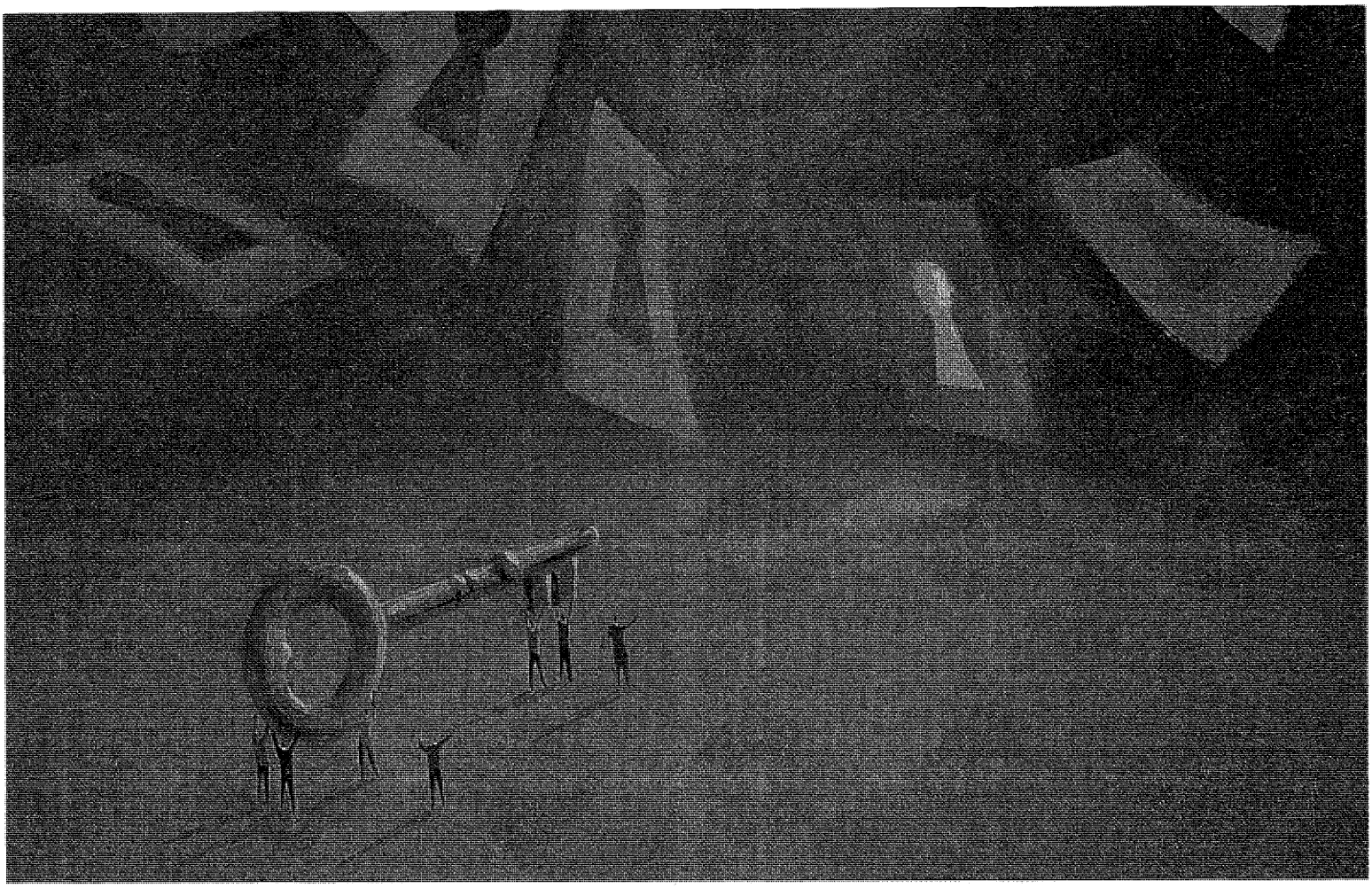


Unlock the door to your future.

***Science* has the keys.**

Just go to sciencecareers.org and use the premier scientific web site dedicated to helping scientists find top quality jobs in the life sciences industry.

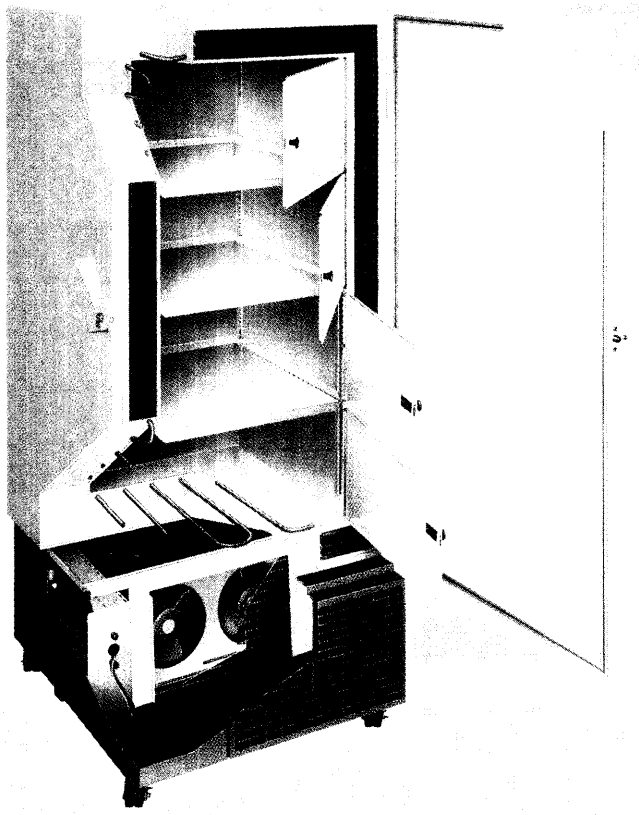
It's easy, and free.

Whether you're looking for job postings from top pharmaceutical and biotechnology organizations, a Resume/CV database, our Job Alerts service, or career advice, sciencecareers.org. gives you all the keys you need to discover your future.

Science @ CAREERS

www.sciencecareers.org

LIFETIME CABINET WARRANTY



FORMA® ULT FREEZERS WITHSTAND THE TEST OF TIME

Forma—it's a brand that has represented high quality, reliable laboratory equipment for 50 years. When it comes to ultra-low temperature freezers, we know our foamed-in-place cabinet design will withstand the test of time—no compromises! That's why we now offer a Lifetime Cabinet Warranty on all Forma 900 and 8500 Series -86C ULT Freezers. This warranty includes the cabinet, evaporator, and door(s).

Forma ULT Freezers also offer:

- PEAK II Refrigeration System – Performance, Environmentally safe refrigerants, Assurance of quality and reliability, and Kilowatt consumption minimized.
- Volume Storage – Our new 28 cu. ft. capacity single door upright freezer can hold a maximum of 60,000 vials, based on a 2.0ml vial size and our maximum capacity inventory rack systems.
- Variety – 12.7 and 20 cu. ft. chests and 13, 17.3, and 23 cu. ft. single and double door upright sizes.

Why risk storing your valuable samples in anything but a Forma Freezer? Contact us for pricing or additional details about our ULT Freezer line.

Forma Scientific, Inc.

P.O. Box 649, Marietta, OH 45750
740-373-4763 • Fax: 740-373-6770
USA and Canada 1-800-848-3080
International Distributors Worldwide
An ISO 9001 Company

A Thermo Electron Company

Circle No. 44 on Readers' Service Card

1-800-848-3080 • www.forma.com

NEW PRODUCTS

DNA LIGATION KIT

The Fast-Link DNA Ligation Kit provides fast and efficient DNA ligations for both routine and high-throughput cloning. The kit will ligate cohesive-end DNA in 5 min, blunt-end DNA in 15 min, and polymerase chain reaction product with A-overhangs in 1 hour or less. In addition, desalting the DNA ligation reaction prior to electroporation of cells is not necessary.

Epicentre
For more information call 800-284-8474 or **circle 147** on the Reader Service Card

COMBINATORIAL ROTATOR

The Combinatorial Rotator is designed to mix up to 40 microtubes at one time. The DC-filtered motor provides smooth rotating action while the variable speed control adjusts from 2 to 80 rpm. The tilting motor bracket allows the user to adjust the mixing angle for different mixing actions. The tethered control can be placed outside of a hood for safer operation.

Glas-Col
For more information call 800-GLAS-COL or **circle 148** on the Reader Service Card

PROTEIN MOLECULAR WEIGHT MARKER

The BlueRanger Prestained Protein Molecular Weight Marker Mix eliminates the need to expose protein molecular weight markers to detrimental freeze-thaw cycles. Its single-dose packaging eliminates the chance of contamination due to multiple withdrawals. It is an individually dried and stabilized mixture of seven proteins that span the range of 18.3 to 250 kD. Each well contains sufficient dried, prestained proteins for loading one or two sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) lanes. It is compatible with a broad range of SDS-PAGE gels and downstream applications.

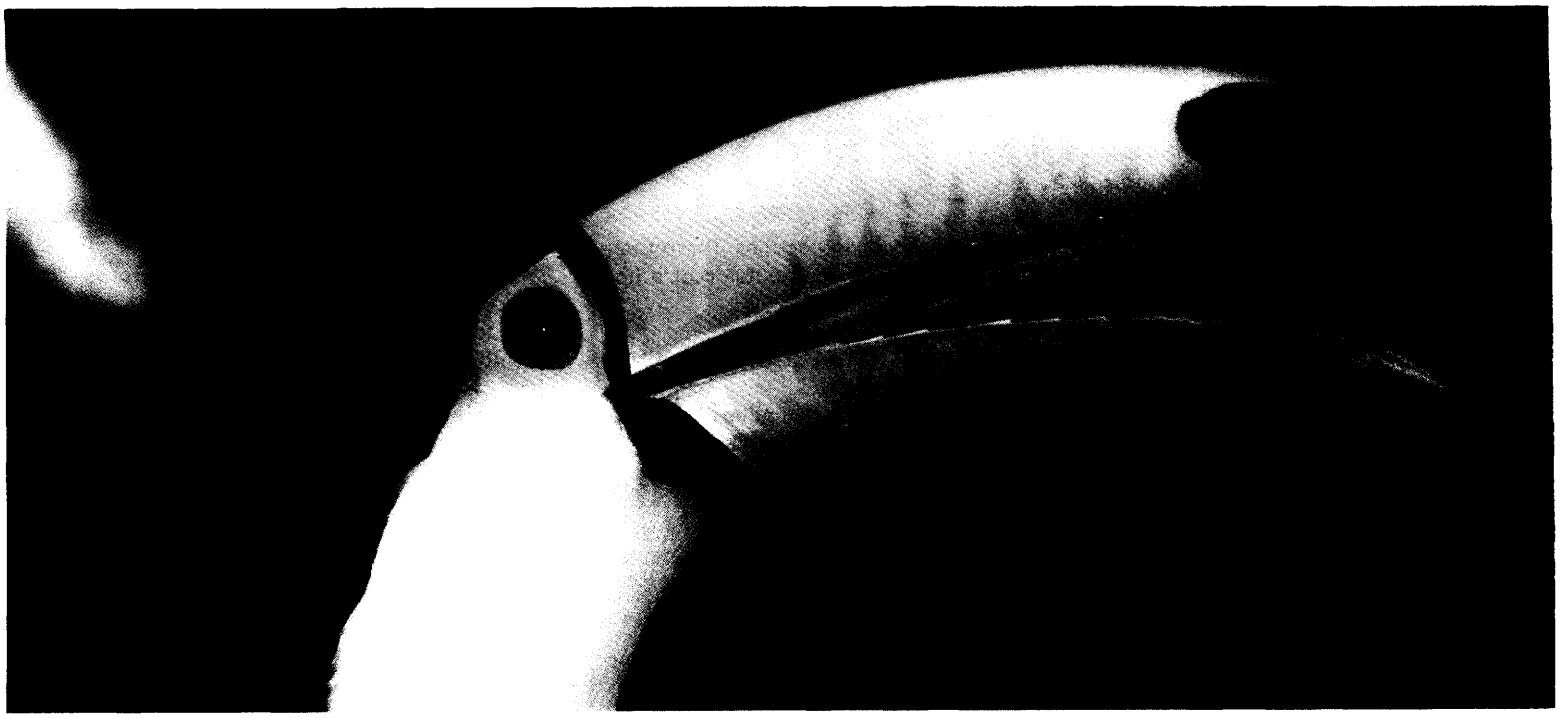
Pierce
For more information call 815-968-0747 or **circle 149** on the Reader Service Card

LITERATURE

Filtration Products is a 24-page product announcement that contains hundreds of filters and accessory products for use in general filtration, food science, life science, pharmaceutical research, and environmental sciences. Among the many products are syringe filters, filter paper, air monitoring filters, extraction thimbles, thin-layer chromatography plates, membrane filters, buchner filters, immersion filters, microfiltration apparatus, and filtering flasks.

Markson LabSales
For more information call 800-528-5114 or **circle 150** on the Reader Service Card

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS of any products or materials mentioned is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Reader Service Card and placing it in a mailbox. U.S. postage is free.



Toco Toucan *(Ramphastos toco)*

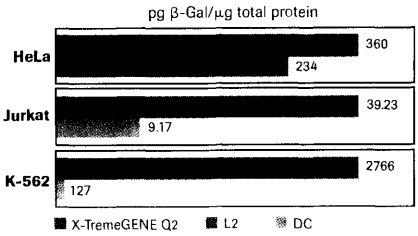
Achieve Superior Transfection of HeLa, Jurkat, and K-562 Cells

X-tremeGENE Q2 Reagent

Choose a reagent specifically designed and optimized for superior DNA delivery into HeLa, Jurkat, and K-562 cells: X-tremeGENE Q2 Transfection Reagent from Roche Molecular Biochemicals.

Express more protein

In HeLa, Jurkat, and K-562 cells, obtain higher protein expression than possible with any other available reagent. Achieve results with minimal optimization using the supplied cell type-specific protocols.



If you're dissatisfied with the transfection efficiency in your HeLa, Jurkat, or K-562 cells, test X-tremeGENE Q2 Reagent in your experiments today!

Cat. No.	Pack Size
3 045 595	0.4 ml (100 transfections)
3 036 421	1.8 ml (450 transfections)

FuGENE 6 Reagent

Obtain exceptional transient and stable transfections with convenient FuGENE 6 Reagent.

Easy on your cells

Efficiently transfect standard cell types and sensitive primary cultures, such as neuronal cultures. For an updated list of more than 300 successfully transfected cell types, visit *http://biochem.roche.com/techserv/fugcell.htm*

Easy on you

Eliminate five steps from transfection protocols required by other transfection reagents. Save time, especially in cell-based HTS and multiple-plate transfection experiments, by using non-cytotoxic FuGENE 6 Reagent in the presence of serum.

Make the easy choice

Order FuGENE 6 Transfection Reagent today, and achieve exceptional results with the least amount of effort!

Cat. No.	Pack Size
1 815 091	0.4 ml
1 814 443	1.0 ml
1 815 075	Multi-pack (5 x 1.0 ml)

Roche

Roche Diagnostics GmbH
Roche Molecular Biochemicals
Mannheim, Germany

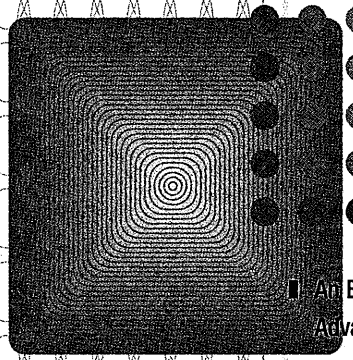
Argentina 54 1 951-0041; **Australia** +61-2 9899 7999; **Austria** +43-1 277 870; **Belgium** +32 2 247 49 30; **Brazil** +55 (11) 3666 3565, +55 (11) 3667 0829, +55 (11) 3666 4897, +55 (11) 3667 3993; **Canada** +1-450 686 7050; (800) 361 2070; **Chile** +56-2 375 2011; **China** +86-21 6427 5586, +86-21 6427 1331; **Czech Republic** +420-5 5 712 50 18; **Denmark** +45.36 39 99 99; **Egypt** 202 361 9047; **Finland** +358-9 525 333 66; **France** +33-4-76 76 46 85; **Germany** (49) 621 759-8568; **Greece** +30 1 686 0600; **Hong Kong** (852) 2485 7596; **India** (22) 43123 12; **Indonesia** +62-21 525 7738; **Iran** +98 21 208 2266, +98 21 878 5656; **Republic of Ireland** 1 800 409041; **Israel** 972-6-638 9591; **Italy** +39-039 247 4108; **Japan** +81-3 5443 5284; **Malaysia** +60-3 755 5039; **Mexico** +52-50 81 58 00; **The Netherlands** +31-36 539 49 11; **New Zealand** +64-9 276 4157; **Norway** (47) 23 373300; **Philippines** +63-2 8934567; **Poland** +48-226684305, +48-226679168; **Portugal** +351-1 417 1717, +351-1 4164400; **Saudi Arabia** +966-14010333/4040266/4031145; **Singapore** 65 3716533/65 3716632; **South Africa** 011-886 2400; **South Korea** 82-2 3471-6500; **Spain** (93) 201 4411; **Sweden** 08 40 488 00; **Switzerland** +41 (41) 799 6161; **Taiwan** +886-2 2505 25 33; **Thailand** 66(2)9370444; **Turkey** 0090 212 213 32 80; **United Kingdom** +44 1273 480444, 0808 100 99 98; **USA** (800) 428 5433

Circle No. 48 on Readers' Service Card

DNA Chips and Microarrays:

The technology that underlies DNA chips and microarrays continues to advance at a rapid rate. Companies are rushing into the market with fresh products designed to solve increasingly difficult problems.

Progress of the Revolution



It was just a few years ago that the idea of using high-density DNA arrays as analytical tools took root in the very fertile ground of scientific imagination. As a technology, DNA microarraying benefited from two important characteristics. First, it was easy to understand. Second, it fulfilled a strong latent conceptual and experimental need. That dynamic combination propelled DNA microarrays, often referred to as DNA chips, into their current position of very high visibility on the radar screen of life science and biopharmaceuticals.

"Microarrays are hot. Every time you mention them people will jump," says Walter Tian, director of marketing and sales development for Boston company NEN Life Science Products. "More and more scientists are getting the message about what they do." Qinajin Hu, president of Bay area biotechnology company Mergen Ltd., agrees. "The technology is extremely powerful," he says. "It changes the whole way in which we study biological disciplines such as pharmacology, agriculture, and drug development. It permits us to work with hundreds of thousands of genes rather than one or two genes at a time. So instead of dealing with individual trees, we're dealing with the whole forest."

The technology has come to fruition at a remarkably appropriate time. It will both benefit from and build on the recent success of efforts to sequence the genomes of humans and other species. "The genome project has made it necessary for us to move fast," says Stephen Fodor, president and CEO of Silicon Valley's Affymetrix, Inc., one of the true

by Peter Gwynne and Guy Page

continued ➢

The companies in this article were selected at random. Their inclusion in this article does not indicate endorsement by either AAAS or *Science* nor is it meant to imply that their products or services are superior to those of other companies.

The future of life science is in your hands.

Agilent Technologies introduces the first generation of the LabChip® chip developed in collaboration with Caliper Technologies, the revolutionary Agilent 2100 bioanalyzer system automates nucleic acid analysis. Now sample handling, separation and detection all take place within a microchip.

The system offers rapid analysis, reduced sample consumption, and enhanced reproducibility for laboratories working with PCR products, restriction enzyme digests, RNA preps, and other types of nucleic acid samples. With standardized assay protocols, digital results, and powerful data analysis tools, the Agilent 2100 bioanalyzer promises to improve your lab's productivity.

To grasp the benefits of an integrated lab-on-a-chip system, contact Agilent today. Let LabChip® technology add a whole new dimension to your work.

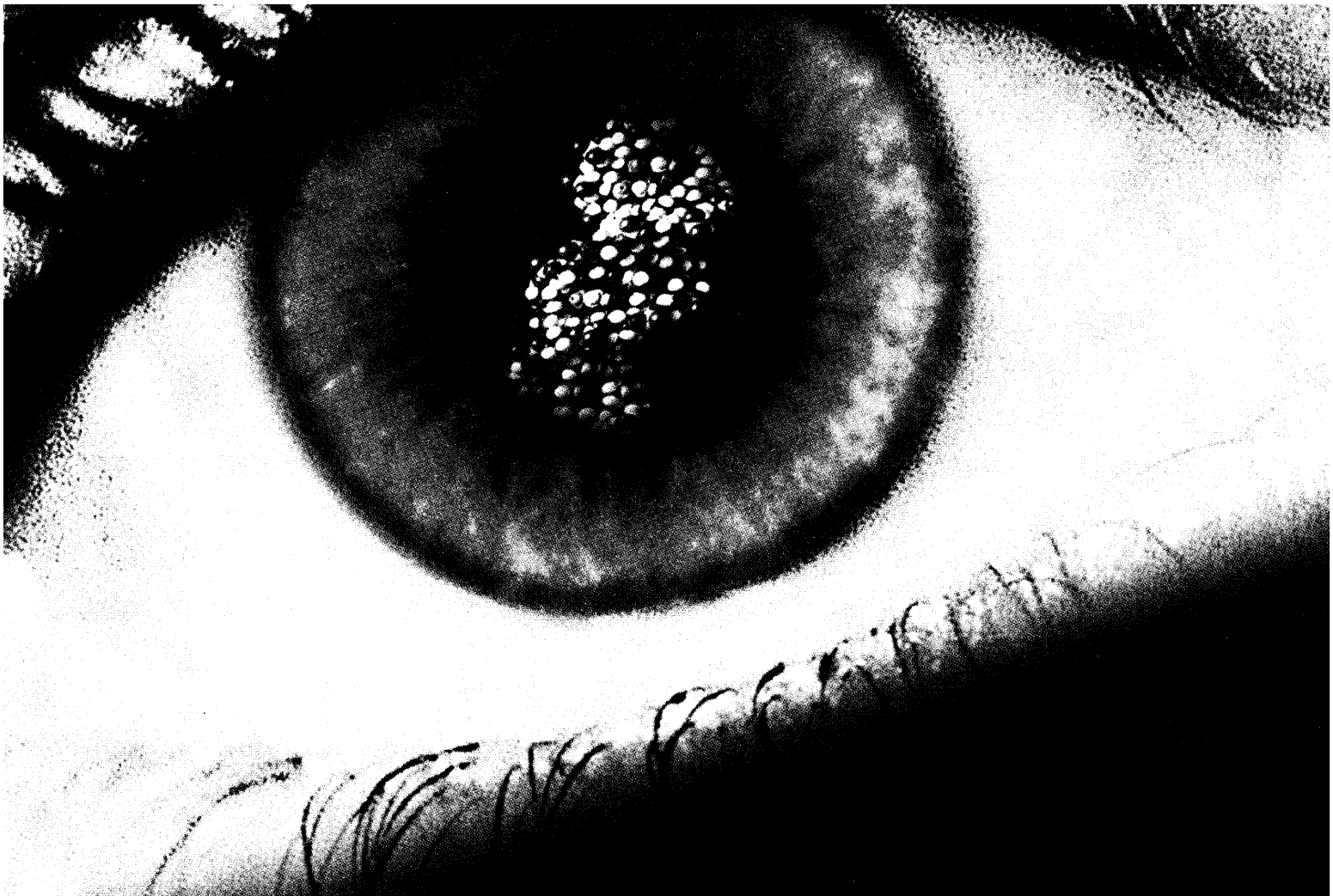
www.agilent.com/chem/labonachip

1-800-227-9770 Select Option 1, Program 4291

Agilent Technologies

Innovating the HP Way

Circle No. 10 on Readers Service Card



When it comes to high-throughput, there are custom oligos, and there are customized custom oligos.

Your lab is unique. Shouldn't your high-throughput service be?

We think so. That's why our competitive pricing and synthesis capacity allow you to order any number of custom oligos for your genome project. Choose from 96-well plates, 384-well plates, and cluster tubes customized to your specifications and delivered in 3-5 days.

What's more, no one's quality control surpasses ours. Every oligo is verified by PAGE analysis, and every batch is performance-tested by PCR and mass spec. You'll also enjoy our personal, friendly service and easy ordering. All at surprisingly affordable prices!

So call today for details on our revolutionary custom high-throughput oligo synthesis. You'll find that at Sigma-Genosys, we focus on you, so you can focus on your research.

SIGMA
GENOSYS

Toll Free: 877-260-0764 • www.genosys.com • Email: info@genosys.com

Circle No. 26 on Readers' Service Card

SUPERase•In™

The Ultimate RNase Inhibitor

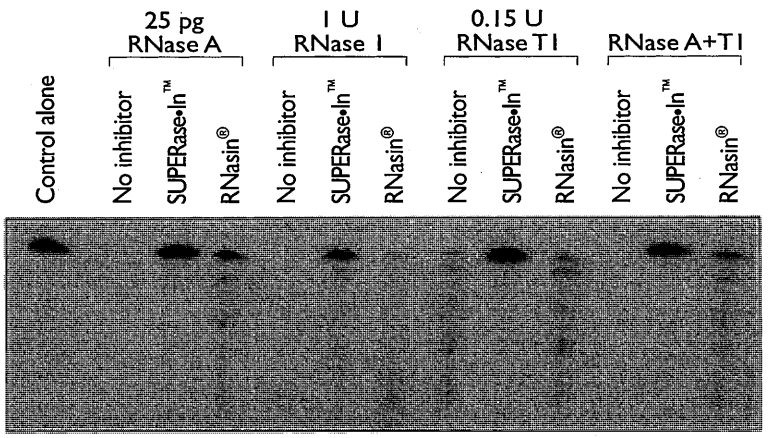
Blocks more RNases than any other inhibitor

•

Effective at elevated temperatures where other inhibitors fail

•

No DTT requirement



SUPERase•In™ vs. Placental Ribonuclease Inhibitor. A ^{32}P-labeled RNA probe was incubated for 30 minutes at 37°C in the presence of the indicated nucleases and either SUPERase•In or ribonuclease inhibitor protein (RIP). Both the SUPERase•In and the RNasin® were added at a concentration of 1 U/µl.

SUPERase•In™ inhibits MORE RNases under MORE reaction conditions than any other RNase inhibitor available.

Although ribonuclease inhibitor protein (RIP or RNasin®) has been the most commonly used RNase inhibitor, it has limitations. RIP binds only RNase A-type enzymes, functions under a narrow temperature range and requires DTT to prevent the release of active RNases. New SUPERase•In inhibits more RNases - RNase A, B, C, RNase T1 and RNase 1. SUPERase•In remains active up to 65°C and has no DTT requirement. SUPERase•In gives a higher level of protection against RNA degradation than any other product - it's the ultimate RNase inhibitor.

RNasin® is a registered trademark of Promega Corporation.

For a complete list of distributors visit our website, http://www.ambion.com

U.S. (800)888-8804

Canada (800)445-1161

iBlink

iBlink™ Info

PRODUCT INFO IN A BLINK!

Why is SUPERase•In™ replacing RIP in commercial kits? An instant iBlink™ email has the answer.

Contact us at iblinksuper@ambion.com.

Ambion®

THE RNA COMPANY™

AMBION, INC. • 2130 WOODWARD ST. • SUITE 200 • AUSTIN, TX 78744-1832
tel(512)651-0200 • fax(512)651-0201 • email: moinfo@ambion.com • www.ambion.com

Investigate our proteomic solutions — *available now!*

New! Protein Warehouse™

The only bioinformatics solution.

Yes, Genomic Solutions does have your complete proteomic solution. Our Investigator™ Proteomic System automates current manual methods to save time and increase throughput. ProteinWAREHOUSE™ provides bioinformatics that pulls your data together. The result is the ability to seamlessly integrate and easily track your data along the protein characterization pathway.

Within the Investigator proteomics circle, you'll find:

- Bioinformatics
- 2-D electrophoresis
- Automated gel staining
- 2-D image analysis, quantification and matching
- Gel plug (spot) excision
- Automated protein digestion
- Automated spotting
- Proteomic-grade reagents & pre-cast gels
- 2-D contract lab services

Electrophoresis to Mass Spec, join our inner circle of solutions. It's the new shape of productivity in proteomics research.

GENOMIC SOLUTIONS™

FUELING INNOVATION.
DRIVING DISCOVERY.™

Why wait?

www.genomicsolutions.com

Circle No. 78 on Readers' Service Card

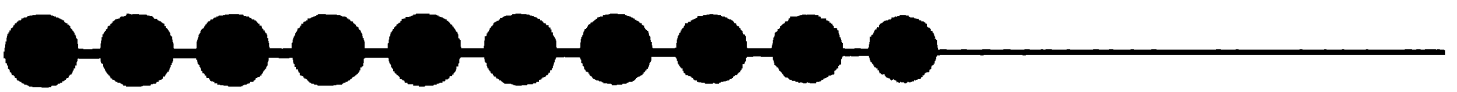
pioneers of microarrays. "Once you put out products that contain the gene, you must keep going." Jim Hagstrom, director of gene therapy at Wisconsin's Mirus Corporation, makes a similar point. "All these gene sequences are coming out now and going into the computer databases," he says. "That gives us the ability to look at the expression of all the genes in a cell. The technology will allow researchers to know how drugs affect cells at the gene level."

Like human genome sequencing, microarray technology has reached the starting line rather than the finishing tape. "Microarrays now are like the polymerase chain reaction (PCR) industry was in the beginning," says Cheryl Bibeau, senior product manager for Corning Life Science Products in Massachusetts. Individual researchers who once had to set up their own PCR procedures, she explains, can now buy their supplies and experimental kits for microarrays from specialist companies. As a result, says Jeffrey Williams, CEO of Ann Arbor company Genomic Solutions, "You're seeing more standard biochips coming to the marketplace." The reason: Increasing numbers of academic and industrial life scientists prefer to spend their time doing actual science rather than devoting a large proportion of that time to trying to figure out how to make DNA microarrays from scratch.

What do scientists do with DNA chips and microarrays once they buy or make them? Basically they use them to monitor and try to understand the interactions among the vast numbers of genes in a genome. "Today the big thing is gene expression profiling," says Dirk Vetter, co-founder and CEO of German company Graffinity Pharmaceutical Design GmbH. "It's very synchronized with the Human Genome Project as data from that are being made available."

Just a little further down the road is the use of microarrays and chips to study single nucleotide polymorphisms (SNPs), the base pairs at specific locations in chromosomes that vary frequently among different individuals. Next will come investigations of proteins. Ultimately, those studies should lead to better understanding of the ways in which genes influence health and disease and thereby lay the foundation for an era of personalized medicine, in which each diseased patient will receive treatment tailored to his or her particular genetic complement.

Like human genome sequencing, microarray technology has reached the starting line rather than the finishing tape.



An Evolutionary Advantage

New technologies arise continually in every branch of science. Some are grasped and adopted quickly while others languish, sometimes interminably. Part of the difference in adoption rate depends on how easily the practitioners can understand the benefits of the new technology. Since scientists, like everyone else, naturally gravitate toward the familiar, new ideas that build logically and incrementally on existing ideas inevitably receive the best reception. In this sense, DNA microarray analysis had a natural advantage. The basic technique represented an extension of the nucleic acid hybridization process that scientists had used for decades. Because of this long history, molecular biologists could understand not only how the analysis was done but also exactly what benefits they could expect to get from performing it. This kind of clarity is rare among significant new technologies.

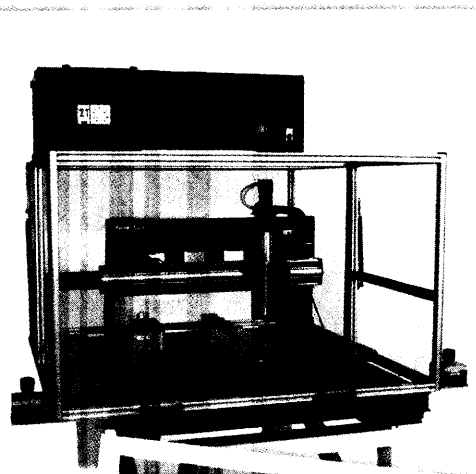
One other important factor propelled the enthusiastic reception of DNA microarrays: their ability to fulfill powerful, latent needs in the basic research and drug discovery communities. For many years researchers in the field of molecular genetics have understood that most physiological processes are influenced to a greater or lesser degree (if not actually determined) genetically by the switching on and off of sets of genes. When a cell or a tissue responds to environmental change — such as an external stimulus, food, fear, or disease — it does so by calling on its genes to manage the necessary biochemical changes. The observation that some genes become more active and others become less active during a physiological change has by now become commonplace. In some cases, we even think we understand why these "levels of gene expression" occur. There is no question now that understanding which genes go up and which go down is an essential part of "understanding" any physiological process. It certainly plays a critical role in understanding the biological context in which modern drug discovery operates.

In addition to holding a basic belief that physiological change implies change in genetic expression, researchers have long recognized that every interesting biological process usually involves more than one gene. The number can reach tens, hundreds, or even thousands, but it is seldom just a few. So life scientists want to monitor the activities of many genes at the same time in a reasonably reliable and quantitative way. Premicroarray technology could keep track of a maximum of no more than 30 genes at a time and could not offer any data that even approached the quantitative. DNA microarrays offer the opportunity to perform fast, comprehensive, moderately quantitative analyses on hundreds of thousands of genes simultaneously. Plainly, scientists found the temptation to use microarrays just too much to resist. The technical revolution represented by microarrays began quickly and is spreading with enormous speed.

continued ➢

OmniGrid™: The most advanced high-throughput microarrayer.

Omni.



OmniGrid microarrayer with complete environment control.

Exclusive GeneMachines® ServerArm allows fully unattended runs.

A scanned image of an array prepared using OmniGrid microarrayer. Data courtesy NCI.

Potent.

1. 15K spots on 100 slides in 5 hrs– fully unattended.
2. 40K+ spots per slide.
3. 38-plate capacity.
4. Up to 48 pins.
5. Effortless sample tracking.
6. Flexible placement of samples & controls.
7. Random plate access.
8. Custom cleaning procedures.
9. Random sample access.
10. Plate lid removal/replacement.
11. ±2.5 micron accuracy.
12. Blotting capability.
13. Humidity control/HEPA filter.
14. Multiple pin types/brands.
15. 20+ pin configurations.
16. Easy-to-use GUI interface.
17. Multi-level user access.
18. State-of-the-art engineering.
19. 2-year warranty.
20. Available now.

Dependable microarrayers were hard to find. Until now.

The OmniGrid microarrayer combines industrial-strength components and elegant design to deliver quality samples fast. And do it day-in-and-day-out.

Just set up the easy-to-use software with your custom protocols, insert 96- or 384-well plates with desired substrate, start it up and walk away.

So choose the OmniGrid microarrayer for the long haul. Call 1-877-855-GENE (4363) or visit www.genemachines.com today.

GENEMACHINES

WORK LESS. DO MORE.™

MicroPlate it Safe

Labsystems Microplates

Our partnership promise for optical and binding precision

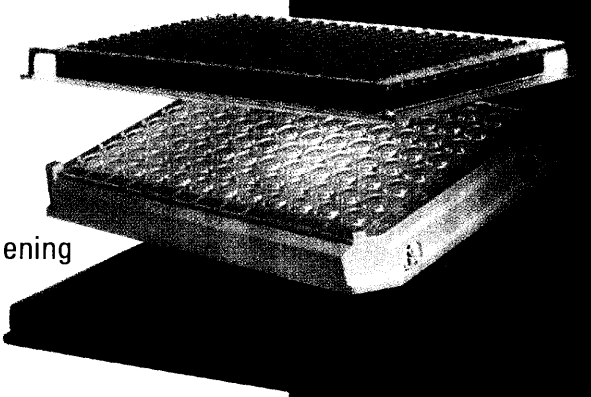
When it comes to designing the right microplate for your needs, Labsystems is committed to building a long-term partnership to provide a reliable solution with our plastics molding expertise. We guarantee unrivaled quality and minimized batch-to-batch variation for every application.

- Three binding surfaces:
  - Universal (untreated)
  - Enhanced Binding (treated)
  - Streptavidin-Coated
- Compatibility with all standard microplate instrumentation
- Wide selection for high-throughput screening
- Excellent binding characteristics and stability for various molecules

Ask about our special customized features.

Full range of plates available:

- **Combiplate®**
- **Cliniplate™**
- **BioBind™ Streptavidin-Coated Combiplate**



Labsystems

Labsystems Oy
P.O. Box 208, FIN-00811 Helsinki, Finland
Tel. +358-9-329 100, Fax +358-9-3291 0414
http://www.labsystems.fi

A THERMO BIOANALYSIS COMPANY

Circle No. 102 on Readers' Service Card

Need microarray results faster?

New! GeneMap™ Gene expression analysis out of a box.

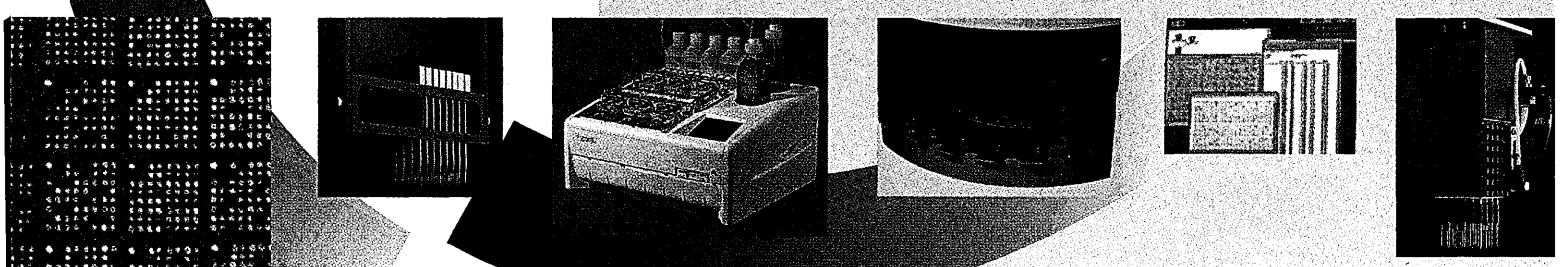
Kick start your experiments — Genomic Solutions has tools to accelerate your research. Don't have a library? Our GeneMap™ arrays are available for hybridization, imaging and analysis. Or choose the complete GeneTAC™ biochip system — we'll train you on incorporating the system into your experiments. These specialized instruments work together, assuring the productivity today's challenging research climate demands.

Within our GeneTAC circle you'll find:

- Gene expression analysis
- DNA library management
- Microarray production
- Hybridization
- Microarray imaging
- Microarray analysis
- Results reporting

We can also fill any part of your research regimen with our in-house contract lab services.

Genomic Solutions: a full circle of research solutions to fit your exacting needs in gene expression analysis.



GENOMIC SOLUTIONS™

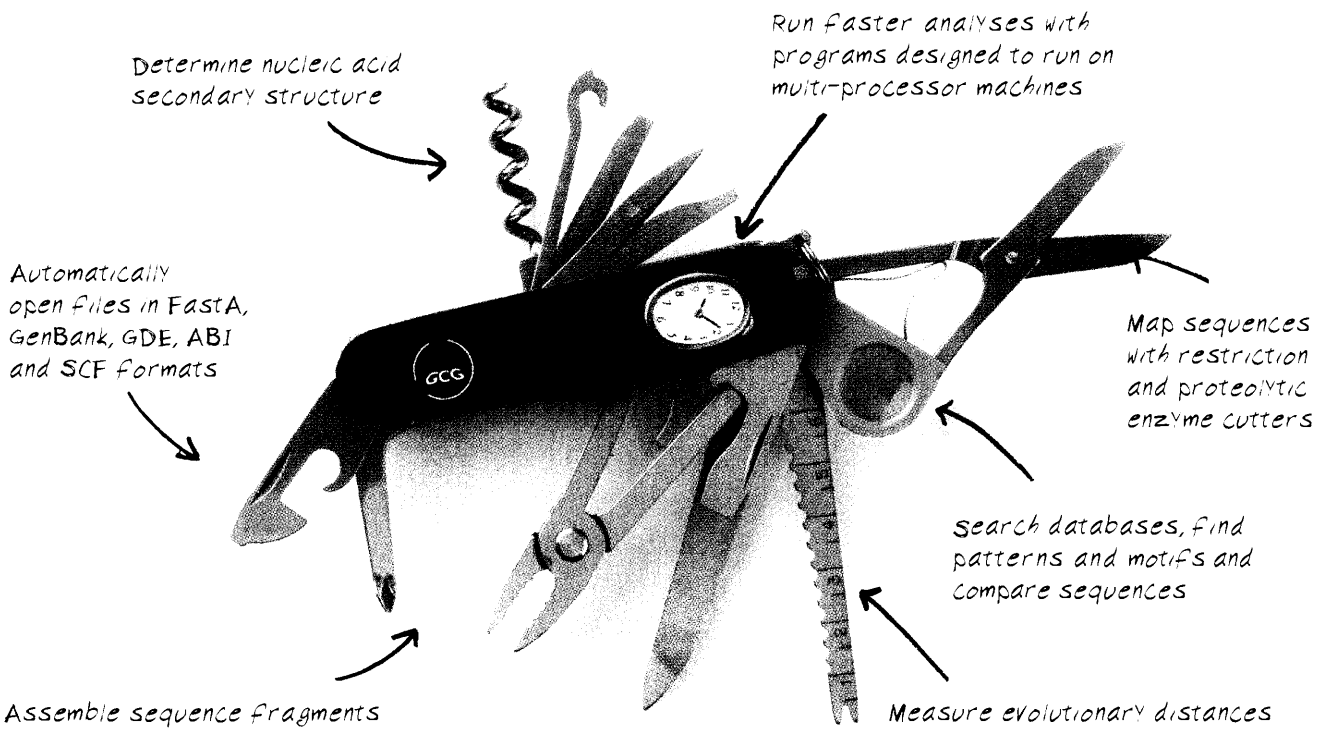
FUELING INNOVATION.
DRIVING DISCOVERY.™

www.genomicsolutions.com

See our new GeneTAC™ G3 at the Beyond the Genome meeting

Circle No. 31 on Readers' Service Card

Your BIOINFORMATICS survival kit



INTEGRATED ANALYSIS TOOLS, GRAPHICAL INTERFACES AND DATABASES...FROM ONE SOURCE

It's about more than just surviving – it's about thriving. Look to Genetics Computer Group and Oxford Molecular to keep you equipped in bioinformatics.

Need analysis tools? The Wisconsin Package™ offers the most comprehensive set of sequence analysis tools on the market.

Need flexibility? Try the Wisconsin Package and SeqLab® on UNIX; SeqWeb® on the web; OMIGA on Windows 95/NT; or MacVector® on the Macintosh.

Need current data? We provide the major nucleotide and protein sequence databases available daily, weekly, or bimonthly.

Need speed? Our database searching and sequence comparison programs run on multi-processor machines and cut your analysis time to a minimum.

QUALITY TOOLS.

BACKED BY SCIENTIFIC EXPERTISE AND A LEGACY OF COMMITMENT.

Genetics Computer Group

An Oxford Molecular Company

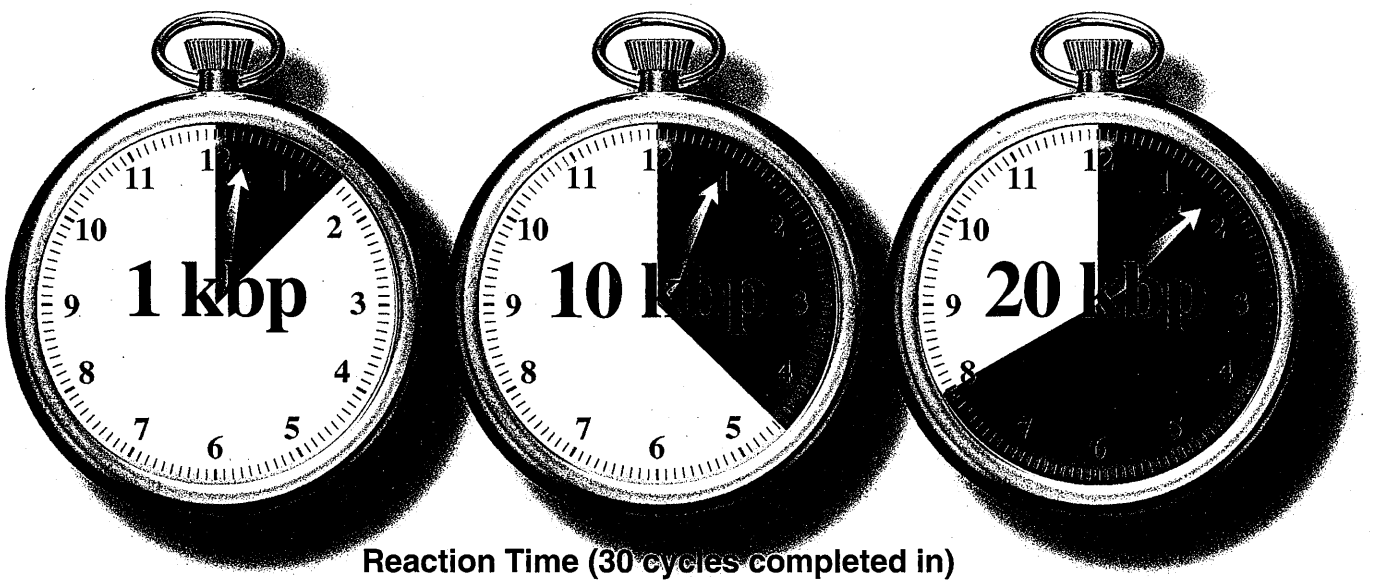
Worldwide	Europe	North America
608.231.5200	+44 1865 784600	800.876.9994
www.gcg.com/tools1		

Circle No. 99 on Readers' Service Card

TaKaRa Z-Taq™

The Fastest DNA Polymerase Ever

Today's Research for Tomorrow's Revolution



Reaction Time (30 cycles completed in)

TaKaRa Z-Taq™ Conventional *Taq*

Speed Comparison in Amplifying *E. coli* Genomic DNA (100 ng/50 µl PCR)

TaKaRa Z-Taq™ (R006A: 200 U, R006B: 200 U x 4)

- Offers Unmatched PCR Productivity by any other enzyme at **Five times Faster Speed** with Excellent Processivity and Higher Sensitivity.

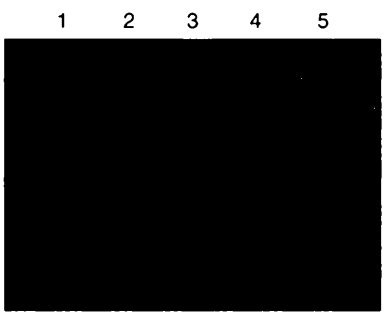
Amplification Length Achieved	
Human genomic DNA	17.5 kbp and longer
E. coli genomic DNA	20 kbp and longer
λ DNA	20 kbp and longer

- *TaKaRa Z-Taq*™ provides High-throughput to enable multiple runs of sample processing on a single cycler* each day. *Applicable to any thermal cycler currently in use

- Highly Efficient and Cost-effective PCR processes will accelerate genetics applications in every related field.

Amplification of *E. coli* Genomic DNA (100 ng/50 µl PCR) with *TaKaRa Z-Taq*™

on the TaKaRa PCR Thermal Cycler PERSONAL by performing 30 cycles: Using 5 sec-denaturation time at 98° C, extension times are 2 sec, 70 sec and 150 sec at 68° C, respectively for 1 kbp, 10 kbp and 20 kbp.



Lane (5 µl applied for the Electrophoresis)

1. pHY marker
2. 1 kbp
3. 10 kbp
4. 20 kbp
5. λ-*Hind* III marker

TaKaRa
TAKARA SHUZO CO.,LTD.
BIOMEDICAL GROUP
Otsu, Shiga, Japan
Phone:+81 77-543-7247 Fax:+81 77-543-9254

Korea
BOHAN (TaKaRa-Korea) Biomedical Inc.
Phone: (02) 577-2002 Fax: (02) 577-3691
Europe
TaKaRa Biomedical Europe S.A.
Phone: +33 1 41 47 01 14 Fax: +33 1 47 92 18 80

DISTRIBUTORS
USA and the Americas
PanVera Corporation
Toll Free: 800-791-1400
Fax: 608-233-3007
E-mail: info@panvera.com

Europe
BioWhittaker Europe
Phone: +32(0)8732 1611
Fax: +32(0)8735 1967

Taiwan
Cold Spring Biotechnology Co.,Ltd.
Phone: +886 2-695-9990
Fax: +886 2-695-9963

Taiwan
Cheng Chin Trading Co.,Ltd.
Phone: +886 2-331-3111
Fax: +886 2-382-2197

Homepage: http://www.takara.co.jp/english/bio_e/ E-mail: bio-sm@takara.co.jp

Circle No. 13 on Readers' Service Card

The Basics of Microarrays

Developed in the early 1990s, the DNA microarray is basically an ordered set of DNA molecules of known sequence. The arrays are usually rectangular (100 x 100, 60 x 40, or 300 x 500, for example). They can consist of as few as several hundred units or as many as tens of thousands. Each unit is a spot less than 200 microns in diameter that is placed in the array at a precisely defined location. The identity of the DNA molecule affixed to that spot is always the same. Thus the information content of a spot remains the same and can be used in calculations of experimental results.

The consequence of using an ordered array is that the sum of all interactions across the full set of spots — that is, gene sequences — can be measured simultaneously and calculated instantly. So rather than looking at physiological changes gene by gene, a researcher can evaluate an entire set of genes at once.

Each point on a DNA chip contains a specific sequence. The "sample" or test material usually consists of RNA that has been "amplified" by PCR. By using PCR on the RNA, researchers can prepare enough material to view and at the same time introduce fluorescent tags or other labels into the test material so that it can be visualized. The test material will stick to the DNA chip wherever the DNA sequence on the chip matches that of the PCR-amplified RNA sample. Then the chip is "read" in a device that examines the location of each spot and reports whether or not the spot has a fluorescent label attached to it.

The amount of material on a spot also has an effect on the reading device. That makes the test somewhat more informative than a simple yes/no evaluation; it can measure semiquantitative changes from spot to spot. Thus with a simple tool and using very familiar biochemical methods, a molecular biologist can conduct a comprehensive assessment of genetic function in a target tissue.

Key Components

The technology that underlies DNA microarrays and chips has advanced at a staggering rate as more and more companies have jumped on the bandwagon and the sense of competition has heated up. In many cases relatively few barriers exist to entry in this market, allowing any company with the requisite core technology to get into the game. Here, we look at the key technologies by category.

Media and premade chips: For the increasing number of life scientists who use off-the-shelf DNA chips, the question of media (the material from which the chip or slide is made) is a nonissue. They simply specify what they need from their vendor. But for researchers who want to prepare their own microarrays — still a substantial fraction in the basic research community and particularly in the pharmaceutical and biotechnology industries — the type and quality of media can determine the difference between a successful experimental program and a frustrating one.

Most of the media are offered in standard microscope slide configuration. The first offerings of polylysine coated glass slides suffered from severe problems in background and reproducibility. Then, about a year ago, Corning introduced its CMT-GAPS amino-silanized slides. "From what I can tell, we have one of the most consistent slides out there," says Bibeau. "The slides have been one of our most successful products."

Corning wasn't alone in new media technology. Sleicher and Schuell introduced its FAST slides at about the same time, while Surmodics has brought out its own proprietary slide format and Clontech has introduced an amino-silane slide. More products are expected in this category to address persistent needs for low background and intra- and interslide variability.

Spotters: With the slide media in hand, the question of DNA deposition becomes critical. Lacking reliable means to attach oligonucleotides to the existing media, most do-it-yourself microarray makers need to spot cDNAs or PCR products from their collections onto the slides.

Two options currently exist. The simpler, offered by several suppliers, is a quill pen spotter. This instrument uses a steel quill pen to place nearly identical spots on up to 100 slides in a set. The method has the advantage of being relatively

The consequence of using an ordered array is that the sum of all interactions across the full set of spots that is, gene sequences — can be measured simultaneously and calculated instantly.

continued ➢

It's here

Introducing GenePix™ Pro 3.0 microarray analysis software.

If you're looking for more flexibility and automation in your microarray analysis software, look at what GenePix Pro 3.0 has to offer:

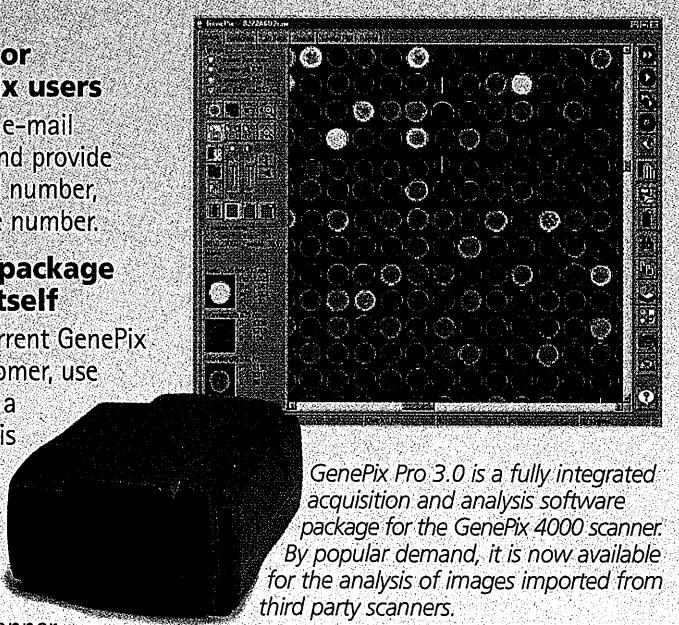
- HTML and Visual Basic scripting for custom control over data acquisition, analysis and display.
- Customizable URL links to web-based data.
- Automatic barcode reading from images as they are acquired—no more hand-held readers!
- Automatic spot finder aligns feature indicators with image features—even images from third-party scanners.
- Scatter plot display of any extracted analysis quantity against any other quantity.
- Automated workflow control—run scans and save images with the push of a button.
- Integrated array list generator makes it easy to map clones from multi-well plates to microarrays.

Free upgrade for current GenePix users

For your free copy, e-mail sales@axon.com and provide your GenePix serial number, address, and phone number.

A stand-alone package that pays for itself

If you are not a current GenePix 4000 scanner customer, use GenePix Pro 3.0 as a stand-alone analysis package. Buy up to three copies and apply the cost directly to the future purchase of a GenePix 4000 scanner.



GenePix Pro 3.0 is a fully integrated acquisition and analysis software package for the GenePix 4000 scanner. By popular demand, it is now available for the analysis of images imported from third party scanners.

Find out more

To get more details and a list of International Distributors, call **+1-650-571-9400** or visit our web site at **www.axon.com.**

Axon Instruments, Inc.

REGISTERED ISO 9001 QUALITY SYSTEM

Circle No. 56 on Readers' Service Card

The Human Genome is sequenced, LifeSpan BioSciences offers the next step...

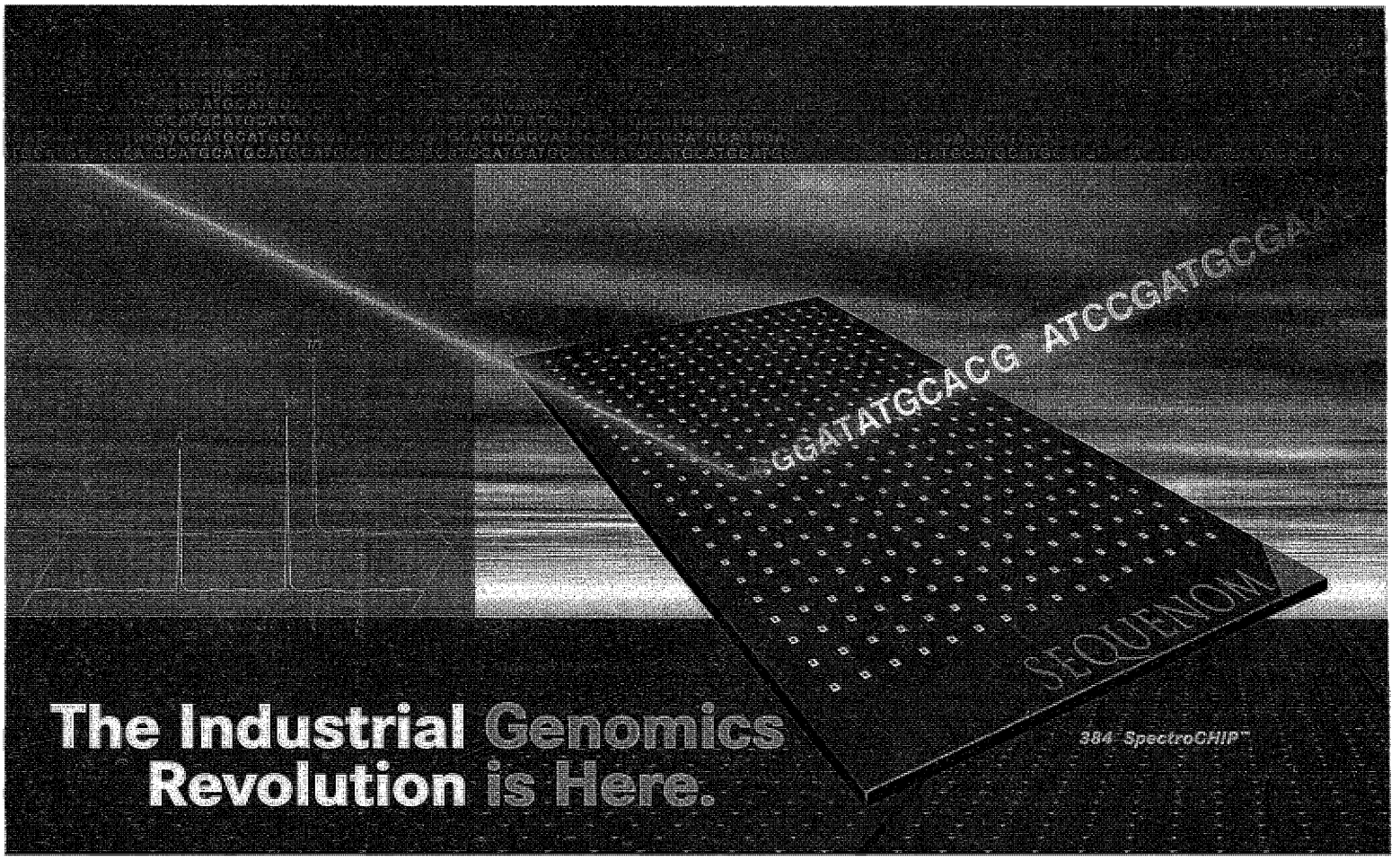
Gene localization analysis to accelerate drug development

- 2 Million Human Tissue Specimens
- Immunocytochemistry Localization
- *In situ* Hybridization Localization
- Expert Molecular Pathology Interpretation

Combining genomics and pathology: Genes to Drugs, quickly

LIFESPAN BIOSCIENCES

700 Blanchard Street, Seattle, WA 98121
tel 206.464.1554 fax 206.464.1723
www.lsbio.com



The Industrial Genomics Revolution is Here.

SEQUENOM's revolutionary MassARRAY™ technology provides the performance you need to take high-throughput genotyping to an industrial level.

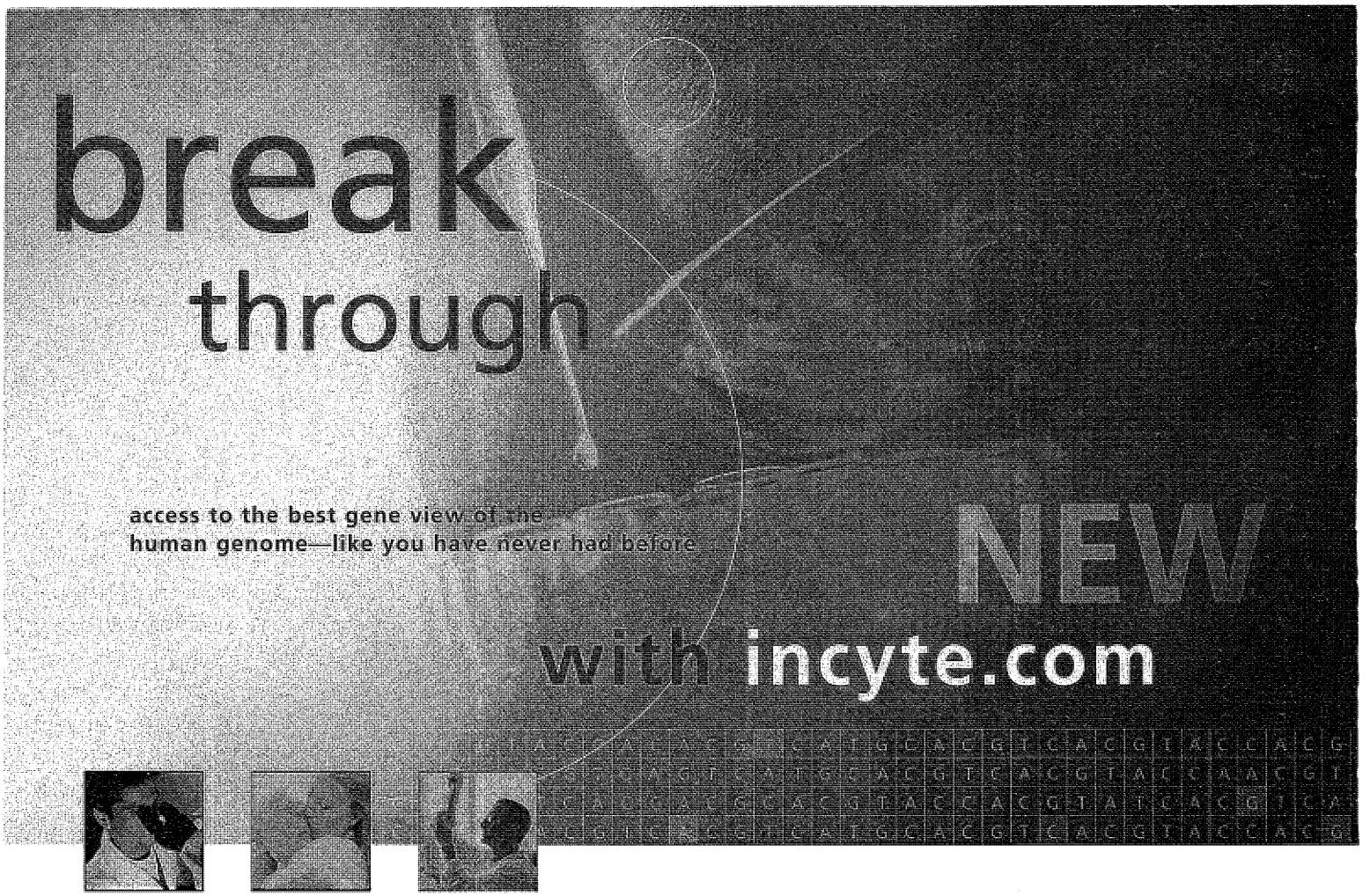
By combining proprietary chemistries with the speed and analytical power of MALDI-TOF mass spectrometry, the MassARRAY system offers unparalleled accuracy and throughput in SNPs analysis. This flexible system also easily adapts to meet your changing research needs, assuring success in even the most demanding genotyping projects. To join the Industrial Genomics Revolution, contact us at 1.877.4GENOME or visit our website today and get all the **FACTS**.

FLEXIBILITY **ACCURACY** **COST-EFFECTIVENESS**

THROUGHPUT **SIMPLICITY**

SEQUENOM
INDUSTRIAL GENOMICS™

Join the revolution @
www.sequenom.com



www.incyte.com

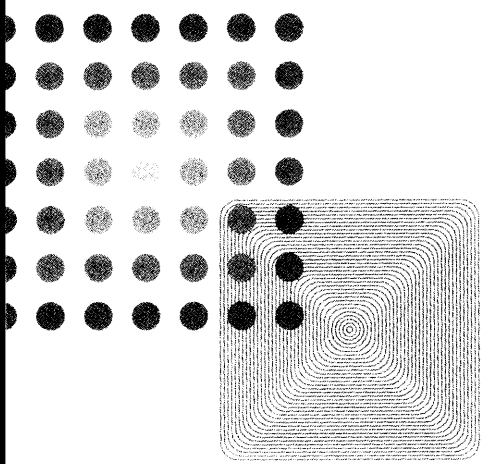
Only Incyte has LifeSeq® Public—free and enhanced public domain data linked to a proprietary, easy-to-use sequence database and clones.

Only Incyte has LifeSeq® Gold—120,000 gene transcripts (60,000 not available anywhere else), gene data based on actual expression, not prediction, and physical clones for every gene transcript.

Announcing a brand new site that provides you with the most powerful and complete view of the human genome. Plus, 24/7 access to the most up-to-date, highest quality data, reagents and supplies. Join us as we come together to create a dedicated online community of collaboration and dynamic online tools. Enhance your research. Accelerate your discovery. Achieve your breakthrough. **www.incyte.com**

IncyteGenomics
For Life.

Circle No. 81 on Readers' Service Card



direct and producing spots that are moderately consistent and relatively small in size. The amount of variability, however, is not small. As an alternative, Packard Instruments and others offer instruments that deposit DNA in much the same way that ink jet printers deposit spots on paper. The process occurs very fast and produces very uniform spots. However, the spots produced in this way tend to be larger than the compact spots made by the quill pen instruments.

Labeling and detection: "Labeling and detection have undergone a lot of changes," says NEN's Tian. "Companies have developed several different modifications to the protocol to provide ease of use, cost benefits, and sensitivity."

Virtually all labeling for DNA microarray analysis involves fluorescence, which allows multiple independent signals to be read at the same time. Each probe is labeled with a fluor of a different color; the colors differ sufficiently that they can be effectively separated using optical filters. The majority of readers on the market now use either high-intensity white light or laser-induced fluorescence to detect the signal from each spot on a microarray. Perhaps the major difference among readers is whether the light beam is focused confocally or not. A confocal instrument collects a signal from a shallow plane of focus, effectively eliminating much of the potential background fluorescence. But this attractive capability comes at a price. The instruments tend to be much more expensive than the nonconfocal variety. They also require a flatter analytical surface unless the instrument can readjust the confocal plane as the height of the reading surface varies.

The technology to construct a microarray reader is available to many, if not all, manufacturers of imaging instruments. As the microarray market grows, analysts expect that more and more companies will join the ranks of suppliers of microarray readers. Axon Instruments, Inc., for example, has recently introduced its GenePix 4000 A scanner, which detects two colors with a resolution of 10 microns. "But as the market grows there will be a need for different types of scanners for different market segments," says David Wellis, Axon's director of microarray technology. "We'll move beyond current scanner technologies to high-throughput, higher-resolution scanners."

Mirus, which manufactures products for PanVera Corporation, has a different take on attaching labels directly onto nucleic acids. "We have developed what we think is the easiest way of labeling," says Hagstrom. "It's direct covalent labeling of a tag. The attachment is to a spot on the nucleic acid not involved in hydrogen bonding, typically to guanine residues." When labeled with fluorescent tags, these nucleic acids can be used as probes; when they are labeled with chemically reactive groups, they can be attached directly to chips and microarrays. The key reason for the new technology, says Hagstrom, is the fact that covalent bonding is the strongest there is. "Another big advantage," he adds, "is that it will label RNA or DNA directly. Sometimes you need to use an RNA probe."

New detection technologies are emerging on the market. Sequenom, Inc., based in San Diego, uses mass spectrometry in its MassARRAY system designed to detect SNPs. "We look at DNA as nature made it," says chief scientific officer Charles Cantor. "Because we use mass spectrometry, the readings are almost error free. That's significant when you're doing a few million measurements."

Ciphergen Biosystems, Inc. of Palo Alto takes a similar approach in applying microarrays to the measurement of proteins. "We use an affinity capture surface to purify and concentrate specific and general types of molecules from very small biological samples and then use mass spectrometers to analyze what has been captured," explains Christopher Pohl, Ciphergen's vice president for R&D.

Orchid BioSciences, Inc. of Princeton applies microfluidics — the movement of minuscule amounts of liquid through hair-thin channels created in wafers — to the detection of SNPs. "Our focus has been on orchestrating massively parallel arrays of reactions," says Dale Pfost, Orchid's chairman, CEO, and president. "Microarrays fit into a subset of that." The company has recently marketed its SNP-IT primer extension technology to PE Biosystems, Amersham Pharmacia, and other large life science companies.

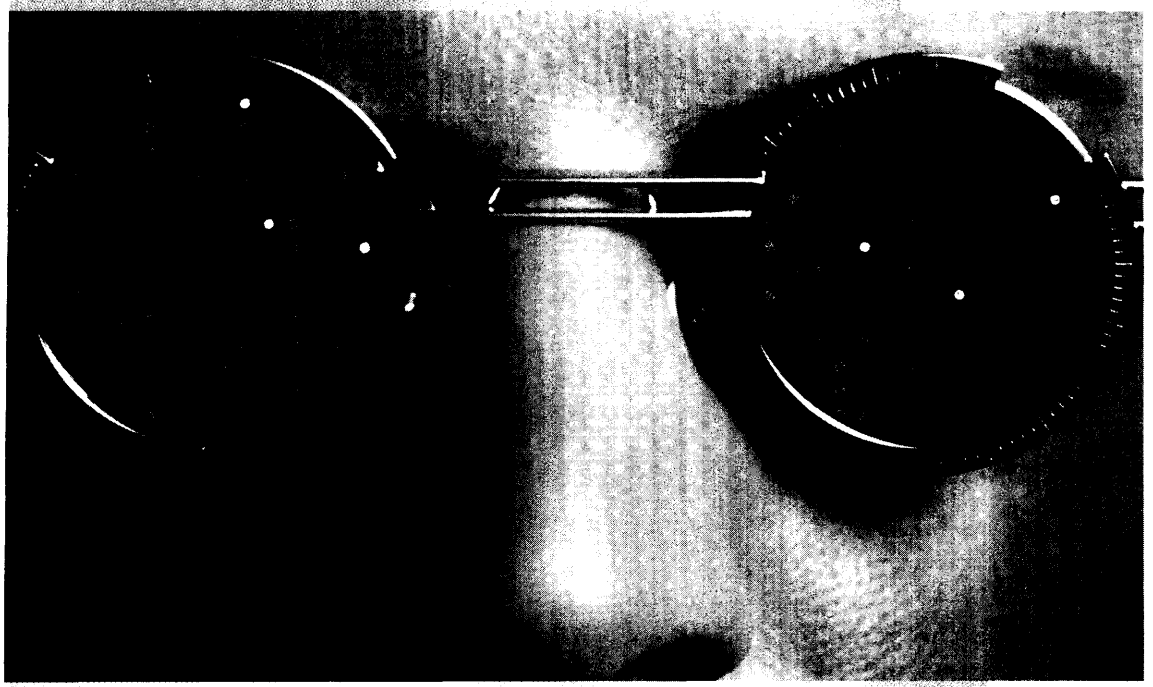
Analytical software: The key to differentiation among suppliers of microarrays and chips may eventually lie in the analytical software that instrument manufacturers put up for sale. They may design their own software or obtain it through a partnership. But the range of capabilities offered, including data integration, may well provide the leverage that an instrument system needs to stay ahead in the market. Critical attributes of competitive software include data collection and storage, flexible formatting of data output, statistical analysis of individual spot intensities to provide grouping and cluster analyses, linkage to external databases, and a broad range of reporting functions. "Software and integrated solutions are becoming more and more important," says Williams of Genomic Solutions.

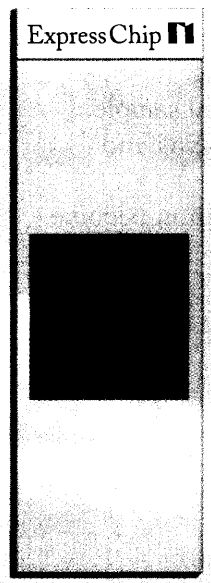
Virtually all labeling for DNA microarray analysis involves fluorescence, which allows multiple independent signals to be read at the same time.

continued ➢

MERGEN LTD.

Discover A Clear Array of Possibilities. ExpressChip™ DNA Microarrays from Mergen.





If you need to simultaneously analyze over one thousand gene expressions, there's no better choice than ExpressChip™ DNA Microarrays from Mergen. Each ExpressChip kit contains two duplicate glass slides pre-spotted with oligonucleotides, and reagents for probe hybridization and signal amplification.

Simple, Flexible and Affordable.

- Choose among human, mouse, rat, or custom ExpressChip kits
- Use low amount of total RNA as starting material
- Process slides with your choice of laser scanners and image analysis software
- Customized services available

High Quality.

- Off-chip oligo synthesis for high coupling efficiency and optimized quality control
- Sequences individually tested for cross-homologies in GenBank database
- Superb spot geometry and uniform density
- Hybridization without cover slip for clear images across the array with minimal artifacts

Differential Expression Results You Can Trust.

- High specificity and sensitivity
- Linearity over large dynamic range

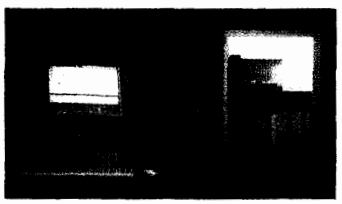
Get started today with ExpressChip™ DNA Microarrays from Mergen and discover an endless array of possibilities. Visit us on the web at www.mergen-ltd.com, or call us toll-free at 1-877-4MERGEN (463-7436).

Circle No. 96 on Readers' Service Card

Setting the Pace in Drug Discovery

Drug discovery is a race, and the competition is tough. Potential targets and drugs must be identified and validated efficiently.

Get into the fast lane. By studying and understanding molecular interactions you can make better decisions, faster. You need to know the answer to issues like: How specific is the interaction? How fast? How strong? How much of the compound is there? The answers have importance across the drug discovery process. Selecting the correct target. Designing robust assays. Understanding the interactions between proteins and low molecular weight compounds.



The Key to Success. Our instruments offer researchers novel ways to rapidly detect and monitor biomolecular interactions. Without labeling. In real-time. And with minimal sample preparation. For proteins and small molecules.

Target identification and validation become more efficient. Assay development is faster. Compound selection is improved. The entire drug discovery process is more streamlined.

BIACORE

www.biacore.com

Circle No. 17 on Readers' Service Card

So you've found more than one needle in the haystack...

Now what? You need to quickly pinpoint the best hits and continuously track their progress through lead optimization. Potency, specificity, bioavailablility and toxicity become key components in decision-making as you drive toward real therapeutic value.

Our multi-parameter, cell-based assays can simultaneously deliver these components while establishing the potency of your lead series compounds.

Our automated technology allows you to immediately cross-correlate assay data between assays and even between High Throughput Screening and High Content Screening. This dramatically increases your capacity to complete cell-based assays. The benefit is greatly reduced assay times, assay-to-assay variability and process cycle times.

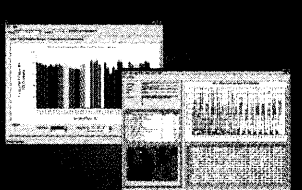
And this is just the beginning...

So before you start on your next haystack, contact Cellomics, and let us help you make better decisions with our instrumentation, reagent kits, informatics and cellular bioinformatics products.

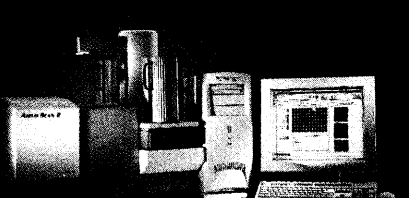
CELLOMICS™
VITAL KNOWLEDGE

High Content Screening just got faster. To find out more and to receive our free publication, High Content Screening, visit our website at www.cellomics.com or call (412) 826-3600.

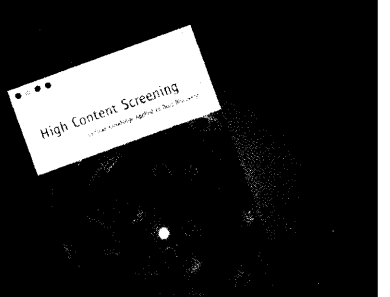
Hitkit™ Assay Kits



Informatics Solutions



ArrayScan® II HCS System

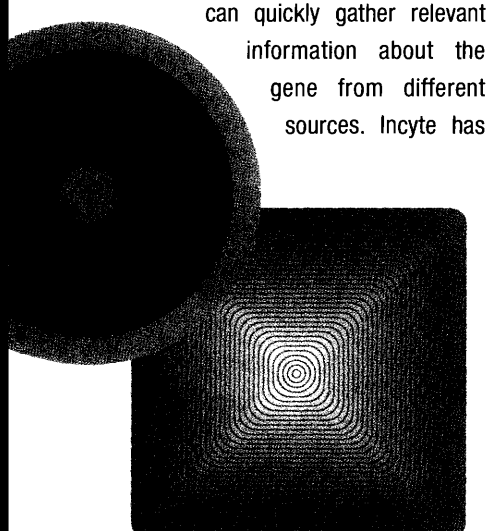


Adding Value Through Collaboration

Because of their small size and high density, DNA microarrays almost necessarily have to be read using an instrument; in this, they stand in contrast to some of the larger and more cumbersome techniques of molecular biology, such as electrophoresis gels. This fact opens up an enormous opportunity for integration of other data functions with the microarray data. "As commercial microarray technology matures, customers expect their microarray systems to be seamlessly integrated all the way from reagents and microarrays to scanners and analysis software," says Wellis.

Axon responded to that expectation in May, for example. The company and NEN Life Science Products announced a collaboration that will comarket NEN's MICROMAX microarray products and Axon's GenePix microarray analysis systems. "We supply the software and NEN the actual arrays," explains Wellis. "The comarketing agreement involves workshops together and sales forces carrying each other's literature."

In another example of collaboration that adds value for scientists, Invitrogen has partnered with Affymetrix in delivering a software solution that links microarray data with published scientific information. Its Pathways software creates a connection between the identity of any particular spot on a microarray and an information search conducted over the Internet. So once an investigator locates a spot of interest, he or she can quickly gather relevant information about the gene from different sources. Incyte has taken the link one step further by using the Internet to provide access to DNA clones in its clone bank. The company's LifeSeq system allows researchers to identify genes of interest and order them online from the Incyte storage, taking the term "clone by phone" to its ultimate incarnation.



DNA microarrays can be used to find new drug targets by highlighting those genes that change expression patterns in the diseased ... state.

The magnitude of the past year's developments in microarrays is large enough to transform completely the way in which we look at and think about biological processes. But completing the transformation will take time. Participants in the field have to develop a microarray-based scientific language, to set standards, and to begin the laborious process of redefining biology in new terms. In the meantime, however, individuals with more practical objectives have wasted no time in taking advantage of the benefits microarray analysis has to offer.

The Early Adopters

The adoption profile for a new life science technology typically follows a pattern in which new ideas are first tried out in the basic research community. There, researchers identify and fix bugs and limitations, refine and extend the technologies, and in some cases help the technologies to evolve toward industrial markets. For microarray technology, however, just the opposite has occurred. Pharmaceutical researchers engaged in drug discovery were among the earliest to realize the huge potential benefits the new technology could offer as they faced an onslaught of new information from the rapidly advancing Human Genome Project and the simultaneous commercial project run by Celera Genomics. They were also the first to embrace DNA microarrays as new research tools.

The drug researchers, of course, had practical objectives. They wanted to identify specific genes involved in disease processes and to monitor response to drug candidates. For them, DNA microarray technology provided a convenient, high-throughput means to evaluate large numbers of gene candidates simultaneously and to monitor physiologic responses to drug candidates.

One of the most important steps in rational drug design is the identification of a target — the molecule with which the drug itself interacts. DNA microarrays can be used to find new drug targets by highlighting those genes that change expression patterns in the diseased or otherwise affected state. A comprehensive analysis of changes in genetic expression in an experimental model of congestive heart failure, for example, will reveal a large number of genes that have potential involvement in the problem.

Not all the genes that change expression in the disease state will have a discrete or distinct role. Most won't, in fact. Yet among the often thousands that do change, the drug designer hunts for the one or a few that will prevent the disease when modified by a drug. So one successful result of the DNA microarray analysis in a drug discovery program is a short list of drug target candidates that then become the subjects of validation research. In this sense, DNA microarrays can accelerate the drug target identification process significantly when compared with the almost blind hunts conducted in the past.

Similarly, microarrays can clear up bottlenecks in the drug discovery process. "Pharmas and biotechnology companies are working to bring up all their targets, and high-throughput screening doesn't bring up the number of targets you need," says Graffinity's Vetter. "With the microarray platform, you can very rapidly develop lead compounds for drugs or diagnostics."

What is significant is the fact that a large proportion of the drug discovery community recognized that fact at about the same time. "A year ago we were all saying that this looks like a really good idea and the technology is workable,"

continued ➢

Finding Healthy Solutions

For the past 220 years, innovation and creativity have thrived at Takeda, where, as a major producer of pharmaceuticals for the healthcare industry around the world, we have supplied inventive solutions to help people enjoy better health and a higher quality of life.

In creating some of the drugs that are now in use worldwide, Takeda's scientists pioneered new areas of pharmaceutical research to uncover original compounds with unique modes of action. Our medicines have helped millions of patients to fight diseases such as diabetes, hypertension and prostate cancer—in some of the more remarkable cases, surgery could be avoided.

Each small miracle points to our ultimate goal of finding cures. Using original approaches and the latest technology we are resolved to search until they are found.

Seeking the world's cures

Takeda

TAKEDA CHEMICAL INDUSTRIES, LTD.

http://www.takeda.com Head Office: 1-1, Doshomachi 4-chome, Chuo-ku, Osaka 540-8645, Japan

Circle No. 8 on Readers' Service Card

recalls Williams of Genomic Solutions. "Now we can say that this is a real market. The applications work and we can do real science."

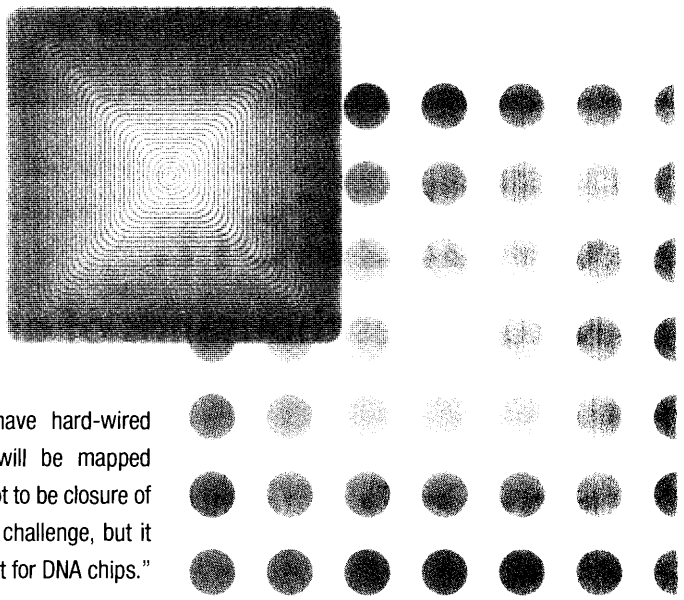
Application to Gene Expression

Apart from the ability of a DNA chip to point out genes whose expression changes in a disease process, the chip can provide valuable guidance about the nature of the changes that a cell undergoes. The overall patterns of genetic change, including groups or families of genes as well as individual genes, describe in a broad-brush way the nature, direction, and intensity of response. An appropriately designed microarray will provide a comprehensive view of biological change, giving clues to the drug developer about where productive pharmaceutical intervention might be made.

DNA microarrays that are designed to measure changes in gene expression level provide a picture of the active state of the cell or tissue. They represent the status of the cell's physiology from the perspective of hundreds or thousands of genetic functions. The GeneChips® on the market from Affymetrix, the Atlas cDNA microarrays from Clontech, and the preformatted arrays from Research Genetics, Operon, Mergen, and Stratagene are all examples of expression arrays. Each is designed to provide information on changes or variations in gene expression when the target biological system is varied.

This class of microarray and type of application dominate the field at present. NEN's Tian estimates that investigations of gene expression account for about 90 percent of the usage of DNA microarrays. "The big thing today is gene expression profiling," agrees Vetter. "It's what all the software is being written for. It combines nicely with all the databases. And it's very synchronized with the Human Genome Project as the data from that are being made available."

DNA chips permit scientists to take gene expression profiling to the next level. "I see a high realization throughout the biological community that we need a highly parallel approach to monitoring as many messages as possible," says Affymetrix's Fodor. "We have the human genome sequenced and we have hard-wired cDNA sequences. These two will be mapped together. At some point there's got to be closure of those two. It will be a scientific challenge, but it will help to drive the main market for DNA chips."



Enter the SNIP Chip

Microarrays designed for studies of gene expression may predominate now, but other types of microarrays have already made their appearance in the laboratory. At present, the most important alternative type of DNA microarray is the so-called SNP chip (pronounced "snip chip"). Rather than taking a snapshot of the cell's biological state at a given point in time, this type of chip reports on the basic underlying genetic structure of the cell.

A SNP is characterized by a single DNA base pair at a precisely defined position in a chromosome which varies frequently among individuals. Thus for that given base position, a fraction of the population may have one form ("A," for example); while another fraction might have "T;" and yet a third fraction might have "C." Taken together, a large number of these individual base differences add up to a unique genetic identification, and this identity can be evaluated using a SNP chip. A properly designed SNP chip can assess hundreds or thousands of SNP variants at once, providing a genetic fingerprint of the individual with far less work and less ambiguity than the current methods of DNA typing.

The speed and simplicity of the analysis enables the use of DNA typing in situations where it would otherwise have been too costly and unwieldy. The two main uses for the health care-related SNP analysis are in management of both clinical trials and medical diagnosis and treatment. The basic principle stems from the ability of SNP analysis to pinpoint patients with different vulnerabilities to particular diseases based on their genetic complements.

The massive industry-sponsored undertaking to catalogue SNPs by the SNP Consortium should help to build an important correlation between specific genetic types and susceptibility to certain diseases or response to certain medical treatments. That will give scientists the option of using the SNP data to select individuals for participation in clinical trials according to their genotypes. In that way, pharmaceutical companies hope to improve the overall success rates of the trials as compared with trials based on the current method of selecting participants in a comparatively blind fashion.

Another extremely important use of SNP chips will occur in choosing medical treatments. Correlation between SNP genotype and drug response is likely to become an integral part of diagnosis, dictating which individuals among patients who suffer similar symptoms will receive one treatment and which another. The time may not be far off when any patient making a routine visit to the doctor's office will expect to undergo a SNP analysis.

Rather than taking a snapshot of the cell's biological state at a given point in time [the SNP] chip reports on the basic underlying genetic structure....

continued ➢

c-myc ha-ras kinases VEGF

regulatory proteins

c-src CANCER

MEKK1 Cdk1

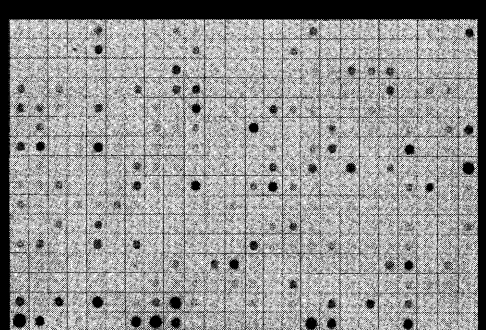
p53 Cyclin B

p21 cytokines & receptors

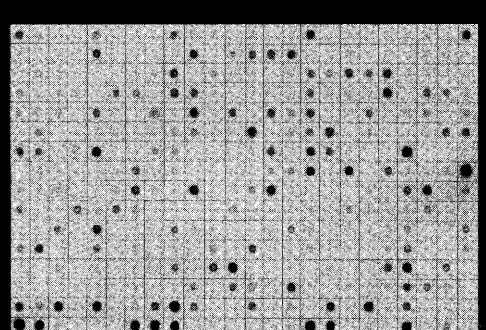
BCl2 p73

cell cycle apoptosis

A



B



Images of Star Profiler Arrays hybridized with DIG-labeled cDNA from human MSTO (A) and NCI-H82 (B) lung cancer cell lines. Following hybridization, array membranes were incubated with anti-DIG AP antibody and then subsequently with a chemiluminescent substrate. Membranes were exposed for 5 min to x-ray film.

Introducing... Star Profiler Arrays.

★nonradioactive detection

★373 well-studied genes

★fast! results in 2 days

To order or inquire about Star Profiler Arrays, call us toll free at 1-888-411-4363(GENE) or email us at info@genemed.com.

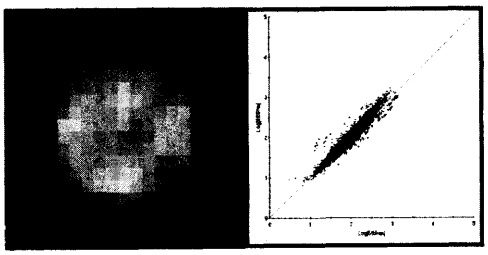
Oncogene Profiler Arrays coming soon!
Custom array orders are also available... call for more information.

Genemed Molecular Biochemicals
South San Francisco, CA 94080 USA
Tel: 888-411-4363 or 650-876-7193
Fax: 650-872-0318
Email: info@genemed.com

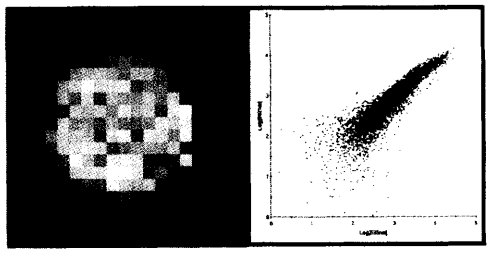
GMB
Simplifying Science.

Circle No. 34 on Readers' Service Card

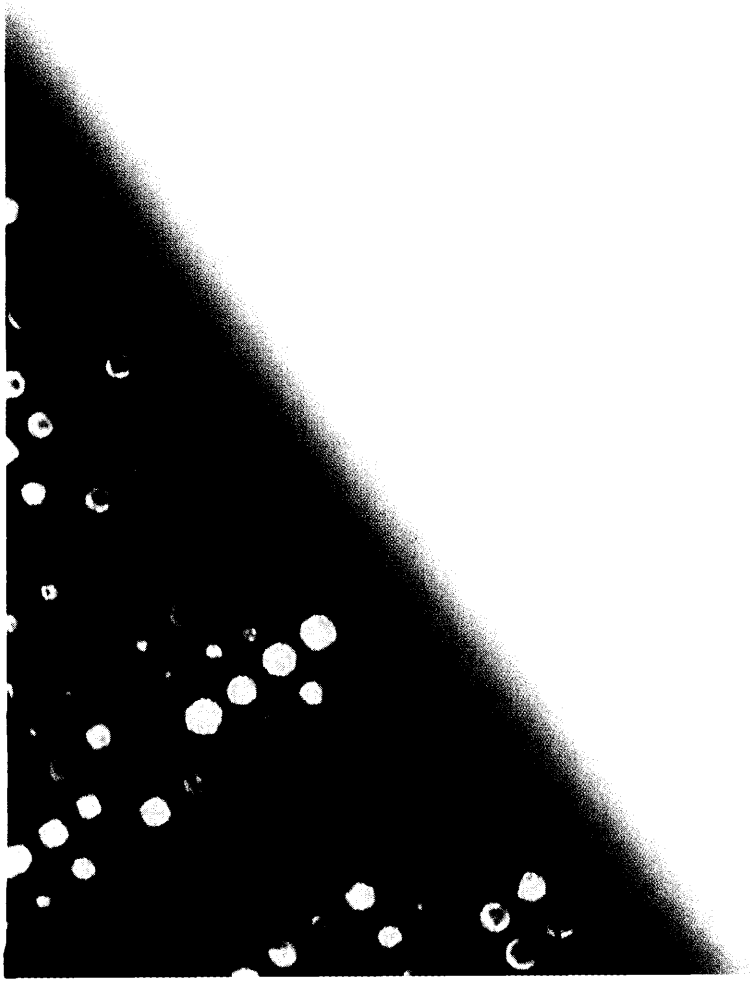
Which Data Would You Stake Your Reputation On?



arrayWoRx™ image and GEC using
"best fit" background method



Ordinary laser scan and
GEC using local background method



You spend months designing and executing your experiments. Why jeopardize your success with a scanner that can't give you accurate data?
Only the ***arrayWoRx***™ Microarray Scanner gives you the highest quality images and data for accurate determination of hybridization results.

Quality Images. The arrayWoRx system uses a white light source and custom CCD camera technology for superior sensitivity and the highest pixel resolution in the industry.

Quality Data. Our patented "best-fit" technique of background signal determination is a critical step in identifying low expression spots and extending the usable range of your data.

Quality Science. Efficient array finding and spot characterization algorithms deliver the quality data needed for a superior repeatable scientific result.

Learn more about the superior scanner that can put your data, and your reputation, in a new light.

The *arrayWoRx*™ **Microarray Scanner**
from Applied Precision, Inc.

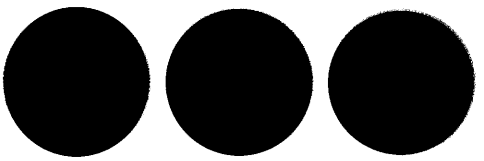
AppliedPrecision

Enabling the world's core technologies

Call 1.888.244.4274 or 425.557.1000 today or visit www.appliedprecision.com

Circle No. 61 on Readers' Service Card

One of the truly intriguing offshoots of DNA microarray technology is its potentia to simplify and acc lerate the testing for tox substances



The Search for SNPS

The clear importance of SNP analysis has stimulated tremendous interest in technical development. "The key questions are what human variation really is and how are we going to get at it," says Fodor. "Here, you get into the issue of what sort of density and information content you can achieve. On one of our wafers we can currently put 40 million different probes. So these chips can essentially serve as CD-ROMs. Now we are thinking of all the sorts of technologies that can take advantage of that capacity."

Affymetrix and other large makers of DNA chips, such as Incyte, don't hold a monopoly on applications of microarray technology. Other firms have sought to adapt their technologies to SNP analysis. As an example, Amersham Pharmacia Biotech has recently licensed SNP detection technology that it will implement on its MegaBASE automated DNA sequencing instrumentation.

Newer, smaller companies are also using their own technical twists to fuel the SNP surge. Typically, they follow twin business tracks, selling instruments and services to academic and industrial researchers who want to carry out SNP analysis and trying to discover and patent specific SNPs of potentially high value.

Sequenom brings expertise in mass spectrometry to the technical party. Cantor emphasizes that the pieces of equipment are not your father's mass spectrometers, loaded with a roomful of vacuum systems. "Our instruments are desk-sized and fully automated," he says.

Through its MassARRAY development program, Sequenom offers a laser-based system for high-throughput mass spectrometric analysis of DNA molecules arrayed on a chip that can collect 20,000 spectra daily. "We have automated the process of assay development in collaboration with the National Cancer Institute," Cantor continues. "That gives us unlimited assay capabilities. In practice we can develop 1,000 new assays per day with a first-time success rate of 90 percent. We can run these assays on gene pools so that we can measure allele frequencies, which might give evidence of significant variations."

Cantor sees SNP technology playing a significant role in diagnosing disease. "We think the diagnostic applications will be major," he says. "We are setting up diagnostic assays already. Our goal is to find and, if possible, own the SNPs of diagnostic importance."

Orchid, meanwhile, is applying its microfluidic technology to large-scale SNP mapping that deals with tens to hundreds of thousands of SNPs. "We recently signed an agreement with PE Biosystems to populate their installed base of DNA sequencers with our SNP-IT technology," says Pfost. "We have a similar arrangement with Amersham Pharmacia and for the installed base of Affymetrix chips." The company is also putting together what it calls a "mega-SNPatron." As Pfost explains, "We're scaling up the throughput and scaling down the cost through the use of microarrays and microfluids."

Like Sequenom, Orchid is undertaking its own search for significant SNPs. "We believe that not all SNPs are created equal," explains Pfost. "We need to find the true SNPs and determine their allele frequency. At our facility we are culling through SNPs to find those of medical significance."

One of the truly intriguing offshoots of DNA microarray technology is its potential to simplify and accelerate the testing for toxic substances. As a routine part of drug development, any compound selected as a candidate must be tested for its toxic effects. There are many instances outside the pharmaceutical development process in which chemicals or compounds must be tested as well. The use of DNA microarrays in this arena stems from the observation that particular classes of toxic compound stimulate well-defined and discrete genetic responses. By examining the pattern of genetic response — which genes increase their genetic activity, otherwise known as "going up," and which "go down" — an analyst can infer the nature of the compound being tested. Moreover, the specific patterns of genetic response can be used to clarify the mechanism by which the toxic effect is achieved.

A Protein Procedure

Ciphergen Biosystems has taken microarray technology a step further with its ProteinChip™ system that uses patented surface-enhanced laser desorption/ionization technology to separate, detect, and analyze proteins at the femtomole level directly and rapidly from biological samples. "It's primarily a protein analysis system as opposed to more normal amino acid analysis," explains Pohl. "What we capture is a class of proteins. We compare samples that have been matched in some fashion: diseased versus normal or patient before and patient after or, for toxicity studies, different doses of the drug. We look for changes in the amounts of proteins detected."

That technology sets the stage for practical proteomics. "There's currently no simple, easy-to-use proteomics technology," points out Enrique Dalmasso, director of Ciphergen's Biomarker Discovery Center™. "At present, the established method of two-dimensional gel analysis followed by mass spectrometric analysis of the spots is the only way available. But that has several limitations. Our technology is extremely complementary to two-dimensional gels. And several distinct features make it particularly good for discovery of protein biomarkers." The technology also emphasizes user-friendliness. "It's designed for general biologists, as opposed to proteomic specialists," says Pohl. "You don't have to be a certified proteomics expert to run it."

Like other firms in the microarray field, Ciphergen offers customers services as well as products. Research teams can buy their own instrument or can send their chips to the company for analysis. "At the Biomarker Center our role is to work on large collaborative projects to discover and validate biomarkers and to provide services beyond the capabilities of what our clients can do in-house," explains Dalmasso.

continued ➢

G Protein-Coupled Receptor Localization Database

A comprehensive review of up to 320 GPCR genes

Proprietary Localization Data
- Immunocytochemistry
- Tissue Localization
- Disease Association
- Pathologists' Interpretations

Curated Public Data
- DNA and Protein Sequence Data
- Expression Data
- Patent Data
- Publication

Combining genomics and pathology: Genes to Drugs, quickly

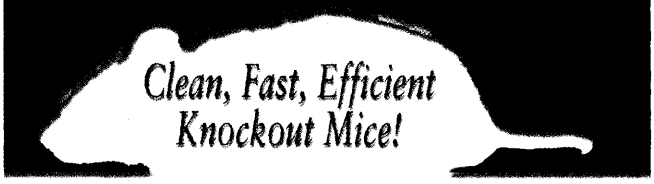
LIFESPAN BIOSCIENCES

700 Blanchard Street, Seattle, WA 98121
tel **206.464.15**54 fax 206.464.1723
www.lsbio.com

ESGRO®
ES Cell culture reagent

from CHEMICON

Use ESGRO with embryonic stem cells to create knockout mice!



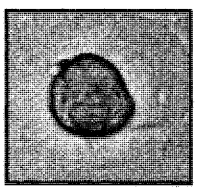
ESGRO® is a unique cell culture reagent that maintains *in vitro* the pluripotential of murine embryonic stem cells used in the production of knockout mice. Recombinant murine LIF, the active ingredient of ESGRO®, inhibits the spontaneous differentiation of ES cells in culture.

ESGRO®

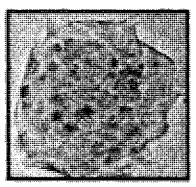
- **REPLACES** the need for feeder cells and conditioned media
- **MINIMIZES** the risk of mycoplasma contamination
- **INHIBITS** the spontaneous differentiation of ES cells
- **RECOMBINANT MURINE LIF** ensures batch-to-batch consistency
- **SAVES TIME** over traditional methods

ESGRO®	**10^6 Units**	**ESG1106**
ESGRO®	**10^7 Units**	**ESG1107**

LIF - U.S. Patent No. 5,427,925 & 5,187,077 & 5,443,825 & one pending .
ES Cell Patents - U.S. Patent No. 5,166,065 and two pending.



UNDIFFERENTIATED CELLS R1
- *Passage number 6 in the presence of ESGRO® supplemented media*



DIFFERENTIATED CELLS R1
- *Previously passaged 6 times in ESGRO®*
- *Removed from ESGRO® for period of 2 days and cultured upon a gelatin matrix*

CHEMICON INTERNATIONAL

www.chemicon.com

CHEMICON International, Inc.
28835 Single Oak Drive
Temecula, CA 92590 USA
800.437.7500 toll free
909.676.8080 phone
909.676.9209 fax
www.chemicon.com

CHEMICON International, Ltd.
United Kingdom
2 Admiral House
Cardinal Way
Harrow, HA3 5UT
United Kingdom
44 208 863 0415 phone
44 208 863 0416 fax

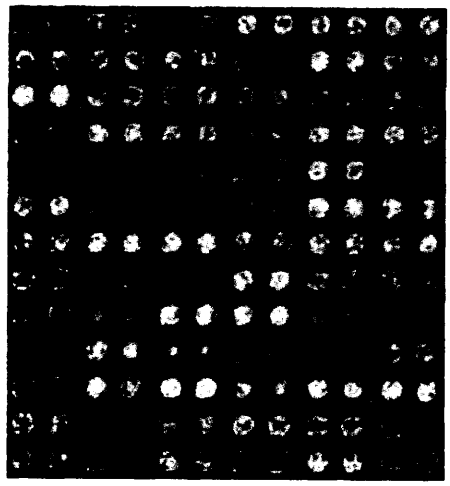
Germany
Fischbacher Weg 3A
D-65719 Hofheim
Germany
49 6192 207 300 phone
49 6192 295 955 fax

Australia
34 Wadhurst Drive
Boronia
Victoria 3155
Australia
61 3 9839 2000 phone
61 3 9887 3912 fax

191-7/00

Circle No. 106 on Readers' Service Card

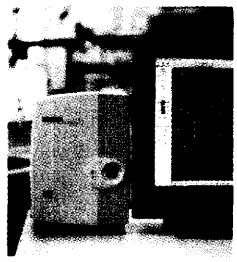
Leave your background behind



The ability to differentiate between spot response and background noise is an important measure of your microarray scanner's sensitivity. Although an instrument with a disproportionately high signal-to-noise ratio (SNR) will produce a strong image with bright spots, it can also reduce the unit's dynamic range – invalidating your test results.

Virtek ChipReader™ delivers the highest sensitivity available, so you get data that reflects the true nature of your sample. You also get unmatched throughput, the ability to read multiple dyes simultaneously, the smallest scanner footprint, plus Virtek's renowned technical support and service.

- Highest sensitivty
- Greatest flexibility
- Highest throughput
- Smallest footprint
- Scans multiple dyes



To learn more about Virtek ChipReader:
Call: 519-746-7190 or toll free
1-800-684-7835 (Canada)
1-800-933-9011 (U.S.)
E-mail: chipreader@virtekvision.com

VIRTEK

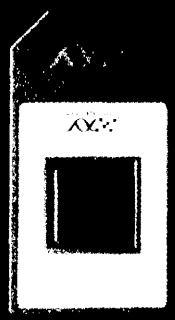
LEADING THE WORLD IN PRECISION LASER APPLICATIONS

www.virtekvision.com

Circle No. 87 on Readers' Service Card

Deciphering the code of human existence requires a special set of tools.

APPLY THE POWER OF AFFYMETRIX GENECHIP HUMAN GENOME U95 SET. With more than 60,000 full-length genes and EST clusters, the GeneChip Human Genome U95 Set offers the most extensive coverage of the human genome available. This robust and highly reproducible set of arrays is designed specifically for uncovering relationships between known genes, revealing the function of uncharacterized genes and building quantitative human expression databases.



The Human Genome U95 Set builds on previous GeneChip human genome arrays with more sequence information and higher densities than ever before. Expanded manufacturing capacity now makes it possible for Affymetrix to offer the new 5-array set immediately to all bioresearchers interested in exploring the mysteries of human gene expression.

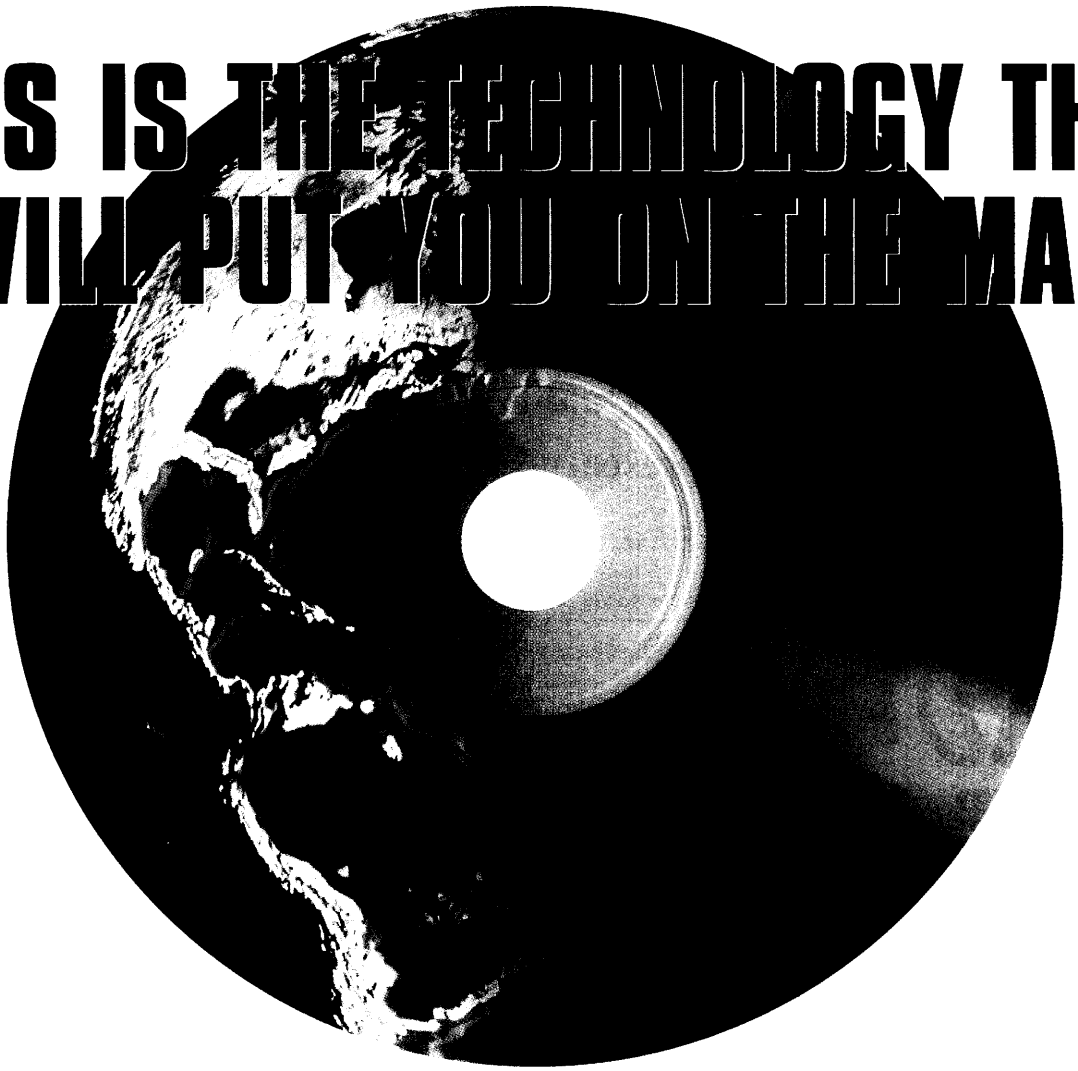
DISCOVER MORE. Contact your Affymetrix representative or visit our website at www.affymetrix.com.

AFFYMETRIX®

3380 Central Expressway, Santa Clara, CA 95051, USA
1 888-DNA-CHIP (362-2447) 1 408-731-5503
www.affymetrix.com

Circle No. 39 on Readers' Service Card

THIS IS THE TECHNOLOGY THAT WILL PUT YOU ON THE MAP.



HIGH-THROUGHPUT RESEARCH™ FROM INFORMAX.

Optimize your targets. Accelerate your discoveries. Send your genomic research into overdrive with GenoMax™ – the most powerful bioinformatics tool available today.

GenoMax software is the only software that includes all the parameters of a High Throughput Research™ (HTR™) environment: Genomic Integration of multiple target analyses. Research Automation that mines data 24/7. Results Filtering, giving you the most meaningful findings. Collaboration between scientists who can access, manage and visualize data. Extensibility that allows new tools to be quickly integrated. And Distributed Processing of massive amounts of data with dedicated servers.

If you're going to remain profitable in the race for discovery, it's time for a quantum leap toward success. Create your own HTR environment with GenoMax. And find yourself miles ahead on the genetic map.

Gene Expression Analysis • EST Clustering • Genome Viewing • 3-D Structure Prediction • SNP Analysis • Protein-Protein Interaction Analysis

InforMax®
High-Throughput Research

United States: *Phone: 800.357.3114 Fax: 301.216.0087* • **United Kingdom:** *Phone: 44 (0) 186.578.4580 Fax: 44 (0) 186.578.4585* • **www.informaxinc.com**

Do-it-Yourself or Off-the-Shelf?

In addition to deciding whether to analyze their own microarrays or have them analyzed, scientists who use the technology must determine whether to make their own chips and microarrays. Over the past year the increased availability of high-quality microarrays has made off-the-shelf systems more attractive.

Certainly making microarrays in-house can be complicated, expensive, and time-consuming. And in one sense scientists get out of microarrays only what they put into them. "Arrays are new, and scientists have problems formatting them," says Mergen's Hu. "You really have to make sure that you have high quality, or your data will not be reliable." Mergen takes six to eight weeks to manufacture custom arrays and has a fully validated high-throughput, on-chip SNP detection technology almost ready to market.

Vetter of Graffinity points to the need to be able to mass-produce microarrays on a large scale. "The content is also important," he adds. "We think it's important to have an array platform that can deal with any sort of content."

NEN's Tian notes the amount of investment that it takes to develop what he calls "home-brewed" microarrays. "The robotic setup is prohibitive for the average lab," he says. "And it takes nine to 12 months before anyone can get into the manufacturing mode." NEN is now setting up a facility to give scientists the best of both the do-it-yourself and the off-the-shelf worlds: making custom microarrays to order with the correct gene content and a fast turnaround time.

In fact, the rapid advance of microarray technology is giving researchers a cornucopia of scientific opportunities. "We find that the more information we put on these chips, the more scientists like them," says Fodor. "They tend to spend less time looking for individual genes when they have them all on an array. What people are looking for is completeness. The more complete the information you give them, the happier they are."

Peter Gwynne is a freelance science writer based on Cape Cod, Massachusetts, U.S.A. Guy Page is managing director of Ferguson Forth Page, a consulting firm in Madison, Wisconsin, U.S.A.

DNA CHIPS AND MICROARRAYS: RESOURCES

Advertisers

Affymetrix, Inc.	www.affymetrix.com
Agilent Technologies	www.agilent.com
Ambion	www.ambion.com/superasein
Applied Precision, Inc.	www.appliedprecision.com
ATCC	www.atcc.org
Axon Instruments, Inc.	www.axon.com
BD Pharmingen	www. pharmingen.com
BD Transduction Labs	www.translab.com
Biacore	www.biacore.com/key
BioSearch Technologies, Inc.	www.biosearchtech.com
BioSupplies.com	www.biosupplies.com
Cellomics,® Inc.	www.cellomics.com
Fuji Photo Film Co., Ltd.	http://home.fujifilm.com/products/science/index.html
GeneMachines, Inc.	www.genemachines.com
Genemed Molecular Biochemicals	www.genemed.com
Genetics Computer Group(GCG)®	www.gcg.com
Genomic Solutions	www.genomicsolutions.com
Incyte Genomics	www.incyte.com
Informax	www.informaxinc.com
Labsystems	www.labsystems.fi
LifeSpan BioSciences, Inc.	www.lsbio.com
Mergen Ltd.	www.mergen-ltd.com
Midland Certified Reagent Company	www.mcrc.com
Roche Molecular Biochemicals	http://biochem.roche.com/fugene
Scanalytics, Inc.	www.scanalytics.com
Sequenom, Inc.	www.sequenom.com
Sigma Genosys	www.genosys.com
Takara Shuzo Co., Ltd.	www.takara.co.jp/english/bio_e
Takeda Chemical Industries, Ltd.	www.takeda.com
Virtek Vision International, Inc.	www.virtekvision.com

Featured Companies

Affymetrix, Inc.	www.affymetrix.com
Amersham Pharmacia Biotech	www.apbiotech.com
Axon Instruments, Inc.	www.axon.com
Celera	www.celera.com
Ciphergen Biosystems, Inc.	www.ciphergen.co.uk
Clontech	www.clontech.com
Corning Life Science Products	www.corning.com
Genomic Solutions	www.genomicsolutions.com
Graffinity Pharmaceutical Design GmbH	www.graffinity.com
Incyte Genomics	www.incyte.com
Invitrogen	www.invitrogen.com
Mergen Ltd.	www.mergen-ltd.com
Mirus Corporation	www.genetransfer.com
National Cancer Institute	www.nci.nih.gov
NEN Life Science Products	www.nen.com
Operon	www.operon.com
Orchid BioSciences, Inc.	www.orchidbio.com
Oxford Gene Technologies	www.ogt.co.uk
Packard Instruments	www.packardinst.com
PanVera Corporation	www.panvera.com
PE Biosystems/Applied Biosystems	www.pebiosystems.com, www.appliedbiosystems.com
Research Genetics	www.researchgenetics.com
Sequenom, Inc.	www.sequenom.com
Sleicher and Schuell	www.s-und-s.de
Stratagene	www.stratagene.com
Surmodics	www.surmodics.com

Note: Readers can find out more about the companies listed by accessing their sites on the World Wide Web (WWW). If the listed company does not have a site on the WWW or if it is under construction, we have substituted that company's main telephone number. Every effort has been made to ensure the accuracy of this information. The companies in this article were selected at random. Their inclusion in this article does not indicate endorsement by either AAAS or *Science* nor is it meant to imply that their products or services are superior to those of other companies.

Careers and Graduate Programs for B.S. and M.S. Scientists

OPPORTUNITIES AT THE GRADUATE LEVEL

by Peter Gwynne

You've completed almost all the work to obtain your B.S. or M.S. degree in life science. Now you face the truly difficult question: Do you stay on in college to take a Ph.D. in a chosen topic or move out into the workforce to put your degree to use earning money?

The answer, of course, depends on the individual scientist's needs and world view. But you should not make the decision without plenty of thought. Many experts in human resources recommend that you take an inventory of your skills, your needs, and your dreams. Rather than concentrating on the present, you should focus on your hopes for the future, asking where you hope to be five or even 10 years down the line. Ask yourself what types of scientific pursuit you expect to find most interesting and challenging, inside or outside the laboratory.

Academe and industry offer a wide range of opportunities for life scientists with newly minted B.S. and M.S. degrees. Here, we review some of the options.

Remember also that your decision does not bind you for life. A Ph.D. does not preclude a scientist from moving into industry or out of the lab. Nor does a move into industry at the B.S. or M.S. level mean that you can't return to school. Some scientists take jobs in industry in order to experience the flavor of nonacademic research while leaving themselves the option to return for a Ph.D.

This article provides a guide to the possibilities for life scientists with B.S. and M.S. degrees. As you will see, the opportunities are both numerous and intriguing.

- ALKERMES, INC.
- BRISTOL-MYERS SQUIBB
- UNIVERSITY OF CALIFORNIA, RIVERSIDE
- GENAISSANCE PHARMACEUTICAL
- GENZYME CORPORATION
- JOHNS HOPKINS UNIVERSITY
- MILLENNIUM PHARMACEUTICALS, INC.
- NORTHWESTERN UNIVERSITY
- ORCHID BIOSCIENCES, INC.
- PHARMACIA CORPORATION
- SLOAN FOUNDATION
- UNIVERSITY OF VIRGINIA

The Career Option

Master's and Bachelor's degrees qualify graduates for a wide span of jobs in the life science industry, ranging from bench work to manufacturing and from clinical trials to sales. In order to land the most suitable job, however, it's necessary to take a personal inventory of one's skills and experience.

Good grades in the degree courses are essential. But many employers demand more. Hands-on experience in a laboratory is becoming almost mandatory for positions that involve lab work. Employers don't expect candidates fresh out of school to have complete

A former science editor of Newsweek, *Peter Gwynne writes about science and technology from his base on Cape Cod, Massachusetts, U.S.A.*

CONTINUED ⇒

We've just made the best even better!

In joining together with Warner-Lambert, Pfizer has combined the best people and practices to create the world's largest and most talented biomedical research organization. The new Pfizer is about growth and opportunity—about bigger and better. It unites the power of the industry's best sales, marketing and manufacturing operations behind a portfolio that includes eight $1-billion prescription medicines and the world's most comprehensive animal health business. It also puts a research and development budget of $4.7 billion into the hands of our scientists, clinicians, technicians and other professionals who share our dedication to discovering, developing and delivering innovative medicines for both people and animals.

A new era of opportunity

Poised at the forefront of our industry, Pfizer looks forward to a future of unprecedented potential. Our search for new treatments spans hundreds of research projects across 31 major disease groups—more than any other company on the globe. And our drug library includes approximately two million compounds backed by a powerful pipeline filled with more than 130 potential new treatments. Not only does our new enterprise represent the chance to work with some of the best minds and the most sophisticated R&D tools in the industry, it also represents a new era of opportunity in health and well being. It's the chance to be a part of the breakthroughs and cures of the new century with the new Pfizer.

Our vast global reach

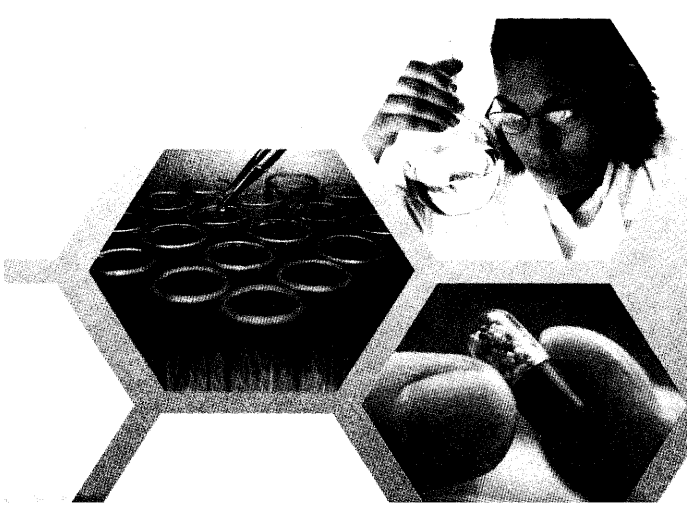
The new Pfizer conducts research in more than 30 countries around the world with major research sites in La Jolla, CA; Ann Arbor, MI; Cambridge, MA; Amboise and Fresnes, France; Sandwich and Cambridge, England; Nagoya and Tokyo, Japan; and Groton, CT—the headquarters of Pfizer's R&D operation.

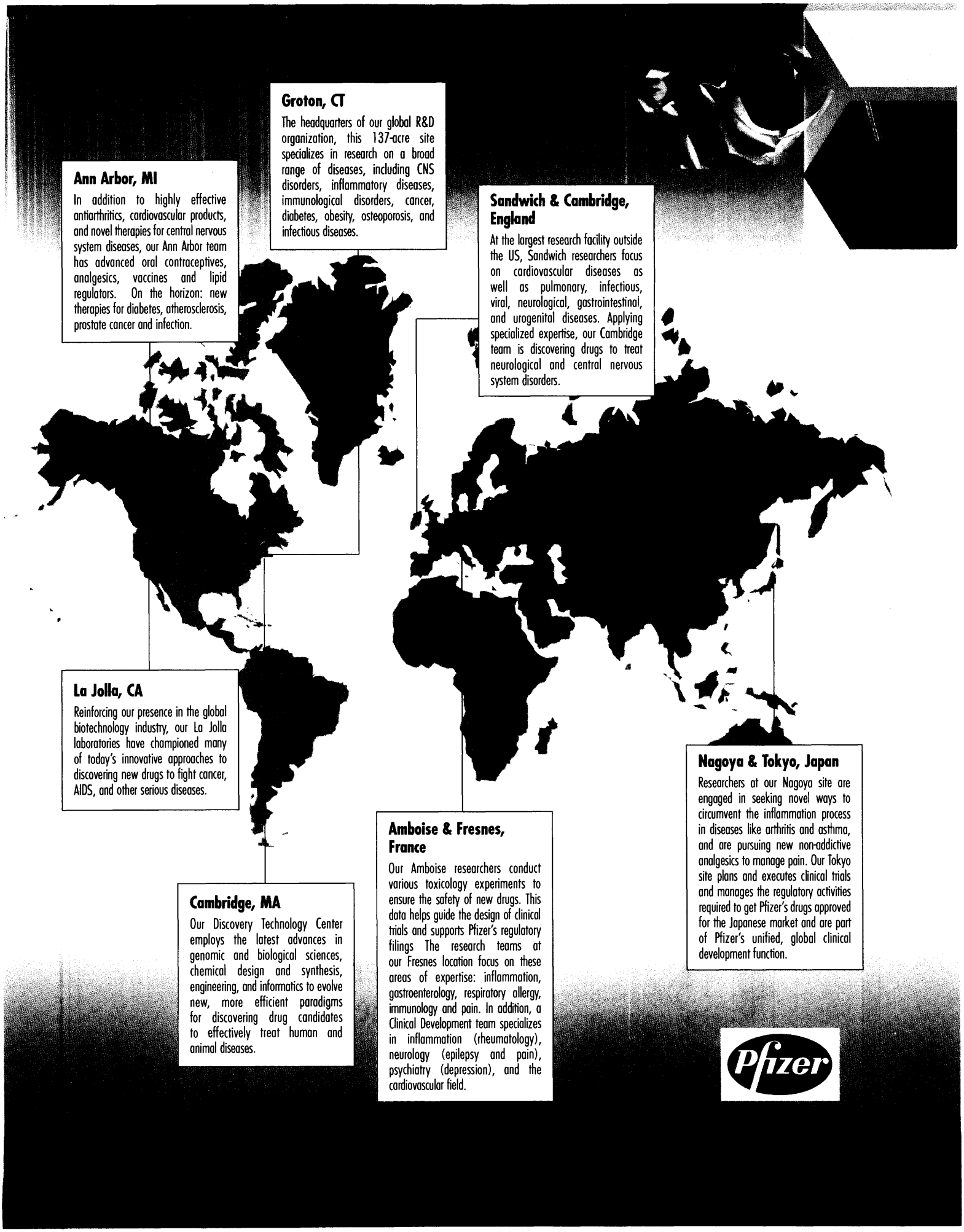
To learn more about working at Pfizer, please visit our website at **www.pfizer.com**. We encourage you to apply for specific positions online. An Equal Opportunity Employer, Pfizer offers a workplace rich with diversity and potential.

challenge innovation teamwork

The Face *of* Pfizer

careers that matter





Groton, CT

The headquarters of our global R&D organization, this 137-acre site specializes in research on a broad range of diseases, including CNS disorders, inflammatory diseases, immunological disorders, cancer, diabetes, obesity, osteoporosis, and infectious diseases.

Ann Arbor, MI

In addition to highly effective antiarthritics, cardiovascular products, and novel therapies for central nervous system diseases, our Ann Arbor team has advanced oral contraceptives, analgesics, vaccines and lipid regulators. On the horizon: new therapies for diabetes, atherosclerosis, prostate cancer and infection.

Sandwich & Cambridge, England

At the largest research facility outside the US, Sandwich researchers focus on cardiovascular diseases as well as pulmonary, infectious, viral, neurological, gastrointestinal, and urogenital diseases. Applying specialized expertise, our Cambridge team is discovering drugs to treat neurological and central nervous system disorders.

La Jolla, CA

Reinforcing our presence in the global biotechnology industry, our La Jolla laboratories have championed many of today's innovative approaches to discovering new drugs to fight cancer, AIDS, and other serious diseases.

Nagoya & Tokyo, Japan

Researchers at our Nagoya site are engaged in seeking novel ways to circumvent the inflammation process in diseases like arthritis and asthma, and are pursuing new non-addictive analgesics to manage pain. Our Tokyo site plans and executes clinical trials and manages the regulatory activities required to get Pfizer's drugs approved for the Japanese market and are part of Pfizer's unified, global clinical development function.

Cambridge, MA

Our Discovery Technology Center employs the latest advances in genomic and biological sciences, chemical design and synthesis, engineering, and informatics to evolve new, more efficient paradigms for discovering drug candidates to effectively treat human and animal diseases.

Amboise & Fresnes, France

Our Amboise researchers conduct various toxicology experiments to ensure the safety of new drugs. This data helps guide the design of clinical trials and supports Pfizer's regulatory filings The research teams at our Fresnes location focus on these areas of expertise: inflammation, gastroenterology, respiratory allergy, immunology and pain. In addition, a Clinical Development team specializes in inflammation (rheumatology), neurology (epilepsy and pain), psychiatry (depression), and the cardiovascular field.

Pfizer

Breaking New Ground In World Health

Demands An Uncompromising Commitment To Science.

To ensure the success of innovative new drugs, it is essential to ensure that the scientists charged with their discovery and development have every available resource at their command. At Boehringer Ingelheim Pharmaceuticals, Inc., that commitment is expressed in our leading-edge laboratories and manufacturing facilities in seven countries around the world, making Boehringer Ingelheim one of the most progressive and scientifically advanced pharmaceutical companies in the industry today.

Boehringer Ingelheim is dedicated to providing our scientific professionals with the means to push the limits of the medical frontier. You'll find we're equally uncompromising when it comes to breaking new ground in careers. We invite you to explore the exciting opportunities at our Ridgefield facility.

Boehringer Ingelheim Pharmaceuticals, Inc., based in Ridgefield, CT, is the largest U.S. subsidiary of Boehringer Ingelheim Corporation. Headquartered in Ingelheim, Germany, The Boehringer Ingelheim group of companies is one of the top 20 leading pharmaceutical corporations in the world with more than 140 affiliated companies and business interests on every continent. Its product range is focused on human pharmaceuticals - hospital, prescription and self-medication - as well as animal health.

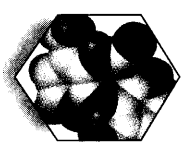
Boehringer Ingelheim's collaborative efforts span the globe with substantial research and development, production, and distribution bringing new drugs and renewed health to people throughout the world.

Join us in one of the following areas and we could open a world of opportunity for your career:

- **Medicinal Chemistry**
- **Chemical Development/Process Development**
- **Biological Sciences**
- **Drug Metabolism and Pharmacokinetics**
- **Pharmaceutics/Formulation**
- **Pharmacology**
- **Immunotoxicology**
- **Clinical Research in Respiratory Diseases, Oncology and General Medicine**
- **Analytical Sciences**

At our Ridgefield, CT campus, we offer a dynamic, collaborative environment where insight, inspiration and commitment create opportunity on an entirely new scale. For immediate consideration, please email your resume and salary history to: bipi@bi-careers.com; OR send to: Boehringer Ingelheim Staffing Center, PO Box 534, Waltham, MA 02454-0534. Including Job Code: AD-SCI/BIPI in your cover letter or subject line will help us to expedite your request and avoid delays in routing your resume. Please, principals only. Unsolicited agency referrals will not be accepted.

We are a proud Equal Opportunity Employer and are committed to offering a healthy, non-smoking work environment, M/F/D/V.



Boehringer Ingelheim

http://us.boehringer-ingelheim.com

Solutions for Genomic Research

Incyte Genomics is a leading provider of an integrated platform of genomic technologies designed to aid in the understanding of the molecular basis of disease. Our platform includes database products, genomic data management software, microarray-based gene expression services, and related reagents and services — information management tools critical to the pharmaceutical and biotechnology industries for drug discovery and development. The employees of Incyte provide the tremendous energy, talent and expertise that will help us revolutionize the world of healthcare. We're looking for individuals who share our vision and want to play a role in defining a new industry as we build our global organization.

Scientific Programmer

Responsible for scientific programming and software development to support DNA sequence dataflow. This individual will interact with dataflow and product science groups and others in bioinformatics to identify dataflow steps that can be streamlined through automation or otherwise optimized; design and implement software to accomplish these improvements; and maintain and improve existing software. Requires a BS or equivalent in Computer Science or Biological Sciences, strong programming background, Perl, C++ and excellent communication skills. At least 2 years work or graduate-level experience utilizing the above skills, knowledge of molecular biology and bioinformatics, database experience (Oracle, SQL, Perl, DBI/DBD), and web HTML/CGI/Java development are also required. REF: TY4189SP

Scientist/Sr. Scientist

Perform scientific validation of user interface functionality of new dataflow processes. Requires an MS plus 4 years experience in Biology or related field; or PhD in Biology or related field. Must be familiar with bioinformatic tools, proficient in UNIX and have good written and oral communication skills. Perl or SQL experience is desirable. REF: TY4118MB, TY4117MB

Scientific Programmer

Work to automate and optimize complex programs in a production environment. Requires a BS/MS or equivalent in Computer Science, with excellent knowledge of UNIX, Perl/C/C++ and Oracle Pro*C programming. Excellent organizational and communication skills are a plus. Experience with sequence analysis programs including gene finding and bioinformatic analysis tools is desired. REF: TY3880AJ

Bioinformatics Assistant/Associate

Perform all bioinformatics functions necessary for sequencing projects, including working with various processes and platforms depending on project type. Requires a BS or equivalent in biological or related science, with a strong biology/genetics background. Experience in a UNIX environment and good organizational and communication skills also required. SQL and Perl programming desired. REF: PS4239MM0

Sr. Research Associate/Associate Scientist

Responsible for the entire production process of RNA purification from human and animal tissues and cells, including quantitative and qualitative analysis assays by OD and agarose gels, PCR QC assays, and computer data entry/tracking. Familiarity with standard molecular biology techniques required, along with data management and analysis utilizing Excel and FMP on Mac OS and a thorough understanding of current approaches to RNA QC, including ABI Taqman assays and RNA fluorometry. A BS or equivalent in Biology or related science and 1 year of production lab experience are also needed. REF: PS4324NT

IP Bioinformatics Associate

Take responsibility for running product-to-patent data flow, tracking patent application data and respond to queries in support of patent efforts. Requires a BS or equivalent in Biology, Computer Science or related field and familiarity in a UNIX environment. SQL and Perl programming desired. REF: PS4391AR

Sr. Scientist, Pathway Biology

An individual with bioinformatics experience and strong background in transcription and/or inflammation biology is required for our multidisciplinary research team, aimed toward modeling the biological processes. MS/PhD or equivalent in related field and 3+ years of experience are required, along with knowledge of the concepts of genetic networks and the ability to collaborate in large-scale experimental design. REF: SD4325BC1500

www.incyte.com

You'll find we offer competitive salaries, an outstanding benefits package and significant opportunities for professional growth. Please reply with your resume to: Incyte Genomics, Inc., REF: _____, fax 650/845-4176, email science@incyte.com. Incyte Genomics is proud to be an equal opportunity employer, and recognizes the talent of its diverse workforce.

IncyteGenomics

familiarity with state-of-the-art technologies and instrumentation. But they do want those candidates to show evidence that they are familiar with the workings of a research laboratory by having worked on a high-level project at their university or an appropriate industrial internship.

Most companies in the life science business also value communication skills. Drug discovery and related research are essentially team ventures that involve scientists with several disciplinary backgrounds. To ensure that teams run smoothly individual members must be able to communicate their findings effectively to colleagues who know little of that individual's subject.

The lack of a doctoral degree does not necessarily present a barrier to advancement in life science corporations. In several companies, industry experience and demonstrated leadership abilities can compensate for the missing years of higher education. Some firms will also provide financial support and encouragement for employees who want to work on Ph.D.s.

Here we talk to representatives of companies in the biotechnology and pharmaceutical businesses to assess the wide variety of options available, both inside and outside the laboratory, to newly minted B.S. and M.S. graduates.

CAMBRIDGE, MASSACHUSETTS:

"We're looking for areas where we can innovate," says Ken Chin, staffing consultant for Genzyme Corporation. "I see a lot of needs in the chemistry area at the B.S. and M.S. levels. We also want microbiologists, immunologists, biochemists, and process engineers. And since we always have clinical research going on as a result of our bench work and lab work, we're looking for people to do biostatistics and psychometrics."

Indeed, says Chin, because the company is part pharma and part biotechnology firm and is growing at a rate of about 20 percent annually, it offers a diversity of technologies and products to potential employees. "The breadth of our technologies gives us more flexibility in attracting different people," he says. "People come to do research, development, and marketing. There's probably a wider scope than you'll see in other companies."

More than 80 percent of Genzyme's B.S. and M.S. recruits start out in bench science. "But you're not locked into a career track that forces you to stay in the lab," says Chin. "You can move out of pure research into a development role and from there into marketing. Or if you stay in research you can dedicate some time to your own projects if they show promise."

Genzyme gives scientists with Bachelor's and Master's degrees the opportunity to gain further skills and qualifications. "We have established Genzyme University to offer courses to our employees," says Chin. "They can also use Web resources and local universities. We'll pay for employees to attend up to four courses per year with full reimbursement."


Ken Chin

Even without further qualifications, B.S. and M.S. life scientists can move up to positions of higher responsibility more usually held by Ph.D.s. "You're looking at a marketplace that requires people to be innovative," says Chin. "Just because you have paper qualifications, that doesn't mean that you're the best person for the job. The key is what you've been able to demonstrate in terms of leadership ability."

The company encourages personal initiative. "We focus on the individual," Chin continues. "We want to minimize barriers for the individual and to be sure that we don't put systematic limitations on people. We don't live by hard rules; we live by guidelines. We want you to come, we want you to stay, and we want you to develop."

NEW HAVEN, CONNECTICUT:

As group leader of SNP discovery at Genaissance Pharmaceutical, Anne Chew oversees a team of biologists who use the company's proprietary tools in their day-to-day jobs. By doing so, they help to ensure that the tools remain user-friendly for life scientists investigating single nucleotide polymorphisms, the base pairs that can differ between different individuals. "We're looking to hire people to discover the SNPs, to discover genotype data, and to validate information," says Chew. "Genaissance involves teamwork. You're interfacing all the time with experts in other areas such as computer science and patent law."

Most members of Chew's team have M.S. and B.S. degrees rather than Ph.D.s. She expects individuals to possess some practical experience before they join the team. "Recruits with a background in biology, and specifically genetics, are attractive to us. They should be familiar with molecular biology techniques such as PCR and sequencing since these techniques provide the basis of our SNP discovery," says Chew. "It's important also to have experience in the laboratory and in querying the public databases."

Life scientists who join the company may spend time in the laboratory before moving into groups such as Chew's. "They may start in the lab if they aren't familiar with lab techniques and then move into the analysis group that suits their interest," explains Chew. "We do our best to make sure that you're hired for the position most suited to you."

Once they have some experience under their belts, individuals with Bachelor's and Master's degrees can hope to move into leadership positions. "You can become a

CONTINUED ⇒

If we needed conventional answers, we'd be looking for conventional people.

Another dull day at Genaissance Pharmaceuticals.

We've established a dynamic genomics and informatics firm that is committed to discovering genomic variations which will aid in the development of personalized drugs that are safer and more effective. We've also created an extraordinary workplace that respectfully values every individual. Genaissance Pharmaceuticals represents an exceptional opportunity to improve the quality of your life and career.

Director, Clinical Biostatistics

Lead a small group of clinical biostatisticians to provide statistical support to studies relating genetic variation with response to drugs, and assist in the development of methods for associating proprietary genetic variation data with drug response. Job Code: SJGR-02

Director, Economics of Healthcare

Lead our health economics research and strategy development by being responsible for competitive marketing strategies, target markets, product positioning, and formulary development. Job Code: SJGR-03

Director, Education and Publishing

Develop and implement educational outreach efforts to help build our leadership position and create a positive, receptive environment. Areas of responsibility will include strategic publication planning, medical writing, and conference/symposia planning and preparation. Job Code: SJPO-03

Director, Investor Relations

Act as a liaison between Genaissance and the investment community through daily contact with investors, brokers, fund managers, analysts, and news media; responsible for proactive and reactive strategies to protect and build corporate reputation. Job Code: SJPO-02

Process Development Manager

Develop and enhance PCR-based assays to detect single nucleotide polymorphisms using mass spectrometry; and manage development, implementation, and validation of molecular methodologies throughout the production pipeline. Job Code: SJMR-01

Laboratory Automation Engineer

Design, implement, and maintain all high-throughput automated production systems, including those for sequencing and genotyping. Job Code: SJMR-03

Scientific Analysts

Openings for Junior and Senior-level Analysts exist in the areas of Molecular Biology, Molecular Genetics, Genomics, Population Genetics, and Genetic Epidemiology. Job Code: SJSA

Project Leaders

For the Medical Affairs Group, you will lead/manage project teams, which are comprised of Internal Operations Managers, Biostatisticians, Data Analysts, and Bioinformatics and Genomics Specialists. Job Code: SJCD-03

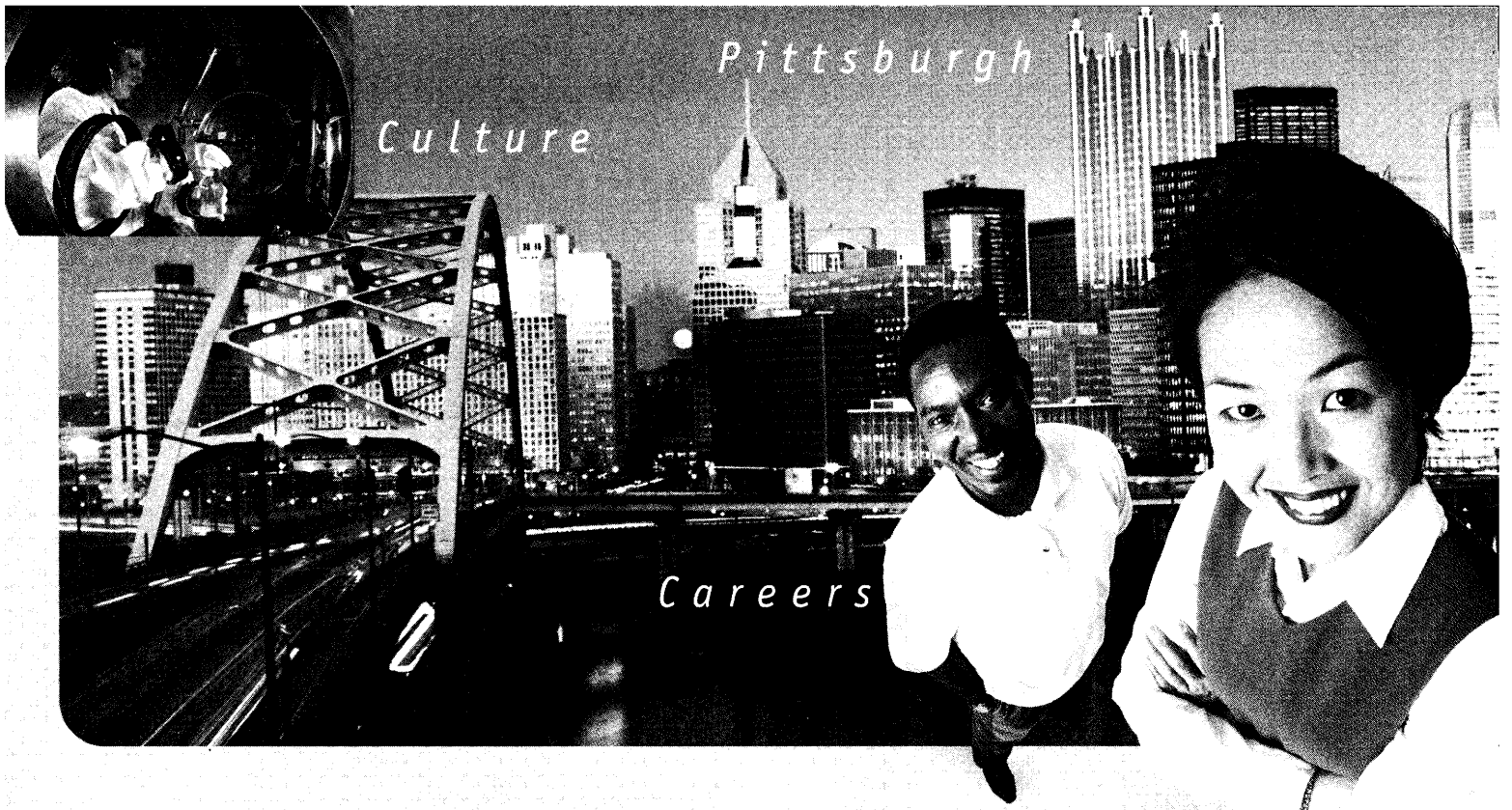
If you're the type of person who'd rather run than walk, then our non-traditional work environment may be just for you. Genaissance offers competitive salaries and comprehensive benefits.

To learn more about Genaissance and these positions, visit us at the Science Career Fair in Cambridge, MA on August 17th.

If unable to stop by our booth on the 17th, please visit our website at: www.genaissance.com Or forward resume, indicating Job Code, to: Jennifer Barretta, Human Resources Generalist, Genaissance Pharmaceuticals, 5 Science Park, New Haven, CT 06511. Email communication highly preferred: j.barretta@genaissance.com FAX #: (203) 562-9377. We are an equal opportunity employer.

GENAISSANCE PHARMACEUTICALS

www.genaissance.com



Join Our Team

Become part of our dynamic team involved in the most cutting-edge technology the biotech industry has to offer. Find out how you can work with biotech experts from all over the world who use their training and experience to enhance advancements in drug discovery. Cellomics®, Inc. offers an exciting working environment with one of the most competitive compensation packages to be found. To discover available career opportunities, the advantages of Pittsburgh living, and detailed information on skills and qualifications required, visit us at www.cellomics.com. When applying, please include job codes. Cellomics is an Equal Opportunity Employer.

Career Opportunities

Java Technical Lead (WB5)
This candidate will serve as the Java technical lead and expert in all Java programming projects for our Bioinformatics team.

Screen Automation Associate (JZ3)
This candidate will be responsible for creating a core facility implementing standard peripheral instrumentation used in the automation of assays High Content Screening.

Program Manager, CellChip System (SK1)
This candidate will be responsible for managing a multidisciplinary team consisting of scientists and engineers effecting the commercial development of systems hardware, software and cell-based reagents.

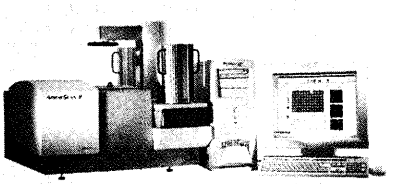
CellChip Project Leader – Surface Chemistry (RV3)
This candidate will be involved in surface engineering of polymers and ceramics to control cellular adhesion.

CellChip Project Leader – Cell Biology (RV5)
This candidate will be responsible for cell engineering for selective attachment to synthetic surfaces for application in multicellular assemblies.

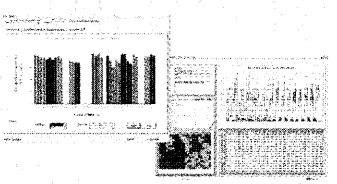
CellChip Scientist Surface Chemistry (RV6)
This candidate will work in the CellChip program on synthesis of new functional monomers and polymers to control protein adsorption on thermoplastics and ceramics.

Field Applications Specialist (MN6)
This candidate will provide telephone support to Cellomics' customers and accompany Sales Representatives on sales calls in customers' laboratories to provide technical and applications assistance in response to customer inquiries.

Products



ArrayScan® II HCS System



Informatics Solutions

Hitkit™ Assay Kits

CELLOMICS™
VITAL KNOWLEDGE

635 William Pitt Way • Pittsburgh, PA 15238 • Toll-free: (888) 826-3857

www.cellomics.com

As one of the world's top five pharmaceutical organizations, AstraZeneca is on the front lines of drug discovery and development. Together, our nine R&D centers around the world have delivered some of the most effective and widely used pharmaceuticals available. And today, with the addition of our state-of-the-art AstraZeneca R&D Boston center in Waltham, Massachusetts, we are better equipped than ever to deliver new drugs that ensure a higher quality of life for people around the globe.

AstraZeneca R&D Boston's striking new facility reflects the innovative environment of our leading-edge pharmaceutical research in Cancer and Infectious Diseases. Our Enabling Science and Technology Center is part of this exciting new venue, providing powerful capabilities in biological, chemical, and scientific computing technology to AstraZeneca R&D worldwide. Together with our other facilities, we are bringing life-enhancing medicines to patients around the globe, and creating an even more dynamic environment for our international scientific community.

ONE GLOBAL FORCE

FIRST FOR INNOVATION

For a more detailed description of the following positions, please visit our website: **www.astrazeneca-boston.com**

INFECTION RESEARCH

- **Scientists - Medicinal Chemistry**
- **Research Associates - Medicinal Chemistry**
- **Research Associate - Analytical Chemistry**
- **Research Associate - Combinatorial Chemistry**
- **Research Associate - Microbiology**
- **Scientist - Target Biochemistry**
- **Research Associates - Target Biochemistry**
- **Scientist - Protein Purification**
- **Scientist - Fermentation**
- **Scientist - DMPK**
- **Research Associate - DMPK**

ENABLING SCIENCE & TECHNOLOGY

- **Principal Informatics Scientists - Biology, Chemistry**
- **Informatics Scientists - Biology, Chemistry**
- **Informatics Associates - Biology, Chemistry**
- **Statistical Scientists**
- **Scientists - Genomics/Target Validation**
- **Scientists - Cell Biology**
- **Research Associates - Molecular Biology, Protein Biochemistry, Cell Biology, Analytical Chemistry, Laboratory Automation**
- **Chemical Technicians**

DISCOVERY INFORMATION SYSTEMS

- **IS Team Leaders - Biology, Chemistry**
- **Software Engineers - Biological Applications, Chemical Applications**

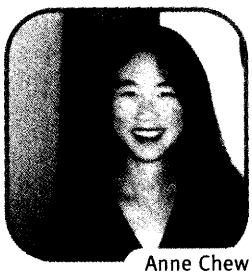
Candidates interested in contributing to the momentum of success at AstraZeneca, please forward your resume to: **AstraZeneca R&D Boston, 35 Gatehouse Drive, Waltham, MA 02451; E-mail: hr@astrazeneca.com; Fax: 781.839.4500.** Diversity is the essence of our science, our careers and our lives. We are an equal opportunity employer.

AstraZeneca

One powerful source for your career: www.astrazeneca-boston.com

group leader with an M.S. and good industry experience," Chew notes.

Genaissance encourages its employees to obtain further qualifications, such as Master's degrees and certificates in such technologies as Java and SQL, through tuition reimbursement. It's also possible to start taking advanced classes while still working at the company. Chew suggests that "It's quite smart to work for a year or two before starting the Ph.D. You can better evaluate your career interests before applying to specific programs. The Ph.D. is a long haul and it's better to be prepared."


Anne Chew

What should applicants do to convince the company of their interest? "Come prepared," advises Chew. "Do the research on Genaissance. Be ready to address why you want to join us. Some people come to an interview not even understanding our platform. We want people who will be excited working for the company."

PRINCETON, NEW JERSEY:

Orchid BioSciences, Inc. is in the process of growing from 60 employees last year to 300 by the end of 2000. So it's not surprising that the company, which applies its proprietary microfluidic technology to gene sequencing, has plenty of openings for life scientists with B.S. and M.S. degrees. "We have a variety of positions from early research discovery through to manufacturing and marketing for B.S. scientists. For candidates with M.S. degrees, we have more challenging positions," says Sarajane Mackenzie, vice president of human resources and chief people officer. "People graduating now with a degree in the life sciences are lucky. They have their pick of any job."

In Mackenzie's view, biotechnology and the Internet are the truly hot fields for B.S. and M.S. graduates. "Anyone that has a double discipline is ideal," she says. "A life science graduate with computer science skill is a super candidate for any position. We really look for informatics people. I would almost go as far as to advise people to get a double major these days."

About three-quarters of the 60 people hired by Orchid so far this year have gone straight into R&D. The other quarter have gone into areas such as manufacturing and sales. "The actual job depends on the scientist's interests," says Mackenzie. "We're a small, flexible company without a set pattern of employment opportunities."

Orchid sets no ceiling on achievement by holders of B.S. and M.S. degrees. "At some point your work experience takes over from your lack of a higher degree," Mackenize explains. "People can move up in the company at every level. Our management has a variety of levels from B.S. to Ph.D. Promotion is based on ability, not degree level."

Employees do have the opportunity to improve their paper qualifications. "We have generous benefits," Mackenzie continues. "We have 100 percent tuition reimbursement for people with the energy to do higher degrees that we consider job related."


Sarajane Mackenzie

Mackenzie sees a nondoctoral degree as more useful in some ways than a Ph.D. "M.S. and B.S. graduates are hot because they are less specialized and can go into many avenues," she says. "They're in the driver's seat as never before in my experience." Her advice to interested parties: "Check us out on our Web site. Send us your résumé with a cover letter stating your interest. We'd love to hear from everyone."

CAMBRIDGE, MASSACHUSETTS:

"We're looking for people who really understand the scientific implications of what they're doing as a segue to any other opportunities we have," says Shani Stickney, manager of staffing and HR systems at Millennium Pharmaceuticals, Inc. "The best recruits at the B.S./M.S. level come with two years' experience, understanding techniques and technologies. They know how that understanding fits into the large picture. They also have the willingness to learn and adapt."

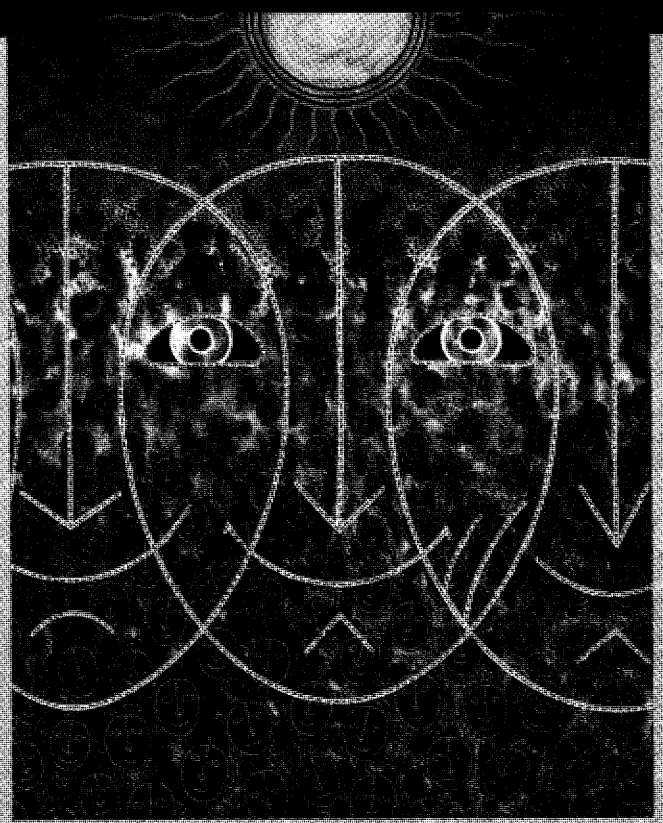
The company, which applies its own drug discovery platform across the health care sector from identifying genes to managing patients, offers several opportunities to B.S. and M.S. graduates. "They can manage their research findings into real applications," says Stickney. "They understand the information and the data and the process for getting at that information."

B.S./M.S. scientists also play key roles in Millennium's activities that involve intellectual property. "People with significant bench experience help with the preparation of all our patents. This makes our patent applications much more sound," says Stickney. "Others get involved with licensing and business development. They assess new technologies available in academia or industry, determine their ability to be incorporated into what we do at Millennium, and arrange terms for us to license the technologies. This is absolutely critical to maintaining a competitive edge for our technology."

New B.S./M.S. recruits typically start working in a laboratory of a core group or one that focuses on a particular disease. "That gives them exposure to the company, the kind of research we do, and the technologies we use," says Stickney. "It's really critical for these people to understand the larger picture. Recruits will work in one or

CONTINUED ⇒

the new face in pharmaceuticals



Millennium is a different kind of biopharmaceutical company with a unique vision for the future of medicine. We're working to understand the molecular basis of disease, the essential key to discovering new therapeutic treatments and predictive medicine products. Our goal is to make breakthrough therapies available faster for a full range of major under-served diseases. To this end, we recently formed a unique biotechnology/pharmaceutical alliance with Aventis Pharma that focuses on inflammation. Further, our acquisition of UK-based Cambridge Discovery Chemistry bolsters our global capability and promises to significantly accelerate our downstream drug discovery efforts. Come explore the opportunities with a progressive and innovative organization, and see why the face of the future never looked brighter.

Join us in building the biopharmaceutical company of the future at our Cambridge facilities. Please respond by sending only one resume using only one of the following methods, indicating the positions you are interested in. Mail your resume to: Millennium Pharmaceuticals, Resume Processing Center, Source Code SC800, PO Box 798, Burlington, MA 01803. Email: millennium@rpc.webhire.com. Fax: (800) 370-6925. A source code must be included with all submissions. We are an equal opportunity employer committed to discovering the individual in everyone.

We have numerous BS/MS-level opportunities for Sr. Research Associates/ Research Associates in the following areas:

Assay Development
Target Validation
Protein Purification
E. coli Production
Cellular Biochemistry
Enzymology
Synthetic Chemistry
Molecular Biology
Drug Metabolism
Genotyping
Cell Culture
Biologics
Pharmacology
Sequencing
In vivo Pharmacology
In vivo Tumor Biology
Pathology

GPCR
Proteins/Antibodies
Protein Purification
Protein Expression
Monoclonal Antibodies
Hybridoma
Biotherapeutics
Phage Display
Molecular Pathology
Molecular Biology
Sequencing
Transcriptional Profiling
Process Validation
Cloning
Process Technology
Cell Culture - Lab Manager
Animal Resources Group - Lab Technicians

In addition, we have numerous PhD-level opportunities for Directors and Sr. Scientists/Scientists in the following areas:

Drug Optimization
Biostatistics
Cell/Tumor Biology
GPCR
Pharmacogenomics
Development
Hybridoma
Pharmacology

Preclinical Development
Protein Sciences
Transplant
Protein Mass Spectrometry
Technology Development
Biotherapeutics
Management

For full details on these and other positions at Millennium, please visit us at www.mlnm.com and apply online.

Transcending the limits of medicine™

MILLENNIUM®

FEWER CAREER OPPORTUNITIES HAVE A GREATER INFLUENCE ON LIFE.

Lilly
Answers That Matter.

VIROLOGY RESEARCH

Eli Lilly and Company's Infectious Diseases Research Division is recruiting research scientists and postdoctoral fellows. Applicants would join a growing and energized research environment with the opportunity to interact with a variety of top-notch molecular and cellular biologists, pharmacologists, toxicologists, and chemists in a team environment at Lilly and through external alliances including:

- Stanford University on viral hepatitis
- Top academic leaders in areas of hepatitis B and hepatitis C
- Vertex Pharmaceuticals and Ribozyme Pharmaceuticals Inc. in the development of cutting edge technologies for chronic hepatitis C virus

PH.D. VIROLOGISTS

We are seeking scientists with proven research expertise in molecular and cellular virology. Outstanding scientists at the junior and senior level will be considered. Candidates should have relevant post-doctoral experience.

SOURCE CODE: ADSCMID41

BS/MS VIROLOGISTS

We are seeking scientists with research experience using eukaryotic virus systems. This includes individuals who have worked with animal models for the study of viral pathogenesis and those with in vitro virology expertise. Successful candidates should have a broad based knowledge of molecular biology techniques including cloning, sequencing, PCR, nucleic acid isolation and analysis, and tissue culture experience.

SOURCE CODE: ADSCMID42

BS/MS BIOCHEMISTS

We are seeking biochemists to join a team effort aimed at identification and characterization of anti-viral targets. Successful candidates would have experience with protein purification and characterization, experience performing enzyme assays, analyzing data, and a working knowledge of standard biochemical methods including SDS page, spectrophotometry, HPLC, and western blots.

SOURCE CODE: ADSCMID43

POSTDOCTORAL SCIENTISTS

We are looking for creative virologists and biochemists to explore emerging aspects of virology. Lilly postdoctoral scientists gain sound practical experience and focused training that will significantly expand their scientific knowledge and abilities in drug discovery. The ideal candidate should have a recent Ph.D. in virology or biochemistry.

SOURCE CODE: ADSCMID44

To attract the best and brightest, Eli Lilly and Company offers competitive compensation packages and a dynamic, creative environment.

For consideration please send your resume with the noted code for the position of interest to:

Eli Lilly and Company,
US Recruiting and Staffing,
Lilly Corporate Center,
DC 1811,
Indianapolis, IN 46285

We are an equal opportunity employer making a difference through our commitment to diversity.

Our Difference IS MAKING A

The difference is www.lilly.com

Aventis Pharmaceuticals

Aventis

Our challenge is life.

Hoechst Marion Roussel and Rhone Poulenc Rorer have adopted the name Aventis Pharmaceuticals to create:

A new world-class pharmaceutical company.

Aventis Pharmaceuticals is dedicated to extending and enhancing human life through the discovery, development, manufacture and sale of pharmaceutical products. Aventis Pharmaceuticals offers the power of global forces in pharmaceutical products and services, an excellent financial standing and a vision for the future that is unmatched in the industry.

Become part of the most exciting growth company in the pharmaceutical industry. The formation of Aventis Pharmaceuticals will result in significant expansion at the

North American Strategic Research Center in Bridgewater, New Jersey.

We have opportunities available on the following Drug Discovery Research Teams: **CNS, Respiratory & Rheumatoid Arthritis, Immunology, Biotechnology, eADME/DMPK, Toxicology & Pathology, and Chemistry,**

If you possess the skills, attitude, and desire to become part of the newest, and most exciting drug discovery team in "Pharm Country" stop by and visit us at Booth #624, Drug Discovery Technology 2000, August 14-18, Boston, MA. If unable to attend send your resume and cover letter indicating position of interest and ad code 2000BW0052 on the outside of envelope or in the subject line of email, to:

Aventis Pharmaceuticals
PO Box 504 • Newtown, PA 18940
email: aventis@beksdata.com

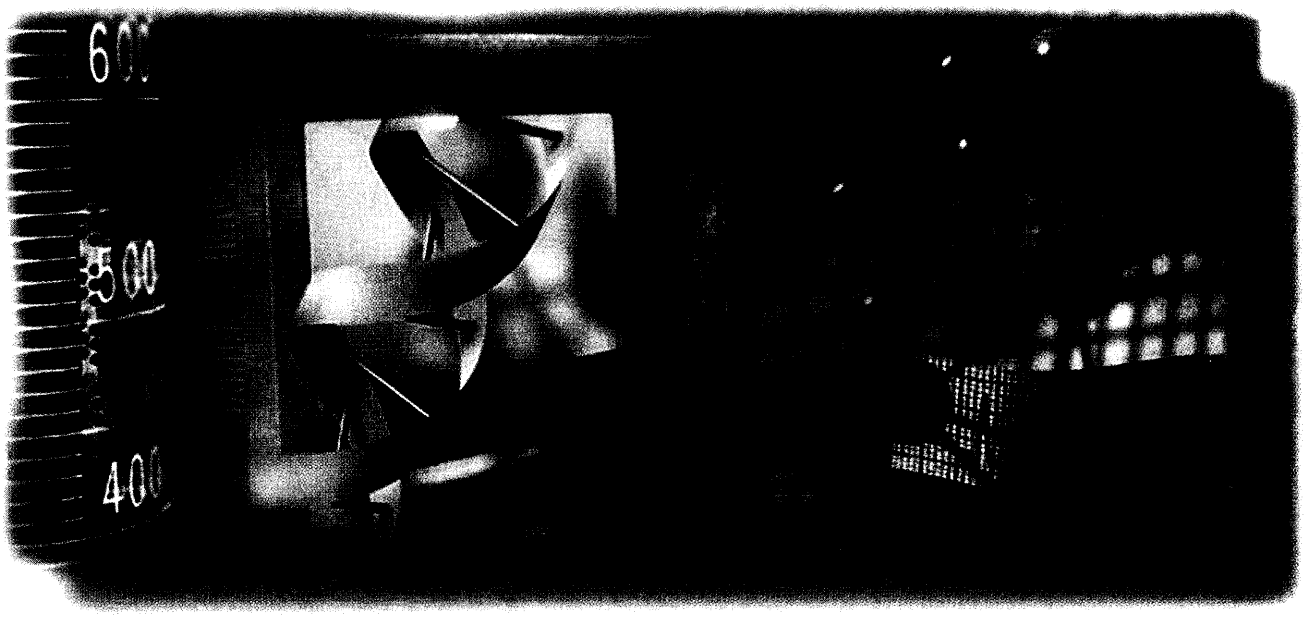
Visit our website at:
www.aventis.com

The one to watch.

Exciting career opportunities are available at the BS/MS level for research professionals with pharmaceutical industry experience in the following areas:

- **Bioinformatics/LIMS Chemoinformatics**
- **Toxicology**
- **Pathology**
- **Immunology**
- **Molecular Biology**
- **Cell Biology**
- **Biochemistry**
- **Neuroscience**
- **Proteomics**
- **Genomics**
- **Pharmacology**
- **Pharmacokinetics**
- **Medicinal Chemistry**
- **High Throughput Medicinal Chemistry**
- **Chemical Development**
- **Process Development**
- **Molecular Modeling**
- **Structural & Physical Chemistry**
- **High Throughput Screening**

Aventis Pharmaceuticals is proud to be an equal opportunity employer committed to a diverse workforce.



Help Shape *the future of* Pharmaceutical Innovation.

The outstanding success of Schering-Plough stems from a basic commitment to scientific research and development. R&D spending, which totaled $1.2 billion in 1999, has nearly doubled in the past 5 years ... with expenditures in the current year expected to increase by about 15%.

At Schering-Plough Research Institute, we are pursuing new leads in targeted therapeutic areas and assembling a product pipeline that will address pressing health care issues today and well into the future. Our scientists are identifying and developing new drugs that directly target the causes of disease and may offer significant improvements over older treatments that only address disease symptoms. To help speed the selection and development of new therapeutic candidates that may have potentially fewer side effects and better efficacy, new technologies have been fully integrated into SPRI's drug discovery and development process. These technologies include genomics, combinatorial chemistry, automated high-throughput screening of chemical and natural product libraries, and structure-based drug design.

We invite candidates who meet any of the following requirements to join the exciting growth environment at Schering-Plough Research Institute's campuses in Lafayette (Northwestern New Jersey) and Kenilworth (North Central New Jersey)... all providing excellent residential communities with easy access to New York City.

SAFETY PHARMACOLOGY

An integrated General Pharmacology/Safety Pharmacology program is evolving at the Lafayette campus of our Drug Safety Evaluation Center which is bridging the progress of a new chemical entity from early discovery to late development.

Senior Principal Scientist
Study Director – Cardiovascular Pharmacologist

Will be responsible for establishing various state-of-the-art *in vivo* models for the evaluation of new drugs for effects on cardiovascular hemodynamic and electrocardiographic functions. Will direct the activities of 3-5 technical staff. Requires a Ph.D., MD or DVM with appropriate training in the cardiovascular field, plus postdoctoral level training. Up to 10 years experience in the pharmaceutical industry and in a GLP environment is desirable. Technical ability for assessing cardiovascular activity using *in vitro* techniques is also desirable. Supervisory experience is preferred as are effective interpersonal, verbal and written communication skills.
Job Code: XHXDD2018

Senior Principal Scientist
Study Director - Neuropharmacologist

Will be responsible for establishing various state-of-the-art *in vivo* models for the evaluation of new drugs for effects on central and peripheral nervous system functions. Will direct the activities of 3-5 technical staff. Requires a Ph.D., MD or DVM with appropriate training in the neuropharmacology field plus postdoctoral level training. Up to 10 years experience in the pharmaceutical industry and in a GLP environment is desirable. Technical ability for assessing neuropharmacologic activity using *in vitro* techniques is also desirable. Supervisory experience is preferred as are effective interpersonal skills, verbal and written communication skills.
Job Code: XHXDD2019

For prompt, confidential consideration on the above two positions, we invite you to apply on line or forward your resume, which MUST include Job Code for position of interest, to: **E-mail: sprisc@resume.isearch.com** or Mail: **Human Resources, Schering-Plough Research Institute, 144 Route 94, P.O. Box 32, Lafayette, NJ 07848.**

We invite candidates who meet any of the following requirements to join our state-of-the-art campus in North Central New Jersey, less than one hour from New York City.

DRUG SAFETY & METABOLISM

BS/MS Research Associate In vivo Drug Metabolism

Responsibilities include dosing, collection and analysis of samples for the purpose of conducting *in vivo* pharmacokinetic and metabolism screening studies. BS or MS in Biochemistry, Pharmacology, Toxicology or related Life Sciences discipline with 1-5 years relevant laboratory operations experience, including background as indicated above, required.
Job Code: XHXDD0078

ONCOLOGY RESEARCH

Ph.D. Postdoctoral Scientist Signal Transduction/Genomics

This fellowship within the Cancer Genomics Group, will focus on analysis of a novel MAPK module utilizing traditional as well as cutting-edge technologies such as large-scale DNA arrays and sequence databases. Training will be provided in signal transduction and genomics. Ph.D. with background and/or education in Biochemistry, Molecular Biology or related discipline and up to 3 years postdoctoral experience is needed. Research experience in signal transduction is a plus. The ability to work independently and strong interpersonal skills are highly desirable.
Job Code: XHXTM99995

Research Scientist - Tumor Biology

This multi-faceted position contributes to and supports *in vivo* evaluations of new compounds and anti-cancer therapies targeting oncogene signal transduction, tumor angiogenesis and hormone regulated tumor progression. BS/MS in Biological Sciences and minimum 2-4 years experience with *in vivo* models (tumor implantation, dosing, surgery, histopathology) and mammalian cell culture required. Expertise with biochemistry, molecular cloning techniques and immunology is highly desired.
Job Code XHXDD0107

Research Associate- Tumor Biology

Will concentrate on signaling pathways as targets for drug discovery. BS or MS degree in Biology, Biochemistry or Molecular Biology with 2+ years laboratory experience encompassing molecular biology, biochemical techniques and cell culture experience required. Expertise with enzyme assays, Western blotting, PCR and cloning are desired.
Strong communication skills are preferred.
Job Code: XHXDD0145

BONE BIOLOGY

Ph.D. Scientist

Position requires a Ph.D. in Biochemistry or Molecular Biology with 6-8 years of experience. Osteoclast and osteoblast biochemistry and/or molecular biology is essential. Functional genomic experience is highly desired. **Job Code: XHXDD00JA**

MOLECULAR GENETICS

BS/MS Research Associate Antibacterial/Antifungal

The antibacterial/antifungal group is expanding its effort to implement high-throughput assays. Staff is required to develop assays and furnish support for lead confirmation and follow-up biochemistry programs. BS or MS degree in Biology or related area and 2-4 years laboratory experience - biochemical or molecular biology. Skill with techniques including cloning and expressing genes in bacterial and yeast systems; enzyme assays; protein electrophoresis; and chromatography needed. Computer literacy including data processing and spreadsheet programs a must. Industry experience is a plus.
Job Code: XHXDD0136

AUTOMATED HIGH-TROUGHPUT SCREENING

BS/MS Research Assistant

Entry-level opportunity (0-3 years) for a bench scientist in our high-throughput screening department. Candidates should have a degree in Biochemistry, Biology or other Life Sciences, and possess strong organizational skills. This position entails performing biochemical assays in support of new drug discovery, as well as assisting in the preparation and maintenance of our compound collection. The ideal candidate would have some experience with enzymatic or receptor binding assay technologies, and be detail oriented. Some programming or database experience would be an added plus. **Job Code: XHXDD9183**

Research Associate Instrumentation Specialist

We seek an experienced scientist (3-10 years) to take on an instrumentation specialist role in our centralized high-throughput screening department. Applicants should have a degree in Biochemistry, Pharmacology, Medical Technology or other Life Sciences, and possess a significant background with semi-automated instrumentation. The successful candidate will have hands-on experience with running biochemical assays in an HTS environment using a variety of laboratory equipment, including: automated pipetting modules, lab robotics, and microtiter plate readers. Troubleshooting and organizational skills are a must. Engineering, systems integration or programming (VB, C++) skills are a plus.
Job Code: XHXDD0129

SCIENTIFIC INFORMATION SYSTEMS

Scientific Systems Project Manager Drug Safety and Toxicology

BS in Life Science, Computer Science, Engineering or Information Systems Management and experience in project leadership/supervision for the development, maintenance, and support of vendor and proprietary research software for complex scientific systems. Experience in software validation and information systems regulatory compliance highly desired.
Job Code: XHXRI9912

Senior Scientific Systems Analyst Structural Chemistry

MS or Ph.D. in Chemistry and experience in development, maintenance, support of computational chemistry software. Responsible for development, maintenance and support of vendor and proprietary research software for computer-aided drug design, protein NMR and protein crystallography. Experience with UNIX systems, modern programming languages, and standard computational chemistry software packages a must. **Job Code: XHXRI9938**

Senior Scientific Systems Analyst Bioinformatics

MS/Ph.D. in Life Science and experience in development, maintenance, support of computational biology software. Responsible for development, maintenance and support of vendor and proprietary research software for bioinformatics. Experience with Perl, UNIX systems, and standard bioinformatics software packages a must. **Job Code: XHXRI2016B**

Senior Scientific Systems Analyst Drug Safety & Toxicology

BS in Life Science, Computer Science, Engineering, Information Systems or related field and experience in development, maintenance, support of scientific software. Experience in information systems regulatory compliance highly desired. Responsible for development, maintenance and support of vendor and proprietary research software to provide data collection, analysis and reporting for Drug Safety and Toxicology research. **Job Code: XHXRI2016E**

Senior Scientific Systems Analyst Drug Metabolism

MS or Ph.D. in Life Science and experience in development, maintenance, support of scientific and lab automation software. Experience in information systems regulatory compliance highly desired. Responsible for development, maintenance and support of vendor and proprietary research software to provide lab automation and data analysis for Drug Metabolism and Pharmacokinetics research. **Job Code: XHXRI2016A**

Senior Scientific Systems Analyst Discovery Research

MS or Ph.D. in Life Science and experience in development, maintenance, support of scientific and lab automation software. Responsible for development, maintenance and support of vendor and proprietary research software for lab automation and data analysis in support of a variety of pharmaceutical discovery research and technology programs.
Job Code: XHXRI2016D

Senior Scientific Systems Analyst Discovery Informatics

MS/Ph.D. in Life Science and experience in development, maintenance, support of scientific and lab automation software. Responsible for development, maintenance and support of vendor and proprietary research software for lab automation and information management in support of pharmaceutical discovery research.
Job Code: XHXRI2016C

We offer an excellent compensation package that includes a competitive salary, a cash incentive bonus program, profit sharing and 401(k). Comprehensive benefits include: group insurance and retirement programs, flexible work arrangements, education assistance, and health and wellness programs.

For prompt, confidential consideration on the above positions, we invite you to apply on line or forward your resume, which MUST include Job Code for position of interest, to: E-mail: **sprisc@resume.isearch.com** or Mail: **Human Resources-SC, Schering-Plough Research Institute, 2015 Galloping Hill Road, Kenilworth, NJ 07033-1300**. We are an equal opportunity employer. We regret that we are unable to respond to each resume. Only those selected for an interview will be contacted.

For additional information, or to apply online, visit our website at:

www.sp-research.com

Schering-Plough Research Institute

Using Science for Human Advantage

several groups to further lengthen their toolkits."

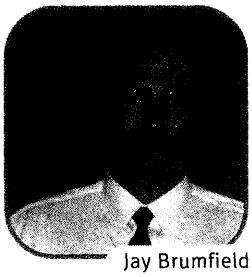
Individuals with B.S. and M.S. degrees can aspire to management positions as long as they have the appropriate skills in project management and people management and a good understanding of the technology. They can also reach the level of Scientist, usually reserved for Ph.D.s. And Millennium has what Stickney terms "a very aggressive tuition reimbursement program" that helps individuals to work part-time on Ph.D.s.

What qualities do candidates need for consideration by Millennium? "They must be keen at understanding the whole scientific area we are trying to address," says Stickney. "They must also have teamwork and communication skills. Researchers are required to work cross-functionally. They are experts in their particular areas, but they have to be good translators to scientists in other areas who know very little about their work."

KALAMAZOO, MICHIGAN:

"It is pretty much a constant in the pharmaceutical industry that chemists with B.S./M.S. training will be in high demand," recounts Jay Brumfield. A chemist who is a group leader of analytical development at Pharmacia Corporation, Brumfield has frequently recruited for pharmaceutical development for his firm, which was created by the merger of Pharmacia & Upjohn with Monsanto Company.

In addition to seeking chemists, Pharmacia Pharmaceutical Development looks for recruits with laboratory training in the industrial pharmacy area. That isn't easy, as the source of those individuals has dried up recently. "Up to a couple of years ago, many schools of pharmacy offered B.S. and M.S. degrees to students who could focus on training for either laboratory work—such as operating pharmeceutical manufacturing


Jay Brumfield

equipment and developing formulations—or retail pharmacy," Brumfield explains. "Now, most schools have changed to Pharm D. programs. Most of their graduates take jobs in retail or clinical pharmacy." As a practical response to the shortage, Brumfield continues, "A lot of pharmaceutical companies are looking for chemical engineers to fill the gap."

In its recruiting of B.S./M.S. graduates, Pharmacia seeks a combination of research backgrounds. "It's important to retain a mix of people bringing ideas from the university and practical ideas from industry," Brumfield says. "So we recruit both seasoned veterans and people directly from the university." So for students considering employment for Pharmacia, "Having completed internships and research projects certainly doesn't hurt," he adds.

Brumfield pinpoints another requirement. "Communication skills are absolutely critical," he says. "They become more and more important as the person advances to higher levels. Even for entry-level bench chemists, being able to express their findings clearly to their peers and people at all levels is quite important."

Scientists with nondoctoral degrees have plenty of opportunity to move up in Pharmacia. "We have Bachelor's- and Master's-level people who have pursued successful careers in the senior scientist path and in the technical management area," says Brumfield. "Industrial experience and demonstrated leadership can propel B.S.- and M.S.-degreed professionals to advanced positions on either the scientific or managerial career paths."

How can students best go about getting a job at Pharmacia and similar companies? While the Internet can help to locate positions, Brumfield asserts that there is no substitute for face-to-face interviews. "Summer internships," he adds, "still provide an excellent way for candidates to get a foot in the door and to see what goes on in industry as a possible long-term career match. And networking with friends of acquaintances on the inside is a very successful way of gauging opportunities. This mechanism is particularly attractive to currently employed candidates who want to put out feelers without announcing to the world that they are actively looking elsewhere."

PRINCETON, NEW JERSEY:

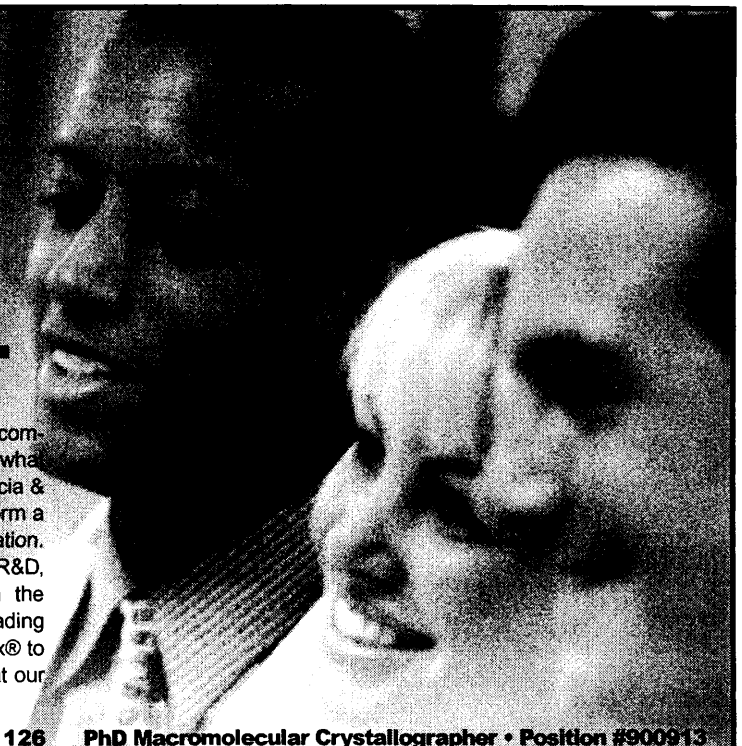
"We have had and continue to have numbers of opportunities for B.S. and M.S. candidates," says Susan Millner, director of strategic staffing for the Pharmaceutical Research Institute of pharmaceutical company Bristol-Myers Squibb. "The caveat is that we really are looking for individuals who have had hands-on experience in a lab, in summer internships, for example."


Susan Millner

Among potential recruits with the necessary lab experience, Bristol-Myers Squibb looks for a variety of specialists. "We're always looking for chemists, especially synthetic organic, analytical, and protein chemists," Millner continues. "Candidates with experience in hybrid fields, like life science and computing, are also attractive to us. So are life science degrees plus any other form of technical specialization, such as robotics, mass spectrometry, high-throughput screening, or computer-assisted drug design."

A background in informatics also helps.

CONTINUED ⇒



PHARMACIA

Do the research and you'll find this to be

AN AMAZING DEVELOPMENT

Discovering brilliant new cures is easier to achieve when your company is rapidly growing in sales, stability and resources. That's what we're experiencing with the merger of Monsanto and Pharmacia & Upjohn, where 60,000 professionals have come together to form a $17 billion first-tier pharma organization: Pharmacia Corporation. By investing more than $2 billion annually in pharmaceutical R&D, and developing one of the strongest patent positions in the industry, we are able to provide such innovative, industry-leading drugs as Detrol® for over-active bladder control and Celebrex® to treat arthritis. The following opportunities are now available at our **Kalamazoo, MI** facility:

BS/MS Chromatography Specialist • Position #901126
We seek a versatile individual to participate in the provision of preparative and analytical chromatography services to the medicinal chemistry communities. The successful candidate must be able to relate to the needs of our clients, purify the target analytes on a milligram to multi-gram scale, communicate the results orally and in writing, maintain the instruments, and keep abreast of new developments while working in a team environment. Familiarity with or the willingness to learn several chromatographic techniques, including chiral phase HPLC, LC-MS, CE and SFC, is required.

BS/MS Mass Spectrometrist • Position #901124
The selected candidate will be involved in multiple projects that involve mass spectrometric analysis to support drug discovery. In particular, the incumbent will provide mass spectrometry support for medicinal chemistry and biology research by performing mass spectrometric analyses of small organic and biological molecules. In addition, this individual will be responsible for instrument maintenance and troubleshooting. Requirements include demonstrated competency in mass spectrometry; proficiency in EI/CI, MALDI, ESI, and APCI techniques with excellent mass spectral interpretation skills; a BS/MS in Analytical Chemistry, Chemistry or related fields; 1-5 years of professional experience in mass spectrometry; and excellent computer skills. Strong written/verbal communication skills and the ability to multitask in a team-based environment are essential.

PhD Protein NMR Spectroscopist • Position #901129
As a member of the structural chemistry NMR group, you will impact drug discovery and drug design projects by identifying lead chemical templates and determining the structures of proteins or protein/ligand complexes. Considerable experience in NMR instrumentation, methods and pulse sequence development, including multidimensional heteronuclear experiments, as applied to ligand screening or protein structure determination is essential. Requirements include a PhD in Biochemistry, Biophysics or Chemistry; proven experience in all aspects of protein NMR spectroscopy, including data collection, data analysis and determination of solution structures; strong publications history; and excellent communication skills.

BS/MS Protein NMR Spectroscopist • Position #901131
As a member of the structural chemistry NMR group, you will impact drug discovery and drug design projects by identifying and evaluating lead chemical templates. The successful candidate will develop, implement and apply NMR screening methodologies as well as interface with the biological and chemical communities to conduct detailed studies of protein/ligand interactions. Requirements include an MS in Biochemistry, Biophysics or Chemistry or a BS with a minimum of 2 years of experience with NMR spectroscopy. Excellent communication, data management and technical writing skills are essential. Experience in flow NMR instrumentation as applied to ligand screening and modern NMR methods used to study protein/ligand interactions is highly desirable.

PhD Scientist – Optical Spectroscopy • Position #901132
In addition to maintaining an up to date laboratory facility, the selected candidate will be expected to expand applications for optical spectroscopy in supporting or enhancing the drug discovery process. Requirements include a PhD in Physical, Biophysical, Bioanalytical Science or a closely related field with practical experience in the application of optical spectroscopic techniques. The ability to successfully engage in collaborative research efforts is essential. Direct experience with spectroscopic characterization of protein structure or protein ligand interactions is desirable.

PhD Macromolecular Crystallographer • Position #900913
We seek a scientist with extensive research laboratory experience and a strong record of success in crystallographic structure determination to conduct research on the structural biology of novel pharmaceutical targets to expand an existing structure-aided drug design effort. In collaboration with crystallographers, medicinal chemists and other program team members, the scientist will crystallize proteins and solve/interpret structures to support drug discovery. The individual we select will join an established, well-equipped crystallography group.

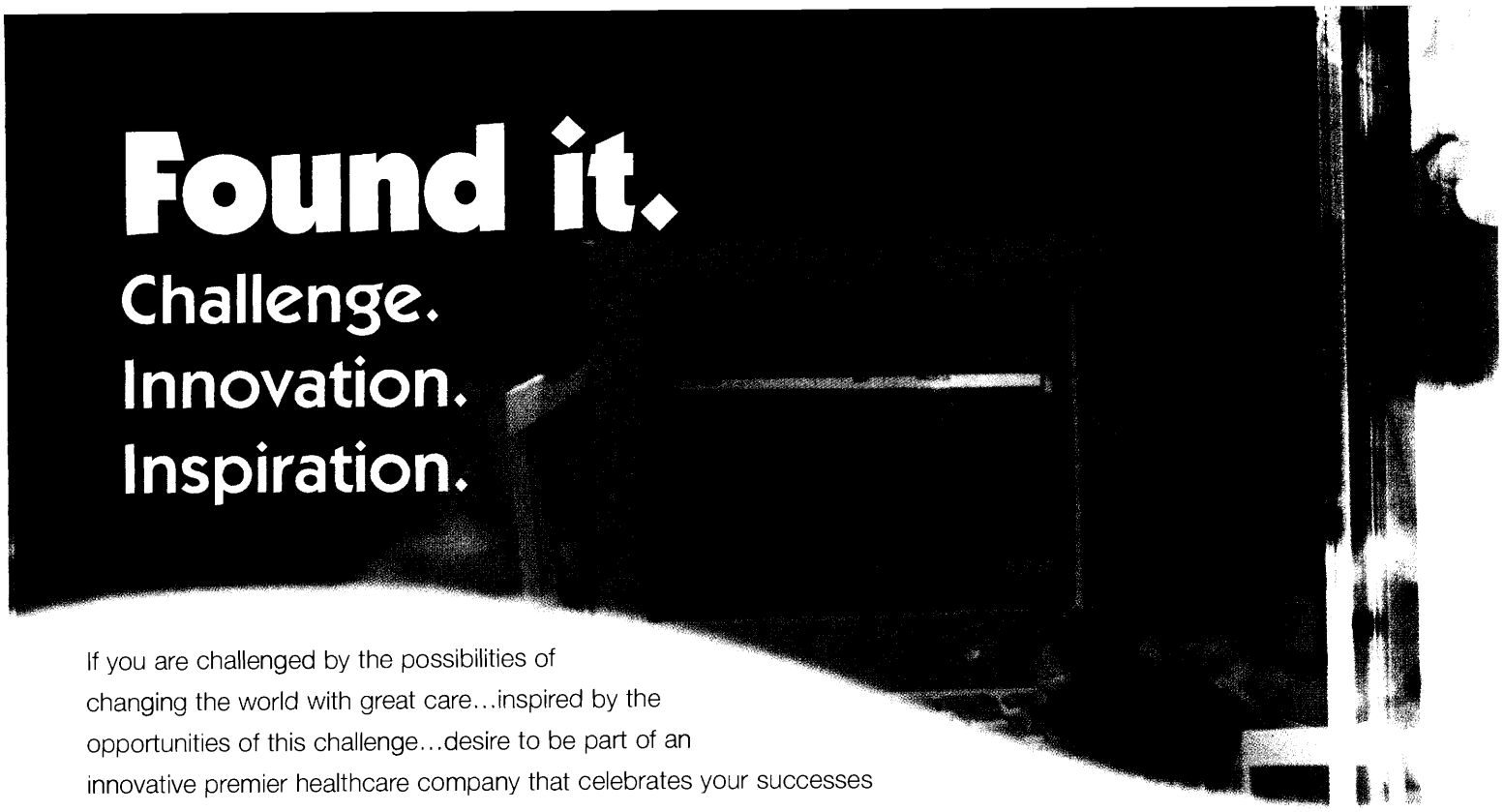
BS/MS Crystallization Biochemist • Position #900087
A self-motivated biochemist is needed in our structure-directed drug design laboratory. As a member of the macromolecular crystallography team, the successful candidate will prepare protein samples and develop crystallization strategies for new protein targets and protein-ligand complexes. A BS/MS in Biochemistry or related field is required; experience in the crystallization of macromolecules is preferred.

BS/MS Analytical Chemist/Biochemist• Position #901122
The Optical Spectroscopy & Calorimetry section needs an associate to assist in characterizing interactions of drug candidates with proteins and nucleic acids in support of structure-based drug design efforts. Primary responsibilities will include examining protein folding, protein denaturation, implementing existing procedures, and helping develop new procedures to examine molecular interactions using optical spectroscopic and microcalorimetric techniques. Techniques used to determine binding affinities and the location of molecular interactions include isothermal titrating calorimetry and fluorescence, absorbence and circular dichroism spectroscopies. A BS/MS in Chemistry or Biochemistry combined with laboratory experience in optical spectroscopy of biomolecules are required.

BS/MS Cell Biologist/Biochemist • Position #900939
The candidate will use cell-based assays of membrane permeability and transporter expression to increase our understanding of the roles of membrane transporters in drug candidate activity and intersubject variability in drug absorption and disposition. Transport and inhibition data will be used to facilitate the selection of compounds with favorable physicochemical properties relative to drug delivery with a focus on biopharmaceutics applied to intestinal absorption and blood-brain barrier penetration. The selected candidate will express transporter genes in cell systems to create new models and will coordinate in vivo studies using rodents including existing knockout models. A BS/MS in Biochemistry, Pharmacology or Cell Biology, or a degree in a related discipline is desired.

Pharmacia can improve your future, with outstanding compensation, excellent benefits and the realization that you've reached the height of the industry. **You may apply online at www.pharmacia.com (click on Pharmacia & Upjohn)** or send your resumes, **indicating appropriate Position #,** to: **Pharmacia Corporation, 7000 Portage Rd., 5003-024-001,** Attn: Human Resources, Kalamazoo, MI 49001. An equal opportunity employer, we value a diverse combination of ideas, perspectives, and cultures.

www.pharmacia.com



If you are challenged by the possibilities of changing the world with great care...inspired by the opportunities of this challenge...desire to be part of an innovative premier healthcare company that celebrates your successes as well as our own...then, you have *found it at Bayer.*

The Bayer Research Center in West Haven, CT has worldwide responsibility for discovering new drugs to tre diabetes, obesity and cancer. We currently have exceptional opportunities available within our modern, multi-disc lir ary Research Center for Scientists in the following disciplines:

Principal Research Scientists

Receptor Pharmacology
Animal Physiology
Molecular Biology/Biochemistry
Biochemistry/Cell Biology
Molecular Biology/Genomics/Bioinformatics
Synthetic Organic Chemistry

Sr. Scientists

In Vitro Pharmacology
Enzymology/Biochemistry
Cell Biology/Biochemistry
Synthetic Organic Chemistry

Sr. Associate Scientists

Biochemistry/Cell Biology
Receptor Pharmacology
Cell Biology
Molecular Biology/Biochemistry
In Vivo Pharmacology
Genomics/Molecular Biology
Protein Biochemistry
Synthetic Organic Chemistry

Please respond by sending only one resume using only one of the following methods: (mail, e-mail, fax). Please in lude **Job Code #ASM0800** with your submission.

Our **Pharmaceutical facility in Clayton, NC**, is one of the largest facilities of its kind in the world. This biopharmaceutical manufacturing facility works primarily with plasma and plasma derived products. Conveniently located west of Raleigh and Research Triangle Park, we seek to fill the following position:

Production Manager

Dissolving and Filtration Department

The ideal candidate must have production management experience in protein purification at a pharmaceutical manufacturing facility, as you will be responsible for planning, scheduling and managing resources in order to meet production demands and objectives without exceeding the annual budget. Additionally, you will ensure that the Dissolving and Filtration Department meets safety, quality and compliance objectives; issue routine reports on departmental performance and work with other groups to improve productivity, cycle-time and decrease production costs.

Position requires a BS degree and a minimum of 10 years relevant experience. Preference will be given to those candidates possessing a Ph.D. degree. In addition, candidate must have a minimum of 4 years work experience in biotechnology or pharmaceutical manufacturing operations and have managed a significant size GMP production operation for a least 2 years. Incumbent will demonstrate high levels of value and integrity and be able to provide effective leadership to employees in this department. The ability to excel in a team environment as well as possess good verbal and written communication skills are desired. Must have familiarity with MS Excel, Word and PowerPoint.

Please respond by sending only one resume using only one of the following methods: (mail, e-mail, fax). Please include **Job Code #ASMC0595** with your submission.

Bayer Corporation offers a competitive salary and a comprehensive benefits package (including 100% tuition reimbursement). Bayer is proud to offer a diversified international global workplace. We are an equal opportunity employer committed to enhancing cultural diversity within our environment. For more information on Bayer Corporation, please visit our **website at www.bayerpharma-na.com**

Reply to: Resume Processing Center
Bayer Corporation, Pharmaceutical Division
P.O. Box 3238
Scranton, PA 18505-0238
Fax: 1-888-805-7474; email: bayerpharma@alexus.com

Join us in changing the world with great care.

Bayer

Pharmaceutical Division

BETWEEN COLLEGE AND GRADUATE OR MEDICAL SCHOOL IS THE PERFECT TIME TO DO YOUR OWN RESEARCH

The National Institutes of Health offers opportunities for recent college graduates who wish to explore the world of biomedical research while applying to graduate or medical school. The experience gained in this program will enable you to "test the scientific waters" at the largest institution in the world devoted to biomedical research. In a way, you'll be doing your own research, determining if this is the career path you truly want to pursue. In addition, you may have the chance to contribute to important scientific discoveries that have a profound impact on efforts to find the cause, cure, and prevention of disease.

The NIH Postbaccalaureate Intramural Research Training Award (IRTA) provides support for a year-long research training experience in our state-of-the-art laboratories in Bethesda, Maryland. To be considered, you must have graduated from a U.S. accredited college or university no more than twelve months prior to starting the fellowship and intend to apply to graduate or medical school within the next year. Awards may be granted for an initial twelve-month period and be renewed one time for an additional twelve months, based on satisfactory performance and progress toward matriculation at an accredited graduate or medical school.

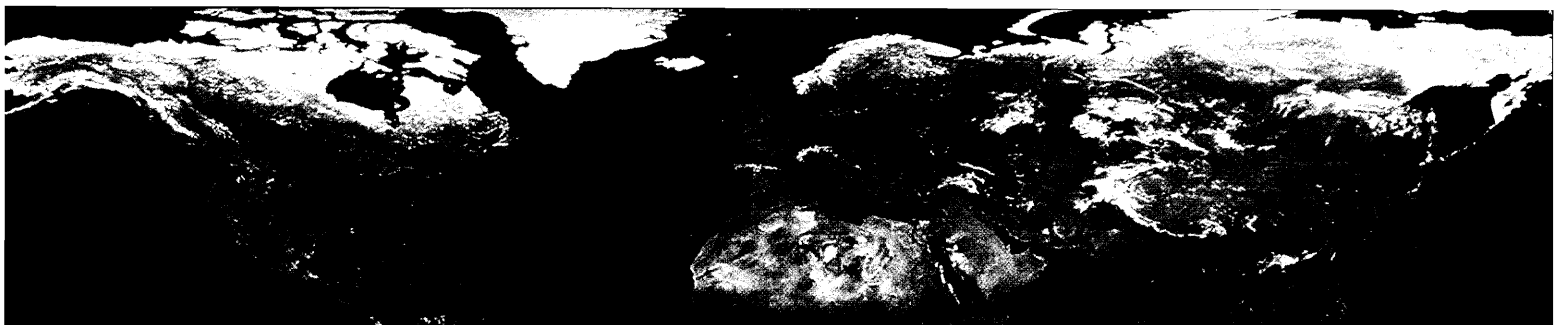
The NIH Academy is a new postbaccalaureate training program at NIH, launched in 2000. It is intended to facilitate the early development of scientists and physicians who aspire to careers in biomedical research related to the elimination of domestic health disparities – diseases and health conditions that disproportionately affect specific population groups in the U.S. The Academy is a small, residential program, with an added curricular requirement for participants.

The experiences you gain at the NIH in these programs will be valuable wherever your career takes you. Interested candidates should apply through the NIH Office of Education website. To be eligible, you must be a U.S. citizen or permanent resident.

National Institutes of Health
Office of Education
Building 2, Room 2E06
2 Center Drive MSC 0240
Bethesda, MD 20892
(800) 445-8283

http://www.training.nih.gov

NIH is dedicated to building a diverse community in its training and employment programs.



Life Made Better

The members of the Bristol-Myers Squibb Pharmaceutical Research Institute share one goal—to discover and develop best-in-class, cost-effective medicines that enhance and extend human life.

Oncology Drug Discovery
Princeton, NJ

In Vivo Antitumor (Drug Evaluation) Scientist: Ph.D. with a minimum 3 years experience to develop preclinical in vivo models to evaluate the pharmacodynamics of candidate anticancer agents. Experience with tumor response biomarkers and knowledge of the pharmacology of current anticancer agents is essential. Background in various aspects of pharmacokinetics of anticancer agents, systematic and tumoral, is desired. **Code: PRNR195FL1**

In Vivo Tumor Pharmacologist: Ph.D. with experience in cancer drug pharmacology and pharmacokinetics to identify and develop candidate anticancer agents. Individual will also design, develop and implement in vitro/in vivo experiments employing pharmacokinetic/pharmacodynamic principles. Experience in the development and validation of biomarkers as surrogates for tumor responses including the usage of non-invasive imaging techniques is essential. **Code: PRNR195FL2**

Metabolic and Cardiovascular Drug Discovery
Princeton, NJ

Ion Channels Scientist: B.S./M.S. with 3 years experience in electrophysiological technology to screen compounds for ion channel modulatory activity and identify and characterize pharmacologic and biophysical properties of ion channel-related targets for cardiovascular and metabolic diseases drug development. Experience with whole and single cell channel patch clamp, two electrode voltage clamp and fluorescence-based ion channel activity assays is essential; gastrointestinal smooth muscle electrophysiology knowledge required. **Code: PRNR195PL**

Molecular Physiologist: B.S./M.S. with 3-5 years experience in molecular and cellular biology, biochemistry and in vivo techniques to research the molecular pathophysiology of lipodystrophy and metabolic diseases. Knowledge of mitochondrial function, metabolism and metabolic diseases, endocrinology or adipose tissue biology is beneficial. Expertise in mitochondrial isolation, mammalian cell culture, RNA, protein analysis, biochemical and immunoassay techniques preferred. **Code: PRNR195RP**

Immunology, Inflammation & Pulmonary
Princeton, NJ

In Vivo Specialist: B.S./M.S. with 2+ years experience in the pharmaceutical/biotech industry to conduct in vivo studies supporting preclinical development of novel compounds for inflammatory and immune-mediated pulmonary and autoimmune diseases. Experience with preclinical in vivo/in vitro models for allergy/asthma, lung inflammation, and/or acute and chronic inflammatory and autoimmune diseases is essential; understanding of pulmonary physiology, pathology, immunological principles involved in the development of pulmonary diseases is required. **Code: PRNR195KM**

Applied Genomics
Wallingford, CT

DNA Sequencing & Molecular Biology Associate: B.S./M.S. with 2 years experience in Molecular Biology and DNA sequencing to perform all DNA sequencing/analysis. Familiarity with standard DNA sequencing/analysis software; UNIX-based tools a plus. Exposure to high-throughput biology/functional genomics is required; microbiology or neuroscience background is a plus. **Code: PRMA195BD**

For positions in Princeton, NJ, send resume to:
Bristol-Myers Squibb Company
Pharmaceutical Research Institute
P.O. Box 4000
Princeton, NJ 08543-4000
Fax: (609) 581-8841

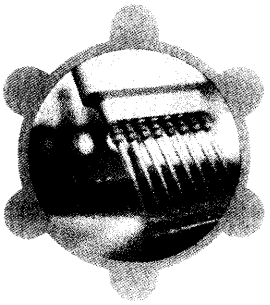
For positions in Wallingford, CT, send resume to:
Bristol-Myers Squibb Company
Pharmaceutical Research Institute
P.O. Box 5101, 5 Research Parkway
Wallingford, CT 06492-7661
Fax: (203) 677-7762

We use resume-scanning technology. Please submit resumes, including Code #, on plain white bond paper using standard type and fonts (no italics, graphics or staples please).

Bristol-Myers Squibb
Pharmaceutical Research Institute

w w w . b m s . c o m

Bristol-Myers Squibb is proud to be an equal opportunity employer, M/F/D/V.



Life science students taking Master's and Bachelor's degrees aren't restricted to the traditional disciplines. Increasingly they can register for specialist courses... that provide exposure to a spectrum of the life sciences.

"Biostatisticians with degrees below the Ph.D. level have a lot of opportunity to conduct clinical trials and analyze the results," says Millner. "Folk in pharmacogenomics with statistical skills are of great value." Clinical trials also provide a platform for employment. "Clinical research associates and clinical scientists who can assist in the management of clinical trials are in high demand," according to Millner. "We also need animal physiologists. Given the requirements of all the studies we have, there aren't enough people to do all the studies the FDA requires."

Individual scientists' career paths at Bristol-Myers Squibb depend on the role for which they are hired. "Most will spend time at the bench developing functional expertise in one or more areas before moving out," Millner explains. "You start to develop your own specialized expertise. As you gain breadth and depth, your leadership skills will develop. We are very committed to developing a diversity of leadership skills at various levels. While the majority of the company's top management holds Ph.D.s, we have individuals without them in virtually every division who have become group leaders and senior scientists."

The company encourages scientists to further their education through tuition reimbursement programs. "These include some specialized doctoral fellowship programs," says Millner. "They are highly selective."

As to selection of employees, "We are really eager to see people who can communicate a sense of purpose or vision for the mission of the company, which is to extend and enhance human life," Millner explains. "We look for individuals who can be accountable for their own results and development. And we are very team-oriented."

CAMBRIDGE, MASSACHUSETTS:

Alkermes, Inc., a company that is creating a new generation of drug delivery systems and a new set of careers, seeks experience in its recruits at the B.S. and M.S. levels. Even the entry-level jobs that Alkermes offers require a certain amount of practical exposure. "For research associate positions for chemists, we might look at experience in running instrumentation such as HPLC," says manager of human resources Debi Harmon. "Pharmacology research associates should have some experience working with animals, in a summer internship, for example."

Debi Harmon

The company also offers a few non-laboratory opportunities. "Some recruits end up as clinical research associates who go into the field to monitor clinical trials," says Harmon. "We also have positions in our regulatory affairs department that deal with regulatory agencies and compile and submit documentation." However, she adds, "Both those fields are very hard to get into without experience, especially as an outside candidate."

One of the firm's most promising areas of employment is for engineers. "Engineering is a wonderful field," says Harmon. "The engineers we tend to hire are mostly chemical with experience in process development and/or manufacturing. We need people with a knowledge of life science to go into our process development groups or our clinical and preclinical manufacturing groups. We also have openings for validation engineers."

Employees with Bachelor's and Master's degrees can also move up the management or technical ladder at Alkermes. Higher management positions require many years of specific experience. "M.S./B.S. scientists can go into management in the area of laboratory operations," says Harmon. "We have management positions that involve running laboratories—ordering and organizing inventory, calibrating and repairing equipment, and supervising lab assistants in these areas. Sometimes lab mangers can move into other supervisory areas."

Harmon recommends that B.S. and M.S. students give serious thought to the type of task they want to do five years down the line before deciding whether to take a job in industry or academia or to continue their schooling. "If you decide to pursue industry, examine your interests and background and research the locations that have a lot of positions in your area of specialty," she suggests. "Relocation can be a very important factor. Sometimes candidates haven't thought through different locations. Boston area salaries, for example, aren't as high as those in New York or California but tend to be higher than in areas such as Florida. Evaluate the locations, the position, the salary, the benefits, and their pros and cons as pieces of a pie you should investigate and weigh before accepting a job."

CONTINUED ⇒

A New Age of Discovery

Advanced Inhalation Research, Inc.

Join an industry leader who's reached a milestone that few other biotech companies have.

1999 was another year filled with accomplishments for Alkermes as we solidified our position as the industry leader in sophisticated drug delivery technologies. Highlights included the acquisition of Advanced Inhalation Research (AIR) in February, filing of the Company's first NDA in June and our first product approval by the FDA in December.

As Alkermes grows, we're blazing the way for a new generation of careers. With advanced clinical trials underway for several indications and strong collaborative relationships with major pharmaceutical partners, we combine the exhilarating energy of a start up with a sound foundation for continued financial stability and growth.

As a key contributor to our expanding success, you will receive a fully competitive compensation package with stock options, excellent benefits, and a company-matched 401(k) plan.

The following three positions are located in CINCINNATI, OHIO.

Development Scientist

We are seeking a Development Scientist with a minimum of five years' experience in the pharmaceutical industry, preferably developing controlled release dosage forms. The successful candidate will design/develop controlled release formulations to meet customers' technical/business needs. You will also represent our capabilities to attract new customer interest in our technologies. The applicant should be well-versed in experimental design, formulation development, polymer science, analytical chemistry, and parenteral manufacturing. A Ph.D. in Industrial Pharmaceutics, Chemistry or closely related field is required. Project management experience is expected. **Box O-JH**

Analytical Development Scientist

Responsibilities include leading and directing analytical associates in developing and validating analytical methods; acting as a key member of cross-functional project teams engaged in bringing new pharmaceutical drug products to market; and generating reports and presenting analytical data to project teams and our external customers. The successful candidate will possess solid leadership and communication skills and a sound understanding of cGMP requirements. A Ph.D. degree in Chemistry or related field is desirable but not required. **Box O-KH**

Postdoctoral Fellow in Polymer Science

We are seeking a postdoctoral fellow to work on the synthesis of novel biodegradable polymers to be used in drug delivery applications. We are interested in candidates with a Ph.D. in Chemistry or Polymer Science and a strong background in polymer synthesis and characterization. Experience synthesizing biodegradable polymers is a plus. The candidate should be creative, innovative, organized, work effectively with minimal supervision, and have strong communication skills. **Box O-CP**

For the above positions only, please apply to: Alkermes, Inc., Attention: Human Resources, 6960 Cornell Road, Cincinnati, Ohio 45242. Fax: (513) 489-8095. Recruiter@Alkermes.com

The following are located in CAMBRIDGE, MASSACHUSETTS.

Toxicologist

You will be responsible for the design and conduct of regulatory and investigative toxicology programs to support registration of pharmaceutical formulations based on Alkermes' innovative drug delivery technologies. A broad knowledge of the pharmacology of biotechnology products and small molecule pharmaceuticals is preferred. Requirements include a DVM or Ph.D. in Toxicology or other biological sciences, and a minimum of two years in pharmaceutical toxicology. **Box SGR**

We also have opportunities available in the following areas:

Process Engineering
Regulatory Affairs
Manufacturing
Quality Assurance

For immediate consideration, send your CV and cover letter indicating position desired to: Alkermes, Inc., 64 Sidney Street, Cambridge, MA 02139. Fax: (617) 494-9263.

VISIT OUR WEBSITE AT WWW.ALKERMES.COM

We are an equal opportunity employer relying on the strength of a diverse workforce.

Delivering The Science That Delivers The Drugs

Applied Biosystems

We provide the world's leading technology and information solutions to help life scientists understand the logic of biology. From instrument systems to reagents and software, Applied Biosystems enables science for life.

Product Specialist / Associate Product Manager, Polymorphism Detection (00-000539)

Will be responsible for identifying, evaluating, and participating in the development of marketing strategy and products for polymorphism detection within our Genetic Analysis department. Job responsibilities also include: active participation in both reagent and software product development teams; providing technical marketing product specifications; providing technical, marketing and product training to field sales and in-house personnel: planning and executing product marketing strategies worldwide; high level of interaction with customers, field sales and product development teams. Product areas: Fluorescent DNA sequencing reagents and accompanying analysis software. Requires a BS/MS in Molecular Biology or related field (lab experience desirable) coupled with 3-5 years direct sales experience. Must have excellent interpersonal communication and team-working skills. Experience with internet-based selling and marketing techniques required. Must have the ability to analyze complex data or information and formulate into a cohesive plan or strategy. Experience with fluorescent DNA analysis techniques (instruments, reagents and analysis software) desirable. **(Respond to woodkj@appliedbiosytems.com)**

Product Marketing Manager, PCR (00-001404)

You will be responsible for coordinating the collection, analysis, and distribution of information related to the worldwide marketplace for our TaqMan pathogen and MicroSeq product lines. You will develop product specifications based upon market research in conjunction with R&D, oversee product development from release of new products, creation of promotional literature, development of product training material and presentation material for internal personnel, analysis of product orders and sales, review of product forecasts and inventory levels, and participate in industry congresses and tradeshows. Requires knowledge and skills normally acquired through the completion of a MS or Ph.D.in Microbiology or Molecular Biology with 3 or more years of direct marketing or sales experience in a life sciences products company. Completion of graduate level marketing courses and/or MBA preferred. **(Respond to woodkj@appliedbiosytems.com)**

Marketing Manager / Product Manager (00-001027)

This individual will be responsible for marketing the SDS solution for SNP analysis. Duties include, but are not limited to, being the primary contact person for input regarding technical issues which impact product sales, quality, cost, reliability and performance. Participation in the planning, preparation and implementation of product marketing plans. Providing support for sales personnel where specialized technical expertise is required, particularly in the early stages in the product life cycle. Assisting in the analysis of the competitive arena for technologies and products to ensure accuracy and relevancy. Providing advice and support to Field Marketing Specialists, customers and Sales representatives to resolve technical issues requiring marketing support. Assisting in the development and preparation of marketing communications. Serves as a liaison between research and development, manufacturing, and the market. Act as the technical advisor with information about the product and/or technology. Attend scientific meetings as necessary. Assist on the analysis of market performance and make recommendations to improve performance. Assist in the preparation of forecasts for sales and manufacturing. Requires knowledge and skills normally acquired through the successful completion of a Bachelor's Degree (B.S.) in a scientific discipline, or equivalent. Completion of an advanced degree is desirable. Requires 3-6years related experience and/or training, research with the technology or similar products; or equivalent combination of education and experience. Requires working knowledge of the product type and/or technology including working knowledge of chemical/biological processes and common methods of analysis. Requires the ability to work as a member of a multifunctional team, strong communication and organizational skills and planning ability. **(Respond to woodkj@appliedbiosytems.com)**

Product Manager, DNA Analysis (00-000528)

This individual will be responsible for marketing and product management of one of Applied Biosystems' DNA Analysis systems, and associated consumables. Duties include, but are not limited to, defining and communicating product definition, working as an integral leader on the project development team developing and implementing product strategies. Defining and implementing product launch plans including developing promotional and sales collateral. Defining product positioning and pricing worldwide based on market analysis. Conducting technical sales training, and interfacing frequently with sales and field marketing. Provides a central focus for worldwide information and direction concerning the development and promotion of the product area. Extensive customer contact and approximately 25% worldwide travel will be required. Requires knowledge and skills normally acquired through the successful completion of a Bachelor's Degree (B.S./B.A.) in a scientific discipline (molecular biology or biochemistry preferred), or equivalent. Completion of an advanced degree in business (MBA) or related science is strongly recommended. Requires four to seven years of related experience in product management and strategic marketing. Experience in sales or research with the technology or similar products is a plus. Experience with PE Biosystems instrumentation and markets desired. Excellent verbal and oral communication skills required. **(Respond to woodkj@appliedbiosytems.com)**

Senior Scientist, Analytical Methods Development (00-001376)

Will develop and validate quantitative analytical methods for a wide variety of specialty chemical reagents. Will work closely with synthesis chemists on new chemical products under development and on existing commercial products solving a diverse and challenging array of analytical problems. Additionally will serve as a technical resource for R & D, Marketing and Development and Manufacturing staff. Requires Ph.D. in analytical chemistry coupled with 2 - 5 years hands-on experience in problem solving and methods development. Must have good working knowledge of modern chromatographic, spectroscopic and wet chemical analytical methods, with particular emphasis on different chromatographic techniques LC-MS, and GC-MC. **(Respond to DiasSE@appliedbiosytems.com)**

Process Research Chemist (00-001303)

We are currently seeking a highly motivated Organic Synthesis Chemist for a Chemical Developmental position in our Consumables Development & Manufacturing Department. The successful candidate will play a critical role in the rapid commercialization of a wide range of new state-of-the-art chemical products. This chemist will design and develop robust multi-step synthetic processes for the preparation of heterocyclic compounds and will oversee the transfer of these processes into our manufacturing environment. As a key member of highly interdisciplinary project teams, this skilled chemist will utilize a diverse array of synthetic methods, in conjunction with modern chromatographic and spectroscopic methods, to ensure the rapid development of new products for use in a broad range of Life Science applications. Requires Ph.D. in organic chemistry with 5 + years of experience. Other requirements include demonstrated skill in synthetic organic chemistry and chemical process development. Experience with hetrocyclic and heteroaromatic chemistry is highly desirable. **(Respond to DiasSE@appliedbiosytems.com)**

Senior Bioanalytical Chemist / Principal Scientist (00-001059)

Responsible for designing and executing multivariate experiments to explore the complex interactions of our Chemistries, Applications and Instrument Systems. Will characterize the impact of chemical process changes, impurity profiles and other relevant factors on these complex systems. Will participate and lead highly interdisciplinary teams. Seeking a candidate with broad background and hands-on experience in Analytical Chemistry, Biochemistry and Molecular Biology. Requires Ph.D. coupled with 5 + years industry experience. Must possess excellent problem solving skills and a working knowledge of statistical design of experiments. **(Respond to DiasSE@appliedbiosytems.com)**

Group Leader, Nucleic Acid Chemistry (00-000632)

The Science & Technology Group is looking for a "hands-on" team leader who has demonstrated a strong analytical approach to solving complex problems. The work will involve applying a broad spectrum of analytical techniques to evaluate a variety of technologies including (a) oligonucleotide and polynucleotide hybridization to surface-bound oligonucleotides, (b) nucleic acid detection using fluorescence and alternative signals, and (c) alternative amplification technologies in microfluidic formats. The candidate will have a Ph.D. in physical biochemistry, analytical chemistry or material science (or relevant other qualifications) and at least 5 years experience related to the above objectives. Experience applying quantitative analysis in areas such as nucleic acid detection, nucleic acid hybridization, fluorescence, surface derivatization and characterization, optical detection methods and/or instrumentation is desired. In addition, the candidate will have some experience in managing scientific staff. **(Respond to DiasSE@appliedbiosytems.com)**

Interested candidates should email their resumes to the mentioned email address. For more information on this and other career opportunities visit our website at **www.appliedbiosytems.com** OR Fax to **(650) 638-5874**. We provide generous compensation and one of the industry's most comprehensive benefits plans. Applied Biosytems is an Equal Opportunity Employer and welcomes diversity in the workplace.

We live to develop.

www.transformpharma.com

Revolutionary Product Development Platform

We're TransForm Pharmaceuticals, a pre-IPO with impressive roots and significant funding - conceived to RADICALLY transform the process of pharmaceutical development. The way we see it - development is the product of creativity. At this point, we need more creative thinkers and high energy leaders. There is a better way to develop pharma products - and careers.

TransForm Pharmaceuticals. It's definitely the way to develop.

For complete details on these positions, visit us at **www.transformpharma.com**

TransForm Pharmaceuticals provides a competitive salary and benefits package.
Please forward resumes to: Human Resources
TransForm Pharmaceuticals, Inc.
610 Lincoln Street, Waltham, MA 02451

E-MAIL: **careers@transformpharma.com**

FAX: 781-466-4780

TransForm Pharmaceuticals is proud to be an equal opportunity employer, dedicated to promoting a culturally diverse workplace.

TRANSFORM™
pharmaceuticals
The Way To Develop.

Scientific Director – Crystallization
Lead a scientific team responsible for the design and implementation of the Company's scientific strategy to identify and characterize optimal solid forms of active pharmaceutical ingredients utilizing proprietary technology. Participate in a multi-disciplinary team focused on the continued development of the Company's state-of-the-art platform for identification and characterization of novel solid forms of commercially attractive compounds. Requires Ph.D in Material Science, Solid-State Chemistry or Pharmaceutical Chemistry plus 7-10 years of industry experience in a leadership position.

Scientist – Metabolism
Establish a proprietary P-glycoprotein and/or P-450 metabolism assay platform. Redefine and design new assay platforms, or develop upgrades to the existing platforms in response to the Company's scientific and product development needs. Requires Ph.D in Biochemistry, Enzymology, Pharmacology or Pharmacokinetics and working knowledge of cell-based and enzyme-based P-glycoprotein and P-450 assays with 2+ years of experience with metabolism methodology.

Scientist – Mass Spectrometry
Establish and develop a mass spectrometry based screening system for qualitative and quantitative drug analysis. Requires Ph.D and at least 2 years of experience with various methods of mass spectrometry as well as automation and liquid handling systems.

Scientist – Crystallization
Organic chemist needed to participate in research efforts to study the contribution of various salt forms on the physical properties of pharmaceutical ingredients. Carry out experiments aimed at exploring the effects of different salts on the physical properties of compounds of commercial interest to the Company. Requires MS/Ph.D in Organic Chemistry with a minimum of 5 years of experience working in the pharmaceutical industry. Successful candidate will have demonstrated expertise in the generation and characterization of salt forms of organic molecules. Pharmaceutical formulation experience a plus.

Scientist – Analytical Chemistry
Responsible for the development of stability assays and measurements using HPLC, LC/MS and other analytical methods. Requires MS/Ph.D in Analytical Chemistry plus 3+ years of industry experience.

Scientist – Absorption
Develop and establish cell-based absorption assays for drug substances, establish new cell lines. Requires MS/Ph.D in Cell/Molecular Biology with 2+ years of experience and expertise in cell culture, cell biology, absorption assays, and Caco-2 based assays.

Research Associate – Absorption
Establish *in vitro* absorption assays. Primary responsibilities include the design and implementation of a drug absorption assay platform. Requires a BS degree with 3+ years of relevant experience.

You can look toward the future.

Or you can help create it.

At Immunex, we're working to change the future by creating innovative biopharmaceuticals that are giving new hope to patients suffering from cancer, inflammatory and infectious diseases. Based in Seattle, Washington, you will enjoy all the benefits of this cutting-edge city. Beautiful scenery from mountains to water plus all the amenities of urban living are easily within your grasp. In addition to offering an environment that fosters great scientific discovery, we'll provide the resources, support, and freedom you need to accomplish great things. In every facet of our operation, we apply the same innovative thinking that has been our greatest strength. And through our resolve to treat each other with respect and dignity, we've created a company that is as committed to the growth and development of its employees as it is to the progress of science.

PROCESS SCIENCES

Due to our continued growth in extensive commercial product portfolio, expanding product development pipeline and rapid advances in biotechnology, we are looking to add talented Research Assistants/Associates, Scientists, Engineers, Technical Operators and Administrative support to our Process Sciences teams. Additionally, we are commissioning and staffing our new pilot plant, the Process Development Facility, in Bothell, Washington. This new resource will enable us to rapidly develop and commercialize biopharmaceutical products through excellent process development and state-of-the-art bioprocessing technology. We offer an opportunity to become an integral part of a company that fosters scientific excellence, teamwork, and the challenge of being on the cutting-edge of new technologies. If you have a proven track record of scientific accomplishment in one of the following areas listed below, you are invited to submit your credentials for immediate consideration.

PROCESS SCIENCE ADMINISTRATION
You will work closely with the scientific staff to manage both internal and external projects. A position in project management assisting complex, multi-faceted projects is available.

ANALYTICAL CHEMISTRY AND FORMULATION
Utilizing your expertise in liquid chromatography and analytical assay development, you will be responsible for analytical characterization, method development, formulation and drug delivery system development for our products. Senior Research Associate positions are available.

BIOPROCESSING OPERATIONS
Immunex is actively seeking individuals with skills or experience in the areas of large-scale mammalian cell culture, pilot and large-scale recovery and purification, bioprocessing operations, and process engineering. Bioprocessing Assistant/Associate positions are available.

PRODUCT RECOVERY
This team will be responsible for the development and support of purification processes for recombinant therapeutic proteins. Experience in protein purification including column chromatography and membrane filtration is desirable. Successful candidates will work in a collaborative environment with other groups with Process Sciences as well as the Clinical and Commercial Manufacturing Departments. Eleven positions from entry-level through senior staff scientists are available. Individuals with a BS, MS, or Ph.D. in Science or Engineering are encouraged to apply.

CELL SCIENCES
We are actively seeking individuals with skills and experience in molecular biology, protein expression, tissue culture, fermentation technology and bioprocessing to become an integral part of our Cell Sciences team, which is responsible for the development of expression technologies and processes for recombinant proteins. Lab Assistants, Research Assistant, Scientist positions are available.

MANUFACTURING AND PROCESS ENGINEERING
You will be supporting the unit operations with manufacturing processes and automation systems in a biopharmaceutical cGMP-manufacturing environment. Individuals with a BS, MS, or Ph.D. in a relevant Engineering discipline is required. Automation Engineering, Process Engineering /Staff Scientist, and Manufacturing Technical Service opportunities are available.

POST DOCTORAL
Our Process Sciences Department has openings for Postdoctoral Fellows in the areas of gene expression and protein characterization and engineering. A strong interdisciplinary approach to problem solving is encouraged. Requires a Ph.D. in Molecular Biology, Cell Biology, Biochemistry, Chemical Engineering, Pharmaceutical Sciences or related field.

For more information on Immunex, the career opportunities available, about Seattle, Washington, and to apply online, please visit our Web site at:

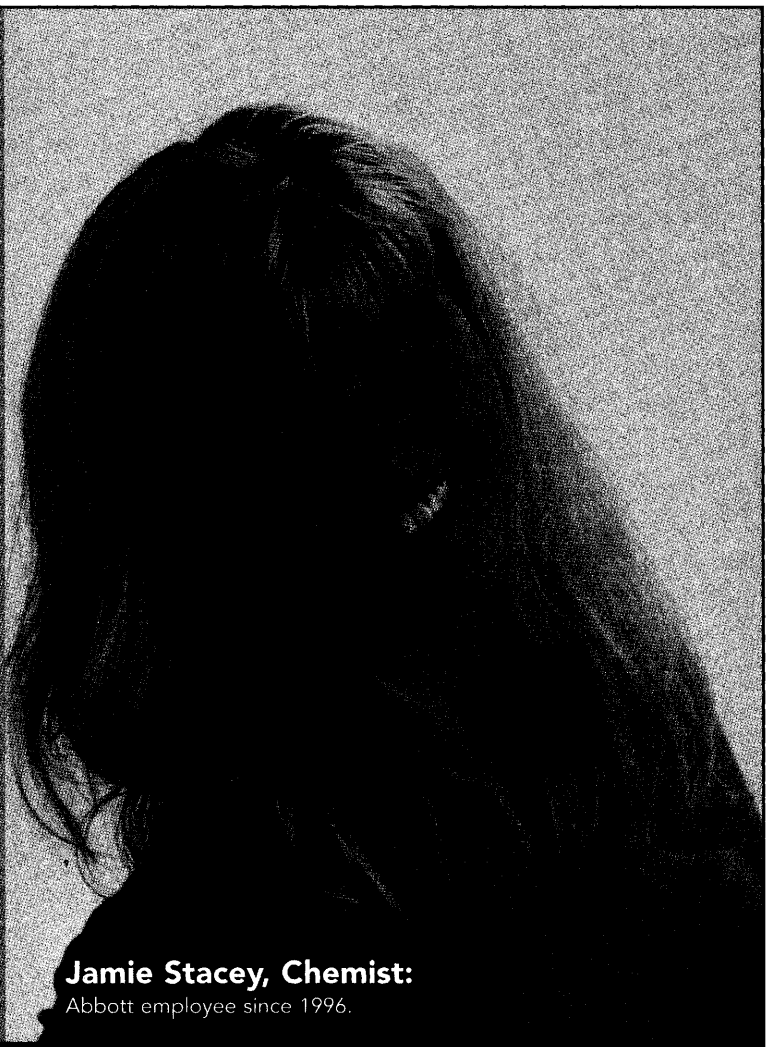
www.immunex.com/careers

immunex®

Creating the Future of Medicine™

Immunex is an equal opportunity employer committed to diversity.

people leading change



Jamie Stacey, Chemist:
Abbott employee since 1996.

When I was in college I discovered how much I liked chemistry. Now I'm able to take my passion for chemistry and apply it as a medicinal chemist at Abbott Laboratories. As a member of the Drug Discovery team, I'm focused on several strategies to inhibit the progression of cancer. Knowing that my research will have an impact on so many people makes my work extremely fulfilling. It is truly amazing to play a role in helping to improve people's lives.

I'm proud to tell people I work at Abbott. This is a company that cares about its employees as well as the people who rely on its products. In college, I never could have imagined where my passion for chemistry would take me. Now that I'm here, I know the possibilities are endless.

ABBOTT LABORATORIES
Quality Health Care Worldwide

Abbott Laboratories has a rich history of health care innovation. To learn more or to inquire about a career at Abbott, visit our website at **www.abbott.com** An equal opportunity employer, diversity makes us stronger.

The Academic Route

Life science students taking Master's and Bachelor's degrees aren't restricted to the traditional disciplines. Increasingly they can register for specialist courses in such hot topics as bioinformatics, for interdisciplinary courses that provide exposure to a spectrum of the life sciences, and even for programs that prepare scientists for work in the business side of life science.

Most applicants need to satisfy two basic criteria. Research experience is becoming almost mandatory for students entering interdisciplinary Ph.D. programs. They can usually pick up that experience through strong undergraduate research projects or via summer internships in industry. Some colleges provide their own training courses for student applicants who have not had the necessary exposure to research laboratories.

Another factor of growing importance in applying for graduate programs echoes a requirement of industry. Students should possess demonstrable skills in communication. In multidisciplinary programs in particular, it's essential that scientists in one specialty can accurately outline what they're doing to scientists in other specialties. Admissions departments for graduate programs pay a great deal of attention to applicants' verbal and written skills.

In this section, representatives of four academic institutions and one foundation outline the interdisciplinary programs now available for B.S. and M.S. graduates who seek to broaden their skills through higher postgraduate education.

RIVERSIDE, CALIFORNIA:

As a result of changes in the curriculum, the Agricultural Experiment Station at the University of California, Riverside, is being integrated into the general university community. "Biology subjects are growing at such an enormous pace that the chancellor and deans decided to use the expertise at the Agricultural Station for the broad campus," explains Thomas Miller, professor of entomology and adviser to the cellular and developmental biology faculty at the university. The result: a series of new interdisciplinary programs at the Master's and Ph.D. level that range from environmental toxicology to biomedical sciences.

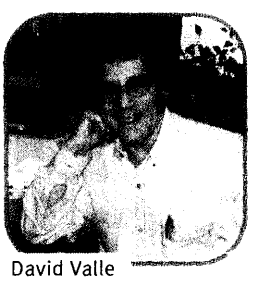
Miller and other supervisors of the interdisciplinary program look for students who are broadly trained, smart, and motivated. "We view graduate education as a way of developing discipline and critical thinking," he says. "You don't get kids going into these graduate programs unless they are motivated."

A well-rounded scientific education also represents a plus. "We try to get students who are broadly trained," says Miller. As an example of an ideal fit between student and program, he cites a scientist with a Bachelor's degree from Wabash College who wanted to apply biotechnology to solve entomological problems. "We put him in a program leading to genetically engineered insects," he recalls. "He figured out how to do that and is now at a major biotechnology company." Another student applied a background in microbiology to the delivery of genes to insects as part of a pest control strategy. "That's the value of a broad background and training," says Miller. "You never know where you're going to go with it."

The Riverside courses emphasize another key aspect of modern science: presentation. "Communication skills have always been important," says Miller. "To me, one of the most valuable skills is giving talks. You won't get very far if you can't present yourself well. We really insist on students developing seminar skills early. Every fall we have all our students get up and talk about their research at a departmental graduate students' day. We give awards for the best talk." Miller himself adds a further presentational requirement. "Every one of my graduate students," he says, "has to develop a Web page."

BALTIMORE, MARYLAND:

The Johns Hopkins University Medical School's Institute of Genetic Medicine offers a unique Ph.D. program in human genetics and molecular biology. "The goal is to provide training in state-of-the-art molecular and cellular biology and genetics, as well as to provide exposure to human biology in both health and disease," says David Valle, professor of pediatrics and molecular biology at the Institute. "Graduates of the program are equipped to answer questions in the broad area of human genetics." Between six and 11 students per year enroll in the program. They take 5.8 years on average to compete their Ph.D.s.


David Valle

"The program is different from traditional ones in that the students take courses alongside medical students to learn about human biology in addition to taking the standard courses in molecular and cellular biology," says Valle. "In the second year they take a modified medical school pathology course. It's similar in some ways to an M.D.-Ph.D. program."

Three main categories of students enter the program. The largest group consists of individuals who have majored in a biological science at the undergraduate level and want to pursue a career in genetic research that may have an impact on humans. Students in the second category, says Valle, "have worked as lab technicians for a

CONTINUED ⇒

Aurora™
Biosciences Corporation

Aurora has several openings in discovery biology aimed at supporting our expanding drug discovery services business. We are looking for individuals who want to join our team-oriented, results driven environment. Opportunities exist in screen development, screening, and informatics at our site in San Diego, California.

DIRECTOR, DISCOVERY TECHNOLOGY

The successful candidate will lead an expanding group of biologists, informatics and automation specialists to operate Aurora's in-house high throughput and ultra-high throughput screening systems (UHTSS™ Platform). Involves management of people and processes for the development, operation and maintenance of multiple automated screening systems, validation and automation of screens, analysis of screening data, and presentation of reports to internal and external customers. Requires a PhD and at least 5 years relevant postdoctoral experience in screening and/or drug discovery in a major pharmaceutical or biotech company. Also requires excellent management skills, demonstrated commitment to innovation, and a strong scientific reputation. Job #0058PN

GROUP LEADER, GENE EXPRESSION

The ideal candidate will lead a team of scientists in the area of screening development on molecular targets that regulate gene expression. Requires a PhD with at least 5 years postdoctoral experience, and a minimum of 2 years working in the biotechnology or pharmaceutical industry. Must have strong working knowledge of molecular and cellular biology. Research background in regulation of transcription/gene expression required, as is experience supervising a laboratory group or a scientific program. Job #0017BP

SCIENTIST, INFORMATICS/CHEMINFORMATICS

The successful candidate will be responsible for building cheminformatics capabilities and applying these to analysis of high-throughput screening data. Requires a PhD in Chemistry and 0-6 years experience in the drug discovery field. Requires knowledge and experience with current computational techniques including QSAR, molecular modeling, compound library analysis, as well programming expertise and experience using computational tools for data mining and cluster analysis. Job #0061LM

SCIENTIST, RECEPTORS

The ideal candidate will develop advanced cell-based assays for G-protein coupled receptors (GPCR) using Aurora biosensor technologies. Primary responsibilities will include using state-of-the-art informatics and molecular methods to clone and express receptors and to assess receptor signaling properties in a variety of cell backgrounds. Requires a PhD and a minimum 3 years postdoctoral experience. Expertise with G-protein coupled receptors and extensive experience with current methods of molecular biology are essential. Job #0013KB

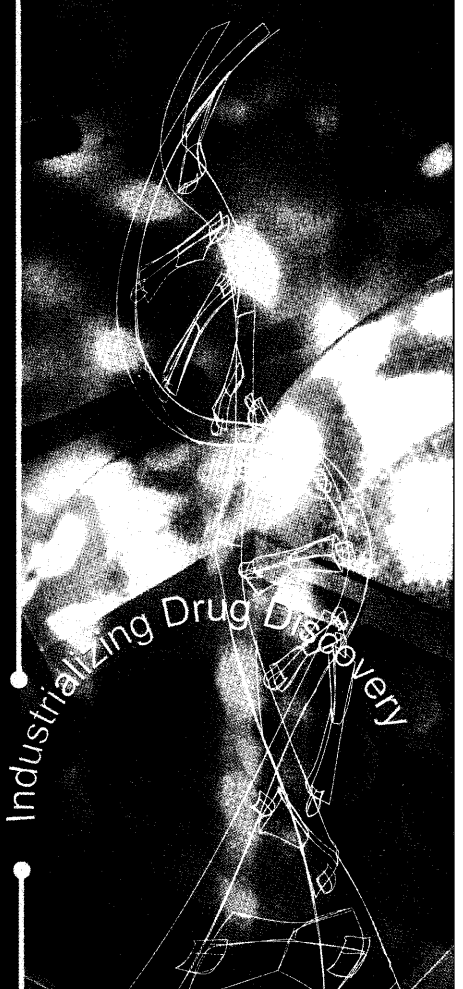
SCIENTIST, ION CHANNELS

The successful candidate will be involved in creating innovative high-throughput assays and new technology for ion channel drug discovery. Responsibilities will include cell-based assay development projects involving challenging drug targets. In addition, selected candidate will co-develop technologies in a multi-disciplinary environment that will enable the discovery of new information about ion channel/compound interactions. Requires a PhD and expertise in at least 2 of the following areas: cell culture, molecular biology, ion transport biology, optical detection methods, molecular probes, genomics, electrophysiology, automation and high-throughput screening. Job #0062TG

SCIENTIST, SCREENING

The successful candidate will be responsible for industrializing our methods of cell production for ultra high throughput screens. The candidate will work with automated instrumentation and informatics teams to develop novel processes to handle and track Aurora's biosensor cell lines. Responsibilities will also include database management and supporting screening efforts. Requires a PhD and 1-3 or more years of postdoctoral level experience including training in cell biology, genetics or immunology. Requires familiarity with signal transduction, automated cell culture, excellent communication skills, outstanding teaming skills, and customer orientation. JOB #0008AG

Around the world, major pharmaceutical and biotechnology companies turn to Aurora Biosciences to make the process for discovering new medicines more rapid and effective than ever before. Behind every one of our solutions—which are based on innovative combinations of biology, chemistry, automation, software and high technologies—is a close-knit group of talented, knowledgeable professionals committed to improving human health.



In addition to competitive salary and benefits, we offer equity participation via an ISO and Stock Purchase Program. Visit our website at www.aurorabiosciences.com. Then email your resume and letter, referencing JOB#, to hr@aurorabio.com. Or fax to (858) 404-6720. If unable to email or fax, please mail to Aurora Biosciences Corporation, Human Resources, 11010 Torreyana Rd., San Diego, CA 92121. EOE.

Share the Vision

It's a vision of hope and of bettering the world. At each of our facilities, we're working to make this vision a reality. And, as part of American Home Products, one of the world's leading research-based companies, we deliver. If you're interested in a career in using your pharmaceutical and scientific knowledge to help us help the world, join us. Wyeth-Ayerst currently has job opportunities available in the **Oncology department** of our **Pearl River, NY facility.**

SCIENTIST II (FOUR POSITIONS)

For these positions, we are seeking biologists to work with teams devoted to implementation of small molecule drug screening programs that include molecular and cellular assay development and in vivo modeling of disease. Candidates with strengths in any of these areas are encouraged to apply.

To qualify for these positions, you must possess a BS in Biology, Biochemistry or a related field with 5-7 years of relevant experience, or an MS in Biology, Biochemistry or a related field with 2-4 years of relevant experience. One position will require a strong background in colorimetric assays; familiarity with robotics equipment for high-throughput screening, along with expertise in mouse handling and experimentation. A second position is sought for candidates with a full understanding of receptor binding assays, immunoblotting, FACS analysis, cell survival assays and other biochemical methods. For the third position, training in recombinant DNA technology, protein purification and characterization, biochemical techniques and assays and cell culture is highly preferred. To qualify for the fourth position, you should have experience with tissue culture, small animal experiments, routine biochemistry gels, and immunoblotting. Computer skills and familiarity with protein and DNA analysis are desirable, but not necessary.

SENIOR RESEARCH SCIENTIST I

This challenging role will be in charge of a group of 3-4 scientists studying the role of the m-Tor pathway in human neoplasia.

Requirements include a Ph.D. with a strong background in Molecular Genetics and Signal Transduction. Knowledge of genomic technologies including microarray, DNA sequencing and gene cloning is mandatory. Industrial experience is desirable, but not essential.

Wyeth-Ayerst offers competitive compensation and benefits programs including stock options, child-care subsidies, flex-time, educational assistance and professional development programs. Please forward your resume with salary requirements to: **S. Avery at Wyeth-Ayerst, 401 North Middletown Road, Pearl River, NY 10965. E-mail: averys@war.wyeth.com Fax: (845) 732-5375.**

No phone calls please. Principals only. Equal Opportunity Employer. M/F/D/V.

For more information, visit us at: **www.wyethjobs.com**

WYETH AYERST®

A division of American Home Products

Graduate Programs in Science & Engineering

at The Ohio State University

College of Biological Sciences
www.biosci.ohio-state.edu
Entomology
Evolution, Ecology & Organismal Biology
Microbiology
Molecular Genetics
Plant Biology

College of Dentistry
www.dent.ohio-state.edu
Oral Biology

College of Engineering
www.eng.ohio-state.edu
Aeronautical & Astronautical Engineering
Architecture
Chemical Engineering
City & Regional Planning
Civil Engineering
Computer & Information Science
Electrical Engineering
Engineering Mechanics
Food, Agricultural, & Biological Engineering
Geodetic Science & Surveying
Industrial & Systems Engineering
Landscape Architecture
Materials Science & Engineering
Mechanical Engineering
Nuclear Engineering
Welding Engineering

College of Food, Agricultural, and Environmental Sciences
cfaes.ohio-state.edu
Agricultural Education
Agricultural, Environmental, & Development Economics
Animal Sciences
Food, Agricultural, & Biological Engineering
Food Science and Nutrition
Horticulture and Crop Sciences
Natural Resources
Plant Pathology
Soil Science

College of Human Ecology
www.hec.ohio-state.edu
Human Development and Family Science
Human Nutrition and Food Management
Textiles and Clothing

College of Mathematical and Physical Sciences
www.mps.ohio-state.edu
Astronomy
Biostatistics
Chemistry
Geological Sciences
Mathematics
Physics
Statistics

College of Medicine and Public Health
www.med.ohio-state.edu/ColMed.html
Allied Medical Professions
Anatomy
Health Services Management & Policy
Medical Science
Molecular Virology, Immunology, & Medical Genetics
Pathology
Pharmacology
Physiology
Public Health

College of Pharmacy
www.pharmacy.ohio-state.edu
Pharmacy

Interdisciplinary Programs
www.gradsch.ohio-state.edu/GSInterD.html
Biomedical Engineering
Biophysics
Chemical Physics
Environmental Science
Molecular, Cellular, & Developmental Biology
Neuroscience
Ohio State Biochemistry Program
OSU Nutrition

THE OHIO STATE UNIVERSITY

For further information, contact:

The Ohio State University
Graduate School
247 University Hall
230 North Oval Mall
Columbus, OH 43210-1366
(614) 292-6031

www.gradsch.ohio-state.edu

Ground-breaking Research. Advanced Technology. Dedicated People.

At Axys Pharmaceuticals, our scientific staff employs state-of-the-art techniques to develop therapeutic treatments for cancer. We currently have opportunities in our South San Francisco facility for dedicated scientific professionals to join our interdisciplinary R&D team. If you are committed to quality and excellence, bring your skills and expertise to Axys Pharmaceuticals and play an integral role in our success.

(Senior) Scientist
Protein Expression

Working with multidisciplinary project teams, you will play a key role in the advancement of drug discovery efforts in oncology. You will be responsible for cloning new target genes and developing efficient expression systems to produce recombinant proteins for assay development, high throughput screening, and X-ray crystallography. In addition, you will clone species variants and construct mutant proteins for structure/function studies. Small-scale purification of affinity-tagged proteins will also be expected. Candidates must possess a Ph.D. in molecular biology, biochemistry, or related field with 2+ years of relevant post-doctoral and/or industrial experience. The position calls for a solid background in molecular cloning and protein expression as evidenced by a strong publication record and/or patent bibliography. Demonstrated knowledge/skills in the following areas are essential: cDNA cloning, PCR, DNA sequence analysis, site-directed mutagenesis, affinity chromatography, and baculovirus and/or yeast expression systems. Excellent written/verbal communication skills are required. A background in cancer biology is highly desirable. (Job# 00-050-SCI)

Scientist
Enzymology/HTS

In this key role, you will represent the enzymology department on project teams, provide scientific leadership to enzymology research associates, and conduct research to identify new targets. Specifically, you will design/perform experiments to characterize lead compounds in a variety of enzyme systems. Presentation and publication of results will be expected. Candidates must possess a Ph.D. in biochemistry or related field and 2+ years of postdoctoral experience with a proven publication record. Strong written/verbal communication skills are essential. A strong background in enzyme kinetics, assay development, receptor-ligand binding, or high throughput screening is desired. Experience in the biology, isolation, and characterization of proteases, polymerases, or kinases helpful. (Job# 00-049-SCI)

Scientist
Tumor Biology

As our Tumor Biology Scientist, you will develop, characterize, and implement in vivo tumor and angiogenesis models for profiling drug candidates evolving from ongoing oncology drug discovery programs. You will also apply your expertise in tumor biology to collaborations with academic researchers and contract organizations to evaluate the potential clinical utility of our proprietary chemical compounds. To be successful in this position, you need a minimum of 5 years' post-Ph.D. experience involving the development, implementation, and utilization of cell and animal oncology models to evaluate compounds. This would include experience working with standard tumor models in rats and mice, xenograft models, and more sophisticated models to evaluate various phases of the processes of tumor progression and angiogenesis. We prefer candidates experienced with immunohistochemistry, histology, pathology flow cytometry, gel electrophoresis, Western blotting, PCR, cell culture, and ELISA. Significant experience with in vivo tumor models is a must, and a significant publication record is expected. (Job# 00-010-SCI)

Research Associate
Biochemistry

You will perform experiments designed to characterize our lead inhibitory compounds in a variety of enzyme systems. This will include the accurate measurement of inhibition constants as well as defining the mechanism of action of interesting compounds. In addition, you will develop assays that enable HTS screens for novel oncology targets. Candidates must possess a BS/MS in biochemistry or related field and 1-3 years of relevant lab experience. The position requires experience with enzyme or cell-based assays using spectrophotometric and fluorometric detection methods. Excellent written/verbal communication skills are essential. Knowledge of protein purification and enzyme kinetics, and experience in inhibitor characterization a plus. Familiarity with HTS screens and cancer research helpful. (Job# 00-046-SCI)

Research Associate
Protein Expression

You will work with a team of 5-7 members to support structure studies, assay development, and HTS in our oncology product development effort. The focus will be on purification, refolding, and characterization of recombinant proteins derived from a variety of expression systems. Candidates must possess a BS/MS in biochemistry or related field; at least 2 years' demonstrated experience in protein purification & protein chemistry; proficiency running FPLC, HPLC, and protein analytical techniques (ELISA, SDS-PAGE, kinetic assays); and excellent written/verbal communication skills. Molecular biology experience a plus. (Job# 00-031-SCI)

Besides attractive salaries and outstanding benefits, we offer the opportunity to be part of a dynamic environment that fosters professional & personal growth. Please forward your resume/cv to:

Axys Pharmaceuticals
HR Department
Attn: (Job#)
180 Kimball Way
South San Francisco, CA 94080
Email: human_resources@axyspharm.com.
We look forward to hearing from you. EOE

AXYS

www.axyspharm.com

**THE OPPORTUNITY OF A LIFETIME.
EVERY DAY.**

ANNOUNCING THE ESTABLISHMENT OF THE CENTER FOR MOLECULAR & CELLULAR TOXICOLOGY THE UNIVERSITY OF TEXAS AT AUSTIN

The University of Texas at Austin has established an interdisciplinary Center for Molecular and Cellular Toxicology. The mission of the CMCT is *"To provide leadership for the expansion of programs of excellence in environmental health sciences research and education"*. The CMCT is supported by the Colleges of Pharmacy and Natural Sciences at UT Austin and the University of Texas M. D. Anderson Cancer Center, Department of Carcinogenesis, located at the Science Park -Research Division, in Smithville, about 40 miles east of Austin. Faculty participating in the Center represent a wide variety of scientific disciplines (Pharmacology, Toxicology, Medicinal Chemistry, Pharmaceutics, Neuroscience, Nutrition, Biochemistry, Chemistry, Marine Biology, and Civil and Mechanical Engineering) with expertise in the areas listed.

Graduate students are provided with an extremely competitive stipend, tuition and fees are paid, and support for travel to scientific meetings is a priority of the Center. A variety of attractive career opportunities are available for graduates of our program. Additional information on the research interests of specific faculty can be obtained via the WWW at:

http://www.utexas.edu/pharmacy/cmct

Austin, the state capital, is situated in central Texas, nestled on the edge of the beautiful Texas Hill country. Rolling hills, lush landscape and a panorama of brilliant wildflowers dot the highways. An abundance of rivers, lakes and campgrounds add to the many benefits of UT's location. The Colorado River runs through the city and the chain of Highland Lakes, including Lake Travis, extends to the west. Excellent sport, music, golf, swimming, boating and fishing are available throughout most of the year.

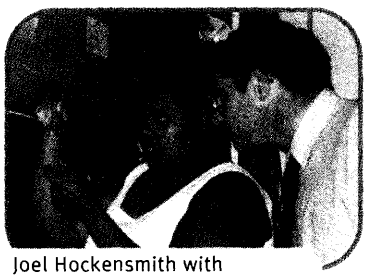
- Molecular toxicology
- Cell biology
- Molecular carcinogenesis
- Cell cycle regulation
- Apoptosis
- Signal transduction
- Transgenic models
- Behavioral neuroscience
- Neurotoxicology
- Reproductive toxicology
- Marine/environmental toxicology
- Radiation biology
- Adverse effects, and control, of air pollution
- Drug development
- Preclinical and clinical pharmacology
- Biological applications of mass spectroscopy

Equal Opportunity Employer

For further information:

The Center for Molecular and Cellular Toxicology
The University of Texas @ Austin
Austin, TX 78712-1074
(512) 471-5096 [TEL]
(512) 471-5002 [FAX]
scouser@mail.utexas.edu

couple of years after receiving their Bachelor's degrees. They want to get a feel for research before continuing their education. These students are very good influences because they are more certain than the others of what they want to do in their careers." The third category consists of students in the Johns Hopkins M.D.-Ph.D. program.


Joel Hockensmith with Ph.D student LeeAnn Swanegan

What skills equip students for the program? "Our admissions committee looks for students with a strong academic record in science," says Valle. "We want people who clearly have an interest in and some talent at research. So successful applicants will have become involved in one or two research projects as undergraduates and will be able to describe them in a way that convinces us that they knew what they were doing and accomplished something."

Having earned their Ph.D.s, students typically go on to postdoctoral fellowships. After that, about 70 percent of the classes end up as independent investigators in academia. A smaller group finds work in the biotechnology industry, while a couple of the program's alumni have recently forged new careers in patent law. "Law firms are making it very attractive for people with this type of background," Valle says. "They provide a rather lucrative situation, including the provision of the expenses of law school."

CHARLOTTESVILLE, VIRGINIA:

Two forces have caused the growing popularity of interdisciplinary graduate programs, according to Joel Hockensmith, associate professor of biochemistry and molecular genetics and assistant dean for graduate research and training at the University of Virginia School of Medicine. "The programs are really driven by the advance of science and the needs of society," he says.

The National Institutes of Health puts both those driving forces into practice by supporting students in interdisciplinary programs through training grants. Disciplines include biotechnology, biophysics, cancer research, cell and molecular biology, cardiovascular research, cellular and molecular pharmacology, developmental biology, immunology, infectious diseases, and neuroscience. Faculty members from the traditional disciplines such as biology, biochemistry, and microbiology teach courses in the interdisciplinary programs.

Recruits to the Ph.D. programs generally have a background in the life sciences. However, Hockensmith says, "Computer scientists are also welcome."

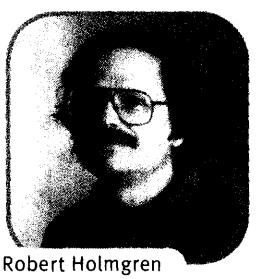
Entrants to the programs require strong qualifications in three areas. "We look at their grades, test scores, and research experience," says Hockensmith. "Students need to have a solid foundation to build on, including calculus and organic chemistry. They have to take the general GRE test and a subject test that shows they have mastered the discipline they have studied. Letters of recommendation are also important. We find that the letters are candid because almost all students waive their rights to see them."

Even more critical, he continues, "Almost every student who comes to us has research experience somewhere." The medical school makes provision for students who do not have the opportunity to obtain such experience in their undergraduate courses or industrial internships by offering its own summer internship program. "Our objective is to give students from smaller institutions the opportunity to have some research experience," Hockensmith explains. Students should aim to excel in their exposure to research. "No one ever fails a research experience," says Hockensmith. "But grades of B and C tell us that the student didn't do well in the lab."

The medical school also keeps close track of applicants' ability to communicate. "They need to be able to write a coherent statement of their interests," Hockensmith says. "It's really no different from writing a CV or a résumé. You should have someone proof it and also have both a scientist and a nonscientist read it to see that it makes sense." He also warns applicants to take care with their communications from the start. "Be careful with your e-mail when you make the first contact to receive an application. It will appear in a file somewhere," he says. "If the spelling and the grammar are poor, it leaves a distinct impression that may impact the evaluation of your application."

EVANSTON, ILLINOIS:

"A trend has started in biological science to go in the direction in which chemistry has gone for a long time," says Robert Holmgren, chair of the Interdepartmental Biological Sciences Program at Northwestern University. "Many more biology students are going into industry—particularly pharmaceuticals and biotechnology—like chemists."


Robert Holmgren

In response, Holmgren's Ph.D. program represents an alternative that covers a number of disciplines. "We are more broad-minded than traditional programs," he says. "In addition to life scientists we have engineers and people from local hospitals. Students have to take three classes, but the rest are electives. They can rotate through any

CONTINUED ⇒

Share the Vision.

It's a vision of hope and of bettering the world. At each of our facilities, we're working to make this vision a reality. And, as part of American Home Products, one of the world's leading research-based companies, we deliver. If you're interested in a career in using your pharmaceutical and scientific knowledge to help us help the world, we currently have positions available at:

Genetics Institute

At Genetics Institute, one of the largest developers of protein-based therapeutic products, our objective is to defend against the effects of debilitating diseases. From BeneFIX, a Hemophilia B blood coagulant, and Neumega, an agent that combats platelet deficiencies in cancer patients, to ReFacto, a recently approved therapy for Hemophilia A, we see our discoveries through the entire research and commercialization process, resulting in therapeutic treatments that improve the quality of life.

Thanks to overwhelming success in three key operating divisions, the Wyeth-Ayerst Genetics Institute is conducting a tremendous hiring drive that will last well into the year 2001. Manufacturing plant expansions in **Andover, MA** and **St. Louis, MO,** and research facilities expansion in **Andover and Cambridge, MA,** have led to challenging opportunities in all areas. Our success depends on a talented workforce, and tomorrow's leaders are being sought today!

Ideal candidates have a BS, MS and/or Ph.D. Opportunities exist in **Cambridge and Andover, MA and St. Louis, MO** in the following areas:

- **GENOMICS & BIOINFORMATICS**
- **PROCESS ENGINEERING**
- **FORMULATIONS/DRUG DELIVERY**
- **ANALYTICAL METHODS DEVELOPMENT/CHARACTERIZATION**
- **MEDICINAL/BIOLOGICAL CHEMISTRY**
- **CELL & MOLECULAR BIOLOGY**
- **VALIDATION**
- **MUSCULOSKELETAL TISSUE BIOLOGY**
- **QUALITY CONTROL/QUALITY ASSURANCE**
- **REGULATORY AFFAIRS**
- **INFORMATION TECHNOLOGY**
- **MANUFACTURING/SUPPLY CHAIN**
- **MEDIA/SOLUTIONS PREPARATION**
- **PROTEIN PURIFICATION**
- **PROCESS DEVELOPMENT**
- **DISCOVERY/PRECLINICAL/CLINICAL RESEARCH**

Visit our booth at the upcoming Career fair in Cambridge Massachusetts, on Thursday, August 17th, at the Cambridge Marriott from 11:00 AM - 4:00 PM.

GENETICS INSTITUTE

For more information on exciting job opportunities at Genetics Institute
visit our website at: **www.genetics.com**

Please forward your resume to: Wyeth-Ayerst, Reference OPSCI-GI, P.O. Box 7886, Philadelphia, PA 19101-7886.
Fax in fine mode to: (610) 989-4854.
Email: jobs@RAMAIL1.wyeth.com (ASCII format, no attachments, subject: resume).

Principals only. Equal Opportunity Employer, M/F/D/V.

Molecular and Cellular Biology at Missouri . . .

where **YOU** *can make a difference!*

Outstanding Training for Careers in Science

Cutting edge research opportunities abound for graduate students at the University of Missouri-Columbia (MU). You will have the opportunity to work side by side with leading faculty researchers and may rotate through a variety of labs prior to choosing a thesis advisor. Your doctoral training at MU will include coursework at the frontier of science taught by leaders in the field. *(For detailed information about degree programs and research opportunities, see the web sites listed at the lower right portion of this page.)*

Research facilities support centralized services for protein purification and sequencing, peptide synthesis and recombinant protein expression; automated DNA sequencing and DNA microarraying; monoclonal antibody production and cell sorting; transgenic mice; transgenic plants; confocal and deconvolution microscopy and image processing; scanning and transmission electron microscopy, x-ray crystallography and NMR spectroscopy. In addition, the campus offers facilities at the nation's largest university research reactor.

Commitment to the Life Sciences

Founded in 1839, the University of Missouri-Columbia is one of only 31 public universities selected for membership in the Association of American Universities and is also designated a Research University I by the Carnegie Foundation for the Advancement of Teaching. In addition to current facilities and programs, up to fifty new life sciences faculty will be hired over the next five years, and MU will soon break ground for the construction of a 200,000 square foot, $50 million Life Sciences Center with state-of-the-art laboratories.

A Great Place to Live . . .

MU is located in the center of the I-70 corridor through Missouri — just 2 hours from both Kansas City and St. Louis. Columbia is consistently ranked as one of the nation's most livable cities. With higher education and medical science among its top "industries," Columbia is a vibrant, well-educated community of diverse cultures, with a wide array of arts and entertainment, restaurants, theatres, and special events. You'll find Missouri to be an interesting mix of exciting big cities, historic small towns — and everything in between. Opportunities for outdoor fun are endless with hiking and biking trails, lush forests, and the clear waters of the Ozark National Scenic Riverways.

MISSOURI®
Where the rivers run

Molecular Biology Program

Graduate Fellowships

Four-year graduate fellowships at **$16,500 per year, plus full tuition and subsidized health insurance**. Apply to several life science Ph.D. programs using one application. University funding for fellowships is supplemented by an institutional training grant from the National Institutes of Health.

Postdoctoral Fellowships

Our faculty may also individually sponsor Postdoctoral Fellowships for two-year awards of **$25,000 per year**.

NIH Training Program

NIH Trainee Positions

Four Ph.D. degree programs are available to trainees: Biochemistry, Biological Sciences, Genetics, and Molecular Microbiology and Immunology. The interdisciplinary Genetics Program integrates life sciences faculty from over 12 departments. Trainees are funded at **$16,500 per year, plus full tuition and subsidized health insurance**.

Degree and Program Information

Biochemistry

Call toll free: 1•800•647-2414
E-mail: gradprogram@biochem.missouri.edu
www.biochem.missouri.edu/

Biological Sciences

Call toll free: 1•800•553-5698
E-mail: nemerich@missouri.edu
www.biology.missouri.edu/

Genetics

Call toll free: 1•877•Gene•PhD (436-3743)
E-mail: genetics@missouri.edu
www.biotech.missouri.edu/genetics/

Molecular Biology Program

Call toll free: 1•877•Gene•PhD (436-3743)
E-mail: mbp@missouri.edu
www.biotech.missouri.edu/mbp/

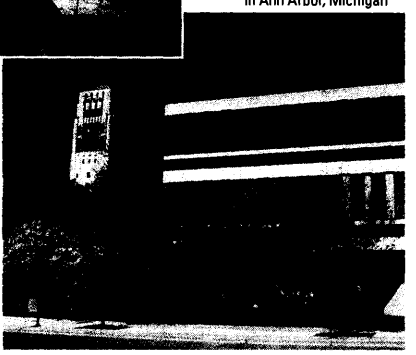
Molecular Microbiology and Immunology

Call: 573•882-2470
E-mail: mmiwww@missouri.edu
www.missouri.edu/~mmiwww/

Program In Biomedical Sciences

Graduate Studies at the University of Michigan

Photos: scenes from the campus in Ann Arbor, Michigan



One application– 11 graduate programs

The Program in Biomedical Sciences (PIBS) at the University of Michigan coordinates admissions and the first year of graduate studies in eleven Ph.D. programs, encompassing over 270 active graduate research mentors. PIBS combines maximum flexibility in training options with the ability to engage in individualized training in small, specialized graduate programs. Students receive support throughout their graduate studies to cover tuition, health care, and a stipend for living expenses. For detailed information visit our web site or contact us directly.

Ph.D. Programs

Biological Chemistry
Biophysics
Cell and Developmental Biology
Cellular and Molecular Biology
Human Genetics
Immunology
Microbiology and Immunology
Neurosciences
Pathology
Pharmacology
Physiology

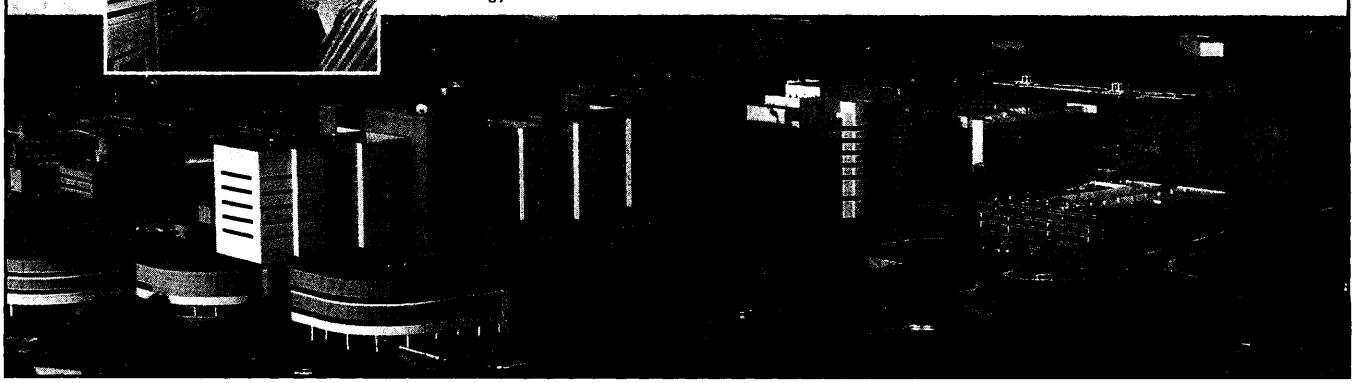
Research Areas

Behavior and Cognition
Bioinformatics
Biotechnology
Cancer Biology
Cell Biology
Cellular and Molecular Immunology
Developmental Biology
Drug Metabolism
Electrophysiology
Enzyme Mechanisms
Gene Expression
Gene Therapy
Genetics of Disease
Hormone Action
Inflammation
Information Processing in Sensory Systems
Integrative Biology
Learning and Memory Systems
Metabolic Regulation
Microbial Pathogenesis
Molecular Basis of Aging
Molecular Membrane Biology
Organogenesis
Protein Trafficking
Receptor Interactions
Reproductive Biology
Signal Transduction
Structural Biology
Virology

For information, please contact us.

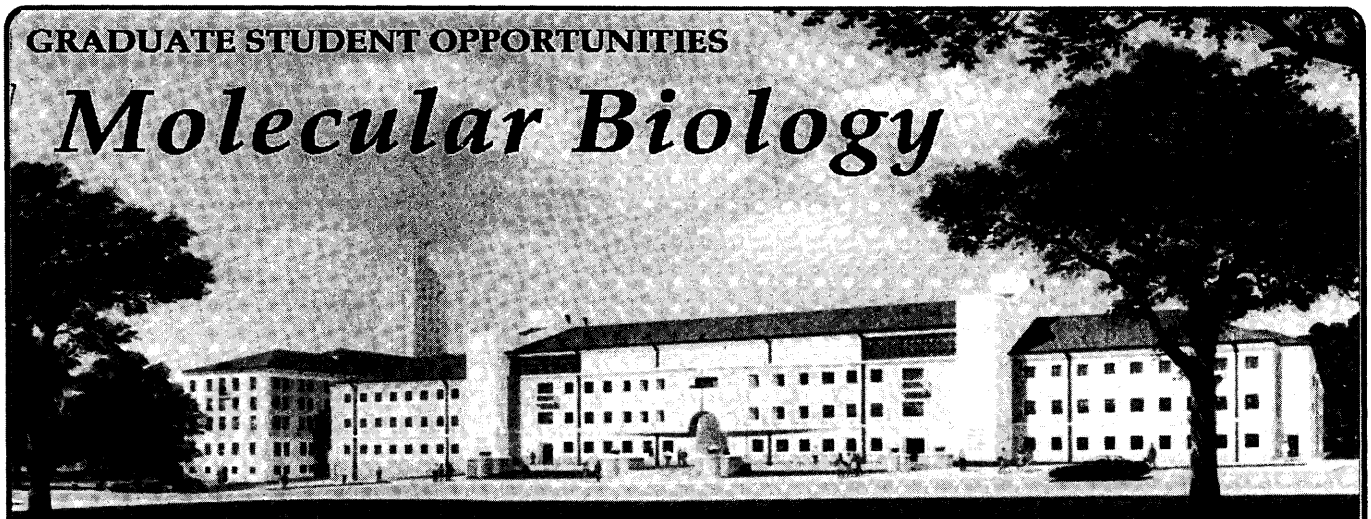
Ph.D. Graduate Programs
http://www.med.umich.edu/pibs/
Phone: 734.647.7005
Toll Free: 877.294.0120
FAX: 734.647-7022
e-mail: PIBS@umich.edu
PIBS University of Michigan Medical School
1150 W. Medical Center Drive, Box 0619
2960 Taubman Library
Ann Arbor, MI 48109-0619

Medical Scientist Training Program
(M.D./Ph.D. combined)
http://www.med.umich.edu/medschool/mstp/
Phone: 734.764-6176
FAX: 734.764-8180
e-mail: MSTP@umich.edu



GRADUATE STUDENT OPPORTUNITIES

Molecular Biology



The University of Texas at Austin

We invite you to join the dynamic Graduate Program in Molecular Biology at The University of Texas at Austin. This multidisciplinary program provides a highly interactive, supportive environment with many opportunities to participate in cutting edge research in over 90 laboratories. Faculty research interests cover a wide gamut: cell and developmental biology, molecular genetics, chemical biology, structural biology, neurobiology, cancer biology, immunology, virology, nutrition, rational drug design, bioinformatics, molecular evolution, bioengineering, biophysics, and more.

UT Molecular Biology graduate students are well funded and receive intensive training through a core curriculum, small seminar courses and access to a variety of seminar speakers. Each student may choose to conduct thesis research in the laboratory of any one of the participating faculty members. The program's cornerstone, the Institute for Cellular and Molecular Biology, was established to expand and foster the development of molecular biology at The University of Texas at Austin.

Over the past two years, the Institute has hired over 19 new faculty, in association with University academic departments. ICMB is centered in the new 150,000 square foot Molecular Biology Building. It supports state-of-the-art laboratories, staffed core facilities for nucleic acid sequencing and synthesis, peptide sequencing and synthesis, flow cytometry, electron, deconvolution and confocal microscopy, molecular modeling, graphics, computing and mouse genetic engineering.

The University of Texas is centrally located in Austin, which is nestled in the beautiful and rugged Texas hill country. Austin recently ranked second nationally in Money magazine's "Best Places to Live."

For more information, please visit our Web site:
www.esb.utexas.edu/molbio/
You may also write or call:

Graduate Program in Molecular Biology
The University of Texas at Austin
Molecular Biology Building
Austin, Texas 78712
512-471-2150

Postdoctoral opportunities also exist. Inquiries for these positions should be directed to individual faculty members or to:

Institute for Cellular & Molecular Biology
The University of Texas at Austin
Molecular Biology Building
2500 Speedway
Austin, Texas 78712

The University of Texas at Austin is an Equal Opportunity Employer.
Qualified minorities and women are encouraged to apply.

laboratory that's a part of our program, from civil engineering to a hospital setting."

One key facet of the program is exposure to Northwestern's Bio-Opportunities program. "Career preparation is as big a part of our graduate program as research training," says Holly Falk-Krzesinski, assistant director of the Interdepartmental Biological Sciences Program. "We don't only award Ph.D.s to our students. We give them the skills necessary for successful careers in science. We're really concerned with what happens after they receive their degrees."

The Bio-Opportunities program has two components. Seminars give students basic information about career possibilities in various areas of life science. Recent seminar subjects include industrial research opportunities, science at museums, and the nuts and bolts of getting and holding tenure-track academic positions, says Falk-Krzesinski. "The seminar that had the highest attendance looked at teaching opportunities. It's very tough once students graduate to make career decisions without basic knowledge. You can waste a whole postdoctoral fellowship doing something you're not happy with."

The program also offers workshops that help students to refine the skills necessary for successful careers beyond the Ph.D. "We have done workshops on interviewing skills, how to improve your writing about science and medicine, and negotiation," Falk-Krzesinski continues. "The seminars give students the ammunition to go out into the big bad world after school."


Holly Falk-Krzesinski

To help students further in their post-Ph.D. lives, program leaders encourage them to apply for extramural funding of their research. That, says Falk-Krzesinski, "helps them to establish careers as an independent scientific investigators."

Students have signed up enthusiastically for the interdepartmental graduate program. "It's more accepted and easier to pursue these alternative programs than it used to be," says Holmgren. "There's no stigma in pursuing this type of program."

NEW YORK:


Michael Teitelbaum

Two years ago, in an effort to encourage scientists to consider working outside academia, the Sloan Foundation set up a program to encourage universities to offer "professional Master's degrees" in science. "The stimulus was the view that there ought to be an alternative path for undergraduates who are good in science and who would like a career in science fields, but who do not want to be professors," explains program director Michael Teitelbaum. "The model is the MBA or the law degree. The professional Master's degree is really the target degree that everyone in the industry would like to have."

The initial group of programs, which started to accept students last fall, concentrated largely on cross-disciplinary subjects. Georgia Tech, for example, offers professional Master's degrees in human-computer interaction and in bioinformatics, among other topics. The University of Southern California has a similar degree in bioinformatics. The University of Arizona offers an applied bioscience option, the University of Wisconsin has biomedical informatics, and the University of South Carolina offers plant biotechnology and phytoremediation. And Michigan State University has one program in industrial microbiology, another in integrated pest management, and a third in computational chemistry.

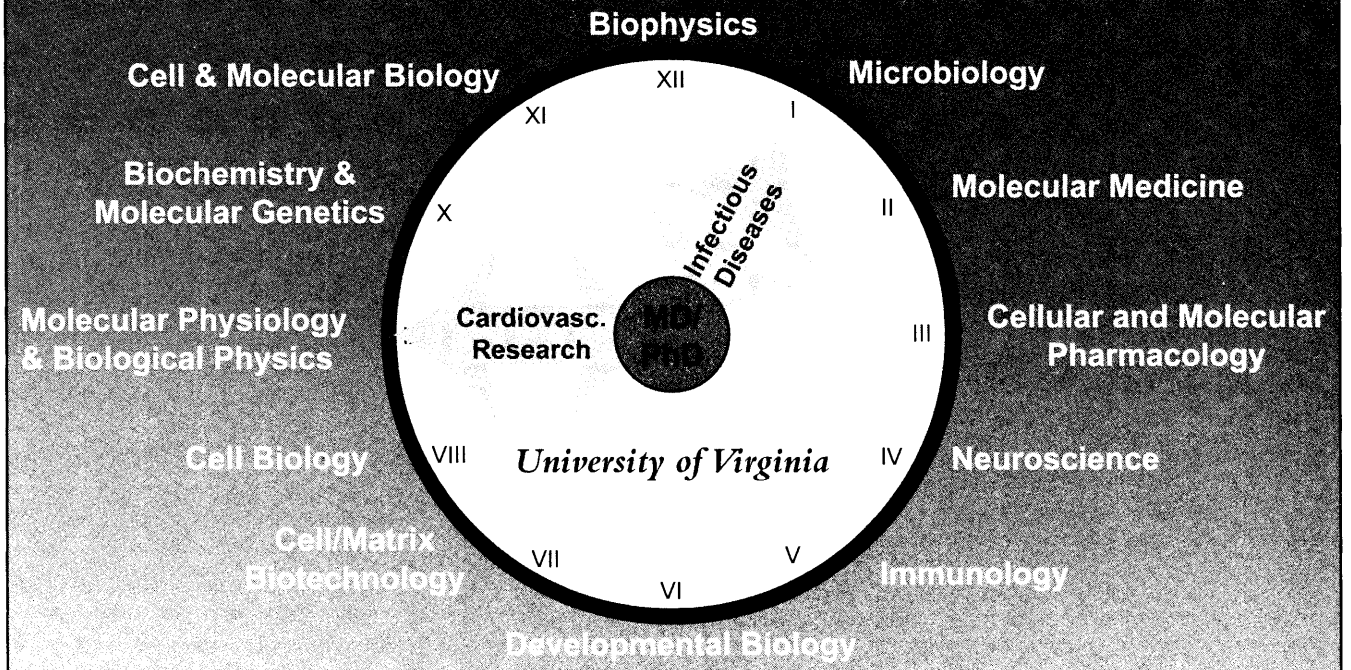
Early this year the Foundation announced support to start up a second group of awards, focusing on professional Master's degrees in bioinformatics. "These are intensive two-year degrees that include an internship in a company or other employer that works in bioinformatics," says Teitelbaum. "We determined that people with this qualification would be highly attractive to employers and would get very attractive salaries. A Master's degree holder with a relevant background in bioinformatics can expect a starting salary of $70,000 per year."

In Boston, Northeastern University and Boston University have already enrolled students who will start in the fall semester on a joint professional degree in bioinformatics. Other institutions that plan to offer the program starting next year include the New Jersey Institute of Technology, the Keck Graduate Institute, Rensselaer Polytechnic Institute, the University of California Los Angeles, the University of California Santa Cruz, and the University of Texas El Paso.

"These degrees must be quite different from the existing Master's degrees that have come to be waystations on the road to Ph.D.s," says Teitelbaum. As a B.S. or M.S. graduate, "You reach a fork in the road and decide to go on the Ph.D. track or the two-year professional Master's track." ■

For further valuable career features, go to
sciencecareers.org,
then click on *Advice and Perspectives*.

If You've Got the Time, We've Got the Science



We seek individuals who wish to shape the future, who like a challenge, and who want to leave a mark on the world. We invite you to join us in a broad-based interdisciplinary effort to expand our knowledge of human disease and to help pioneer development of exciting and powerful new treatments, cures and therapies.

Doctoral and Post-Doctoral Training

University of Virginia
Molecular Physiology and Biological Physics

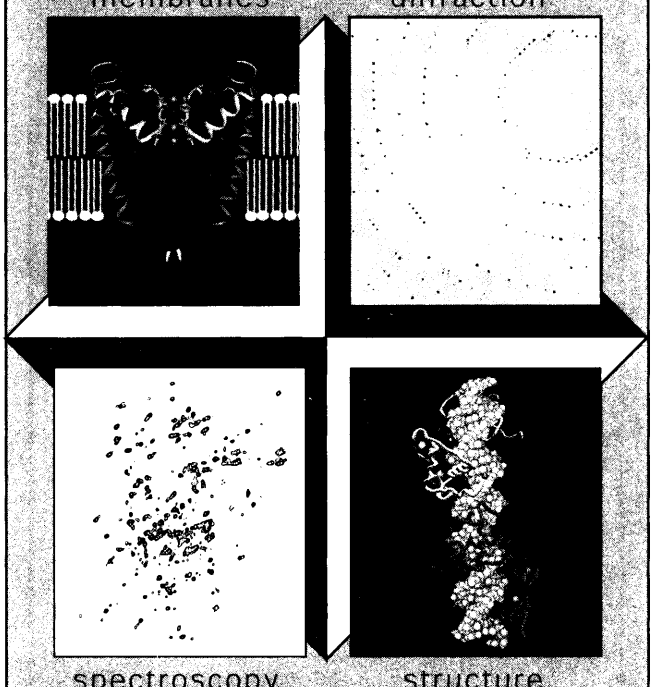
cardiovascular biology
cancer
channels, transporters
cell signaling
structural biology

ARE YOU PREPARED FOR CUTTING EDGE RESEARCH?

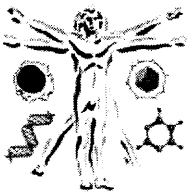
check it out!

www.med.virginia.edu/medicine/basic-sci/physio/home.html

Biophysics @ Virginia



www.med.virginia.edu/biophysics



The University of Alabama at Birmingham Graduate Program in *INTEGRATIVE BIOMEDICAL SCIENCES*

The Program:
Molecular biology has radically advanced our knowledge of fundamental mechanisms regulating cellular function. We are now challenged to expand and apply this knowledge to the understanding of basic organ-system biology in the normal and pathological situation. The Program in Integrative Biomedical Sciences is designed to equip students with in-depth knowledge of biological chemistry and molecular biology together with organ-system physiology and pathophysiology. Graduates will obtain the Ph.D. degree in one of the participating departments (Comparative Medicine, Pharmacology and Toxicology, Pathology, and Physiology and Biophysics).

The University:
UAB ranks among the nation's top 20 universities receiving research and training awards from the National Institutes of Health (NIH) and 15th in the NIH's awards to medical schools. This outstanding level of funding is your assurance of advanced research facilities that are second to none. In addition to the standard facilities for molecular biology, core facilities exist for the creation and generation of transgenic animals, mass spectroscopy, laser microdissection, and confocal and electron microscopy.

The Faculty:
The faculty participating in the Integrative Biomedical Sciences Graduate Program are internationally renowned scientists with active research programs whose interests span cellular and molecular biology and organ-based pathophysiology. Major areas of faculty research include the following:

Signal transduction; The molecular basis of cardiovascular, renal, pulmonary and metabolic disease; Neuropathophysiology; Molecular genetics; Drug metabolism; Extracellular matrix biochemistry and cell biology; Infectious diseases; Transgenic animal models of disease; Immunopathobiology; Cancer biology

For more information on the IBS Graduate Program and student financial assistance, visit our website at **ibs.path.uab.edu**.

Dr. Thomas M. Lincoln, Director
University of Alabama at Birmingham
1670 University Boulevard, VH G001
Birmingham, AL 35294-0019
Phone: (205)934-2817 Fax: (205)934-0043 Email: lincoln.@uab.edu

Florida State University Molecular Biophysics Ph.D. Program

Multidisciplinary training in Molecular Biophysics and Molecular Biology for students with backgrounds in:

- Physics
- Biology
- Chemistry
- Mathematics
- Computer Sciences
- Engineering

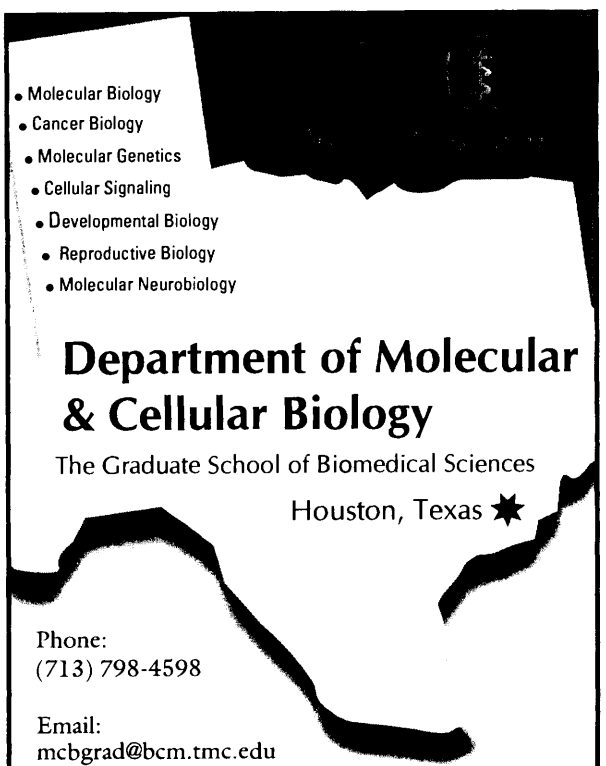
Research Opportunities In:

- Protein Structure and Function
- Nucleic Acid Structure and Function
- Muscle Contraction and Cell Motility
- Membrane Protein Structure
- Computational Biophysics
- X-Ray Crystallography Methods
- Nuclear and Electron Magnetic Resonance
- Electron Microscopy
- 3-D Image Reconstruction

Molecular Biophysics at FSU offers:

- Competitive Fellowships and Assistantships
- Federal Training Grant in Structural Biology (NSF)
- Student health plan, travel stipends, tuition waivers
- Professional development allowances
- Unique, flexible interdisciplinary training
- Stimulating research and training environment
- Curriculum tailored to student needs and interests

For further information and application form, contact:
Academic Affairs Coordinator
Molecular Biophysics Graduate Program
251 MBB, Florida State University
Tallahassee, FL 32306-4380
T: (850) 644-1012; F: (850) 561-1406
mob@sb.fsu.edu or website at
http://www.sb.fsu.edu/mob



Department of Molecular & Cellular Biology

The Graduate School of Biomedical Sciences

Houston, Texas

Phone:
(713) 798-4598

Email:
mcbgrad@bcm.tmc.edu

Visit our web site:
http://www.bcm.tmc.edu/mcb

Apply electronically and waive the application fee!

MONTANA STATE UNIVERSITY BOZEMAN

Graduate Training for the Biology of the Future

The post-genomic era of biological research will focus on understanding how complex, inter-linked systems function in living organisms. New combinations of skills, and therefore new kinds of Ph.D. training, will be required of future biological scientists. To address this need, Montana State University announces a new Ph.D. program in the Structure and Function of Complex Biological Systems, funded by the National Science Foundation's IGERT program. This multidisciplinary training program provides students with the opportunity to study with faculty from Biological, Chemical, Mathematical and Computer Sciences. State-of-the-art research, instrumentation, and computational facilities are available. Research areas encompass, but are not limited to:

- Structural, Molecular, Cellular & Developmental Biology
- Experimental & Computational Neurobiology
- Mathematical Modeling, Bioinformatics & Algorithm Development

Graduate study at MSU offers a unique opportunity to obtain outstanding scientific training in a spectacular mountain environment. Applications and additional information are available at http://cbs.montana.edu/ or by contacting Kristie Rhodes at krhodes@montana.edu or (406) 994-5178. Review of applications will begin January 15, 2001. Minorities and underrepresented groups are encouraged to apply. Only citizens and permanent residents of the US are eligible.

www.lsc.psu.edu

PENNSTATE

Life Sciences Consortium

INTEGRATIVE BIOSCIENCES GRADUATE PROGRAMS

The Pennsylvania State University's Life Sciences Consortium (LSC) is pleased to offer an interdisciplinary graduate program in Integrative Biosciences. This program spans the Colleges of Agricultural Sciences, Earth and Mineral Sciences, Engineering, Health and Human Development, Liberal Arts, the Eberly College of Science on the University Park campus and the College of Medicine in Hershey. The goal of this program is to foster collaborative, innovative research in the life sciences and to provide unique training experiences for graduate students.

Options include:

- Biomolecular Transport Dynamics
- Cell and Developmental Biology
- Cellular and Molecular Mechanisms of Toxicity
- Chemical Biology
- Ecological and Molecular Plant Physiology
- Immunobiology
- Molecular Medicine
- Neuroscience
- Nutrition Sciences

Fellowships are available to candidates with outstanding credentials. Information and applications can be obtained from the LSC web site: www.lsc.psu.edu/GradEd.html or from Janice Kennedy, 519 Wartik Laboratory, The Pennsylvania State University, University Park, PA 16802. E-mail address: lscgradadm@mail.biotec.psu.edu and phone: (814) 865-3155. Penn State is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to apply.

Graduate Program in Molecular and Cell Biology University of Maryland Baltimore

Housed within the Graduate School, this interdisciplinary graduate research program offers a Ph.D. in Molecular and Cell Biology. The Program is supported by faculty who represent the Schools of Medicine, Pharmacy and Dentistry as well as organizations such as the Institute for Human Virology, the Centers for Medical and Marine Biotechnology, and the Veterans Administration Medical Center. We offer cutting-edge research in bacterial genetics, immunology, protein structure and function, DNA structure and repair, and the role of genes in development and disease, as well as specialty tracks in cancer, radiation biology, and molecular medicine. Successful applicants are awarded a two-year fellowship that includes a stipend and pays for the costs of tuition and fees. Graduate students actively participate in seminars, journal clubs and The Annual Symposium, which hosts internationally recognized speakers in the biological and biomedical sciences.

For more information please visit our web site:
http://www.umaryland.edu/graduate/mcb/mcb.html

Or send inquiries to:
Molecular & Cell Biology Graduate Program
University of Maryland, Baltimore
108 N. Greene Street, Room 110C
Baltimore, Maryland 21201-1503
email: alefe001@umaryland.edu

Cooperative Ph.D. in Molecular Genetics and Cell Biology

A Maine-wide Ph.D. program in Molecular Genetics and Cell Biology offered by The University of Maine, The Jackson Laboratory, the Maine Medical Center Research Institute, the Foundation for Blood Research and the University of Southern Maine.

Research and educational opportunities in molecular genetics, genomics, bioinformatics, biostatistics, molecular biology, developmental and cell biology, reproductive biology, genetics, physical biochemistry, bacteriology, virology, and immunology.

For additional information see our web site at: www.umaine.edu/MolecGenet
or email
Dr. Keith W. Hutchison
University of Maine
keithh@maine.edu
207-581-2827

THE UNIVERSITY OF MAINE

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

UMD NEW JERSEY

GRADUATE STUDY IN MOLECULAR BIOPHYSICS

Applications are invited from students interested in applying the tools and concepts of the physical and mathematical sciences to the solution of significant biological problems. Qualified students admitted to Rutgers and University of Medicine & Dentistry of New Jersey (UMDNJ) doctoral programs in biochemical engineering, biochemistry, chemistry, computer science, mechanics, microbiology, and pharmacology receive broad exposure to the principles and methods of molecular biophysics along with rigorous training in the relevant physical sciences. Accepted students are eligible for NIH traineeships and other University support. Admission is based on GRE scores, grade point averages, letters of recommendation, and a personal interview. A bachelor's degree or equivalent is required. Students with M.S., M.D., D.D.S., D.M.D., and D.V.M. degrees are also encouraged to apply.

For further information contact:
The Center for Molecular Biophysics and Biophysical Chemistry
Rutgers University, Wright-Rieman Laboratories
610 Taylor Road, Piscataway, NJ 08854-8087
Telephone: (732)445-6376
E-mail: mbcenter@rutchem.rutgers.edu
Website: http://rutchem.rutgers.edu/~mbcenter

Rutgers University and UMDNJ are dedicated by law and by purpose to serving all people on an equal and nondiscriminatory basis.

KENT STATE UNIVERSITY

Biological Sciences

The Department of Biological Sciences offers graduate programs in Ecology and Physiology that lead to M.S. and Ph.D. degrees. Our graduate programs are designed to prepare individuals for careers in colleges and universities, the business sector, and governmental agencies. We expect students to master current knowledge in the field and to develop the skills necessary to make original contributions through research. Although we focus on training in our areas of faculty strength, we emphasize a thorough grounding in broad biological principles, believing that well-rounded individuals will be best prepared to face future challenges. Areas of research specialization in Ecology are *aquatic ecology* and *systematic /evolutionary biology* and in Physiology are *reproductive physiology* and *endocrinology*. Contact: Dr. John R.D. Stalvey, Dept. Biological Sciences, Box 100, Kent State University, Kent, OH 44242. **Website: www.kent.edu/biology/graduate.htm**

ornl ut

The University of Tennessee–Oak Ridge National Laboratory

Graduate School of Genome Science and Technology

The new Genome Science and Technology (***GST***) Graduate School is designed to focus on developments in the biological and computational sciences that stem from genome sequencing efforts. The knowledge of complete genomes is revolutionizing the biological sciences, leading to new discoveries in the health sciences and biology. ***GST*** students will be trained in emerging areas of genomics, structural biology, proteomics, computational biology/ bioinformatics, and bioanalytical technologies.

GST takes advantage of the faculty, facilities, and research programs at The University of Tennessee and the Oak Ridge National Laboratory. This novel program combines an academic environment with the team-oriented approach to large research initiatives at the national laboratory. Faculty members have expertise in cutting-edge research utilizing mammalian genetics and mutagenesis, spectroscopy, high field NMR, x-ray crystallography, computational modeling, mass spectrometry, neutron scattering, and microarray technology. Various biological model systems are investigated, featuring the Oak Ridge National Laboratory Mouse Genetics Research Facility, one of the world's largest resources for studies in mouse genetics and mutagenesis for functional genomics.

We are seeking outstanding students with backgrounds in the biological, physical or computational sciences. Graduate student stipends are $18,000 with full tuition waiver.

To apply, visit: http://lsd.ornl.gov/gst/
Graduate School in Genome Science and Technology
Dr. Jeffrey M. Becker, Director
(jbecker@utk.edu)
1060 Commerce Park
Oak Ridge, TN 37830-8026

UTK is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA Employer. ORNL, a multipurpose research facility managed by UT/Battelle, LLC, for the U.S. Department of Energy, is an equal opportunity employer committed to building and maintaining a diverse work force.

UNIVERSITY OF FLORIDA

The **Interdisciplinary Program in Biomedical Sciences (IDP)** at the University of Florida College of Medicine is an interdepartmental Ph.D. graduate program offering a flexible first-year core curriculum on the fundamentals of biomedical science, and advanced programs specializing in six areas of biomedical research:

- ***Biochemistry & Molecular Biology***
- ***Genetics***
- ***Immunology & Microbiology***
- ***Molecular Cell Biology***
- ***Neuroscience***
- ***Physiology & Pharmacology***

For detailed information about the IDP curriculum, research opportunities, and admissions, please visit us on the web at:

http://www.med.ufl.edu/idp

IDP Admissions
Office of Graduate Education
Box 100215 Health Science Center
University of Florida College of Medicine
Gainesville, FL 32610-0215
(352) 392-0740
idp@dean.med.ufl.edu

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Cellular and Molecular Biology Program

The Cellular and Molecular Biology (CMB) Graduate Program at the University of Alabama at Birmingham (UAB) Medical Center includes over 120 faculty from the Departments of Biochemistry and Molecular Genetics, Cell Biology, Microbiology, and Neurobiology. UAB consistently ranks among the top 20 medical centers in federal grant support. Research strengths of the CMB faculty include:

- Cell Physiology and Signaling
- Extracellular Matrix and Cell Adhesion
- Gene Regulation and Expression
- Immunology
- Macromolecular Structure and Function
- Molecular Genetics of Diseases
- Molecular Pathogenesis
- Neurobiology
- Virology

The broad, interdisciplinary nature of the CMB Program allows students to rotate in laboratories with diverse research interests before choosing where they will complete their dissertation project. Financial support includes a stipend of $17,000 per year, health insurance, and all tuition and fees. For more information, contact:

The CMB Graduate Program
BBRB Room 260
1530 Third Avenue South
The University of Alabama at Birmingham
Birmingham, AL 35294-2170

Phone: 1-800-262-7764
Fax: 1-205-975-2536
E-mail: cmb@uab.edu
Web: www.cmb.uab.edu

MIT

The Director of the newly established Center for Advanced Nuclear Energy Systems (CANES) invites applications for two research scientists/engineers to serve as program directors. The Center is a joint endeavor between the MIT Nuclear Engineering Department and the MIT Energy Laboratory. The current research program is broad-based with projects covering water, gas, and liquid metal cooled reactor concepts.

Duties and responsibilities assigned by the Director encompass research, administrative, and program coordination tasks. In collaboration with Center faculty, the program directors will contribute to and coordinate research programs focusing on advanced nuclear reactors and fuel cycles and will participate in developing new projects for enhancing the technology choices of future nuclear energy systems. A demonstrated record of working in a collaborative research environment and willingness to examine both topical and systems issues expected. Ability to communicate orally and in writing essential.

PROGRAM DIRECTOR FOR ADVANCED REACTORS

Requirements: Ph.D. in Nuclear Engineering. Significant experience in reactor technology with an understanding of thermal hydraulics and structural analysis issues of nuclear fuel and reactor components required; experience in modeling and experimental studies of high temperature materials in nuclear environments highly desirable. Knowledge of single- and two-phase flows, natural and forced convection systems, and steam and gas power cycles very desirable. **Job No. 00-0754**

PROGRAM DIRECTOR FOR NUCLEAR FUEL MANAGEMENT

Requirements: Ph.D. in Nuclear Engineering. Experience in neutronic analysis issues of nuclear fuel and reactor performance required. Experience in modeling of thermal and fast neutron systems—both static and dynamic behavior— very desirable; as is familiarity with analysis of fuel management, transient and safety response, spent fuel and waste management, and/or proliferation issues. **Job No. 00-0755**

To apply, applicants should e-mail resume, description of their research interests, and the names of three references to: canes@mit.edu.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
An Equal Opportunity/Affirmative Action Employer
Non-Smoking Environment
web.mit.edu/personnel/www

GRADUATE PROGRAMS

Campbell University School of Pharmacy

Professional Programs:

- Doctor of Pharmacy
- MS and BS in Clinical Research
- BS in Pharmaceutical Sciences

For more information please contact:

School of Pharmacy
Admissions Office
Campbell University
PO Box 1090
Buies Creek, NC 27506

(800)760-9734

OR visit us on the web:

www.campbell.edu/pharmacy

NCI CCC
A Comprehensive Cancer Center Designated by the National Cancer Institute

FACULTY POSITION
CASE WESTERN RESERVE UNIVERSITY
PHARMACOGENOMICS - PHARMACOGENETICS

The Department of Pharmacology and the Comprehensive Cancer Center of Case Western Reserve University and University Hospitals of Cleveland are seeking faculty with expertise in pharmacogenomics or pharmacogenetics to join our interdisciplinary program in Hormone Responsive Malignancies. The appointments are in the tenure track (Assistant or Associate Professor) in the Department of Pharmacology. Qualified applicants are expected to have experience in at least one area of functional genomics such as gene expression profiling with microarrays, genome scanning for SNPs or proteomics. We are especially interested in animal models of drug variability, especially those related to hormone responsive cancers. Interested applicants should send a curriculum vitae, a brief description of research interests, and names of three references to: Christine Rhoads, Cancer Center, 11100 Euclid Avenue, Cleveland, OH 44106-5065.

CASE WESTERN RESERVE UNIVERSITY

In employment and education, Case Western Reserve University is committed to affirmative action and equal opportunity.

GRADUATE PROGRAMS

Graduate Studies in Cellular and Structural Biochemistry and Molecular Biology
THE UNIVERSITY OF OKLAHOMA

HEALTH SCIENCES CENTER

The Department of Biochemistry and Molecular Biology is one of the fastest growing Biomedical Science programs in the Midwestern United States. Our graduate program provides students with interdisciplinary training in structural biochemistry, cellular biochemistry, and molecular biology. The department has excellent resources, graduate assistantships, and state-of-the-art equipment. Close association of the OU Health Science Center with the Oklahoma Medical Research Foundation provides a diverse and stimulating research environment.

For more information and applications, contact:

The Department of Biochemistry and Molecular Biology
OUHSC
P.O. Box 26901, Room 853-BMSB
Oklahoma City, OK 73190
(405) 271-2227 ext. 1201
or E-mail: biochemistry@ouhsc.edu
Visit our webpage http://w3.ouhsc.edu/biochem

Howard Hughes Medical Institute

"The fellowship has given me a great deal more freedom and flexibility in selecting a lab."

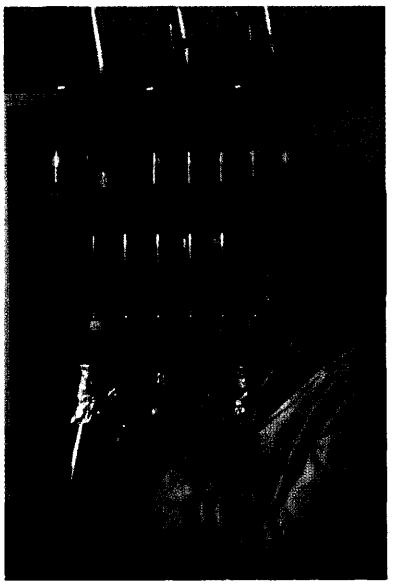


Photo by Paul Fetters

As a predoctoral fellow in the laboratory of Richard Young at the Massachusetts Institute of Technology, Ann-Marie White sought to create a model system for studying the host-pathogen interactions between macrophages and mycobacteria.

Ann-Marie White
Former HHMI Predoctoral Fellow at the Whitehead Institute for Biomedical Research

The Howard Hughes Medical Institute has established fellowship programs that support training in fundamental biological and biomedical research. Graduate students, medical students, and physicians may be eligible to apply for the programs listed below.

Predoctoral Fellowships in Biological Sciences Five years of support for full-time graduate study toward a Ph.D. degree in designated biological sciences or related fields.

Research Training Fellowships for Medical Students Support is awarded for one year of full-time fundamental research in a laboratory at the student's medical school or another institution (except NIH in Bethesda, Maryland).

Research Scholars at the National Institutes of Health Under this joint HHMI–NIH program, medical students in the United States spend an intensive year of research in the intramural program at NIH in Bethesda, Maryland.

Postdoctoral Research Fellowships for Physicians Three years of support for training in fundamental research subsequent to at least two years of postgraduate clinical training.

The Howard Hughes Medical Institute, an Equal Opportunity Employer, welcomes applications from all qualified candidates and encourages women and underrepresented minorities to apply.

Vita Per HHMI Scientiam

For more information: www.hhmi.org/fellowships

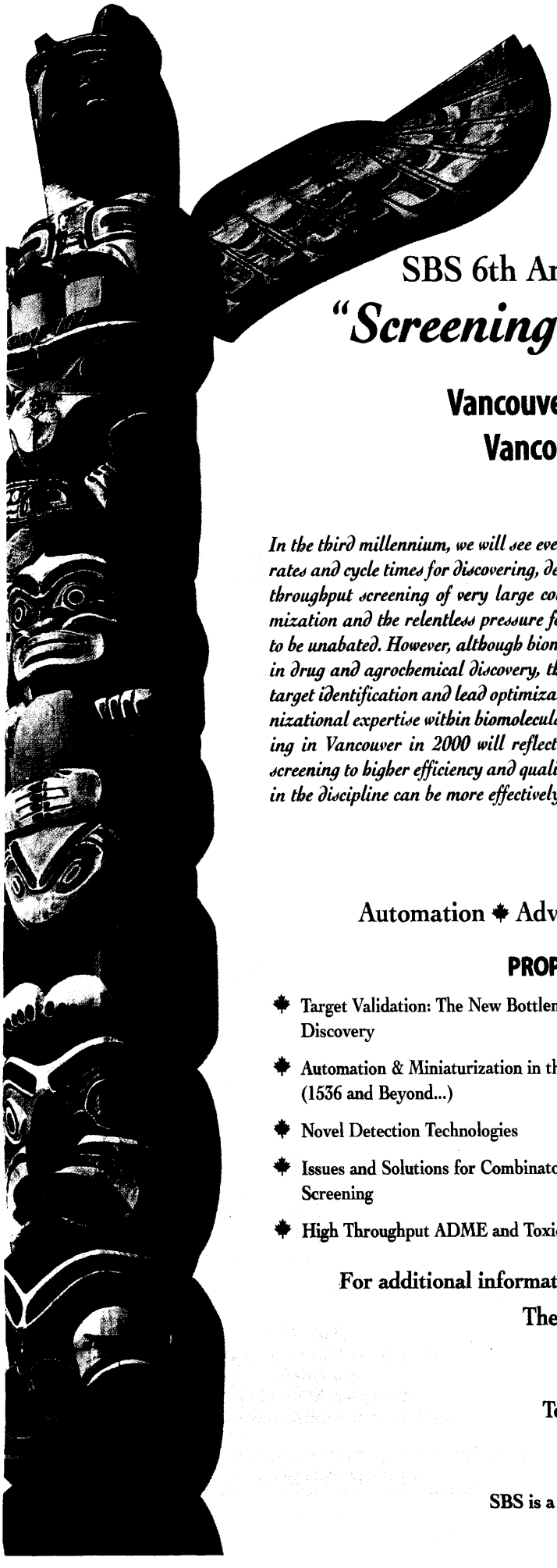
Your Future is Online

Where scientists click. Just go to www.sciencecareers.org and use the premier scientific web site dedicated to helping scientists find top quality jobs in the life sciences industry.

It's easy, and free. Whether it's job postings from top pharmaceutical and biotechnology organizations, a Resume/CV database, our Job Alerts service, or career advice you need, sciencecareers.org. can help you discover your future.

Science @ CAREERS

www.sciencecareers.org



THE SOCIETY FOR SBS BIOMOLECULAR SCREENING

SBS 6th Annual Conference and Exhibition

"Screening in the New Millennium"

Vancouver Convention & Exhibition Centre
Vancouver, British Columbia, Canada
September 6-9, 2000

In the third millennium, we will see even more pressure on the pharmaceutical and allied industries to improve success rates and cycle times for discovering, developing and marketing major products. Because of the central position of high throughput screening of very large collections of compounds to provide quality chemical leads for subsequent optimization and the relentless pressure for improved technologies, processes and success rates in this area will continue to be unabated. However, although biomolecular screening has become a key driver of technological and process change in drug and agrochemical discovery, this has not always been reflected in the upstream and downstream processes of target identification and lead optimization respectively. This provides a real opportunity for the technologies and organizational expertise within biomolecular screening to be used more widely within the whole discovery process. The meeting in Vancouver in 2000 will reflect both the technological advances which are continually driving biomolecular screening to higher efficiency and quality, but also will examine some of the additional areas where the principles within the discipline can be more effectively applied. – *Paul England*

SHORT COURSES

Tuesday, September 5, 2000

Automation ✦ Advanced Fluorescence ✦ Quality Control in HTS

PROPOSED TECHNICAL PROGRAM TOPICS

- Target Validation: The New Bottleneck in Drug Discovery
- Automation & Miniaturization in the New Millennium (1536 and Beyond...)
- Novel Detection Technologies
- Issues and Solutions for Combinatorial Chemistry in Screening
- High Throughput ADME and Toxicity Screening
- Agrochemicals, Nutraceuticals and Consumer Products: How Can Screening Improve R&D
- Information Technologies in Screening and Sample Bank Operations
- Drugs in a Clinical Development Stemming from HTS
- Point Counterpoint:
  Automation: Integrated vs. Workstation
  How Much Target Validation is Required for Clinical Trials?

For additional information visit our website or call and request document #SCI08.

The Society for Biomolecular Screening
36 Tamarack Avenue, #348
Danbury, Connecticut 06811

Tel: 203.743.1336, Fax: 203.748.7557
Email: sbsemail@aol.com
Website: www.sbsonline.org

SBS is a non-profit member based scientific organization.

SCI08

MJ RESEARCH, INC.

MJ Research is a leading manufacturer of lab products for biomedical, including thermal cyclers for DNA amplification, related consumable products and other DNA analysis equipment.

Inside Sales Representatives (CA and MA)
Advanced degree in science, preferably molecular biology and experience with PCR, automated fluorescent DNA sequencing and/or genotyping.

Technical Marketing Writers (MA)
We seek accomplished word smiths for our fast-paced marcom group. Write scientific text and copy as needed for operations manuals, marketing collateral, etc. Distill tech info for biomed market. Three plus years tech writing or scientific writing experience and computer proficiency required; PhD in life sciences preferred.

Other opportunities:

National Sales Manager (CA)
Product Manager (CA)
Associate Product Manager (MA)
Product Support Specialists (CA and MA)

MJ Research offers competitive salaries and excellent benefits. If interested in more information about these and other jobs we are offering, please see our web site.

Interested candidates should submit a resume to **HR Department.** Please reference job title. All candidates must be eligible to work in the US without a sponsor. AA/EOE.

MJ Research, Inc.
590 Lincoln Street
Waltham, MA 02451
Fax to **617-972-8085**
or email to **hr@mjr.com**

www.mjr.com

NCI CCC
A Comprehensive Cancer Center Designated by the National Cancer Institute

CANCER RESEARCH TRAINING for MD or MD/PhD

COMPREHENSIVE CANCER CENTER
Case Western Reserve University
University Hospitals of Cleveland

A unique research training opportunity open immediately for MD or MD/PhD interested in Cancer Research. Involves application of molecular and cell biological advances in apoptosis research to clinical investigation of human malignancy. Generous stipend and supply budget for period of up to three years for candidate who has completed residency and/or fellowship training. Individuals with background in medical or pediatric oncology, or other oncology discipline, should apply. This is a NIH funded position in the Comprehensive Cancer Center, Case Western Reserve University School of Medicine. Must be US citizen or permanent resident. To apply, send CV, brief statement of research background and interests, and names of three references to: Clark Distelhorst, M.D., Case Western Reserve University School of Medicine, 10900 Euclid Avenue, Cleveland, Ohio 44106-4937 (e-mail: cwd@po.cwru.edu).

CASE WESTERN RESERVE UNIVERSITY

In employment and education, Case Western Reserve University is committed to affirmative action and equal opportunity.

---

mayo

MAYO CLINIC POSTDOCTORAL POSITION VASCULAR BIOLOGY

Two positions are available immediately in a laboratory in the Department of Medicine in the area of hepatic vascular biology. The focus of the laboratory is to understand the regulation of nitric oxide production in the liver with an emphasis on regulation of endothelial nitric oxide synthase as it relates to liver cirrhosis and portal hypertension. The **first position** focuses on the molecular regulation of endothelial nitric oxide synthase. Expertise in cellular biology including immunofluoresence techniques and cell fractionation is required as well as experience in standard biochemistry and molecular biology techniques. The **second position** focuses on nitric oxide, hepatic hemodynamics and experimental models of liver disease. Experience with in vivo hemodynamic measurements and in vitro pharmacology in rodent models is required. Please forward curriculum vitae and letter of interest to:

Vijay Shah, M.D.
Alfred 2-435 GI Research Unit
Mayo Clinic
Rochester, MN 55905
E-mail: shah.vijay@mayo.edu

Mayo Foundation is an affirmative action and equal opportunity employer and educator.

PHASE 1

Phase-1 Molecular Toxicology, a leader in molecular toxicology offers great opportunities in our new laboratory facility located in Santa Fe, New Mexico for highly motivated individuals to join us in the application of cutting-edge technology.

Biostatistician/Data Analyst: Position will conduct data monitoring, analysis, and modeling. Must be familiar with basic and intermediate statistical analyses, including multivariate regression and ANOVA; clustering and discriminant techniques; and factor analysis. Should be familiar with EXCEL, Statistica, SAS or SPSS. M.S. or Ph.D. in Biostatistics, Statistics, Computational Science, or Applied Mathematics, with some knowledge of genetics or biology preferred. (Job code SM/BS001)

Research Associates: Multiple positions available to work in an R&D Toxicogenomics team, under the supervision of a Scientist conducting experiments in molecular toxicology. Molecular Biology experience in RNA isolation, RNA amplification, çDNA cloning, gel electrophoresis, RT-PCR and in vitro transcription preferred. Qualifications include Masters Degree in Molecular Biology, Biochemistry, or Molecular Toxicology. A working knowledge of gene expression is highly desired. (Job code SM/RA001)

Scientists: Multiple positions available to work in R&D managing toxicogenomics projects. Two years post doc experience. Must understand principles & techniques of Molecular Genetics. Background should include molecular biology experience in RNA isolation, RNA amplification, cDNA cloning, gel electrophoresis. Current knowledge of techniques for determining differential gene expression (i.e. SAGE, AFLP, mRNA differential display, microarrays, reportu gene assays). Genetics background, statistics and tissue culture experience a plus. Requirements include a Ph.D. in Molecular Biology, Toxicology, Biochemistry, Genetics or Pharmacology. Good leadership and computer skills necessary. (Job code SM/S001)
Equivalent Scientist positions available in our Ghent, Belgium laboratory (Job code SM/SBR001)

Scientist/Manager: This position will lead the New Technology group, responsible for implementing new technology platforms for Phase-1 gene expression/single nucleotide polymorphism detection and quantification. Background in bioengineering/biophysical chemistry with some experience in molecular biology. Industry experience preferred. Ph.D. required. (Job code SM/NT001)

We offer competitive salaries, commensurate with experience. If you are interested in an exciting opportunity to work with a dynamic team, send your resume to: **Phase-1 Molecular Toxicology, HR Department, 2904 Rodeo Park Drive East, Santa Fe, New Mexico 87505. Fax: 505-471-8205, e-mail: cbertram@phase1tox.com.**

VERTEX

Small Molecules. Huge Discoveries.

Vertex is leading the way in small molecule drug discovery. By pioneering a new, faster approach to drug discovery, our goal is to set the standard for pharmaceutical research and development in the 21st century. Our HIV protease inhibitor, Agenerase™, was released in 1999 in partnership with Glaxo Wellcome. And we have a broad array of promising drug candidates expected to launch in the coming years. It's a pipeline packed with huge potential. And it's only at Vertex.

Biology

300-9, Cell Biology, BS/MS

300-10U, Cell Biology, PhD

300-13U, Molecular Cloning, PhD

300-6, Target Validation, PhD

Biophysical Chemistry

300-24U, Investigator/ Staff Investigator, PhD

Enzymology

300-38, Investigator/ Staff Investigator, PhD

300-26U, Investigator, PhD

300-25U, Assistant/Associate Scientist, BS/MS

Modeling & Informatics

400-3U, Molecular Modeling, PhD

400-12U, Methods Development, PhD

Protein Biochemistry

300-14U, Investigator, PhD

Protein Expression

300-18U, Staff Investigator, PhD

300-19U, Assistant/Associate Scientist, BS/MS

Pharmacokinetics & Drug Metabolism

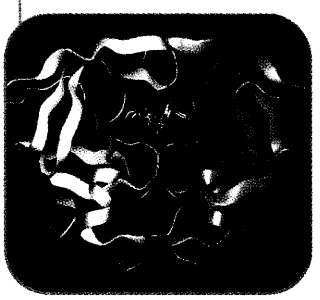
310-2U, Investigator/ Sr. Staff Investigator, PhD

Virology

320-1, Associate/Investigator, BS/MS/PhD

X-Ray Crystallography

400-11U, Investigator, PhD



For more information about these and other opportunities, please visit:

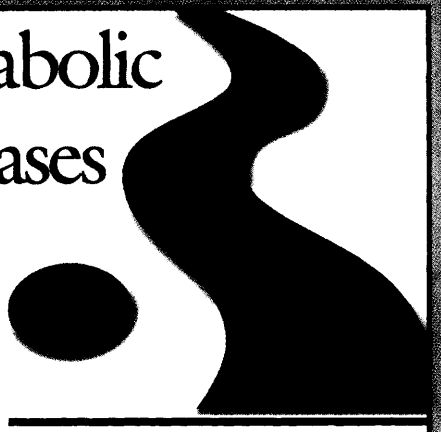
www.vertexcareers.com

We are an equal opportunity employer who makes diversity the foundation of all success.

We Enjoy a Big Lead in Small Molecules.

VERTEX

Metabolic Diseases



Tularik Inc. is an established leader in the biopharmaceutical industry, dedicated to the discovery and development of novel therapeutic agents that act through the regulation of gene expression. We have exciting opportunities for talented scientists to join our new Tularik subsidiary devoted to discovering drugs to treat metabolic diseases. As a member of this new team, you will be involved in all aspects of target identification and characterization, assay development, and high-throughput screening. Qualified candidates will possess a Ph.D., broad expertise in molecular biology, biochemistry, enzymology, and assay development, and at least 2 years of postdoctoral experience. We are particularly interested in hearing from applicants who have expertise in the following areas of research:

- **Atherosclerosis**
- **Diabetes**
- **G Protein-Coupled Receptors**
- **Hypercholesterolemia**
- **Obesity**

In addition to challenging and empowering our employees, Tularik offers experienced leadership, employee stock options and a competitive salary and benefits package. Tularik's collaborative and stimulating research environment recognizes the achievements of individuals and project teams.

If you are interested in joining our exciting new R&D team, please send your CV, complete with source code: (TPC), by e-mail to:

resume@tularik.com

or mail to:

Tularik Inc.
Human Resources
2 Corporate Drive
South San Francisco, CA 94080

Tularik

EOE **www.tularik.com**

Share the Vision

It's a vision of hope and of bettering the world. At each of our facilities, we're working to make this vision a reality. And, as part of American Home Products, one of the world's leading research-based companies, we deliver. If you're interested in a career in using your pharmaceutical and scientific knowledge to help us help the world, join us in our **PRINCETON, NJ** facility.

RESEARCH SCIENTIST - NEUROSCIENCE

In this position, you will be responsible for sample preparation (protein extractions, subcellular fractionation, etc.) for proteomics projects, protein separations (2-DE, HPLC, protein complex purifications, immunoprecipitation, etc.), and data analysis (e.g., image analysis for 2-DE) for the identification of relevant proteins of interest. You will conduct differential (qualitative and quantitative) protein analysis to support target identification, protein functional analysis/target validation, and pathway elucidation studies. The selected candidate will also be responsible for the identification, evaluation and implementation of new technologies for proteomics, as well as coordination with the protein mass spectrometry section.

A BS/BA or MS plus 5 years' protein biochemistry experience is necessary, as are strong method development skills in proteomics/functional genomics. You must have expertise in protein separations techniques (especially 2D-PAGE and liquid chromatography) and second messenger system assays. A background in neuropharmacology or signal transduction pathways is ideal. Experience with cell culture techniques and computer-assisted data analysis is also highly desirable.

Wyeth-Ayerst offers competitive compensation and benefits programs including stock options, child-care subsidies, flex-time, educational assistance and professional development programs. Please forward your resume with salary requirements to: **Wyeth-Ayerst, Reference OPSCI-PTN-RD, P.O. Box 7886, Philadelphia, PA 19101-7886.** Fax in fine mode to: **(610) 989-4854.** E-mail: **jobs@RAMAIL1.wyeth.com** (ASCII format, no attachments, subject: resume).

Principals only. Equal Opportunity Employer. M/F/D/V.

For more information, visit us at: **www.wyethjobs.com**

WYETH AYERST

A division of American Home Products

FACULTY POSITION IN PHARMACEUTICS/ PHARMACEUTICAL BIOTECHNOLOGY DEPARTMENT OF PHARMACEUTICAL SCIENCES

Northeastern University seeks applications and nominations for a tenure track position at the Assistant/Associate Professor level in the Department of Pharmaceutical Sciences of the School of Pharmacy in the Bouvé College of Health Sciences. The Department of Pharmaceutical Sciences is one of two departments in the School that supports an entry level Doctor of Pharmacy degree program. The Department also offers a Ph.D. program in Pharmaceutical Biomedical Sciences. The Center for Drug Targeting is an integral component of the Department. Northeastern University is a Carnegie II Research Institution, and benefits from its central location. Boston is a major center for biotechnology industries, offering the possibility for significant collaboration and support.

Applicants must have a Ph.D. or equivalent degree, post-doctoral experience, and have the potential for, or have already achieved, a well-funded research program. Responsibilities will include teaching of pharmaceutics to Pharm.D. and graduate students and participation in team teaching of integrated sciences for the Pharm.D. program. A background in the area of pharmaceutical biotechnology or drug delivery systems is preferred; an individual with experimental experience in molecular biology and phage display techniques would complement departmental strengths and best fit departmental needs. A competitive package of salary, benefits, and support facilities will be provided.

Applicants should submit curriculum vitae, a letter describing their qualifications, research interests, and at least three letters of recommendation to: **Norman R. Boisse, Ph.D., Search Committee Chair, Mugar Building Room 211, Northeastern University, Boston, MA 02115. Telephone: 617-373-4182; FAX: 617-373-8886; Email: n.boisse@nunet.neu.edu** Applications received by November 1, 2000 will be given full consideration for appointment in early 2001. Northeastern University is an Affirmative Action/ Equal Opportunity/Title IX Employer. Women and minorities are encouraged to apply.

NATIONAL INSTITUTES OF HEALTH
NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM

Chief, Laboratory of Integrative Neuroscience
Division of Intramural Clinical and Biological Research

Applications are invited for establishing a multidisciplinary research program to assess the role of particular molecular targets of alcohol in the central nervous system in acute intoxication and alcohol seeking behavior. The successful candidate will have an internationally recognized research program in any area of neuroscience, as documented by an outstanding publication record and, when applicable, a history of significant extramural grant support. Candidates with a demonstrated ability to integrate multiple types of research approaches, including those of cell and molecular biology, genetics, structural biology and behavioral neuroscience, are especially encouraged to apply. The successful candidate will be provided significant resources to establish a multidisciplinary research team and will be offered a competitive salary and benefits package. Those interested should submit their CV, list of publications, a brief research proposal and the names of 3 individuals who could be contacted for reference to:

Ms. Kathleen Hanratty
NIH, NIAAA, Bldg. 31, Room 1B58
31 Center Drive MSC 2088
Bethesda, MD 20892-2088

Applications must be received by September 15, 2000.

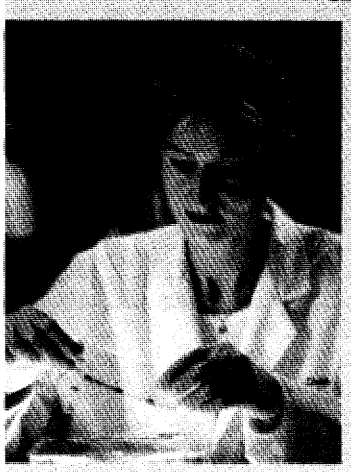
NIH is an Equal Opportunity Employer. Applications from women, minorities, and persons with disabilities are strongly encouraged. The DICBR/NIAAA is a smoke-free environment.

POSTDOCTORAL POSITIONS
Drug Development on Cell Cycle Checkpoint Signaling Mechanisms

The Clinical Trials Unit of the Developmental Therapeutics Program (DTP), Division of Cancer Treatment and Diagnosis (DCTD), has postdoctoral positions available to investigate signal transduction mechanisms regulating cell cycle checkpoints, with particular interest in the development of endpoint determination of the small molecules which are in Phase-I clinical trial in cancer control. Studies will focus on targeting the pathways of the regulation of checkpoint kinase and its down stream complexes in response to selected compounds. The research data obtained will be ultimately linked to clinical outcomes about the compounds. Major research areas include but are not limited to cell signaling, cell senescence, apoptosis and growth regulation. Experience in biochemical techniques and cell biology is essential and some basic knowledge in molecular biology would be beneficial. Experience in apoptosis, oncogenesis, and signal transduction is an advantage but not required. Applicants must have a Ph.D. and/or M.D. and less than five years of postdoctoral experience. Recent graduates are encouraged to apply. One position is available immediately. Compensation will vary according to qualifications. If you are interested, please fax your curriculum vitae and the names of three references to:

Krishnendu K. Roy, Ph.D.
Clinical Trials Unit, Developmental Therapeutics Program
Division of Cancer Treatment and Diagnosis
NCI, Building 10, Room 6N 113, 10 Center Drive
Bethesda, MD 20892
Voice: (301) 496-4119
Fax: (301) 480-7456
E-mail: kr91w@nih.gov

Expanding the Powers of Research



St. Jude Children's Research Hospital, is an internationally renowned research and treatment center for children with catastrophic diseases – primarily pediatric cancers. Our scientists are dedicated to biomedical research that seeks to understand the molecular causes of disease, improving diagnosis and treatment, minimizing immediate and long-term side effects, and ultimately – to finding a cure.

Our rapid expansion plans, supporting our continuing medical advances, allow our staff to further develop and grow their careers in a well founded, state-of-the-art facility. In fact, we are one of the great international educational and teaching institutions for pediatric diseases, and provide regular workshops, seminars and lectures presented by St. Jude faculty as well as distinguished visiting investigators.

Don't miss this opportunity to excel in your career at our internationally renowned institution. The following positions are currently available:

- **Research Technologist**
- **Senior Research Technologist**
- **Research Lab Specialist**
- **Director of Quality Assurance for Therapeutics**
- **Database Analyst/Developer**
- **Database Developer**

For immediate consideration, e-mail, or mail your resume to:

St. Jude Children's Research Hospital
Human Resources Department
332 North Lauderdale
Memphis, TN 38105
E-mail: virgil.holder@stjude.org

St. Jude Children's Research Hospital
ALSAC • Danny Thomas, Founder

www.stjude.org/hr

We are an equal opportunity employer. Photo courtesy of St. Jude Biomedical Communications Department.

SENIOR/JUNIOR APPOINTMENTS GENETICS UNIVERSITY OF RICHMOND

The Department of Biology at this highly selective private independent university seeks two individuals, at least one of whom we hope to appoint at a senior level (**ASSOCIATE** or **FULL PROFESSOR**). We seek candidates with expertise in the areas of genetics and/or molecular genetics who can also contribute in the areas of microbiology and/or plant molecular biology. High-quality teaching that includes participation at all curricular levels and a strong research program that actively engages undergraduate and Master's students are expected. We seek compelling applications from advanced or midcareer biologists who already have distinguished records of accomplishment as well as from strong candidates at the junior level. Applicants should submit curriculum vitae, statements regarding teaching philosophy and research interests, up to five publications, and should have three letters of recommendation sent directly to: **Dr. W. John Hayden, Department of Biology, University of Richmond, Richmond, VA 23173**. Review of applications will begin November 1, 2000, and continue until the positions are filled. Anticipated starting date of August 2001. For more information, see **website: http://www.richmond.edu/academics/a%26s/biology/index.html**. *The University of Richmond is an Equal Opportunity/Affirmative Action Employer and strongly encourages women and minorities to apply for its positions.*

FACULTY POSITION MICROBIAL/VIRAL PATHOGENESIS

The Department of Microbiology of The University of Texas Health Science Center at San Antonio invites applications for a tenure-track faculty position(s) at the **ASSISTANT**, **ASSOCIATE**, or **FULL PROFESSOR** level. Expertise in microbial pathogenesis (bacterial/parasitic/viral/fungal) and/or host immune responses to microbial pathogens is preferred. Individuals with outstanding backgrounds in other areas with an interest in extending their research to include studies of medically relevant microbes are also encouraged to apply. The successful applicant(s) will have a Ph.D. and/or M.D. degree and will be expected to establish and maintain a high-quality, extramurally funded research program and participate in graduate student training and medical/dental school teaching. This is an exceptional opportunity to join a strong Department in a desirable geographic location.

Send curriculum vitae, summary of research interests, and the names and addresses of three references by November 30, 2000, to: **Microbiology Search Committee, Department of Microbiology, The University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, Mail Code 7758, San Antonio, TX 78229-3900**. Information concerning the UTHSCSA and the Department of Microbiology can be found through the **website: http://www.uthscsa.edu**.

The UTHSCSA is an Equal Employment Opportunity/Affirmative Action Employer.

RESEARCH INSTRUCTOR, DEPARTMENT OF PATHOLOGY. A Research Instructor position is available to be filled immediately. Applicants must have a Ph.D. in virology/molecular biology, three to four years of postdoctoral training, and experience in the areas of DNA/protein or protein/protein interactions. Additional training and experience in human stromal cell research and gene expression/regulation are required. Preference will be given to persons having strong backgrounds in osteoblast biology. Send updated curriculum vitae and the names of four individuals that can serve as references to: **Barbara Hartman, Program Coordinator, Division of Molecular and Cellular Pathology, Department of Pathology, University of Alabama at Birmingham, 1670 University Boulevard, Volker Hall/G001, Birmingham, AL 35294**. *The University of Alabama at Birmingham is an Affirmative Action/Equal Opportunity Employer and invites applications form qualified women and minority candidates.*

POSITIONS OPEN

ASSISTANT PROFESSOR (NONTENURE-TRACK) POSITIONS MEDICAL BIOTECHNOLOGY CENTER University of Maryland Biotechnology Institute

The Medical Biotechnology Center (MBC), University of Maryland Biotechnology Institute, seeks to fill two **ASSISTANT PROFESSOR** positions (nontenure track). The MBC is one of five research centers of the University of Maryland Biotechnology Institute (UMBI); **website: http://www.umbi.umd.edu**. The MBC is located on the campus of the University of Maryland, Baltimore, in a newly constructed state-of-the-art research facility. (1) Position Number F3-0101: We seek an individual with experience in molecular biology and biophysics of voltage-gated and ligand-gated ion channels, skill in whole cell patch clamp of cardiac muscle and other cells, and in the construction of permanently transfected cell lines. (2) Position Number F3-0102: We seek an individual with expertise in molecular biology, immunofluorescence microscopy, digital imaging, EM immunocytochemistry, and broad knowledge of the spectrin superfamily in striated muscle. The successful candidates should have demonstrated success at obtaining independent research funding. Salary range: $45,000 to $60,000 per annum. Please send a letter of application (please reference position number); a statement of research interests; up-to-date curriculum vitae; and the names, mail and e-mail addresses, FAX and telephone numbers of three references from at least two institutions. Review of applications will begin August 28, 2000, and continue until a suitable candidate is selected. Please send information to:

W. J. Lederer, M.D., Ph.D.
Chair, Faculty Search Committee, MBC
University of Maryland Biotechnology Institute
725 West Lombard Street
Baltimore, MD 21201

MBC/UMBI is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and candidates with disabilities are encouraged to apply.

RESEARCH ASSOCIATE PROFESSOR IN MAGNETIC RESONANCE PHYSICS The University of Illinois at Chicago

A new position at the Associate Professor level is available within the Center for Magnetic Resonance Research in the Department of Radiology at the University of Illinois at Chicago. The research program has state-of-the-art cross-sectional MR imaging equipment, including one 3T LX (8.3) Signa GEMS scanner housed in a new comprehensive outpatient facility. Opportunities abound for MR imaging research with the development of a 9.4T human scanner to be installed in 2002. There is also access to two 1.5T LX scanners. In addition to conventional MRI, the research program includes diffusion, perfusion, sodium, and routine functional MR imaging and MR spectroscopy. Close clinical and research collaborations exist with Neurosurgery, Neurology, and Psychiatry. The successful applicant will be a Ph.D. Physicist or Engineer with at least five years of experience in MR physics (possibly with an industrial experience) able to start in this year of 2000 and will have strong motivation for helping to establish a high-quality state-of-the-art MR research program in a collaborative, dynamic clinical and research environment. Experience with GEMS scanners and pulse programming is essential. Attractive compensation package is available.

For fullest consideration, please forward curriculum vitae and introduction letter to: **Keith R. Thulborn, M.D., Ph.D., Professor and Director of the MR Research Program, University of Illinois at Chicago, 1740 West Taylor Street (M/C 931), Chicago, IL 60612**. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer offering a competitive salary and benefits package.*

POSITIONS OPEN

Biology. Tenure-track position in ornithology at the **ASSISTANT PROFESSOR** level beginning fall 2001 in the Biology Department at Colorado College, a private, highly selective undergraduate liberal arts institution enrolling approximately 1,900 students. Responsibilities include (1) teaching courses in vertebrate zoology, field zoology, ecology, and ornithology and (2) development of a field-based research program involving undergraduates. Ph.D. required; teaching and postdoctoral research experience highly desirable. Successful applicant will be expected to interact with and participate in the interdisciplinary Southwest Studies and/or Environmental Science programs and to teach one or two courses per year that are cross-linked with those programs. The College seeks candidates who understand diverse perspectives and learning styles, with particular emphasis on the perspectives of women and minority groups. Applicants should send (1) cover letter that includes a description of professional background and goals, (2) statement of teaching philosophy, (3) description of current and future research plans, (4) curriculum vitae with e-mail address, (5) copies of undergraduate and graduate transcripts, and (6) four letters of recommendation to: **Ron Capen, Department of Biology, Colorado College, Colorado Springs, CO 80903** no later than October 1, 2000.

Colorado College (**website: www.ColoradoCollege.edu**) *is an Equal Opportunity Employer. We welcome members of all minority groups and reaffirm our commitment to hire without regard to race, color, age, religion, sex, national origin, sexual orientation, or disability.*

ASSISTANT/ASSOCIATE/FULL PROFESSOR of microbiology, School of Veterinary Medicine, University of California, Davis. Veterinarian with advanced training in microbiology required, with an emphasis in bacteriology or mycology preferred. Ph.D. preferred. Interest in clinical microbiology (bacteriology/mycology) required. Demonstrated aptitude/experience in teaching. Documented research record or potential to develop an independent research program utilizing contemporary molecular techniques for the characterization of infectious diseases. Must possess excellent interpersonal and communications skills and a demonstrated ability to work with others in a collegial team atmosphere. Responsibilities: participation in lectures and laboratories; 30% commitment as Service Chief to the Clinical Microbiology Service in the Veterinary Medical Teaching Hospital; and development of a creative, independent, and productive research program to define disease processes at the cellular or organismal level. Final filing date: November 1, 2000, or until filled. Submit letter of intent outlining special interest in the position, overall qualifications, experience, and career goals; curriculum vitae; and the names and addresses of three professional references to: **N. James MacLachlan, Chairman, Department of Pathology, Microbiology, and Immunology, School of Veterinary Medicine, University of California, Davis, Davis, CA 95616**. *The University of California is an Affirmative Action/Equal Opportunity Employer.*

RESEARCH ASSOCIATE

The School of Biological Sciences at the University of Missouri–Kansas City has an NIH-funded **POSTDOCTORAL POSITION** available for a Scientist interested in transduction of calcium signals in intact mammalian cells. Our current emphasis is on spatial factors at the plasma membrane that affect activation of calmodulin-dependent endothelial nitric oxide synthase and adenylate cyclase activities. Enzyme assays and genetically encoded fluorescent indicators will be used to define in intact cells mechanisms that control the relationships between free calcium, free calcium-liganded calmodulin, and enzyme activation at the plasma membrane. Previous biochemical and/or cellular studies of signal transduction desirable; experience with quantitative fluorescence imaging helpful. Contact: **Dr. Anthony Persechini, c/o Sandy Van Engelenhoven; e-mail: vanengelenhovens@umkc.edu**. *University of Missouri–Kansas City is an Affirmative Action/Equal Opportunity Employer.*

QUANTITATIVE PSYCHOLOGIST
DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF CALIFORNIA, DAVIS

The Department of Psychology at the University of California at Davis invites applications for a tenure-track appointment at the **ASSISTANT PROFESSOR** level to begin in July 2001. The candidate must have a Ph.D., specialize in the application of advanced quantitative methods in psychology, and have a strong commitment to quality teaching of quantitative methods at both graduate and undergraduate levels. This position is part of a campus initiative to promote quantitative research in the social sciences at UC Davis. The successful candidate is expected to participate in the new Center on Quantitative Social Science Research with faculty from other social science disciplines. In addition to research in advanced quantitative methods, the ideal candidate would have substantive research interests within one of the four areas covered by the Department: cognition-perception, social-personality, psychobiology, and developmental. Interested applicants should submit curriculum vitae, statement of research and teaching interests, evidence of success in teaching, representative reprints or preprints, and three letters of reference. Review of applications will commence on November 1, 2000, and continue until the position is filled. Send materials to: **Quantitative Psychology Search Committee, Department of Psychology, One Shields Avenue, University of California, Davis, Davis, CA 95616-8686**. For information, contact: **Search Committee Chair Keith Widaman** at the above address or via **e-mail: kfwidaman@ucdavis.edu**.

The University of California, Davis, and the Department of Psychology are interested in candidates who are committed to the highest standards of scholarship and professional activities and to the development of a campus climate that supports equality and diversity. The University of California is an Affirmative Action/Equal Opportunity Employer.

ASSOCIATE/ASSISTANT PROFESSOR
BIOCHEMISTRY AND
MOLECULAR BIOLOGY

The Department of Biochemistry and Molecular Biology at the F. Edward Hebert School of Medicine, Uniformed Services University (USU) in Bethesda, Maryland, invites applications for two tenure-track faculty positions at the **ASSISTANT/ASSOCIATE** level available in 2000. Outstanding candidates in the areas of biochemistry and molecular and cell biology (e.g., signal transduction, gene expression, chromatin structure, apoptosis), using state-of-the-art genetic/genomic-based molecular approaches, are encouraged to apply. Candidates must have a Ph.D. or M.D. degree and postdoctoral experience and will be expected to develop a vigorous, independent basic research program. The successful candidates will participate in the training of medical and graduate students. Please send curriculum vitae, reprints of three to five recent publications, a one-page statement of future research plans, and the names of at least three preferred references by September 30, 2000, to: **Ms. Melanie Joy, Department of Biochemistry and Molecular Biology Search Committee, Uniformed Services University, F. Edward Hebert School of Medicine, 4301 Jones Bridge Road, Bethesda, MD 20814-4799**. *Uniformed Services University is an Equal Opportunity Employer with a strong commitment to racial, cultural, and ethnic diversity.*

EMPIRICAL EVOLUTIONARY GENETICS
MATHEMATICAL ECOLOGY

The Section of Integrative Biology at The University of Texas at Austin is seeking to fill two **ASSISTANT PROFESSOR** positions to begin as early as September 2001. Both positions require a Ph.D. (awarded prior to September 2001). Please write to: **Integrative Biology, University of Texas, Austin, TX 78712-1023** or view our **website: http://www.biosci.utexas.edu/jobs/** for details. Closing date: October 15, 2000. *University of Texas–Austin is an Equal Employment Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

NEUROSCIENTIST
TENURE-TRACK FACULTY POSITION

The Department of Pharmacology and Toxicology invites applications for a tenure-track faculty position as **ASSISTANT/ASSOCIATE PROFESSOR**. We seek a Neuroscientist with outstanding research accomplishments and interests complementary to the neuroscience faculty located within the various clinical and basic science departments and institutes of the Medical College of Georgia. Candidates must hold a Ph.D. or M.D./Ph.D. degree and are expected to be ready to apply for or have an independent, extramurally funded research program. Established areas of neuroscience research at the Medical College of Georgia include development, neuron-glia interactions, regulation of synaptic transmission, axonal transport, and neuroendocrinology. Applications from candidates with expertise in axonal guidance, neurogenesis, regeneration, plasticity, model genetic systems, or cognitive neuroscience are encouraged, although all areas of neuroscience will be considered. Applicants are expected to be effective educators and participate in teaching programs in the Schools of Medicine, Allied Health Sciences, and Graduate Studies.

Applicants should send curriculum vitae, a statement of current and future research plans, a description of teaching experience, and the names of three references to: **Dr. Deborah Lewis, Department of Pharmacology and Toxicology, Medical College of Georgia, Augusta, GA 30912-2300**. Application deadline is November 20, 2000.

The Medical College of Georgia is an Affirmative Action/Equal Educational and Employment Opportunity Institution and does not discriminate on the basis of race, religion, sex, age, national origin, or disability in employment or provision of services.

BIOSTATISTICS

The School of Biological Sciences at The University of Texas at Austin invites applications for a position at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level in biostatistics beginning as early as fall 2001. The position requires a Ph.D. (awarded prior to September 2001). The research area is open, but we are particularly interested in individuals with interests in computational or theoretical biology, ecology, evolution, behavior, and population biology. The successful applicant will teach an undergraduate course in statistics for biology majors and a graduate course in their area of specialization, develop a strong research program, and supervise graduate students. Applicants should send curriculum vitae, a brief statement of research and teaching interests, no more than three reprints or preprints, and have at least three letters of recommendation sent directly to: **Biostatistics Search, Section of Integrative Biology C0930, University of Texas, Austin, TX 78712-1023 U.S.A.** by November 1, 2000. For more detailed information, see **website: http://www.biosci.utexas.edu/jobs/**. *University of Texas–Austin is an Equal Employment Opportunity/Affirmative Action Employer.*

ASSISTANT/ASSOCIATE PROFESSOR
CENTER FOR PHARMACOGENETICS
The University of Pittsburgh

The newly established Center for Pharmacogenetics in the School of Pharmacy seeks outstanding Investigators to fill a tenure-track eligible position. It is a full-time, 12-month appointment. Successful candidates must have a Ph.D. and/or M.D. as well as an excellent research record in pharmacogenetics and/or functional genomics. Rank and salary will be commensurate with qualifications and experience. Send curriculum vitae, three letters of recommendation, and a statement of research interest by November 15, 2000, to: **Dr. Leaf Huang, University of Pittsburgh, 3501 Terrace Street, 633 Salk Hall, Pittsburgh, PA 15213.**

POSITIONS OPEN

TENURE-TRACK POSITION AVAILABLE
IN HUMAN CANCER GENETICS

Preference will be given to **BASIC SCIENTISTS** working in the following areas: identification and characterization of new human cancer genes and biochemical characterization of proteins encoded by human cancer genes.

The position is in the Laboratory of Immunobiology, Division of Basic Sciences, National Cancer Institute–Frederick Cancer Research and Development Center, Frederick, Maryland. Principal investigators in the laboratory are: **Michael Lerman** (genetics and biochemistry of human lung cancer), **Berton Zbar** (genetics of human kidney cancer), **Stephen Hou** (signal transduction in *Drosophila*), and **Ed Leonard** (inflammation).

The start-up package will include two Postdoctoral Research Fellows, one technician, and ample laboratory space. Deadline for receipt of applications: November 1, 2000.

Applicants should submit curriculum vitae, a statement of research interests and future plans, and three letters of reference to: **Ms. Teri Cecil, Building 578, Room 6, National Cancer Institute-Frederick Cancer Research and Development Center, P.O. Box B, Frederick, MD 21702. Telephone: 301-846-5403; FAX: 301-846-6053**. *The National Cancer Institute is an Equal Opportunity Employer.*

BIOCHEMISTRY FACULTY POSITIONS

The Department of Biochemistry at the University of Mississippi Medical Center (**website: http://www2.umsmed.edu/dept/biochemistry/biochem1.html**) invites applications for two tenure-track positions at any rank. The Department is recruiting applicants who will undertake basic cancer or other medically related research. One position will be for a **CELL BIOLOGIST** and the other will be open to all areas of biochemistry and molecular biology. The interests of the applicants should overlap with those existing in the Department, which has strong research programs in gene expression, chromatin structure and replication, ribosome biogenesis, nucleic acid and protein biophysics, energy transduction, enzymology, and structural biology. The successful applicants are expected to establish or have independent, funded research programs and to participate in the training of medical, dental, and graduate students. Send curriculum vitae, a brief outline of future research plans, and the names of three references by December 1, 2000, to: **Dr. Mark Olson, Chair, Department of Biochemistry, The University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216-4505**. *Equal Opportunity Employer; Minorities/Females/Disabled/Veterans.*

FACULTY POSITIONS
UNIVERSITY OF CHICAGO

The Department of Pediatrics at the University of Chicago invites applications for Faculty Positions in the section of Pediatric Hematology/Oncology and Stem Cell Transplantation. We are seeking outstanding candidates who hold either the M.D. or Ph.D. degrees with established research interest related to cancer or blood diseases. Academic rank will be commensurate with qualifications.

Successful candidates will be expected to develop an independent, extramurally funded research program. Excellent laboratory facilities will be provided. The selected faculty will participate in teaching of students, residents, and Fellows. Appropriately trained physicians will participate in the clinical activities of the section.

Candidates should send letters of application, curriculum vitae, statement of research accomplishments and interests, and the names and addresses of three references to: **Eric C. Beyer, M.D., Ph.D., Section Chief, Hematology/Oncology, Department of Pediatrics, University of Chicago, 5841 South Maryland Avenue, MC 4060, Chicago, IL 60637**. *The University of Chicago is an Affirmative Action Equal Opportunity Employer.*

"IT'S AS EASY AS TAKING A BREATH."

Inhale—Leading the *inhaleables* revolution.

Located in the San Francisco Bay Area, Inhale is developing the world's leading delivery platform for creating inhaleables. Inhale's novel system integrates customized formulation and proprietary fine-powder processing, packaging and inhalation device technologies. While our biotechnology and pharmaceutical partners make breakthroughs in new drug development, Inhale is developing technologies to deliver those therapies more efficiently to the people who need them.

Our partnership with Pfizer addresses pulmonary delivery of insulin. With Biogen, we are working on a non-invasive formulation of its leading, multiple sclerosis drug, AVONEX®. With our valuable corporate alliances and our broad product portfolio in various stages of development and commercialization, this is an exciting time to join the Inhale team.

DRUG DEVELOPMENT/RESEARCH

- RESEARCH ASSOCIATE/SR. RESEARCH ASSOCIATE
- SCIENTIST
- SR. SCIENTIST
- TECHNICAL LEADER
- NON-CLINICAL STATISTICIAN

QUALITY CONTROL

- QC RESEARCH ASSOCIATE
- QC SCIENTIST
- ASSOCIATE DIRECTORS

QUALITY ASSURANCE

- QA SPECIALIST
- QA SPECIALIST/COMPLIANCE MANAGER

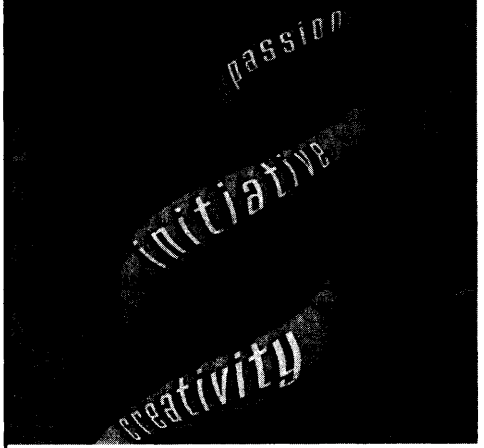
OPPORTUNITIES ALSO AVAILABLE IN:

REGULATORY AFFAIRS, PROJECT MANAGEMENT, PRODUCT MANAGEMENT, DOCUMENTATION, BUSINESS DEVELOPMENT, ENGINEERING, INFORMATION SYSTEMS, MATERIALS MANAGEMENT, FACILITIES OPERATIONS, AND CLINICAL MANUFACTURING

Inhale offers excellent benefits and an informal, friendly work environment. Salary commensurate with experience. EOE. Please submit your resume, indicating Job Code: 811SCI, on-line at: **www.inhale.com/careers**.

inhale

Inquire Within



Genentech's people share some pretty uncommon traits. Initiative, creativity, risk-taking—the stuff from which breakthrough medicines are created. Expect the extraordinary. Share your traits with us.

Scientist

As a key member of the Molecular Oncology Department, you will evaluate cell surface tumor antigens as potential targets for therapeutic antibodies. You should have completed a doctoral degree in Molecular Biology or related discipline and a postdoctoral fellowship with a significant publication track record and possess demonstrated expertise in receptor biology. You will be a part of a multi-disciplinary group dedicated to developing our next generation of anti-cancer antibodies. Job Code: 2401

Research Assistant/Associate

Join the protein structure group involved in exploring the structure and function of proteins and protein complexes. You will produce and characterize proteins for structural analysis by X-ray crystallography (and NMR spectroscopy), involving protein purification, refolding, and crystallization. You will also be involved in crystal characterization and X-ray data collection. You should have a BS/MS in Biochemistry, Chemistry, or a related discipline and 1+ years experience in areas related to protein chemistry. Familiarity with protein crystallization and/or molecular biology techniques (mutagenesis, bacterial expression) is desirable. You must be highly motivated, capable of working independently, and enjoy working in a collaborative setting. Strong analytical, communication, and organizational skills are needed. Job Code: 2225

Senior Research Associate & Research Assist./Assoc.

As a member of our Antibody Technology group, you will participate in a variety of projects by generating and characterizing monoclonal antibodies using conventional hybridoma technology, as well as emerging technologies such as antibody phage library. You should have a BS/MS in Immunology, Molecular Biology or related discipline and experience in molecular biology. Knowledge in antibody engineering or affinity measurement would be desirable. Job Code: 2228

To apply, please email your resume, indicating Job Code, to genentechad@webhirerpc.com (place Job Code in the subject field; ASCII files only with a maximum line width of 76 characters). Or mail to Genentech, Inc., Attn: H. Belforte, Human Resources, PO Box 1950, South San Francisco, CA 94083-1950. Genentech is an Equal Opportunity Employer. www.gene.com.

Please come by our booth at the Science Career Fair on August 17, 2000.

www.gene.com

Genentech, Inc.

incredible people

extraordinary science

Tulane University Health Sciences Center (TUHSC) announces a search for **DEAN** of the **TULANE UNIVERSITY SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE**. The School of Public Health and Tropical Medicine is a separate component of the TUHSC, allied with the Tulane University School of Medicine, the Tulane Regional Primate Research Center, and the Tulane University Hospital and Clinic. The School of Public Health and Tropical Medicine is organized into seven academic units: community health sciences, biostatistics, epidemiology, environmental health sciences, health systems management, international health and development, and tropical medicine. School-based centers include the Center for Cardiovascular Health, Institute for Health Services Research, Tulane–Xavier Center of Excellence for Women's Health, Center for Infectious Diseases, and Environmental Diseases Prevention Research Center. The Dean will provide leadership, commitment, management skills, and vision to accomplish the goals at the School of Public Health and Tropical Medicine and will continue to strengthen the School's teaching and research programs while simultaneously enhancing the environment of the School as an academic center that is conducive to learning. Candidate qualifications include an earned doctoral-level degree with national and international stature in public health. A proven research record, publications, and academic achievement are also required as well as the qualities to provide leadership to enhance the overall quality, reputation, and value of the School. To submit an application, please send curriculum vitae to: **Dr. Larry Webber, Search Committee Chair, Biostatistics Department, SL-18, 1430 Tulane Avenue, New Orleans, LA 70112-2699. E-mail: lwebber@tulane.edu.**

COMPUTATIONAL BIOLOGY

The Department of Biological Sciences at Carnegie Mellon University seeks an outstanding candidate for a **TENURE-TRACK APPOINTMENT** at the intersection of computer science and the biological sciences. Successful candidates will have strong credentials in both areas and will be prepared to take advantage of the University's world-class strength in computer science and the strong tradition of interdisciplinary research in the Department of Biological Sciences. Applicants pursuing purely computational or mixed experimental/computational approaches and those with Doctoral degrees in either computer science or a natural science will be considered. An anticipated area of particular interest is prediction of protein and RNA structure and function. Appointment will be made at a level commensurate with the experience of the applicant. Interested applicants should send curriculum vitae, statement of research interests, and three letters of recommendation to: **Dr. Robert F. Murphy, Department of Biological Sciences, Carnegie Mellon University, 4400 Fifth Avenue, Pittsburgh, PA 15213**. Review of applications will begin on November 1, 2000, and will continue until a suitable candidate is recruited. *Carnegie Mellon University is an Equal Opportunity/Affirmative Action Employer. Our Department is eager to diversify its faculty; we encourage women and minorities to apply.*

PROFESSOR AND HEAD DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION (FSHN)

The University of Illinois at Urbana–Champaign seeks a Head for the Department of FSHN in the College of Agricultural, Consumer, and Environmental Sciences. Requirements are a Ph.D. in food science, nutrition, or a closely related field; strong background in research and resident instruction or extension education; and demonstrated administrative skills. Full position description available. Send letter of application, résumé, and names of five references by October 2, 2000, to: **James L. Robinson, Chair, FSHN Head Search, 122 Mumford Hall, 1301 West Gregory Drive, Urbana, IL 61801. Telephone: 217-333-2469; e-mail: jrobins@uiuc.edu.**

POSITIONS OPEN

BIOMOLECULAR CHEMISTRY UNIVERSITY OF WISCONSIN–MADISON

The Department of Biomolecular Chemistry invites applications for a tenure-track **ASSISTANT PROFESSOR** biochemical research and teaching position. We seek a colleague eager to establish a vigorous, independent research program and teach at several levels. For more information, visit our **website: www.medsch.wisc.edu/bmolchem/asstprof.html**. Send curriculum vitae and two-page research plan and have three reference letters sent before October 1, 2000, to: **Dr. James E. Dahlberg, Search Chair, University of Wisconsin Medical School, 587 MSC, 1300 University Avenue, Madison, WI 53706-1532**. *Equal Opportunity/Affirmative Action Employer. Minorities and women are encouraged to apply.*

STANFORD UNIVERSITY DEPARTMENT OF CHEMISTRY

TENURE-TRACK FACULTY APPOINTMENT, open rank, in the general area of inorganic or organic chemistry. Applicants must be strongly motivated toward creative research and committed to teaching at the undergraduate and graduate levels. All applications must include the following materials: (1) current curriculum vitae and list of publications, (2) brief statement of research interests (three pages or less), and (3) three letters of reference sent on your behalf to the Chair of the appropriate search committee. Completed applications must be received by October 31, 2000. Appointments will commence on or after September 1, 2001.

Send applications in the general area of inorganic chemistry to: **Chair, 2000-2001 Inorganic Search Committee, Department of Chemistry, Stanford University, Stanford, CA 94305**. Send applications in the general area of organic chemistry to: **Chair, 2000-2001 Organic Chemistry Search Committee** (same address as for inorganic chemistry applications).

Stanford University is committed to Equal Employment Opportunity through Affirmative Action and is eager to identify minority persons and women with appropriate qualifications.

DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS
Case Western Reserve University

The Department of Physiology and Biophysics invites applications for **TENURE-TRACK FACULTY** at the junior and senior levels. Suitable areas of research include but are not limited to cellular and molecular approaches to systems integrated physiology, with emphasis on cardiovascular, pulmonary, and/or neurophysiology. We offer a highly competitive compensation package, ample start-up funds, and state-of-the-art research facilities. Submit curriculum vitae; a brief statement of research interest(s); three representative reprints; and the names, addresses, and telephone numbers of four references to: **Nanduri R. Prabhakar, Department of Physiology and Biophysics, 10900 Euclid Avenue, Cleveland, OH 44106-4970**. *Case Western Reserve University is an Equal Opportunity/Affirmative Action Employer.*

A tenure-track position (**ASSISTANT/ASSOCIATE PROFESSOR** level) is available in the Department of Physical Medicine and Rehabilitation at the University of California, Irvine, to help develop a competitive research program related to rehabilitative medicine. Outstanding opportunities exist for collaborations with the UCI research community, especially in the areas of muscle biology, spinal cord injury, exercise physiology, biomedical engineering, and neuroscience. Curricula vitae to: **Jen Yu, M.D., Ph.D., Professor and Chair, Department of Physical Medicine and Rehabilitation, UCI Medical Center, 101 The City Drive, Orange, CA 92868**. *University of California, Irvine, is an Equal Opportunity Employer committed to excellence through diversity.*

POSITIONS OPEN

FACULTY POSITION MAMMALIAN MOLECULAR BIOLOGY
University of California, San Diego

The Molecular Biology Section in the Division of Biology at University of California, San Diego, invites applications for a tenure-track faculty position in mammalian molecular biology with strong preference for the rank of **ASSISTANT PROFESSOR**. Exceptional candidates pursuing innovative molecular approaches to problems in virology, immunology, mouse genetics, mammalian cell-cycle progression, and cancer biology are encouraged to apply.

The successful candidate is expected to develop a vigorous research program and participate in the undergraduate and graduate teaching curriculum. A Ph.D. degree and several years of productive postdoctoral research are required. Salary will be commensurate with level of appointment and based on the University of California salary scale.

Please submit curriculum vitae; a statement of professional goals and research interests; and names of five references and their addresses, e-mails, telephone and FAX numbers by November 1, 2000, to: **Molecular Biology Search Committee, Division of Biology 0346, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0346. Websites: http://www.biology.ucsd.edu/** and **http://academicaffairs.ucsd.edu/offices/aaa/recruitment/biology.htm.**

University of California, San Diego, is an Equal Opportunity/Affirmative Action Employer with a strong institutional commitment to the achievement of diversity among its faculty and staff.

The Department of Pharmacology of the University of Tennessee College of Medicine is seeking to fill two tenure-track positions at the **ASSISTANT/ASSOCIATE PROFESSOR** level. Applicants must have a Ph.D. or M.D. and have demonstrated the capability to support and direct an independent, competitive research program. Neuropharmacologists using molecular, cellular, and/or electrophysiological approaches and who look forward to collaboration in a highly interactive research environment with a large, well-funded neuroscience community will be given preference. This is a 12-month appointment that includes teaching responsibilities in both the professional and graduate colleges. Excellent laboratory facilities and start-up funding are available. These positions will remain open until filled. Applicants should submit curriculum vitae, three letters of reference, and a comprehensive description of their research program to: **Burt M. Sharp, M.D., Chair, Department of Pharmacology, University of Tennessee College of Medicine, 874 Union Avenue, Memphis, TN 38163**. *The University of Tennessee is an Equal Employment Opportunity/Affirmative Action/Title VI/Title IX/Section 504/Americans with Disabilities Act/Age Discrimination in Employment Act Employer. Women and minorities are especially encouraged to apply.*

THE DEPARTMENT OF CHEMISTRY UNIVERSITY OF WISCONSIN–MADISON

Anticipates openings for two or more faculty positions to begin in August 2001. We seek outstanding candidates at the **ASSISTANT PROFESSOR** level (tenure track) in all areas of chemistry. Candidates must have a Ph.D. in chemistry or a related field; postdoctoral experience is desirable. The position requires development of an internationally recognized program of scholarly research as well as excellent teaching at both the undergraduate and graduate level. Please send curriculum vitae and a concise description of research plans and arrange for three letters of recommendation to be sent to: **Professor James C. Weisshaar, Chair of Faculty Search Committee, Department of Chemistry, University of Wisconsin–Madison, Madison, WI 53706-1396**. To guarantee full consideration, all materials must arrive before October 15, 2000. *The University of Wisconsin is an Equal Opportunity/Affirmative Action Employer; applications from qualified women and minority candidates are encouraged. Unless confidentiality is requested in writing, information regarding the identity of the applicant must be released on request. Finalists cannot be guaranteed confidentiality.*

Discover a World Full of Possibilities

As an emerging force in the biopharmaceutical industry, Aviron has attracted bright and talented individuals to develop some of the world's most innovative vaccine technologies. Our lead product, FluMist™, an intranasal influenza virus vaccine, has shown outstanding clinical efficacy and is poised to reduce the $4.6 billion annual cost associated with influenza. Other vaccines are in development to prevent diseases caused by cytomegalovirus (CMV), respiratory syncytial virus (RSV), and Epstein-Barr virus (EBV).

Join our growing workforce as we transition to a commercial-stage company. We currently have exciting, growth-oriented opportunities for dedicated professionals in our dynamic organization.

Research Scientists

- In this role, you will develop high throughput sequencing and genotyping technologies. Requires a PhD in Virology, Molecular Biology, or a related field with 2-5 years relevant postdoctoral experience. Job #0108
- In this position, you will generate infectious influenza virus recombinants from plasmid clones and assay these viruses for replicative properties. Requires a PhD or postdoctoral experience in genetic manipulations of negative sense viral RNAs for cloning and construction of cDNAs. Job #0608
- You will work as part of a team of scientists in constructing live attenuated respiratory syncytial virus vaccines. Requires BS degree with 3-5 years (or MS degree with 1-2 years) of experience in virology, molecular biology, and cell biology. Background in working with negative strand RNA viruses is preferred. Job #0704

Process Development Scientists

- Requires PhD with experience in process development, scale-up operations and downstream purification. Extensive travel to our UK and Philadelphia manufacturing sites will be required for technology transfer. Job #0124, Job #0614
- You will be responsible for process development activities ranging from virus seed optimization through processing of virus harvest materials. Requires an MS or PhD in Virology, Cell Biology, Biochemical Engineering, or a related discipline with a minimum 10 years post-MS or 7 years post-PhD experience. Experience with development of live virus vaccines or gene therapy vectors would be most desirable. Job #0401
- You will serve as the primary technical liaison between Development and Manufacturing and will provide technical support to Manufacturing. Requires a MS in Biochemical Engineering, Biochemistry, Microbiology, Virology or Biology with a minimum 7 years post-PhD or 10 years post-MS experience. Experience with development of live virus vaccines or gene therapy vectors would be preferred. Job #0501

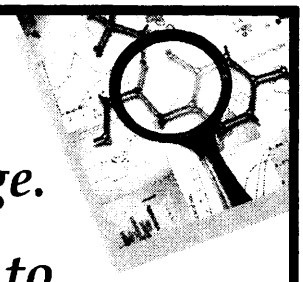
Director, Corporate Development

Working with the Commercial Development team, you will manage and facilitate in-licensing activities and development opportunities. Requires a BS/BA, MBA (PhD is a plus) and 7-10 years related experience. Job #522

Join our growing team to make an impact on your life and the lives of others. If interested, please forward resume, indicating Job #, to: Aviron, Human Resources, 297 N. Bernardo Ave., Mountain View, CA 94043; fax 650/919-6624; email pstevenson@aviron.com (please use job title in subject line). No phone calls please. Aviron welcomes candidates from diverse backgrounds. EOE

Aviron

www.aviron.com



Inspired by the Challenge.

Dedicated to the Solution.

Gilead Sciences is an independent biopharmaceutical company that seeks to provide accelerated solutions for patients and the people who care for them. The Company discovers, develops, manufactures and commercializes proprietary therapeutics for challenging infectious diseases (viral, fungal and bacterial infections) and cancer.

We have multiple opportunities in Biology and Chemistry at all levels.

Please visit our Web site for complete listings.

www.gilead.com

Interested candidates should send a resume, indicating Job Code of interest to: Human Resources, Gilead Sciences, Inc., 333 Lakeside Drive, Foster City, CA 94404; email: careers-fostercity@gilead.com; or fax (650) 522-5800. Visit our Web site: www.gilead.com. We are proud to be an equal opportunity employer.

GILEAD SCIENCES

www.gilead.com

INSTITUTE OF BIOTECHNOLOGY/ DEPARTMENT OF MOLECULAR MEDICINE
University of Texas Health Science Center at San Antonio

The Department of Molecular Medicine invites applications for three tenure-track positions at the **ASSISTANT PROFESSOR** level and above. We are particularly interested in candidates focusing on carcinogenesis, development, tumor suppressor genes, growth factors, and DNA repair, although outstanding scientists in other fields of investigation are also strongly encouraged to apply. Applicants for the Assistant Professorship should have postdoctoral training and a substantial record of contributions to the peer-reviewed literature. Applicants for more senior positions should have an established research program and extensive experience in training graduate students and Postdoctoral Fellows.

We offer highly competitive salaries and an excellent start-up package including modern laboratory space, funds for personnel and supplies, and state-of-the-art core facilities. Successful applicants will also be appointed faculty in the Molecular Medicine Graduate Program. The city of San Antonio (located just south of the scenic Texas hill country) offers an unmatched mix of excellent housing, leisure, and cultural opportunities.

Please send curriculum vitae, reprints of three representative publications, a one-page statement of research accomplishments and objectives, and the names of three or more references by September 1, 2000, to:

Alan Tomkinson, Associate Professor
Institute of Biotechnology/
Department of Molecular Medicine
University of Texas Health Science Center
at San Antonio
15355 Lambda Drive
San Antonio, TX 78245-3207

For further information about our Department and graduate program, please visit our **website: http://www.molecularmedicine.uthscsa.edu**.

The University of Texas is an Equal Opportunity/Affirmative Action Employer.

TENURE-TRACK ASSISTANT/ASSOCIATE PROFESSOR IN WILDLIFE

Full-time tenure-track position. Ph.D. required at time of appointment. Candidate must demonstrate interest in and ability to teach undergraduates and maintain a graduate research program. Dedication to superior teaching is a tradition at Humboldt State University. Applicants should demonstrate expertise in wildlife-habitat relationships and wildlife techniques. Successful candidate may teach habitat ecology, wildlife techniques, principles of wildlife managment, or other assigned courses. Submit curriculum vitae, three letters of reference, and transcripts to: **Dr. Mark A. Colwell, Chair, Department of Wildlife, Humboldt State University, Arcata, CA 95521. Telephone: 707-826-3723**. Applications accepted until 15 December 2000 or until position is filled. *Humboldt State University is an Equal Opportunity/Affirmative Action/Title IX Employer.*

BIOLOGICAL SAFETY OFFICER. The Rockefeller University seeks a Biological Safety Officer to manage the University's biosafety program with particular emphasis on research activities involving recombinant DNA molecules, laboratory animals, and bioharzardous agents. B.S., demonstrated expertise in microbiology, cellular biology, molecular biology, genetics, or biochemistry and either relevant professional experience in the field of biosafety or three or more years of laboratory research experience with recombinant DNA, microbiological practices, and BL2+ (preferred BL3) containment practices. Postdoctorates are encouraged to apply. Excellent benefits. Send résumé with salary requirements to: **The Rockefeller University, 1230 York Avenue, Box 125, New York, NY 10021. FAX: 212-327-7079; e-mail: hr@rockefeller.edu**. *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

BIOMOLECULAR NMR SPECTROSCOPY

The Department of Chemistry at Purdue University invites applications for a **TENURE-TRACK FACULTY POSITION** to commence sometime during 2001. Applicants at all levels will be considered. Applicants are expected to have extensive experience in the application of NMR spectroscopy to problems of biological significance. Purdue University is strongly committed to the support of NMR spectroscopy. The present facilities include state-of-the-art Varian and Bruker 600 and 500 MHz spectrometers, a professional staff with several Ph.D. scientists, and a highly regarded electronics instrumentation laboratory. Siting and other commitments for an ultra-high field instrument exist. Applications must include a complete résumé and detailed description of research interests. Applicants should arrange for three letters of recommendation to be sent to: **NMR Search Committee, Department of Chemistry, Purdue University, West Lafayette, IN 47907-1393**. Review of applications begins October 16, 2000, and continues until the position is filled. Further information is available at **website: www.chem.purdue.edu**; questions may be addressed to **e-mail: vanetten@purdue.edu**. *Purdue University is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT/ASSOCIATE PROFESSOR UNIVERSITY OF TENNESSEE, KNOXVILLE

The Department of Ecology and Evolutionary Biology will fill up to three positions to start no later than August 1, 2001. Positions are at the Assistant Professor or, in special circumstances, Associate Professor level. Postdoctoral experience or the equivalent is preferred.

Position I: Computational/theoretical ecology or evolution. Current research emphases include complex ecological and evolutionary systems, problems at large spatial extent, computational phylogenetics, and individual-based models. The successful candidate will participate in courses in mathematical ecology or mathematical evolution and enhance the current Departmental emphases in theoretical ecology and evolution.

Position II: Vertebrate evolution. The specific research field is open (e.g., molecular systematics, comparative analyses, phylogeography). Primary teaching responsibility is a one-semester upper-level course in comparative vertebrate anatomy.

Position III: Interdisciplinary ecology, evolution, or behavior. Research interests in conservation biology, ichthyology, and aquatic communities are particularly attractive, but other applicants are welcome. Applicants should have strong interdisciplinary skills and are encouraged to develop a research plan that includes using available regional natural resources. Teaching will include an undergraduate ecology course and a discipline-specific graduate course.

A description of the Department can be found at **website: www.bio.utk.edu/eebwebsi.nsf/**. Interested candidates should indicate the position(s) they are applying for and send curriculum vitae; representative reprints; a statement of research goals and teaching experience; and names, addresses, telephone numbers, and e-mail addresses of three references to: **Dr. Dan Simberloff, Nancy Gore Hunger Chair of Environmental Studies, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996**. Review of applications will begin on September 15, 2000, and will continue until the positions are filled. *University of Tennessee Knoxville is an Equal Employment Opportunity/Affirmative Action/Title VI/Title IX/Section 504/Americans with Disabilities Act/Age Discrimination in Employment Act Institution in the provision of its education and employment programs and services.*

POSITIONS OPEN

ASSISTANT/ASSOCIATE PROFESSOR
Wellman Laboratories of Photomedicine
Massachusetts General Hospital
Department of Dermatology
Harvard Medical School

Applications for faculty positions are invited from candidates with combined medical and laboratory science expertise. This is a well-established, interdisciplinary laboratory at one of Harvard's premier research hospitals, dedicated to the discovery and development of biomedical applications of light. The ideal candidate will have M.D.-Ph.D. or equivalent training; primary dedication to an academic research career; and demonstrated expertise in cell biology, molecular biology, biophysics, immunology, or other sciences with a desire to learn, collaborate, lead independent research, and contribute substantially to photomedicine. Problems in photomedicine include mechanisms of response to UV radiation, photosensitization, photodynamic therapy, carcinogenesis, laser-tissue interactions, biomedical optics, diagnostic optical spectroscopy and imaging, and any biomedical interaction or novel use of light impacting medicine or surgery. The laboratory environment is excellent, problem-rich, stimulating, and collaborative. Primary appointment is at Harvard Medical School, with strong potential for adjunct appointment at MIT or other university. Established funding is available for several years; evidence of potential for independent peer-reviewed grant support is desirable. Teaching graduate students, Postgraduate Fellows, and other academic interests are strongly encouraged. For M.D. or M.D.-Ph.D. candidates, a maximum clinical commitment of about 20 percent is appropriate.

Applicants should submit curriculum vitae, a statement of research interests and goals with reprints of selected recent publications, and the names of three references by October 1, 2000, to:

Dr. John A. Parrish
Director, Wellman Laboratories of Photomedicine
Massachusetts General Hospital, WEL 224
Boston, MA 02114

Massachusetts General Hospital is an Equal Opportunity/Affirmative Action Employer.

FACULTY POSITION IN MOLECULAR BIOLOGY

The Department of Molecular Biology at the University of Wyoming is seeking to fill a tenure-track position at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level. Strong candidates in all areas of biochemistry, biophysics, genetics, cell biology, and microbiology will be considered. Candidates must hold a Ph.D. in an appropriate field and have at least two years of postdoctoral experience. The successful candidate will be expected to establish an independently funded research program and participate in both the undergraduate and graduate teaching programs. Candidates seeking appointment at the Associate level will be expected to have already developed an independently funded research program. The Department is presently composed of 14 faculty members with diverse research interests in biochemistry, genetics, and microbiology supported by over $2.5 million per year in grants. Laboratory facilities are modern and well equipped. Salary and start-up packages will be competitive. The University enrolls 11,000 students including approximately 2,500 graduate students. Laramie is located in southeastern Wyoming about 120 miles from Denver, Colorado. For additional information, see **website: http://www.uwyo.edu/ag/molecbio/mobio.html** or direct questions to **e-mail: uwmbio@uwyo.edu**. Candidates should submit curriculum vitae, description of research plans and teaching philosophy, and three letters of recommendation to: **Faculty Search Committee, Department of Molecular Biology, University of Wyoming, Laramie, WY 82071-3944**. Screening of applications will begin on September 15, 2000, and continue until a suitable candidate is identified.

The University of Wyoming is an Affirmative Action/Equal Employment Opportunity Employer.

University of Alberta
Edmonton

Vice President (Research)

The University of Alberta invites applications from, and nominations of, individuals for the position of Vice-President (Research). Ideally, the appointee will take office on July 1, 2001. The University plans to conduct interviews in November and December 2000 and wishes to receive applications by October 21, 2000. The search will continue until the position is filled. This is one of four Vice-Presidents reporting to the President.

Founded in 1908, the University of Alberta is one of Canada's five largest, full-service research-intensive universities, with full-time enrolment of more than 30,000 students. It has a annual budget in excess of $850 million and is known for housing one of the largest and most extensive library collections in North America. The University of Alberta values partnerships with industry and is a recognized leader in technology transfer activities. As well, the University of Alberta values and seeks to enhance partnerships with community and business leaders and alumni. A capital campaign launched in April, 1997 has raised $191 million.

The University of Alberta is a centre of excellence in Canadian higher education with teaching and research programs of international distinction. The Vice-President (Research) must provide vision and leadership in a rapidly expanding research environment, which last year attracted more than $200 million in external funding. The successful applicant will have overall responsibility for the administration of research grants and contracts, for enhancing and promoting technology commercialization, for liaison between the University and the public and private institutions that fund research, and for the dissemination of research findings to the communities the University serves. Candidates will have a distinguished record of research and teaching as well as experience in academic administration. The ability to coordinate work in a multi-disciplinary environment is vital. The University of Alberta is committed to attracting and retaining outstanding faculty, staff and students and to creating an optimal teaching and learning environment. Priorities include achieving ambitious goals in the areas of research, teaching, internationalization, fundraising and external partnerships.

In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. If suitable Canadian citizens and permanent residents cannot be found, other individuals will be considered. Applications or nominations with curriculum vitae should be sent to: **Dr. Roderick Fraser, President, c/o University, Secretariat, 2-5 University Hall, Edmonton, Alberta T6G 2J9, Tel: (780) 492-3212, Fax: (780) 492-1424**

The records arising from this competition will be managed in accordance with provisions of the Alberta Freedom of Information and Protection of Privacy Act (FOIPP).

The University of Alberta hires on the basis of merit. We are committed to the principle of equity in employment. We welcome diversity and encourage applications from all qualified women and men, including persons with disabilities, members of visible minorities, and Aboriginal persons.

...it makes *sense*.

ProteinChip® Technology

Ciphergen Biosystems is currently expanding its US and European operations and looking for ambitious, commercially-minded Ph.D. biochemists/biologists with excellent communication skills and proven problem solving abilities, at the following locations:
Chicago, Atlanta, Washington, D.C., plus major European cities in France, Germany, Denmark, Switzerland, and Benelux.

In addition, Ciphergen is also looking for an experienced Program Sales Manager for the Central US region, Germany, Switzerland and Benelux.

Field Scientist

Preferably you will have substantial experience in **Protein analysis, purification and/or characterisation** in one or more of the following disciplines:

- **Receptor - ligand interactions**
- **Proteomics / Biomarker discovery**
- **Immunology**
- **Protein chemistry**
- **Immunoassay development**

Your role will involve working alongside our clients' scientists, in both industry and academia, developing protocols and rapidly solving biological problems using Ciphergen's proprietary ProteinChip technology.

As well as being a talented research scientist, capable of strong analytical thinking and creativity, you will need good leadership and interactive skills as well as the ability to communicate effectively at all levels. The position involves extensive travel in your local area and occasionally trips to the head office in California.

Program Manager

Your role will be to manage your region's Field Scientists, liaising with customers, organizing demonstrations and most importantly selling Ciphergen's technology to new customers.

Join the Protein Renaissance

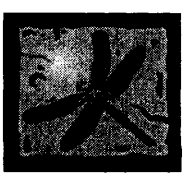
This is a unique opportunity to join a young, rapidly growing company that is working at the forefront of the 'Protein Renaissance'. You will have the opportunity of working alongside our existing team of field scientists, as well as with our customers who are involved at the leading edge of research into the diagnosis, treatment and cure of the most challenging diseases facing us today.

We offer an excellent compensation package, including stock options. Please visit our website at www.ciphergen.com and send your resume to:

US Resumes
Ciphergen Biosystems, Inc.
Attn: Human Resources
6611 Dumbarton Circle
Fremont, CA 94555

European Resumes
Ciphergen Biosystems Ltd
Attn: Human Resources
Surrey Technology Centre
The Surrey Research Park
Guildford, Surrey GU2 7YG
UK

Or e-mail resume to
cv@ciphergen.com
EOE



Ciphergen

POSITIONS OPEN

Applicants are invited for a **STAFF SCIENTIST** to work collaboratively in a program to investigate the signal transduction pathways that result in the activation of mast cells for the release of inflammatory mediators. The individual selected will have overall responsibility for studies that will involve the role of protein tyrosine kinases in the signal transduction pathways. Preferably, such an individual should have experience in molecular biology, library screening, and cell biology. Collaborations will be established with other members of the laboratory including Postdoctoral Fellows and other Research Investigators (both at NIH and other locations) to define the novel molecules that are involved in this pathway. Applicants should have a Ph.D., M.D., D.D.S., or equivalent and relevant postdoctoral experience in molecular biology and biochemistry. Preference will be given to candidates having experience working in molecular biology as applied to eukaryotic systems and the manipulation of cultured cell lines. The candidate will work under the supervision of a tenured Senior Investigator. Indefinite appointment up to five years. Salary ranges from $60,890 to $79,155.

To be considered, send curriculum vitae and bibliography, one-to-two-page summary of research interest and goals, and have three letters of recommendation sent to: **NIDCR Personnel Office, 31 Center Drive, MSC 2290, Building 31, Room 2C39, Bethesda, MD 20892–2290. Telephone: 301-496-6971**. Applications will be accepted until September 22, 2000. *NIH is an Equal Opportunity Employer.*

ASSISTANT/ASSOCIATE PROFESSOR of veterinary nutrition, Department of Molecular Biosciences, School of Veterinary Medicine, University of California, Davis. Tenure-track position available July 1, 2001. Salary dependent on qualifications and experience. Ph.D. and/or D.V.M. or equivalent in nutrition or related field; research record or high potential to develop research in nutrition using state-of-the-art techniques to investigate basic mechanisms in nutrition; demonstrated experience or aptitude in teaching nutrition; excellent interpersonal and communication skills; and a demonstrated ability to work with others in a collegial, team atmosphere required. Comparative nutrition and/or companion animal nutrition experience or interest preferred. Opportunity to participate in the Feline Research Center. Send letter outlining interest, qualifications, experience, and career goals related to the position; curriculum vitae; and names, addresses, and telephone numbers of three references to: **Dr. Alan Buckpitt, Chair, c/o Ms. Joan Learned, Department of Molecular Biosciences, School of Veterinary Medicine, University of California, One Shields Avenue, Davis, CA 95616-8741**. Applications will be accepted through October 6, 2000, or until a suitable candidate is identified. *The University of California, Davis, is an Affirmative Action/Equal Opportunity Employer.*

DIRECTOR OF MARINE FACILITIES

Humboldt State University seeks applications for the position of Director of Marine Facilities. This full-time position directs the Telonicher Marine Laboratory and oversees the marine vessel fleet. A demonstrated understanding of and commitment to the instructional research mission of maritime facilities in an academic environment is required. M.S. or M.A. required (Ph.D. preferred) in an area of marine science or marine-related engineering. Significant work experience in a higher education environment. Three successful years of experience in management of marine facilities. Knowledge of maritime maintenance and safety practices. Ability to work effectively with individuals who represent diverse and competing interests. Submit letter of application, complete résumé, and addresses and telephone numbers of four professional references to: **Chair, Search Committee for Director of Marine Facilities, c/o Human Resources Department, Humboldt State Department, Humboldt State University, Arcata, CA 95521-8299**. We will begin reviewing applications on October 1, 2000. Starting date preferably before January 1, 2001.

POSITIONS OPEN

Messiah College invites applications for **ACADEMIC DEAN** to provide leadership for School of Health and Natural Sciences (Department of Nursing, Department of Natural Sciences, and Department of Health, Physical Education, and Recreation).

Messiah College is a Christian college of the liberal and applied arts and sciences, rooted in the Anabaptist, Pietist, and Wesleyan traditions and committed to an embracing spirit, to academic excellence, and to social engagement.

Compensation will be commensurate with qualifications and experience. Excellent benefits include TIAA-CREF; life, health, and dental insurance; and college tuition assistance for dependents. Nominations and applications should be submitted as soon as possible. Review of candidates will begin September 30, 2000; however, applications will be received until the positions are filled. Starting date for these positions is summer 2001.

Applicants should provide a letter summarizing their interest in the College and their qualifications for the Academic Dean position, comprehensive curriculum vitae, brief statements of philosophy of Christian higher education and approach to administration/leadership, and at least three letters of reference. Please address all inquiries, applications, and nominations to:

Dr. Kim S. Phipps, Provost
Messiah College
One College Avenue
Grantham, PA 17027
Telephone: 717-796-5375
E-mail: kphipps@messiah.edu
Website: http://www.messiah.edu

TENURE-TRACK POSITIONS DEPARTMENT OF PHYSIOLOGY THE UNIVERSITY OF TENNESSEE

The University of Tennessee, Department of Physiology, is actively recruiting for three tenure-track faculty positions. Academic rank is dependent upon experience and qualifications. Candidates should have a Ph.D. or M.D. degree, a good track record in publications, and postdoctoral research experience with a background in cellular and/or molecular biology. The abilities to establish an independent research program in the areas of cardiovascular, gastrointestinal, developmental, endocrine, or epithelial physiology and to engage in teaching activities of the Department are expected. See our **website: http://physio1.utmem.edu** for information regarding the Department.

Applicants should send curriculum vitae, copies of three representative publications, and the names of three references to: **Dr. Leonard R. Johnson, Chair, University of Tennessee Department of Physiology, 894 Union Avenue, Memphis, TN 38163**. These positions will remain open until filled. *University of Tennessee is an Equal Employment Opportunity/Affirmative Action/Title VI/Title IX/Section 504/Americans with Disabilities Act/Age Discrimination in Employment Act Employer. Minorities and females are encouraged to apply.*

The Department of Chemistry at The University of Virginia is seeking qualified applicants for two tenure-track positions at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level. We are seeking individuals whose research interests and expertise are in one of the following areas: biological chemistry, material science/synthetic chemistry, and theoretical/physical chemistry. Candidates are expected to establish an externally funded research program that will attract top-caliber graduate students and postdoctoral collaborators. Teaching ability at both graduate and undergraduate levels is also a prime consideration. Applicants should send curriculum vitae, copies of reprints/preprints, and a detailed description of research plans no later than October 15, 2000, to: **Professor Timothy Macdonald, Chair, Department of Chemistry, University of Virginia, McCormick Road, Charlottesville, VA 22901**. Applicants should arrange for three letters of recommendation to be sent to the above address by the closing date. *The University of Virginia is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

The University of Missouri–Kansas City School of Dentistry, Department of Oral Biology, has several positions opening September 2000. There will be tenure-track positions at the **ASSISTANT**, **ASSOCIATE**, and **PROFESSOR** levels and one nontenure-track position as a **RESEARCH ASSISTANT**. Academic rank commensurate with credentials and experience. These positions will offer highly competitive start-up funds, laboratory space, and salaries. Successful candidates are expected to maintain an active research program as well as to teach graduate students and dental residents. Applicants in the bone and dental research field, such as tissue engineering, molecular cell biology, genetics, developmental biology, and biomaterials, are strongly encouraged to apply. Interested individuals should send curriculum vitae, a one page description of current research activities, and the names of three references to: **Harvey C. Eplee, D.D.S., Office of Academic Appointment, University of Missouri–Kansas City School of Dentistry, 650 East 25th Street, Kansas City, MO 64108**. *Equal Opportunity/Affirmative Action Employer.*

SENIOR SCIENTIST POSITION

PhycoGen, Inc. of Falmouth, Maine, is seeking an outstanding and innovative Senior Scientist with a Ph.D. in chemistry or biochemistry and five to seven years of research experience to join a growing team of scientists. In particular, experience with combinatorial chemical methodologies, organic synthesis, and drug discovery is highly desirable. Leadership and independent working skills are critical. PhycoGen is a biotechnology company developing a range of environmentally benign products and medical therapeutics for major markets. PhycoGen offers an outstanding and competitive compensation package and rewards creativity and teamwork. Please forward résumés by mail, FAX, or e-mail to: **Ms. D. Russell, PhycoGen, Inc., 360 U.S. Route One, Falmouth, ME 04105. FAX: 207-781-8866; e-mail: drussell@phycogen.com**. *PhycoGen is a drug-free Equal Opportunity Employer.*

POSTDOCTORAL ASSOCIATE NORTH SHORE/LONG ISLAND JEWISH HEALTH SYSTEM

A position is currently available in the Department of Medicine at the Long Island Jewish Medical Center, the clinical campus for the Albert Einstein College of Medicine. The successful candidate will participate in ongoing research focused upon brainstem and forebrain mechanisms of cardiovascular control associated with long-term hypoxic exposure. Preference will be given to candidates with recognized expertise in neurophysiological and neuroanatomical techniques. Correspondence (résumé and references) should be addressed to: **Anthony L. Sica, Ph.D., Department of Medicine, Pulmonary and Critical Care Division (Room C–20), Long Island Jewish Medical Center, New Hyde Park, NY 11040. E-mail: asica@snet.net.**

RESEARCH ASSISTANT PROFESSOR OF MEDICINE

The Renal Division within the Department of Medicine at the University of Pennsylvania is recruiting a Research Assistant Professor of Medicine. Qualifications: Ph.D. or equivalent degree, at least three years of experience in T cell immunobiology and transplantation immunology, and expertise in cellular and molecular immunology and flow cytometry. Applicants should submit curriculum vitae including statement of research interests and the names of at least three references to: **Laurence A. Turka, M.D., Chief, Renal Electrolyte and Hypertension Division, University of Pennsylvania, 700 Clinical Research Building, 415 Curie Boulevard, Philadelphia, PA 19104–6144.** *The University of Pennsylvania is an Affirmative Action/Equal Opportunity Employer and welcomes applications from women and minority persons.*

Light up your career!

WWW.QDOTS.COM

Quantum Dot Corporation is a pre-IPO company that is revolutionizing genomics and proteomics via its proprietary quantum dot technology. Qdot™ semiconductor nanocrystals are nanometer-scale "LED" labels that have vast advantages in multiplexing, detection, and sensitivity versus dye molecules. We are looking for the best and the brightest to join us in our new state-of-the-art facility in Hayward, CA.

See our website for detailed position descriptions.

BIOLOGY

CHIEF SCIENTIFIC OFFICER

QDC is looking for a preeminent scientist to build upon our scientific vision and product development plans in genomics and proteomics. Candidates must have a strong track record of scientific accomplishments. Successful candidates will be dynamic, articulate, and possess outstanding leadership skills. A Ph.D. in a biological science or an M.D. is req'd.

DIRECTOR/V.P. OF BIOLOGY

Lead our biological R&D in high-throughput genomics and proteomics. Requires proven scientific and leadership skills. A strong track record in genomic or proteomic R&D is required. Expertise in a broad array of nucleic acid and protein assays is essential. A Ph.D. in the biological sciences is required.

SENIOR SCIENTIST /PRINCIPAL SCIENTIST, IN-VITRO PROTEIN ASSAYS

Lead development of assay technology for proteomics. Requires protein chemistry, biochemistry or related background with Ph.D. and substantial experience. Familiarity with critical issues facing researchers in proteomics and functional genomics is essential. Experience with developing assays for diagnostics and HTS also desirable. Record of innovation required, and the ability to lead an interdisciplinary team.

SENIOR SCIENTIST /PRINCIPAL SCIENTIST, GENE EXPRESSION

Develop/implement a product platform using Qdot™ nanocrystals as labels in expression assays. Must have a Ph.D. or equiv., and a background in molecular biology. Experience with standard DNA/RNA methodologies, labeling, nucleic acid amplification, and microarray technology development is desirable.

RESEARCH ASSOCIATES

Conduct exciting R&D into new genomic and proteomic assays. Experience required in at least one of the following areas: genotyping, gene expression analysis, PCR, FISH, microarrays, immunocytochemistry, ELISA, or flow cytometry. A B.S. in a biological science is required, and industrial exper. desired.

CHEMISTRY

ORGANIC CHEMIST

A versatile background in organic synthesis including reactions on surfaces, conjugation, and the synthesis of novel linking reagents and monomers is essential. Experience with amphiphilic molecules, organo-silicon or -phosphorus compounds is desired. Ph.D. in organic chemistry required.

CHEMICAL ENGINEER

Experience in process design, modeling, and heat/mass transfer is necessary. Industrial experience in scale-up of continuous and batch processes, pref. in the chem. or biotech industries. Ph.D. or equivalent in Chemical Engineering.

POLYMER MICROSPHERE CHEMIST

Experience with polymer beads, emulsion polymerization, overcoating, and surface modification is required. A background in polymer chemistry or engineering and industrial experience is required.

RESEARCH ASSOCIATES, CHEMISTRY/ BIOCHEMISTRY

Develop/optimize the synthesis of new Qdot™ nanocrystals. Experience with air- or water-sensitive materials, work in a glovebox, Schlenk line, or syringe transfers desired.

Develop/optimize conjugation of Qdot™ nanocrystals to biomolecules, and assess activity of the conjugates. Exper. with fluorescence, light scattering, HPLC. BS/MS in chem./biochem. required.

ENGINEERING

SOFTWARE/SENIOR SOFTWARE ENGINEER

Develop algorithms/prototype software for our DNA and protein analysis systems. Work with internal and external software developers. Experience with scientific image processing methods, signal processing, and statistical data analysis methods is required.

ENGINEER/SENIOR ENGINEER

Develop/test optical detection prototypes. Work internally to test these systems, and with external instrument developers to create commercial versions. Experience in optical systems modeling and design required, and in fluorescence detection desired.

MARKETING

MARKETING MANAGER, PROTEIN PRODUCTS

Develop strategy and tactics for all protein–based products. Drive all business development and marketing activities related to product line. BS/MS or Ph.D. in Biology or Cell Biology and a minimum of 2 years experience in similar position required.

LEGAL

PATENT AGENT

Draft new applications, prosecute pending applications, interact with inventors and outside counsel, and assist in all aspects of portfolio management. Requires a background in chemistry or biotechnology, 2-4 years experience in preparing/prosecuting US/foreign patent applications, and excellent people skills.

As part of Quantum Dot's dynamic team, our full time employees receive a competitive salary and benefits package including stock options. For consideration, please send your resume to: Quantum Dot Corporation, 26136 Research Road, Hayward, CA 94545. Email: jobs@qdots.com. Quantum Dot Corporation is an equal opportunity employer. **WWW.QDOTS.COM**

Quantum Dot Corporation

ILLUMINATING THE PATH TO SCIENTIFIC DISCOVERY™

The mission of Human Genome Sciences is to treat and cure disease by bringing new gene-based medicines to patients around the world. We are dedicated to discovery for health. We believe that our genomics-based drugs will usher in a new generation of healthcare products. Our medicines will use the human body's natural substances — genes, proteins and antibodies — to repair, rebuild and restore to normal health damaged, diseased and aged tissues. We are currently looking for the following individuals:

BIOSTATICIANS

The first position will provide statistical and data analysis support to pre-clinical and pharmacology studies. The second position will provide support to assay development and bioassay quality control methodology. Both positions include the development of protocols, statistical analysis plans/methods, and support of the writing of final pre-clinical and clinical study reports. Individuals will also develop new technology to assist in a faster time to approval of biologics. A familiarity with federal regulations, such as CFRs and ICH-guidelines, is necessary. Qualified candidates will have a Ph.D. in Statistics, Biostatistics or related field and experience in the biopharmaceutical industry. (Master's degree considered for second position.) Two years' experience required for the first position preferably in the pre-clinical area. Knowledge of S-Plus, SAS, R statistical packages or other statistical package essential. **Job Code PB1/22-8/11**

PROCESS STATISTICIAN

Individual will provide statistical and data analysis support to manufacturing, assay development as well as quality control and quality assurance in the manufacturing setting. Individual will develop guidelines and support the writing of reports as well as develop statistical quality control methodology, operations research and SOPs. Individual will also develop new technology to assist in a faster time to approval of biologics.

Qualified candidate will have familiarity with federal regulations such as CFRs, ICH-guidelines. A Ph.D. in Statistical Quality Control, Operations Research, Statistics, Biostatistics or related field is required. Knowledge of GMP is essential. A minimum of 2 years' experience in the biopharmaceutical industry and knowledge of S-Plus, SAS, R statistical packages or other statistical packages required. **Job Code PB3-8/11**

STATISTICAL PROGRAMMER

Individual will provide statistical and data analysis programming support to clinical projects as well as pre-clinical studies and assay development. This includes development of programming methodology for the support of statistical analysis plans and the writing of final clinical study reports. Individual will also develop new technology to assist in a faster time to approval of biologics. A bachelor's degree in computer science or related field with at least 2 years' programming experience in the biopharmaceutical industry is required. Knowledge of S-Plus, SAS, R statistical packages or other statistical packages is essential. Knowledge of JAVA, PERL and other computer languages desirable. **Job Code PB4-8/11.**

PATENT TECHNICAL SPECIALISTS

Individual will work with scientific staff preparing, filing, and processing patent applications for HGS. This includes working closely with scientific teams to define new inventions, providing scientific advice in patent prosecution matters, and preparing patent applications for filing. Individual will handle all patent prosecution, research patent applications and assist with appeal and interference proceedings. Qualified candidate will have a minimum of master's degree or equivalent; Ph.D. is a plus. Excellent communication skills essential. **Job Code JD-8/11.**

HGS encourages the pursuit of excellence and offers a competitive benefits package, including educational reimbursement, subsidized health club membership, and a 401(k) with employer match. Look for us on the Internet at www.hgsi.com for additional information. For immediate consideration, please send/fax your resume to **Human Resources Department, Human Genome Sciences, Inc., Job Code #, 9410 Key West Avenue, Rockville, MD 20850; fax: (301) 309-1845.**

HGS

Our preferred method for receiving resumes is via our Web page or via e-mail.

EOE, M/F/D/V.

Visit our Web site to learn more about us: http://www.hgsi.com

POSITIONS OPEN

THERAPEUTICS TARGETED AT SIGNAL TRANSDUCTION IN TUMOR CELLS OR IMMUNE EFFECTOR CELLS

Center for Cancer Drug Discovery and Development
Taussig Cancer Center
Lerner Research Institute
Cleveland Clinic Foundation

The Center for Cancer Drug Discovery and Development and the Department of Cancer Biology are seeking a Ph.D. or M.D. to develop a research program in therapeutics modulating signal transduction. This individual will focus his/her research activities on the substantial progress made in understanding control of tumor cell growth and immune effector cell function on a molecular level. The **INVESTIGATOR** will develop a research program focused on therapeutics targeted at receptors, kinases, gene transcription, or other aspects of control of protein expression. The focus may either be at a specific target or with a family of potential therapeutic molecules and could involve organic molecules or biologicals such as cytokines or monoclonal antibodies. The successful candidate will be expected to develop collaborative interactions with Investigators in related areas within the Taussig Cancer Center and the Lerner Research Institute. The Cleveland Clinic Foundation is committed to recruiting an outstanding Investigator at the **ASSISTANT** or **ASSOCIATE STAFF** level. The successful applicant would have joint appointments in the Center for Cancer Drug Discovery and Development and a basic science department of the Lerner Research Institute. The appointment would be accompanied by an attractive recruitment package of institutional resources and funding reflective of the academic level of the appointment.

Applicants should send curriculum vitae, statement of research interests, and three letters of reference to:

Ernest C. Borden, M.D.
The Cleveland Clinic Foundation, Desk R-40
9500 Euclid Avenue
Cleveland, OH 44195

The Cleveland Clinic Foundation is an Equal Opportunity/Affirmative Action Employer.

STAFF SCIENTIST FOR A MOLECULAR PROFILING CORE LABORATORY

Developmental Therapeutics Department
Medicine Branch
Division of Clinical Sciences
National Cancer Institute

A position for a Staff Scientist of a new Molecular Profiling Core Laboratory is currently being established to support translational clinical research protocols within the Developmental Therapeutics Department, Medical Branch, National Cancer Institute. The primary goal of the Core is the incorporation of biochemical and molecular endpoints in cancer clinical trials to assess both the prognostic and predictive implications of a given molecular phenotype with respect to clinical outcomes and to verify the specific biological activity of novel agents. The molecular profiling laboratory will focus on quantitative real-time PCR, immunohistochemistry, and emerging multiplex technologies. The primary responsibilities of the Staff Scientist will be to supervise the operation of the Core Laboratory, to train support personnel in performing assays and interpretation of data, and to develop and adapt assays that will enhance the translational science of current and future clinical trials. This term position requires an M.D., Ph.D., or equivalent degree and expertise in the analysis of gene and protein expression using molecular technologies. *Candidates must be citizens or permanent residents of the U.S.A.* To apply, please submit a letter of interest, curriculum vitae/bibliography, and three letters of recommendation to: **Dr. Sandra Swain, Medicine Branch, NCI, Building 10, Room 12N226, 9000 Rockville Pike, Bethesda, MD 20892. Telephone: 301-496-4916** by October 1, 2000. *The National Cancer Institute is an Equal Employment Opportunity/Affirmative Action Employer that values and fosters diversity throughout the entire organization.*

POSITIONS OPEN

The Agricultural Research Service's Henry A. Wallace-Beltsville Agricultural Research Center, Weed Science Laboratory, in Beltsville, Maryland, is seeking a permanent interdisciplinary **SUPERVISORY PLANT PHYSIOLOGIST/RESEARCH AGRONOMIST/RESEARCH HORTICULTURIST** to serve as research leader of the laboratory. Duties include managing laboratory research programs (sustainable weed management, biocontrol of weeds, and control of narcotic plants) and conducting research in the area of weed control strategies that are compatible with sustainable agriculture farming systems. Salary: GS-14, $71,954 to $93,537; GS-15, $84,638 to $110,028 per annum plus benefits. *U.S. citizenship is required.* Candidates must request a copy of the vacancy announcement ARS-XOE-4050 by calling **Telephone: 301-504-1484** or via **website: www.ars.usda.gov** in order to respond/submit specific information. Applications must be postmarked by September 1, 2000. *U.S. Department of Agriculture is an Equal Opportunity Provider and Employer.*

RESEARCH ASSISTANT PROFESSOR AND POSTDOCTORAL FELLOWSHIP LUNG AND VASCULAR BIOLOGY

University of Illinois at Chicago
College of Medicine
Department of Pharmacology

Positions as Research Assistant Professor and Postdoctoral Research Associate are available for individuals with research expertise in any of the following areas: vascular endothelial barrier function, mechanisms of expression of endothelial adhesion molecules, role of neutrophils and oxidant mechanisms of vascular injury, signaling in endothelial cells, signaling activated by oxidants and growth factors in endothelial cells, cell-cell interactions in the microcirculation, and mechanisms of leukocyte migration across vascular barrier. The successful candidate will have Ph.D. or M.D., credible publication record, and potential for independent funding and tenure-track position. For fullest consideration, qualified candidates should submit their curriculum vitae and three letters of reference no later than September 1, 2000, to: **A. B. Malik, Ph.D., Professor and Head (RAP/PD), Department of Pharmacology, University of Illinois, 835 South Wolcott Avenue, Room E403 (M/C 868), Chicago, IL 60612. E-mail: abmalik@uic.edu**. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

Virology: Advanced Viral Research Corporation (ADVR), a leader in the development of peptide nucleic acids, is seeking scientific personnel at all levels with expertise in molecular virology to staff its expanding research laboratories in Westchester County, New York. **SENIOR SCIENTIST** candidates should have a Ph.D. and at least two years of postdoctoral experience. **ASSOCIATE SCIENTIST** candidates should have B.S./M.S. degrees with at least one year of laboratory research experience. We offer competitive compensation and benefits packages. Please submit curriculum vitae to: **Human Resources Department, Advanced Viral Research Corporation, 200 Corporate Boulevard South, Yonkers, NY 10701. FAX: 914-376-7368**. *ADVR is an Equal Opportunity Employer.*

INFORMATION TECHNOLOGY/ BIOINFORMATICS PROFESSIONAL

The Department of Biology at Indiana University seeks a computing and bioinformatics support professional. Qualified candidates should have a Ph.D./M.S., experience with UNIX system management, computing support, scientific data analysis, and bioinformatics. Good communication abilities are essential. To apply, contact: **Dr. Don Gilbert, Biology Department, Indiana University, Bloomington, IN 47405. E-mail: gilbertd@bio.indiana.edu; FAX: 812-855-6705; website: http://sunflower.bio.indiana.edu.** *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

The University of South Alabama College of Medicine offers a research-intensive course of study leading to the **DOCTOR OF PHILOSOPHY DEGREE** in **BASIC MEDICAL SCIENCES**. Areas of specialization are biochemistry and molecular biology, cancer biology, cell biology and neuroscience, microbiology and immunology, pharmacology, and physiology. Annual stipend: $14,688 plus tuition waiver. For information, contact: **Graduate Program in Basic Medical Sciences, University of South Alabama College of Medicine, CSAB 251, Mobile, AL 36688. Telephone: 334-460-6153;e-mail:lflagge@jaguar1.usouthal.edu.** *The University of South Alabama is an Equal Opportunity/Affirmative Action Institution.*

SENIOR STAFF SCIENTIST RESEARCH CHEMISTRY

Amylin Pharmaceuticals is looking for a Ph.D. in protein chemistry or related field with four years of industrial experience, preferably in the biotechnology industry. Must have expert knowledge in the purification and characterization of peptide and proteins from natural and recombinant sources. Experience in various forms of chromatography, protein folding, protein stability, and biophysical characterization techniques is essential. Mail résumé to: **Amylin Pharmaceuticals, 9373 Towne Centre Drive, Suite 250, San Diego, CA 92121, Job Code E116, FAX: 858-552-2212; e-mail: hgudmundson@yahoo.com.**

Two **POSTDOCTORAL/RESEARCH ASSOCIATE POSITIONS** available immediately to study the role of subcortical systems in controlling the electrical activity of the hippocampus, concentrating on the hippocampal theta rhythm (see **Vertes and Kocsis**, *Neuroscience* **81**:893–926, 1997). Experience in electrophysiology (unit recording in anesthetized and freely moving rats), anatomy (tracing and immunohistochemistry), or behavior. Combination of techniques desirable. Salary range depending upon qualifications and experience: $30,000 to $45,000. Interested candidates should send curriculum vitae, brief statement of research interests, and letters of reference to: **Dr. Robert P. Vertes, Center for Complex Systems and Brain Sciences, Florida Atlantic University, Boca Raton, FL 33431. FAX: 561-297-2363; e-mail: Vertes@walt.ccs.fau.edu.**

POSTDOCTORAL POSITION available immediately to investigate the cocaine and substrate binding sites on the dopamine transporter using photoaffinity labeling and mass spectrometry. Applicants must have a Ph.D. and experience with protein chemistry and/or mass spectrometry of peptides and proteins. Send brief description of research experience and interests, curriculum vitae, and contact information for three references to: **Dr. Jay Justice, Department of Chemistry, Emory University, 1515 Pierce Drive, Atlanta, GA 30322. E-mail: jjustice@emory.edu.** *Emory University is an Affirmative Action/Equal Opportunity Employer.*

A **POSTDOCTORAL POSITION** is available in the Pulmonary Division, Department of Medicine, at the University of Pennsylvania to study smooth muscle cell signal transduction and protein translation. The project will focus on mechanisms of smooth muscle cell hypertrophy and the response to cell adhesion as they relate to asthma. Expertise in biochemistry and molecular biology required. Send curriculum vitae, letter of research interests, and the names of three references to: **Dr. Aili Lazaar; e-mail: alazaar@mail.med.upenn.edu; FAX: 215-573-4469.** *The University of Pennsylvania is an Equal Opportunity Employer.*

POSTDOCTORAL POSITION at University of Maryland School of Medicine, Baltimore, to study endothelial cell biology. Will utilize molecular techniques to study protein-protein interactions and signaling events. Call Dr. S. E. Goldblum at **Telephone: 410-605-7182**. FAX résumé and references to: **FAX: 410-605-7914. E-mail: shirley.taylor@med.va.gov**. *Equal Opportunity Employer.*

Director, National Eye Institute (NEI)
National Institutes of Health (NIH)

The Position

The Director, NEI, provides leadership and direction to the national research program relative to vision, visual diseases and disorders. The Director develops Institute goals, priorities, policies, and program activities, and provides overall leadership and guidance. Through NEI's intramural laboratories and the extramural scientific community, the Institute supports laboratory and clinical investigations and training of scientists with particular interest in the biomedical and behavioral sciences for research careers in the visual health sciences. The Director, NEI serves as the principal advisor to the Director, NIH on research and scientific policy related to vision research. The NEI has a FY 2000 budget of $450 million to support nearly 1600 research projects. In addition to the leadership and managerial/administrative responsibilities described, the incumbent may carry out his/her own research program. Resources commensurate with the proposed program will be provided.

The Qualifications Required

Senior-level research experience and knowledge of research programs in one or more areas of vision research. Demonstrated leadership of a research program involving dealings with outside groups and extensive planning, program assessment, and analysis of program objectives, the development of plans for the resolution of major operational problems and issues; and management of financial and human resources, including selecting, management, and motivating staff using fair and equitable staffing/recruitment practices. Applicants must possess a M.D., O.D., and/or Ph.D. degree.

The Challenge

To provide strong and effective leadership to an organization dedicated to protecting and improving the visual health of the Nation through the support and performance of the highest quality laboratory and clinical research aimed at increasing our understanding of the eye and visual system in health and disease and developing the most appropriate and effective means of prevention, treatment, and rehabilitation, and through the timely dissemination of research findings and information that will promote visual health. Inherent in this challenge is the investigation of normal tissue and normal visual processes, so that a more complete understanding may be gained of the abnormal processes that lead to diseases of the eye and disorders of vision. These investigations are conducted in hundreds of extramural laboratories and clinics throughout the United States and in the NEI's own intramural facilities in Bethesda, Maryland.

Salary

The Director, NEI, will be appointed at a salary commensurate with his/her qualifications and experience.

How to Apply

Applicants must submit a current Curriculum Vitae and bibliography to:
Ms. Carmen Garcia, Division of Senior and Scientific Employment
National Institutes of Health, Building 31, Room B3C08
31 Center Drive MSC2203, Bethesda, MD 20892-2203
Applications may also be sent via E-Mail to: garciac@od.nih.gov

Applications must be postmarked by September 15, 2000

NIH is an Equal Opportunity Employer

HOWARD HUGHES MEDICAL INSTITUTE

The Howard Hughes Medical Institute conducts biomedical research in the areas of cell biology, genetics, immunology, neuroscience and structural biology at over seventy locations around the United States. HHMI regularly has positions open for research and administrative personnel.

Laboratory Positions:

- Postdoctoral Positions
- Research Specialists/Technicians
- Research Secretaries

Administrative Positions:

- Managers
- Administrative Assistants
- Purchasing Coordinators
- Receiving Clerks

Institute employees enjoy competitive salaries and an excellent benefits package. HHMI is an equal opportunity employer. Please visit our website at **www.hhmi.org/jobs** for a listing of available positions.

POSTDOCTORAL POSITION
DIVISION OF RHEUMATOLOGY

The Division of Rheumatology, Department of Medicine, University of Alberta, invites applications for a Postdoctoral position to study HLA B27-restricted antigen processing and presentation of bacterial and host proteins. This position is available immediately. Studies will incorporate molecular biology, protein chemistry, and cell biology to study proteasome processing of bacterial and host gene products *in vivo* and *in vitro*. Experience in molecular/cell biology and protein biochemistry is preferred. Send curriculum vitae, names, and telephone numbers of three references to: **Dr. Walter Maksymowych, Division of Rheumatology, Department of Medicine, University of Alberta, Edmonton, Alberta, Canada. FAX: 780-407-6055**. Or send to: **Dr. Kevin Kane, Department of Medical Microbiology and Immunology, University of Alberta, Edmonton, Alberta, Canada. FAX: 780-492-7521; e-mail: kevin.kane@ualberta.ca**. *The University of Alberta hires on the basis of merit. We are committed to the principle of Equity in Employment. We welcome diversity and encourage applications from all qualified women and men, including persons with disabilities, members of visible minorities, and aboriginal persons. The records arising from this competition will be managed in accordance with provisions of the Alberta Freedom of Information and Protection of Privacy Act (FOIPP).*

NIH POSTDOCTORAL FELLOWSHIPS in neuroscience and rehabilitation available immediately to (1) study neural principles underlying motor function in health and disease and (2) apply those principles to therapeutic interventions. Requirements: M.D. or Ph.D. in basic or clinical science; strong commitment to a basic or clinical research career, especially in rehabilitation sciences; *citizen or permanent resident of the United States*. More information at **website: www2.kumc.edu/coa/Research/research.htm**. Send statement of research interests, curriculum vitae, and three references to: **Randolph J. Nudo, Center on Aging, University of Kansas Medical Center, 3901 Rainbow Boulevard, Kansas City, KS 66160. E-mail: rnudo@kumc.edu.**

NIH-funded **POSTDOCTORAL POSITION** to study structure/function relationships in a recently recognized family of prokaryotic and eukaryotic amine oxidoreductases that all contain covalently bound flavin and may use tetrahydrofolate as a cosubstrate. Candidates should have a Ph.D. and strong background in biochemistry and molecular biology. Send curriculum vitae, summary of research experience, and the names and telephone numbers of three references to: **Dr. Marilyn Jorns, MCP Hahnemann School of Medicine, Department of Biochemistry, 2900 Queen Lane, Philadelphia, PA 19129. E-mail: marilyn.jorns@drexel.edu.**

SENIOR MANAGING MICROSCOPIST in the Center for Dementia Research at the Nathan Kline Institute, an affiliate of New York University School of Medicine, to participate in neuroscience and Alzheimer's research. Must have hands-on experience in TEM (all aspects), LM, and digital imaging; basic computer morphometry skills desirable. Must be able to work independently, maintain and supervise the facility, and train other staff. B.S., M.S., or higher degree required. Salary competitive. Send résumé to: **Dementia Research, NKI, 140 Old Orangeburg Road, Orangeburg, NY 10962. FAX: 914-398-5422**. *Equal Opportunity Employer.*

POSTDOCTORAL FELLOW
NEUROCHEMISTRY, NEUROSCIENCE

A Postdoctoral position is available to study neurotransmitters (glutamate and catecholamine) involved in mechanisms of pain and analgesia in the central nervous system. Experience in neurochemical (HPLC) assay and electrophysiological studies is preferred. Send curriculum vitae and the names of three references to: **Dr. Hui-Lin Pan, Penn State University College of Medicine, The Milton S. Hershey Medical Center, Department of Anesthesiology, P.O. Box 850, H187, Hershey, PA 17033. E-mail: hpan@psu.edu.**

POSITIONS OPEN

POSTDOCTORAL RESEARCH POSITIONS
IN MICROBIOLOGY
American Society for Microbiology/
National Center for Infectious Diseases

Positions are available for Postdoctoral Scientists to conduct novel research with the overall objective of developing practical applications of microbiology, immunology, and epidemiology for diagnosis and prevention of infectious diseases. Associates will perform research in residence at the National Center for Infectious Diseases, which is headquartered at the Centers for Diseases Control and Prevention in Atlanta, Georgia.

Deadline for applications is November 15, 2000. **Website: http://www.asmusa.org/edusrc/edu23e.htm; e-mail: fellowships-careerinformation@asmusa.org** or **ihulede@asmusa.org.**

The Institute for Genomic Diversity at Cornell University seeks a **POSTDOCTORAL ASSOCIATE** to help in the development of high-throughput genotyping assays in collaboration with Corning Inc. Strong fundamental knowledge and technical skills in molecular biology, biochemistry, and analytical chemistry are required. Experience in assay development and expertise in related technologies such as surface chemistry, automation, and informatics is highly desirable. Interested candidates possessing a Ph.D. in molecular biology, biochemistry, or analytical chemistry should send their curriculum vitae and the names and contact information for three references to: **Ms. Jamie Gwynne, Room 159 Biotechnology Building, Cornell University, Ithaca, NY 14853**. *Cornell University is an Equal Opportunity/Affirmative Action Employer and Educator.*

The Rockefeller University of New York: X-ray crystallography of bacterial transcription complexes. Applications are invited for **POSTDOCTORAL POSITIONS** in the laboratory of **Dr. Seth Darst** to investigate structure-function relationships underlying macromolecular assemblies involved in the process of transcription. Work in the laboratory involves biochemical, biophysical, and X-ray crystallographic investigations of bacterial RNA polymerase and complexes with nucleic acids, substrates, regulatory factors and/or inhibitors isolated at defined stages of the transcription process. Reply to: **Dr. Seth A. Darst, The Rockefeller University, Box 224, 1230 York Avenue, New York, NY 10021. FAX: 212-327-7477; e-mail: darst@mail.rockefeller.edu**. *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOWSHIP position available to study cellular and molecular changes in myocytes isolated from postinfarction rats in the laboratory of **Joseph Y. Cheung, M.D., Ph.D.** The effects of exercise training on postinfarction myocyte performance are also investigated. Strong background in cellular physiology and molecular biology is preferred. If interested, please send your curriculum vitae and letter of interest to: **Weis Center for Research, Attention: Suann Klechinski, Administrative Assistant, 100 North Academy Avenue, Danville, PA 17822.**

POSTDOCTORAL FELLOW: Ph.D. and/or M.D. with experience in molecular biology to investigate regulation of osmotically responsive genes and pathogenesis of diabetic cataract in several transgenic mouse models. Submit résumé and references to: **Patrick R. Cammarata, Ph.D., University of North Texas Health Science Center at Fort Worth, 3500 Camp Bowie Boulevard, Fort Worth, TX 76107-2699. FAX: 817-735-2610; e-mail: pcammara@hsc.unt.edu**. *An Equal Employment Opportunity/Affirmative Action Institution.*

POSTDOCTORAL/RESEARCH ASSOCIATE POSITIONS available to study the mechanisms of p53-mediated stress response (**website: http://www.hcoa.org/about_us/faculty_and_staff.htm**). Experience in molecular biology and/or biochemistry required. Send curriculum vitae and three recommendations to: **Dr. Xiangwei Wu, Huffington Center on Aging, M320, Baylor College of Medicine, 1 Baylor Plaza, Houston, TX 77030.**

POSITIONS OPEN

POSTDOCTORAL POSITIONS
VASCULAR BIOLOGY

Two Posdoctoral positions are available immediately in the following areas: (1) Redox-sensitive gene expression in vascular cells. Molecular cloning and characterization of vascular oxidases. Experience in molecular biology (differential gene display, DNA microarrays) and/or biochemistry required. (2) Cellular mechanisms of smooth muscle differentiation. A strong background in cell biology required.

Applicants must be U.S. residents (permanent) or citizens. Interested candidates should send curriculum vitae (including three references) and direct inquiries to:

Andrew Zalewski, M.D.
Cardiovascular Research Center
Thomas Jefferson University
1025 Walnut Street, Suite 410N
Philadelphia, PA 19107
E-mail: andrew.zalewski@mail.tju.edu

POSTDOCTORAL POSITION
MOLECULAR IMMUNOLOGY
Case Western Reserve University

Postdoctoral position available to develop antibacterial human monoclonal antibodies in transgenic mice in order to investigate the effects of variable region gene sequence and constant region on antibody function. Candidates must have a Ph.D. with strong monoclonal antibody and molecular genetics experience. Applicants should send curriculum vitae with three references to: **John R. Schreiber, M.D., Department of Pediatrics, Case Western Reserve University, Division of Infectious Diseases, Rainbow Babies and Children's Hospital, 11100 Euclid Avenue, Cleveland, OH 44106. FAX: 216-844-8362; e-mail: jrs3@po.cwru.edu**. *Case Western Reserve University is an Equal Opportunity/Affirmative Action Employer. Applications from women and minority candidates are strongly encouraged.*

Two **POSTDOCTORAL POSITIONS** are available to study chaperone-assisted protein folding. Ph.D. in biochemistry or in a related discipline is required. Desired scientific background for the first position includes thermodynamic and/or kinetic analysis of protein-protein and protein-ligand interactions, circular dichroism and fluorescence spectroscopy, analytical ultracentrifugation, and titration calorimetry. For the second position, experience in molecular biology and protein purification and characterization is desired. Please forward an application letter, curriculum vitae, and names of two references to: **Dr. Michal Zolkiewski, Department of Biochemistry, 104 Willard Hall, Kansas State University, Manhattan, KS 66506. E-mail: michalz@ksu.edu**. *Kansas State University is an Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS available to study the molecular mechanisms of apoptosis. Current research projects include regulation of caspases and signaling pathways of apoptotic receptors (see *Cell* **89**:1067; *Molecular Cell* **1**:319; *Science* **281**:1355; and *Science* **281**:1860). Experience in molecular biology, biochemistry, or genetics is preferred. Send curriculum vitae and names of three references to: **Dr. Xiaolu (Kelvin) Yang, University of Pennsylvania School of Medicine, 421 Curie Boulevard, 610 BRBII/III, Philadelphia, PA 19104-6160. FAX: 215-573-8606; e-mail: xyang@mail.med.upenn.edu.**

POSTDOCTORAL POSITION is available to study the molecular basis of early neurodegeneration induced by neurotropic bacterial and viral pathogens using multidisciplinary research approach. Individuals with experience in molecular biology, cell biology, and/or neurobiology with skills in protein chemistry are invited to submit their curriculum vitae and the names and addresses of three references to: **Anura Rambukkana, Ph.D., Laboratory of Bacterial Pathogenesis and Immunology, The Rockefeller University, 1230 York Avenue, New York, NY 10021. FAX: 212-327-7584/8960; e-mail: rambuka@rockvax.rockefeller.edu.**

FACULTY POSITIONS

Assistant and Associate Professor
Center for Cell Biology & Cancer Research
Albany Medical College

The Center for Cell Biology & Cancer Research at the Albany Medical College announces the availability of tenure-track faculty positions at both the Assistant and Associate Professor levels. The successful candidates' research will interface with scientific programs within the Center focusing on tissue remodeling and cancer biology. Studies by Center Faculty concentrate on molecular mechanisms regulating cell adhesion and motility, angiogenesis, growth factor- and matrix-dependent signal transduction, and gene therapy of cancer. Individuals with research interest in these areas are particularly encouraged to apply. New faculty are expected to participate in the graduate program in Cell Biology and in the Postdoctoral Training Program in "Tissue Remodeling and Cancer." The Center for Cell Biology & Cancer Research is aligned with the Clinical Cancer Center at the Albany Medical Center and opportunities exist to develop collaborations with clinical faculty in the Cancer Center as well as the Centers for Vascular Biology, Neuroscience, and Immunology and Microbial Disease.

The level of appointment will reflect the experience of the candidate selected. Qualifications include a Ph.D. degree and a demonstrated track record of excellence in research. New faculty will be expected to maintain an independent, externally funded research program emphasizing molecular genetic approaches to problems related to Cancer Biology. Candidates for the Associate Professor position should have an active, funded research program in an area consistent with the interest of the Center. Applicants will be expected to participate in the teaching missions of both the Graduate and Medical Schools.

Full consideration will be given to those applications received by October 15, 2000. A curriculum vitae, description of research interests, and at least three letters of reference are required; providing copies of published papers is strongly encouraged. Application materials should be submitted to:

Paul J. Higgins, Ph.D.
Cell Biology & Cancer Research (165)
Albany Medical College
47 New Scotland Avenue
Albany, NY 12208

The Albany Medical College is an Equal Opportunity, Affirmative Action Employer

---

Since 1888, Abbott Laboratories has been advancing the health care industry with breakthrough AIDS tests and treatments, the world's best-known nutritionals, powerful antibiotics, advanced diagnostic products and innovative anesthetics. Due to our growth, we have opportunities immediately available within our Diagnostics Division for highly motivated individuals, both entry level and experienced, who thrive in a fast-paced and dynamic environment.

Product/Q.A. Specialists
A BS/BA/MS in Life Science, Chemistry, Medical Technology or related fields required.

Prep Technicians
A BS/BA/MS in Life Science, Biochemistry, Microbiology or related field required.

Technical Specialists
A Ph.D. in Biochemistry, Chemistry, Immunology, Molecular Biology or related fields with experience in diagnostic test assays essential.

We offer a competitive compensation package, including full benefits. For immediate consideration, please send your resume to: Abbott Diagnostics, Ad Code: 2K-PQS88FB, Dept. 94C, Building AP51, 200 Abbott Park Road, Abbott Park, IL 60064-6208. Or, respond on-line at: www.abbott.com and enter Ad Code: 2K-PQS88FB. An EOE, we are committed to employee diversity.

ABBOTT LABORATORIES
Quality Health Care Worldwide

www.abbott.com

NIMH National Institute of Mental Health

National Institute of Mental Health
National Institutes of Health
Department of Health and Human Services

Deputy Associate Director, Office of Translational Research & Scientific Technology (GS-13/14)

Applications are being accepted for a position in the Division of Neuroscience and Basic Behavioral Science (DNBBS). This Division is responsible for NIMH funding of extramural research grants in the areas of basic and clinical neuroscience, genetics, therapeutics development, and basic behavioral science, as well as research training in these areas. The Office of Translational Research and Scientific Technology is a major component of the Division, with an annual budget of approximately $32 million.

This program officer position is responsible for the Small Business Innovation Research Program (SBIR), and Small Business Technology Transfer Program (STTR), which have a combined annual budget of about $12 million and which support research and development of innovative scientific technologies with commercial potential. Responsibilities will include management of portfolios of these extramural grants, participation in funding decisions, and the development and implementation of policies related to resource allocation. **Applications for this position will be accepted through September 22, 2000.**

Applicants should have a Ph.D. degree, or equivalent training, in a discipline related to neuroscience and/or scientific technologies relevant to neuroscience, and should have an interest in developing a broad perspective in this area. They should have experience conducting related research at the postdoctoral level or as an independent investigator. **GS-13/14 civil service positions have a salary range from $60,890 to $93,537** per annum (with locality pay). Full federal fringe benefits apply to this position. Alternate appointment mechanisms in the Public Health Service Commissioned Corps may be used.

Copies of the full text vacancy announcement are available via the World Wide Web: http://www.nimh.nih.gov/orm/pmb/jobs.htm. Please refer to announcement number NIMH-00-0071. Interested candidates may contact **Ms. Margot Darby, NIMH Personnel Management Branch, at (301) 443-9094. Applications will be accepted if postmarked by the closing date and received within 5 business days.**

The National Institutes of Health is an equal opportunity employer

TWO POSTDOCTORAL POSITIONS REGULATION OF CELL GROWTH LABORATORY

Two Postdoctoral Positions are available in the Regulation of Cell Growth Laboratory under the supervision of **Dr. Philipp Kaldis**. We are using biochemical, molecular, and transgenic/knockout mouse techniques to determine the functions of cyclin-dependent kinases (cdks) during the cell cycle.

Self-motivated applicants with a Ph.D. and experience in molecular biology and/or transgenic/knockout mouse techniques are encouraged to apply. Previous experience in cell cycle is an advantage but not required.

The newly renovated laboratory is located at the National Cancer Institute–Frederick Cancer Research and Development Center, Frederick, Maryland, and is part of the Regulation of Cell Growth Laboratory group headed by **Dr. Karen H. Vousden**. The positions are fully funded ($31,500 to $38,020) and provide an excellent work environment. Interested applicants should send curriculum vitae, publication list, a brief description of research interests and experience, and three letters of reference to:

Dr. Philipp Kaldis
c/o Dr. Karen Vousden
National Cancer Institute, NCI–FCRDC
Regulation of Cell Growth Laboratory
Building 560, P.O. Box B
West Seventh Street
Frederick, MD 21702

The National Cancer Institute is an Equal Employment Opportunity/Affirmative Action Employer that values and fosters diversity throughout the entire organization.

POSTDOCTORAL POSITION AUTOIMMUNITY/NEUROIMMUNOLOGY JOHNS HOPKINS UNIVERSITY

Funded Postdoctoral position for three years to study exciting new strategies for antigen-specific immunotherapy for model autoimmune diseases. Projects involve specific therapy of experimental *myasthenia gravis* in animals and cell culture systems, using gene transfer, transgenic mice, stem cell-based therapy, and novel therapeutic agents. Strong background in immunology and molecular biology and experience in cellular and antibody methods required. *Funding for U.S. citizens or permanent residents.* Curriculum vitae and list of references to: **Daniel B. Drachman, M.D., Professor of Neurology and Neuroscience, Johns Hopkins School of Medicine, 600 North Wolfe Street, Meyer 5-119, Baltimore, MD 21287-7519. E-mail (preferred) dandrac@aol.com; FAX: 410-955-1961**. *Equal Opportunity/Affirmative Action Employer.*

RESEARCH SCIENTIST MOLECULAR MICROBIAL ECOLOGY

The Center for Freshwater Studies (CFS) at the University of Alabama invites applications for a three-year Research Scientist position in molecular microbial ecology. We seek candidates with a Ph.D. in an areas relevant to application of molecular microbial techniques to do research in freshwater ecology and to work on funded research projects. The position is available immediately. Salary is $36,000 per year plus benefits. Submit application or make further inquiries to: **Dr. Amelia Ward, Box 870206, The University of Alabama, Tuscaloosa, AL 35487. Telephone: 205-348-1796; e-mail: award@biology.as.ua.edu**. *The University of Alabama is an Equal Opportunity/Affirmative Action Employer.*

MOTOROLA BIOCHIP SYSTEMS

Significant opportunities for career development and growth in multiple disciplines and attractive locations in the Chicago and Phoenix areas are part of our very competitive compensation package. For more information, visit **website: www.motorola.com/biochipsystems**. Please apply online at **website: www.MotorolaCareers.com.** *Motorola is an Equal Opportunity/Affirmative Action Employer. We welcome and encourage diversity in our workforce.*

POSITIONS OPEN

Computational neuroscience: **POSTDOCTORAL FELLOW** to investigate the dynamical properties of nonlinear systems with a particular emphasis on information processing and storage in gene networks and molecular pathways. Applicants should send a letter of application, curriculum vitae, and names of three references to: **Dr. John H. Byrne, Department of Neurobiology and Anatomy, The University of Texas–Houston Medical School, Houston, TX 77030**. *Affirmative Action/Equal Opportunity Employer.*

RESEARCH ASSOCIATE/ POSTDOCTORAL POSITIONS AT THE UNIVERSITY OF VIRGINIA

Research Associate/Postdoctoral positions are available to study how the diversity of G protein α and $\beta\gamma$ subunits leads to specificity in transmembrane signaling. We are defining functional roles for $\beta\gamma$ dimers containing divergent β subunits (such as $\beta 5$) using pure, recombinant proteins and cell transfection assays to monitor interaction with various α subunits and effectors. Systems under study include receptor-α:$\beta\gamma$ coupling, regulation of Type I and II adenylyl cyclases, and activation of PLC-β or PI 3-kinase. A Ph.D. with experience with molecular techniques, biochemistry, and protein purification is required. Application deadline: November 1, 2000. Send curriculum vitae and list of references to: **Dr. James C. Garrison, Department of Pharmacology, P.O. Box 800735, University of Virginia Health System, Charlottesville, VA 22908-0735**. *The University of Virginia is an Equal Opportunity/Affirmative Action Employer.*

JOSLIN DIABETES CENTER HARVARD MEDICAL SCHOOL

Positions for **POSTDOCTORAL SCIENTISTS** available. **Dr. Martin Myers, M.D., Ph.D.**, studies the basic biochemistry and cell biology of cytokine receptor signaling by the leptin receptor and its role in neuroendocrine function. **Dr. Terry Maratos-Flier, M.D.**, investigates biology and physiology relevant to the actions of neuropeptides involved in energy homeostasis, specifically MCH and the MCH receptor. **Dr. Bentley Cheatham, Ph.D.**, studies the cell biology of vesicle transport/biogenesis in adipocytes and the role of the newly identified pantophysin in membrane trafficking events. Send letter indicating laboratory of interest and curriculum vitae to: **Nancy Feinman, Research Division, Joslin Diabetes Center, 1 Joslin Place, Boston, MA 02215. E-mail: nancy.feinman@joslin.harvard.edu.**

POSTDOCTORAL POSITIONS available immediately to study the structural and catalytic properties of an enzyme crucial for replication of parasites (Leishmania, Trypanosoma). Candidates must have a Ph.D. in biochemistry or related field and excellent background in protein purification and characterization and enzymology. Experience with molecular biology techniques would be desirable. Send curriculum vitae and names of three references to: **Dr. Ronald T. Borchardt, Department of Pharmaceutical Chemistry, 2095 Constant Avenue, The University of Kansas, Lawrence, KS 66047. E-mail: rborchardt@ukans.edu**. *Equal Opportunity/Affirmative Action.*

POSTDOCTORAL FELLOWSHIP position available to study transcriptional control of hematopoietic proliferation and differentiation in the laboratory of **Barbara A. Miller, M.D.** This research will particularly involve studies on the function of fungal nuclear migration genes in human hematopoietic cell growth in a laboratory where the major focus is molecular oncology. Strong background in molecular biology required. If interested, please send your curriculum vitae and letter of interest to: **Weis Center for Research, Attention: Suann Klechinski, Administrative Assistant, 100 North Academy Avenue, Danville, PA 17822.**

POSITIONS OPEN

POSTDOCTORAL FELLOWSHIPS LUNG AND INFLAMMATORY CELL BIOLOGY

The Ohio State University Heart Lung Research Institute has four Fellowship positions currently available, aided by a NHLBI institutional training grant, in the area of pulmonary pathobiology and lung inflammation. Applicants are sought with interests in a wide range of interrelated disciplines including inflammatory cell function, cytokines, cell signaling, mitochondrial function, free radical biology, lung epithelial biology, molecular genetics, gene regulation, and functional genomics. Applicants must have a Ph.D. or M.D. degree *and be citizens of the United States, noncitizen nationals, or have permanent residence status.* For more information on faculty and resources related to the program, contact **e-mail: clanton.1@osu.edu**. For application, send curriculum vitae, a brief description of research interests, and names of three references to: **Mark D. Wewers, Division Director, Pulmonary and Critical Care Medicine, The Ohio State University College of Medicine and Public Health, N325 Means Hall, 1654 Upham Drive, Columbus, OH 43210-1228.** *The Ohio State University is an Equal Opportunity/Affirmative Action Employer. Qualified women, minorities, Vietnam-era veterans, disabled veterans, and individuals with disabilities are encouraged to apply.*

POSTDOCTORAL POSITION DEPARTMENT OF PHARMACOLOGY The University of Tennessee

Available immediately to investigate the molecular mechanism of action of alcohol on cloned ion channel proteins. Qualifications: M.D. or Ph.D. in biochemistry, physiology, neuroscience, cell or molecular biology or related field. No more than five years of postdoctoral experience. Practical knowledge of PCR, RT-PCR, DNA recombination, protein purification and expression, and *in situ* hybridization is required. Knowledge of electrophysiology is desirable but not required. Please send curriculum vitae, statement of research interests, and names of three references to: **Alex Dopico, M.D., Ph.D., Department of Pharmacology, University of Tennessee College of Medicine, 874 Union Avenue, Memphis, TN 38163**. *The University of Tennessee is an Equal Employment Opportunity/Affirmative Action/Title IX/Section 504 Americans with Disabilities Act/Age Discrimination in Employment Act Employer.*

POSTDOCTORAL POSITIONS are available immediately to qualified candidates for studying (1) genes involved in the loss of photosynthetic capacity during plant growth in elevated carbon dioxide and (2) the cellular and molecular biology of deacclimation of freezing tolerance in plants. A Ph.D. in biochemistry or molecular biology is required. *Candidates must be U.S. citizens or from specific treaty nations.* Applications specifying which position is sought should be mailed by September 1, 2000. Contact: **Dr. Eliot Herman, U.S. Department of Agriculture–Agricultural Research Service, Climate Stress Laboratory, Building 046–A, BARC-West, Beltsville, MD 20705-2350. Telephone: 301-504-5258; e-mail: HermanE@ba.ars.usda.gov**. *The USDA is an Affirmative Action/Equal Opportunity Employer.*

THE UNIVERSITY OF MICHIGAN

A **POSTDOCTORAL FELLOW** position is available to study the molecular pathways that link genetic changes to the development of pancreatic cancer with a specific emphasis on the TGFβ signaling pathway. Candidates should possess a Ph.D. and have a strong background in molecular biology. Send your curriculum vitae and three letters of reference to: **Diane Simeone, M.D., Department of Surgery, University of Michigan Hospital, 2922D Taubman Center/0331, 1500 East Medical Center Drive, Ann Arbor, MI 48109. E-mail: simeone@umich.edu**. *The University of Michigan is a nondiscriminatory/Affirmative Action Employer and strongly encourages females and minorities to apply.*

FACULTY POSITIONS
TEXAS SOUTHERN UNIVERSITY

Texas Southern University seeks applicants for six tenure-track faculty positions (two positions each in Chemistry, Biology and Pharmaceutical Sciences). Applicants for these positions must have a Ph.D. degree in chemistry, biology, environmental toxicology and/or environmental health sciences with the necessary background, training and qualifications to conduct biomedical and environmental toxicology research. Responsibilities will include developing a vigorous externally funded research program and participation in teaching and supervision of graduate students in the M.S./Ph.D. degree programs in environmental toxicology. Although the particular research area is open, preference will be given to candidates whose research focuses on areas related to cellular and molecular approaches to environmental toxicology. The two positions in biology will require a strong background in molecular genetics and biotechnology. The two positions in chemistry require a strong background in environmental chemistry, fate and metabolism of environmental toxicants and instrumental analysis.

Salaries and benefits for these positions are commensurate with qualifications and experience. The review process will begin immediately upon receipt of all completed application materials. The availability date for the two biology and two chemistry positions is September 1, 2000, however the positions will remain open until filled. The availability date for the two pharmaceutical sciences positions is September 1, 2001. Interested applicants should submit a letter of interest; curriculum vitae; list of publications; outlines of two independent areas for future research projects; and names, addresses, and telephone numbers of three references to:

Search Committee
c/o Barbara E. Hayes, Ph.D.
College of Pharmacy and Health Sciences
Texas Southern University
3100 Cleburne Avenue
Houston, Texas 77004

Texas Southern University is an Equal Opportunity/Affirmative Action Employer and strongly encourages applications from women and minorities

Department of Laboratory Medicine and Pathobiology
Faculty of Medicine
UNIVERSITY OF TORONTO

Faculty Positions

The Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto (**http://www.utoronto.ca/LabMedPathobiology**) is seeking applicants for six full-time faculty positions either non-tenure or tenure-stream at the rank of Assistant Professor available July 1, 2001. We are particularly interested in individuals working in the areas of molecular and biochemical mechanisms of disease and in biotechnology. Two of these positions are directed exclusively at candidates working in the broad area of microbiology including virology and parasitology. Candidates must have an MD or a PhD degree or equivalent, have completed significant postdoctoral training, and have an established track record of high quality research. Exceptional candidates with established funded research programs and a rank of Associate or Full Professor may be considered as well. Teaching experience at the undergraduate and graduate level is an important asset.

The successful candidate is expected to participate actively in graduate and undergraduate teaching programs, maintain a well-funded independent research program and interact with other investigators at the University campus and the major affiliated teaching hospitals.

Applicants should submit curriculum vitae, description of their research accomplishments and the focus of their planned research program and the names of three referees by 2 October, 2000, or until positions are filled, to the **Chair, Academic Search Committee, Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto, Room 110, 100 College Street, Toronto, Ontario, M5G 1L5**.

The University of Toronto is strongly committed to diversity within its community. The University especially welcomes applications from visible minority group members, women, Aboriginal persons, persons with disabilities, and others who may contribute to further diversification of ideas.

Postdoctoral Positions in DNA Repair Research

Several positions exist in the Molecular and Structural Biology division of the Biology and Biotechnology Research Program (BBRP). Recent PhD in biochemistry, molecular biology, or a related field is required. Areas of research include:

Define the repair mechanisms for ionizing radiation-induced DNA damage with a focus on proteins in the base excision and double-strand break repair pathways, design structure-function based inhibitors for radiosensitization, or identify genetic factors in human cancer susceptibility. Experience in protein biochemistry or signal transduction required. Reply to David Wilson III at **dnarepairw@llnl.gov**

Determine the biological function of a novel DNA repair protein; define the protein's biochemical activity, interacting proteins, and its role in vertebrate homologous recombinational repair. Experience in protein biochemistry, expression, and purification is advantageous. Reply to Nan Liu at **dnarepairl@llnl.gov**

Construct and characterize knockout mutants in DNA repair pathways, including homologous recombinational repair, in CHO hamster cells; study the role of the Fanconi anemia group G gene in maintaining chromosome stability by using genetic and biochemical approaches. Background in DNA repair preferred. Reply to Larry Thompson at **dnarepairt@llnl.gov**

For each position, reference **Dept. AJSC8B0BS**. LLNL's BBRP offers a challenging environment and competitive salary/benefits. We are located in the scenic Livermore Valley and have interactions with DNA repair researchers at UC Berkeley, UC San Francisco, UC Davis, and Stanford University. LLNL is an equal opportunity employer with a commitment to work force diversity.

University of California
Lawrence Livermore National Laboratory

Visit our employment web site at:
www.llnl.gov/jobs

POSITIONS OPEN

ASSISTANT PROFESSOR
Floricultural Crop Production, Management, and Physiology

The Horticulture Department at Michigan State University is seeking applicants for a research and extension tenure-track position in production, management, and physiology of floricultural crops. Responsibilities and expectations include coordinating research and production management programs for these crops; effectively collaborating with industry and MSU's plant science community; communicating research findings to the commercial floriculture industry and other clientele; successfully competing for extramural funds; leadership in working with research faculty and extension agents; and coordinating, integrating research, and extension programming related to floriculture.

Qualifications: Ph.D. in horticulture or related field required, as is a record of potential for research of the highest quality and the ability to collaborate productively with research and extension personnel. Postdoctoral experience in floriculture, ecology, ecophysiology, or stress physiology desirable.

Screening will begin September 15, 2000, and will continue until a qualified applicant is identified. Position available January 1, 2001. Send curriculum vitae, publication list, description of research and extension interests and goals, and request that three reference letters be sent to:

Dr. Royal Heins, Search Committee Chair
228 Plant and Soil Sciences Building
Department of Horticulture
Michigan State University
East Lansing, MI 48824-1325

ASSISTANT PROFESSOR
Vegetable Crop Production, Physiology, Ecology

The Department of Horticulture at Michigan State University is seeking candidates for a research and extension tenure-track position to establish a systems approach to vegetable crop production, physiology, and/or ecology. Other expectations: developing a highly recognized, externally funded program; collaborating with grower groups and MSU plant scientists and extension personnel; participating in a vegetable crop research team utilizing basic and applied approaches to issues in integrated crop management, sustainable production, protected culture, new crops, shelf-life extension, food safety, quality assessment, handling procedures, preharvest effects and practices on product quality and storability, and the physiology of quality and storage disorders.

Qualifications: Ph.D. in crop science, horticulture, plant physiology, or related field and a record of research productivity required. Postdoctoral and/or industry experience and evidence of ability to obtain competitive external grants in support of research and/or educational programs desirable. Screening will begin October 1, 2000, or until a suitable applicant is identified. Position available January 1, 2001. Send curriculum vitae, publication list, description of research interests, and request that three reference letters be sent to:

Dr. Kenneth Sink, Search Committee Chair
336 Plant and Soil Sciences Building
Department of Horticulture
Michigan State University
East Lansing, MI 48824-1325

POSTDOCTORAL POSITION is available to study immune mechanisms and cellular response to *Cryptosporidium parvum* antigens. Candidate should have a Ph.D. in microbiology or related field and experience in immunologic techniques. Experience in molecular biology (e.g., gene expression and protein purification) also helpful. *Must be U.S. citizen.* Send curriculum vitae to: **Jan R. Mead, Ph.D., Atlanta VA Medical Center, 1670 Clairmont Road, Decatur, GA 30033. FAX: 404-728-7780; e-mail: jmead@emory.edu.**

POSITIONS OPEN

BECKMAN FELLOWS
Biomedical Optics/Cellular Photobiology/Photomedicine

The Beckman Laser Institute (BLI) invites applicants for the Arnold and Mabel Beckman Fellows Program at the University of California, Irvine (UCI). Applicants should have a Ph.D. (or M.D./Ph.D.) and must demonstrate strong interest in developing an independent, interdisciplinary research program that develops or employs optical technologies for the study of biological problems at the cellular and/or tissue levels and/or for the diagnosis and treatment of disease. Preference will be given to candidates who have already undertaken research in a field related to biomedical optics, photomedicine, laser cell microscopy, and/or photobiology.

Fellows are expected to develop interdisciplinary research projects that address one of the main Beckman Laser Institute research areas (**website: www.bli.uci.edu**). Fellows will be expected to develop strong collaborations with other BLI scientists. Appointments will be made for a term of up to three years. Annual stipends are $65,000 (salary and fringe benefits); an additional $55,000 per year in discretionary funds is provided for research as well as to access other Institute resources. Collaboration with other Beckman Centers/Institutes is encouraged.

Applications for the Beckman Fellows Program are being accepted immediately for 2000 and 2001. Please send curriculum vitae, a list of three references, and a brief (two-to-three page) research proposal to:

Michael W. Berns, Ph.D.
Director, Beckman Laser Institute
1002 Health Sciences Road, East
Irvine, CA 92612
E-mail: job@bli.uci.edu

The University of California, Irvine, is an Equal Opportunity Employer committed to excellence through diversity. Applicants must be U.S. citizens or permanent residents.

POSTDOCTORAL RESEARCH ASSOCIATE

College of Veterinary Medicine, Mississippi State University, is seeking two Postdoctoral Associates for research related to neuroendocrine interactions. Responsibilities: Integrate projects using animal models on estrogen-mediated effects on the nervous system including development, neurochemistry, morphology, and behavior; gene expression and signal transduction in nervous and endocrine tissues; hormone and neurotransmitter quantitation; xenoestrogen effects on the nervous and endocrine systems; interact in groups active in toxicology and reproductive physiology. Qualifications: Ph.D. in relevant area of life sciences with laboratory experience in one or more of the areas listed above plus cell culture, HPLC, general molecular biology techniques, imaging techniques, and laboratory animal handling. Salary: Commensurate with qualifications and experience; minimum $28,000 per year. Applications: Accepted through August 25, 2000, or until a suitable candidate is identified. Technical questions may be directed to: **Dr. Janice Chambers; e-mail: chambers@cvm.msstate.edu**. Submit a letter of application outlining qualifications and research experience/interests, curriculum vitae, transcripts, and three letters of reference to: **Ms. Barbara Rhoades, Administrative Officer, College of Veterinary Medicine, Box 9825, Mississippi State University, Mississippi State, MS 39762-9825**. *Mississippi State University is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS are available immediately to study the biochemical and molecular aspects of cell-cell and cell-matrix interactions, as well as signal transduction in leukocytes. A strong background in molecular biology, retroviral vector-mediated gene transfer, or intracellular signaling is desirable. Projects include identification and characterization of genes responsible for a novel leukocyte deficiency. Please send curriculum vitae and the names of three references to: **Dr. Li Zhang, Department of Vascular Biology, Holland Laboratory of The American Red Cross, 15601 Crabbs Branch Way, Rockville, MD 20855. FAX: 301-738-0465; e-mail: ZHANGL@USA.REDCROSS.ORG.**

POSITIONS OPEN

FACULTY POSITION

Applications are invited from exceptional candidates with an M.D., Ph.D., or M.D./Ph.D. to develop a research program on the immunology of the eye or other model sites that are immunologically privileged. The successful candidate would hold a primary **TENURE-TRACK APPOINTMENT** in the Department of Ophthalmology and Visual Sciences at the University of Illinois and a secondary appointment in either the Department of Microbiology and Immunology or the Cancer Center or both. The Department of Ophthalmology and Visual Sciences has a strong tradition of engaging in cutting-edge research and wishes to extend investigative strength in basic aspects of immunology. Candidates will be expected to maintain an independently funded research program and take part in multidisciplinary research and training programs in immunology across the medical center. Applicants must have the background and commitment to pursue a federally funded research program in immunology using traditional and molecular approaches. Applications are solicited from immunologists who seek to ask important new questions about immune privilege, tumor immunology, or uveitis. Contemporay laboratory space and an attractive set-up/salary package is available. Respond with curriculum vitae and a list of three references by September 22, 2000, to:

Jose S. Pulido, M.D., M.S. (028a)
Professor and Head
Department of Ophthalmology
College of Medicine (M/C 648)
University of Illinois at Chicago
1855 West Taylor Street
Chicago, IL 60612-7243

The University of Illinois at Chicago is an Affirmative Action/Equal Opportunity Employer.

TWO TENURE-TRACK FACULTY POSITIONS
Institute of Biological Chemistry
Academia Sinica, Taiwan

We seek applicants at the level of **ASSISTANT RESEARCH FELLOW** (equivalent to **ASSISTANT PROFESSOR**) but may consider more advanced faculty. Applicants should have a Ph.D. and/or M.D. degree plus postdoctoral training. The ability to pursue independent research is of critical importance for consideration. Areas of particular interest include structural biology, proteomics, and related areas in biochemistry. The Institute will provide excellent start-up funds and laboratory space as well as state-of-the-art common facilities. Interested applicants are requested to send (1) description of previous research experience, (2) representative reprints of research papers, (3) description of proposed research, (4) résumé, and (5) three letters of recommendation to: **Dr. Andrew H.-J. Wang, Director of the Institute of Biological Chemistry, Academia Sinica, Taiwan** by November 1, 2000. Inquiries can be made via **Telephone: 886-2-27855696, extension 1015; FAX: 886-2-27889759; e-mail: tan@gate.sinica.edu.tw.**

POSTDOCTORAL POSITIONS: Two full-time Postdoctoral Associate positions (for one to four calendar years), funded through NIH grants, are available immediately. Duties for the first position include research to determine the effects of ethanol on hypothalamic neuron differentiation and apoptosis using double immunocytochemistry and *in situ* hybridization, electron microscopy, and morphometric analysis procedures. The research duties for the second position include determination of the changes in expression of growth factor genes during estrogen-induced cell transformation in the pituitary using RNA protection assays. Demonstrated experience in appropriate research techniques as well as written and oral communication skills is essential. Send curriculum vitae and three letters of reference to: **Dipak K. Sarkar, Chairman, Department of Animal Sciences, 84 Lipman Drive, Rutgers University, New Brunswick, NJ 08901. E-mail: sarkar@aesop.rutgers.edu.**

Director
Health Research and Policy Centers
University of Illinois at Chicago

Nominations and applications are invited for the position of Director of the Health Research and Policy Centers (HRPCs) at the University of Illinois at Chicago (UIC). UIC is a Research I university with 15 colleges and one of the largest comprehensive health sciences centers in the nation. Total enrollment is approximately 24,000 of which approximately 8,000 are graduate and professional students.

The HRPCs are a University-wide, multidisciplinary group of 5 centers (Health Behavior Research Center; Research on Health in Aging Center; Health Policy Center; Health Services Research Center; and Health Promotion and Disease Prevention Center) and a Methodological Core (see www.uic.edu/depts/ovcr/hrpc). The mission of the HRPCs is to improve the health of the public by stimulating and supporting a broad mix of high-quality social and biosocial research and policy making on health and medical care. The Director leads a nationally recognized group of center directors and researchers conducting projects on health behaviors, health promotion, disease prevention, health services/outcomes, and health policy. Currently it houses approximately 40 research projects funded by NIH, CDC, HRSA, AHRQ, national and local foundations, and state and local public health agencies. The research is conducted with adolescents, adults and the elderly, in schools, families, communities, both locally and nationally.

Candidates for the position must have an outstanding and nationally recognized record of research, external funding, and scholarship; be able to provide leadership to continue and enhance the growth of the centers; provide support and mentoring to foster the development of young investigators; provide and supervise administrative staff and infrastructure to optimally support the research enterprise; and have demonstrated ability to work cooperatively with other research centers. The position requires administrative experience in leading and administering research groups. A candidate's scholarly accomplishments should qualify him/her for appointment as a tenured full professor in any of the disciplines in the social sciences or public health.

Evaluation of applications and nominations will begin on October 1, 2000, and will continue until the position is filled. Applications, accompanied by a complete curriculum vitae and a letter of interest in which the applicant provides a statement of research focus and administrative experience, should be sent to:

Dr. Sylvia Furner, Chairperson
Search Committee for the Director of the Health Research & Policy Centers
The School of Public Health
University of Illinois at Chicago
2121 W. Taylor Street, MC: 922
Chicago, Illinois, 60612-7260
E-mail address: SEFurner@uic.edu

The University of Illinois at Chicago is an Affirmative Action/Equal Opportunity Employer. Women, minorities, and people with disabilities are encouraged to apply.

Clinical Research Scientist - CNS

Great opportunity to focus on clinical development and programs (Phases I to IV) for products in CNS (anxiety, depression). Specific challenges will include assisting in managing clinical trials, analyzing clinical trial data, writing protocols and reports and preparing regulatory submissions.

We desire candidates that have recently completed a Ph.D. or Postdoc in Clinical or Experimental Psychology. Knowledge of depression/anxiety studies, clinical rating scales and neuropharmacology as well as strong writing skills as illustrated by being published in journals are also desired. This position is located in **New York City.**

Medical Science Liaison

Establish and develop collaborative relationships with Medical Research Leaders in medical disciplines, to increase awareness of both disease states and therapies. Attend medical and scientific meetings in therapeutic areas. Disseminate medical knowledge relating to Forest's development efforts. Educate leading researchers/educators, hospital P&T committees, and managed care organizations on cutting edge clinical information. Travel may average up to 30% depending on location.

Advanced degree preferred (MD, Pharm D., Ph.D., R.Ph., RN or P.A.). Previous medical experience and/or Clinical/Research experience in CNS, General Clinical, Pulmonary/Respiratory and Rheumatology. Strong written and verbal communication skills required. Current openings in the following areas: **Boston, Chicago, New York City, Cincinnati, Pittsburgh, Los Angeles, Denver, Washington D.C., Baltimore and Atlanta.**

To be considered for part of our team, send your resume, in confidence, indicating position of interest, with salary requirements to: **Human Resources Department, Code SCI, Forest Laboratories, Inc., 909 Third Ave., New York, NY 10022-4731; Fax: 212-750-9152; staffing@frx.com EOE M/F/D/V Visit our website at www.frx.com**

FOREST LABORATORIES INC.
Where Opportunity Keeps Growing.

Tenure-Track Faculty Position in Behavioral Neuroscience

Georgia State University

Georgia State University is engaged in a major expansion of its research and instructional programs in **Behavioral Neuroscience** as part of the recently launched **NSF Science and Technology Center for Behavioral Neuroscience.** Generous state and institutional funds along with $20 million from the National Science Foundation has been committed to fund the Center for the first five years. The Center is a consortium of more than 60 neuroscientists from Georgia State and other Atlanta area universities including the Atlanta University Center, Emory University, Georgia Tech and Morehouse Medical School. The purpose of the center is to foster interdisciplinary collaborative approaches toward understanding the basic neural mechanisms underlying the regulation of complex social behaviors and emotions. The center is also designed to enhance minority participation in science, to encourage technology transfer to industry, and to aid in bringing research findings to the public.

The Department **of Biology at Georgia State University** invites applications for a tenure-track position in **Behavioral Neuroscience.** We are particularly interested in individuals who employ *molecular and cellular approaches* to the study of how *neurochemical signals* regulate *behavior*. The successful candidate appointed at the Assistant Professor level will be expected to establish a vigorous, independent, externally funded research program. Applicants at more senior levels should have an established, externally funded research program. All faculty members also participate in instruction at the undergraduate and graduate levels.

The Biology Department has a large and active research faculty, outstanding research and core facilities, and M.S. and Ph.D. training programs (See **http://biology.gsu.edu).** Our expanding program in neuroscience includes two interdisciplinary centers at Georgia State focused on neuroscience research (See **http://biology.gsu.edu/neurosci).**

Applicants should include a CV, reprints or recent papers, at least three letters of recommendation, and a statement of future research plans.

Send applications to:
Dr. H. Elliott Albers
Chair of the Behavioral Neuroscience Search Committee
Dept. of Biology
Georgia State University
P.O. Box 4010
Atlanta, GA 30302-4010

Review of applications will commence on September 15, 2000 and continue until the position is filled. Georgia State University, a unit of the University System of Georgia, is an EEO/AA Employer.

New Millennium, New Look, Great Resources!

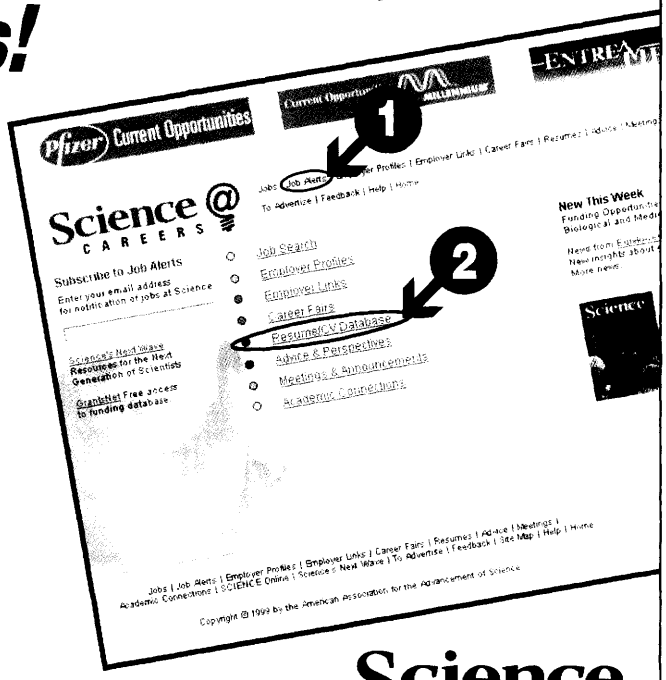
Science Careers web site has ❷ great ways to help you find a job.

1. Job Alerts Sign up for Job Alerts by posting your criteria for a job. Every week, *Science* Careers will send you job postings that match those criteria. It doesn't get any easier.

2. Resume/CV Database

www.sciencecareers.org * FORMERLY SPN

This database allows you to post your credentials for access by hiring managers from leading universities and biopharma organizations.



Sign up for both today.

Science
Discover your future.

RESEARCH

Scientists

AN ATMOSPHERE OF DISCOVERY

Alexion Pharmaceuticals is a public company engaged in the development of novel drugs for the treatment of immunological and cardiovascular diseases. Now is the ideal time to join our inspiring environment as we intensify our efforts for new discoveries. Currently, we offer excellent opportunities for professionals at all levels from B.S. degrees through PhDs with the following experience:

- ***Recombinant Antibody Technology***
- ***Phage Display***
- ***Biopanning***
- ***Antibody Expression***

Alexion offers competitive compensation; full benefits including health insurance, 401(k) plan, incentive stock options, and relocation assistance; and talented professional colleagues. For consideration, please send resume to:

Human Resources, Dept. Code: #SS,
Alexion Pharmaceuticals, Inc.,
25 Science Park, Suite 360,
New Haven, CT 06511,
Email: huzare@alxn.com

Alexion Pharmaceuticals Inc.
www.alxn.com
Equal Opportunity Employer

JRH Biosciences, a leading international cell culture reagents manufacturing company, currently has the following openings:

Product Development Manager - KS
Manages the Media Development Group and GLP production.

Marketing Manager - KS
Develops and manages the implementation of differentiated serum product strategies.

Technology Service Associate - KS & PA
Investigates and resolves manufacturing issues.

Technology & Compliance Manager - PA
Develops, validates and implements new manufacturing processes and product packaging.

Account Manager - Baltimore/DC
Maximizes coverage of client base, identifies new opportunities, and ensures a high profile for JRH Biosciences.

Production Manager - PA
Manages the Media Manufacturing departments in Pennsylvania.

If you would like to join our team, please apply in person or submit your resume to **Attn: Human Resources, JRH Biosciences, 13804 W. 107th St., Lenexa, KS 66215; Fax: (913) 469-5584; e-mail: Hr@jrhbio.com**. *EOE*

JRH BIOSCIENCES
A CSL Company

Science

RPI, a leader in the development of ribozyme-based pharmaceutical products, is currently seeking an experienced Scientist to join our Pharmacology Department at our facility in Boulder, Colorado:

Scientist-Pharmacokinetics

Seeking a Ph.D. level scientist to conduct and support pre-clinical and clinical pharmacokinetic studies of ribozymes. Responsibilities will also include the design, conduct, and interpretation of metabolism, protein binding and mass balance studies. Expertise with standard biochemical assays used for drug quantitation such as HPLC, CGE or MS is required. Previous experience with oligonucleotides is also desirable. Must be an independent thinker with the ability to direct projects and interact with scientists from diverse disciplines. Applicants must have a Ph.D. Excellent communication skills required. Please refer to job # 087.

We offer a competitive salary and a generous benefits package, including stock option plan. For consideration, please send a Curriculum Vitae and the names of three references to: Ribozyme Pharmaceuticals, Inc., 2950 Wilderness Place, Boulder, CO 80301, Attn: job#087, FAX 303-449-6995. No phone calls please.

We are an Equal Opportunity Employer.

RPI

Compound Libraries Manager

Uniondale, NY

OSI Pharmaceuticals is a leading drug discovery company with a substantial pipeline of product opportunities for commercialization with the pharmaceutical industry. OSI's research programs are focused in the areas of cancer therapeutics, cosmeceuticals, diabetes, and GPCR-directed drug discovery. OSI utilizes a comprehensive drug discovery and development capability to facilitate the rapid and cost-effective discovery and development of novel, small molecule compounds in more than 40 research and development programs.

Play a key role in OSI's Drug Discovery operation in the new millennium through improved organization and distribution of the company's compound libraries. In this challenging position you will supervise a team of professionals, direct work-flow and assist in refining the electronic inventory process. You will have a science-based BS degree, 2-6 years of relevant experience and an affinity for working with industry-standard databases. Supervisory experience is desirable. Programming and robotics expertise will be considered as strong pluses.

OSI Pharmaceuticals offers a superb benefits package, including 3 weeks vacation, stock options, 401(K) and opportunities for career development. Qualified candidates may send resumes to: **Director, Human Resources, OSI Pharmaceuticals, Inc., 106 Charles Lindbergh Boulevard., Uniondale, NY, 11553; Fax: (516) 222-0114; e-mail: employment@osip.com** Equal Opportunity Employer M/F/D/V.

OSI Pharmaceuticals
www.osip.com

GRADUATE PROGRAMS

EASTERN VIRGINIA MEDICAL SCHOOL
ESTABLISHED 1973

BIOMEDICAL SCIENCES GRADUATE PROGRAM

Eastern Virginia Medical School

The Eastern Virginia Medical School invites applications for M.S. and Ph.D. research training in its multidisciplinary Biomedical Sciences Program. The program includes faculty with expertise in cell and molecular biology, physiological sciences, virology, biochemistry and the neurosciences. Unique translational research programs allow for training in the molecular and clinical aspects of several diseases including diabetes, reproductive medicine, aging, pediatric infectious diseases, prostate and breast cancer and ocular disorders.

For further information contact:

Director
Ph.D. Biomedical Sciences Program
Office of Research
Rm. 2054, Lewis Hall
Eastern Virginia Medical School
700 Olney Rd.
Norfolk, Virginia 23507-1696
Wasilewj@evms.edu
http://www.evms.edu/hlthprof/phd-biomed.html

EVMS is an Affirmative Action/Equal Opportunity Employer

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

University of California

Inquiries are invited from qualified applicants for faculty positions currently available.

Ecologist, Full Professor and Chair, Department of Environmental Sciences & Policy. Teach, participate in advising, conduct research in ecology and serve as department chair. This position is a nine-month tenure track appointment. Eleven-month term employment will be offered and continued based upon academic personnel review. Position will be available July 2001. Apply to: **Alan Hastings, Search Committee Chair, e-mail: amhastings@ucdavis.edu.** Position open until filled. To ensure consideration apply by October 16, 2000.

Assistant/Associate Vegetable Specialist in Cooperative Extension (11 mos.) A career-track position that includes CE research, outreach, and education responsibility, with emphasis on cool-season vegetable production. Appointee will be located at the UCD/USDA Research Center in Salinas, and will be an integral part of the UC Department of Vegetable Crops. Apply to: **Timothy Hartz, Search Committee Chair, Department of Vegetable Crops, e-mail: hartz@vegmail.ucdavis.edu.** Position open until filled. To ensure consideration, apply by September 30, 2000.

Assistant Anadromous and Inland Fisheries Specialist in Cooperative Extension (11 mos.) A career-track position that includes applied research and outreach of relevance to California in the area of adaptive management and the design and/or evaluation of conservation and species/fisheries restoration projects. Apply to: **Chris Dewees, Search Committee Chair, Department of Wildlife, Fish, and Conservation Biology, e-mail: cmdewees@ucdavis.edu.** Position open until filled. To assure consideration apply by August 31, 2000.

Assistant Viticulture Specialist in Cooperative Extension (11 mos). A career-track position that includes CE research, outreach, and education responsibility, with emphasis in the raisin industry and the central and southern California winegrape industry. Appointee will be located at the Kearney Agricultural Center, and will be an integral part of the UC Department of Viticulture and Enology. Apply to: **Dr. Nick Dokoozlian, Department of Viticulture and Enology, e-mail: nkd@uckac.edu.** Position open until filled. To assure consideration, apply by February 1, 2001.

ANTICIPATED POSITIONS

Assistant Soil Resource Specialist in Cooperative Extension (11 mos.). A career-track position that includes CE research, outreach, and education responsibility, with emphasis in the development of a statewide extension and applied research program in land use, interpretation, soil management, and soil restoration. Ph.D. in soil science or related field. Apply to: **Dennis Rolston, Department of Land, Air, and Water Resources, e-mail: derolston@ucdavis.edu.** Position open until filled.

Assistant Environmental Specialist in Cooperative Extension (11 mos.) A career-track position that includes CE research, outreach, and education responsibility, with emphasis in the development and implementation of effective methods to deal with environmental issues related to waste management including air quality and nutrient recycling. Apply to: **Gary Anderson, Chair, Department of Animal Science, e-mail: gbanderson@ucdavis.edu.** Position open until filled.

Cooperative Extension positions have responsibilities for extension education and outreach, and applied research. Professional positions have responsibilities for teaching, advising and research (in the Agricultural Experiment Station). Candidates for all positions must have a Ph.D. in an appropriate field. Applicants must submit resume, transcripts (if within five years of graduation), statement of research and teaching experience, list and reprints of significant publications, and the names and addresses of at least three persons familiar with the applicant's qualifications, to the search committee chair and department noted for position, **University of California, Davis, CA 95616.** Please indicate the position(s) in which you are interested.

The University of California is an Affirmative Action/Equal Opportunity Employer.

CELLTECH
CHIROSCIENCE

Celltech Chiroscience, Inc., a leading biotech company located near Seattle which uses its diverse, state-of-the-art genomics and target validation technologies to discover, develop and bring to market novel medicines for improved healthcare, has an immediate opportunity.

SCIENTIST – MOLECULAR BIOLOGY

Working in an interdisciplinary team environment, this individual will be responsible for providing expert technical direction in molecular biology and in particular cDNA library construction. The successful candidate will be responsible for the generation of high quality cDNA libraries from differentially expressed gene populations. Experience with subtractive cDNA library construction and differential display along with mRNA isolation and library construction from low cell numbers and Laser Captured cells would be desirable. In addition expertise in expression cloning would be beneficial. The position is a key central role within the group and requires the ability to evaluate and develop new methodologies.

This position requires a Ph.D. with 2-3 years post-doctoral experience in Molecular Biology or a related discipline. The ideal candidate will have strong capabilities in all aspects of molecular biology with a proven track record in the isolation of rare and differentially expressed cDNAs. Joining the Molecular Biology group there will be an expectation to identify and validate novel genes with a view to developing new drug targets. Understanding of Bioinformatics and a strong grasp of computational molecular biology are essential. Working within a dynamic group, good written and verbal communication skills are required.

For information on other open positions, please see our job postings at celltechgroup.com/celltech_chiroscience/index.html, under Recruitment.

Celltech Chiroscience, Inc. offers competitive compensation & benefits & the chance to join one of science's most exciting fields – gene discovery! For consideration, please fax, mail, or email your resume to: **Human Resources, Job Code MBScience800, Celltech Chiroscience, Inc., 1631 220th St. SE, Bothell, WA 98021** Fax: 425-489-8018, Email: careers@chiroscience.com

MIT

POSTDOCTORAL FELLOW

The Harvard/MIT Division of Health Sciences and Technology has an immediate opening. Will join a team of investigators studying cardiovascular function with emphasis on the development of new diagnostic and therapeutic techniques. Other projects include investigating the adverse effects of space flight on the cardiovascular system. The principal responsibility of this person will be to conduct and supervise various ongoing research projects.

Requirements: a Ph.D. required and a strong background in Biomedical Engineering or Biophysics. Must be self-directed and able to work effectively with others. A background in signal processing and computer programming/ interfacing highly desirable.

Interested applicants should send curriculum vitae and references to: **Professor Richard J. Cohen, Harvard-MIT Division of Health Sciences and Technology, MIT, Room E25-335, 45 Carleton Street, Cambridge, MA 02142. Email:rjcohen@mit.edu.**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
An Equal Opportunity/ Affirmative Action Employer
Non-Smoking Environment
web.mit.edu/personnel/www

Postdoctoral Positions Available

The Department of Dermatology, University of Michigan Medical School, invites applications from highly motivated and creative scientists for postdoctoral fellowships. We are seeking candidates who are interested in using state of the art approaches to study 1) molecular mechanisms of cell activation by ultraviolet irradiation; 2) regulation of signal transduction by reactive oxygen/anti-oxidants; 3) functions of nuclear receptor superfamily members and cross talk between nuclear receptors and AP-1/NF-kB; and 4) regulation collagen and elastin synthesis and turnover by matrix metalloproteinases. The ongoing comprehensive research effort provides a unique opportunity to study medically relevant aspects of signal transduction and gene expression at the molecular level in a human organ *in vivo* (Nature, 379:335-339, 1996; New England Journal Medicine 337(20):1419-1428, 1997; JCI 101:1432-1440, 1998; and Nature Medicine 5(4): 418-422, 1999). All candidates should possess a PhD with experience in biochemistry and/or molecular biology with demonstrated research excellence and strong written and oral communication skills. Competitive salary and excellent fringe benefits are available. Interested applicants should submit curriculum vitae to: **Gary Fisher PhD, Associate Professor, University of Michigan Department of Dermatology, 1150 W Medical Center Drive, Med Sci I 6447, Ann Arbor MI 48109-0609. Fax 734-647-0076; email dianemch@umich.edu**. Review of candidates will begin on August 25, 2000 and continue until the position is filled.

We encourage applications from candidates who will enrich and contribute to the cultural diversity of our University.

Deputy Editor

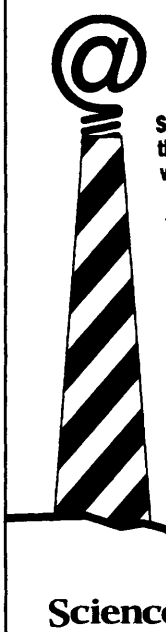
Physiological Genomics (physiolgenomics.org), a new research journal published by The American Physiological Society, has an immediate need for a Deputy Editor to be based in Boston, Massachusetts. We are looking for an individual with a strong scientific background, preferably with experience in genomics.

Responsibilities include: recruitment of articles through direct contact with the scientific community, writing of research commentaries, coordinating the receipt and review of manuscripts, close coordination with authors, editors, and publisher, and representation of the journal at scientific meetings.

The ideal candidate will possess an advanced degree in the biomedical sciences or closely related discipline, 2-6 years related work experience, excellent writing skills to clearly communicate complex concepts, and excellent interpersonal skills.

Brigham and Women's Hospital/ Harvard University and The American Physiological Society offer an outstanding compensation and benefits package. Please submit your resume, writing sample and salary requirements by e-mail to: Dr. Victor Dzau, Editor-in-Chief, *Physiological Genomics*, (care of rpratt@rics.bwh.harvard.edu). Please use Deputy Editor in the subject line of your e-mail. EOE

Chart the right course for your career.



Steer to these coordinates... www.sciencecareers.org

***Science* Careers** can help you navigate through the myriad career options with its fast, **searchable jobs database** and other useful career information.

Science Careers
www.sciencecareers.org

POSTDOCTORAL FELLOWSHIP IN MOLECULAR IMMUNOLOGY

NATIONAL CANCER INSTITUTE

An immediate opening exists for a full-time Postdoctoral Training Fellowship in the Surgery Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland with experience in cellular immunology and molecular biology to study the immunological responses to cancer. Our laboratory has extensive experience in tumor biology and the identification of tumor-associated antigens and a major involvement in clinical trials of vaccination and immunotherapy. Familiarity with T-cell growth and cloning and dendritic cell biology is desirable.

The National Cancer Institute is an Equal Employment Opportunity and Affirmative Action employer that values and fosters diversity throughout the entire organization.

Please send cover letter, CV and statement of research interests to:

James C. Yang, M.D.
Senior Investigator, Surgery Branch
National Cancer Institute
Building 10, Room 2B37
Bethesda, MD 20892-1502
email: JimYang@nih.gov

WAYNE STATE UNIVERSITY

DEAN

COLLEGE OF PHARMACY AND ALLIED HEALTH PROFESSIONS

Wayne State University invites applications and nominations for the position of dean of the College of Pharmacy and Allied Health Professions. The dean is the chief academic officer of the college and reports to the provost of the university.

The successful candidate will have:

- An earned doctorate
- A record of research and scholarly achievement appropriate for a tenured professor
- An understanding of and the ability to provide leadership to the broad educational programs of the college
- A record of organizational leadership through collaborative faculty relationships
- A record of, or demonstrated interest in, the development of research capacity and resources within a college of Pharmacy and Allied Health Professions and the health science arena
- An understanding of the current position and the future opportunities of a college of Pharmacy and Allied Health Professions in the context of the health science professions

Responsibilities:
The dean provides leadership for a college dedicated to excellence in teaching, research, scholarship and community service. As the chief administrative officer of the College of Pharmacy and Allied Health Professions, the dean represents the college at the university level working collaboratively with university administrators and deans from other colleges. The dean's responsibilities, among others, include resource development, strategic planning program development and faculty hiring and development.

University:
Wayne State University is a national, comprehensive research university with 14 schools and colleges offering more than 350 academic programs, including social work, business, nursing, education, urban planning, liberal arts, science, law and engineering to more than 31,000 students. An urban university located in Detroit, Michigan, Wayne State is a Carnegie Research University I institution and attracts one of the largest public graduate and professional school enrollments in the country, with more than 14,000 students.

College of Pharmacy and Allied Health Professions:
The college was created in 1974 by the merger of the College of Pharmacy, originally founded in 1924, and several Allied Health programs in the School of Medicine. The college is home to 16 degree programs offered by nine academic departments: Anesthesia; Clinical Laboratory Science; Mortuary Science; Occupational and Environmental Health Sciences; Occupational Therapy; Pharmaceutical Sciences; Pharmacy Practice; Physical Therapy; and Physician Assistant Studies. College programs are accredited by nine different accrediting agencies. The college has 84 full-time faculty positions. Agreements with area health care institutions provide salary reimbursement for 12+ faculty who have practice or research responsibilities in those institutions. Total enrollment at all levels in the college was 998 students in fall, 1998; 53 percent are in the allied health programs and 47 percent in the pharmacy programs.

New Building:
Construction is under way on a new $64 million facility (270,000 square feet) to house academic and research programs. The six-level structure, which will form the southwest gateway to the Detroit Medical Center (DMC), will be in close proximity to the Rehabilitation Institute of Michigan (RIM), four major DMC hospitals, the Wayne State University School of Medicine, and the Shiffman Medical Library. The building is scheduled for completion in 2002.

Appointment:
Salary is competitive and dependent on the qualifications and experience of the selected candidate. Review of applications will begin October 1, 2000 and will continue until the position is filled.

A letter of interest and a copy of the curriculum vitae should be sent to: **Daniel A. Walz, Professor of Physiology and Chair of the Pharmacy and Allied Health Professions Dean Search Committee, Wayne State University, School of Medicine, 4234 Scott Hall, Detroit, Michigan 48201, d.a.walz@wayne.edu**

Additional information about the College of Pharmacy and Allied Health Professions may be obtained from the Web site at **http://wiz2.pharm.wayne.edu/deansearch.html.**

Wayne State University is an equal opportunity/affirmative action employer.

GLOBAL OPPORTUNITIES

THE UNIVERSITY OF QUEENSLAND

Equal opportunity in employment is University policy.

INSTITUTE FOR MOLECULAR BIOSCIENCE AND THE DEPARTMENT OF GOVERNMENT

Director, Office of Public Policy and Ethics

The Institute for Molecular Bioscience is a national research and development initiative based at The University of Queensland in Brisbane, Australia. The Institute incorporates the Centre for Molecular and Cellular Biology, the Centre for Drug Design and Development, and the ARC Special Research Centre for Functional and Applied Genomics. The IMB is staffed by a multidisciplinary team of research scientists and students working in research divisions encompassing genomics and bioinformatics, genetics and developmental biology, cell biology, structural biology and biological chemistry and molecular design.

The Institute for Molecular Bioscience, in conjunction with the Department of Government, invites applications for the position of Director of the Office of Public Policy and Ethics within the Institute. The successful applicant for this newly established position will be required to contribute to research, teaching and policy analysis in public policy and ethics, and participate in public debate on the development of bioscience in various sectors. The individual will be involved in teaching at undergraduate and postgraduate levels in the area of public policy and ethics and will also be capable of attracting research funding to expand the office and its programs.

The successful applicant should possess postgraduate qualifications (preferably a PhD), together with appropriate experience and knowledge of public policy analysis, especially in the field of science or technology policy. The capacity to link such expertise to the fields of bioscience, biotechnology and bioethics is also required. A demonstrated record of achievement in research, teaching and curriculum design in public policy formulation in the area of bioscience is highly desirable.

This is a full-time appointment at Senior Research Fellow (Level C) or Principal Research Fellow (Level D), with an academic appointment at a commensurate level (Senior Lecturer/ Associate Professor) within the Department of Government. The position is available for up to five years in the first instance.

Salary range: A$62,198 – A$71,718 per annum for Senior Research Fellow (Level C), or A$74,891 – A$82,507 for Principal Research Fellow (Level D), plus employer superannuation contributions of 17%. An appropriate market loading may be considered. The University reserves the right to appoint by invitation.

Further information about the Institute, and a position description and selection criteria, may be obtained from the Institute's website http://www.uq.edu.au/imb or by contacting Ann Day on email a.day@cmcb.uq.edu.au or telephone +61-7-3365-4562. For further detailed information about the position, please contact Professor John Mattick, Co-Director, Institute for Molecular Bioscience on email j.mattick@mailbox.uq.edu.au or telephone +61-7-3365-4446, or Associate Professor Ian Ward, Head, Department of Government on email i.ward@mailbox.uq.edu.au, telephone +61-7-3365-3043 or from the website http://www.uq.edu.au/govt/.

Applications should be forwarded to Ann Day, Finance and Personnel Manager, Institute for Molecular Bioscience, The University of Queensland, Brisbane Qld 4072 Australia (fax +61-7-3365-4388). Please quote **Reference No. 40900**, address the selection criteria, and include a résumé and the names and contact details (phone, fax and email) of three professional referees.

Closing date for applications: 29 September 2000.

WORLD CLASS: BE PART OF IT

NATIONAL UNIVERSITY *of* SINGAPORE

Department of Computational Science

Faculty Appointments

National University of Singapore (NUS) invites applications for full-time tenure track faculty positions in the Department of Computational Science.

The Department of Computational Science is one of the few departments worldwide that offers an interdisciplinary programme leading to an undergraduate degree awarded in computational science. Current active research areas in the Department include nonlinear dynamics and complex systems, computational statistical and condensed matter physics, computational quantum chemistry and molecular modeling, computational biology and computer aided drug design, computational fluid dynamics, wavelet analysis and applications, and neural computing and optimization. NUS is a research active University comparable, according to the Carnegie Classification of Research Institutions, to the top 88 "Research Universities I" in the US. Both the Department and the University provide strong research support with some of the most extensive and modern facilities available.

Applications are invited for faculty appointments at any level in the following areas:

Computational Biology/Bioinformatics
Computational Fluid Dynamics
Computational Electrodynamics
Complex Systems
Computational Chemistry
Computational Materials Science
Numerical Analysis/Scientific Computing
Geometric Modeling and Scientific Visualization

We especially want to attract applicants doing research in Computational Biology/Bioinformatics, although we will consider applications in any of the above areas. Successful candidates are expected to teach undergraduate and graduate courses, supervise master and doctoral students, establish strong research programmes that generate external funding and scholarship and intellectual output typical of that of a world-class university, and perform some amount of administrative work. Besides appointments on normal 3-year contracts, visiting appointments for one or two years may also be considered. Salary would commensurate with qualifications and ample benefits will be provided.

Outstanding individuals with strong commitment to teaching and research are encouraged to send their applications supported by a curriculum vitae, research plan and three letters of recommendation to:

Faculty Search Committee
Department of Computational Science
National University of Singapore
3 Science Drive 2
Singapore 117543
Facsimile: (+65) 774 6756
E-mail: **cschead@nus.edu.sg**

Visit our web-site at **http://www.nus.edu.sg/NUSinfo/Appoint/sci-dcs.htm** for links to information on the Department, the University, terms and conditions of service, and the application form.

Closing date for submission: 30 November 2000

Only shortlisted candidates will be notified.

University of California

Lawrence Livermore National Laboratory

Associate Director for Biology and Biotechnology Research

Lawrence Livermore National Laboratory, one of the nation's premier scientific research and development laboratories, is seeking an Associate Director to lead the Laboratory's Biology and Biotechnology Research Program. Will be responsible for oversight of all bioscience and biotechnology at LLNL, for developing and managing a diverse portfolio of interdisciplinary research and technology development programs in cutting-edge bioscience, biotechnology, and biomedicine, and for leveraging capabilities and resources across the Laboratory. Will manage a portfolio of approximately $60 million and provide leadership for a staff of about 250 employees encompassing three divisions and roughly 30 research groups. The Program is focused on genomics/proteomics, disease susceptibility and prevention, computational biology, and microbiology.

The Associate Director will have nationally recognized research accomplishments in the biosciences, experience in institutional-level program development and management of bioscience programs, demonstrated senior-level leadership and management skills, and knowledge of bioscience and biomedical research activities within the federal government, especially the Department of Energy and the National Institutes of Health.

LLNL offers a challenging environment and a competitive salary/benefits package. Located in the scenic Livermore Valley, we are within easy driving distance to San Jose, San Francisco, and the surrounding Bay Area communities. To apply, send a cover letter with your resume to: bbrpad@llnl.gov. If mailing send to: Ms. Lori Fong, Recruiting and Employment, Lawrence Livermore National Laboratory, PO Box 5510, L-725, Dept. AJSC8BODO, Livermore, CA 94551. US Citizenship is required. We are proud to be an equal opportunity employer with a commitment to workforce diversity. Review of applicants will begin on October 1, 2000.

For more information about the Biology and Biotechnology Research Program, visit our web site at:
www-bio.llnl.gov/bbrp/bbrp.homepage.html

For information about this position, visit our web site at:
www.llnl.gov/jobs

Announcements

THE DORIS DUKE CHARITABLE FOUNDATION

announces new award recipients

CLINICAL SCIENTIST DEVELOPMENT AWARD

A 5-year award to support physician-scientists conducting clinical research at the beginning of their careers as independent investigators in the areas of cancer, AIDS, cardiovascular diseases, and sickle cell anemia and other blood disorders. The awardees for 2000 are:

Michael J. Ackerman, MD, PhD
Mayo Clinic, MN

Richard Aplenc, MD
Children's Hospital of Philadelphia, PA

David Bangsberg, MD, MPH
University of California, San Francisco

Ramon Brugada, MD
Baylor College of Medicine, TX

Mark H. Drazner, MD
University of Texas Southwestern Medical Center at Dallas, TX

John V. Frangioni, MD, PhD
Beth Israel Deaconess Medical Center, MA

William C. Hahn, MD, PhD
Dana-Farber Cancer Institute, MA

Carolyn C. Hoppe, MD
Children's Hospital Oakland, CA

Jennifer J. Jaroscak, MD
Case Western Reserve University, OH

Pamela C. Jenkins, MD, PhD
Dartmouth Medical School, NH

Dean H. Kedes, MD, PhD
University of Virginia, VA

David C. Lyden, MD, PhD
Memorial Sloan-Kettering Cancer Center, NY

Sancy A. Leachman, MD, PhD
University of Utah, UT

Mary F. McNaughton Collins, MD, MPH *Harvard Medical School/ Massachusetts General Hospital, MA*

Philip J. Norris, MD
Harvard Medical School/ Massachusetts General Hospital, MA

Kathryn M. Rexrode, MD, MPH
Harvard Medical School/ Brigham & Women's Hospital, MA

David A. Sweetser, MD, PhD
University of Washington School of Medicine, WA

INNOVATION IN CLINICAL RESEARCH AWARD

A 2-year award to support researchers working on novel and innovative clinical research projects in targeted disease areas* This year, the first year of the award program, cardiovascular diseases were targeted. The awardees for 2000 are:

Joyce E. Bischoff, PhD
Children's Hospital, MA

Daniel J. Garry, MD, PhD
University of Texas Southwestern Medical Center at Dallas, TX

Benjamin D. Levine, MD & Craig G. Crandall, PhD
University of Texas Southwestern Medical Center at Dallas, TX

Robert A. Levine, MD & Susan A. Slaugenhaupt, PhD
Harvard Medical School/ Massachusetts General Hospital, MA

Leslie W. Nifong, MD
East Carolina University/Brody School of Medicine, NC

Ralph V. Shohet, MD & Robert C. Kowal, MD, PhD
University of Texas Southwestern Medical Center at Dallas, TX

Mark R. Starling, MD & Bruce C. Richardson, MD, PhD
University of Michigan Medical Center, MI

* Next year the award will focus on cardiovascular diseases including stroke, and blood disorders

For information about our awardees, future award competitions, or to be added to our list-serve to receive automatic e-mail notification of new Foundation programs, please visit our web-site at:
http://ddcf.aibs.org

Doris Duke Charitable Foundation
650 Fifth Avenue, 19th Floor, New York NY 10019

Infinite Possibilities

Affymax is an innovative company dedicated to the development of new technologies to revolutionize the process of drug discovery.

Staff Scientists

You will provide analytical support for a variety of in vitro and in vivo experiments to evaluate the ADME properties of lead discovery compounds and will assume a key role in the design, development and implementation of novel and predictive in vitro assays that are amenable to high throughput and automation. Requires an M.S. or Ph.D. in Analytical Chemistry or related field. **Job Code LTA001**

The continuing discovery of receptors and other molecules involved in human development and disease calls for new technologies to discover ligands that affect their function. Ideal candidate will be interested in creating and refining novel approaches to solve these molecular recognition problems. Requires a Ph.D. and post-doctoral experience in Cell Biology/Biochemistry. Knowledge of the cytokine/growth factor field a plus. Experience with reporter cells and signal transduction also a plus. **Job Code GUY001**

affymax

We offer excellent compensation and benefits. **Please send your resume via e-mail: ari_jobs@affymax.com or fax to: 408-730-1393.** EOE

For more information about this position and others, go to:

WWW.AFFYMAX.COM

The Department of Neuroscience at the University of Pennsylvania School of Medicine invites applications for tenure track/tenured faculty positions. We expect to make up to three faculty appointments, at the level of Assistant, Associate or Full Professor, during the coming year. Highly competitive setup packages will be available in an outstanding intellectual environment. All areas of modern neuroscience will be considered, but we especially welcome applications from candidates with a strong and innovative record of productivity in one of the following areas: synaptic and cellular physiology and plasticity; cellular and molecular aspects of neuronal development; and systems neuroscience, both with and without a connection to cognitive neuroscience. Appointments with a connection to cognitive neuroscience (Assistant Professor level only) will include joint appointment to Penn's new Center for Cognitive Neuroscience. Applicants should send a CV and statement of research plans, and arrange to have at least three letters of recommendation sent directly to Dr. Irwin B. Levitan, Chair, Department of Neuroscience. **Electronic submission of all application materials (including supporting letters), as Word or Word Perfect file attachments to neurojob@mail.med.upenn.edu, is strongly preferred.** Paper applications may be mailed to Faculty Search, Department of Neuroscience, University of Pennsylvania School of Medicine, 218 Stemmler Hall, 3450 Hamilton Walk, Philadelphia, PA 19104-6074. Applications will be accepted until the positions are filled, but early submission with letters of recommendation is encouraged, because we will begin consideration of applications as soon as they are complete.

The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.

Global Opportunities

UNIVERSITY OF KUWAIT
FACULTY OF MEDICINE
HEALTH SCIENCE CENTER

Pre-clinical and Clinical Appointments
Applications are being sought for the following appointments in the Faculty of Medicine:

Biochemistry: Assistant/Associate Professor
Research expertise should be in the area of molecular biology, cell biology, biotechnology, molecular genetics, protein chemistry or neurochemistry with an excellent research publication record. The candidate for Full Professor is expected to have experience in supervising postgraduate students.

Community Medicine: Assistant/Associate Professor
-Medical Sociologist
-Health Planning and Administration Specialist
-Environmental & Occupational Health
-Epidemiologists (2)

Medicine: Associate/Professor
-Neurology
-Rheumatology
-Infectious Diseases

Assistant/Associate
-Cardiology

Pharmacology & Toxicology: Assistant/Associate/Full Professor
-Neuropharmacology
-Clinical Pharmacology/Toxicology

Radiology: Associate/Professor
-Radiologists

Surgery: Full Professor
-Anaesthesia
-Orthopedics
-Neurosurgery

Requirements for Appointment: Applicants should possess a Ph.D. or an equivalent high professional qualification, i.e., FRCS/MRCP/MRCOG/MRCPath/MD/American Board in their respective speciality and have conducted and published research in their field.

Conditions of Appointment: Total monthly salaries will be within the following scales according to qualifications and experience (1KD = 1.9 St. Pound, US $3.3 approximately).

	Prof. Min-Max	Assoc. Min-Max	Assist. Min-Max
Clinical	KD2585-2745	KD2290-2450	KD2010-2170
Non-Clinical	KD 1670-1830	KD 1320-1480	KD 1030-1190

A social allowance will be paid in addition to the monthly salary as per the University regulations.

Other Benefits: Conference attendance, gratuity and housing allowance or furnished accommodations, free medical treatment in Kuwait. Free annual round-trip air tickets from country of Citizenship or permanent residence for self and family up to three dependent children of 18 years and under. Baggage and freight allowance. Education fees for a maximum of three children in Kuwait from elementary through high school. No taxation. Currency is transferrable without restriction. 60 days paid leave.

Method of Application: Curriculum vitae which should include the names of 3 references; personal particulars: copy of the relevant pages of passport; qualifications with dates, career history; teaching experience, research accomplishments and where appropriate clinical experience should be sent no later than October 31, 2000 to:

The Vice Dean of Administration
Recruitment Office
Faculty of Medicine
Kuwait University
P.O. Box 24923
13110 Safat, Kuwait
Fax: 965-531-8454

Share Our Success
Help us Make A Difference

PRAECIS' mission is to discover, develop and commercialize pharmaceuticals through integration of proprietary combinatorial technologies and high-throughput screening capabilities. We are a biopharmaceutical company involved in innovative research in Prostate Cancer, Endometriosis, Alzheimer's Disease and Growth Factor Biology. Phase III trials for Prostate Cancer and Phase II trials for Endometriosis are ongoing.

Analytical Pharmacology-BS/MS

We seek a BS or MS level chemist for our bioanalytical mass spectrometry laboratory to contribute to the Company's clinical and discovery efforts. Requires 2+ years' pharmaceutical experience in the quantitative analysis of compounds from biological matrices by LC/MS/MS. Expert skills in mass spectrometry, chromatography and methods development for the extraction of active compounds from biological samples are required.

Research Associate Phage Display/Assay

Will involve the use of phage display to select ligands from peptide libraries against a wide variety of pharmacologically important targets. The use of molecular biology will be required in the generation of follow-up mutagenesis libraries. The successful candidate will be involved in configuring a variety of cell- and protein-based biological assays on synthetic peptides and their analogues. Requires BS degree or equivalent in a biological science and 3+ years' related experience. Must be fluent in basic molecular biology techniques, phage display, ELISA, SDS-PAGE, Western blotting, competition binding assays (protein and cell-based), protein modification, eukaryotic cell culture and transfection, and flow cytometry. Experience in cell-based biopanning desired.

Please send your resume to:
Human Resources
PRAECIS Pharmaceuticals, Inc.
One Hampshire Street
Cambridge, MA 02139

Fax: 617-621-8679

We offer a highly competitive compensation and benefits package.
No phone calls, please.
An equal opportunity employer.

Visit our website at

www.praecis.com

PRAECIS

The Future in Drug Development

---

portant Work.

Life. We're Working On It.

Genzyme Corporation is doing important work in biotechnology and health care products, including those for renal function (Renagel(tm)), cancer screening (Thyrogen(tm)), the genetic disorder Gaucher disease (Cerezyme(tm)) and surgical adhesion prevention (Seprafilm(tm)). Our extensive research programs are developing treatments for other genetic, renal, and cardiovascular diseases as well as areas of oncology, using therapeutic protein replacement, cellular replacement, biomaterials, gene therapy and small molecules.

We have the following positions available at our Framingham, MA location:

Senior Scientist

Manage the Clinical Immunology group, which provides support for Genzyme's protein, cell and gene therapy clinical programs. Requires a Ph.D. and 6+ years' relevant experience in clinical laboratory science. Demonstrated technical proficiency and ability to manage a small clinical testing and development group required. Excellent communication and organizational skills necessary; experience with computer data management a plus. ***Job Code: 00-1517***

Senior Scientist

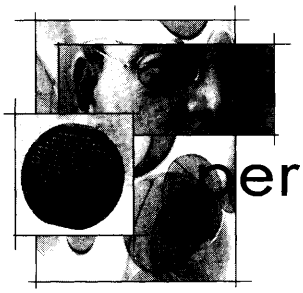
Reporting to the Associate Director of Pharmacology and Toxicology, you will apply your specific knowledge in toxicology to support preclinical product development. You will be responsible for internal pharmacology and toxicology programs and external collaborations. Must oversee and interact with CRO's. Demonstrated supervisory abilities with staff interaction at several levels with multiple projects simultaneously necessary. Knowledge of regulatory environment required. Requires a Ph.D. with 6 years' experience in area of pharmacology, toxicology, pathology or other relevant area. Demonstrated technical proficiency; strong management and leadership skills; and excellent communication skills also required. ***Job Code: 00-1395***

Interested candidates should forward resume, including Job Code, to: Human Resources Department, Genzyme Corporation, One Kendall Square, Cambridge, MA 02139
E-mail: jobs@genzyme.com

www.genzyme.com

genzyme

An equal opportunity employer committed to a culturally diverse work force.



our people
pure performance
our products

Performance. At Millipore, it's about our products and our people. More than a million times a day, our technology performs filtration and purification processes for the most exacting laboratories, pharmaceutical companies, and semiconductor manufacturers around the world. Thanks to our people—the real performers at Millipore. Join us in our New England facilities in these key areas:

Microbiology	**Protein Purification**
Chromatography	**Genomics & Proteomics**
Chemistry	**Marketing Management**
Chemical Engineering	**Process Development & Applications Engineering**

To apply, please address your resume, indicating the area of your interest, to: Millipore Corporation, PO Box 482, Waltham, MA 02454-0482. Email millipore@hiresystems.com; Fax (781) 663-2435. As an equal opportunity employer, we believe in the power of diversity.

www.millipore.com

MILLIPORE

Global Opportunities

The Reliance Group is India's largest business group with revenues of USD 12 billion and market capitalisation of USD 15 billion. The group has interests in oil and gas, petroleum refining, petrochemicals, polyester, plastics, textiles, infrastructure, financial services, power, telecom and infocom.

Business Heads Biotechnology

Reliance is currently pursuing opportunities in the field of biotechnology. As a part of this initiative, Reliance is establishing two biotechnology research centres in Mumbai, India, for research in the areas of agriculture, industrial and medical biotechnology. Additionally, strategic alliances with leading Indian research institutions are being pursued.

Reliance invites management professionals from the biotechnology industry, with minimum of ten years experience having exposure to business development and marketing, to participate in this initiative.

These positions are open to all nationals.

Interested professionals may forward their resumes to :

Corporate HRD
Reliance Industries Limited
Brindavan, 4th Floor, Shree Ram Mills Compound,
Ganpatrao Kadam Marg, Worli, Mumbai - 400 018. INDIA.
E-mail : btbh_hrd@ril.com, Fax : (+91-22) 498 1677

Reliance
Growth is Life
www.ril.com

Conferences

The Genetic and Molecular Basis of Breast Cancer

Monday, October 30, 2000
Tuesday, October 31, 2000

Grand Hyatt New York
New York City

Symposium Co-Directors
Itzhak D. Goldberg, M.D.
Eliot M. Rosen, M.D., PhD

This conference is designed to share and communicate the most recent advances in the understanding of how breast cancer develops, particularly at the cellular, molecular and genetic levels.

The list of distinguished faculty will include Doctors: George Vande Woude (keynote speaker), Ronald DePinho, Saijun Fan, Wafik El-Deiry, Jeffrey Holt, Barry Kacinski, Ganjam Kalpana, Larry Karnitz, Peter Kushner, Steven McMahon, Ramon Parsons, Jeffrey Parvin, Richard Pestell, and Y. Eric Shi.

For further information please call 516-465-2500 or e-mail mccarthy@lij.edu

Sponsored by the Department of Radiation Oncology

NORTH SHORE LONG ISLAND JEWISH HEALTH SYSTEM

SETTING NEW STANDARDS IN HEALTHCARE

Announcements

National Education Association
Excellence in the Academy Awards

★ **The 2000 National Education Association Art of Teaching Prize**
A $2,500 award for an essay that illuminates one professor's approach to the complex and intangible dynamic that inspires students with a love of learning or an article that offers practical approaches to improving teaching and learning at the college level.

★ **The 2000 National Education Association Democracy in Higher Education Prize**
A $2,500 award for an article that contributes to the expansion of the welcoming and democratic culture of higher learning and the ideals of tolerance, justice, and the unfettered pursuit of truth traditional to the academy.

★ **The 2000 National Education Association New Unionism in the Academy Prize**
A $2,500 award for an article that describes a higher education local union's collective approach to uniting the academic community in pursuit of quality higher education for all.

★ **The 2000 National Education Association New Scholar Prize**
A $2,500 award for an article by a scholar with less than seven years of full- or part-time employment in higher education. The submission can be made in any of the categories listed above.

The National Education Association is proud to announce a series of awards intended to advance the Association's commitment in higher education. The deadline for submission for the 2000 awards is September 30, 2000. The competition is open to the entire academic community.

The winning entries will be published in ***Thought & Action***, the NEA higher education journal. Prize winners will also be asked to be presenters at the National Education Association Higher Education Conference, as guests of NEA.

For submission guidelines, visit the National Education Association higher education Web site: **www.nea.org/he**, E-mail **clehane@nea.org**, or write Con Lehane, Editor, Higher Education Publications, National Education Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

Guidelines for the 2001 Excellence in the Academy Awards will be available on the NEA Higher Education web site October 1, 2000.

nea
NATIONAL EDUCATION ASSOCIATION

The Johns Hopkins University Immunogenetics Laboratory

Position Title: Postdoctoral Fellow

Position Description: The Immunogenetics Laboratory of the Johns Hopkins University School of Medicine has a position available for a postdoctoral fellow to perform research in transplantation immunology. The major area of focus will be investigation of the mechanisms of down-regulation of donor-specific alloreactivity. Experience in molecular and cellular immunology is required.

Institution Description: The **Johns Hopkins University School of Medicine** is a nonprofit institution of higher learning located in the Baltimore Metropolitan area. The Immunogenetics Laboratory provides histocompatibility testing for large, progressive programs in bone marrow, kidney, liver, heart, lung and pancreas transplantation. Ongoing studies in the laboratory include post-transplant monitoring, identification of genes involved in graft rejection, vaccine development and studies on desensitization of patients awaiting transplantation. The laboratory maintains a large cell repository in support of various studies.

The Johns Hopkins University offers a comprehensive salary program with outstanding benefits. The University is committed to policies of equal opportunity and affirmative action which are essential to its mission of promoting research, service and academic excellence.

Candidates should send a letter indicating interest and availability along with a current curriculum vitae and contact information for three references to:

John M. Hart
Immunogenetics Laboratory
JHU School of Medicine
2041 East Monument Street
Baltimore, MD 21205
email: hartjm@jhmi.edu

Join the Ambion Team.

Production, Technical Support, Research Associates, and R&D Positions

Ambion is a 10 year old and rapidly growing biotechnology company with over 100 employees. As "The RNA Company", Ambion markets products and kits for isolation, detection, quantification and synthesis of RNA. Many of Ambion's products are based on novel, patented technologies developed at Ambion. Our departments are comprised of diverse individuals, working together as a team to produce cutting edge, innovative products for molecular biologists.

Ambion offers a stimulating work environment, competitive salary, company-paid insurance, 401(K) plan, employee stock option plan and bonus program.

Submit your resume via mail, web or fax.
See our website for position descriptions:
www.ambion.com/jobs

EOE

Ambion, Inc.
2130 Woodward St.
Austin, TX 78744-1832
fax: (512)651-0201
www.ambion.com/jobs

Ambion®
THE RNA COMPANY™

Postdoctoral Research Opportunities at the University of Maryland at College Park

The Department of Cell Biology and Molecular Genetics has funded postdoctoral research opportunities available in the following laboratories:

Dr. Zhongchi Liu: Molecular genetics of Arabidopsis flower development. Research focuses on the regulation of floral homeotic gene expression, cell proliferation control and meristem development. See: Development. 127:2207-2217;121:975-991. Email to ZL17@umail.umd.edu

Dr. David Mosser: This laboratory studies the regulation of cytokine gene expression in macrophages and dendritic cells. Individuals with an interest in infectious diseases are encouraged to apply. See: J. Exp. Med.188:217; 185:1977. Email contact before 11/00: dmmosser@astro.temple.edu

Dr. Anne Simon: RNA virus replication and recombination. Virus symptom modulation by subviral RNAs. Candidates welcome with strong interest in RNA. See: J. Virol. 74:6501-6510; EMBO J. 18:5653-5665; EMBO J. 17:2392-2403; PNAS 94:1113-1118. Email to AS322@umail.umd.edu.

Dr. Daniel Stein: Research focuses on the biological properties of *Neisseria gonorrhoeae* lipooligosaccharides. Individuals with a strong interest in Cellular Microbiology are encouraged to apply. See: PNAS. 95:10872; J. Exp. Med. 191:949. Email to DS64@umail.umd.edu.

Interested applicants are requested to send a copy of their curriculum vitae directly to the appropriate faculty member, c/o

The University of Maryland
Department of Cell Biology and Molecular Genetics
College Park, Maryland 20742

Predoctoral Research opportunities.

Students interested in pursuing research opportunities in one of our 24 funded research programs are invited to apply for admission to our graduate program. Specific details describing this program and our research faculty can be found at our Web site, www.life.umd.edu/cbmg.

The University of Maryland is an EEO/AA Employer

Tenure Track Position/Applied Physics Cornell University

The School of Applied and Engineering Physics at Cornell University is seeking applications for a tenure-track, assistant professor position which is expected to be filled as early as January 1, 2001. Consideration of applications for an associate or full professor level position may also be given to exceptionally well qualified individuals.

Candidates must be able to demonstrate the ability to develop a highly successful independent research program in an experimental or computational area of applied physics, and to participate effectively in the teaching of the applied physics curriculum at both the undergraduate and graduate level. Areas of interest in this search include, but are not limited to, optics and photonics, nanostructure science and technology, materials physics and biological physics. Prospective candidates who wish to pursue interdisciplinary research efforts are strongly encouraged to apply. The successful applicant can expect a very competitive level of support for the start-up of a research program, and considerable institutional resources are available at Cornell that can strengthen this research program and support interdisciplinary and collaborative research ventures. The successful candidate can expect to benefit from association with one or more of Cornell's interdisciplinary research centers, national facilities, and national resources. These include the NSF funded Cornell Center for Materials Research, the Nanobiotechnology Center, the Cornell Nanofabrication Facility (a major node of the National Nanofabrication Users Network), the Cornell High Energy Synchrotron Source, the Cornell Theory Center (a high performance computation facility), the Biotechnology Center, and the NIH funded resources for Macromolecular X-ray Diffraction and for Biophysical Imaging.

Applications, which should include a resume, a statement of research interests, copies of most significant publications or preprints, and names of several references, should be submitted to: **Director, School of Applied and Engineering Physics, 210A Clark Hall, Cornell University, Ithaca, New York 14853-2501.**

http://www.aep.cornell.edu

CORNELL
UNIVERSITY

Cornell University is an Equal Opportunity/Affirmative Action Employer and strongly welcomes nominations of, and applications from, women and underrepresented minorities.

http://www.cornell.edu

The Reliance Group is India's largest business group with revenues of USD 12 billion and market capitalisation of USD 15 billion. The group has interests in oil and gas, petroleum refining, petrochemicals, polyester, plastics, textiles, infrastructure, financial services, power, telecom and infocom.

As a part of its initiative in biotechnology, Reliance is establishing a research and development centre affiliated to a large hospital in Mumbai, India, focussing on tissue engineering and stem cells.

Reliance invites young scientists with over three years of experience in the area of tissue engineering and stem cells to participate in this initiative.

These positions are open to all nationals.

Scientists

Tissue Engineering and Stem Cells

Interested scientists may forward their resumes to :

Corporate HRD
Reliance Industries Limited
Brindavan, 4th Floor, Shree Ram Mills Compound,
Ganpatrao Kadam Marg, Worli, Mumbai - 400 018. INDIA.
E-mail : bttesc_hrd@ril.com, Fax : (+91-22) 498 1677

Reliance
Growth is Life
www.ril.com

Postdoctoral Fellowships in the Radiation Sciences

Department of Environmental
and Occupational Health
Graduate School of Public Health
University of Pittsburgh

The goal of the program is to replenish the national pool of doctoral-level, multidisciplinary radiation professionals in governmental, academic and industrial positions. **The** two-year program includes any needed course work; in-house laboratory rotations; colloquia and seminars; a radiation epidemiology workshop and up to a year of field experience at domestic or foreign sites of interest to the Department of Energy. Qualified physicians may integrate DOE Fellowship training with the department's Occupational Medicine Residency program.

Areas of concentration include:
- radiation epidemiology and biostatistics
- health physics and radiobiology
- biological dosimetry, biomarker development and application
- occupational medicine

Applicants should have a recent doctoral degree in science, medicine, or law (Ph.D., D.Sc., Dr.P.H., M.D., D.O., J.D.) and US citizenship or permanent residency. Stipend: $33,500 first year, $36,000 second year. Health insurance and travel allowances to the field site are provided.

For more information, contact: **Dr. H. Gregg Claycamp, Program Director, University of Pittsburgh, 260 Kappa Drive, Pittsburgh, PA 15238**; Telephone: 412-967-6514; fax: 412-624-1020 Email: hgc2+@pitt.edu

ARA PARSEGHIAN MEDICAL RESEARCH FOUNDATION
A GOAL FOR LIFE

RFA Announcement

The Ara Parseghian Medical Research Foundation announces an unrestricted request for applications (RFA) directed toward understanding the cause and/or developing a treatment for Niemann-Pick Type C (NPC) disease. NPC is an autosomal recessive neurological storage disease. The gene responsible for NPC disease (NPC1) was isolated in 1997 and yeast, fly, worm, cat and mouse homologues have been identified. NPC1 mutant mice are available through Jackson Laboratories and human NPC1 mutant cell lines are available. Preliminary characterization of the NPC1 gene product suggests that it is a membrane-bound protein involved in vesicular trafficking of sterols, sphingolipids and other metabolites.

The Foundation will fund meritorious research proposals for up to a two-year period (renewable thereafter), at a maximum of $125,000/year, excluding salary support for the Principal Investigator. Investigators new to this field are encouraged to apply for funding. Targeted areas of emphasis include:

1. Genomics/Proteomics: Identification of mRNA or proteins in the plasma, serum, CSF, CNS or PNS that correlate with progression of NPC disease in animal models or NPC patients.
2. Neurology/Neurophysiology: Identification of surrogate endpoints in NPC patients using non-invasive imaging or neurophysiological testing modalities including PET and MRI.
3. Neurobiology: Determination of the molecular pathogenesis of NPC disease in the CNS with particular emphasis on elucidating the molecular mechanisms leading to targeted Purkinje cell death.
4. Cell Biology of the NPC1 protein: Elucidation of the offending metabolite(s) and vesicular trafficking pathway leading to neuronal storage and neuronal death.
5. Novel Therapeutic Strategies to treat NPC disease: Design of a bioassay suitable for industrial scale screening of drugs and bioactive compounds that may be therapeutically efficacious in NPC disease.

The application deadline is: October 1, 2000 with funding to begin January 1, 2001. For information and application forms, please contact: Ara Parseghian Medical Research Foundation, 1760 E. River Road, Suite 115, Tucson, AZ 85718. Telephone: 520-577-5106; FAX: 520-577-5212. **For complete information on grants administration, instructions and to download the grant application, visit our web site at www.parseghian.org.**

PENNSTATE

University Park

ASSISTANT PROFESSOR OF FUNCTIONAL GENOMICS

Tenure track position available in the area of FUNCTIONAL GENOMICS to enhance our expertise in molecular genetics. This position has a 75% research and 25% teaching responsibility. RESEARCH responsibilities involve studying regulatory mechanisms relevant to animal processes including growth, reproduction, nutrition, lactation, development, and disease. Experience in the study of gene transcription, genome analysis, expression profiling, protein interaction mapping, and/or microarray technology is desirable. Exciting opportunities exist for interacting with colleagues in the department and the Life Sciences Consortium whose research is in the fields of genetics, genomics, vertebrate development, transgenic biology, reproduction, lactation or growth. The newly formed Genome Study Center also provides additional opportunities for interactions. The successful candidate is expected to develop an internationally recognized, externally funded research program in functional genomics that is relevant to animal agriculture and biotechnology. The TEACHING component involves undergraduate and graduate teaching in the areas of genomics, molecular biology or animal biotechnology. Applicants must have a Ph.D. in animal science, biochemistry, molecular biology, molecular genetics or genomics and a minimum of two years of relevant postdoctoral training. Demonstrated ability to procure external funding is desirable. Salary is competitive, commensurate with background and experience. An attractive benefits package is available. A letter of application, resume, academic transcripts, a statement of research, teaching interests and three professional reference letters should be submitted before October 16, 2000 to **C.S. Shashikant, Chair, Search Committee, Pos #: S-8427, Department of Dairy and Animal Science, 324 Henning Building, The Pennsylvania State University, University Park, PA 16802. For more information about the Department see: www.das.psu.edu.**

Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce.

Corvas, a fast-paced biopharmaceutical company located in the "Biotech Beach" area of La Jolla/San Diego, is engaged in the design and development of next generation therapeutic agents for the prevention and treatment of major cardiovascular, inflammatory and neoplastic diseases.

PHAGE DISPLAY

Senior Molecular Biologist

The successful candidate will have a PhD in Molecular Biology, Biochemistry, or a related field and extensive experience using phage display technologies. Supervisory experience is preferred. Additional experience with ribosome display and/or nucleic acid libraries, as well as *in vitro* evolution methods, is preferred.

We also have positions available in the following areas:

- **MOLECULAR MODELING/COMPUTATIONAL CHEMIST**. Requires a PhD and experience with the design of small molecule enzyme inhibitors. Experience with proteases and their inhibitors is preferred.
- **TISSUE CULTURE**. Requires a BS/MS degree and mammalian cell culture experience. Monoclonal antibody experience is preferred.
- **SYNTHETIC ORGANIC/MEDICINAL CHEMISTS**. Requires a PhD, MS or BS degree.

We offer an attractive compensation package, equity participation, and a highly interactive and stimulating scientific environment. Please send/fax CV to Corvas, 3030 Science Park Road, San Diego, CA 92121, Attn: HR; Fax: (858) 455-0457. EOE

www.corvas.com

CORVAS INTERNATIONAL

Research Scientist

The USDA Forest Service invites applications for a permanent position (GS-13/14 level, salary range $59,623 to $70,457) as a research scientist in the Forest Ecosystems Team of the Pacific Northwest Research Station. The successful applicant will serve as a leader of the Andrews Forest Long-Term Ecological Research Program focused on forest and stream ecology and watershed sciences, develop his/her own research program, advise graduate students, and work cooperatively with forest land managers. The position requires demonstrated science leadership in one or more of the following: watershed processes, ecosystem ecology, landscape ecology, disturbance ecology, or related research areas, preferably at landscape to regional scales. She/he will be an employee of the USDA Forest Service and expected to meet the qualifications of an associate or full professor at Oregon State University, Corvallis, Oregon. When the position is formally announced, a copy of the vacancy announcement with information about application procedures will be sent to you upon request. Interested individuals should send name, address, e-mail address, and telephone number to **Fred Swanson, Forestry Sciences Laboratory, 3200 SW Jefferson Way, Corvallis, OR 97331 by September 25, 2000**. The vacancy announcement will also be available at www.usajobs.opm.gov. For information about the position, please contact Fred Swanson at (541) 750-7355 or at e-mail fswanson@fs.fed.us. *USDA is an equal opportunity employer.*

Director of Research, M.D. or Ph.D.
Case Western Reserve University - Dept. Reproductive Biology at MetroHealth Medical Center

The Department of Reproductive Biology, Case Western Reserve University at MetroHealth Medical Center is recruiting for a Director of Research for the department's active research program. The department currently has active NIH research funding in the areas of maternal/fetal growth, metabolism, exercise, aging and clinical trials. Clinical research (a General Clinical Research Center is located next to the delivery suite) and basic research facilities (the Rammelkamp Research Center on the hospital campus) are available.

The Director of Research will also assume the position of Program Director for the Women's Reproductive Health Development Center (WRHR) at Case Western Reserve University. This NIH funded program with 11 faculty mentors is designed to prepare a young Ob/Gyn for an academic research career. This is a funded academic faculty position and requires a .25 FTE time commitment, good interpersonal and mentoring skills and prior organizational experience. Academic rank is open. Women and minority candidates are encouraged to apply. Interested individuals should contact:

Patrick M. Catalano, MD
Professor and Chair, Reproductive Biology
Case Western Reserve University
2500 MetroHealth Drive
Cleveland, Ohio 44109-1998
Telephone: 216-778-4876

Case Western Reserve University and MetroHealth Medical Center are affirmative action/equal opportunity employers.

---

mayo

POST-DOCTORAL FELLOWSHIP IN CANCER BIOLOGY

MAYO CLINIC AND FOUNDATION, ROCHESTER, MINNESOTA

A post-doctoral fellowship is available effective immediately, to study the structure and function of a novel immediate early gene and its role in cutaneous carcinogenesis. Work will be conducted in the laboratories of Dr. Rajiv Kumar and Dr. Mark Pittelkow at Mayo Foundation.

Please send a curriculum vitae and bibliography, and the names and addresses of three individuals from whom letters of reference may be obtained to: **Dr. Rajiv Kumar, Ruth and Vernon Taylor Professor, 911A Guggenheim, Mayo Clinic and Foundation, 200 First Street SW, Rochester, MN 55905**; e-mail rkumar@mayo.edu, fax 507-266-4710, or to: **Dr. Mark Pittelkow, Professor, Department of Dermatology, 411B Guggenheim, Mayo Clinic and Foundation, 200 First Street, SW, Rochester, MN 55905**; e-mail pittelkow.mark@mayo.edu, fax 507-284-1086.

Mayo Clinic is an Equal Opportunity Employer

GLOBAL OPPORTUNITIES

THE UNIVERSITY OF HONG KONG

香 港 大 學

The University of Hong Kong is one of the leading international comprehensive research universities in the Asia-Pacific region, with more than 100 departments and sub-divisions of studies and learning. There is currently an enrolment of more than 15,000 students (6,000 at postgraduate level). Research students come from more than 40 countries. The medium of instruction is English. The University is committed to its vision of globalisation, together with excellence in scholarship and research.

Associate Professor/Assistant Professor in Chemical Biology

Applications are invited for appointment as Associate Professor/Assistant Professor in Chemical Biology (Ref: RF-2000/2001-5), tenable from 1 November 2000 or as soon as possible thereafter, in the Department of Chemistry/the Institute of Molecular Biology. The appointments will initially be made on a three- to five-year fixed-term basis, with a possibility of renewal.

The mission of the Department of Chemistry is to provide high-quality teaching at undergraduate and postgraduate levels and to conduct top quality research in chemistry and related disciplines.

The Institute of Molecular Biology was established in 1989 to promote molecular biology research at the University. In 1995, it moved into its purpose-built accommodation which houses all the essential equipment for recombinant DNA and cell culture experiments, various biochemical, physiological and morphological analysis as well as facilities for transgenic animal development. The University has a sizeable community of molecular biologists for exchange of ideas and collaboration.

Applicants should have a relevant PhD degree and a demonstrated track record in at least one of the following areas: organic/medicinal chemistry, molecular biology, cell biology, biological chemistry, or structural biology. Prior research experience in protein purification, gene cloning or signal transduction is preferred. The successful candidates will be expected to develop an innovative research program and collaborate with synthetic chemists and biologists.

Annual salaries [attracting 15% (taxable) terminal gratuity] are on the following scales, with starting salary depending on qualifications and experience: Associate Professor: HK$861,180 - HK$1,156,860 (9 points) (in the grade of Senior Lecturer) (approx. US$110,462 - US$148,380; US dollar equivalents as at 11 July); Assistant Professor: HK$554,280 - HK$925,980 (11 points) *(in the grade of Lecturer) (approx. US$46,940 - US$118,774). *An appointee with an annual salary at HK$740,640 (approx. US$95,000) or above may be considered for the award of the title of Associate Professor on the basis of academic merits and achievements.

At current rates, salaries tax will not exceed 15% of gross income. The appointments carry leave, medical and dental benefits, an allowance for children's education in Hong Kong, and, where appropriate, a financial subsidy under the Home Financing Scheme for reimbursing either the actual rental payment or the mortgage repayment up to the relevant maximum entitlement may be provided.

Further particulars and application forms can be obtained at http://www.hku.hk/apptunit/; or from the Appointments Unit (Senior), Registry, The University of Hong Kong, Hong Kong (Fax (852) 2540 6735 or 2559 2058; e-mail: apptunit@reg.hku.hk). Please send completed application form with full curriculum vitae and a brief statement of research interests. Closes **9 October 2000.**

The University is an equal opportunity employer and enjoys a smoke-free environment

FACULTY POSITION

Applications are invited from exceptional candidates at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level (tenure track) with an M.D., Ph.D., or M.D./Ph.D. to develop a research program in angiogenesis. The successful candidate would hold a primary tenure-track appointment in the Department of Ophthalmology and Visual Sciences at the University of Illinois and a secondary appointment in either the Department of Pharmacology or the Cancer Center or both. These research academic units have a strong tradition of engaging in cutting-edge research and wish to develop research strength in angiogenesis. Candidates for this position will be expected to maintain an independently funded research program and take part in multidisciplinary research and training programs. Applicants must have the background and commitment to pursue a federally funded research program. Applications are solicited from investigators who seek to develop important new insights about cellular and molecular aspects of angiogenesis. Outstanding laboratory space and an attractive set-up/salary package is available. Respond with curriculum vitae and a list of three references by September 22, 2000, to:

Jose S. Pulido, M.D., M.S. (027a)
Professor and Head
Department of Ophthalmology
College of Medicine (M/C 648)
University of Illinois at Chicago
1855 West Taylor Street
Chicago, IL 60612-7243

The University of Illinois at Chicago is an Affirmative Action/Equal Opportunity Employer.

BIOCHEMISTRY

The Department of Chemistry and Biochemistry, University of Notre Dame invites applications for two tenure-track positions at the level of **ASSISTANT PROFESSOR** in the Biochemistry Group beginning August 2001. Particular areas of interest include biomolecular structure and dynamics, physical biochemistry and related fields, and genomics. The successful applicants will have demonstrated significant research accomplishments and the potential to establish a strong, independent research program; will be motivated to develop teaching skills in undergraduate and graduate courses; and will become an integral contributor to the overall teaching and research efforts of the Biochemistry Group. Applicants should submit curriculum vitae, statement of research and teaching interests and plans, and arrange for three letters of recommendation to be sent directly to: **Biochemistry Search Committee, University of Notre Dame, Department of Chemistry and Biochemistry, 251 Nieuwland Science Hall, Notre Dame, IN 46556-5670**. Applications will be reviewed on a continuing basis beginning October 1, 2000, until the position is filled. *The University of Notre Dame is an Equal Opportunity Employer and actively solicits applications from women and minorities.*

POSTDOCTORAL POSITIONS
REGULATION OF CELL DIVISION
H. Lee Moffitt Cancer Center

Two positions available to study signal transduction/cell cycle controls at mitosis. Our laboratory is interested in regulation of mitosis and tumorigenesis as it relates to abnormal chromosome segregation. We are currently investigating MAP kinase signaling at mitosis (see *Science* **282**:1312–1315, 1998) using the cell-free system of Xenopus egg extracts and mammalian cells as model systems. Excellent projects await talented Postdoctoral candidates with productive backgrounds in biochemistry or cell/molecular biology. Technical experience with either protein purification or fluorescence/video microscopy is a plus. Moffitt Cancer Center offers an outstanding research-training environment with state-of-the-art core facilities. Send curriculum vitae and three references to: **Dr. Thomas Guadagno, Molecular Oncology Program, MRC 3–East, H. Lee Moffitt Cancer Center, Tampa, FL 33612. E-mail: guadagnt@moffitt.usf.edu.**

POSITIONS OPEN

FACULTY POSITION
DEPARTMENT OF BIOLOGY
UNIVERSITY OF PENNSYLVANIA

The Department of Biology expects to make a tenure-track appointment in evolutionary ecology. We are seeking a broadly trained Evolutionary Ecologist whose research is in one of the following areas: studies of natural selection in nature, adaptation, speciation, coevolutionary relationships, ecological genetics, phylogeography, or any related area. The ideal candidate will complement and interact with existing faculty whose strengths lie in population, community, and ecosystem ecology and evolutionary biology.

Candidates will be expected to teach at the undergraduate and graduate levels in addition to maintaining a vigorous, independent research program. While we expect that this appointment will be made at the **ASSISTANT PROFESSOR** level, outstanding senior applicants will be given serious consideration. Applicants should send curriculum vitae, at least three letters of recommendation, and up to three reprints or manuscripts to:

Chair, Ecology Search Committee
Department of Biology
University of Pennsylvania
Philadelphia, PA 19104-6018

Review of applications will begin on 15 October 2000. Further information on the Department of Biology can be found at **website: www.sas.upenn.edu/biology**. *The University of Pennsylvania is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to apply.*

RESEARCH INVESTIGATOR position available immediately to join an active group of scientists working to develop vaginal and rectal products for use in preventing AIDS and other sexually transmitted infections. A product is currently in large-scale safety trials, and we are working towards efficacy testing and development of improved products. Research will focus on developing animal systems to test products for efficacy and safety. The individual will be able to choose from a number of topics for her/his work (including but not limited to rodent systems) to test efficacy of products against any one of a number of STIs, animal systems to study vaginal and rectal safety, pharmacokinetic studies, laboratory aspects of clinical studies concerning vaginal distribution and rectal irritation, and product mechanism of action. Ph.D. in pharmacology or related field required. Send curriculum vitae, names/addresses of three individuals we may contact for letters of reference, and letter of interest to: **Dr. David Phillips, Population Council, 1230 York Avenue, New York, NY 10021. Telephone: 212-327-8744; FAX: 212-327-7678; e-mail: dphillips@popcouncil.org.**

Three research posts are available in the Salmon Analysis Branch at the Santa Cruz Laboratory of the National Marine Fisheries Service, Southwest Fisheries Science Center. Successful candidates will develop quantitative population models and analyses to support development of recovery plans for threatened and endangered anadromous salmonids and will have considerable freedom to pursue individual research interests in the broad field of salmon-related science. Individuals with strong quantitative skills (preferably holding a Ph.D. in an appropriate field) and who qualify under the criteria for **RESEARCH FISHERY BIOLOGIST, ECOLOGIST**, or **MATHEMATICAL STATISTICIAN** are encouraged to apply. *U.S. citizenship is required.* For more information about the Laboratory, please refer to **website: http://www.pfeg.noaa.gov/tib/**. For information regarding application instructions and requirements, please refer to **website: http://www.usajobs.opm.gov/a9noaa.htm**. *Equal Opportunity Employer.*

POSITIONS OPEN

POSTDOCTORAL POSITIONS
VASCULAR CELL AND MOLECULAR BIOLOGY
Harvard Medical School

Postdoctoral positions are available in The Vascular Research Division, Departments of Pathology, Brigham and Women's Hospital/Harvard Medical School to study the following projects in vascular cell biology. (1) The structure/function of proteins that constitute endothelial cell lateral junctions are being studied. Presently, the emphasis is on cadherin and claudin function in the context of permeability barrier and leukocyte trafficking during inflammation (see *J. Cell Biol.* **148**:203, 2000). (2) Several aspects of T lymphocyte-endothelial cell adhesion are being studied. Emphasis is on the role of endothelium during inflammation focusing on chemokine and cytokine cascades and induction adhesion molecules using both *in vivo* and *in vitro* models (see *Nature* **398**:718, 1999). See our **website: http://fwl.bwh.harvard.edu**. Candidates should possess an M.D. and/or Ph.D. with a strong background in molecular biological, immunological, and biochemical techniques and no more than two years of postdoctoral experience. Send curriculum vitae and the names and telephone numbers of three references by FAX or e-mail to: **Dr. Bill Luscinskas, Department of Pathology, Brigham & Women's Hospital, Boston, MA 02115. FAX: 617-582-6188; e-mail: fluscinskas@rics.bwh.harvard.edu.** *An Affirmative Action/Equal Opportunity Employer.*

***DROSOPHILA* GENETICIST**, Department of Biological Sciences, East Tennessee State University. Tenure track; **ASSISTANT PROFESSOR**. Ph.D. in genetics or closely related discipline required at preferred date (January 2001). Develop research program incorporating both classical and modern approaches. Teaching responsibilites include participation in genetics with laboratory and general biology courses. Expectation to develop specialty course and direct undergraduate and master projects. Curriculum vitae, statements of teaching and research goals, reprints, graduate transcripts, and three letters of reference to be sent by September 25, 2000, to: **Dr. J. Leonard Robertson, Genetics Search Committee, East Tennesee State University, Box 70703, Johnson City, TN 37614. E-mail: robertjl@etsu.edu; website: www.etsu.edu/biology.** *Affirmative Action/Equal Opportunity Employer. Position contingent on state funding.*

RESEARCH INVESTIGATOR position available immediately to join our microbicide program to work on prevention of sexual transmission of HIV. Primary focus of research is to determine the mechanism(s) HIV uses to enter the body during sexual contact. We have been especially interested in the role of epithelial cells as target cells for HIV. Alternatively, the individual may choose to investigate the role of trafficking of mononuclear cells from the vaginal vault or rectum through the mucosa or alternative ways HIV infection may be initiated. Ph.D. in virology or related field required. Send curriculum vitae, names/addresses of three individuals we may contact for letters of reference, and letter of interest to: **Dr. David Phillips, Population Council, 1230 York Avenue, New York, NY 10021. Telephone: 212-327-8744; FAX: 212-327-7678; e-mail: dphillips@popcouncil.org.**

A **POSTDOCTORAL POSITION** is available for an NIH-sponsored project with a long history of funding to study signal transduction mechanisms of macrophages in inflammatory conditions and mechanisms of bacterial endotoxin tolerance. Preference will be given to candidates with molecular biology expertise. Send curriculum vitae and two letters of reference to: **Dr. James A. Cook, Medical University of South Carolina, Department of Physiology and Neurology, 167 Ashley Avenue, Charleston, SC 29425. Telephone: 843-792-4423; FAX: 843-792-2978; e-mail: cookja@musc.edu.** *Equal Opportunity Employer.*

Announcements

Hands-On Training in Biotechnology

Biotechnology Center
Utah State University
2000-2001

Obtain basic training or update your skills in the latest techniques in biotechnology reasearch. Emphasis is on hands-on training and speakers are carefully selected.

Program Schedule

- **Protein Purification: Isolation and Characteriszation**
  October 3-6, 2000
  March 27-30, 2001
- **Techniques in Animal Cell Culture and Scale-Up Strategies**
  April 24-27, 2001
- **Hybridoma Technology and Enzyme Immunoassay Development**
  June 19-22, 2001
- **Microbial Fermentation: Development and Scale-up**
  May 22-25, 2000
  October 2-5, 2001

For more information, please contact:

Rebecca Jo Isom
Education and Outreach Office
Biotechnology Center,
Utah State University
Logan, Ut. 84322
Phone: (435) 797-3504
Fax: (435) 797-2766
E-mail:
risom@cc.usu.edu

Symposia

KECK 2000 SYMPOSIUM
KECK CENTER FOR COMPUTATIONAL BIOLOGY
10-YEAR CELEBRATION SYMPOSIUM
October 16-17, 2000, Houston, Texas

SPEAKERS

Helen Berman, Rutgers University, Piscataway
David Botstein, Stanford University, Stanford
Sydney Brenner, Molecular Sciences Institute, Berkeley
David Eisenberg, University of California, Los Angeles
Tom Ellenberger, Harvard Medical School, Boston
James Gilmore, Genometrix, Houston
Tim Harris, Praelux, Inc., Lawrenceville
Sung-Hou Kim, University of California, Berkeley
James Leary, University of Texas Medical Branch, Galveston
Stephen Mayo, Caltech, Pasadena
John Moult, University of Maryland, Rockville
John Norvell, NIGMS, NIH, Bethesda
Jeffrey Skolnick, Danforth Plant Science Center, St. Louis
Xiaochuan Zhou, Xeotron Co., Houston

ON-LINE REGISTRATION:
http://www.bioc.rice.edu/keck
Deadline for registration is Oct. 1, 2000.
Keck Center for Computational Biology, Rice University
6100 Main St.
Mail Stop 141, Houston, Texas 77005
email: keckcenter@bioc.rice.edu

European Opportunities

KAROLINSKA INSTITUTET
Microbiology and Tumor Biology Center

LECTURER/PROFESSOR
in Experimental Cell and Tumor Biology

The successful applicant will be working in The Microbiology and Tumor Biology Center, a department focused on research, graduate and undergraduate training in the areas of tumor biology, immunology and different subdisciplines of microbiology.

The holder of this position is expected to pursue research and training of outstanding quality, on the biology of tumors and their interaction with the host at the molecular, cellular and organ levels. The area of research can thus be oriented towards molecular cell biology, cell cycle regulation, intracellular signalling, tissue biology or host - tumor interactions. The work will be conducted in a creative and interactive environment, organized around 30 research groups in the Microbiology and Tumor Biology Center, with access to several scientific core facilities within this department or the campuses of Karolinska Institutet.

The applicant must have a strong, internationally renowned scientific track record, as well as pedagogical competence. The requirements for scientific excellence are high, and will have the strongest impact in the evaluation process; additional criteria are pedagogical competence as well as leadership competence, collaborative and communication ability.

The merits and CVs of the applicants will be evaluated according to the Karolinska Institutet evaluation portfolio ("meritportfölj"), which can be found at the KI homepage: **http://info.ki.se/news/job_opportunities/qualifications/index_en.html.** It can also be requested from the Registration Office, tel +46-8-728 65 95.

Upon appointment the holder of the position may apply directly for a full professorship. The Karolinska Institute makes an effort to promote equality between the sexes. Most lecturers and professors are presently men. The university therefore specially encourages women to apply for the position.

Documents should be written in English and submitted in three copies:

a) Application
b) Verified list of merits
c) Short summary of scientific and pedagogical merits, formulated in line with the Karolinska Institute evaluation portfolio (see above)
d) Short summary of plans for future research
e) Complete list of publications
f) Reprints or copies of 10 selected publications (in case of application for full professorship, 20 selected publications).

Information about the position can be obtained from Professor KlasKärre, Chairman, Microbiology and Tumor Biology Center tel 46-8-7286282, fax 46-8-304276, e-mail Klas.Karre@mtc.ki.se, Professor Ingemar Ernberg, tel 46-8-7286262, fax 46-8-319470,e-mail Ingemar.Ernberg@mtc.ki.se, and union representative Professor Staffan Arvidson46-7287172,e-mail Staffan.Arvidson@mtc.ki.se. Your application marked with the registration number 873/2000PA must be available at the Registration Office, Karolinska Institutet, SE-171 77, Stockholm, Sweden, by **September 9th 2000.**

POSITIONS OPEN

ASSISTANT PROFESSOR
Postharvest Physiologist, Vegetable Crops

The Department of Horticulture at Michigan State University is seeking applicants for a tenure-track teaching and research position. Teaching includes handling and storage of horticultural crops; participation in team-taught vegetable crop production and management, introductory horticulture, and the graduate-level postharvest physiology courses and student advising. Research includes developing a highly recognized, extramurally funded program; collaborating with postharvest physiologists, agricultural engineers, and other MSU plant scientists; and effectively interacting with industry personnel. Research may be fundamental or applied, addressing such problems as: shelf-life extension, development of value-added products, food safety, quality assessment, and preharvest effects on quality and storability.

Qualifications: Ph.D. in horticulture or related field with evidence of research productivity in postharvest physiology or related discipline required. Postsdoctoral and/or industry experience; evidence of ability to obtain competitive external grants in support of research and/or educational programs desirable. Screening will begin January 2001 and will continue until a suitable applicant is identified. Position available: July 1, 2001. Send curriculum vitae, publication list, description of research interests, and request that three reference letters be sent to:

Dr. Randolph Beaudry, Search Committee Chair
A22 Plant and Soil Sciences Building
Department of Horticulture
Michigan State University
East Lansing, MI 48824-1325

FACULTY POSITIONS IN BIOLOGY
Texas A&M University

As part of a Universitywide expansion of life sciences at Texas A&M, the Department of Biology invites applications for three tenure-track faculty positions. We seek outstanding individuals addressing fundamental biological questions in their research. Genomics/bioinformatics and integrative biology are areas of special interest, but any scientist using innovative approaches to study model systems is encouraged to apply.

Successful candidates will be expected to establish a vigorous, extramurally funded research program and to be active in undergraduate and graduate teaching. We anticipate that the positions will be filled at the level of **ASSISTANT PROFESSOR**, but exceptional candidates will be considered for appointment at a higher academic rank. Applicants should submit curriculum viate, statement of research and teaching interests, and three letters of recommendation to: **Biology Search Committee, Department of Biology, Texas A&M University, 3258 TAMU, College Station, TX 77843-3258**. Information about our Department can be found at **website: www.bio.tamu.edu**. Review of applications will begin on September 15, 2000, and continue until the positions are filled. *Texas A&M is an Equal Opportunity Employer.*

POSTDOCTORAL ASSOCIATE

Applications are invited for a Postdoctoral Associate position in a laboratory involved in understanding molecular biology of oxidative stress-induced tumorigenesis and the role of chemopreventive protein NQ01. This position is to investigate the mechanism of the role of NQ01 in prevention of oxidative stress-induced tumorigenesis. The studies will involve the use of wild type and NQ01-/-mice, tumor development and analysis, microarray, identification of target genes, gene cloning, and manipulation. Salary is competitive and negotiable. Interested individuals with substantial experience in molecular biology and/or tumor biology are invited to submit their curriculum vitae and names of three references to: **Dr. Anil Jaiswal, Department of Pharmacology, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030**.

Equal Opportunity/Affirmative Action/Equal Access College.

POSITIONS OPEN

ASSISTANT PROFESSOR
INFECTIOUS DISEASES
Washington University School of Medicine

The Division of Infectious Diseases in the Department of Medicine at Washington University School of Medicine solicits applications for tenure-track appointments at the rank of Assistant Professor. We are seeking interactive individuals who will be able to establish a vigorous and outstanding independent basic research program. Our program has a strong emphasis on microbial pathogenesis in prokaryotic, viral, and eukaryotic systems. Recruited faculty will be located contiguous to the Department of Molecular Microbiology and the Division of Pediatric Infectious Diseases; there is tremendous potential for collaborative interactions. Preference will be given to academic physicians who are Board-eligible/Board-certified in infectious diseases. Very attractive start-up packages and protected time arrangements will be offered. Applicants should send detailed curriculum vitae, a few selected reprints, a brief description of current and planned research interests, and arrange to have three letters of reference sent to: **Daniel E. Goldberg, M.D., Ph.D., Codirector, Division of Infectious Diseases, Attention Faculty Search Committee, Washington University School of Medicine, Campus Box 8230, 660 South Euclid Avenue, St. Louis, MO 63110**. *Washington University Medical School is an Equal Opportunity/Affirmative Action Employer. Women and minorities are especially encouraged to apply.*

CLARE BOOTHE LUCE PROGRAM AWARD
Junior Faculty Chair Position for Women
University of Notre Dame
College of Science

The University of Notre Dame invites applications from qualified candidates for a Clare Boothe Luce **ASSISTANT PROFESSORSHIP** within the College of Science. This is a tenure-track appointment at the Assistant Professor level beginning August 22, 2001. The position is restricted by the Luce Foundation to *women who are U.S. citizens*. Candidates should have a Ph.D. in one of the areas present in our Departments of Biological Sciences, Chemistry and Biochemistry, Mathematics, or Physics. Preference will be given for appointments in fields where women are currently underrepresented in these Departments. The successful applicant will be expected to have a strong commitment to excellence in teaching at both the undergraduate and graduate levels and to develop a vigorous independent research program. Competitive salary and start-up funds are available. Interested candidates should send a letter of intent, curriculum vitae, statements of research and teaching interests, and have three letters of recommendation sent to: **Dr. Kathleen Cannon, Associate Dean, College of Science, 229 Nieuwland Science Hall, University of Notre Dame, Notre Dame, IN 46556**. To ensure full consideration, the Search Committee should receive all materials by December 8, 2000.

NATIONAL CANCER INSTITUTE
NATIONAL INSTITUTES OF HEALTH

Two **POSTDOCTORAL POSITIONS** are available immediately to study the molecular basis of cellular response to low oxygen tension, a fundamental process involving angiogenesis and tumorigenesis. The study will be conducted in a laboratory supplied with brand-new equipment. Candidates should possess a Ph.D. and/or M.D. degree and a strong background in biochemistry, cell biology, and/or molecular biology. Letters of application briefly describing research interests, curriculum vitae, and names of three references should be sent to: **Dr. Eric Huang, Laboratory of Human Carcinogenesis, Building 37, Room 2C08, 37 Convent Drive, MSC 4255, Bethesda, MD 20892. Telephone: 301-402-8785; FAX: 301-480-1264; e-mail: huange@mail.nih.gov.**

POSITIONS OPEN

POSTDOCTORAL FELLOWSHIP

A Postdoctoral position is available immediately to study signaling mechanisms involving enzymes of inositide metabolism using *Drosophila* as a model system. Applicants must have a Ph.D. and are expected to be highly motivated. Experience in *Drosophila* genetics and molecular biology is preferred but is not essential.

The position is part of the Division of Basic Sciences of the National Cancer Institute and is located at the Frederick Cancer Research and Development Center in Frederick, Maryland. Salary range for this position is $31,500 to $38,020.

If interested, please send your curriculum vitae and names of three references to: **Jairaj Acharya, M.B., B.S., Ph.D., Building 560, Room 22-6, P.O. Box B, NCI-FCRDC, Frederick, MD 21702**. Your curriculum vitae and names of references may also be sent by **FAX: 301-846-1666; e-mail: acharyaj@mail.ncifcrf.gov**. *The National Institutes of Health is an Equal Opportunity Employer and encourages all qualified women and minorities to apply. Selection for the position will be based solely on merit, with no discrimination for nonmerit reasons such as race, marital status, physical or mental disability, age, sexual orientation, or membership or nonmembership in an employee organization.*

FISHERIES BIOLOGY

The Division of Biology at Kansas State University invites applications for a tenure-track position, preferably at the **ASSISTANT PROFESSOR** level, beginning in the 2001/2002 academic year. A strong, extramurally funded research program and active participation in undergraduate and graduate teaching are expected. A Ph.D. or equivalent is required, and postdoctoral training and teaching experience are desirable. The Division has an excellent record of fisheries and ecology training and research. Further information on the Division and the position can be found at **website: http://www.ksu.edu/biology**. Applicants should submit curriculum vitae, selected reprints, a summary of research interests; and have three letters of reference sent to: **Dr. Chris Smith, Chair, Fisheries Search Committee, Kansas State University, Division of Biology, Ackert Hall, Manhattan, KS 66506-4901**. Review of applications will begin October 5, 2000, and continue until the position is filled. *Kansas State University is an Equal Opportunity Employer and highly encourages diversity among its employees.*

POSTDOCTORAL FELLOWS/
RESEARCH ASSOCIATES

The Molecular Cardiology Program at the Cardiology Division, Department of Medicine, The New York Hospital, Cornell Medical Center has available positions to study molecular genetics and cellular physiology of human cardiac arrhythmias and cardiovascular signal transduction. Exceptionally motivated applicants (Ph.D., M.D., M.D./Ph.D.) with experience in molecular biology, cellular electrophysiology, and/or genetics should send letter of interest, curriculum vitae, and three references to: **Bruce Lerman, M.D., Chief, Cardiology Division, The New York Hospital, Cornell Medical Center, 525 East 68th Street, Starr 409, New York, NY 10021. FAX: 212-746-6951; e-mail: blerman@med.cornell.edu.** *The New York Hospital, Cornell Medical Center is an Equal Opportunity Employer.*

POSTDOCTORAL POSITION is available at the University of Arizona to study vascular function during active vessel remodeling and angiogenesis using MRI and trangenic/knockout mouse models. This position is part of a joint research effort between Biomedical Engineering and Magnetic Resonance programs and is supported through an NIH training grant. *According to terms and conditions of the grant, applicants must be U.S. citizens, noncitizen nationals, or permanent residents.* A background in vascular biology or physiology is required. Experience with MRI methods is desirable. Please send curriculum vitae and names of three references to: **James Hoying, Ph.D.; University of Arizona; P.O. Box 245084, Tucson, AZ 85724. E-mail: jhoying@u.arizona.edu.** *The University of Arizona is an Affirmative Action/Equal Opportunity/Americans with Disabilities Act Employer.*

EUROPEAN OPPORTUNITIES

ANNOUNCEMENTS

TeleThon

JDF

TELETHON/JDF CENTERS FOR STUDY OF TYPE 1 DIABETES IN ITALY

CALL FOR LETTERS OF INTENT

Telethon and the Juvenile Diabetes Foundation International (JDF) are pleased to announce a new joint research program in Italy to foster multi-disciplinary research targeted at finding a cure for Type 1 diabetes. Telethon and JDF would like to establish Centers in Italy to support research in Type 1 diabetes, particularly in genetics and genomics, immune modulation, islet transplantation, genetic engineering and gene therapy.

Interested parties should refer to: the Telethon Web site, **http://www.telethon.it**, or to the JDF Web site, **http://www.jdf.org/research/rschinfo.html#applicants**, for the full text of this RFP.

Submit letters of intent addressed to:

Dr. Francesca Pasinelli, Chief Scientific Officer,
Comitato Telethon Fondazione Onlus
Via Calzecchi,10, 20133 Milano, Italy,
Phone 39 02 70005931, Fax 39 02 70005947
*Email: **fpasinelli@mail.telethon.it***

Letters of intent are due no later than October 15, 2000, and applicants will be notified by October 31, 2000.

DIVERSITAS: An international Programme of Biodiversity Science seeks **an EXECUTIVE DIRECTOR** for its independent International Secretariat housed within UNESCO Headquarters in Paris.

DIVERSITAS is an International Programme of Biodiversity Sciences, co-sponsored by six international organizations: ICSU - International Council for Science, UNESCO, SCOPE-Scientific Committee on Problems of the Environment, IUBS-International Union of Biological Sciences, IUMS-International Union of Microbiological Societies and IGBP-International Geosphere-Biosphere Programme. DIVERSITAS is one of the Global Environmental Change Programme partners with WCRP-World Climate Research Programme, IGBP , IHDP-International Human Dimensions Programme and START.

The Executive Director will be responsible for:
- international co-ordination, planning and organization of scientific research programmes and projects contributing to the goals of DIVERSITAS;
- promotion of working relationships with other research programmes, and with relevant policy bodies, for example, the Conventions dealing with Biological Diversity and their scientific advisory bodies; and,
- overall management of the DIVERSITAS Secretariat.

Applicants should have an advanced scientific degree (preferably Doctorate) in a relevant field of biology/ecology. The following skills will also be required:
- Wide experience in a field of research related to biological diversity; international recognition in research management and coordination;
- Extensive professional experience (5 years minimum) in the planning and organization of large scientific projects and/or management of a scientific institute;
- Familiarity with the procedures of international governmental and non-governmental organizations;
- Demonstrated fund-raising skills;
- Excellent knowledge of English and knowledge of French.

As a result of the recent three year grant by the International Group of Funding Agencies for Global Change Research (IGFA), the DIVERSITAS Executive Director will be appointed by the Co-sponsors of DIVERSITAS for a three year period (renewable), with a one year probationary period. The salary is internationally competitive and will take due account of the experience and qualifications of the candidate.

Deadline for application is 30 September 2000, and commencement of duty as soon as possible thereafter, but negotiable. The duty station is in conjunction with the Division of Ecological Sciences at UNESCO headquarters in Paris. Letters of application, with a CV and 3 references should be sent to the ICSU secretariat: c/o Dr. Anne Larigauderie, ICSU Secretariat, 51 Boulevard de Montmorency, 75016 Paris, France; e-mail: anne@icsu.org; Tel: 33-145250329, Fax: 33-142889431.

POSITIONS OPEN

POSTDOCTORAL FELLOW
GRADUATE INSTITUTE OF TECHNOLOGY
University of Arkansas at Little Rock

The University of Arkansas at Little Rock invites applications for a Postdoctoral Fellow beginning September 15, 2000. The successful candidate will have an earned Doctorate in biology, biochemistry, or related field. Preference will be given to candidates with documented expertise in one or more of the following areas: Rab protein structure and function, molecular analysis of vesicular transport, and/or molecular analysis of *Dictyostelium discoideum*.

The Postdoctoral Fellow will study the role of vesicular transport on the structure and function of the contractile vacuole in *Dictyostelium discoideum*. Interested individuals are requested to submit a résumé and three letters of recommendation to: **Dr. John Bush, Department of Biology, University of Arkansas at Little Rock, 2801 South University, Little Rock, AR 72204-1099. Telephone: 501-569-3520; e-mail: jmbush@ualr.edu**.

The University of Arkansas at Little Rock is committed to the policy of providing Equal Opportunity for all persons and will not discriminate in admissions, age, race, national origin, color, disability, or religion. In carrying out this commitment, the University follows the principles of Affirmative Action and operates within the federal laws and executive orders prohibiting discrimination. Under Arkansas law, all applications are subject to disclosure. Persons hired must have proof of legal authority to work in the United States.

POSTDOCTORAL FELLOWSHIP

Chronic hepatitis C genomic studies and RNA replication. Application of genomics in studying chronic hepatitis C and studies of HCV RNA replication (see *Current Topics of Microbiology and Immunology* **242**). Join an interdisciplinary group with links to the Yerkes microarray facility and the Emory molecular pathology section. Salary and benefits competitive. Send curriculum vitae and references to: **Dr. Curt H. Hagedorn, Division of Digestive Diseases, 2101 Woodruff Memorial Research Building, Emory University School of Medicine, Atlanta, GA 30322. E-mail: chagedo@bimcore.emory.edu; FAX: 404-727-5767**. *Emory University is an Equal Opportunity/Affirmative Action Employer.*

TECHNICAL COMMUNICATION/ SCIENCE NEWS WRITING UNIVERSITY OF WASHINGTON

GRADUATE RESEARCH ASSISTANTSHIP available fall 2000 to study issues in science news reporting. Other opportunities in the department include new media design, usability testing, rhetoric of digital media. **Website: www.uwtc.washington.edu**. Contact: **Program Coordinator, Technical Communication, University of Washington, Box 352195, Seattle, WA 98195-2195. Telephone: 206-543-7108.**

POSTDOCTORAL POSITION available immediately to study regulation of human apolipoprotein genes by designing and creating apolipoprotein variants for expression and analysis in eukaryotic cell lines. Ph.D. or M.A. in a biological science required. *U.S. residents (permanent) or citizens preferred.* Send curriculum vitae and names of three references to: **Margaretha Carraway, Ph.D., Department of Biophysics, Boston University School of Medicine, 715 Albany Street, CABR W302, Boston, MA 02118. E-mail: carraway@med-bioPh.D.bu.edu.**

POSTDOCTORAL POSITION available at the University of California, San Diego, to study regulation of genes related to pain transduction. Self-motivated individuals with experience in immunohistochemistry, *in situ* hybridization, and/or molecular biology are encouraged to apply. Résumés and names of three references to: **Dr. Z. David Luo, Department of Anesthesiology, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0818. E-mail: zluo@ucsd.edu.**

POSITIONS OPEN

POSTDOCTORAL POSITIONS
RNAI MECHANISM AND APPLICATIONS

Three-year position available to examine the mechanism of RNA-mediated gene silencing or RNAi in *Drosophila* (*Cell* **95**:1017–1026, 1998). Approaches range from biochemical studies to mutant screens for RNAi genes. A three-year position is also available to apply RNAi technology to address important problems in cell and developmental biology (functional genomics). Creative and innovative technology development is encouraged (**Kennerdell and Carthew**, *Nature Biotechnology*, 2000, in press).

The University of Pittsburgh campus has 25,000 undergraduate and graduate students, with a vigorous international community. The city of Pittsburgh is 250 miles from the Boston–Washington corridor and for the past 10 years has consistently ranked in Rand McNally's "Top Ten Livable Cities."

Letters of application briefly describing research interests, curriculum vitae, and names of three references should be sent to: **Richard W. Carthew, Ph.D., Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA 15260. E-mail: carthew+@pitt.edu; website: www.pitt.edu/~carthew/pdoc.html**.

POSTDOCTORAL/PH.D. STUDENT POSITIONS at the University of Connecticut Health Center to study cell differentiation, growth, and cell/cell interactions during the development of the vascular system using gene targeting in mice and other approaches. References: *Nature* **376**:66–70; *Development* **126**:3015–3025; *PNAS USA* **97**:8386–8391. Strong background in molecular biology is required, but experience in vascular biology is not essential. Contact: **Dr. G. Fong; e-mail: fonglab@hotmail.com.**

GRADUATE PROGRAMS

The **PHARMACEUTICAL SCIENCES** and **PHARMACOGENOMICS PH.D. PROGRAM** at the University of California, San Francisco, operates at the interface of pharmaceutical sciences and genetics. It has a multidisciplinary research focus: pharmaceutical sciences, which include molecular pharmacology, drug transport, metabolism, delivery, and modeling/simulation of pharmacokinetics/pharmacodynamics; and pharmacogenomics, which is the application of genomics to drug and xenobiotic action. The Program's multidisciplinary faculty, affiliated with 10 basic and clinical science departments, has access to the latest in analytical methodology, DNA arrays, computational resources, and functional genomic model systems to address research questions at the forefront of drug development and therapeutic sciences. For application information, see **website: www.biopharm.ucsf.edu/pspg/html.**

THE GRADUATE CENTER FOR TOXICOLOGY, established in 1969 as one of the nation's first Ph.D. programs in toxicology, provides broad, medical science-based training in toxicology. Opportunities exist for research and specialization in DNA damage; repair and mutagenesis; toxicology of halogenated hydrocarbons; cardiovascular toxicology; neurotoxicology; immunotoxicology; free radicals and antioxidants; cell proliferation and apoptosis; environmental toxicology; metabolism and transport; and clinical, analytical, and forensic toxicology. A National Institute of Environmental Health Sciences Training Grant provides support for outstanding qualified students. **Website: http://www.mc.uky.edu/toxicology.**

The **GRADUATE PROGRAM IN BIOLOGICAL AND MEDICAL INFORMATICS** at the **UNIVERSITY OF CALIFORNIA, SAN FRANCISCO** focuses on the science of biomedical informatics with special emphasis on methodology, innovation, and generalizability of findings rather than the routine application of technology to biomedical science and practice. The three focus areas are bioinformatics and biocomputing, imaging informatics, and health care knowledge management. For program and application information, see **website: www.mis.ucsf.edu.**

POSITIONS OPEN

THE LINUS PAULING INSTITUTE PRIZE FOR HEALTH RESEARCH
Call for Nominations

The Linus Pauling Institute Prize for Health Research is a newly established prize sponsored by the Linus Pauling Institute (LPI) at Oregon State University (**website: http://osu.orst.edu/dept/lpi**). The Prize consists of $50,000 and a medal and will be awarded biannually starting in 2001. The Linus Pauling Institute was established at Oregon State University in 1996 as a working memorial to Linus Pauling, an alumnus (1922) of OSU. The mission of the LPI is to determine the function and role of micronutrients, vitamins, and phytochemicals in promoting optimum health and preventing and treating disease. The purpose of the Prize is to encourage and recognize excellence in research relating to LPI's mission. The aim is to recognize scientists who have made innovational contributions to our knowledge and understanding of the role of diet in prevention and treatment of disease. Procedure: The nominator should submit a nomination letter, two supporting letters, and the candidate's curriculum vitae. The candidate's research accomplishments in light of the purpose of the prize should be amply described in the letters. The recipient must be present to accept the prize and present a paper at a conference titled "Diet and Optimum Health" organized by the LPI in Portland, Oregon, May 16–19, 2001. Nominations should be sent to: **The Linus Pauling Institute, Attention: Barbara McVicar, Oregon State University, 571 Weniger Hall, Corvallis, OR 97331-6512**. Complete nomination materials must be received by October 1, 2000.

ANNOUNCEMENTS

the Naomi Berrie DIABETES CENTER

the cure until the cure

The Naomi Berrie Diabetes Center at Columbia University announces the first annual

NAOMI BERRIE AWARD FOR OUTSTANDING ACHIEVEMENT IN DIABETES RESEARCH

The Naomi Berrie Award will recognize a Senior Research Scientist who has made major contributions to diabetes research, preferably at the basic science level. The recipient will receive $100,000 to support a two-year Research Fellowship for a **DOCTORAL STUDENT** or **POSTDOCTORAL FELLOW** in his or her laboratory.

Applications for nominations can be accessed through our **website: www.nbdiabetes.org**.

Please send inquiries to: **e-mail: diabetes@columbia.edu**.

Closing for nominations is September 1, 2000. The Naomi Berrie Award recipient for 2000 will be announced in October.

ANGELMAN SYNDROME REQUEST FOR RESEARCH PROPOSALS
Receipt Deadline: October 1, 2000

The Angelman Syndrome Foundation, U.S.A., announces the availability of $100,000 to be awarded in support of research on Angelman Snydrome. All areas of biomedical and behavioral research involving AS will be considered. Questions should be directed to: **Professor Daniel F. Harvey, Ph.D., Department of Chemistry and Biochemistry, University of California, San Diego, La Jolla, CA 92093-0358. Telephone: 858-534-0388; e-mail: dharvey@ucsd.edu; website: http://www.angelman.org/call_for_proposals.htm.**

GLOBAL OPPORTUNITIES

POSTDOCTORAL RESEARCH FELLOW
ACADEMIA SINICA
TAIWAN

Applications are invited to work on aspects of glycobiology. The laboratory has interests in a wide range of topics relating to sialo/polysialobiology (see *JBC* **271**:24341, 1996; *JBC* **273**:27199, 1998; *IUPAC Pure & Appl. Chem.* **71**:789, 1999; *JBC* **271**:32667, 199; *JBC* online: July 24, 2000) and functional significance of PNGase-catalyzed de-N-glycosylation in animal and plant (see, e.g., *PNAS USA* **94**:6244, 1997; *JBC* **275**:129, 2000). The posts are available immediately. Salary is within the Academia Sinica scale (NT$675,000 per annum; equivalent to approximately US$20,000). The project will involve the use of chemical, biochemical, and molecular biology techniques, and a background in one or more of the following is required: biochemistry, glycoprotein purification, and gene cloning. Applications from Fellows intending to return to Taiwan to pursue an academic career are encouraged.

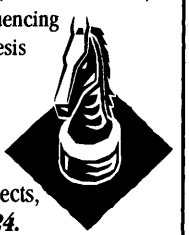
Send curriculum vitae and details (the names, addresses, telephone, and FAX numbers) of two references to: **Professor Yasuo Inoue (Distinguished Chair), Institute of Biological Chemistry, Academia Sinica, Taipei 115, Taiwan.** Informal inquiries are encouraged and can be made directly on **Telephone: +886-2-2785-5696, extension 6020; FAX: +886-2-2788-9759; e-mail: syinoue@gate.sinica.edu.tw.**

COURSES & TRAINING

The Organization for Tropical Studies (OTS) and the Smithsonian Tropical Research Institute (STRI) are soliciting applications for a special course in advanced comparative tropical ecology for fall 2001. The course will provide an intensive comparative research experience for a highly select group of **POSTDOCTORAL SCHOLARS, JUNIOR FACULTY MEMBERS,** and **ADVANCED GRADUATE STUDENTS** at four of the premier research sites in the Neotropics. Participants will contribute to comparative data sets at each site and will develop cross-site comparative independent projects in their areas of expertise. The principal language of instruction will be English. Scholars from outside the United States who are fluent in the language are encouraged to apply. Participants are not required to be affiliated with an OTS member institution or with STRI. Financial assistance to cover the costs of tuition is available. Further information: **OTS, Box 90630, Durham, NC 27708-0630 U.S.A. Telephone: 919-684-5774; e-mail: nao@duke.edu.** Application available at **website: http://www.ots.duke.edu.** Deadline for applications is October 16, 2000; notification to participants will be December 1, 2000.

MARKETPLACE

MARKETPLACE



MARKETPLACE

MORE PRODUCTS ON PREVIOUS PAGE

your Single-Source Antibody Authority

STRATEGIC BIOSOLUTIONS

Custom Antibody Services

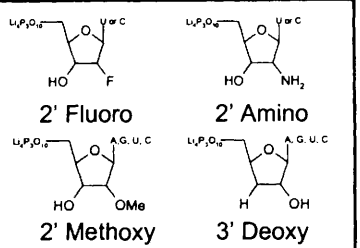
• Polyclonal • Monoclonal
• Hybridoma Development • Ascites Production
• In Vitro Production • Purification • Conjugation

800.481.9737

www.strategicbiosolutions.com

Circle No. 77 on Readers' Service Card

Modified Triphosphates



We carry over 80 modified NTPs
Modified bases and sugars, dNTP and NTP Custom Synthesis Available

TriLink BioTechnologies, Inc.
www.trilinkbiotech.com
Sales@trilinkbiotech.com
800-863-6801 fax 858-546-0020

Circle No. 37 on Readers' Service Card

BioSource International

Custom Antibodies Peptides • Oligos

biosource.com

Circle No. 70 on Readers' Service Card

POLYCLONAL ANTIBODIES

QUICK QUOTE
MOST QUOTES IN AN HOUR

...MADE EASY!

FAST DELIVERY
PEPTIDE TO ANTISERUM IN 70 DAYS

NEW ENGLAND PEPTIDE, INC.

100% SATISFACTION GUARANTEED

Tel: 888-343-5974
Fax: 978-343-5940 www.newenglandpeptide.com

Circle No. 5 on Readers' Service Card

SameDay Oligo Service

25 nmole scale **$.60/Base** 15-30 Bases

Order over the Web by noon (CST) and your order will be shipped that night & in your hands the next morning.

IDT
INTEGRATED DNA TECHNOLOGIES, INC.

www.idtdna.com
1-800-328-2661

Circle No. 67 on Readers' Service Card

Custom Peptides & Antibodies

Best Service & Price! Compare and Save !

Alpha Diagnostic (800) 786-5777
Fax (210) 561-9544; info@4adi.com
Web site: http://www.4adi.com

Circle No. 72 on Readers' Service Card

QUALITY DNA SYNTHESIS

MALDI-TOF Mass Spectrometry Quality Control

Fluorescent Dyes & Other Modifications
Gene Construction & Sequencing Services
Custom RNA Oligos & Antisense DNA Oligos
Custom Primers for PCR & Sequencing
Long Oligos (up to 150-mers)
Competitive Pricing

MIDLAND

The Midland Certified Reagent Company

1-800-247-8766 • FAX: 1-800-359-5789
www.mcrc.com • email: mcrc@oligos.com

Circle No. 73 on Readers' Service Card

3 O.D. Select Oligos

Just $0.60/base*

Order through our Web site and we'll ship your 3 O.D. Select oligos in just 24-48 hours. Every oligo is QC'd by PAGE analysis, and each batch is performance-tested by mass spec.

*Desalted only. Oligos must be 10 to 35 bases in length. No modifications or additional purification. Web orders only. Offer valid in U.S. only.

SIGMA GENOSYS

North America: 1-877-710-1504 • email: gorderentry@sial.com

Circle No. 69 on Readers' Service Card

SEQUENCING BACs?

Template quality BAC DNA from 3-250mL culture using
PSI Ψ CLONE BAC DNA Purification Kits

simple, consistent protocols yield high purity DNA for quantitation, characterization and automated sequencing

PRINCETON SEPARATIONS

1.800.223.0902 · info@prinsep.com

Circle No. 79 on Readers' Service Card

MERLIN® CORE SERVICES

Plasmid Purification
Endotoxin Removal
Any Amount

1-800-4-BIO-101 · www.bio101.com

Circle No. 101 on Readers' Service Card

TRY THE NEW WAY TO CELEBRATE Y2K!!!
BIO•SYNTHESIS, INC.

$12.00/oligo

Don't Count Bases! Count Oligos!
~ *Turnaround Time: 12-48 hours*
~ *50nmole, >5 ODU, up to 25 bases*
~ *Full Q.C. and reliable quality*

or $18.00/oligo (up to 35 bases)

www.biosyn.com **1-800-227-0627**

Circle No. 76 on Readers' Service Card

Quality Peptides & Antisera

Friendly, Personal Service
www.genosys.com

Custom Peptide Synthesis
- sequence analysis
- IG, >70%, >80%, >95% purity
- scales from 2 mg-1 g
- synthesis up to 120 residues
- variety of modifications available
- mass spec & HPLC on every peptide
- satisfaction guaranteed

Polyclonal Antisera Service
- antigen design assistance
- synthesis, conjugation and sera collection
- flexible protocol

SIGMA GENOSYS

North America
1-877-710-1502
ginformation@sial.com

Europe
(+44) (0) 1223 839000
info@sigma-genosys.co.uk

Circle No. 68 on Readers' Service Card

Highly Purified Salt-Free Oligonucleotides

HPSF® GRADE

No failure products • Salt free • No metal ions
MALDI-TOF MS
Production QC on every oligo
Never a purification or setup fee
Inquire about volume pricing
Online ordering & tracking

MWG BIOTECH

TOLL FREE: 1-877-694-2832
www.mwgbiotech.com • info@mwgbiotech.com

Circle No. 75 on Readers' Service Card

Custom Peptides

$14 /residue
3 days turn around
Free Mass Spec
HPLC/UV Trace
8-17 residues
20-50 mg (Desalted)

Please inquire for modified peptides

Tel: 800-597-7873
925-371-1070
Fax: 925-371-1156
email: peptide@peptidogenic.com

PeptidoGenic *The Peptide Engineering Specialist*

Circle No. 1 on Readers' Service Card

Custom Sequencing

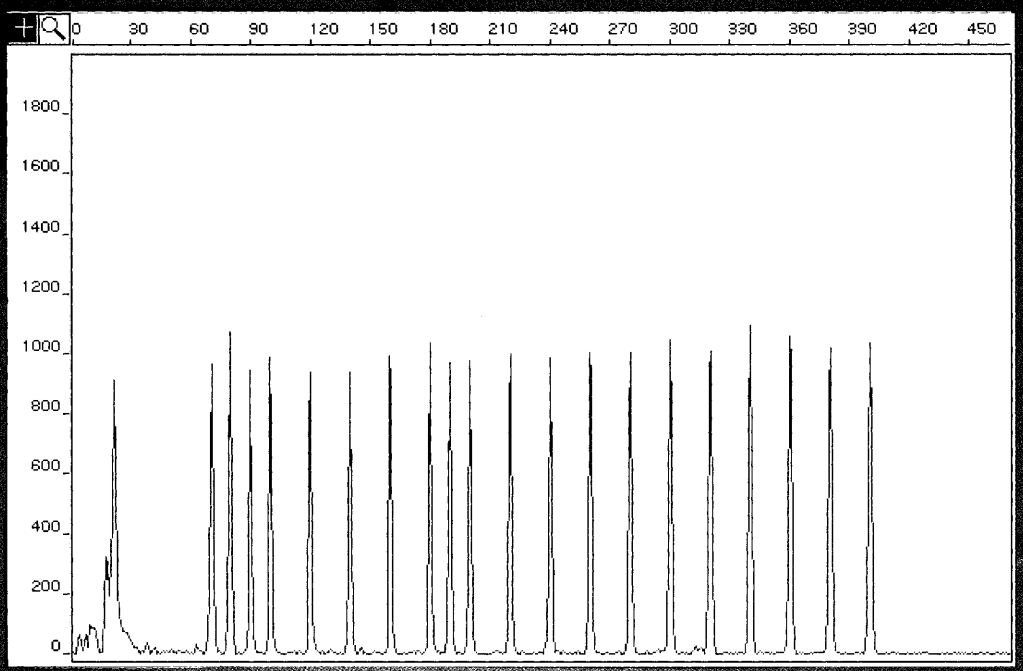
SEQEXPRESS
http://www.resgen.com

Research Genetics
1-800-533-4363

Circle No. 71 on Readers' Service Card

MAPMARKERS™

FLUORESCENT DNA SIZING STANDARDS



Example of Rhodamine-X labeled MapMarker 70-400 sizing standard run on ABI model 310 Genetic Analyzer™. Marker bands are 70, 80, 90, 100, 120, 140, 160, 180, 190, 200, 220, 240, 260, 280, 300, 320, 340, 360, 380, 400 nucleotides long.

MapMarkers are compatible with all fluorescent based separation systems.

MapMarkers provide consistent intensities and migration patterns.

MapMarkers are available labeled with your choice of the most commonly used fluorescent dyes

TO ORDER OR OBTAIN INFORMATION TOLL FREE

Circle No. 57 on Readers' Service Card

BioVentures, Inc.

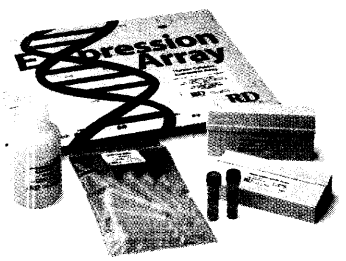
Phone 877-852-7838 FAX 877-286-0322

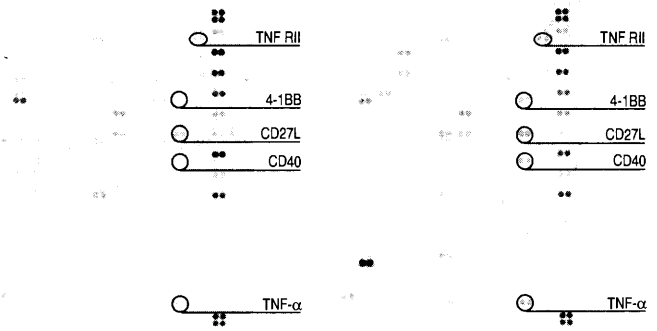
Molecular Biology
REAGENTS

DNA ARRAYS • RNA QUANTITATION • PRIMER PAIRS • PROBE COCKTAILS

Expression Arrays

- Semiquantitative analysis of mRNAs using several different housekeeping control cDNAs
- All cloned cDNAs are sequenced and contain no repetitive elements
- Identify differentially expressed mRNAs by comparing expression profiles from different samples



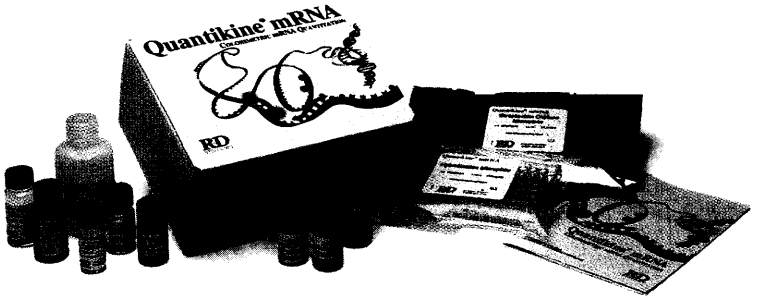


Unstimulated **Stimulated**

The Human Cytokine cDNA Array (Catalog # GA001) shows RNA expression of TNF Superfamily genes in unstimulated and stimulated cells. Stimulated cells show an increase of 3.0, 26, 2.3, 130, and 8.6 fold for TNF RII, 4-1BB, CD27L, CD40 and TNF-α, respectively. Radiolabeled cDNA was made using poly (A)$^+$ RNA, ^{33}P labeled nucleotide and Cytokine-specific Primers (Catalog # GAC11).

Quantikine® mRNA

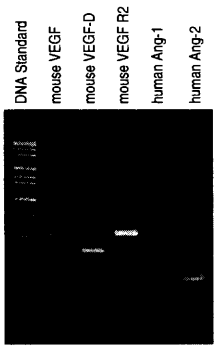
- Quantitate multiple targets at once
- Runs in less than 5 hours
- Less sample RNA than Northern Blot or RPA
- Uses a conventional microplate reader
- Non-radioactive • Non PCR-based



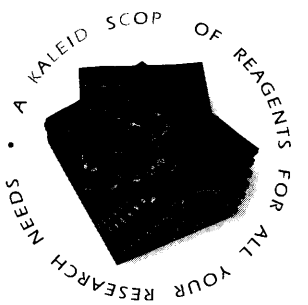
Primer Pairs™ & Probe Cocktails

- R&D Systems' Primer Pairs have been carefully tested to identify optimum amplification conditions so you spend less time optimizing PCR*.
- Probe Cocktails are available labeled with biotin or digoxigenin** or unlabeled with 5'- and 3'-hydroxyl groups.

*PCR is covered by US Patent Numbers 4683195 and 4683202 assigned to Hoffmann-LaRoche.
**licensed from Boehringer Mannheim Gmbh.



RT-PCR products were amplified from first-strand cDNA samples representing sources known to express the respective mRNA. Products were analyzed on a 2.0% agarose-TAE gel and visualized with ethidium bromide staining.*



FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES.

North America
R&D Systems, Inc.
McKinley Place NE
Minneapolis, MN 55413, USA
Tel: 612 379-2956
Free: 1-800-343-7475
Fax: 612 379-6580
info@rndsystems.com

Europe
R&D Systems Europe Ltd.
4-10 The Quadrant, Barton Lane
Abingdon, OX14 3YS, UK
Tel: +44 (0)1235 529 449
Free: 0800 37 34 15
Fax: +44 (0)1235 533 420
info@rndsystems.co.uk

Germany
R&D Systems GmbH
Borsigstrasse 7
65205 Wiesbaden, Germany
Tel: +49 (0)6122 90980
Free: 0800 909 4455
Fax: +49 (0)6122 909819
infogmbh@rndsystems.co.uk

Europe Free Phone
Belgique/België: 0800 10 468 614
Danmark: 80 01 85 92
France: 0800 90 72 49
Nederland: 060 225607
Norge: 800 11033
Sverige: 020 79 31 49
Switzerland: 0800 55 2482

R&D SYSTEMS
1-800-343-7475
www.rndsystems.com

Circle No. 53 on Readers' Service Card