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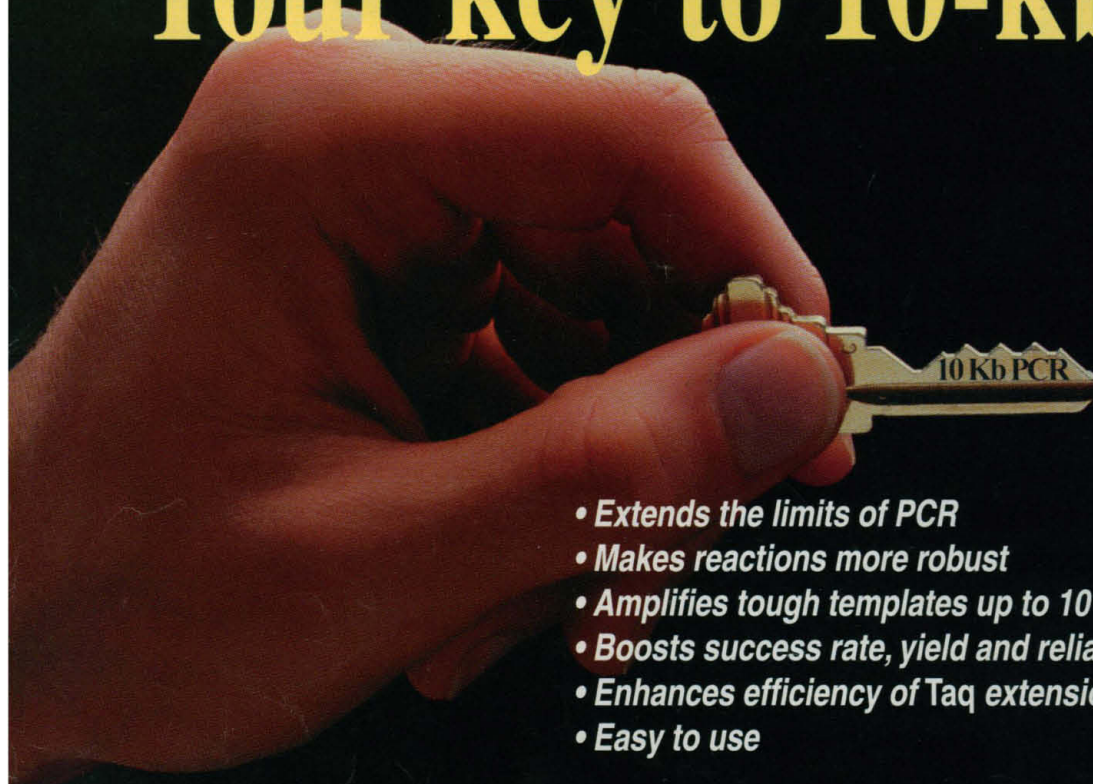
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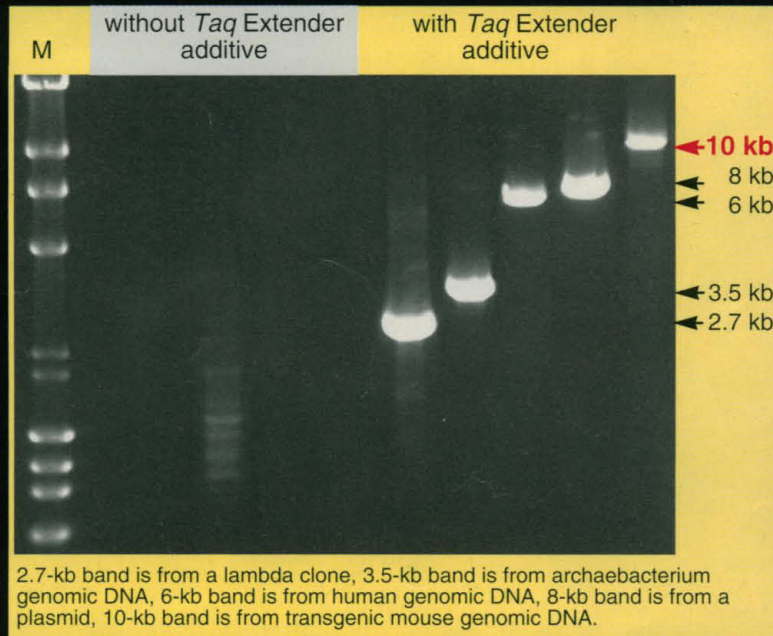
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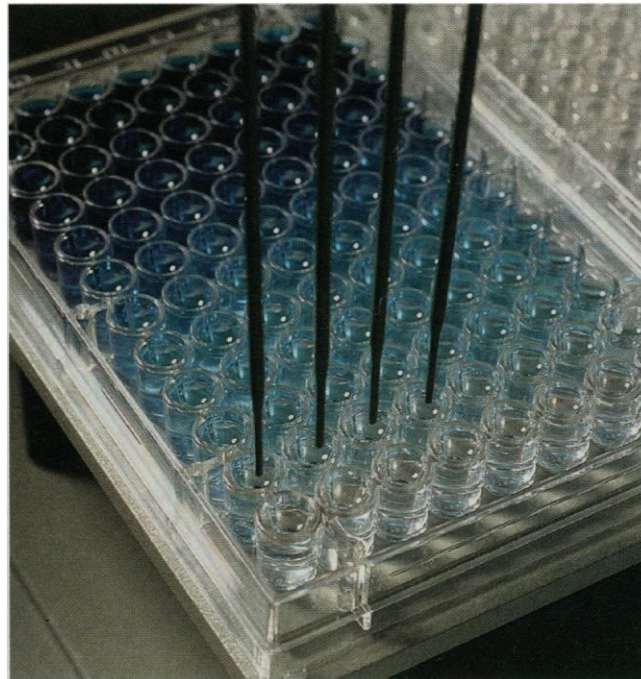
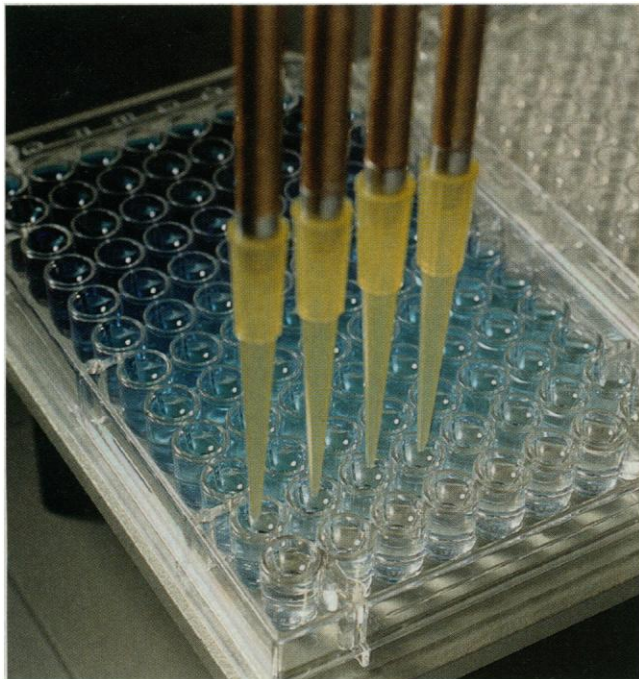
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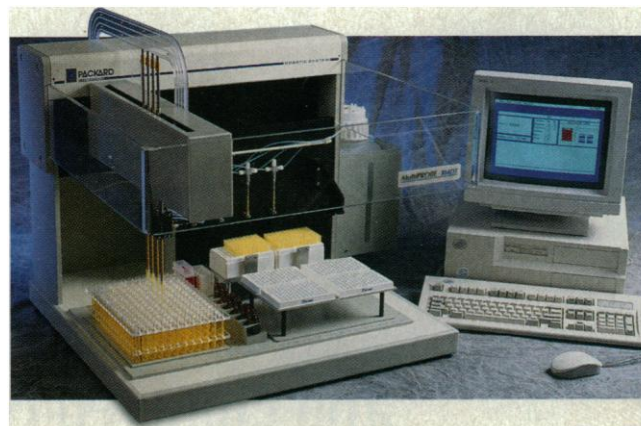
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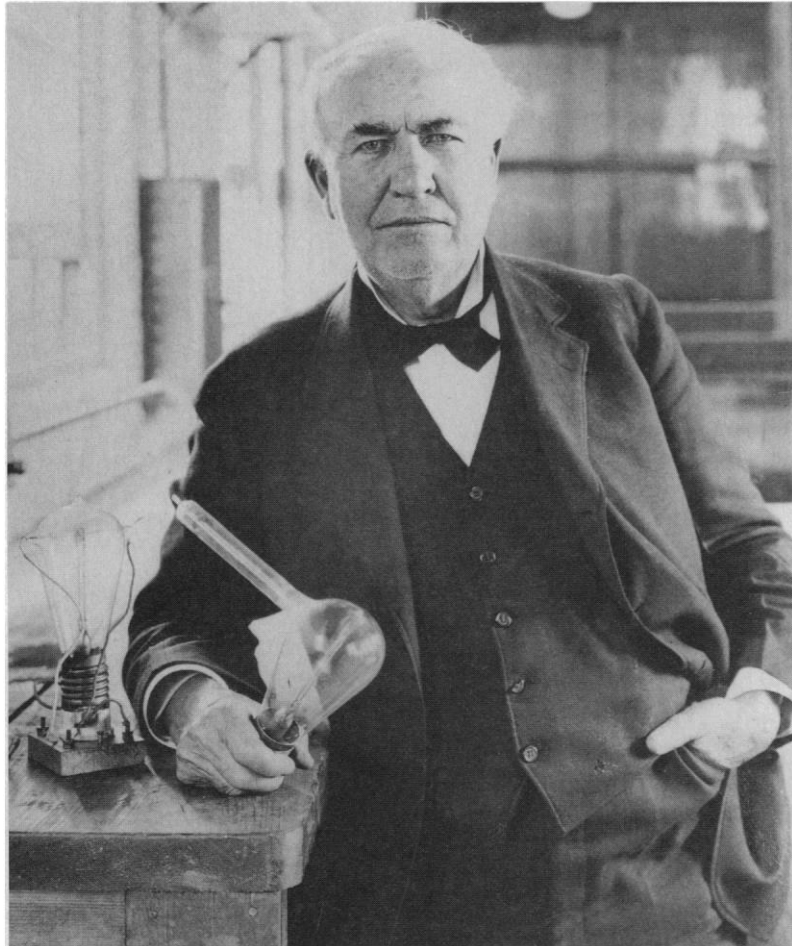
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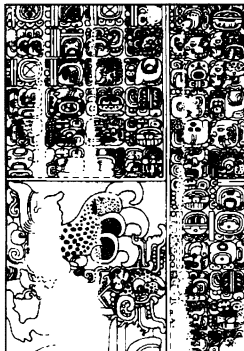


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## COVER

This oviraptorid embryo from Ukhaa Tolgod, Mongolia, in the Gobi Desert is the first definitive embryo of a nonavian theropod dinosaur. It is a near-hatchling, curled in a fetal position. In the upper left is an eggshell fragment showing the outer surface of the egg, and in

the upper right is a skull of a juvenile dromaeosaur that was found associated with the oviraptorid nest. See page 779 and the News story on page 731. [Photo: Michael Ellison, Department of Vertebrate Paleontology, American Museum of Natural History]



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## Innovations on Campus

# 843

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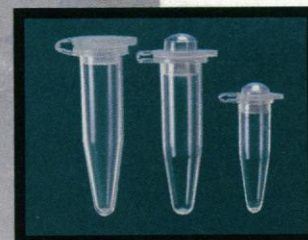
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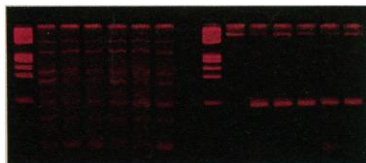
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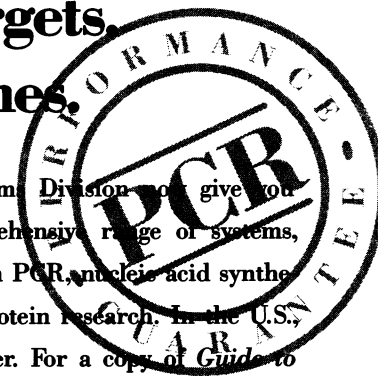


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## Not natural

Dynesius and Nilsson (p. 753) have compiled data from numerous sources to show that, in North America and Eurasia, fewer than a quarter of the large river systems are unaffected by diversion, damming, and other human interferences. Those systems that remain pristine are mostly in remote areas of the far north; elsewhere, water management has led to the loss and fragmentation of many riparian ecosystems. The authors argue that only concerted international action can preserve the remaining unaffected river systems and rehabilitate regions where no natural water flow is left.

## Pulling threads

By means of atomic force microscopy (AFM), Lee *et al.* (p. 771) have measured the base pair adhesion between strands of complementary DNA. Attaching 20-base DNA strands, consisting of five repeated 4-base units, to a fixed surface and to an AFM probe, they brought the two into contact and then drew them slowly apart. The force versus separation plot showed jumps at three values corresponding, the authors argue, to the force needed to tear apart strands overlapping by 20, 16, or 12 base pairs. A similar technique was used to measure the elasticity of long inosine polymers and the adhesion between inosine polymers and a 20-unit cytosine chain.

## Blooms in the fall

Sea-ice algae are known to erupt in spring blooms, but for practical reasons it has been difficult to conduct year-round studies of the antarctic oceans. Fritsen *et al.* (p. 782), taking advantage

of an ice station on a large ice floe in the Weddell Sea, found an autumnal bloom of algae in the upper layers of pack ice. The algae were fed by nutrients from seawater, which were concentrated within the porous snow-ice layers as the temperature fell and a freezing front advanced downwards. The extent of the autumn bloom is enough that it could be a primary source of biomass into the ecosystem.

## Blooms in decline

The "brown tide" outbreaks that have periodically devastated the marine ecology and fisheries of the northeastern United States are blooms of the microalga *Aureococcus anophagefferens*. Discovery of virus-like particles in algal cells led to the suggestion that the demise of the brown tide phenomenon might be due to a viral agent that attacks *A. anophagefferens*, and on p. 805

Milligan and Cosper report the isolation of a possible culprit virus from summer blooms of 1992. The isolated virus infects and lyses healthy algal cells. The dynamics of the alga-virus interaction may be a controlling factor in the outbreak and disappearance of brown tides.

## Clues to lupus

Drug-induced lupus, a constellation of muscle and joint pain resembling the autoimmune disease lupus erythematosus, is a problematic side effect of several chemically and pharmacologically unrelated medications. It has been suggested that some common metabolite of the different drugs creates the symptoms of the disorder, but clinical evidence does not implicate the liver, where production of such a metabolite might be expected. Jiang *et al.* (p. 810) show that in vitro incubation of the

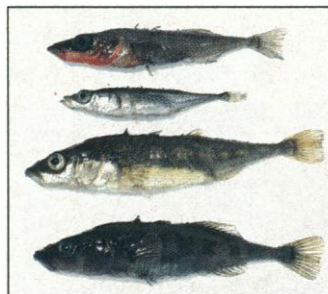
drugs with activated neutrophils, a kind of leukocyte known to be capable of causing extra-cellular oxidative reactions, generates cytotoxicity. Production of the cytotoxic metabolite can be blocked by removing extra-cellular hydrogen peroxide or by inhibiting the enzyme myeloperoxidase. The biochemistry of drug-induced lupus may hint at the mechanism of immune dysregulation in lupus itself.

## Unlooping the loop

Many human tumors display instability of repetitive (microsatellite) DNA, a phenomenon that may be related to defective repair of loop-type nucleotide mismatches. Umar *et al.* (p. 814; see news story by Marx, p. 728) describe an activity in human cell extracts that repairs DNA loops containing five or more unpaired nucleotides. Loop repair activity was maintained in a cell line deficient in the hMLH1 mismatch repair protein, but was lost in a cell line deficient in the hMSH2 protein.

## One fish, two fish . . .

The hypothesis of character displacement holds that evolutionary pressure on competing species leads to a divergence of form; by conforming to more specialized ecological niches, the species avoid direct competition. Many examples of species divergence can plausibly be explained by the hypothesis, but now Schluter (p. 798; see also Perspective by Grant, p. 746) has tested the idea. In the coastal lakes of British Columbia, sticklebacks come in two species: one, the smaller limnetic type, lives in the open water and feeds on plankton, while the other, the benthic, lives in the marginal waters and feeds on benthic invertebrates. When they coexist, the two types are quite distinct, but when either species has a lake all to itself, it has an intermediate form and more catholic dining habits. When Schluter added limnetic sticklebacks to an isolated population of intermediate form, the more benthic phenotypes of the formerly solitary species prospered at the expense of those closer to the limnetic form, and the first generation of offspring clearly showed an increased divergence between the two types.



## Some assembly required

The EPH-related receptors are transmembrane tyrosine kinases, some of which are particularly abundant in the nervous system. Davis *et al.* (p. 816) describe protein ligands that bind to and activate these receptors. These ligands are unusual in that, in soluble form, they activate their receptors inefficiently, if at all. But when the ligands were membrane-bound or clustered with antibodies they efficiently activated their receptors. Such ligands and their receptors might mediate signals that depend on cell-to-cell contact.

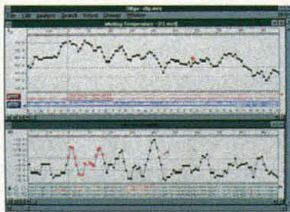


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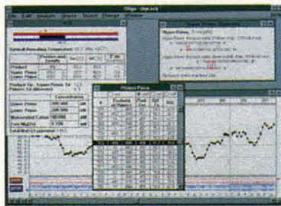


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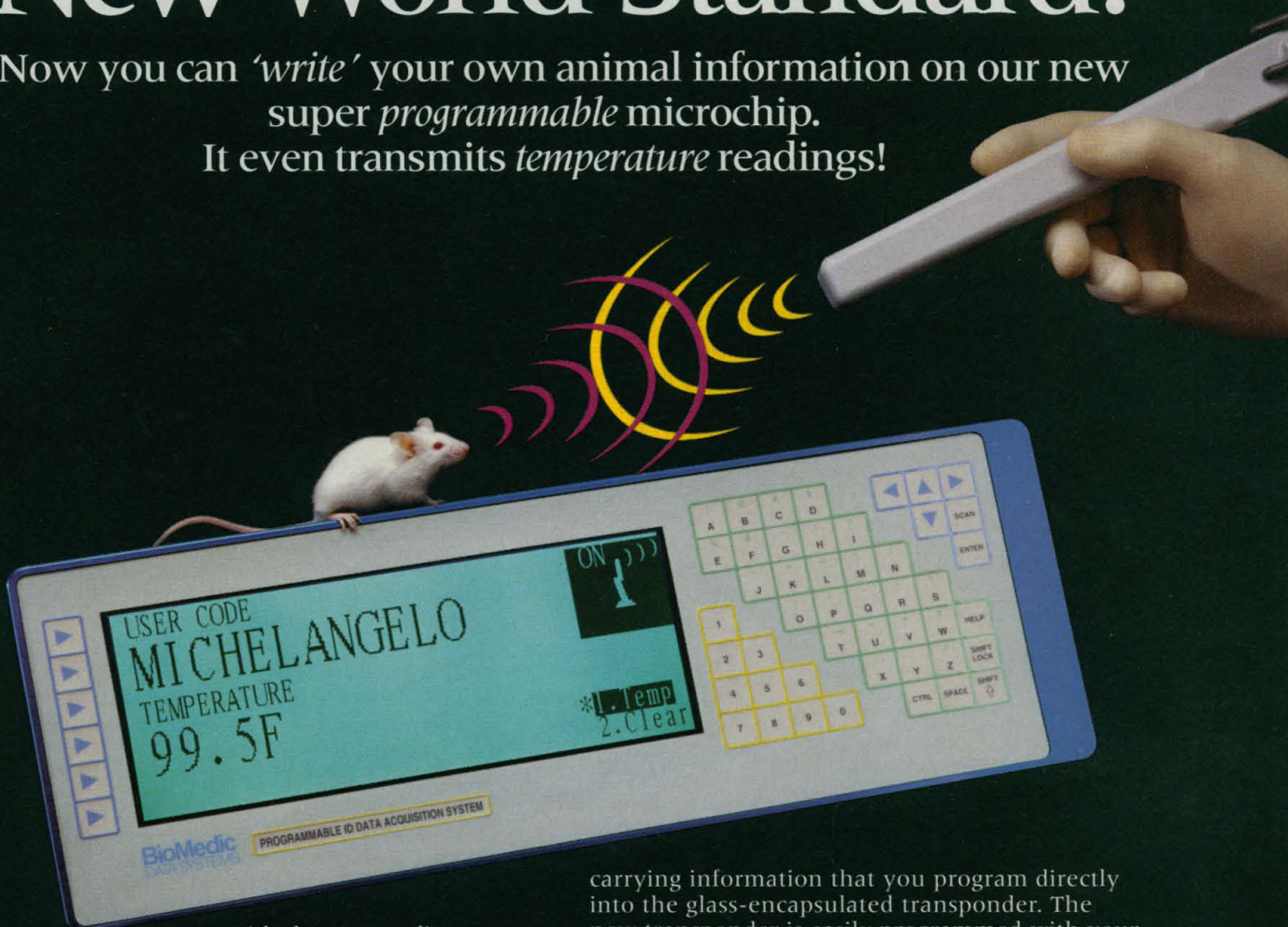
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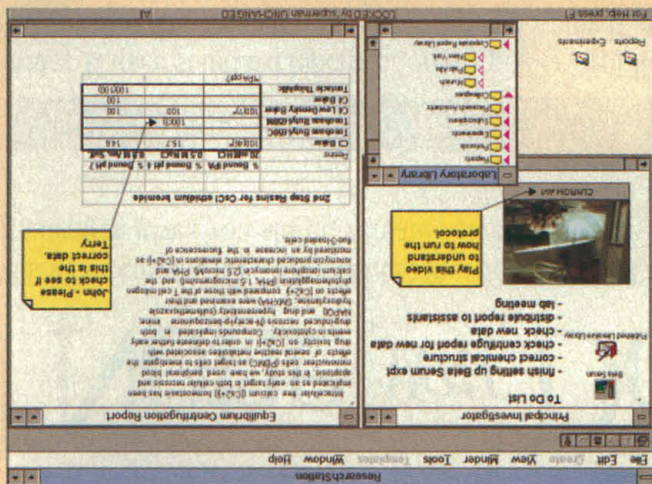
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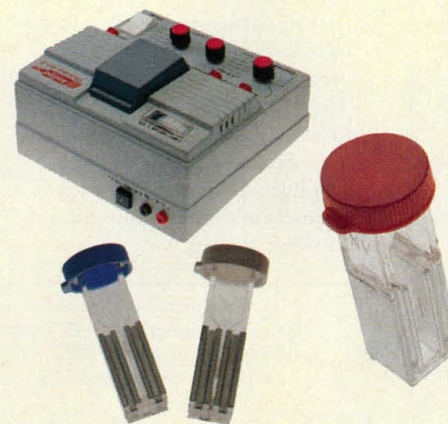
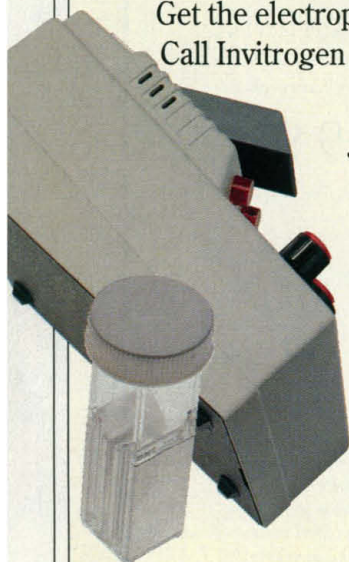
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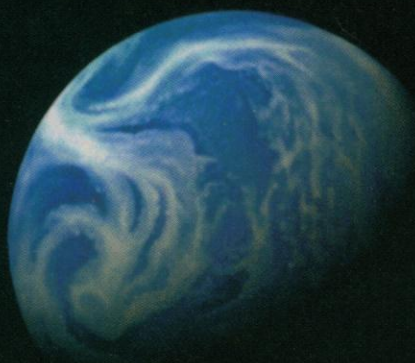
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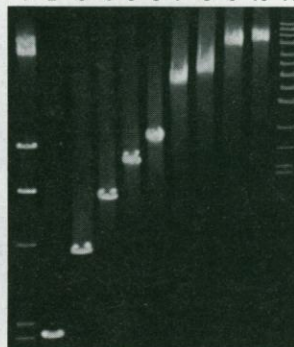


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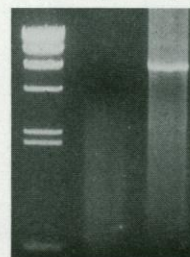
1 2 3 4 5 6 7 8 9 10 11



Lane 1  $\lambda$ DNA/Hind III marker  
Lane 2 2.0 kb  
Lane 3 4.0 kb  
Lane 4 6.0 kb  
Lane 5 8.0 kb  
Lane 6 10.0 kb  
Lane 7 18.0 kb  
Lane 8 20.0 kb  
Lane 9 28.1 kb  
Lane 10 30.0 kb  
Lane 11 High MW marker

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1 2 3



Lane 1  $\lambda$ DNA/Hind III marker  
Lane 2 Conventional PCR kit  
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<sup>1</sup> Shyamala, V. and Ames, G.F.-L.: Genome walking by single-specific-primer polymerase chain reaction: SSP-PCR. *Gene* **84** (1989) 1-8

<sup>2</sup> Isegawa, Y. *et al.*: Selective amplification of cDNA sequence from total RNA by cassette-ligation mediated polymerase chain reaction (PCR): Application to sequencing 6.5 kb genome segment of hantavirus strain B-1. *Molecular and Cellular Probes* **6** (1992) 467-475

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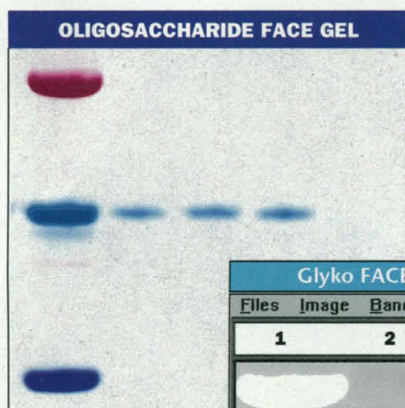
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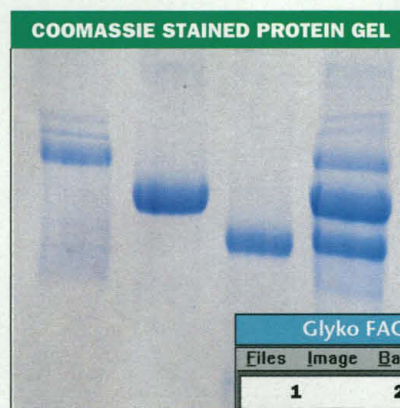
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PHOTOGRAPH OF COOMASSIE STAINED PROTEIN GEL

IMAGE OF FACE GEL SHOWING FLUORESCENT OLIGOSACCHARIDES RELEASED FROM GLYCOPROTEINS

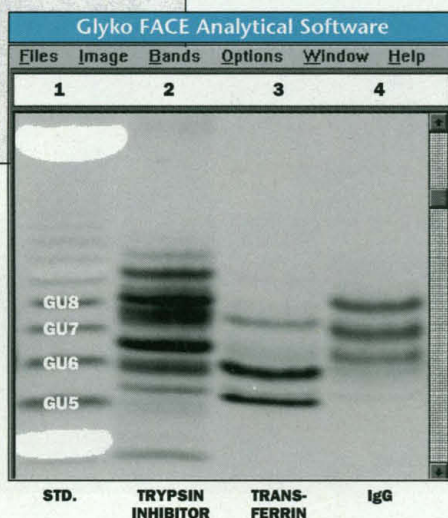
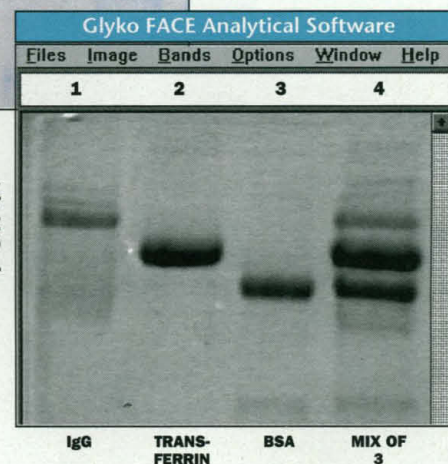


IMAGE OF COOMASSIE STAINED PROTEIN GEL



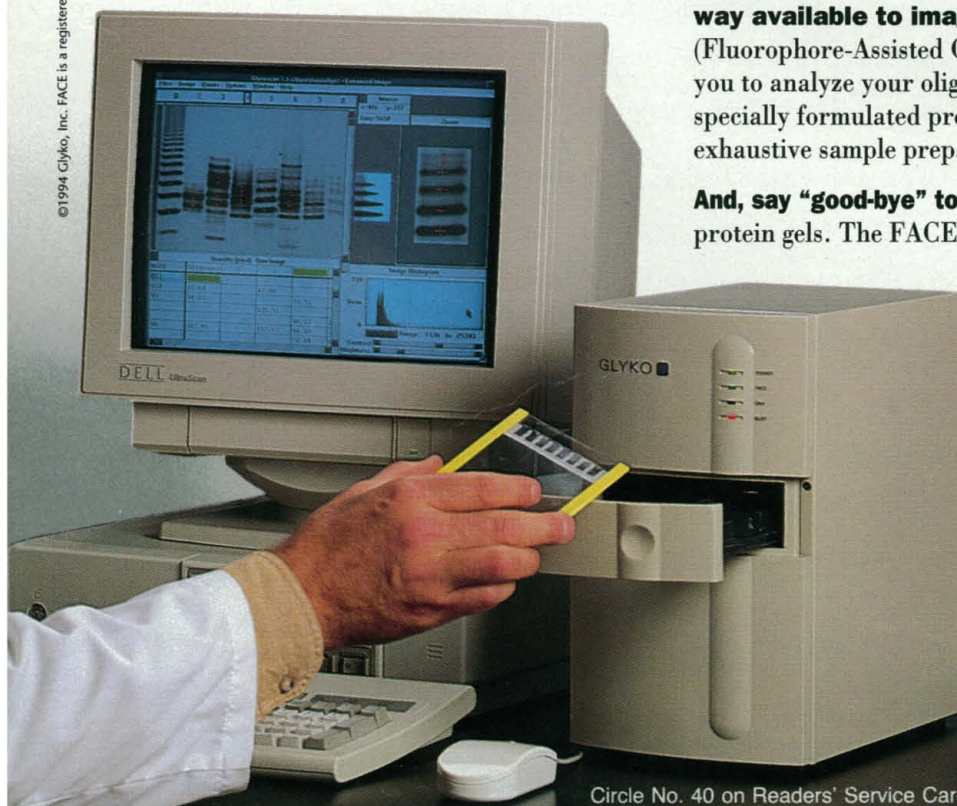
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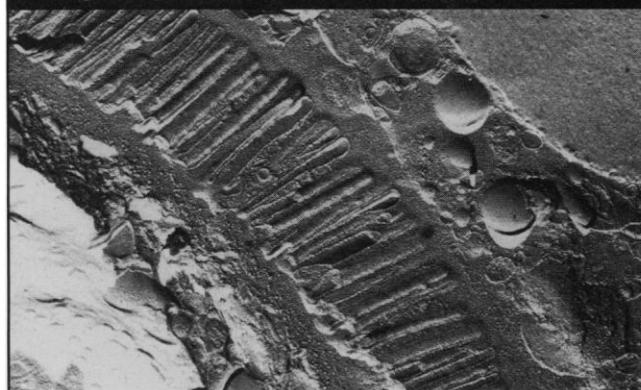
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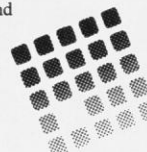
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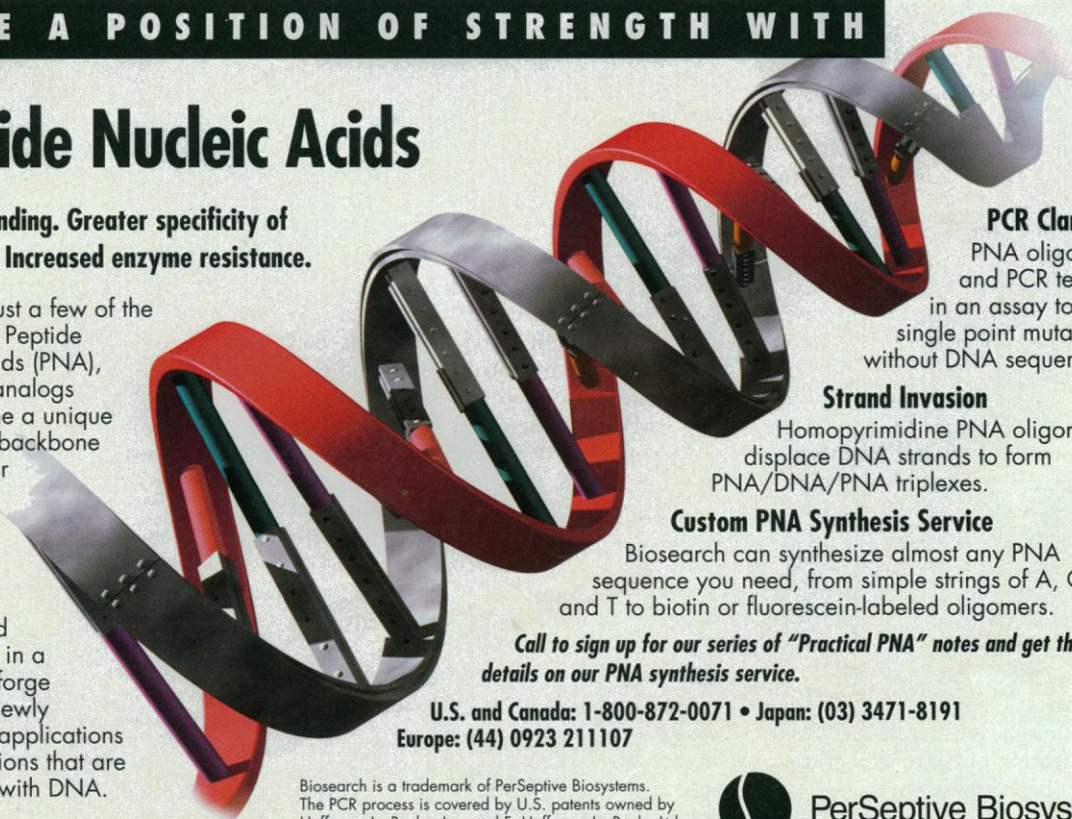
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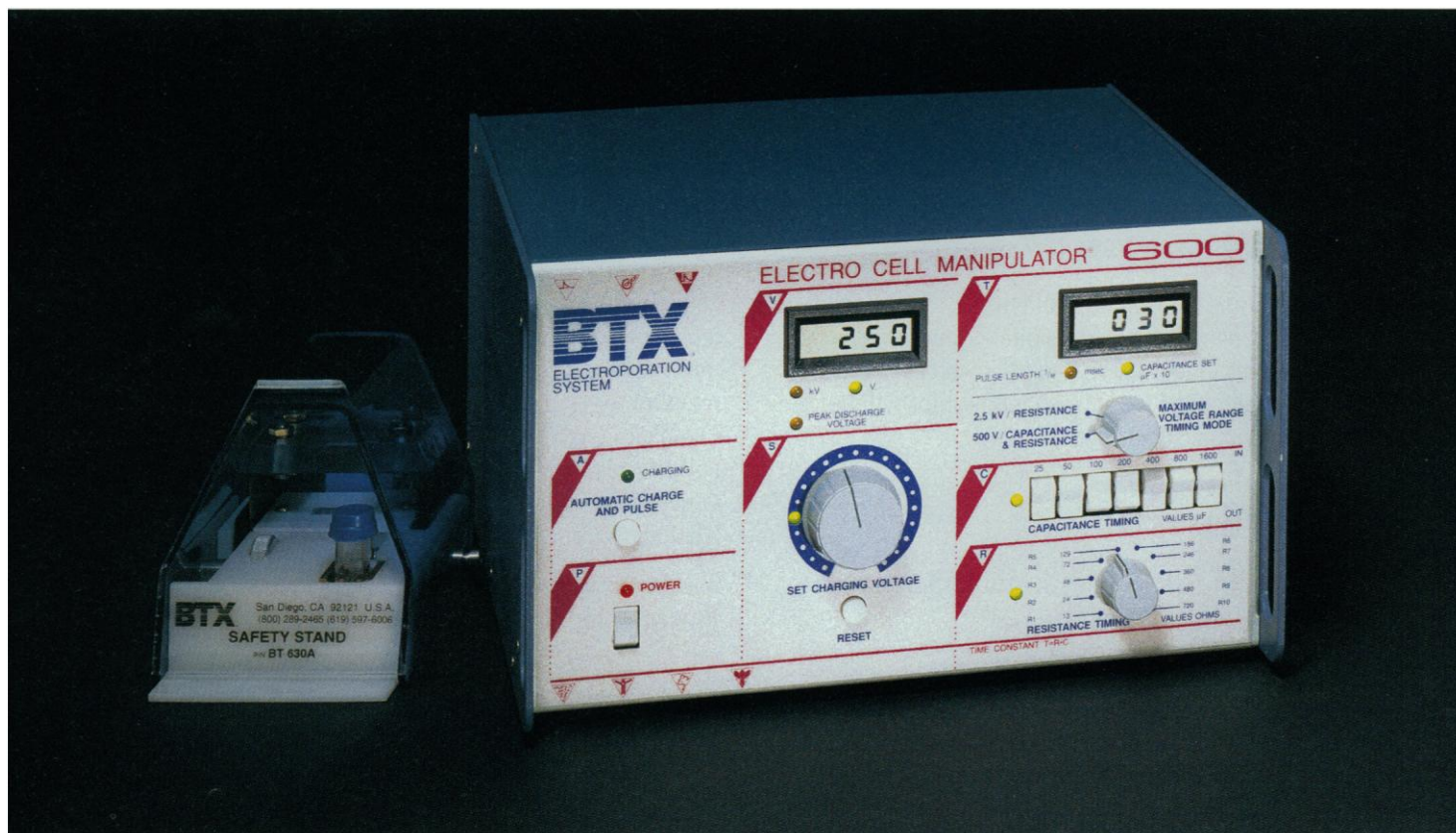


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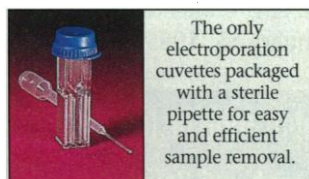
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# 1995-96

## AAAS Fellowships for Scientists & Engineers

### Congressional

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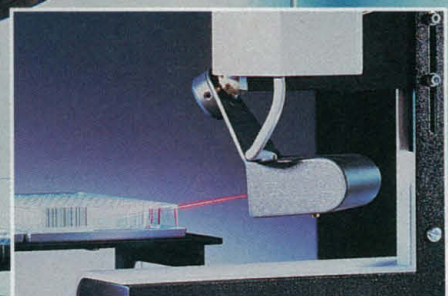
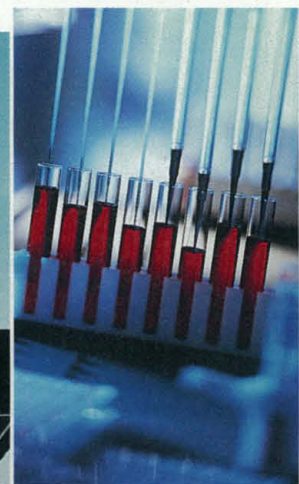
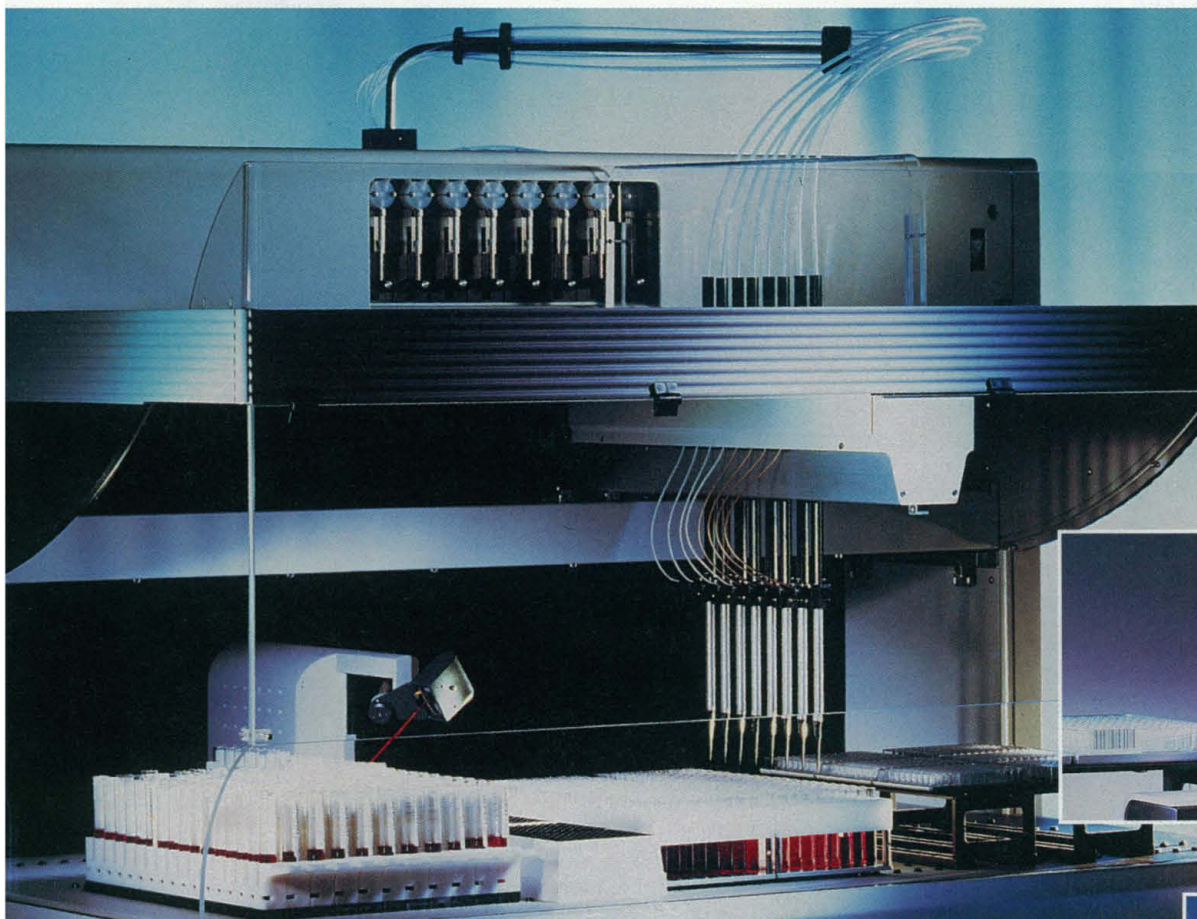
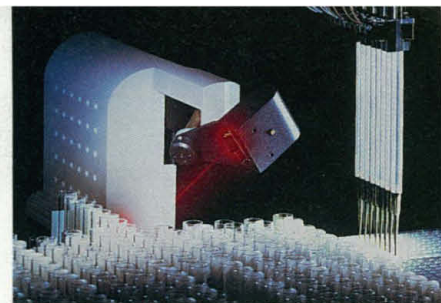
**All application deadlines are January 15, 1995.**

**For additional program information and application instructions, write:**

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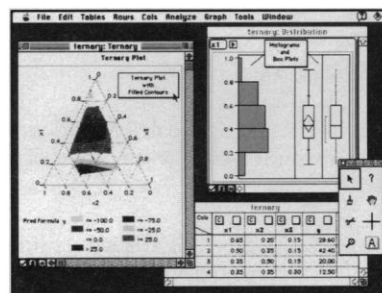
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Polyclonal antibodies CMB-CD44v3 and CMB-CD44v6 are for research in breast, prostate, lung, colon, and ovarian cancer and in other solid tumors. The antibodies can be used for protein immunoblotting, enzyme-linked immunosorbent assay, immunoprecipitation, immunofluorescence, flow cytometry, and immunohistostaining of paraffin-embedded tissues. **Accurate Chemical and Scientific. Circle 140.**

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calmodulin. **Sigma Immunochemicals. Circle 141.**

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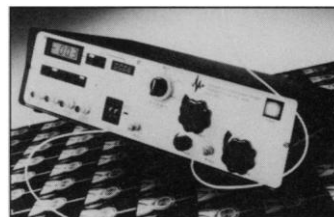
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*Is Your Tail Too Wide? Fix It With µSIL-WAX for Proteins* is an application note on a capillary electrophoresis column coated with a new hydrophilic polymer that minimizes the solute-wall interactions that often occur in the analysis of proteins and peptides. **J & W Scientific. Circle 148.**

*Origen Cell Culture Products* describes a line of media additives and reagents for the cultivation and maintenance of B and T cells, the generation of hybridomas, and the study of hematopoietic cells. **IGEN. Circle 149.**

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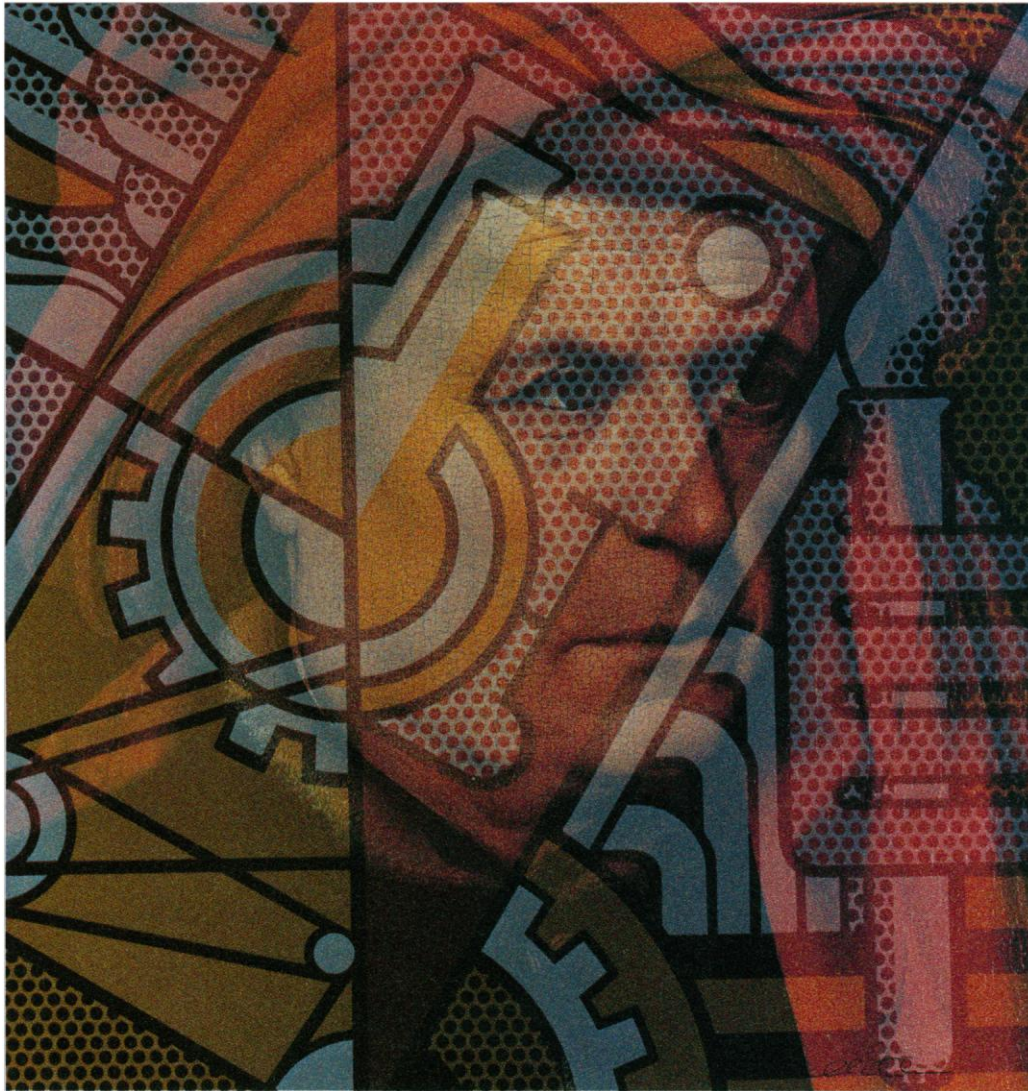
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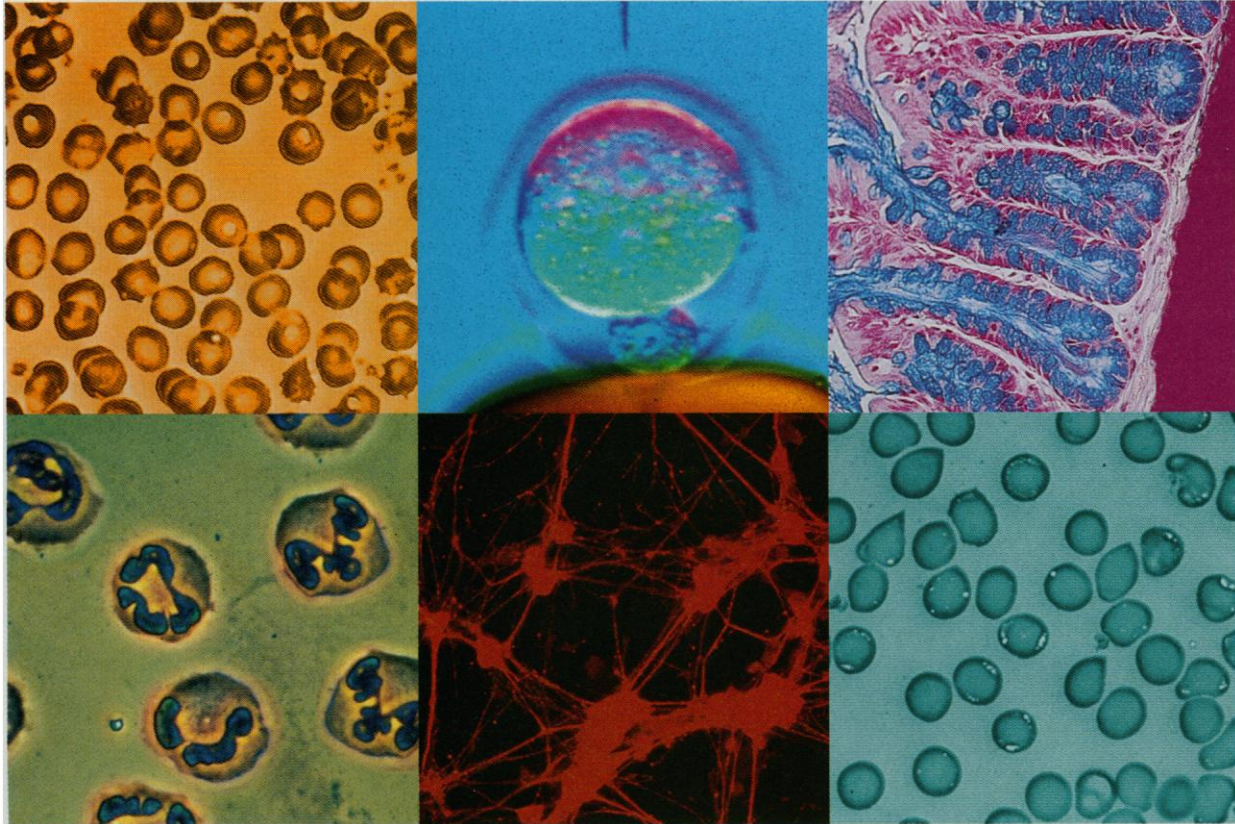
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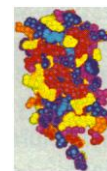
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My work in Pharmaceutical Research and Development involves formulating oral dosage forms for drugs so new that we haven't determined their efficacy yet. I like the challenge of designing experiments and protocols for these early compounds. The available quantities of the agents are still so small that I have to be very careful in the design of the experiment.



As a clinical research biometrician, I work closely with new agents that are potential candidates for regulatory approval. It's fascinating work. Since there's no one constantly looking over my shoulder, I enjoy the freedom to use my own initiative when interacting with clinicians and clinical research associates.

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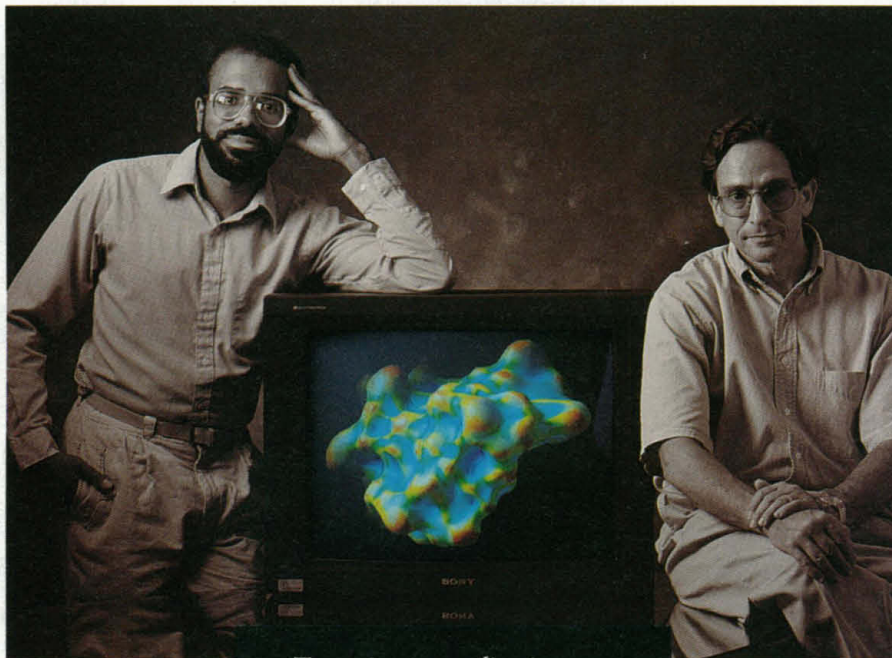


Good teachers along the way nurtured my interest in science... Pfizer offers me another such opportunity. I am a synthetic organic chemist in Medicinal Chemistry working to design small molecules to improve the treatment of Alzheimer's disease. My research involves a great deal of collaboration with my colleagues in biology to define the activity of new drug candidates.

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*Bruce S. Duncan, Ph.D.,  
Research Associate,  
Department of  
Molecular Biology (left),  
is pictured with  
Arthur J. Olson, Ph.D.,  
Professor, Department of  
Molecular Biology, and  
Director, Molecular  
Graphics Laboratory.*

In the Department of Molecular Biology at The Scripps Research Institute (TSRI), postdoctoral fellow Bruce S. Duncan, Ph.D., is developing new computational methods to represent molecular structures and model their interactions. This research is important for gaining new insights into biological processes and for the development of medical applications such as computer-aided drug design.

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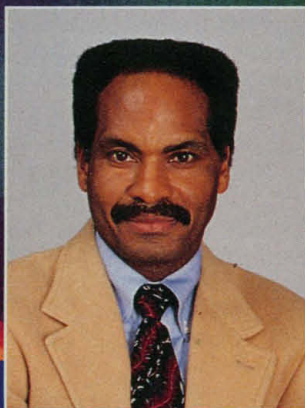
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# Committed To Training Of Scientists And Clinicians

The National Institutes of Health is the world's largest institution dedicated to biomedical research. The NIH intramural research program, which includes more than 4,000 doctoral level scientists and a clinical center that is home to half of all research beds in the country, has traditionally provided exceptional postdoctoral training opportunities in both the basic and clinical biomedical sciences. In addition, the NIH is fully committed to helping prepare the upcoming generation of scientists by providing programs for graduate, medical, and college students.

The NIH also seeks to ensure that the next generation of scientists reflects the rich diversity of this Nation's citizenry. The NIH is committed to achieving this goal and enhancing the training experience and career development of all post-doctoral fellows.

The following descriptions introduce the various postdoctoral and other educational opportunities available at the NIH. Minorities are especially encouraged to explore the many research training opportunities described below and to contact the Office of Education for additional information.

## Postdoctoral Training Programs

### Laboratory Research Training

At the NIH, postdoctoral fellowships are available to conduct basic biomedical research in a wide variety of disciplines. Initial appointments are usually for two to three years. Candidates should have either a doctoral degree (e.g., PhD, MD/PhD, MD, DO, DDS, DMD, or DVM) accompanied by previous laboratory research experience. Current

postdoctoral openings are posted on the NIH EDNET Bulletin Board's POSTDOC conference which is available via modem. In addition, the NIH welcomes applications for anticipated openings from nine months to a year in advance. A catalog featuring the research descriptions of NIH scientists may be obtained by contacting the NIH Office of Education. Research descriptions may also be accessed on the NIH Gopher server on Internet (see below for instructions). Individuals interested in pursuing research training through the Clinical Investigator Pathway of the American Board of Internal Medicine may also contact the NIH Office of Education for additional information.

### Clinical Research and Subspecialty Training

Subspecialty training at the NIH allows physicians to become board-certified specialists who are also prepared for careers in academic medicine. In-depth training in clinical and/or basic research complements the fellow's clinical training in the following programs which are accredited by the Accreditation Council on Graduate Medical or by boards in their respective disciplines: Allergy and Immunology, Anatomic Pathology, Blood Banking/Transfusion Medicine, Clinical Laboratory Immunology, Critical Care Medicine, Dermatology (third year), Endocrinology and Metabolism, Gastroenterology, Hematology, Infectious Diseases, Internal Medicine (third year), Medical Genetics, Medical Oncology, Oral Medicine, Pediatric Endocrinology, Pediatric Hematology/Oncology, Psychiatry (fourth year), Radiation Oncology, Reproductive Endocrinology, and Rheu-

matology. Programs in Clinical Chemistry, Clinical Hematology and Clinical Microbiology offer credit toward board certification on an individual basis. In addition, the Clinical Neurosciences Program offers neurologists advanced training towards Added Qualifications in Clinical Neurophysiology under the American Board of Psychiatry and Neurology.

### Loan Repayment Programs

The NIH AIDS Research and Clinical Research Loan Repayment Programs (LRP) provide educational loan repayments to highly qualified physicians and scientists who agree to conduct qualified research activities as NIH employees. Individuals may receive a maximum of \$20,000 annually in loan repayments, in addition to attractive salaries and benefits, and must sign an initial, two-year contract. Contracts are awarded on a competitive basis, and priority in funding is given to qualified health professionals who are underrepresented in biomedical/behavioral research including members of minority groups, disabled individuals, and women. Interested individuals should contact the LRP for an application at 1-800-528-7689.

### Accessing Information on Postdoctoral Training Electronically

The NIH EDNET Bulletin Board POSTDOC conference may be accessed via Internet ([wylbur.cu.nih.gov](http://wylbur.cu.nih.gov)) or modem (1,301-402-2221 or 1,800-358-2221) with parameters set at "7,Even,1". When connected to NIH, type in ",vt100" for terminal emulation, "F5E" for initials, and "AJL1" for account number.

An electronic version of the Post-

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CENTER FOR BIOLOGICS EVALUATION AND RESEARCH • DIVISION OF COMPUTER RESEARCH AND TECHNOLOGY • FOGARTY INTERNATIONAL CENTER • NATIONAL CANCER INSTITUTE • NATIONAL CENTER FOR HUMAN GENOME RESEARCH • NATIONAL INSTITUTE FOR NURSING RESEARCH • NATIONAL CENTER FOR RESEARCH RESOURCES • NATIONAL EYE INSTITUTE • NATIONAL HEART, LUNG, AND BLOOD INSTITUTE • NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES • NATIONAL INSTITUTE OF ARTHRITIS AND MUSCULOSKELETAL AND SKIN DISEASES • NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT • NATIONAL INSTITUTE OF



# g The Next Generation Clinical Researchers.

doctoral Research Fellowship Opportunities catalog may be accessed via the Internet using either the Gopher Information System ([gopher.nih.gov](http://gopher.nih.gov)) or the World Wide Web (<http://www.nih.gov/>). When connected, select *Research Opportunities at the NIH Office of Education*.

## Graduate Student Programs

Students interested in doctoral training in genetics are encouraged to consider the NIH-George Washington University (GWU) Graduate Program in Genetics. NIH and GWU faculty provide didactic instruction and dissertation research is conducted in NIH laboratories. Full tuition and stipend support are provided.

NIH Predoctoral Intramural Research Training Awards are granted to support doctoral students who wish to conduct their research in NIH intramural laboratories or to students who have been accepted into graduate school but wish to delay matriculation for a year in order to pursue a research experience in an NIH intramural laboratory.

## Medical and Dental Student Programs

The Summer Research Fellowship Program provides eight to ten weeks of basic research training for students in the

summer following their first or second year. In addition, the Clinical Electives Program provides rotations in 20 clinical subspecialties for third and fourth year students, providing clinical and research experiences unduplicated elsewhere.

NIH Predoctoral Intramural Research Training Awards are granted to provide a one year research experience for students currently enrolled in medical school who seek an interim research experience before completing their medical education or for students who have been accepted into medical school but wish to delay matriculation in order to pursue research training in an NIH intramural laboratory.

## Post Baccalaureate Programs

The NIH Predoctoral Intramural Research Training Award Program also provides opportunities for recent college graduates who wish to pursue biomedical research in NIH intramural laboratories for one year while applying for graduate or medical school.

## Undergraduate Student Programs

Students can participate in state-of-the-art biomedical research through the Summer Internship Program in Biomedical

Research. This program also provides workshops on career pathways and strategies for a successful scientific career, as well as a weekly seminar series and brown-bag luncheons where students can interact informally with NIH scientists.

The Undergraduate Scholarship Program supports undergraduates pursuing academic programs which prepare them for careers in professions needed by the NIH. These individuals may receive up to \$20,000 annually in scholarship support for tuition and qualified educational and living expenses. In addition, as participants in the Undergraduate Scholarship Program, recipients will be provided a variety of summer employment opportunities on the NIH campus. Contracts are awarded on a competitive basis with priority in funding given to students from underrepresented minority groups, disabled individuals and women. This program is scheduled to begin in September 1995. For more information, call the Loan Repayment Program at 1-800-528-7689.

To find out how the NIH can play a role in your research training, please contact the NIH Office of Education for information on any of these programs.



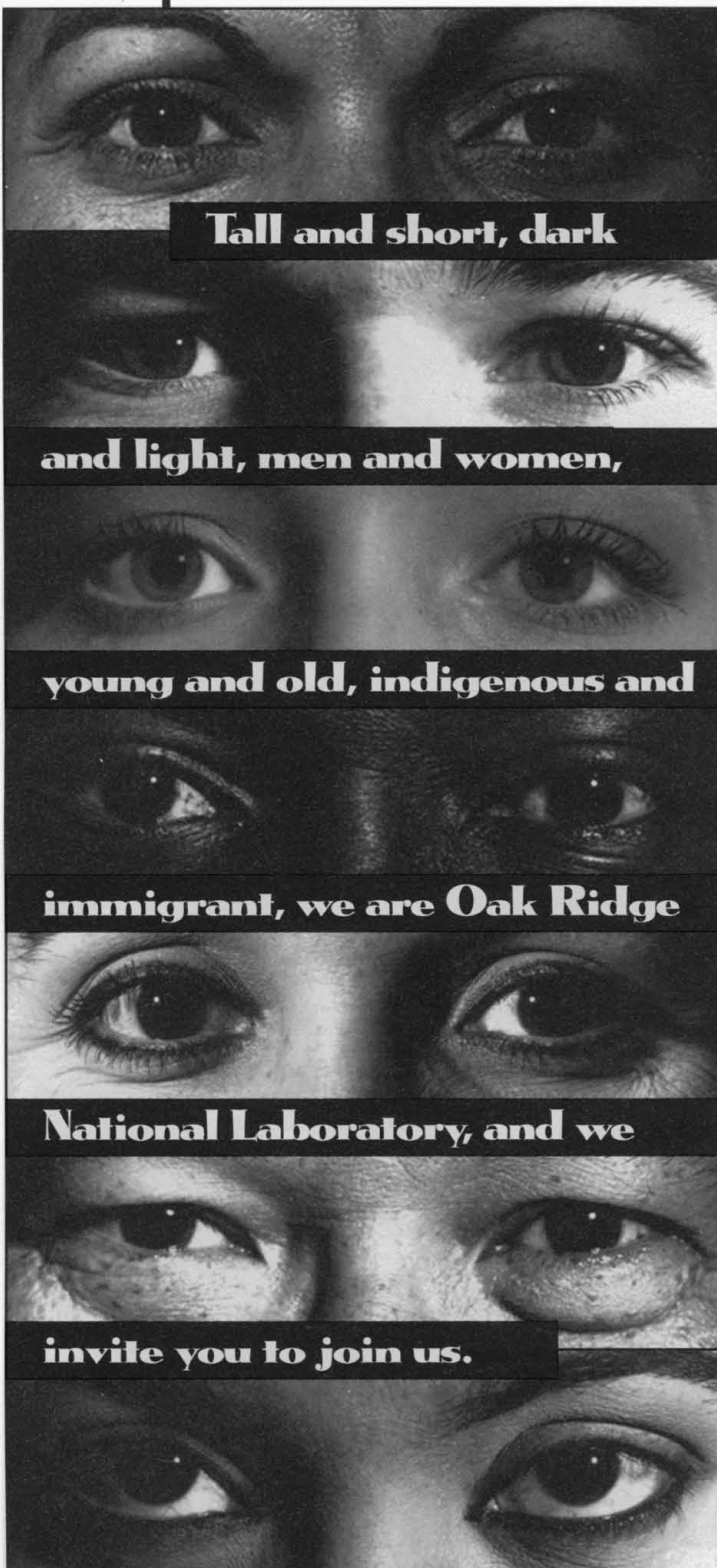
# National Institutes of Health

Office of Education

Building 10, Room 1C129, 10 CENTER DR MSC 20892-1158, BETHESDA MD 20892-1158 • 301-496-2427 • FAX 301-402-0483  
The NIH is an Equal Opportunity Employer

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**Tall and short, dark**

**and light, men and women,**

**young and old, indigenous and**

**immigrant, we are Oak Ridge**

**National Laboratory, and we**

**invite you to join us.**

Oak Ridge National Laboratory is making major contributions every day to solving the energy and environmental problems of the nation and the world through science and technology. Because of recent retirements, we are now seeking outstanding professionals to join us in this essential endeavor. You will work with leading scientists and engineers using state-of-the-art equipment in an environment of challenge and achievement. Among the many exciting programs at ORNL are:

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- Energy technologies & systems
- Instrumentation & controls
- Solid state physics
- Atomic & nuclear physics
- Advanced materials
- Biotechnology
- Robotics

ORNL offers competitive compensation and benefits, including a relocation package. For additional information or consideration for open positions, including BS, MS, PhD and post doctoral opportunities, contact: **ORNL Staffing, Dept. SC, P.O. Box 2008, Oak Ridge, TN 37831-6216.**

*ORNL is an equal opportunity employer committed to building and maintaining a diverse workforce. Some positions may require U.S. citizenship for consideration.*

**ornl**

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Howard Hughes Medical Institute

# Fellowships for Biological and Biomedical Sciences

The Howard Hughes Medical Institute announces the 1995 competitions for fellowship programs that support training in fundamental biological and biomedical research. Awards, based on international competitions, focus on research directed to understanding basic biological processes and disease mechanisms. Fellowships may be held at academic or nonprofit research institutions.

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## Predoctoral Fellowships in Biological Sciences

Up to five years of support for full-time graduate study toward a Ph.D. degree in biostatistics, cell biology and regulation, epidemiology, genetics, immunology, neuroscience, or structural biology. Applicants must not have completed the first year of postbaccalaureate graduate study in biology. *Application deadline: early November.*

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## Postdoctoral Research Fellowships for Physicians

Three years of support for training in fundamental research subsequent to at least two years of postgraduate clinical training and no more than two years of postdoctoral research training. *Application deadline: early January.*

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## Research Training Fellowships for Medical Students

An opportunity for medical students in the United States to explore a burgeoning interest in fundamental research. 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). *Application deadline: early December.*

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## Research Scholars at the National Institutes of Health

Under this joint HHMI-NIH program, medical students in the United States spend an intensive year in research in the intramural program at NIH in Bethesda, Maryland. Residence is provided at the Cloister on the NIH campus. *Application deadline: early January.*

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## 1995 Program Announcements and Applications

### *For Predoctoral Fellowships:*

Hughes Fellowship Program  
The Fellowship Office  
National Research Council  
2101 Constitution Avenue  
Washington, DC 20418  
United States of America  
Telephone: (202) 334-2872  
Fax: (202) 334-3419  
E-mail: [infofell@nas.edu](mailto:infofell@nas.edu)

### *For Other Programs:*

Howard Hughes Medical Institute  
Office of Grants and Special Programs  
Department AL95  
4000 Jones Bridge Road  
Chevy Chase MD 20815-6789  
United States of America  
Telephone: (301) 215-8889  
Fax: (301) 215-8888  
Internet: [fellows@hhmi.org](mailto:fellows@hhmi.org)

The Howard Hughes Medical Institute, an Equal Opportunity Employer, welcomes applications from all qualified candidates and encourages women and members of minority groups to apply.



**FASEB****Announces....**

The Office of Placement Services has been reorganized and renamed **FASEB Career Resources Office** --- Specializing in Biomedical and Biological Career Advancement. Our services have been enhanced and expanded to provide applicants and employers a worldwide computerized resource for seeking and matching the right person with the right position. The **FASEB Career Resources Office** will provide year-round services focusing in four areas.



CAREERS  
OnLine

**Careers OnLine** - a global network for the biomedical professional over the Internet.

**Careers OnLine** is designed to provide applicants at ALL stages of their professional careers with available positions in academe, government and industry.

**Careers OnLine**, because of its international reach, should be the core of an employer's job search to satisfy obligations to recruit a diversified work force under equal employment guidelines. **FREE applicant listings**

will be accepted between January 1 through June 30, 1995. Watch for further details in *The FASEB Journal*. E-mail: [careers@faseb.org](mailto:careers@faseb.org)



CAREERS

**Career Resources Classified** - Matching the Professionals, a special monthly bulletin for employment opportunities and positions desired devoted solely to the life sciences and biomedical professions. This new publication will reach over 42,000 scientists worldwide beginning January 1995. Reserve space now by calling 1-800-43-FASEB, ext. 7103. E-mail: [adnet@faseb.org](mailto:adnet@faseb.org).

**Outplacement Services** - Organizations that are restructuring or downsizing their operation now can provide their staff with opportunities and options for seeking new employment. This service will provide prospective employers with access to resumes of potential applicants.

**FASEB  
Job Fairs**

are held in conjunction with various scientific meetings across the country. Features of the

**FASEB Job Fairs** are...

■ opportunity for face-to-face interviews ■ computerized appointment scheduling ■ a confidential communication system for applicants and recruiters who wish to make independent interview arrangements ■ Job Boards (postings of positions available) ■ access to **Careers OnLine**. Reasonable registration fees. E-mail: [careers@faseb.org](mailto:careers@faseb.org)  
Preliminary 1995 schedule as follows:

Biophysical Society Meeting	February 12-16, 1995	San Francisco
Experimental Biology '95	April 9-13, 1995	Atlanta
ASBMB-DBC ACS Joint Meeting	May 21-25, 1995	San Francisco
Protein Society Annual Symposia	July 8-12, 1995	Boston

**MINORITY ACCESS TO RESEARCH CAREERS (MARC)**

**FASEB's Life Sciences Research Office** administers three programs funded by the Minority Access to Research Careers (MARC) Program of the National Institute of General Medical Sciences (NIGMS).

The Visiting Scientists for Minority Institutions program provides opportunity for visits by distinguished research investigators from the FASEB Societies at minority institutions for periods of 3 to 5 days. Visiting Scientists present lectures and demonstrations, interact with faculty and students, discuss research career opportunities, explore curriculum improvements, and assist with research grant preparation. A roster of visiting scientists is available on request.

Scholarships are awarded competitively to faculty and students at minority institutions for attendance at annual meetings of the nine FASEB Member Societies.

Scholarships are awarded competitively to minority institution faculty for attendance at FASEB Summer Research Conferences.

For more information contact:

LSRO, Rose Marie Soulen, Executive Secretary, 301-530-7030 or FAX 301-571-1876  
E-mail: [marc@lsro.faseb.org](mailto:marc@lsro.faseb.org)

For more information:

1-800-43-FASEB

Fax: 301-530-7001

9650 Rockville Pike  
Bethesda, MD 20814-3998



**MILES** 

**Pharmaceutical  
Division**



*It's not "WHAT"  
has brought us where we are today.  
It's "WHO".*

Miles Inc., Pharmaceutical Division does business from a unique vantage point. We define our values and our vision not by "what" will make us a premier healthcare corporation, but rather "who" will. We believe it's the combined talent, motivation and insight of our highly skilled staff that ultimately inspire and commit us to achieve excellence. Which is why we open the lines of communication among employees with comprehensive internal diversity training.

#### **MEDICAL AFFAIRS OPPORTUNITIES**

Our Medical Affairs area is not merely statistics, analyses, tracking and regulations; it's the blending of people from different backgrounds — cross-functional teamwork in an entrepreneurial environment. Join this innovative, creative company — after all, it's not what you are that matters, it's who you are.

#### **Director - Professional Services**

M.D. with experience in the pharmaceutical industry. Must have in-depth knowledge of professional services management. Directs all activities on investigation of adverse effects and complaints and supports marketing in providing advice and guidance for medically and scientifically accurate programs.

#### **Associate Director - Regulatory Affairs**

Requires Ph.D. or equivalent with at least 4 years' FDA regulatory experience. Demonstrated knowledge of all aspects of regulatory affairs and extensive experience with FDA divisions and concepts.

#### **Associate Director - Anti-Infective**

M.D. preferably trained in infectious disease and board eligible. Requires clinical trial experience in AIDS drug development.

#### **Clinical Data Coordinator**

B.S. in a scientific area or equivalent and 2 years' experience in data management. Thorough knowledge of medical terminology and basic SAS computer programming for data processing, proofing and display.

#### **Statistician**

Requires a Ph.D. in Statistics. Must possess thorough knowledge of statistical methodology, including experimental design and linear models.

#### **Clinical Programmer Analyst**

Candidate must possess a B.S. with scientific emphasis or equivalent and minimal experience. Requires knowledge of SAS, IBM/OS/MVS JCL, and ISPF experience is desired.

#### **Medical Research Associate**

B.S. in Biomedical Sciences or equivalent with 3-4 years' experience monitoring clinical trials. Requires a working knowledge of medical terminology, biology, pharmacology, trial methodology and clinical pharmacology.

All positions require effective interpersonal, verbal and written communications skills and the ability to work successfully with individuals at all levels of management.

Located on the Connecticut seashore, Miles is close to the New York City and Boston metropolitan areas. We offer a highly competitive salary and comprehensive benefits package, including tuition reimbursement, 401(k), relocation assistance and more. For immediate consideration, please send your resume, including salary requirements, to: **Miles Inc., Pharmaceutical Division, Dept. KPS, 400 Morgan Lane, West Haven, CT 06516.**

*Miles values the strength diversity adds to the workplace and is committed to being an equal opportunity employer M/F/D/V.*

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*Diversity Equals Strength.*





# COLD SPRING HARBOR LABORATORY

## 1995 SPRING COURSES



### ADVANCED GENOME SEQUENCING & ANALYSIS

March 14 - 27

Ellson Y. Chen, Perkin Elmer Corporation  
Richard Gibbs, Baylor College of Medicine  
W. Richard McCombie, Cold Spring Harbor Laboratory  
Richard K. Wilson, Washington University

Recent advances in the automation of DNA sequencing have opened new possibilities for the analysis of complex genomes at the DNA sequence level. This two week course will provide intensive training in this rapidly evolving field. The course will emphasize techniques and strategies for using automated sequencers to sequence large, contiguous genomic regions. Students will carry out all of the steps in the sequencing process from preparing cosmid DNA to computer analysis of the finished sequence. Topics will include subclone library generation, large-scale template purification, sequencing reactions, gel analysis on automated sequencers, sequence assembly, gap filling and conflict resolution. Students will work in groups to sequence a large region of DNA and through this process be trained in crucial project and data management techniques. A series of lectures will discuss their applications of these techniques as well as alternate strategies for high speed automated DNA sequencing.

### PROTEIN PURIFICATION & CHARACTERIZATION

March 30 - April 12

Richard Burgess, University of Wisconsin, Madison  
James Kadonaga, University of California, San Diego  
Sue-Hwa Lin, M.D. Anderson Cancer Center, University of Texas  
Daniel R. Marshak, Cold Spring Harbor Laboratory

This course is intended for scientists who are not familiar with techniques of protein isolation and characterization. It is a rigorous program that includes laboratory work all day and a lecture with discussion session every evening. Each student will become familiar with each of the major techniques in protein purification by actually performing four separate isolations including: (i) a regulatory protein from muscle tissue; (ii) a sequence-specific, DNA-binding protein; (iii) a recombinant protein overexpressed in *E. coli*; and (iv) a membrane-bound receptor. A variety of bulk fractionation, electrophoretic, and chromatographic techniques will be employed including: precipitation by salts, pH, and ionic polymers; ion exchange, gel filtration, hydrophobic interaction, and reverse phase chromatography; lectin affinity, oligonucleotide affinity, and immunoaffinity chromatography; polyacrylamide gel electrophoresis, and electroblotting; and high performance liquid chromatography. Procedures will be presented for solubilizing proteins from inclusion bodies and refolding them into active monomeric forms. Methods of protein characterization will be utilized including immunological and biochemical assays, peptide mapping, amino acid analysis, protein sequencing, and mass spectrometry. Emphasis will be placed on strategies of protein purification and characterization rather than on automated instrumental analysis. Guest lecturers will discuss protein structure, modifications of proteins, methodologies for protein purification and characterization, and applications of protein biochemistry to cell and molecular biology. Guest lecturers have included: R. Aebersold, L. Gierasch, G. Hart, A. Kornberg, N. Pace, Y. Paterson, G. Rose, J. Rothman, B. Stillman, and N. Tonks.

### CLONING & ANALYSIS OF LARGE DNA MOLECULES

March 30 - April 12

Hadi Abderrahim, Cell Genesys, Inc.  
Bruce Birren, Whitehead / MIT Center for Genome Research  
Douglas Vollrath, Stanford University

This course will cover the theory and practice of manipulating and cloning high molecular weight DNA. The course will focus on the use of yeast artificial chromosome (YAC), bacterial artificial chromosome (BAC) and bacteriophage P1 cloning systems for library construction and techniques of pulsed field gel electrophoresis (PFGE). Lectures and laboratory work will include an introduction to yeast genetics, the isolation and manipulation of high molecular weight DNA from a variety of sources, and preparative and analytical PFGE. Clones will be produced and characterized by several approaches, including library screening, contig assembly, long range restriction mapping, and recovery of YAC ends. Lectures by outside speakers on topics of current interest will supplement the laboratory work.

### EARLY DEVELOPMENT OF *XENOPUS LAEVIS*

April 4 - 13

Robert Grainger, University of Virginia  
Hazel Sive, Whitehead Institute

This course will provide extensive laboratory exposure to the biology, manipulation and use of embryos from the frog, *Xenopus laevis*. The course is suited both for investigators who have had no experience with *Xenopus*, as well as those who have worked with *Xenopus* and wish to expand their repertoire of techniques. All students should have a current training in molecular biology and some knowledge of developmental biology. The course consists of intensive laboratory sessions, supplemented by daily lectures and demonstrations from experts in both experimental and molecular embryology. Six areas will be covered: (i) care and handling of adults and embryo isolation; (ii) stages of embryonic development and anatomy; (iii) whole mount *in situ* hybridization and immunocytochemistry; (iv) microinjection of eggs and oocytes, including mRNA and antisense oligonucleotides; (v) micromanipulation of embryos, including induction and transplantation assays; and (vi) preparation and use of cell cycle extracts. Lecturers and co-instructors will include: Enrique Amaya, Rick Elinson, Janet Heasman, John Gurdon, Richard Harland, Ray Keller, John Newport, and Nancy Papalopulu.

**Application Deadline: January 15, 1995**

Tuition Room and Board:

Ten day course      \$ 1,460

Two week course    \$ 1,720

Scholarship funds are available for qualified applicants

**Applications can be obtained from:**

Course Registrar SM  
Cold Spring Harbor Laboratory

1 Bungtown Road, Cold Spring Harbor, New York 11724-2213

Tel: 516-367-8345 Fax: 516-367-8845 Email: [meetings@cshl.org](mailto:meetings@cshl.org)

Additional information on Meetings, Courses, and Publications: World Wide Web site: <http://www.cshl.org/>



# AMGEN

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The National Medal of Technology®, similar in prestige to the Nobel Prize, recognizes excellence in technological innovation and commercialization. Founded in 1980, AMGEN is the world's largest independent biotechnology company and the first in the industry to receive this award.

# AMGEN

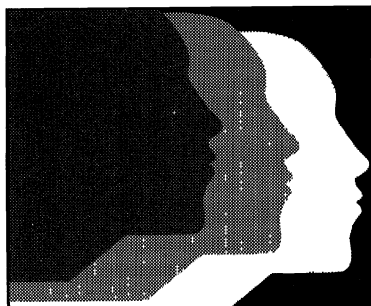
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We're making a major impact on people's health and the quality of their lives by discovering and creating new, innovative, and cost-effective pharmaceuticals and diagnostic products — innovations in such diverse therapeutic categories as anti-viral, cardiovascular, and analgesic medications. Our dedication to turning research into real-world solutions has created career opportunities for the following motivated individuals.

### **Biologists**

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- Cell
- Enzymology
- Pharmacology
- Toxicology

### **Biostatisticians**

- Clinical Trials

### **Project Analysts**

- Clinical Trials Safety & Efficacy Data

### **Chemists**

- Analytical
- Formulation
- Pharmaceutical
- QA/QC
- Simulation Production
- Synthetic Organic
- Validation

### **Compliance Specialists**

- Diagnostics/Software
- Audit

### **Associate Medical Directors**

### **Clinical Data Associates**

### **Clinical Research Associates**

- Pharmaceutical Experience

### **Nurse Practitioners**

- Occupational Health

### **Regulatory Managers**

- Pharmaceutical Experience

### **Research Scientists—PhDs**

- Biochemistry/Cell Biology
- Enzymology
- Immunology
- Protein Chemistry
- Protein Crystallography

We offer excellent salaries and a comprehensive benefits package. Positions are available in Palo Alto, Cupertino and Evergreen (San Jose). Please send your resume, indicating appropriate area of interest, to: Syntex, Inc., Professional Staffing, Dept. CSCI1104MM, 3401 Hillview Avenue, Suite A2-130, Palo Alto, CA 94304. We are an equal opportunity employer committed to the values of a diversified workforce.



**CORNELL UNIVERSITY  
GRADUATE SCHOOL OF MEDICAL SCIENCES**

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New York, NY 10021  
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Medical College and Sloan-Kettering Divisions

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**CORNELL UNIVERSITY GRADUATE SCHOOL OF MEDICAL SCIENCES**

**announces**

**INTERDISCIPLINARY GRADUATE TRAINING in MOLECULAR MEDICINE**

The Cornell University Graduate School of Medical Sciences, composed of faculty from Cornell University Medical College and Memorial-Sloan Kettering Cancer Center, has established a training program in Molecular Medicine leading to the Ph.D. degree.

Students will matriculate as members of the Graduate School of Medical Sciences and complete a core curriculum, courses bridging basic and clinical science, and a series of laboratory rotations designed to expose the student to the many research opportunities at the participating institutions. Training will focus on the molecular and cellular basis of human disease, inform students of the major unresolved questions of pathogenesis and therapeutics, and how molecular medicine might address these issues in the future. Graduates will be laboratory scientists whose expertise will be in fundamental biomedical research but who can interface productively with clinical investigators.

The Cornell University Medical College/Graduate School of Medical Sciences constitutes the New York City Campus of Cornell University at Ithaca, New York. It is part of a large biomedical research complex extending along York Avenue on Manhattan's East Side, including The Memorial-Sloan Kettering Cancer Center, The Hospital for Special Surgery, and The Rockefeller University.

**The Cornell University Medical College is committed to the successful recruitment and training of qualified women and members of underrepresented minority groups, including, but not limited to, African Americans, Alaskan Natives, American Indians, hispanic Americans, and Pacific Islanders.**

**Cornell University is an Equal Opportunity/Affirmative Action Employer**

To receive additional information and an application kit, call or write to:

**Cornell University Graduate School of Medical Sciences  
445 East 69th Street  
New York, NY 10021, USA  
Tel: (212) 746-6565  
Fax: (212) 746-8906**





# CHALLENGING BIOMEDICAL EMPLOYMENT OPPORTUNITIES

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## DHHS/PHS/FOOD AND DRUG ADMINISTRATION CENTER FOR BIOLOGICS EVALUATION AND RESEARCH

The Center for Biologics Evaluation and Research is searching for **outstanding physicians and scientists** interested in a challenge by participating in the development and approval process for new biological products. The Center's mission is to regulate blood, vaccines, biological therapeutics and related products according to statutory authorities in order to protect and enhance the public health. The regulation of these products is founded on science and law to ensure their purity, potency, safety, efficiency, and availability. In conjunction with regulatory and research responsibilities, the Center statistically evaluates clinical and preclinical studies of human biological products and vaccines and epidemiologically evaluates post-marketing studies and adverse biologics reactions. As members of a multidisciplinary team of scientists, the incumbents will work as reviewers in the approval process for new biological products. Some positions offer the unique opportunity to conduct biomedical research at the post doctoral level in combination with review responsibilities. These positions offer a high degree of independence and involve complex medical, scientific, and regulatory issues. Opportunities for professional development may include further training, attendance at scientific meetings and conferences, and clinical activities.

**Qualifications:** Physicians must have completed all requirements for a Doctor of Medicine or Osteopathy Degree from an accredited institution. Graduates of foreign medical schools must submit a copy of their permanent Educational Commission for Foreign Medical Graduates (ECFMG) certification. Physicians should be board eligible or certified in a primary specialty or have completed at least four years of residency training or possess equivalent experience. For scientists, doctoral level degrees in biological or physical sciences, pharmacology, toxicology, or related disciplines, along with advanced training and/or experience in the development, manufacture or testing of biologics is desirable.

In addition, candidates should have highly developed analytical, written and oral skills, as well as the ability to research problems and issues and to use mature judgment in problem solving.

Candidates for Civil Service or Commissioned Corps appointments must be U.S. citizens. Candidates for fellowships may be either U.S. citizens or resident aliens eligible for citizenship within four years.

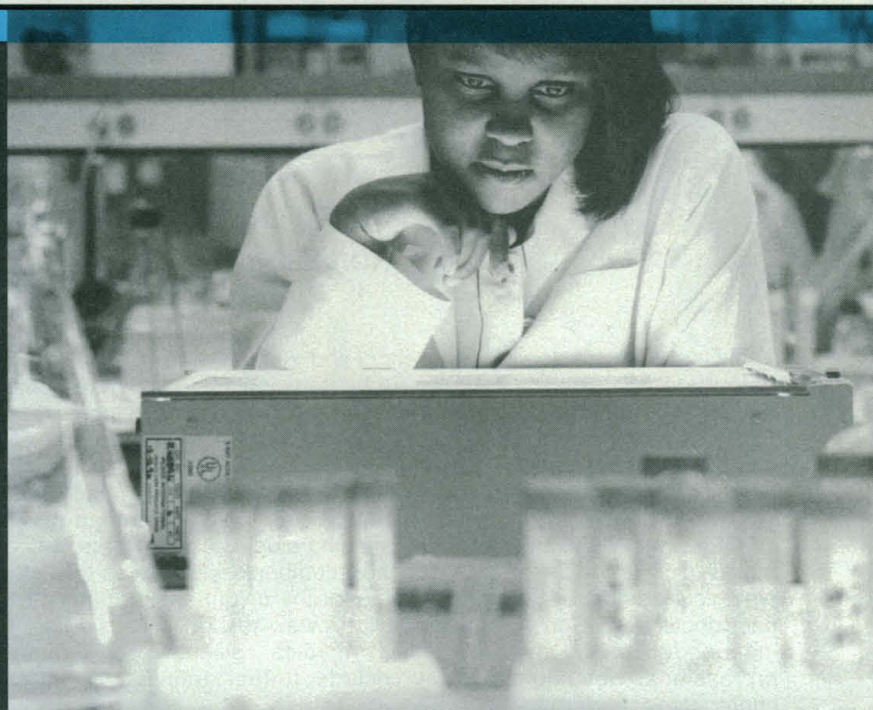
**Location:** Offices and laboratories are strategically located on the campus of the National Institutes of Health in Bethesda, Maryland, or in close proximity to the campus.

**Salary:** For physicians, the 1994 Civil Service salary range for GS-13 through GS-15 is \$59,099 to \$91,029. In addition, some positions may include a Physicians' Comparability Allowance. For scientist (other than M.D.), the 1994 Civil Service salary range for GS-11 through GS-15 is \$35,045 to \$90,252. Salary, benefits, research support, and level of responsibility are commensurate with education and experience. Also, positions may be filled by appointment in the U.S. Public Health Service, Commissioned Corps, or in the Fellowship Program, with commensurate salary and benefits.

**How To Apply:** Applications are accepted throughout the year, and candidates should indicate when they will be available for employment. Interested candidates should send an Application for Federal Employment (SF-171) and/or current detailed Curriculum Vitae along with bibliography, statement of regulatory/research interest, transcripts, and names of three references to:

**FDA/Center for Biologics Evaluation & Research  
1401 Rockville Pike, HFM -60  
Rockville, Maryland 20852-1448  
Attention: EEO Recruitment Coordinator (211)**

If you're  
looking to  
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Cynthia Barrack, BGS Summer Intern '92

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*The University of Pennsylvania Medical Center actively promotes diversity in its community. Students, faculty, and staff are selected without regard to race, color, sex, sexual or affectional preference, religion, national or ethnic origin, handicap, or disability.*

For information contact:  
Biomedical Graduate Studies  
240 John Morgan Building  
University of Pennsylvania  
Philadelphia, PA 19104-6064  
215-898-1030  
email: BGS@mscf.upenn.edu



**UNIVERSITY OF  
PENNSYLVANIA  
MEDICAL CENTER**

University of Pennsylvania School of Medicine  
Hospital of the University of Pennsylvania



# THE NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

*in Research Triangle Park, North Carolina,  
has challenging opportunities for Researchers!*

## MISSION:

The mission of the NIEHS is to reduce the burden of human illness and dysfunction from environmental exposures by understanding each of these elements and how they interrelate through multidisciplinary biomedical research programs, prevention and intervention efforts, and communication strategies that encompass training, education, technology transfer, and community outreach.



## EMPLOYMENT

### OPPORTUNITIES AVAILABLE:

Postdoctoral fellowships and Senior Scientist positions are available for applicants in the physical and life sciences interested in applying a multidisciplinary approach to research in environmental health. Salaries for permanent positions range from \$47,920 to \$86,589. The stipend range for postdoctoral fellowships is \$28,000 to \$73,472. The detailed compensation and benefit package will be outlined once the appointment mechanism is determined by the Institute.

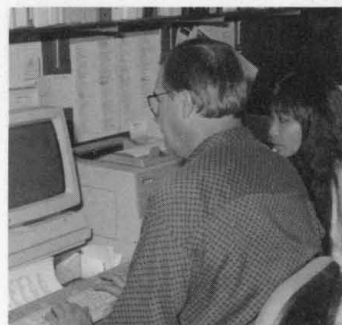


NIEHS scientists, working with researchers in Utah, recently isolated the breast cancer gene. Dr. Martin Rodbell won the nobel prize in Medicine this month for his research that led to the discovery of cellular chemical messengers called G-proteins. NIEHS cosponsored a national Environmental Justice symposium this year to focus on research issues and strategies central to environmental justice, and to examine community and government actions needed to confront this important health challenge.



## LOCATION:

The headquarters and intramural research programs of NIEHS are located in Research Triangle Park, North Carolina. Its proximity to four major universities - The University of North Carolina in Chapel Hill, Duke University and NC Central University in Durham, and North Carolina State University in Raleigh - facilitates the close working relationships between the staff of the universities and the Institute.



Amenities include on-site day care facility, Fitness Program, Spouse Placement Assistance Program, continuing training and development opportunities, and a competitive retirement package.

## QUALIFICATIONS REQUIRED:

Applicants for postdoctoral fellowships must possess a Ph.D., M.D., D.V.M., or equivalent degree and less than 7 years of postdoctoral experience. Other positions are also available.

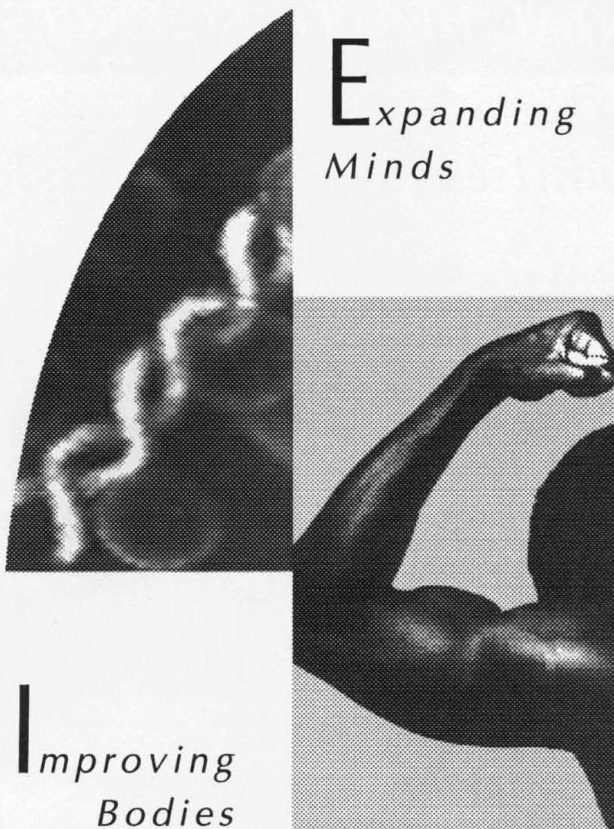
## HOW TO APPLY:

Submit the following to the address listed below:

1. A cover letter describing the types of research position(s) of interest and date available for employment.
2. Curriculum vitae and bibliography.
3. Three letters of reference
4. A statement regarding citizenship status (U.S. citizen, permanent resident, or type of visa held or sought).

## NIEHS Personnel Office (HNV93)

P.O. Box 12233  
Research Triangle Park, NC  
27709



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Write us at Chiron Corporation, Human Resources, 4560 Horton Street, Emeryville, CA 94608. Expand your opportunities to advance your career *and* to transform the practice of medicine. We welcome applications from all individuals. Women, veterans, minorities and disabled individuals are encouraged to apply.





# THE UNIVERSITY OF CALIFORNIA, IRVINE

## SCHOOL OF BIOLOGICAL SCIENCES

### ANNOUNCES FIVE FACULTY OPENINGS



UCI's School of Biological Sciences has 70 full-time faculty doing innovative work in a broad range of research areas including cellular, developmental, evolutionary and molecular biology; biochemistry; ecology; and neurobiology. In conjunction with the basic science departments of the UCI College of Medicine, we operate several respected graduate programs. We currently have five positions available which will require selected candidates to develop and maintain an active research program, and to participate in both our undergraduate and graduate teaching programs. Curriculum vitae, a description of research and teaching backgrounds, and names and addresses of three referees should be submitted by January 6, 1995 to the appropriate Search Committee Chair.

#### **DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY**

##### **ASSISTANT PROFESSOR - TENURE TRACK**

The successful applicant will have broad training in immunology and research interest in the field of immunopathogenesis. Departmental research interests cover a wide range of topics in molecular biology, molecular genetics, biochemistry, immunology, structural biology and cellular biology. Additionally, we have strong interdepartmental research units in virology and cancer as well as an expanding program in molecular pathogenesis in conjunction with the College of Medicine. Send materials to: Dr. Anthony James, Department of Molecular Biology and Biochemistry, UCI, Irvine, CA 92717-3900.

#### **DEPARTMENT OF PSYCHOBIOLOGY**

##### **ASSISTANT PROFESSORS (2) - TENURE TRACK**

Current departmental research emphasizes plasticity with a focus on problems within the areas of learning and memory, integrative neuroscience and aging/neurodegeneration. The successful candidates will be neurobiologists working at the molecular, cellular, systems or behavioral levels. We anticipate that candidates' research will complement current Departmental research programs and have a manifest relationship to some behavioral endpoint. Send materials to: Dr. H.P. Killackey, Department of Psychobiology, UCI, Irvine, CA 92717-4550.

#### **DEPARTMENT OF DEVELOPMENTAL AND CELL BIOLOGY**

##### **ASSISTANT PROFESSOR - TENURE TRACK**

The successful candidate will be using innovative approaches, preferably molecular and genetic, to investigate fundamental problems in the development of animals or plants. Research interests in the Department include the molecular genetics and cell biology of pattern formation, growth control and cell signaling in animals and plants, as well as development of the nervous system. Send materials to: Dr. Susan V. Bryant, Department of Developmental and Cell Biology, UCI, Irvine, CA 92717-2300.

#### **SCHOOL OF BIOLOGICAL SCIENCES - STRUCTURAL BIOLOGIST**

##### **ASSISTANT/ASSOCIATE PROFESSOR - TENURE TRACK**

The successful candidate will have a background in the area of macromolecular crystallography, NMR spectroscopy or computational/theoretical approaches to fundamental biological problems. Facilities at UCI include high field NMR spectrometers, state-of-the-art x-ray diffraction equipment, and excellent computing facilities including access to the UCSD Super Computing Center. Send materials to: Dr. Thomas Poulos, Department of Molecular Biology and Biochemistry, UCI, Irvine, CA 92717-3900.



Discover UCI's perfect climate for thriving careers. As one of nine University of California campuses, UCI is among the most respected institutions of higher education in the nation and is known for its commitment to and celebration of diversity. Located in the heart of Irvine, a flourishing high technology and cultural center just five miles from the Pacific Ocean, we promote growth and accomplishment for faculty and staff as well as students. Selected candidates will enjoy an excellent salary and benefits package along with the opportunity to participate in our continuing successes.



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## **Associate Director-CNS New Neurobiology**

This Senior Molecular Biologist will assist in guiding 5 Ph.D. and 16 Associate Scientists in gene cloning, transfection/expression, transgenic animal and antisense programs in a broadly based CNS Drug Discovery Department. This researcher must be recognized for significant contributions in Molecular Biology applied to the Nervous System. Proven project and Ph.D. leadership skills a must as is familiarity with CNS Pharmacology. **Refer to #KBD-AD-CNS**

## **Senior/Principal Research Scientist-CNS**

This Neuroscientist/Pharmacologist will be a member of a broadly based CNS Department emphasizing molecular approaches to drug design. This position requires an accomplished researcher in the general fields of G-Protein-Coupled Receptors and their Downstream Targets and/or Second Messenger Systems from a Molecular and Biochemical perspective. While directing a group of Associate Scientists, this Receptor Scientist will be responsible for both theoretical and laboratory aspects of Radioligand Binding and Second Messenger Assays. Consideration will be given to both Senior Researchers and recent Postdoctoral Scientists. **Refer to #KBD-SPR-CNS**

## **Associate/Staff Scientist-Molecular Neurobiology**

This individual will be responsible for carrying out experiments requiring skills in molecular biology, such as cDNA cloning, PCR, DNA sequencing, in-situ hybridization, DNA and RNA blotting, protein expression, and transfections. Further experience in neurobiology, tissue culture, immunocytochemistry, protein biochemistry, or transgenic mice is desirable. A BS/BA or MS/MA and several years of research experience in an academic or industrial lab is ideal. **Refer to #KBD-AS-MN-CNS**

## **Associate/Staff Scientist-CNS**

This Scientist will be responsible for carrying out experiments requiring skills in molecular biology (such as PCR, DNA and RNA sequencing, in-situ hybridization, Northern, RNase protection assays, transfections) and tissue culture (cell lines as well as primary cultures). Experience with receptor binding assays, a basic understanding of chemistry or some experience with chemical DNA synthesis methods would be a plus. Several years of experience in an academic or industrial lab is a must. **Refer to #KBD-AS-CNS**

## **Associate Director-Clinical Pharmacology**

An experienced MD with residency training in a clinical specialty. Specific training or experience in clinical pharmacology obtained either in a fellowship program, or in a prior academic, government or industrial position is required. An interest in and experience with basic research and an ability to interact with basic scientists is desirable. **Refer to #KBD-AD-CP**

## **Ph.D. Macrophage Cell Biologist**

This individual will have primary responsibility for discovering and developing new drugs for therapeutic targets distinctive to the human macrophage. The successful candidate must have a Ph.D. with at least two years postdoctoral experience, specifically related to the study of macrophage cell biology or biochemistry, and possess a wide range of knowledge and interest in macrophage biology in terms of cell activation and differentiation. **Refer to #EPG-S-IDR-D**

## **Ph.D. Molecular Biologist**

We are seeking a Ph.D. level scientist with expertise in molecular biology that could be applied to the study of vascular biology. Specific research experience in one of the following areas is preferred: molecular, cellular and/or biochemical aspects of vascular biology; macrophage cell biology, intergrin biology and intracellular signaling. The preferred candidate would also have a general knowledge of arteriosclerosis and some understanding of the drug discovery process. The candidate's background and experience should enable him/her to interface between arteriosclerosis and thrombosis within CVS, and with discovery groups outside of CVS, for example, a vascular biologist with a strong background in macrophage biology. Prefer candidate with 2-4 years postdoctoral experience. **Refer to #EPG-S-CVS-D**

## **Associate Scientist-Drug Metabolism and Pharmacokinetics**

This Associate Scientist will assay biological samples from nonclinical studies. A BS in Chemistry or related science is required. Experience with HPLC or GC assays is desirable. **Refer to #LL-AS-DMP**

## **Staff Scientist-Drug Metabolism and Pharmacokinetics**

This individual will develop assays for biological samples using LC-MS instrumentation and interpret LC-MS data. BS and/or MS in Chemistry or related science and experience with LC-MS instrumentation is required. **Refer to #LL-SS-DMP**

DuPont Merck offers competitive salaries and benefits and encourages female and minority candidates to apply. Our company is dedicated to the continued growth and development of our most important resource, the people of DuPont Merck.

Please send a letter of introduction and resume, indicating position number, to: Human Resources, The DuPont Merck Pharmaceutical Company, E400/2413, P.O. Box 80400, Wilmington, DE 19880-0400. An equal opportunity employer M/F/D/V.

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# ***Providing Leadership in Health Care Through Change, Innovation and Growth***

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Baxter Biotech Gene Therapy Unit, a Baxter Healthcare Corporation R&D group, is continuing in an established tradition of individual commitment emphasizing a conscious desire to excel. We at Baxter Biotech Gene Therapy Unit, Santa Ana, CA are committed to pioneering the creation of novel therapies based on engineered immunity that will minimize pain and suffering in achieving a cure for cancer. We seek talented individuals motivated to deliver new technologies to patients through studying the processes of gene therapy in T cells.

## **CELL IMMUNOLOGY**

In this position you will be responsible for evaluating function and growth of genetically engineered T lymphocytes using standard immunological assays, as well as developing and evaluating processes for gene delivery. You will also be responsible for the development of prototype cell processing systems, and manufacturing processes to evaluate culture components and T lymphocyte function in the production of genetically modified cells for clinical trials.

The successful candidate will have a Ph.D. in Immunology or a related field with 0-3 years extensive experience in evaluating T lymphocyte activity, cell manipulation and culturing. Knowledge of animal models for tumor immunity, analysis by flow cytometry, and protein analysis is a strong asset. Industrial work experience, and previous supervisory experience are beneficial. Familiarity with cell processing instrumentation devices e.g. CS3000 is preferred.

## **CELL BIOLOGY**

In this position you will assist in the analysis of genetically engineered T lymphocytes as well as in the development of lymphocyte cell processing systems. Developing manufacturing processes and components evaluation in the production of genetically modified T cells for clinical trials will also be a major focus.

Applicants must possess a strong background in Immunology, Cell Biology, or Industrial Biotechnology, and a M.S. with 3-5 years related experience or B.S. with 5-7 years related experience. Knowledge of QC documentation, establishing/validating processes under GLP for GMP, and cell culturing experience are desired. Familiarity with flow cytometry, T cell analysis, cell processing instrumentation/devices e.g. CS3000 is highly recommended.

**Strong written and oral communication skills, organizational ability, and team orientation are required for all positions.**

The name Baxter Healthcare Corporation is synonymous with products, systems and services devoted to improving health care throughout the world. We are a Fortune 100 company providing a smoke-free environment, competitive compensation and benefits. Please send your resume in confidence to: **Baxter Biotech, Gene Therapy Unit, Human Resources Department, 9 Parker, Irvine, CA 92718.** An Affirmative Action/Equal Opportunity Employer.

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**Gene Therapy Division**

***Baxter***

A decade ago, Jim Wyngaarden, then  
director of NIH, characterized clinical investigators  
as "an endangered species."

# MD PhD

The Picower  
Institute for  
Medical  
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has  
initiated  
a Ph.D. degree  
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for a highly select group of young  
M.D.s who are committed to a career in  
biomedical research.

In today's  
world of  
biomedical  
research a gap is  
widening between  
technically proficient  
basic scientific  
researchers and  
clinical practitioners  
in daily contact with  
patients. In a recent  
article published  
in Science, the  
need for dual degree  
researchers to fill a void  
in biomedical research  
was emphasized:  
"physician-scientists are  
the major conduit for the application  
of basic science to human disease."

#### **Molecular Medicine**

- a new and exciting field which integrates molecular and structural biology, biochemistry and immunology
- focuses on elucidating the fundamental mechanisms of disease
- develops molecular means of diagnosing, treating and preventing disease

#### **The Picower Institute for Medical Research**

- is located on Long Island's North Shore, 45 minutes from Manhattan
- in a dedicated research building at North Shore University Hospital, which is affiliated with New York University School of Medicine
- contains 14 outstanding groups working on chronic and infectious diseases
- founded by Anthony Cerami, previously Professor of Medical Biochemistry and Dean of Rockefeller University

#### **The Picower Graduate School of Molecular Medicine**

- offers a Ph.D. degree for M.D.'s, chartered by the University of the State of New York: Tuition fees—none; Stipend—\$35,000; Time—3 years; Focus—laboratory research; Teaching—tutorials, seminars, courses
- Applications: Letter—research interests, clinical experience, goals; *Curriculum vitae*; 3 recommendations; Transcripts
- To: Dr. Annette Lee  
Director of Educational Programs  
The Picower Institute for Medical Research  
350 Community Drive  
Manhasset, NY 11030 USA



The Picower Institute for  
Medical Research



## ABL-Basic Research Program

# POSTDOCTORAL FELLOWSHIPS

## at the National Cancer Institute-Frederick Cancer Research and Development Center

### Molecular Mechanisms of Carcinogenesis

**George F. Vande Woude, Ph.D., Program Director** molecular basis of neoplastic transformation; role of proto-oncogenes in cell cycle regulation

**Stephen H. Hughes, Ph.D.** structure and function of HIV reverse transcriptase; *ski* oncogene; expression of cytoskeletal genes; retroviral vectors; transgenic birds and mammals

**George N. Pavlaklis, M.D., Ph.D.** eukaryotic gene regulation; molecular biology of HIV and pathogenesis of AIDS

**Barbara K. Felber, Ph.D.** molecular biology of human retroviruses; posttranscriptional mechanisms of gene regulation

**Peter F. Johnson, Ph.D.** mammalian bZIP transcription factors: protein structure, dimeric interactions, mechanisms of transcriptional activation, and regulatory functions during cell differentiation and development

**Deborah Morrison, Ph.D.** role of the proto-oncogene *c-raf* in mitogenic and developmental pathways; structure/function analysis of *c-raf*; identification of signal-transducing molecules

**David Kaplan, Ph.D.** signal-transducing molecules in mitogenesis, oncogenesis, and development; identification and characterization of substrates of receptor and nonreceptor tyrosine kinases; function of *trk* genes

### Chemistry of Carcinogenesis

**Anthony Dipple, Ph.D.** polycyclic aromatic hydrocarbon carcinogenesis and mutational specificity; chemical carcinogen-DNA interactions

**Robert C. Moschel, Ph.D.** chemical synthesis of carcinogen-modified DNA; physical chemistry of carcinogen-DNA interactions; DNA adduct-induced mutagenesis in bacteria and mammalian cells; chemotherapy adjuvants

### Chromosome Biology

**Stuart J. Austin, Ph.D.** chromosome stability in bacteria: regulation of plasmid replication and distribution of copies to daughter cells

**Donald Court, Ph.D.** regulation of gene expression by transcription initiation, transcription termination, and RNA processing

### Eukaryotic Gene Expression

**Jeffrey N. Strathern, Ph.D.** recombination; pseudogene formation; DNA repair in yeast; cell type regulation; gene expression

**David J. Garfinkel, Ph.D.** molecular biology of the retrotransposon Ty; genome rearrangement; insertional mutagenesis; gene regulation

**Amar J.S. Klar, Ph.D.** mating-type switching of fission and budding yeast; genetics and molecular biology of recombination; gene regulation

### Molecular Virology and Carcinogenesis

**Stephen Oroszlan, Ph.D.** immunochemistry and protein chemistry of retroviruses; structure and function of retroviral gene products; viral proteases

**Alan R. Rein, Ph.D.** retroviral genetics; functional analysis of retroviral genes using natural and synthetic mutants; viral pathogenicity

**Nancy R. Rice, Ph.D.** study of the *rel* oncogene and the related NF- $\kappa$ B family of transcription factors.

### Mammalian Genetics

**Neal G. Copeland, Ph.D.** development of mouse models of human disease; neurofibromatosis; gene targeting in ES cells

**Nancy A. Jenkins, Ph.D.** molecular genetics of mouse development; transgenic mice; receptor/ligand interactions and their role in development

**Peter J. Donovan, Ph.D.** development of the mouse germ line; germ cell gene expression; sterile mutants; cell adhesion molecules

### Macromolecular Structure

**Alexander Wlodawer, Ph.D.** structure of enzymes and cytokines studied by X-ray diffraction

**Christopher J. Michejda, Ph.D.** antineoplastic and antiviral drug design; biochemical and molecular pharmacology

**R. Andrew Byrd, Ph.D.** structure of proteins and carbohydrates studied by macromolecular NMR techniques

The ABL-Basic Research Program is dedicated to basic research in molecular biology, biochemistry, crystallography, genetics, virology, and organic chemistry. The scope of current projects is indicated by the research interests of the senior scientists listed above. Senior staff members enjoy complete independence in their choice of research problems and are accorded excellent facilities to accomplish their goals. A vigorous seminar program, implemented by formal and informal arrangements with the National Institutes of Health, Johns Hopkins University, University of Maryland, and other research and academic institutions, provides opportunities for extensive interaction within the scientific community.

The Frederick Cancer Research and Development Center is located in Frederick, Maryland, which with its proximity to Washington, D.C., and Baltimore offers a rich scientific and cultural environment, as well as a quiet country setting.

**Fellowships** are awarded on an equal opportunity basis to recent recipients of an M.D., a Ph.D., or an equivalent degree in the biological or biochemical sciences. Postdoctoral training opportunities are available with the staff members listed above as well as other scientists associated with the Program.

**Appointments** are made for one to three years. **Annual stipends** generally range from \$25,000 to \$31,000, depending upon experience.

Interested individuals are encouraged to apply well in advance of their availability date. The ABL-Basic Research Program does not discriminate in employment on the grounds of sex, race, color, age, religion, disability, or national origin.

**To apply**, send a letter describing your research interests, a curriculum vitae, and the names and addresses of three references to the investigator(s) of interest, c/o: **ABL-Basic Research Program, Personnel Department/Sci, NCI-FCRDC, P.O. Box B, Bldg. 428, Frederick, Maryland 21702-1201.**

The Basic Research Program is operated by Advanced BioScience Laboratories, Inc., under contract with the National Cancer Institute. EOE M/F/D/V



**BASIC RESEARCH  
PROGRAM**