AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

SCIENCE

15 NOVEMBER 1996 $7.00
VOL. 274 • PAGES 1049–1268

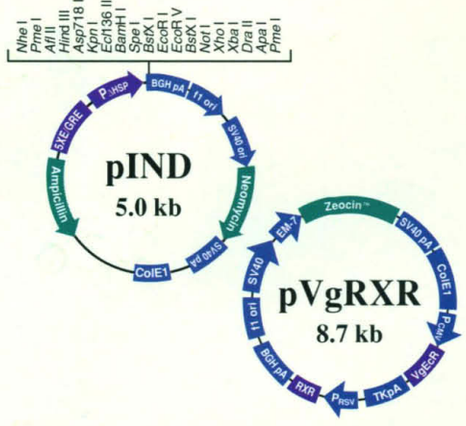
Developmental Neuroscience

The First Truly Inducible Mammalian Expression System

Invitrogen's new Ecdysone-Inducible Mammalian Expression System is the first system to offer truly low basal expression and high inducibility. Based on a naturally evolved eukaryotic regulatory mechanism that triggers the molting process of insects, ecdysone-responsiveness transfers ideally into mammalian systems (1). This system is entirely unique. It does not rely on prokaryotic operator sites and the artificial nuclear localization of regulatory molecules to control induction as do other regulated systems. This makes the Ecdysone System extremely efficient and easy to use.

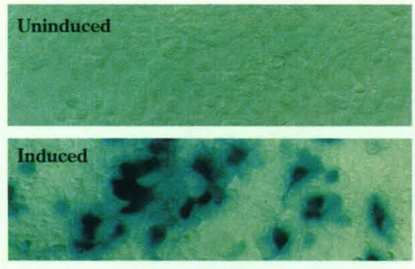
How it Works

For transient transfection and induction, simply clone your gene of interest into pIND, then cotransfect it into mammalian cells with the regulator vector, pVgRXR. Approximately six hours later, treat the transfected cells with the ecdysone analog, muristerone A and begin analysis. Depending on the sensitivity of the assay, you can begin detecting induced expression in as little as two hours. For stable transfection, use dual selection with Zeocin™ and G418.



Tightly Regulated

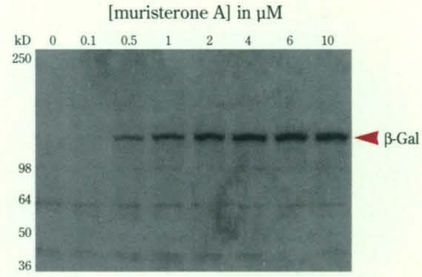
The slides below show a simple colorimetric assay of 293 cells cotransfected with pVgRXR and pIND/*lacZ* before and after muristerone treatment. This example vividly illustrates the Ecdysone System's tight control and capacity for high inducibility.



Uninduced and induced transiently transfected 293 cells stained with X-gal.

Specificity and Control

Induction is specific–exhibiting no pleiotropic effects on mammalian cells–and dose-dependent–allowing for thorough analysis of gene function through a full range of expression.



Dose-dependent β-galactosidase Induction. 293 cells stably transfected with pVgRXR and pIND/*lacZ* treated with increasing amounts of muristerone A. Equal amounts of isolated protein were separated by SDS-PAGE, blotted and detected by antibody and chemiluminescence.

COMPLETE KIT. The Ecdysone-Inducible Mammalian Expression System has everything you need to get started, including vectors, a positive control, sequencing primers, Zeocin™ antibiotic, and muristerone A. Stable cell lines expressing the regulator (pVgRXR) are also available. Call Invitrogen or visit our web site to learn more about the Ecdysone-Inducible Mammalian Expression System.

1. No, D. *et al.* (1996) *Proc. Natl. Acad. Sci. USA* **93**: 3346-3351.

EUROPEAN HEADQUARTERS:
Invitrogen BV
De Schelp 12, 9351 NV Leek
The Netherlands
Tel: +31 (0) 594 515 175
Fax: +31 (0) 594 515 312
EMail: tech_service@invitrogen.nl

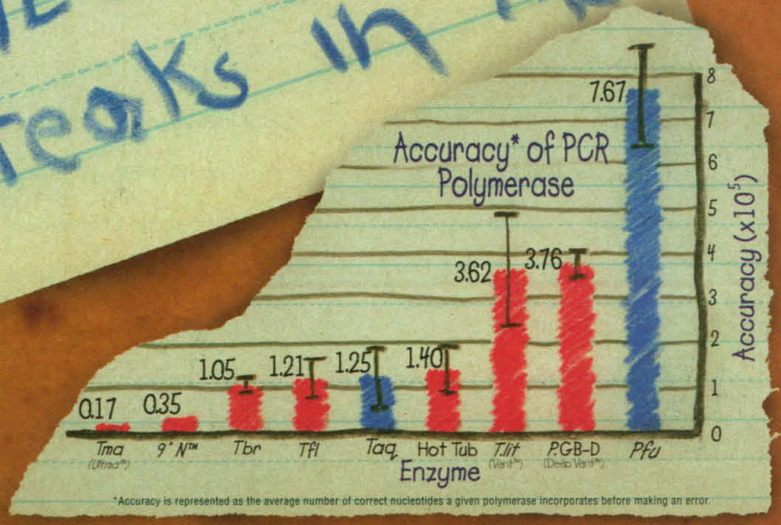
TOLL FREE TELEPHONE NUMBERS:
Belgium 0800 111 73
Denmark 800 188 67
Finland 990 31 800 5345
France 19 31 800 5345
Germany 0130 8100 43
The Netherlands 06 022 8848
Norway 800 113 70
Sweden 020 795 369
Switzerland 155 1966
UK 0800 96 61 93

Distributors:
Australia 03 9562 6888
Hong Kong 886 2 381 0844
Israel 02 524 447
Italy 02 38 19 51
Japan 03 5684 1616
Korea 822 569 6902
Singapore 65 482 3888 or 29 29 783
Spain 03 450 2601
Taiwan 886 2 381 0844
From all other countries, please contact our European headquarters at +31 (0) 594 515 175.

Invitrogen®
1-800-955-6288
http://www.invitrogen.com

Circle No. 66 on Readers' Service Card

For High-Fidelity PCR *Pfu* Beats *Taq* Every Time!



*Accuracy is represented as the average number of correct nucleotides a given polymerase incorporates before making an error.

UNITED STATES:
Stratagene Headquarters
800-424-5444
INTERNET MAIL:
techservices@stratagene.com
AUSTRALIA: 1800-252-204
AUSTRIA: 1 5332666
BRAZIL: 11 530 7833
CANADA: 905 713 1201
DENMARK: 8 6101055
FRANCE: 1 34 60 2424
GERMANY: 0130-840911
HONG KONG: 5785839
ISRAEL: 3 7521687
ITALY: 258013409
JAPAN: (Toyobo) 3 3660 4819
or 6 348 3785
(Funakoshi) 3 5684 1622
KOREA: 2 5560311
MALAYSIA: 37031888
THE NETHERLANDS: 33 4950094
NEW ZEALAND: 9 443 5867
NORWAY: 22715090
PORTUGAL: 1-4581641
ROC: 2 694 0066 or 2 720 2215
SINGAPORE: 2730898
SPAIN: 1 729 03 33
SWEDEN: 8 680 0845
SWITZERLAND: 3641106
THAILAND: 23080611
UNITED KINGDOM: 0800 585370

† Patent Pending

‡ Purchase of these enzymes is accompanied by a license to use them in the Polymerase Chain Reaction (PCR) process in conjunction with an Authorized Thermal Cycler. Stratagene's PCR products are sold under licensing arrangements with Roche Molecular Systems, Inc., F. Hoffmann-La Roche Ltd. and The Perkin-Elmer Corporation.

Pfu† polymerase for accurate PCR!‡

Call Stratagene
Or your Stratagene distributor
for the complete picture...

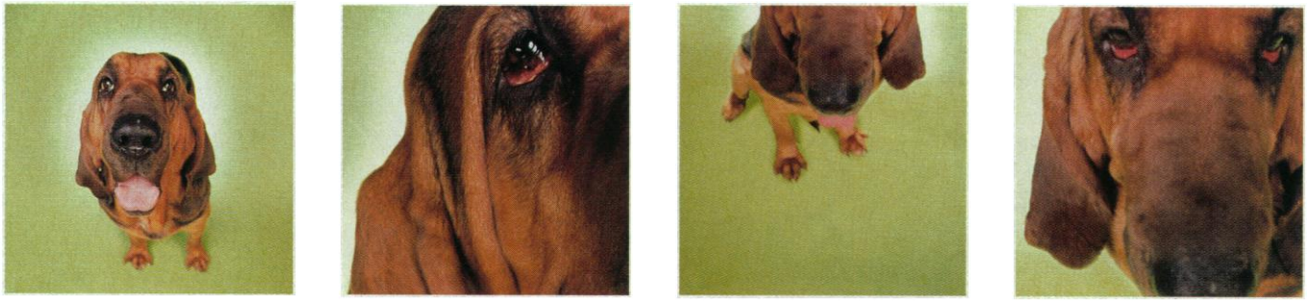
NATIVE *Pfu* DNA POLYMERASE
Catalog #600135 (100U), #600136 (500U)

RECOMBINANT *Pfu* DNA POLYMERASE
Catalog #600153 (100U), #600154 (500U), #600159 (1000)

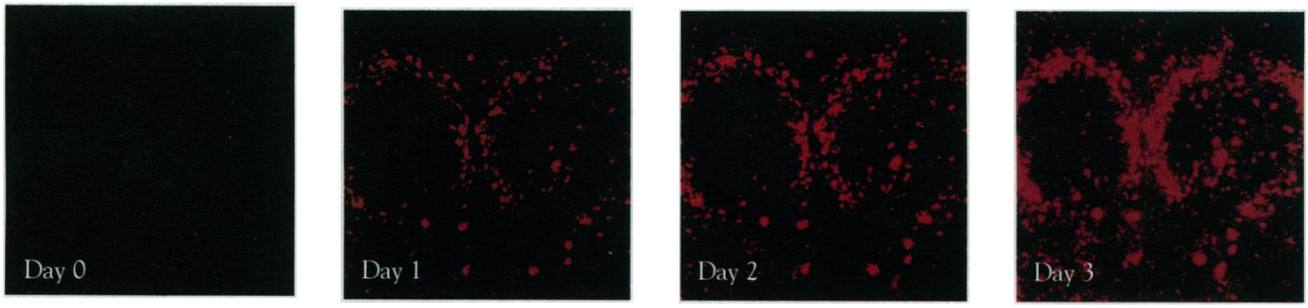
Circle No. 101 on Readers' Service Card

STRATAGENE®

TRACKS LIKE CRAZY.



SO DO THESE.



PKH Fluorescent Cell Linker Kits. Only From Sigma.

PKH kits always get their cell. That's because we're the only people who have everything you'll need in a single kit. Our PKH linker kits provide intense, fluorescent labeling of live cells over an extended period of time, with no apparent toxic effects. PKH linker kits are effective for a variety of cell types and exhibit no leaking, nor transfer from cell to cell — offering stable, clear, intense, accurate and reproducible fluorescent labeling of cells.

Our red and green fluorescent linkers mimic existing fluorophores, allowing you to use existing detection equipment and current fluorescent filters.

Our kits offer a combination of fluorescent cell linkers and diluent with everything very easy to use. Because of the easy use and effectiveness, the success of our PKH kits is well-documented. In short, we offer everything you need for easy and completely accurate cell tracking.

So if you want to track like crazy, put the best "tracker" on the case. PKH Fluorescent Cell Linker Kits — only from Sigma. The others? They're still barking up the wrong tree.

For ordering or information, call 1-800-325-3010 (USA/Canada) or 314-771-5750 (call collect outside USA and Canada), or contact your local Sigma office.

SIGMA BIOSCIENCES™

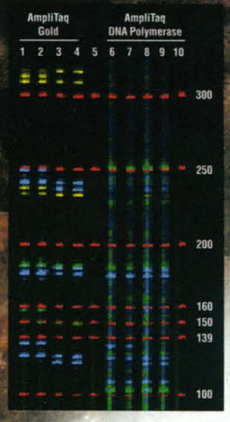
Sigma Chemical Company
P.O. Box 14508
St. Louis, MO 63178 USA

Distributed for Phanos Technologies

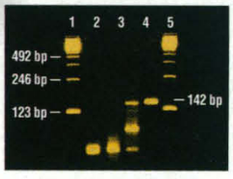
Circle No. 78 on Readers' Service Card

Introducing
AmpliTaq Gold™

Where There's Gold, You'll Find Performance.



Co-amplification of 8 human STR loci. L1, 2: male control DNA; L3, 4: female control DNA; L5: AmpliTaq negative control; L6, 7: male control DNA; L8, 9: female control DNA; L10: negative control.



Amplification of HIV-1 Control DNA. L2: 0 copies, AmpliTaq DNA Polymerase, No Hot Start; L3: 10 copies, AmpliTaq DNA Polymerase, No Hot Start; L4: 10 copies, AmpliTaq DNA Polymerase, manual Hot Start; L5: 10 copies, AmpliTaq Gold.

For PCR performance with higher yield, better specificity and more reliable results, discover AmpliTaq Gold™.

This new version of AmpliTaq® DNA Polymerase provides the specificity of Hot Start PCR, without all the extra steps. In most cases, you can substitute AmpliTaq Gold directly in existing PCR amplification protocols—without re-optimization.

You'll find AmpliTaq Gold saves time and money with dramatically lower drop-out rates, improved specificity, and easier multiplexing.

It also gives you consistently better PCR results. Because AmpliTaq Gold remains inactive until heated, conditions that lead to primer-dimer formation and mispriming are eliminated.

And of course, you have the continued assurance of knowing that AmpliTaq Gold is backed by PE Applied Biosystems' exclusive PCR Performance Guarantee.

So discover AmpliTaq Gold, and discover high performance PCR. To request information, call 1-800-327-3002. Outside the U.S. and Canada, contact your local PE Applied Biosystems representative. On the Internet, visit our home page at http://www. amplitaqgold.com, or e-mail pebio@perkin-elmer.com.

PE *Applied Biosystems*

Europe Langen, Germany Tel: 49 6103 708 301 Fax: 49 6103 708 310
Japan Tokyo, Japan Tel: (0473) 80-8381 Fax: (0473) 80-8505
Latin America Mexico City, Mexico Tel: 52-5-651-7077 Fax: 52-5-593-6223
Australia Melbourne, Australia Tel: (03) 9212-8585 Fax: (03) 9212-8502

Perkin-Elmer PCR reagents are developed and manufactured by Roche Molecular Systems, Inc., Branchburg, New Jersey, U.S.A.

Roche

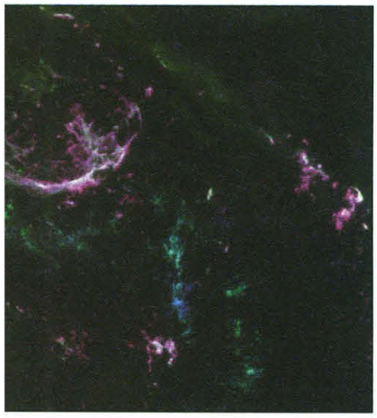
AmpliTaq Gold is a trademark and AmpliTaq is a registered trademark of Roche Molecular Systems, Inc. The PCR process is covered by patents owned by Hoffmann-La Roche, Inc. and F.Hoffmann-La Roche Ltd. PE Applied Biosystems is a trademark and Perkin-Elmer is a registered trademark of The Perkin-Elmer Corporation. The Perkin-Elmer Corporation is ISO 9001 certified.

Circle No. 83 on Readers' Service Card

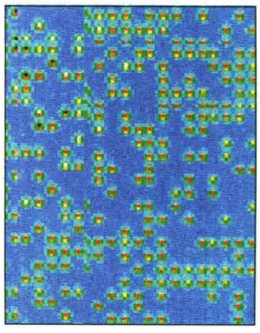
ISSN 0036-8075
15 NOVEMBER 1996
VOLUME 274
NUMBER 5290

SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



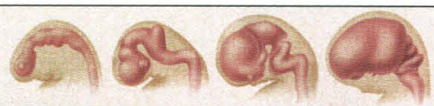
1078
Stardust memories



1182
Data storage in organic glasses

NEWS

PERSPECTIVES



DEVELOPMENTAL NEUROBIOLOGY

NEWS

ARTICLES

RESEARCH ARTICLE

REPORTS

DEPARTMENTS

AAAS Board of Directors

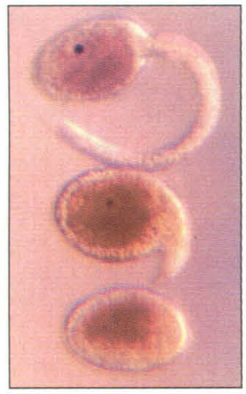
Rita R. Colwell
Retiring President, Chairman
Jane Lubchenco
President
Mildred S. Dresselhaus
President-elect
Sheila Jasanoff
William A. Lester Jr.
Simon A. Levin
Marcia C. Linn
Michael J. Novacek
Anna C. Roosevelt
Jean E. Taylor
Nancy S. Wexler
William T. Golden
Treasurer
Richard S. Nicholson
Executive Officer

■ **SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005.** Periodicals Mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 1996 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): $102 ($55 allocated to subscription). Domestic institutional subscription (51 issues): $250. Foreign postage extra: Mexico, Caribbean (surface mail) $55; other countries (air assist delivery) $90. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 88122. **Printed in the U.S.A.**

COVER

Segmentation in the early embryonic hindbrain is revealed by *Hox* reporter gene expression in a transgenic mouse. The alternating blue- and brown-stained domains are rhombomeres, repeat units that underlie the hindbrain's segmented neural architecture. Development of the nervous system, from embryonic patterning to early function, is the focus of this issue. See page 1109, the Editorial on page 1063, and the special section beginning on page 1099, which includes an article on Web sites of interest to neuroscientists. [Image: James Sharpe]

TECHNICAL COMMENTS



1082 & 1205
Evolutionary tails

◩ Indicates accompanying feature

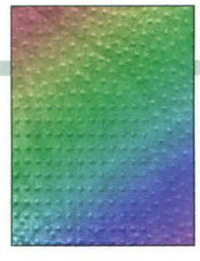
Change of address: allow 4 weeks, giving old and new addresses and 8-digit account number. **Postmaster:** Send change of address to *Science*, P.O. Box 1811, Danbury, CT 06813–1811. **Single copy sales:** $7.00 per issue prepaid includes surface postage; bulk rates on request.

Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that $4.00 per article is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923.

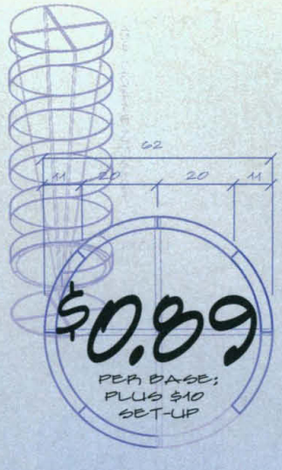
The identification code for *Science* is 0036-8075/83 $4.00. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

On the Web

Video clips showing vortex dynamics in superconducting films by Harada *et al.*
http://www.sciencemag.org/science/feature/data/harada.shl



Oligos Custom-Built to Your Blueprints



Whether you need a refrigerator full of primers and probes, or an exotic, one-of-a-kind modified oligo, Genosys is always ready to "build to suit."

Unlike many other suppliers, we actually welcome your special requirements. For example, labeled oligos for non-isotopic detection. Our "assorted flavors" include biotin, fluorescein, alkaline phosphatase, digoxigenin,† ABI dyes, and rhodamine. All routine at Genosys.

S-oligos for antisense studies? Large scale synthesis? Custom libraries? Arbitrary 10-mers? Custom genes? Talk to us; you won't be disappointed.

Of course you'll also want the highest quality. So you'll be pleased to learn that Genosys delivers every oligo with its own Quality Assurance Certificate, including digitized PAGE analysis, quantitated yield, melting temperature, MW and µg/OD. As for delivery, standard orders are shipped within 24 hours; can anyone beat that?

If you have particular requirements for research-ready DNA —or if you're just very particular about the DNA used in your research— call, fax or e-mail for our latest catalog. Maybe we can build something together.

Genosys Biotechnologies, Inc.
The Woodlands, TX U.S.A.
Phone: (800) 853-3385
or (713) 363-3693
Fax: (713) 363-2212
eMail: genosys@main.com

Visit our World Wide Web Site
http://www.genosys.com

GENOSYS

† Licensed from Boehringer Mannheim GmbH
Pricing for U.S.

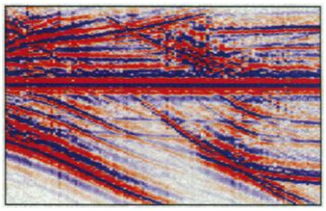
Circle No. 48 on Readers' Service Card

© 1995 Genosys Biotechnologies, Inc.
BBC J95-295 D/M-3

edited by PHIL SZUROMI

Mantle minerals

Key information regarding the composition of the lower mantle, and thus the nature of convection in the Earth, is provided by matching seismic and mineralogical data of the transition between the upper and lower mantles that occurs at a depth of about 660 kilometers. Estabrook and Kind (p. 1179) show that seismic reflections



that were expected to be returned from just beneath the phase transition at 660 kilometers are not present. These data can be explained if the jump in *P*-wave velocity across the 660-kilometer transition is about 2%, or less than the previously expected value. This analysis implies that the lower and upper mantles have similar compositions.

■

Affecting climate

Whether the observed changes in climate during this century are the result of natural variability or human influences remains hotly debated. Tett *et al.* (p. 1170) have performed a set of climate simulations involving changes in three factors that are under anthropogenic influence and are believed to affect climate, namely sulfate aerosols, greenhouse gases, and stratospheric ozone. Detailed comparison with observations shows that best agreement is reached when the simulations are forced with a combination of these three factors, compared to simulations involving only subsets of these factors. Although many questions and uncertainties remain, recent climate changes are unlikely to be entirely due to unforced natural variability.

■

Tails of the ascidians

Chordates, which include vertebrates, normally have during some stage of development a notochord, an internal flexible rod of cells along their dorsal side. Tunicates (ascidians, or sea squirts) are among the simplest chordates and now provide genetic clues to notochord development. Most species, such as *Molgula oculata*, develop from a tailed tadpole larva, but some, such as its relative *M. occulta*, evolved to lack a tail and notochord structure as larvae. Tail expression can be restored, however, in hybrid embryos. Swalla and Jeffery (p. 1205; see the news story by Pennisi, p. 1082) have now found that the zinc finger gene *Manx* is expressed in cells that develop notochord features and is down-regulated in the tailless species.

Photorefractive organic glass

Photorefractive (PR) materials have applications in optical devices and storage systems. Organic PR materials can be made with properties that rival or exceed those of the main inorganic PR material, lithium niobate. One problem, however, is that the chromophores used to generate the PR response must be dissolved in excess polymers for the material to remain in an optically useful glassy state. Lundquist *et al.* (p. 1182) now report a class of improved organic PR materials in which the chromophore itself forms a stable glass so that the polymer fraction can be decreased substantially.

■

Timing deglaciation

Deglaciation following the Last Glacial Maximum was interrupted most notably by the Younger Dryas, which was a return to colder conditions about 12,000 years ago, but the origin of this event has been uncertain because it has been difficult to correlate in time the relevant climate records obtained from various regions around the North Atlantic. Björck *et al.* (p. 1155) examined several climate records, including Greenland ice cores and tree rings and lake sediments from northern Europe, to develop a chronology for the Younger Dryas and related climate shifts. They suggest that the Younger Dryas lasted until about 11,400 years ago and was caused by a change in the thermohaline circulation of the Atlantic Ocean.

■

Causing division

In dividing eukaryotic cells, exit from mitosis and initiation of anaphase requires the activation of the anaphase-promoting complex (APC), a group of proteins that mediates regulated proteolysis of proteins critical to the control of the cell cycle. Reports from Peters *et al.* and Zachariae *et al.* (pp. 1199 and 1201) describe a new subunit of the APC. The APC subunit appears to be evolutionarily conserved because the APC subunits from both yeast and *Xenopus laevis* (a frog) are similar to a protein called BIME from *Aspergillus nidulans* (a fungus). The properties of BIME in *Aspergillus* indicate that the APC may also function to regulate entry into as well as exit from mitosis.

■

Caught napping

The differences between the chemistry of the brain while awake versus asleep has intrigued researchers for many years. Cirelli *et al.* (p. 1211) show that the locus coeruleus, a small region of the brain that communicates with large areas of the brain cortex and hippocampus, has a much lower pattern of activity in sleeping than in waking rats. The authors provide evidence which suggests that the locus coeruleus acts as a neuromodulator to control the activity of other brain areas during the sleep-wake cycle.

■

Mutating pathogens

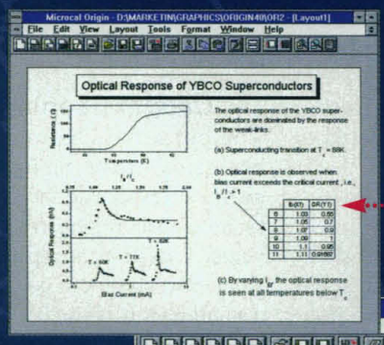
Methyl-directed mismatch repair (MMR) helps control the rate of mutations in newly synthesized DNA and gene transfer between species. LeClerc *et al.* (p. 1208) examined isolates of bacterial pathogen species associated with food-transmitted human diseases, including *Escherichia coli* and *Salmonella enteritidis*, and found that they had an unexpectedly high mutation rate. In all of the cases examined, the hypermutability was to due to defects in MMR. The authors suggest that hypermutability may help account for the rapid increase in antibiotic resistance seen recently in bacterial pathogens (see the news story by Grady, p. 1081).

ORIGIN™ 4.1

For Windows™

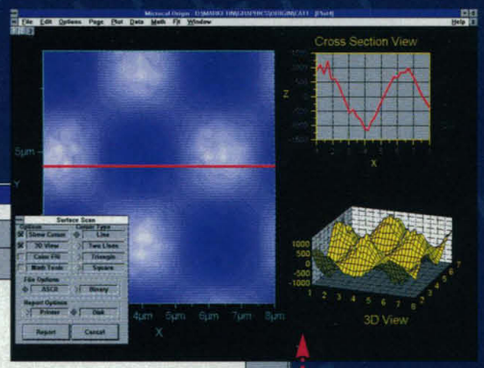
NEW! 16-bit, 32-bit and Professional version!

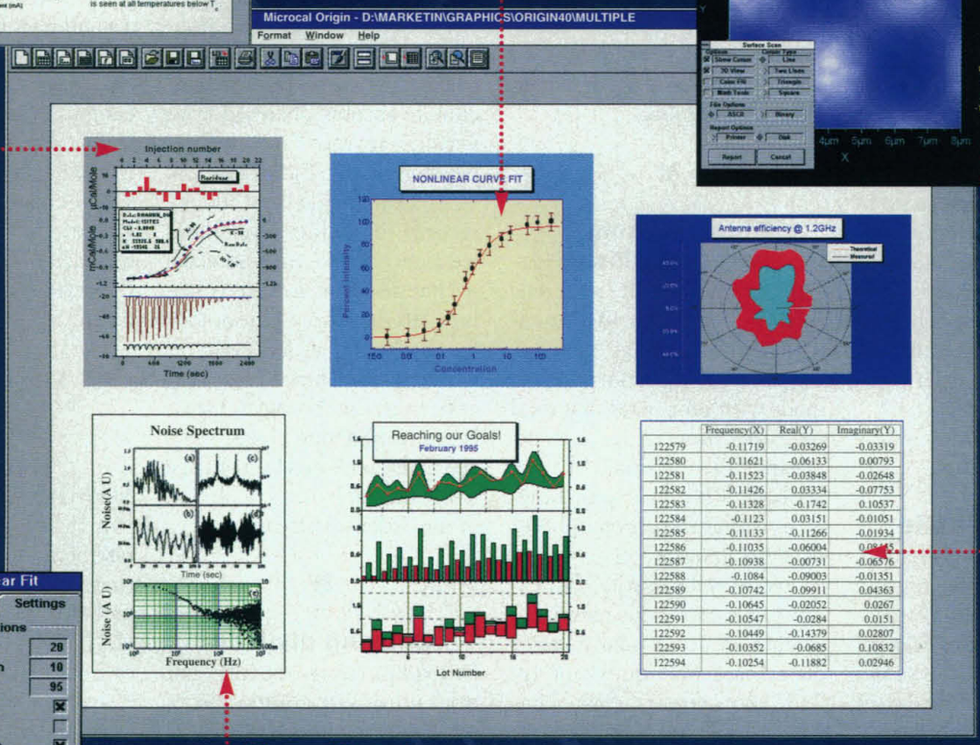
ORIGIN was the first technical graphics and data analysis software developed using all of MS Windows power. Tens of thousands of scientists and engineers worldwide choose Origin for its exceptional speed, powerful analytical capability, and presentation-quality graphics. NEW Origin version 4.1 is compatible with both Windows 3.1 and Windows 95.



Layout Page
Create publication quality reports with multiple graphs, worksheets, and text using the select-and-drop interface.

Nonlinear Curve Fitter
Use nearly 200 built-in functions and user defined functions through integrated interface.

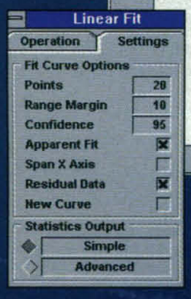




Multiple Graphs
Link axes in layered graphs. Change an axis on any graph; Origin automatically adjusts the rest.

Origin Professional
Allows you to develop custom applications using floating toolbars, import custom data, and incorporate your own programs into Origin.

Analysis Toolbars
Simplify and provide clutter-free access to all data analysis options.



	Frequency(X)	Real(Y)	Imaginary(Y)
122579	-0.11719	-0.03269	-0.03319
122580	-0.11621	-0.06133	0.00793
122581	-0.11523	-0.03848	-0.02648
122582	-0.11426	0.03334	-0.07753
122583	-0.11328	-0.1742	0.10537
122584	-0.1123	0.03151	-0.01051
122585	-0.11133	-0.11266	-0.01934
122586	-0.11035	-0.06004	0.08445
122587	-0.10938	-0.00731	-0.06576
122588	-0.1084	-0.09003	-0.01351
122589	-0.10742	-0.09911	0.04363
122590	-0.10645	-0.02052	0.0267
122591	-0.10547	-0.0284	0.0151
122592	-0.10449	-0.14379	0.02807
122593	-0.10352	-0.0685	0.10832
122594	-0.10254	-0.11882	0.02946

Large Datasets
Unrestricted number of data points in a column.

Advanced Analysis
Perform regression, FFT, baseline and peak analysis.

See it for yourself! Call 800-969-7720 for a FREE demo, or download it at http://www.microcal.com

Circle No. 93 on Readers' Service Card

Microcal™

Microcal Software, Inc.
One Roundhouse Plaza
Northampton, MA 01060 USA

413-586-2013/fax:413-585-0126
email: info@microcal.com
WWW: http://www.microcal.com

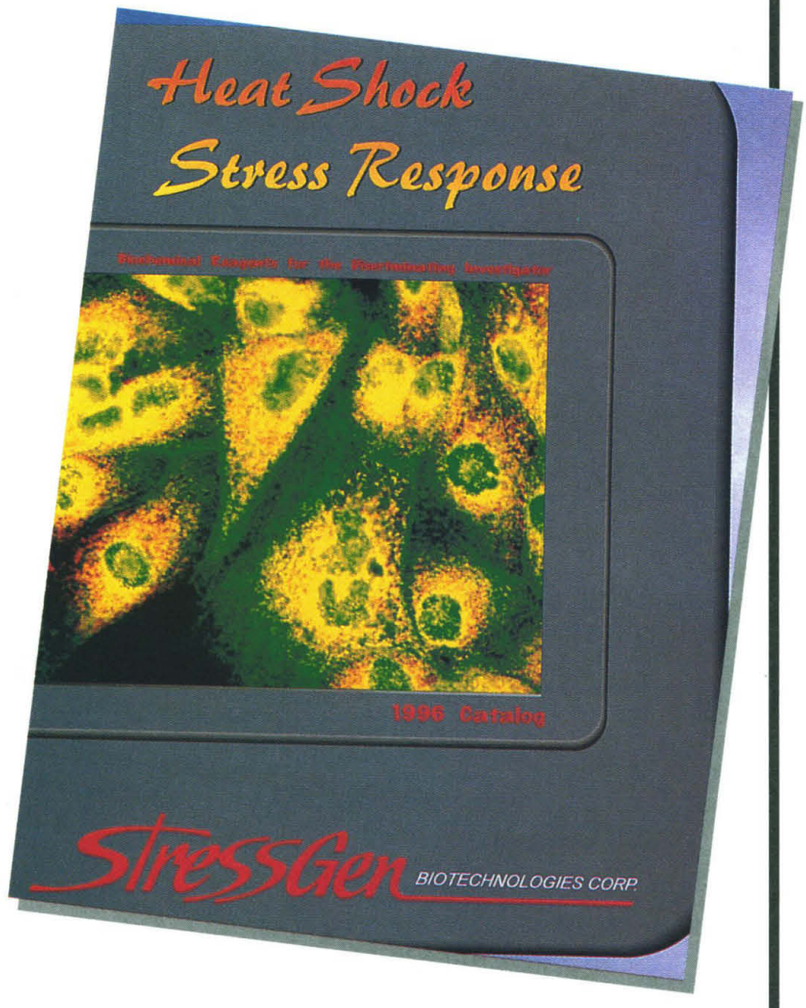
Origin is a trademark of Microcal. All other brand and product names are trademarks of their respective owners.

GET STRESSED!

Get your antibodies, proteins, and other research tools from **StressGen** – the stress response experts.

Thyroid Hormone Receptor
Full Length HSP cDNA's
Ubiquitin ■ HSF1
Crystallins
GroES
GrpE ■ DnaJ
TCP-1
Hsp104
Dehydrin
Calreticulin
Grp58(Erp61)
Colligin(Hsp47)
Hsp56(p59)
Synaptotagmin
Heat Shock RNA extracts

SEE US AT ASCB BOOTH 1531



We have many other products too! Call the stress response experts for a free catalogue.

(800) 661-4978 (US ONLY)
(250) 744-2811 (250) 744-2877 (FAX)
info@stressgen.com http://www.stressgen.com/stressgen

StressGen BIOTECHNOLOGIES CORP.

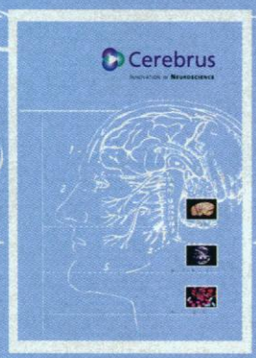
120 - 4243 Glanford Ave.,Victoria, BC, Canada V8Z 4B9

AUSTRALIA BIOCLONE Australia Pty. Ltd +61 (2) 517 1966, **AUSTRIA** SZABO +43 (1) 489 39 610, **BELGIUM** SANBIO BV Biological Products +31 (41) 325 1115, **CHINA** Health Care Products Ltd +852 (0) 2563-5193, **COLUMBIA** Respresentaciones Biotecnologicas +57 (1) 222-3232, **CZECH REPUBLIC** Chemos Cz +42 (2) 701-793, **DENMARK** AMS Biotechnology (Sweden) Ltd +46 (8) 630 02 32, **EGYPT** Cairo Chemical Company +20 (2) 348-4409, **FRANCE** TEBU +33 (1) 348462-52, **GERMANY** BIOMOL Feinchemikalien GmbH +49 (40) 853-2600, **GREECE** FARMALEX S.A. +30 (001) 6445 612, **HONG KONG** Onwon Trading +852 (0) 2757-7569, **HUNGARY** LKB Kereskedelmi Es Szerviz Kft +36 (01) 175-7584, **ISRAEL** ENCO Scientific Services +972 (3) 934-9922, **ITALY** SPACE +39 (02) 257 5377, **ITALY** Diagnostic Brokers Associated +39 (02) 2692 2300, **JAPAN** FUNAKOSHI Co. Ltd +81 (03) 5684-1622, **KOREA** KORAM Biotech. Corp. +82 (02) 556-0311, **KOREA** Essence International Corp. +82 (02) 577-5383, **LUXEMBOURG** SANBIO BV Biological Products +31 (41) 325 1115, **MALAYSIA** Kuberan Enterprise +60 (3) 442-6306, **NETHERLANDS** SANBIO BV Biological Products +31 (41) 325 1115, **SPAIN** AMS Biotechnology (Spain) Ltd +34 (91) 554-5403, **SWEDEN** AMS Biotechnology (Sweden) Ltd +46 (8) 630 02 32, **SWITZERLAND** AMS Biotechnology (Switz.) Ltd +41 (91) 505 522, **TAIWAN** PROtech Technology Co.Ltd +886 (2) 381 0844, **TAIWAN** FENG JIH Biomedical & Instruments Co. Lt +886 (2) 647 8855, **TAIWAN** Cashmere Scientific Co +886 (2) 821 3004, **UNITED KINGDOM** BIOQUOTE LTD +44 (1904) 431-402

Circle No. 98 on Readers' Service Card

NEUROSCIENCE

SEE US AT NEUROSCIENCE '96 STAND 1354



FOR A DETAILED INFORMATION PACK
CONTACT OUR BUSINESS MANAGER

INNOVATION

As innovators in neuroscience research, Cerebrus offers the opportunity to accelerate the discovery and development of novel CNS drugs for its collaborative partners through the provision of CNS research services.

This ability is underpinned by our innovative therapeutic research programmes in neuroscience which will also offer co-development opportunities.

CEREBRUS LIMITED , SILWOOD PARK, BUCKHURST ROAD, ASCOT, BERKSHIRE SL5 7PN, UNITED KINGDOM
TELEPHONE: +44 (0)1344 873266 FAX: +44 (0)1344 873299

Cerebrus
INNOVATION IN **NEUROSCIENCE**

Circle No. 31 on Readers' Service Card

●http://www.sciencemag.org/

SCIENCE

MEMBERSHIP/CIRCULATION
Director: Michael Spinella
Deputy Director: Marlene Zendell
Member Services: Donald Crowl, *Manager*; Mary Curry, *Supervisor*; Pat Butler, Laurie Baker, Yvette Carter *Representatives*
Marketing: Dee Valencia, *Manager*; Jane Pennington, *Europe Manager*; Hilary Baar, *Assistant Manager*; Lauri Sirois, *Coordinator*
Research: Renuka Chander, *Manager*
Business and Finance: Robert Smariga, *Manager*; Nina Araujo de Kobes, Kimberly Parker, *Coordinators*
Computer Specialist: Charles Munson

ADVERTISING AND FINANCE
Associate Publisher: Beth Rosner
Advertising Sales Manager: Susan A. Meredith
Recruitment Advertising Manager: Janis Crowley
Business Manager: Deborah Rivera-Wienhold
Finance: Randy Yi, *Senior Analyst*; Connie Dang, *Financial Analyst*
Marketing: John Meyers, *Manager*; Allison Pritchard, *Associate*
Electronic Media: David Gilliken, *Manager*; Mark Croatti, Crystal Young, *Production Associates*
Product Advertising: Carol Maddox, *Traffic Manager*; Natalie Britt, *Sales Associate*
Product Advertising Sales: East Coast/E. Canada: Richard Teeling, 201-904-9774, FAX 201-904-9701 • **Midwest/Southeast:** Elizabeth Mosko, 773-665-1150, FAX 773-665-2129 • **West Coast/W. Canada:** Neil Boylan, 415-673-9265, FAX 415-673-9267 • **UK, Scandinavia, France, Italy, Belgium, Netherlands:** Andrew Davies, (44) 1-457-838-519, FAX (44) 1-457-838-898 • **Germany/Switzerland/Austria:** Tracey Peers, (44) 1-260-297-530, FAX (44) 1-260-271-022 • **Japan:** Mashy Yoshikawa, (81) 3-3235-5961, FAX (81) 3-3235-5852
Recruitment Advertising: Terri Seiter Azie, *Sales and Production Operations Manager*; Celeste Miller, *Sales Supervisor*; Eric Banks, Troy Benitez, Bren Peters-Minnis, Bethany Ritchey, *Sales*; Debbie Cummings, *European Sales Manager*; Wendy Green, *Production Associate*; Nicole Robinson, *Advertising Assistant*
Recruitment Advertising Sales: US: Janis Crowley, 202-326-6532, FAX 202-289-6742 • **Europe:** Debbie Cummings, (44) 1223-302067, FAX (44) 1223-576208 • **Australia/New Zealand:** Keith Sandell, (61) 02-922-2977, FAX (61) 02-922-1100 • **Japan:** Mashy Yoshikawa, (81) 3-3235-5961, FAX (81) 3-3235-5852
Assistant to Associate Publisher: Nancy Hicks
Permissions: Lincoln Richman
Exhibits Coordinator: Arlene Ennis
Send materials to *Science* Advertising, 1200 New York Avenue, NW, Washington, DC 20005.

SCIENCE EDITORIAL BOARD

Charles J. Arntzen
David Baltimore
J. Michael Bishop
William F. Brinkman
E. Margaret Burbidge
Pierre-Gilles de Gennes
Joseph L. Goldstein
Mary L. Good
Harry B. Gray
John J. Hopfield
F. Clark Howell
Paul A. Marks
Yasutomi Nishizuka
Helen M. Ranney
Bengt Samuelsson
Robert M. Solow
Edward C. Stone
James D. Watson
Richard N. Zare

■ Published by the **American Association for the Advancement of Science (AAAS),** *Science* serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objectives are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, to advance education in science, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

INFORMATION RESOURCES

SUBSCRIPTION SERVICES
For change of address, missing issues, new orders and renewals, and payment questions, please contact AAAS at Danbury, CT: 800-731-4939 or Washington, DC: 202-326-6417, FAX 202-842-1065. Mailing addresses: AAAS, P.O. Box 1811, Danbury, CT 06813 or AAAS Member Services, 1200 New York Avenue, NW, Washington, DC 20005 • **Other AAAS Programs:** 202-326-6400

REPRINTS & PERMISSION
Reprints: Ordering/Billing, 800-407-9191; Corrections, 202-326-6501 • **Permissions:** 202-326-7074, FAX 202-682-0816

INTERNET ADDRESSES
science_editors@aaas.org (for general editorial queries); science_news@aaas.org (for news queries); science_letters@aaas.org (for letters to the editor); science_reviews@aaas.org (for returning manuscript reviews); science@science-int.co.uk (for the Europe Office); membership@aaas.org (for member services); science_classifieds@aaas.org (for submitting classified advertisements); science_advertising@aaas.org (for product advertising)

INFORMATION FOR CONTRIBUTORS
See pages 93–94 of the 5 January 1996 issue or access http://www.sciencemag.org/science/home/con-info.shtml.

EDITORIAL & NEWS CONTACTS

North America
Address: 1200 New York Avenue, NW, Washington, DC 20005
Editorial: 202-326-6501, FAX 202-289-7562
News: 202-326-6500, FAX 202-371-9227 • **Bureaus: Berkeley, CA:** 510-841-1154, FAX 510-841-6339, **San Diego, CA:** 619-942-3252, FAX 619-942-4979, **Chicago, IL:** 312-360-1227, FAX 312-360-0537, **Boston, MA:** 617-566-7137, FAX 617-734-8088

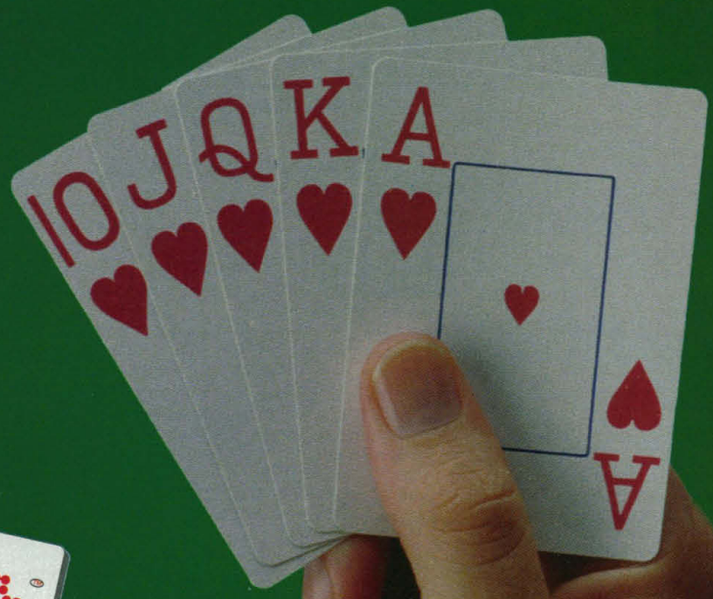
Europe
Headquarters: 14 George IV Street, Cambridge, UK CB2 1HH; (44) 1223-302067, FAX (44) 1223-302068
Paris Correspondent: (33) 1-49-29-09-01, FAX (33) 1-49-29-09-00

Asia
Japan Office: Carl Kay, Esaka-cho 5-chome 11-10, Suita-shi, Osaka 564 Japan; (81) 6-368-1925, FAX (81) 6-368-6905; science@magical.egg.or.jp • **News Bureau:** (81) 3-3335-9925, FAX (81) 3-3335-4898 • **China Office:** Hao Xin, (86)10-6255-9478; science@public3.bta.net.cn

BOARD OF REVIEWING EDITORS

Frederick W. Alt
Children's Hospital, Boston
Don L. Anderson
California Institute of Technology
Michael Ashburner
Univ. of Cambridge
Stephen J. Benkovic
Pennsylvania State Univ.
Alan Bernstein
Mount Sinai Hospital, Toronto
Seth Blair
Univ. of Wisconsin, Madison
David E. Bloom
Harvard Institute for International Development
Piet Borst
The Netherlands Cancer Institute
Henry R. Bourne
Univ. of California, San Francisco
Michael S. Brown
Univ. of Texas Southwestern Medical Center
James J. Bull
Univ. of Texas at Austin
Kathryn Calame
Columbia Univ. College of Physicians & Surgeons
Dennis W. Choi
Washington Univ. School of Medicine, St. Louis
David Clapham
Mayo Foundation
Adrienne E. Clarke
Univ. of Melbourne, Parkville
John M. Coffin
Tufts Univ. School of Medicine
F. Fleming Crim
Univ. of Wisconsin, Madison
Paul J. Crutzen
Max-Planck-Institut für Chemie
James E. Dahlberg
Univ. of Wisconsin Medical School, Madison
Robert Desimone
National Institute of Mental Health, NIH
Paul T. Englund
Johns Hopkins Univ. School of Medicine
G. Ertl
Max-Planck-Gesellschaft
Richard G. Fairbanks
Lamont-Doherty Earth Observatory
Robert E. Fay
U.S. Bureau of the Census
Douglas T. Fearon
Univ. of Cambridge
Harry A. Fozzard
The Univ. of Chicago
Roger I. M. Glass
Centers for Disease Control
Stephen P. Goff
Columbia Univ. College of Physicians & Surgeons
Peter N. Goodfellow
SmithKline Beecham, UK
Peter Gruss
Max Planck Institute of Biophysical Chemistry
Philip C. Hanawalt
Stanford Univ.
Paul Harvey
Univ. of Oxford
M. P. Hassell
Imperial College at Silwood Park
Nobutaka Hirokawa
Univ. of Tokyo
Tomas Hökfelt
Karolinska Institutet
Tasuku Honjo
Kyoto Univ.
Susan D. Iversen
Univ. of Oxford
Eric F. Johnson
The Scripps Research Institute
Elliott Kieff
Harvard Univ.
Judith Kimble
Univ. of Wisconsin, Madison
Stephen M. Kosslyn
Harvard Univ.
Michael LaBarbera
The Univ. of Chicago
Nicole Le Douarin
Institut d'Embryologie Cellulaire et Moléculaire du CNRS
Charles S. Levings III
North Carolina State Univ., Raleigh
Harvey F. Lodish
Whitehead Institute for Biomedical Research
Richard Losick
Harvard Univ.
Reinhard Lührmann
Institut für Molekularbiologie und Tumorforschung der Philipps-Universität
Ruth Lynden-Bell
Queen's Univ., Belfast
Seth Marder
California Institute of Technology
Diane Mathis
Institut de Chimie Biologique, Strasbourg
Susan K. McConnell
Stanford Univ.
Anthony R. Means
Duke Univ. Medical Center
Stanley Meizel
Univ. of California, Davis
Shigetada Nakanishi
Kyoto Univ.
Kim Nasmyth
Research Institute of Molecular Pathology, Vienna
Roger A. Nicoll
Univ. of California, San Francisco
Staffan Normark
Swedish Institute for Infectious Disease Control
Bert W. O'Malley
Baylor College of Medicine
Stuart L. Pimm
The Univ. of Tennessee, Knoxville
Yeshayau Pocker
Univ. of Washington, Seattle
Ralph S. Quatrano
Univ. of North Carolina, Chapel Hill
Martin Raff
Univ. College London
V. Ramanathan
Scripps Institute of Oceanography
Douglas C. Rees
California Institute of Technology
T. M. Rice
ETH-Hönggerberg, Zürich
David C. Rubie
Universität Bayreuth
Erkki Ruoslahti
The Burnham Institute, CA
Gottfried Schatz
Biozentrum, Basel
Jozef Schell
Max-Planck-Institut für Zuchtungforschung
Ronald H. Schwartz
National Institute of Allergy and Infectious Diseases, NIH
Terrence J. Sejnowski
Salk Institute
Christopher R. Somerville
Carnegie Institute of Washington
Thomas A. Steitz
Yale Univ.
Michael P. Stryker
Univ. of California, San Francisco
Cliff Tabin
Harvard Medical School
John Jen Tai
Academia Sinica, Taiwan
Tomoyuki Takahashi
Univ. of Tokyo
Masatoshi Takeichi
Kyoto Univ.
Keiji Tanaka
RIKEN Institute
David Tilman
Univ. of Minnesota, St. Paul
Robert T. N. Tjian
Univ. of California, Berkeley
Yoshinori Tokura
Univ. of Tokyo
Emil R. Unanue
Washington Univ. School of Medicine, St. Louis
Derek van der Kooy
Univ. of Toronto
Geerat J. Vermeij
Univ. of California, Davis
Bert Vogelstein
Johns Hopkins Oncology Center
Arthur Weiss
Univ. of California, San Francisco
Zena Werb
Univ. of California, San Francisco
George M. Whitesides
Harvard Univ.
Owen N. Witte
Univ. of California, Los Angeles

Here's the Deal...



Get the ACE™ Advantage with

cAMP
cGMP
Endothelin

Cayman EIA kits utilize acetylcholinesterase (AChE) as the enzyme label. Its unique properties afford our kits a wide dynamic range, maximum sensitivity and low background.

The Other Deal...

Experience
the ACE™ Advantage
Simply mention code 20082 when ordering to receive a 96-well cAMP, cGMP or Endothelin-1 EIA kit for only

$60!*

CAYMAN CHEMICAL

See us at Neuroscience Booth #658
www.CaymanChem.com
E-mail: cayman @ caymanchem.com

690 KMS Place
Ann Arbor, MI 48108 USA
(800) 364-9897

**To qualify, each order must be accompanied by proof of purchase for any other company's cAMP, cGMP, or Endothelin-1 assay. Limit one 96 well kit per customer. Shipping charges additional. This offer expires December 31, 1996.*

Circle No. 102 on Readers' Service Card

Brinkmann introduces two new Eppendorf® Pipettes.

For those who prefer one-button pipetting and tip ejection...

The New Series 2000

- Eight adjustable models, from 0.1µL to 2.5mL; 28 fixed-volume models, from 1µL to 2.5mL
- Shielded piston design on Ultra Micro models
- Easy user-calibration and user-servicing
- Fully autoclavable
- Two-year warranty

For those who prefer a separate tip ejector...

The New Series 2100

- Seven adjustable models, from 0.1µL to 5mL; 11 fixed-volume models, from 5µL to 1mL
- Shielded piston design on Ultra Micro models
- Easy user-calibration and user-servicing
- Autoclavable lower section
- Two-year warranty

Make your choice. Either way you get the high quality, high performance, and reliability you always get from Eppendorf. For more information about the new Eppendorf Pipettes, call **1-800-645-3050**; fax 1-516-334-7506. In Canada, call 800-263-8715; fax 905-826-5424.

The pipettes are Eppendorf. The choice is yours.

Join Brinkmann during the Neuroscience Exhibit at Booths 843-849

eppendorf

BRINKMANN **Quality products for research and control.**

Brinkmann Instruments, Inc., One Cantiague Road, Westbury, NY 11590-0207
Brinkmann Instruments (Canada) Ltd., 6670 Campobello Road, Mississauga, Ont. L5N 2L8

5101-323

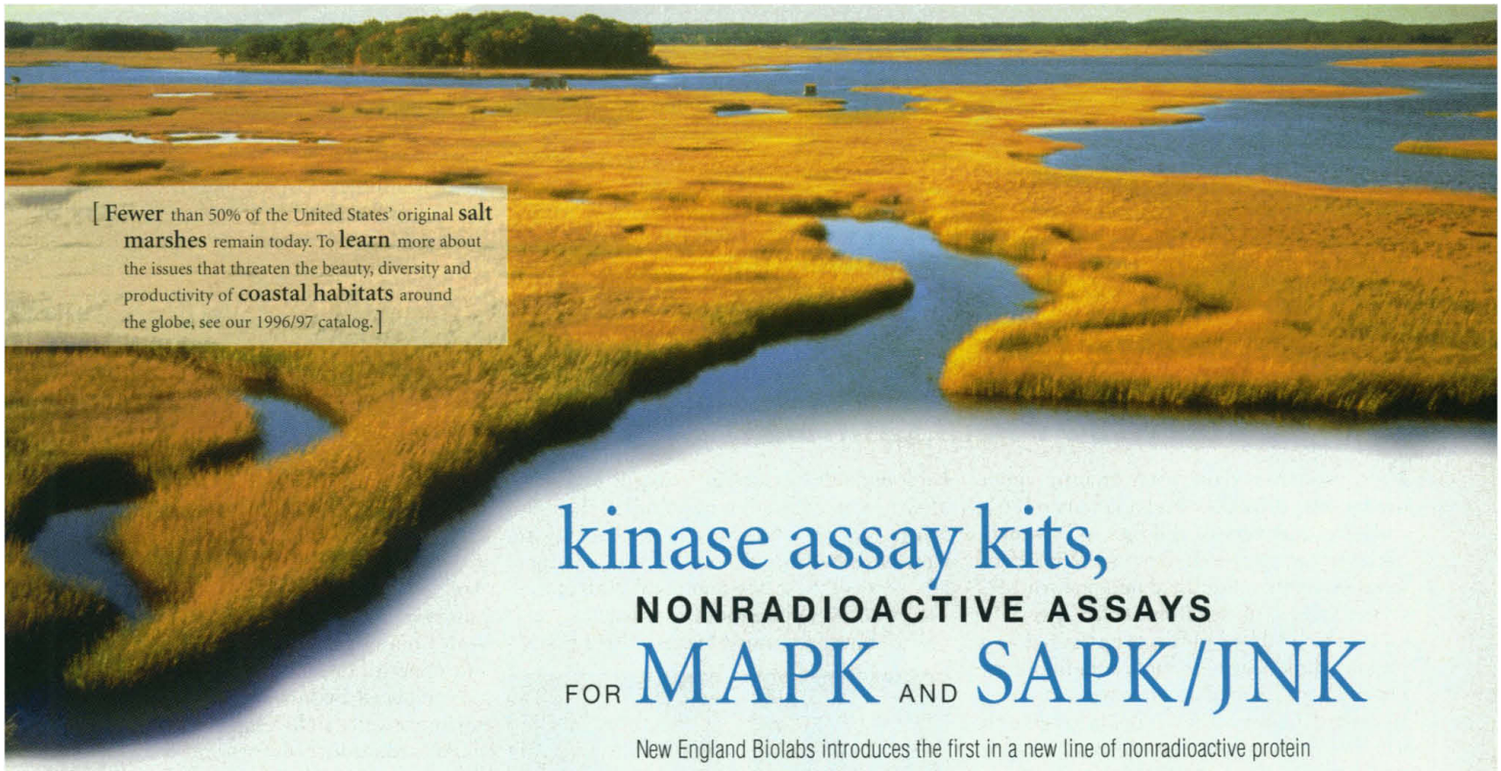
CERTIFIED ISO 9001

Circle No. 53 on Readers' Service Card

Promega Corporation · Toll Free in USA 800-356-9526 · 2800 Woods Hollow Road · Madison, Wisconsin · 53711-5399 · Toll Free Fax in USA 800-356-1970 · Phone 608-274-4330 · Fax 608-277-2516
Internet http://www.promega.com · In Europe http://www.euro.promega.com · Promega products may also be purchased in the USA from **Fisher Scientific · Toll Free 800-766-7000** · Fax 800-926-1166
Branch Offices: Australia 1 800 225 123 · France 0800 48 79 99 · Japan 03 3669 7981 · Netherlands (+31) (0) 71 5324244 · Switzerland 01 830 70 37 · United Kingdom 0800 378994 · **Joint Ventures:** China 21 6483 5136 · 379 393 5607
International Distributors: Argentina 1 384 7962 · Austria 1 891 460 Belgium 0800 18098 · Brazil 031 275 1240 · Canada 800 267 7424 · Chile 2 334 0253 · China 10 6256 3159 · Colombia 1 310 8579 · Czech Republic 02 20610151 Denmark 44 94 88 22 · Egypt 2 245 1785 · Finland 0 350 9250 · France 1 45 33 67 17 Germany 06221 50 24 70 · Greece 01 643 6138 · Hong Kong 2751 9488 · Hungary 01 251 0344 · Iceland see Sweden · India 11 684 6565 · Indonesia 21 723 1018 · Ireland 01 8426644 Israel 8 9406 530 · Italy 055 5001871 · Japan 3 3270 0536 · Korea 2 3461 5911 · Luxembourg 31 71 324244 · Malaysia 3 718 3600 · Mexico 5 519 3463 · New Zealand 9 570 3200 · Norway 035 541999 · Poland 58 31 2807 · Portugal 1 458 1641 · Russia 095 135 4206 Singapore 775 7284 · Slovak Republic 95 632 4729 · South Africa 11 476 9457 · Spain 93 404 52 14 · Sweden 0346 83050 · Taiwan 02 733 6877 · Thailand 2 294 7777 · Turkey 216 385 8321 · Uruguay see Argentina · Venezuela 2 265 0891

Circle No. 81 on Readers' Service Card

©1996 Promega Corporation. All Rights Reserved. Prices and specifications subject to change without prior notice. Rev.092796



[Fewer than 50% of the United States' original **salt marshes** remain today. To **learn** more about the issues that threaten the beauty, diversity and productivity of **coastal habitats** around the globe, see our 1996/97 catalog.]

kinase assay kits,

NONRADIOACTIVE ASSAYS FOR MAPK AND SAPK/JNK

New England Biolabs introduces the first in a new line of nonradioactive protein kinase assay kits for measuring MAPK and SAPK/JNK activity in cell extracts. Both kits use phospho-specific antibodies available only from New England Biolabs and incorporate our Phototope®-HRP Western Detection System for dramatically improved results as compared to conventional kinase assays. Best of all, radioactivity is eliminated.

MAPK and SAPK/JNK Assay Kits Include:

- Phospho-specific Antibodies for: (MAPK & Elk1 or c-Jun)
- Fusion Protein Substrate (Elk1 or c-Jun)
- ATP, Kinase and Cell Lysis Buffers
- Phototope®-HRP Western Detection Kit

To Order:

MAPK Assay Kit	40 assays	Cat. No. 9800
SAPK/JNK Assay Kit	40 assays	Cat. No. 9810

Phospho-specific Antibodies

Our expanding line now includes:

Protein Kinases: p44/42 MAPK, p38 MAPK, MEK1/2, MEK3/6, SEK1, p70 S6, cdc2

Transcription Factors: c-Jun, CREB, Stat1, Stat3, ATF-2, Elk1

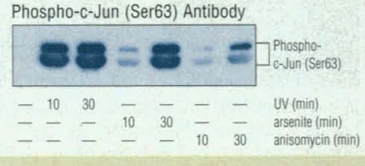
Growth Factor Receptors: TrkA

In addition, many recombinant protein kinases and phosphatases are also available.

For more information, visit our web site:

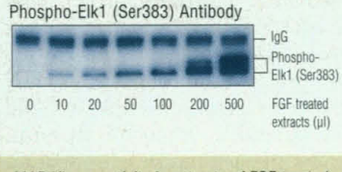
http://www.neb.com

Analysis Using: SAPK/JNK assay kit



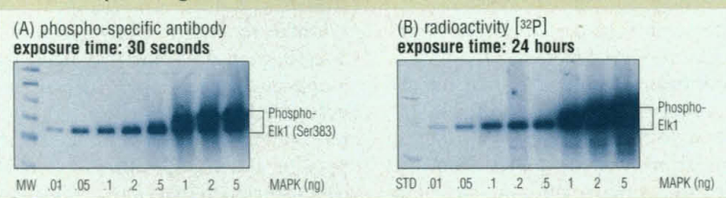
SAPK/JNK activity in extracts of treated SK-N-MC cells was analyzed by c-Jun "pull down"/kinase assay. Phosphorylation of c-Jun at Ser63 was visualized by immunoblotting with phospho-c-Jun (Ser63) antibody.

MAPK assay kit



MAP Kinase activity in extracts of FGF-treated SK-N-MC cells was analyzed by phospho-MAPK antibody IP/Kinase assay using Elk1 as a substrate. Phosphorylation of Elk1 at Ser383 was visualized by immunoblotting with phospho-Elk1 (Ser383) antibody.

Sensitivity Comparison: phospho-specific antibody vs. radioactivity



MAPK-induced phosphorylation of Elk1 was measured by quantitative immunoblotting with phospho-specific Elk1 (Ser383) antibody (A) and compared to direct measurement of phosphate incorporation using [γ32P]-ATP (B). MW = NEB's Biotinylated Protein Marker, Cat. No. 7710.

Circle No. 92 on Readers' Service Card

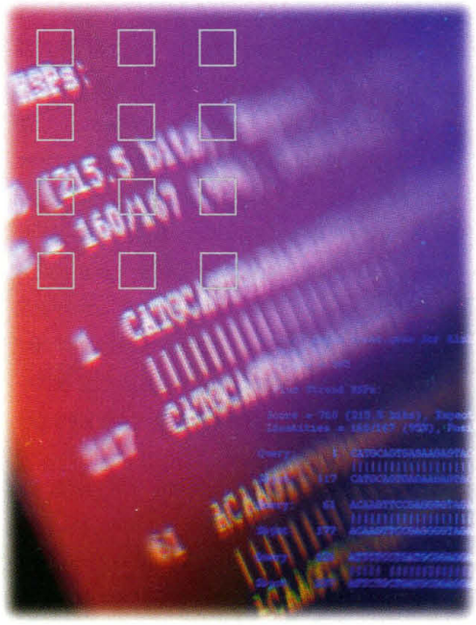
- **New England Biolabs Inc.** 32 Tozer Road, Beverly, MA 01915 USA 1-800-NEB-LABS Tel. (508) 927-5054 Fax (508) 921-1350 email: info@neb.com
- **New England Biolabs Ltd., Canada** Tel. (800) 387-1095 (905) 672-3370 Fax (905) 672-3414 email: info@ca.neb.com
- **New England Biolabs GmbH, Federal Republic of Germany** Tel. (0130) 83 30 31 (06196) 3031 Fax (06196) 83639 email: info@de.neb.com
- **New England Biolabs (UK) Ltd.** Tel. (0800) 31 84 86 (01462) 420616 Fax (01462) 421057 email: info@uk.neb.com

NEW ENGLAND BioLabs® Inc.

DISTRIBUTORS: Australia (07) 5594-0299; Belgium (0800)1 9815; Brazil (011) 66-3565; Denmark (31) 56 20 00; Finland (9) 584-121; France (1) 34 60 24 24; Greece (01) 5226547; Hong Kong 2649-9988; India (542) 311473; Israel (03) 5351205; Italy (02) 381951; Japan (03) 5820-9408; Korea (02) 556-0311; Mexico (5) 519-3463; Netherlands (033) 495 00 94; New Zealand (09) 418-3039; Norway 22 22 04 11; Singapore 4457927; Sweden (08) 30 60 10; Switzerland (061) 481 47 13; Taiwan (02) 8802913


MMC Stockholm
One simple move puts the future in sharper focus.
The company that pioneered BIA technology has just taken a long, hard look at itself. And decided on a simple change: our name.
Pharmacia Biosensor has become Biacore AB. By refocusing our identity, we've more closely associated ourselves with the instruments that we're famous for: the BIACORE® range. Just as importantly, in a competitive marketplace, we've distinguished ourselves from other manufacturers of biosensor technology.
Some things won't change though. Our commitment to helping researchers all over the world realize their scientific visions stays the same. As does our devotion to developing new and exciting products.
Products which save time. Give faster, more accurate information. And ease pressure on research budgets.
At Biacore, we're opening people's eyes.
BIACORE
You have the vision. Use it.
Biosensor
Biacore AB: http://www.pnu.com/biosensor/ fax: +46 18 150110
Circle No. 57 on Readers' Service Card

What do these leading pharmaceutical companies have in common?



Abbott Laboratories
BASF AG
Hoechst AG
Hoffmann-La Roche
Johnson & Johnson
Monsanto Company
Novo Nordisk A/S
Pfizer Inc
Pharmacia & Upjohn, Inc.
Schering AG
Zeneca Ltd.

They all have Incyte.

More than 3,000 scientists worldwide are using Incyte's genomics database products to accelerate their drug discovery and development efforts.

www.incyte.com

Welcome to the world of point-and-click biology.

DATABASES

SOFTWARE

BIOLOGICALS

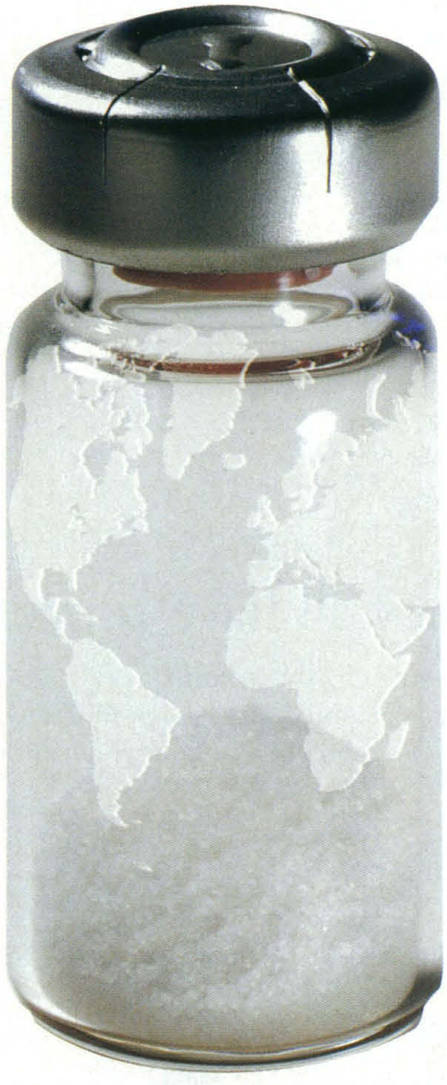
INCYTE
PHARMACEUTICALS, INC.

Palo Alto, CA 94304
888-LifeSeq (543-3737)
415-855-0555

BIOLOGY IN SILICO

Circle No. 41 on Readers' Service Card

We've Built The World's Largest Peptide Company A Milligram At A Time.



In 1996, Bachem Switzerland acquired Bachem California to become the world's largest producer of GMP-quality peptides. Today, we're celebrating over 25 years of providing quality, service and innovation to the scientific community.

What makes Bachem unique among peptide suppliers is that we can provide you with small quantities of ultra-pure peptides for research, as well as GMP-quality peptides in kilogram quantities. With more than 150,000 square feet of production capacity in the United States and Europe, we assure you of a consistent supply of unsurpassed quality products, including: bioactive peptides, amino acid derivatives and resins, enzyme substrates and inhibitors, cytokines and growth factors, phospholipids, monoclonal antibodies and other biochemicals.

Bachem is also the only company that meets the requirements of the FDA, IKS and the MCA for production of pharmaceutical grade peptides. We have been involved in hundreds of projects and routinely provide complete documentation and regulatory support.

For more information, please call the nearest Bachem location listed below. And discover why, milligram for milligram, we're your best choice for peptides.

BACHEM

The Leader in Peptide Technology for 25 Years

Headquarters in Switzerland
BACHEM Feinchemikalien AG
Hauptstrasse 144
CH-4416 Bubendorf
Switzerland
Phone: +41/61/931.23.33
Fax: +41/61/931.25.49

Subsidiary in the U.S.A.
BACHEM Bioscience Inc.
3700 Horizon Drive
King of Prussia, PA 19406
USA
Phone: 610/239.0300
1/800/634.3183
Fax: 610/239.0800

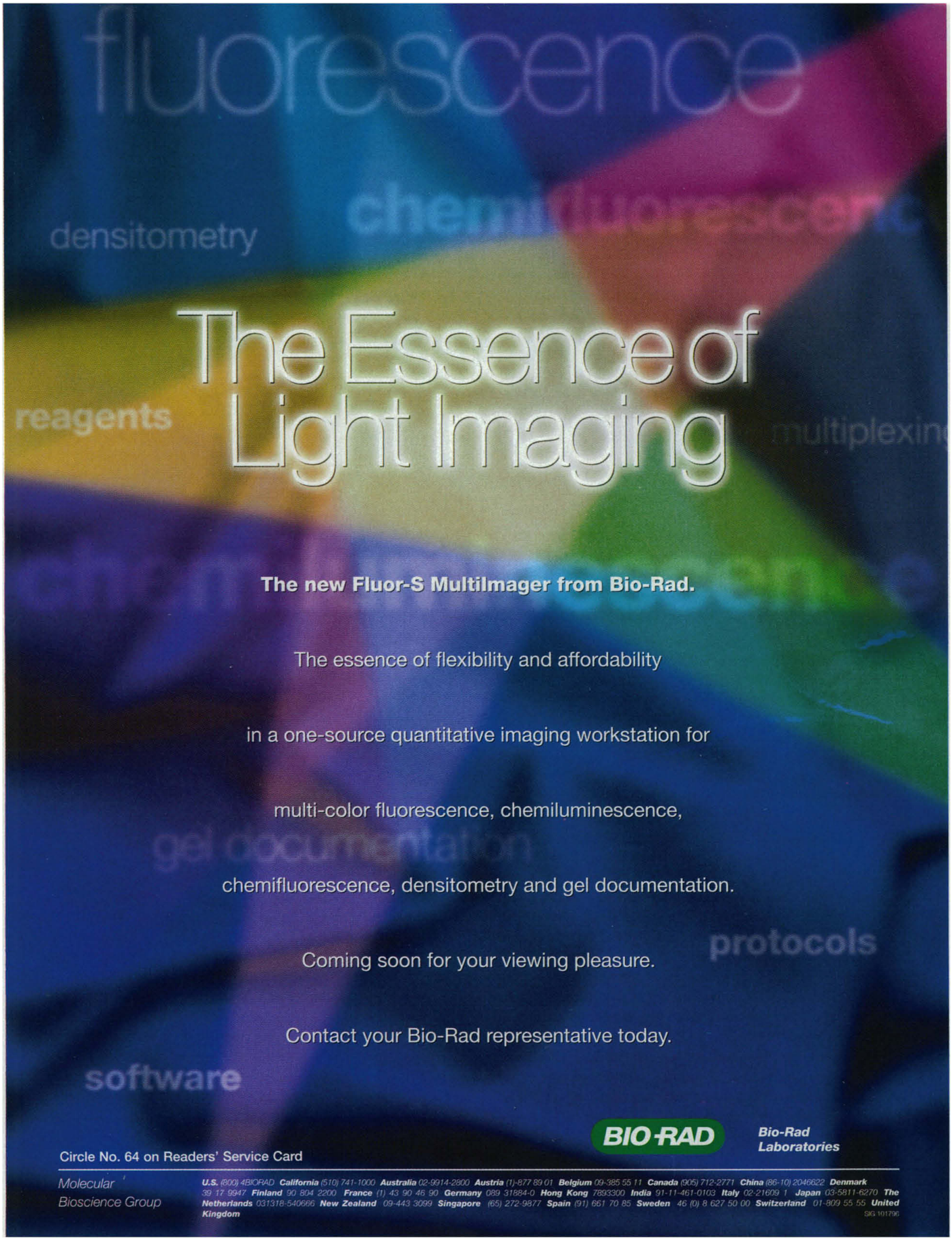
Subsidiary in the U.S.A.
BACHEM California Inc.
3132 Kashiwa Street
Torrance, CA 90505
USA
Phone: 310/539.4171
1/888/422.2436
Fax: 310/530.1571

Subsidiary in Germany
BACHEM Biochemica GmbH
Haberstrasse 6
D-69126 Heidelberg
Germany
Phone: 06221/33.05.0
Fax: 06221/33.05.99

Subsidiary in France
BACHEM Biochimie SARL
136 Avenue Joseph Kessel
F-78960 Voisins-le-Bretonneux
France
Phone: 1/30.12.15.95
Fax: 1/30.57.38.82

Subsidiary in the United Kingdom
BACHEM (UK) Ltd.
69 High Street, Saffron Walden
Essex CB10 1AA
England
Phone: 01799/52.64.65
Fax: 01799/52.63.51

Circle No. 96 on Readers' Service Card


fluorescence
densitometry
reagents
multiplexing
protocols
software
The Essence of Light Imaging
The new Fluor-S Multilmager from Bio-Rad.
The essence of flexibility and affordability
in a one-source quantitative imaging workstation for
multi-color fluorescence, chemiluminescence,
chemifluorescence, densitometry and gel documentation.
Coming soon for your viewing pleasure.
Contact your Bio-Rad representative today.
BIO-RAD
Bio-Rad Laboratories
Circle No. 64 on Readers' Service Card
Molecular Bioscience Group
U.S. (800) 4BIORAD California (510) 741-1000 Australia 02-9914-2800 Austria (1)-877 89 01 Belgium 09-385 55 11 Canada (905) 712-2771 China (86-10) 2046622 Denmark 39 17 9947 Finland 90 804 2200 France (1) 43 90 46 90 Germany 089 31884-0 Hong Kong 7893300 India 91-11-461-0103 Italy 02-21609 1 Japan 03-5811-6270 The Netherlands 031318-540666 New Zealand 09-443 3099 Singapore (65) 272-9877 Spain (91) 661 70 85 Sweden 46 (0) 8 627 50 00 Switzerland 01-809 55 55 United Kingdom
SIG 101790

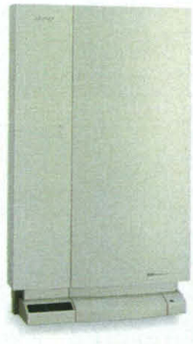
We Go To Great Lengths...

To Give You Accurate Sequence!

Long Reads and High Accuracy

Minimize your time and maximize your data with the longest read lengths possible. LI-COR users enjoy both long reads and high accuracy from the 4000L Long ReadIR™ DNA Sequencer. They expect 800-1100 base read lengths with at least 98.5% accuracy, and they get it! In fact, in our ongoing Long Read contest, the latest winner* sequenced **1260 bases**, *automatically.*

Long reads are meaningless, however, without high accuracy. That's why we use high sensitivity infrared detection combined with powerful Base ImagIR™ analysis software to routinely deliver the accuracy you need.



Model 4000L Long ReadIR™ DNA Sequencer

New Internal Labeling Strategy

Now, these long read length and high accuracy standards can be achieved with your unlabeled primers using CLS™ – our new Cycle Labeling and Sequencing protocol. CLS™ increases prime walking efficiency, giving you over 800 bases per sample. CLS™ offers the speed and ease-of-use of cycle sequencing with one protocol for plasmids, PCR and M13 templates.

*CEPRAP, Univ. of California-Davis. 1260bp with 98.8% accuracy. Base calls were made automatically with no editing or operator intervention.

Test the Difference!

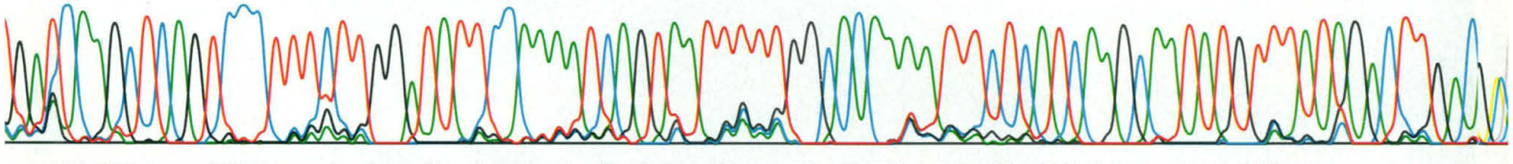
We'll sequence your sample on a LI-COR infrared DNA sequencer, just so you can compare the results!

1-800-645-4267

http://www.licor.com

LI-COR®

BIOTECHNOLOGY DIVISION



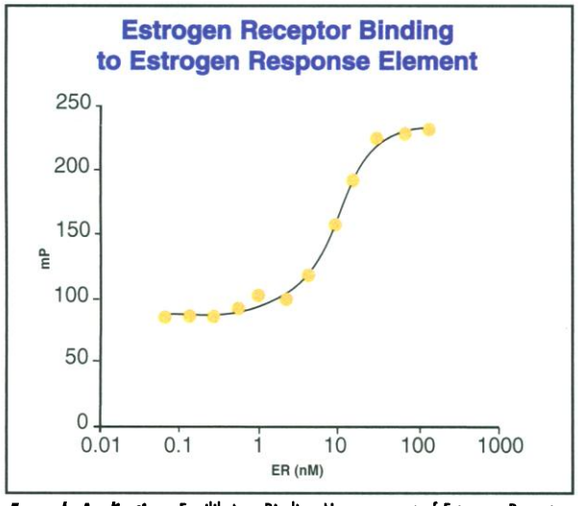
LI-COR, Inc. • 4308 Progressive Ave. • Lincoln, Nebraska 68504 USA • Phone: 402-467-0700 • **FAX:** 402-467-0819 • **E-mail:** biohelp@bio.licor.com

Japan: (0422) 45-5111; **Germany, Austria:** 08092/8289-0; **Switzerland:** 061/411 11 22; **United Kingdom:** 0181-614 1000; **Spain:** (3) 201 44 11; **France:** 1 64 46 2400; **Netherlands:** (0) 294 283119; **Denmark:** +45 86 10 10 55; **Sweden:** 08-680 0845; **Norway:** +47 22 50 90; **Australia:** (02) 417 8877; **New Zealand:** 9 366 3999; **Taiwan:** (02) 393-4231; **Korea:** (02) 547-1758

Circle No. 19 on Readers' Service Card

Equilibrium Binding Measurements In Solution...In Seconds

Perfect for Measuring Protein-DNA and Protein-Protein Binding, Performing Sensitive Enzyme and Drug Screening Assays, as well as Total and Sequence-Specific DNA Quantitation.



Example Application: Equilibrium Binding Measurement of Estrogen Receptor (ER) to the Estrogen Response Element (ERE) using the Beacon® 2000 System. Under the Conditions of this Experiment, the Calculated Kd=10 nM

The Beacon® 2000 Fluorescence Polarization System accurately measures equilibrium binding directly in solution, with as little as **10 femtomoles/ml** of fluorescently labeled sample. Data points are obtained every few seconds and the Beacon® system provides:

- **Variable Temperature Control from 0°C - 65°C, for precise measurement of temperature-dependent reactions**
- **External Filter Holders for easy interchange of λ filters, allowing use of different fluorophores**
- **Low Sample Volume Requirement, from 100 µl to 1 ml**

PANVERA

800-791-1400
(In the USA and Canada)

PanVera Corporation
545 Science Drive • Madison, WI 53711 USA
Phone: 608-233-5050 • Fax: 608-233-3007
E-mail: info@panvera.com
Internet Homepage: http://www.panvera. com/

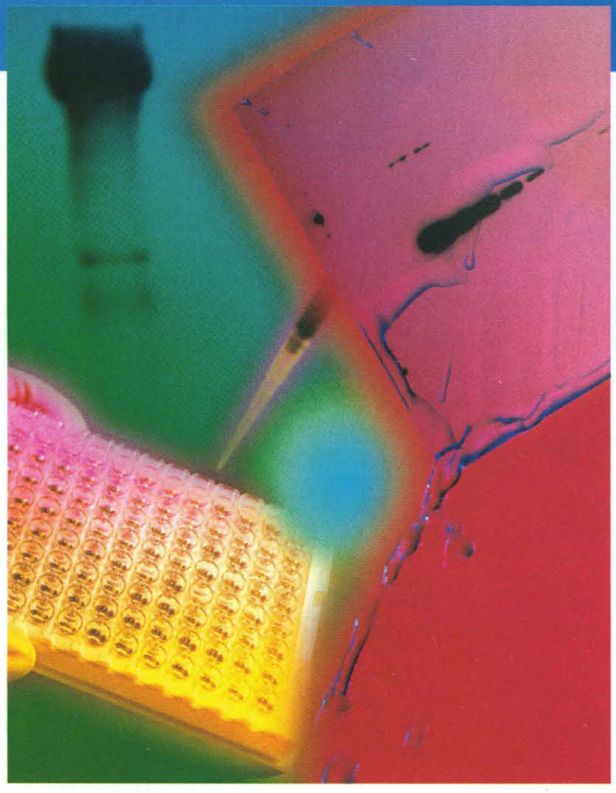
In Japan, Contact TaKaRa-Shuzo, Ltd. at Otsu, Shiga, Japan, Phone: +81 775-43-7247, Fax: +81 775-43-9245

Circle No. 95 on Readers' Service Card

PIERCE

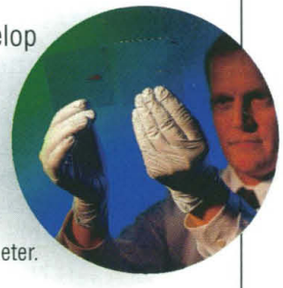
EVERYTHING IS POSSIBLE...WITH THE RIGHT TOOLS.™

Immunology



SuperSignal™ Substrate Systems for Highly Sensitive Chemiluminescent HRP Detection

- High resolution-intense signal with low background
- Sensitive...detection to femtogram levels with SuperSignal™ ULTRA
- Higher light output, unmatched intensity
- Easy to use, simply mix two components
- Longer light emission (make as many exposures as you like!)
- Ability to reprobe and redevelop
- Room temperature storage; excellent stability



For Western Blotting

SuperSignal™ Chemiluminescent Substrate, your economical choice

- Offers picogram sensitivity at an unbeatable price

SuperSignal™ ULTRA, the ultimate in sensitivity

- ULTRA Sensitivity – down to femtogram levels
- ULTRA Duration – 24 hour light emission

For Nucleic Acid Blotting

SuperSignal™ NA, all the performance of radioactivity, none of the hassles

- Single gene copy detection possible in Southern Blots
- Detection in **minutes,** not hours or days

For Use in Luminometers

SuperSignal™ LBA, experience the same sensitivity you've come to expect from all our SuperSignal™ Products in your luminometer.

- High Sensitivity
- Low Background
- Rapid Processing

Product #	Description	Pkg. Size
34080M	SuperSignal™ Chemiluminescent Substrate for Western Blotting	500 ml
34075M	SuperSignal™ ULTRA Substrate	100 ml
17017M	SuperSignal™ NA Kit Includes: Substrate (100 ml), Blocking and Hybridization Buffers	
37070M	SuperSignal™ LBA for luminometer based applications	100 ml

Call 1-800-874-3723 for product information or 815-968-0747 for the name of your local distributor.

Circle No. 104 on Readers' Service Card

PIERCE

3747 N. Meridian Rd. • P.O. Box 117 • Rockford, IL 61105 U.S.A. • E-mail: TechAssist@pierce.geis.com • Internet: http://www.piercenet.com

a Perstorp Life Sciences Company

© Pierce Chemical Company, 1996.

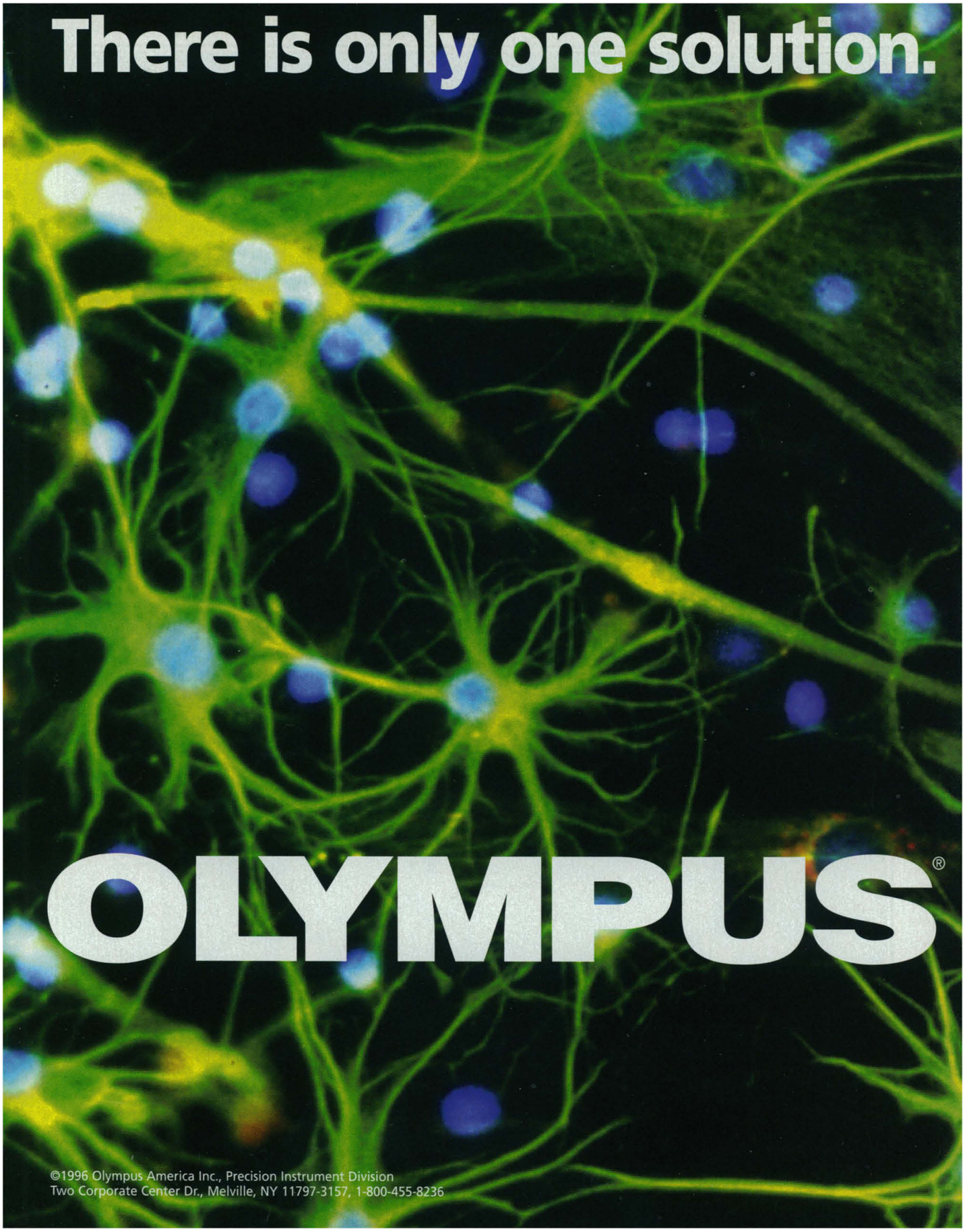
AFTER ALL THESE YEARS, WE THOUGHT WE'D GO OUT FOR A SPIN ON OUR OWN.

Announcing the new SORVALL.® Independent. Flexible. Responsive. A company that will continue to offer products with the exceptional durability, safety and reliability you've come to expect, as well as one of the most valued technical support programs in the industry.

SORVALL®
CENTRIFUGES

Still the best centrifuges going around.

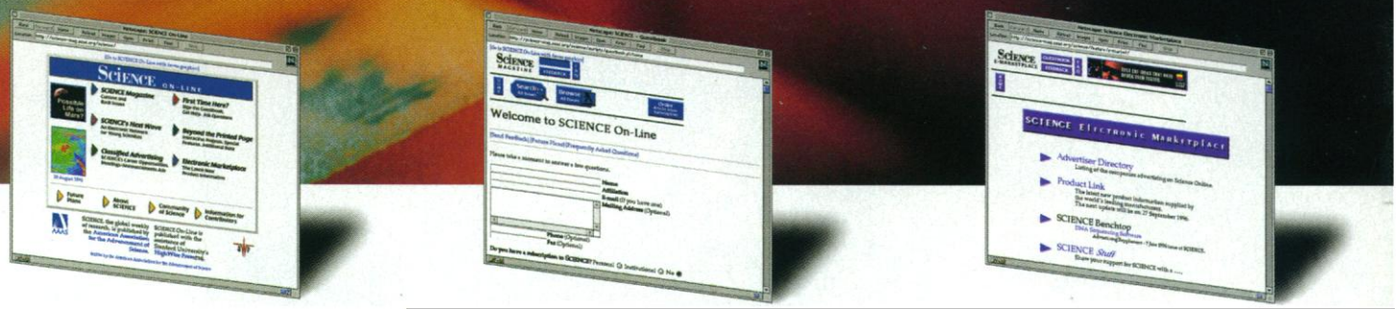
Circle No. 58 on Readers' Service Card


There is only one solution.
OLYMPUS®
©1996 Olympus America Inc., Precision Instrument Division
Two Corporate Center Dr., Melville, NY 11797-3157, 1-800-455-8236

Circle No. 52 on Readers' Service Card

Go To
http://www.sciencemag.org

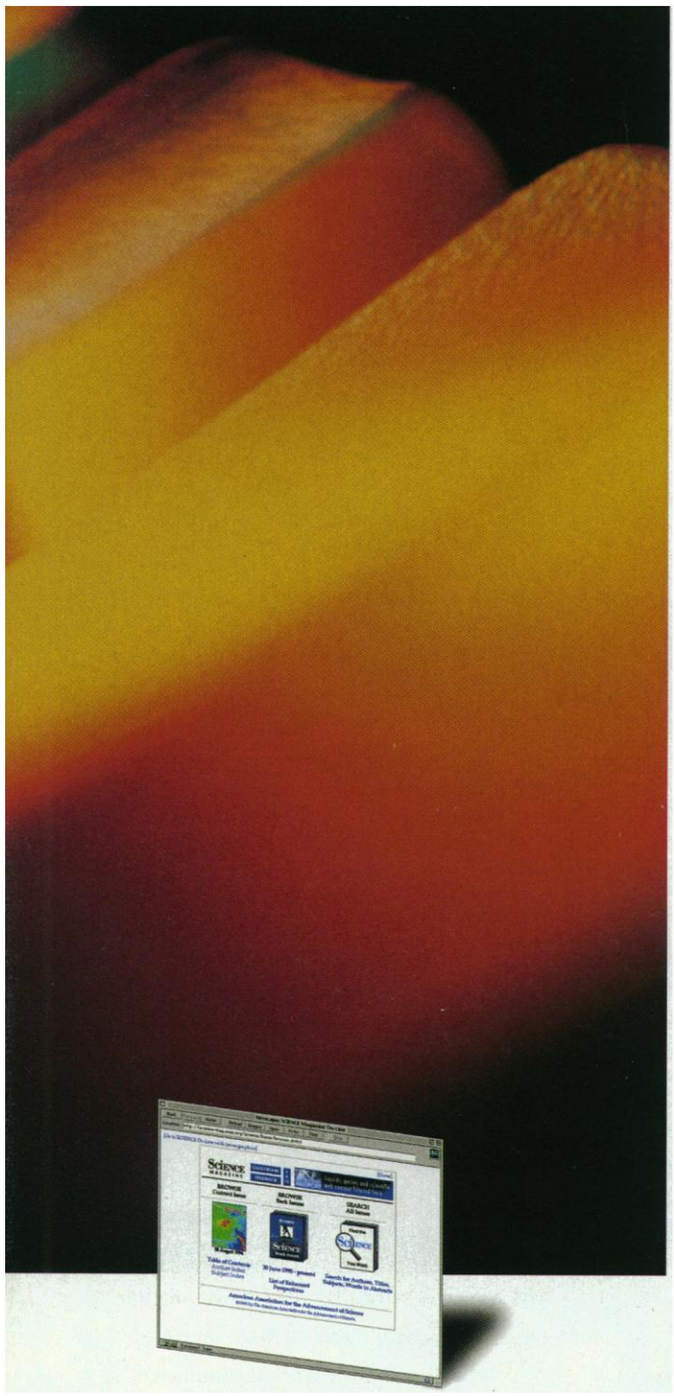
BECAUSE YOU WANT TO KNOW NOW...
SCIENCE ONLINE

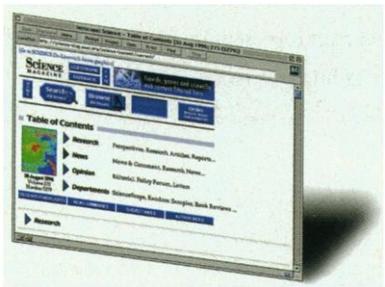


Get it now—news, research, and communications.

Until January 1997, you can access full-text SCIENCE On-Line FREE on the SCIENCE World Wide Web site. After January 1997, full-text SCIENCE On-Line will be available to AAAS members only.

- Get immediate access to the latest issue of SCIENCE as it goes to print (5-6 days before others get their copies by mail).
- Keyword search to every page of every issue.
- Build your own "scientific network" through dialogues with your colleagues in real-time.





ORDER NOW FOR THE SPECIAL INTRODUCTORY RATE!

AAAS members order now and get all 1997 issues of full-text SCIENCE On-Line for just $12. Access our on-line form through the AAAS WWW site: http://www.aaas.org/. Or fill out and mail/fax the coupon below to continue accessing SCIENCE On-Line in 1997. Or call (202) 326-6417 to order today.

☐ YES, I want instant access to SCIENCE. Please upgrade my membership to include full-text SCIENCE On-Line at the special introductory rate of only $12. (Offer good through 12/31/96.) Access to SCIENCE On-Line is for one year beginning January 1997.

☐ Please sign me up for AAAS membership and the special introductory rate for the full-text of SCIENCE On-Line. Membership includes 51 weekly issues of SCIENCE and one year access to SCIENCE On-Line (access begins January 1997.)

	Domestic	Europe, Asia, Pacific & Other	Canada	Mexico/ Caribbean
Regular Member	☐ $114	☐ $204	☐ $179.99	☐ $169
Postdoctoral/Resident	☐ $ 89	☐ $179	☐ $153.24	☐ $144
Full-Time Student	☐ $ 67	☐ $157	☐ $129.70	☐ $122

☐ Please sign me up for AAAS membership without SCIENCE On-Line: (includes 51 weekly issues of SCIENCE)

Regular Member	☐ $102	☐ $192	☐ $167.99	☐ $157
Postdoctoral/Resident	☐ $ 77	☐ $167	☐ $141.24	☐ $132
Full-Time Student	☐ $ 55	☐ $145	☐ $117.70	☐ $110

Rates are valid until 12/31/96. $55 allocated to the paper subscription of SCIENCE. Canadian rate includes GST # 125488122. Please allow 6 weeks for receipt of first paper issue of SCIENCE.

☐ Check enclosed (payable to "AAAS") for: $_____

☐ Charge $_____ to my: ☐ Visa ☐ MasterCard ☐ American Express

_____

CARD # EXP. DATE

_____

SIGNATURE

_____

NAME

_____

MEMBERSHIP ID #

_____

INSTITUTION

_____

STREET ADDRESS

_____

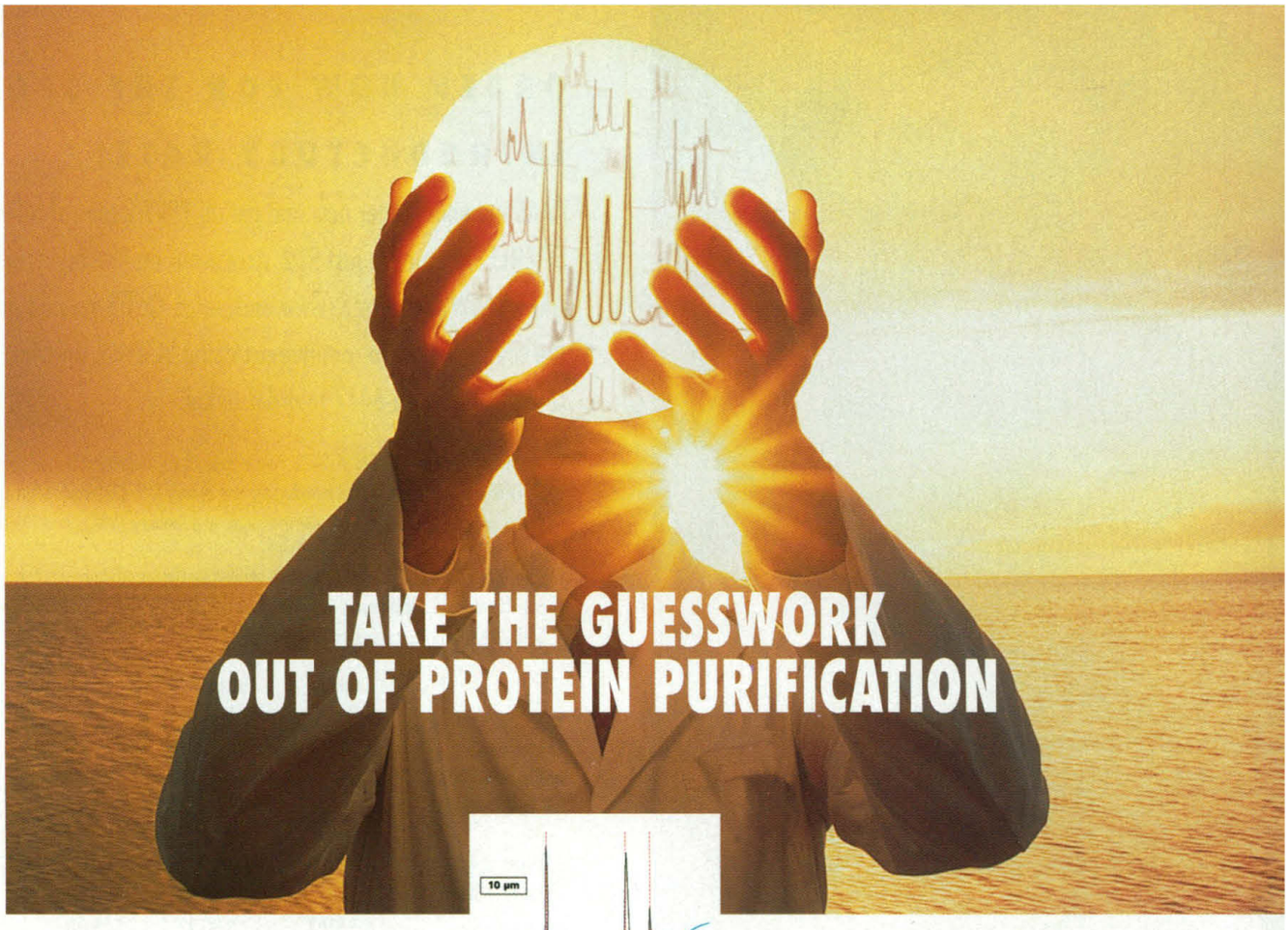
CITY STATE ZIP

MAIL TO:
AAAS—Membership Services
1200 New York Avenue, NW
Washington, DC 20005

OR FAX TO:
(202) 842-1065

Circle No. 55 on Readers' Service Card

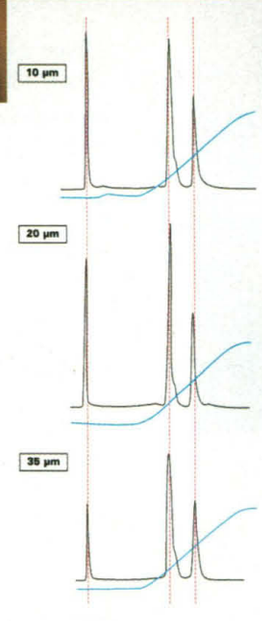
S6AA2



TAKE THE GUESSWORK OUT OF PROTEIN PURIFICATION

ProScale — a revolutionary way to achieve rapid, predictable results for protein purification. By integrating unique chemistry, intelligent software and hardware, ProScale gives you a logical and efficient path to optimize purification. From research to process development, all the way to production, ProScale offers you a no-fail formula for success with your protein.

Plus, ProScale is the only system that comes with proven, scalable HyperD* media. Matched with HyperD, our BioSys™ protein purification workstations are designed to deliver more purified protein, in less time, while retaining maximum activity.



Sample: *Cytochrom c, BSA, Transferrin. Separations on 10, 20 and 35 µm Q HyperD particles showing the same selectivity.*

Our intelligent ProScale software takes much of the guesswork out of method development and optimization, thereby saving

you time and effort. By running simulation experiments within the software, much of your trial-and-error work is eliminated.

Take the guesswork out of protein purification and put ProScale in your lab. For additional information, just call your local Beckman representative or visit our Web site at http://www.beckman.com.

** HyperD is a trademark of BioSepra, Inc.*

BECKMAN

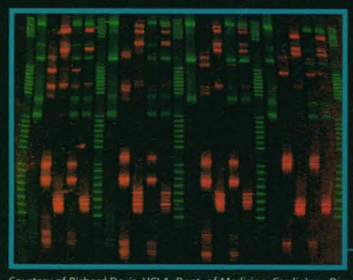
Worldwide Offices: Africa, Middle East, Eastern Europe (Switzerland) (41) 22 994 07 07. **Australia** (61) 02 816 5288. **Austria** (43) 222 7292164. **Canada** (800) 387-6799. **China** (861) 5051241-2. **France** (33) 1 43 01 70 00. **Germany** (49) 89-358700. **Hong Kong** (852) 814 7431. **Italy** (39) 2-953921. **Japan** 3-5352-2825. **Mexico** (525) 5-59-16-35. **Netherlands** 02979-85651. **Poland** (48) 22 408822, 408833. **Singapore** (65) 339 3633. **South Africa** (27) 11-805-2014/5. **Spain** (1) 358-0051. **Sweden** (8) 98-5320. **Switzerland** (41) 22 994 07 07. **Taiwan** (886) 02 378-3456. **U.K.** (01494) 441181. **U.S.A.** 1-800-742-2345.

©1996 Beckman Instruments, Inc.

Circle No. 85 on Readers' Service Card

FluorImager® 595

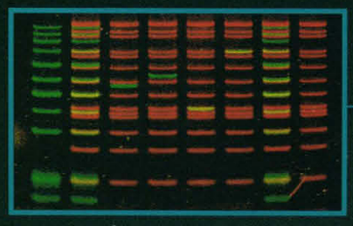
Two-color PCR product analysis



Courtesy of Richard Davis, UCLA, Dept. of Medicine, Cardiology Div.

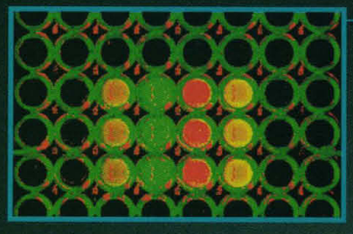
Now you can get the advantages of multiple color fluorescence—in-lane standards, double lane loading, and no radioactivity—using your existing gel boxes. The new FluorImager®595 system from Molecular Dynamics gives you guaranteed fluorescence reagent compatibility *and* lets you recover your bands after electrophoresis. The FluorImager 595 is a great investment, too—because it does so much more than just DNA fragment analysis.

Two-color linkage mapping



The FluorImager 595 detects amplified microsatellite DNA labeled with FAM, TET, HEX, R6G, Cy3™ and other popular dyes.

In-lane standards

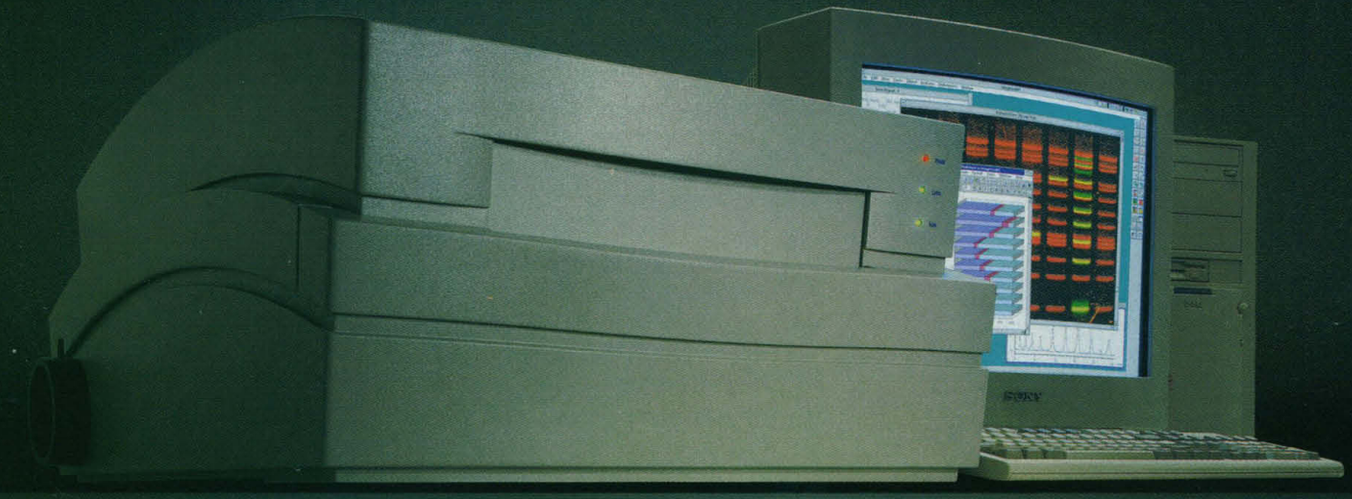


Increase your throughput and accuracy using in-lane standards for PCR product analysis in genotyping and mutation screening applications.

Microplates, membranes, and protein gels, too

The versatile FluorImager 595 does much more than just DNA fragment analysis, including TaqMan™ microplates, chemifluorescent blots, and fluorescent protein gels.

Two-color PCR*, microplates, membranes, and more. Get it all together with FluorImager.



Molecular Dynamics

Innovative Instrument Systems for the Life Sciences

To get the FluorImager 595 brochure, call 1 (800) 333-5703 in the US. In France, call (33) 1 60 86 65 13. In Germany (49) 2151 83870. In the UK and other European countries (44) 1494 793377. In Australia (03) 9810 9572. In Japan (03) 3976 9692. Or visit our web site — www.mdyn.com

Circle No. 61 on Readers' Service Card

©1996 Molecular Dynamics, Inc. All rights reserved. Molecular Dynamics is a trademark and FluorImager is a registered trademark of Molecular Dynamics, Inc. Cy3 is a trademark of Amersham International plc. TaqMan is a trademark of Perkin-Elmer Corp. All other brands, products or services mentioned are trademarks, servicemarks, registered trade- or servicemarks of their respective holders. *The Polymerase Chain Reaction ("PCR") is covered by patents owned by Hoffman-LaRoche Ltd. Use of the PCR process requires a license.

Ad 9632

THINK GLOBALLY. TARGET LOCALLY.

Whether you're looking at whole systems or local phenomena, the new Model 2004 ALZET® osmotic pump helps you observe the in vivo effects of compounds more accurately.

This miniature, implantable pump continuously delivers your test agents for four weeks, at a rate of 0.25 µl/hr. Its small size, long duration, and low flow rate make the Model 2004 ideal for brain infusion or targeted delivery in mice and rats.

ALZET pumps offer more accurate in vivo delivery. By sustaining compound levels in plasma and tissues, they allow the effects of your agent to develop fully and reproducibly. ALZET pumps have successfully delivered hundreds of agents – including proteins and other short half-life compounds. Using a simple catheter attachment, you can localize delivery to specific areas. And operation is fully automatic, eliminating the need for complicated dosing schedules.

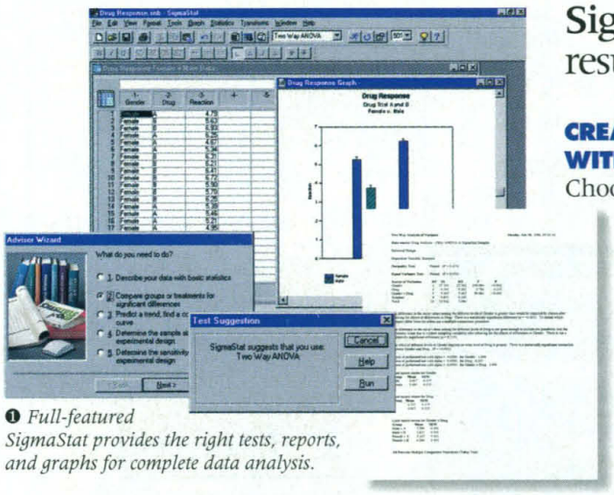
Look at drug delivery from a new perspective. Call ALZET Technical Services at (800) 524-0095 or (415) 962-2251. Specify your region of interest, and we'll send an information package that will reveal a world of possibilities.

alzet®
OSMOTIC PUMPS

Circle No. 84 on Readers' Service Card

THE PROGRAMS OF CHOICE BY OVER 100,000 SCIENTISTS AND ENGINEERS

The exact solution for exacting research.



❶ *Full-featured SigmaStat provides the right tests, reports, and graphs for complete data analysis.*

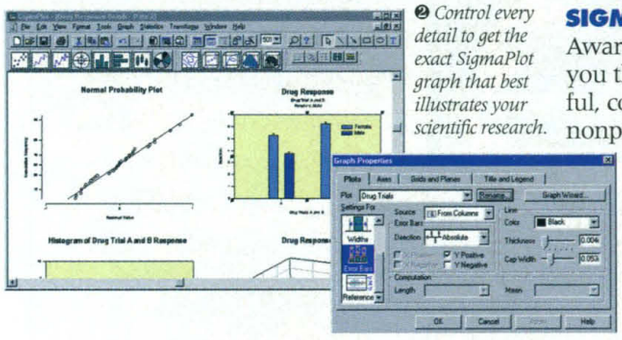
SigmaPlot® and SigmaStat® give you the *right* results with the *right* tests and *right* graphs.

CREATE THE EXACT GRAPH YOU NEED WITH AWARD-WINNING SIGMAPLOT

Choose from a complete set of 2D and 3D scientific graph types – grouped bar, contour, multiple 3D and many more. Then customize every detail – multiple axes, technical axis scales, error bars and more – to create the exact graph you need. And fit nearly any function with SigmaPlot's powerful nonlinear curve fitter.

*"When it comes to choosing the program that will best meet the needs of the bulk of scientific and engineering users, it isn't close: it's **SigmaPlot** by a mile."*

– Barry Simon, Ph.D. **Desktop Engineering Magazine,** Sept.'96
Comparative review of 11 scientific graphics packages.

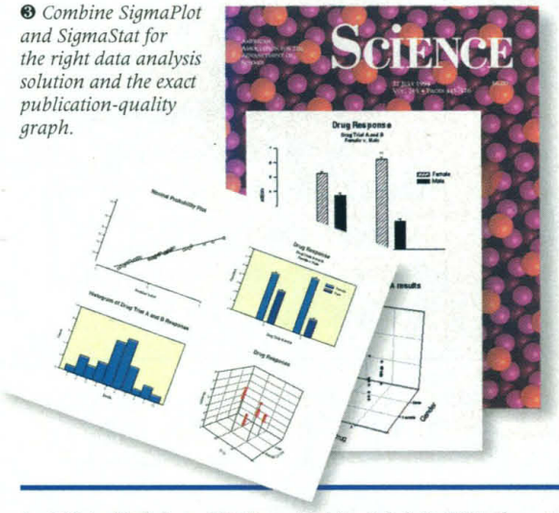


❷ *Control every detail to get the exact SigmaPlot graph that best illustrates your scientific research.*

SIGMASTAT GIVES YOU RESULTS YOU CAN TRUST

Award-winning SigmaStat is the *first* and *only* software that guides you through your entire statistical analysis. SigmaStat offers powerful, comprehensive statistical procedures including *t*-tests, ANOVAs, nonparametric statistics, correlations, regressions and more. Plus, SigmaStat's "expert system" design *automatically* finds the *right* test with the Advisor Wizard, checks if your data fits the underlying assumptions of your statistical model, handles messy data, prints a report complete with an explanation of the results, and creates high-quality graphs. SigmaStat ensures that you draw the right conclusions.

❸ *Combine SigmaPlot and SigmaStat for the right data analysis solution and the exact publication-quality graph.*



COMBINE THE POWER OF SIGMAPLOT AND SIGMASTAT

Team-up these powerful stand-alone programs for an integrated scientific software solution. Increase productivity by sharing worksheets using Jandel's SigmaLinking technology and conveniently organizing files in the Jandel Notebook. Or use state-of-the-art OLE 2 technology to run Excel® directly inside either program. Both programs use the same menus and commands, so you don't have to learn two different products. And with Windows® 95 and Office 95 compatibility, you get consistency across applications. For powerful data analysis and precise publication-quality graphs, SigmaPlot and SigmaStat are *your* exact solution.

FOR MORE INFORMATION CALL
1-800-4-JANDEL (1-800-452-6335)
Or visit our website at: http://www.jandel.com

Jandel Scientific Software 2591 Kerner Blvd. San Rafael, CA 94901 Phone: 1-800-4-JANDEL, (415) 453-6700 FAX (415) 453-7769 e-mail: sales@jandel.com Internet: http://www.jandel.com **In Europe:** Jandel Scientific, Schimmelbuschstrasse 25, 40699, Erkrath, Germany, 02104/9540, 02104/95410 (fax) Jandel Scientific Software has dealers and distributors worldwide. Call , fax or email Jandel U.S. for a representative in your country.

All company and/or product names are trademarks of their respective companies. ©1996 Jandel Corporation.
Reprinted cover with permission from Jeff Knight. ©1994 American Association for the Advancement of Science.

Jandel
SCIENTIFIC SOFTWARE

Circle No. 103 on Readers' Service Card

Welcome to the Club

BioMedNet is the leading Internet-based, worldwide club for the biological and medical community. Membership is FREE of charge and registration is a breeze.

Meetings

BioMedNet is a unique, collaborative and fully interactive working environment that brings together an infinite variety of facilities and resources in a single site organized for easy access and one-stop shopping.

Library

Browse across the full text of hundreds of core biological and medical journals and databases including MEDLINE. Access thousands of abstracts FREE of charge.

FREE MONEY

Join now and take advantage of our FREE money for purchasing information.

Search

Use our powerful search engine to search by author, title or keywords in abstracts or full text through selected areas or the entire BioMedNet site. You can also search for other members with common interests.

Jobs

The job exchange is a forum for jobs offered and wanted. With more than 1,000 listings worldwide, it is the number one online resource for positions in biology and medicine.

Shopping Mall

Grab your shopping cart and cruise the mall with hundreds of listings for biomedical products, services, software and publications that you can order directly online.

Maddox

Sir John Maddox, the distinguished former editor of NATURE, provides an exclusive, stimulating and sometimes controversial commentary focusing on science policy and current research topics.

Discussion

An open forum for members to access ongoing discussion groups, exchange ideas, annotate documents, communicate in real-time and even attend virtual conferences.

There is simply no other resource that comes even close to BioMedNet in serving the needs of the scientific and medical community. Membership is FREE. What are you waiting for?

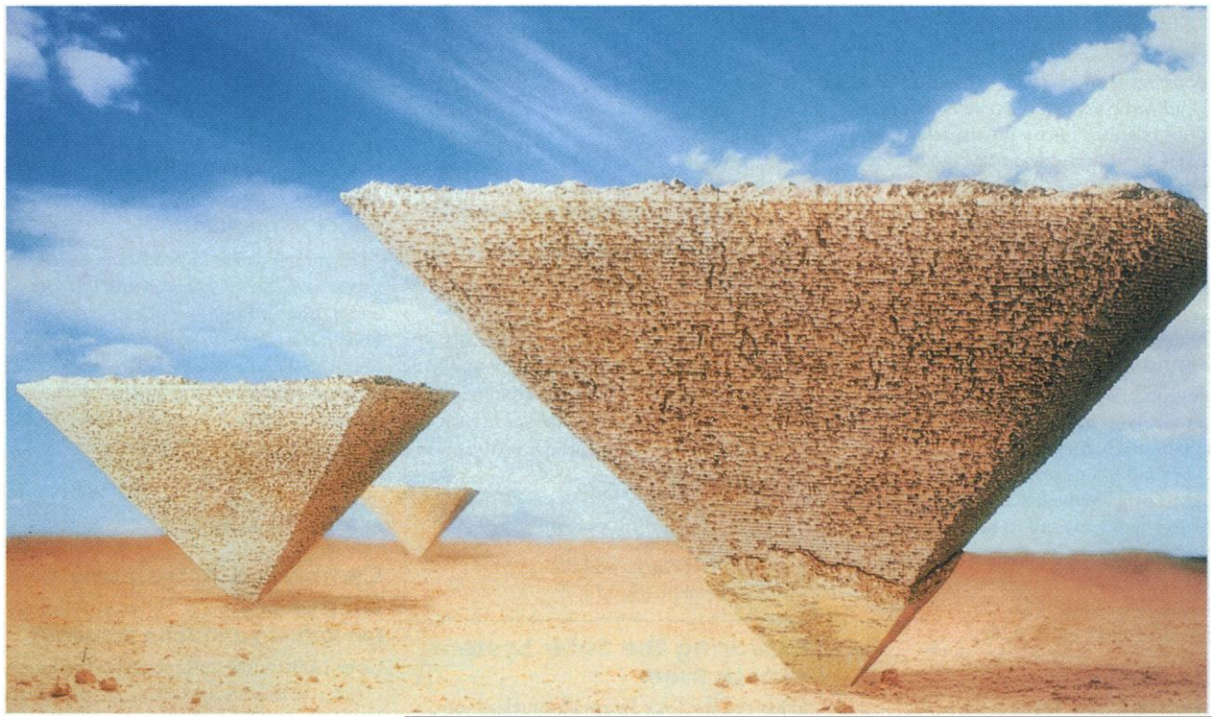
http://biomednet.com

111 8th Ave, Suite 1503, New York, NY 10011
phone:212-645-3303, fax:212-645-5988, e-mail:info@ny.cursci.com
© 1996 BioMedNet

The World Wide Club for the Biological and Medical Community

Circle No. 107 on Readers' Service Card

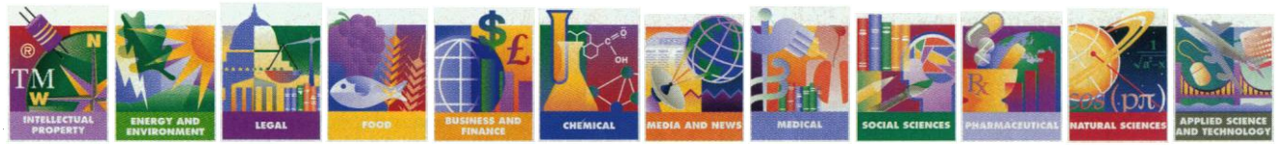
Leave No Stone Unturned.



You know the answers you need are out there. Lost under masses of data. To uncover them, leverage the world's most complete collection of scientific information right from your desktop with Knight-Ridder Information. Search everything from technical and patent literature to industry information....online with DIALOG®, on CD-ROM, on the Web, or use our document delivery service. Whether you're searching individually or organization-wide, you'll have the freedom to transform information into insight, the impulse of science. You don't need to turn the world upside-down. Find out more with Knight-Ridder Information – more easily, more quickly, more productively.

Call toll-free in the US: 800-334-2564.
In Canada and California: 415-254-8800. Europe e-mail: enquiries@dm.krinfo.ch
Or visit us at http://www.krinfo.com.

KNIGHT-RIDDER INFORMATION



INFORMATION SOLUTIONS ONLINE, ON CD-ROM, ON THE WEB, ON PAPER

©1996 Knight-Ridder Information, Inc. 2440 W. El Camino Real, Mountain View CA 94040. All rights reserved. DIALOG is a service mark of Knight-Ridder Information, Inc. Registered U.S. Patent and Trademark Office. scitad

Circle No. 88 on Readers' Service Card

Cambridge: The Right Equation for Science

The Media Equation

How People Treat Computers, Television, and New Media Like Real People and Places

Byron Reeves and Clifford Nass

"Clifford Nass and Byron Reeves have spent the last decade working in the area of social responses to technology. We brought them into our team, and they have shown us some amazing things." —**Bill Gates, Founder and CEO, Microsoft Corporation**

In an extraordinary revision of received wisdom in the social sciences, Byron Reeves and Clifford Nass demonstrate convincingly that our relations to computers, television, and new communication technologies are identical to real social relationships.

1996 305 pp.
1-57586-052-X Hardback $27.95

Thinking Strategically

Power Tools for Personal and Professional Advancement

Craig Loehle

Professionals today, whether scientists, engineers, entrepreneurs, or managers need to maximize their effectiveness. This text goes beyond brainstorming motivational books to provide the power tools needed to dissect problems and to find innovative solutions.

1996 212 pp.
56058-6 Hardback $49.95
56841-2 Paperback $16.95

Now in Paperback...

Remarkable Discoveries!

Frank Ashall

"Ashall is a fresh voice in popular science writing. In a book directed at those with little knowledge of the scientific world and its major figures, he covers 18 topics, most in life sciences...Ashall is an able expository writer who doesn't spare the reader the language of experiments, giving this anthology an air of immediacy and authenticity."

—**Publishers Weekly**

1996 292 pp.
58953-3 Paperback $16.95

Prisons of Light

Black Holes

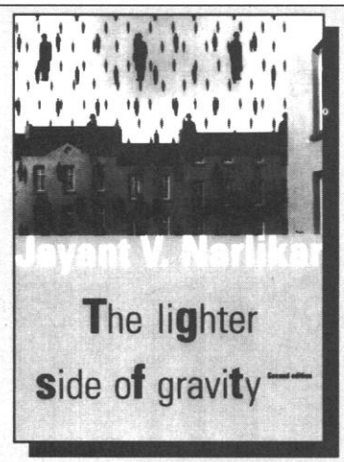
Kitty Ferguson

"...The reader willing to apply a modicrum of concentration and curiosity will be amply rewarded not only with knowledge, but also with the humor, fantasy, poetry and awe Ferguson brings to the subject."

—**Publishers Weekly** (starred review)

This book traces a star from its birth to its death throes and takes a hypothetical journey to the border of a black hole and beyond.

1996 214 pp.
49518-0 Hardback $24.95



The Lighter Side of Gravity

Second Edition

Jayant Narlikar

This updated edition includes the discovery of gigantic gravitational lenses in space, the findings of the Cosmic Background Explorer (COBE) satellite, the detection of dark matter in galaxies, the investigation of the very early Universe, and other new ideas in cosmology.

1996 c.248 pp.
55009-2 Hardback $34.95
56565-0 Paperback $16.95

Exploring the Solar System

Nicholas Booth

Exploring the Solar System chronicles more than three decades of planetary exploration, revealing the Solar System in all its colorful glory. More than 300 of the finest full-color pictures from the missions of NASA and international agencies show us the planets, moons, comets and asteroids, and the mighty Sun itself.

1996 c.176 pp.
58005-6 Hardback $24.95

Beyond Science

The Wider Human Context

John Polkinghorne

"...Polkinghorne will awaken in many thoughtful readers a new appreciation for their place in the marvelous cosmos."

—**Bryce Christensen, Booklist**

This book considers the human context in which science operates, providing a balanced account which firmly asserts science's place in human culture.

1996 140 pp.
57212-6 Hardback $19.95

Birth to Death

Science and Bioethics

David C. Thomasma and Thomasine Kushner, Editors

Aimed at the general reader, this text reviews the major biological advances of recent years and explores their ethical implications. Organized by stage of human life—from birth to death—it guides the reader through the critical issues that face our technologically advanced society.

1996 398 pp.
55556-6 Paperback $19.95

Improving Nature?

The Science and Ethics of Genetic Engineering

Michael J. Reiss and Roger Straughan

"The authors' intent in publishing this work was to make the complicated processes and ethical issues surrounding genetic engineering understandable to the nonbiologist. Biologist Reiss and moral philosopher Straughan have done an admirable job of explaining these concepts in a clear and provocative manner... an excellent introduction to the topic."

—**Library Journal**

1996 298 pp.
45441-7 Hardback $24.95

Cambridge Astronomy Dictionary

Ian Ridpath and John Woodruff

Over 1,000 entries offer concise definitions of celestial objects, observing terms, constellations, observing equipment, and more.

1996 240 pp.
58991-6 Paperback $14.95

The Cambridge Illustrated History of Medicine

Roy Porter, Editor

Against the backdrop of an unprecedented concern for health today, this book not only surveys the rise of medicine in the West from earliest times to the present day, but also glimpses into the future.

Cambridge Illustrated Histories

1996 400 pp.
44211-7 Hardback $39.95

The Cambridge Dictionary of Scientists

Ian Millar, et al., Editors

This alphabetically organized biographical dictionary is an invaluable reference book of over 1,300 key scientists.

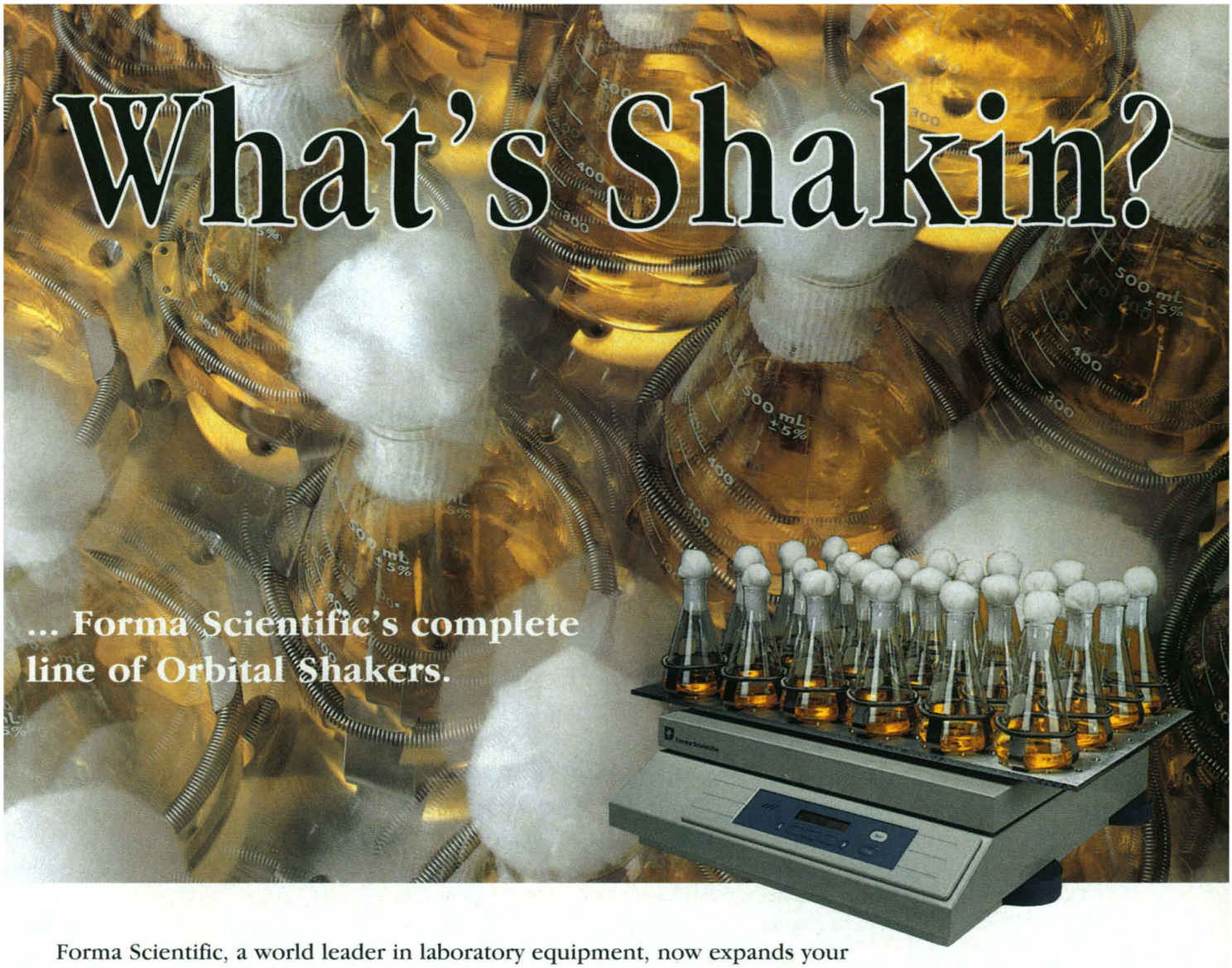
1996 399 pp.
56185-X Hardback $39.95
56718-1 Paperback $16.95

Available in bookstores or from

CAMBRIDGE UNIVERSITY PRESS

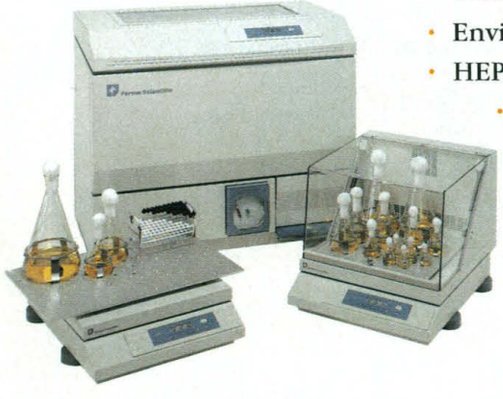
40 West 20th Street, N.Y., NY 10011-4211
Call toll-free 800-872-7423. Web site: http://www.cup.org
MasterCard/VISA accepted. Prices subject to change.

Circle No. 1 on Readers' Service Card



Forma Scientific, a world leader in laboratory equipment, now expands your growth potential with a complete line of Orbital Shakers. With over 40 years of experience, we have made a commitment to you by being the only life science equipment manufacturer to offer a factory-trained direct sales force, and ISO-9001 registration.

UNIQUE FEATURES OF OUR TABLETOP AND CONSOLE MODEL SHAKERS:

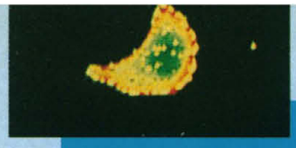


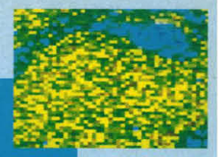
- Temperature Ranges from 4°C to 60°C
- Enviro-Scan™ Microprocessor Controls
- HEPA-Filtration on all Console Models
- Speed Range of 25-525 RPM
- Lifetime Mechanism Warranty
- UL Listed & CSA Certified

Forma Scientific, Inc.
Box 649, Marietta, OH 45750
614-373-4763 · Fax: 614-373-6770
USA and Canada 1-800-848-3080
An ISO 9001 Company
International Distributors Worldwide
URL: http://www.forma.com

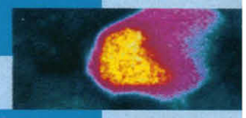
Circle No. 69 on Readers' Service Card

For additional information on Forma's Orbital Shakers, call today!





The world's leading journal for neuroscientists goes interactive

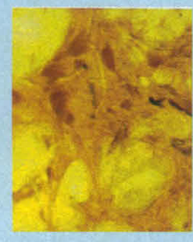


BRAIN RESEARCH INTERACTIVE

Brain Research is moving with the times. In its thirtieth year, the most cited journal in its field is taking an important step into the future with the introduction of Brain Research Interactive. An interactive journal with an outstanding editor, Floyd Bloom.

Interactive publishing

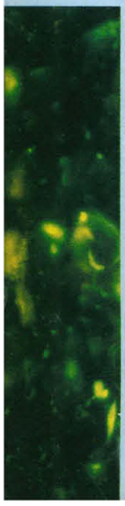
Brain Research Interactive will offer unique publishing opportunities to authors. Not only as far as speed is concerned (contributions can appear on the WWW within one week), but also for the many visual and audio aids which can be used, such as animation, video and sound effects. Search tools enable readers to find the relevant publications, articles and respective protocols quickly and efficiently.



***SMART* Submitter: userfriendly submission software**

You can submit your research articles to Brain Research Interactive with the *SMART* Submitter, a very userfriendly software package, which also allows particularly fast electronic peer review. You can submit your research articles and reviews for Brain Research Interactive to Floyd Bloom at: http://smart.scripps.edu

For further information about the *SMART* Submitter or about down-loading a beta version, consult the *SMART* home page: http://smart.scripps.edu or the Brain Research Interactive home page at: www.elsevier.nl/locate/bres or www.elsevier.com/locate/bres



Get *SMART!* Check it out today!

The Society for Neuroscience Convention

Elsevier Science will be present at the Society for Neuroscience Convention, Washington D.C., USA, November 16-21, 1996. Come and see Brain Research Interactive demonstrated and visit our stands, numbers 215 - 220.

ELSEVIER SCIENCE

Circle No. 40 on Readers' Service Card

Liquid assets

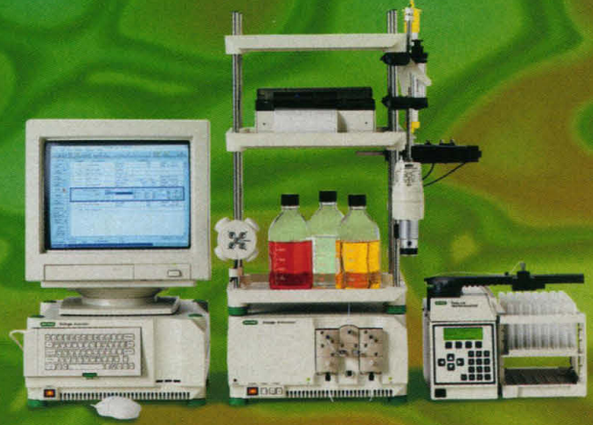
INVEST IN OUR LIQUID CHROMATOGRAPHY SYSTEMS AND ENJOY A WEALTH OF BENEFITS.

How to achieve biomolecule purification quickly, easily, affordably? Add one of our user-friendly workstations to your lab or cold room – the popular BioLogic medium pressure or all-new BioLogic LP low pressure system. Both designed to make your research flow nice and easy. Want to know more? Call 1-800-4BIORAD (1-800-424-6723) today.

THE ALL-NEW BIOLOGIC LP LOW PRESSURE SYSTEM

An economical, self-contained workstation for everyday chromatography needs. Automatically controls peristaltic pump, UV and conductivity, and valves.

- Stores up to 50 methods
- In-progress methods editing
- Controls up to 5 buffers
- Runs up to 40 ml/minute



TOP-OF-THE-LINE BIOLOGIC MEDIUM PRESSURE SYSTEM

A sophisticated tool featuring the easy, intuitive Windows®-based BioLogic software for smooth operation.

- Up to 1,000 psi for column flexibility
- Controls up to 8 columns and 5 buffers
- User-defined valve names and positions
- Runs multiple-column methods
- Unlimited methods storage

Windows is a trademark of Mircosoft Corp.

BIO-RAD

Bio-Rad Laboratories

Life Science Group

Circle No. 63 on Readers' Service Card

U.S. (800) 4BIORAD **California** (510) 741-1000 **Australia** 02-9914-2800 **Austria** (1)-877 89 01 **Belgium** 09-385 55 11 **Canada** (905) 712-2771 **China** (01) 2046622 **Denmark** 39 17 9947 **Finland** 90 804 2200 **France** (1) 49 60 68 34 **Germany** 089 31884-0 **Hong Kong** 7893300 **India** 91-11-461-0103 **Italy** 02-21609 1 **Japan** 03-5811-6270 **The Netherlands** 0318-540666 **New Zealand** 09-443 3099 **Singapore** (65) 272-9877 **Spain** (91) 661 70 85 **Sweden** 46 (0) 8 627 50 00 **Switzerland** 01-809 55 55 **United Kingdom** 0800 181134

SIG 072296