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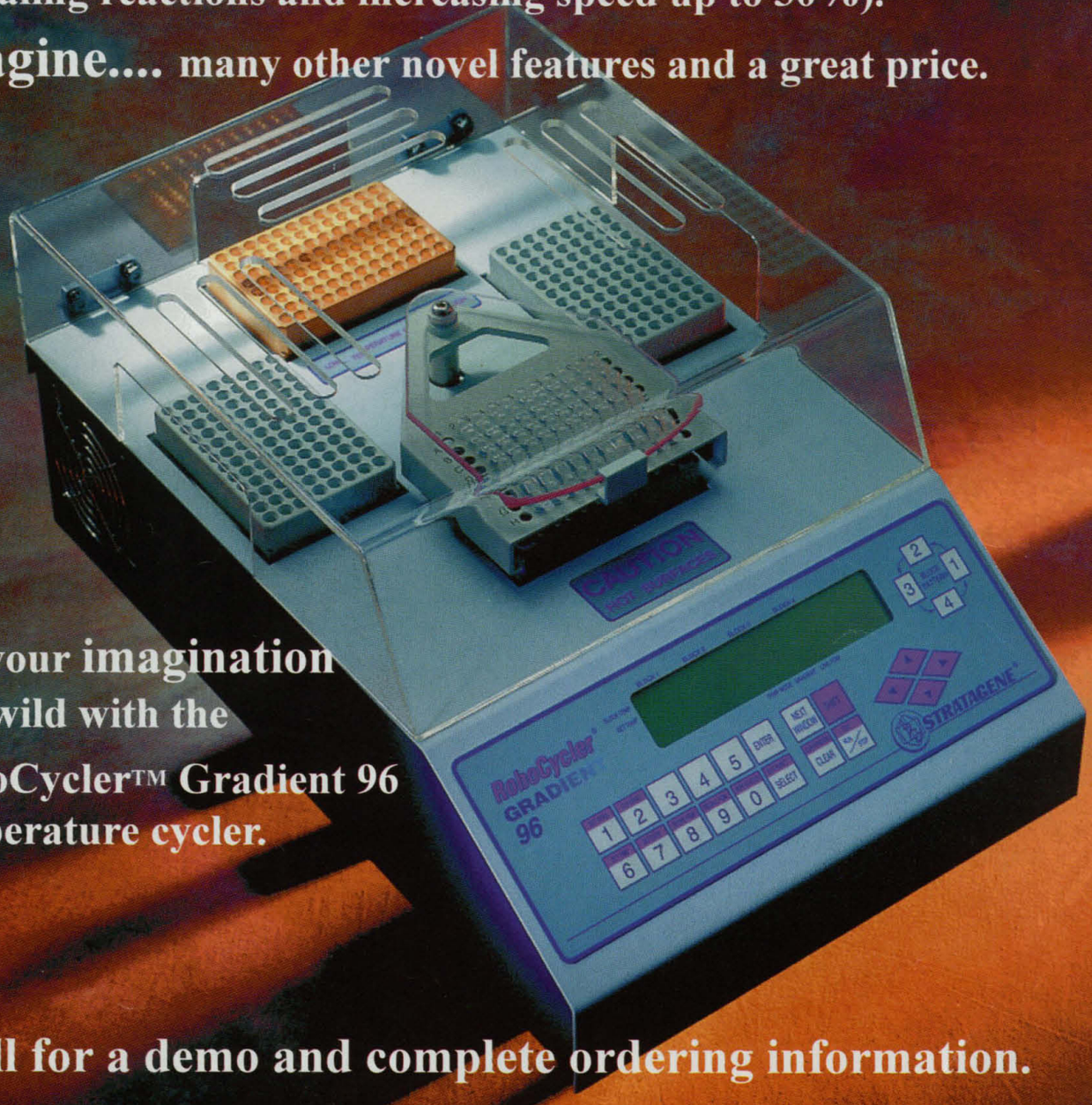

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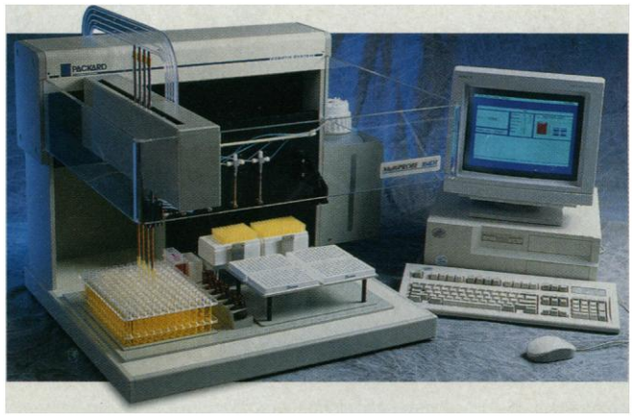

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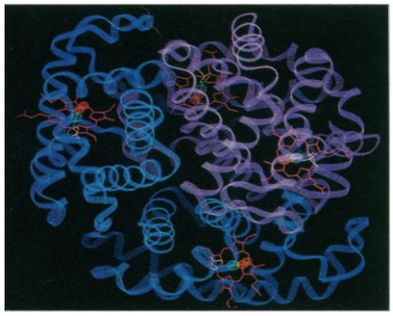
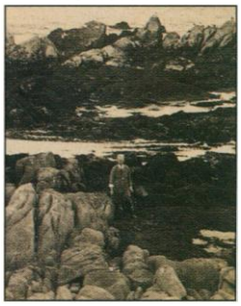
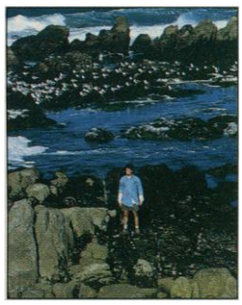


620
Biology's new image

672
A communal shift to the north





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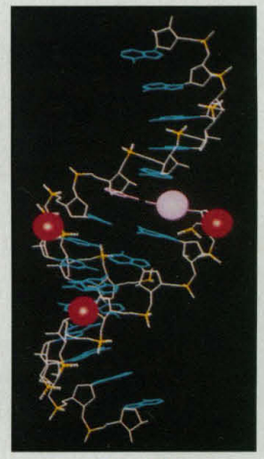
COVER

Magnetic field intensity map at the surface of a thin-film niobium superconductor after a change in the external field. In the darker (gray) areas the field intensity remained frozen, but the lighter regions (light gray to purple to red) experienced increasing degrees of change. The regions of greatest change, according to theory, should have been at the edges of the sample (top and bottom). The photo was chosen from submissions from scientists chairing the 1995 Gordon Conferences. For information on this year's Gordon Conferences, see page 716. [Photo: C. A. Duran, P. L. Gammel, R. E. Miller, and D. J. Bishop at AT&T Bell Laboratories]

TECHNICAL COMMENTS



675
Primordial recognition of RNA

◩ Indicates accompanying feature

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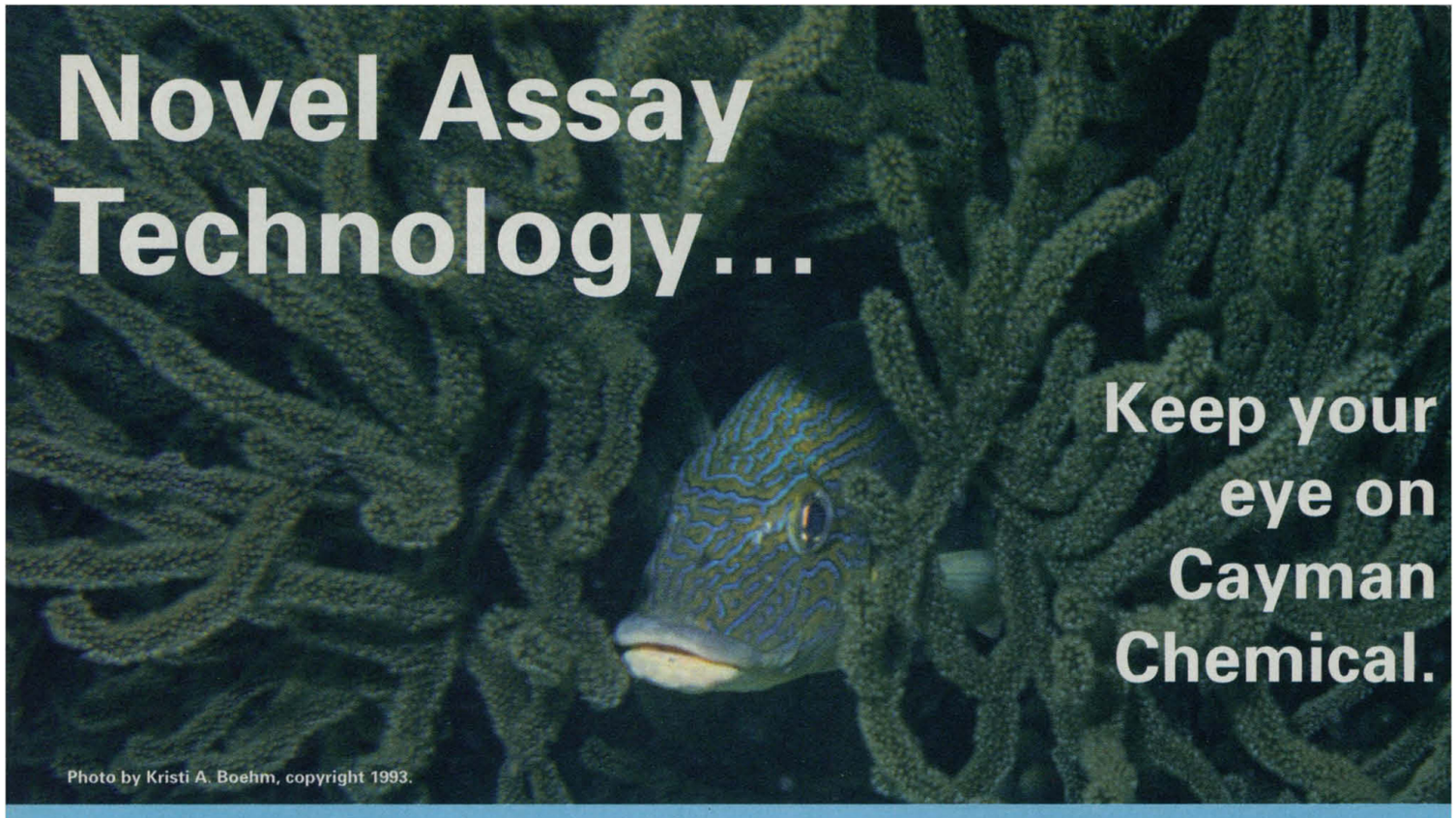

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edited by DAVID LINDLEY

Effective defects

Metal oxides and related materials are often used for the selective oxidation of organic molecules. Gai and Kourtakis (p. 661) have used high-resolution electron microscopy to study how vanadyl pyrophosphate catalysts change when they are used in the conversion of *n*-butane to maleic anhydride. The working catalysts are characterized by sets of symmetry-related defects that propagate by a glide shear mechanism. These defects are likely anionic vacancies associated with strong Lewis acid sites needed for dehydrogenation.

■

Guided by taboo

Many problems in science and engineering involve optimization—searching parameter space to find the minimum of some target function—but a frequent pitfall is that the search will stop on a local minimum while the true global minimum remains undetected. Cvijović and Klinowski (p. 664) report a method for global optimization of continuous functions based on the "taboo" search originally developed for discrete functions. The name comes from the constraints, or taboo conditions, imposed to limit the search to a set of admissible moves in parameter space. The authors say their procedure is simple, generally applicable, and arrives at a solution in fewer iterations than previous methods.

■

By air or sea?

Average global tropospheric temperatures have increased during this century and have risen sharply since the mid-1970s. Graham (p. 666) shows that most of the warming trend from 1970 to 1992 can be reproduced by forcing atmospheric models with the observed ocean surface temperatures for the same period. Increased tropical ocean temperatures appear to have enhanced the tropical hydrological cycle, a response that could be part of natural climate variability but that is also predicted as an early effect of global warming due to increased greenhouse gas levels.

■

Coastal change

Most studies of the response of ecosystems, particularly marine systems, to climate changes have been confined to intervals of a few years to a decade because older ecological inventories generally have too little detail to reveal subtle variations when compared with modern databases. Barry *et al.* (p. 672) found a California marine coastal community that was surveyed in some depth from 1931 to 1933, and by resurveying they were able to look at detailed changes in a marine ecosystem that have occurred over many decades. In the intervening years annual shoreline temperature at the site has increased by 0.75°C, and southern species have become more dominant at the expense of northern species.

Primitive translation

Interpretation of the genetic code—the nucleotide triplets that code for the 20 common amino acids— is effected by aminoacyl–transfer RNA synthetases, proteins that catalyze the covalent addition of an amino acid to a molecule of transfer RNA. In these reactions, the amino acid is first activated and then coupled to a ribosyl hydroxyl group of the RNA. Illangasekare *et al.* (p. 643) have selected in vitro, from a randomized pool, a single RNA molecule that catalyzes its own acylation when offered an activated amino acid. This aminoacylation is evidence for the feasibility of the putative RNA world, thought to have preceded the development of the modern nucleoprotein world, because it shows how RNA self-catalysis could have translated linear sequences of nucleotides into sequences of amino acids.

Flawed hearing

Genetically caused deafness occurs in one birth per thousand, yet the underlying genetic defects are unknown. The most common form of deafness linked to the X chromosome, DFN3, is due to stapes fixation, and de Kok *et al.* (p. 685) have found that patients with DFN3 contain mutations in the *Brain 4* gene (*POU3F4*). *POU3F4* encodes a transcription factor with a POU domain that is expressed during development in the brain and otic vesicle.

■

Muscles of a fly

Differentiation of skeletal muscle requires the expression of the myogenic basic helix-loop-helix genes, which are regulated by the myocyte enhancer binding factor–2 (MEF2) family of transcription factors. Lilly *et al.* (p. 688) investigated the requirement for MEF2 in *Drosophila*, which, unlike vertebrates, possesses only one MEF2 gene. They have isolated a deletion that removes the *D-mef2* gene and have found that in embryos lacking *D-mef2*, myoblasts are formed and positioned properly, but somatic, cardiac, and visceral muscle cells remain undifferentiated. A common muscle cell program requiring *D-mef2* is thus needed for the differentiation of the three muscle cell types.

■

Seeing and doing

Newborn babies wriggle about and thrash their limbs, but do they do this to a purpose? Van der Meer *et al.* (p. 693) attached small weights, via pulleys, to the wrists of babies from 10 to 24 days old, and tracked their arm motions. The babies moved

their arms more when they could see their hands, either directly or on a television monitor, than when their hands were hidden from them, suggesting they are learning to coordinate limb motions and visual perceptions.

■

Perfectly sinister

Outstanding musical ability and, rarer still, the possession of perfect pitch are thought to be linked to structural differences between the left- and right-hand sides of the brain. Schlaug *et al.* (p. 699; see also news story by Nowak, p. 616) used magnetic resonance imaging to compare brain morphology in 30 professional musicians and 30 non-musical individuals, and found that the planum temporale, a part of the auditory cortex, was larger in the left hemisphere of the brains of the musically gifted. The difference was correlated with possession of perfect pitch; musicians without perfect pitch could not be distinguished from the controls.

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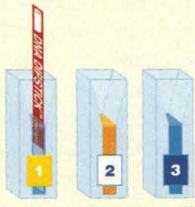

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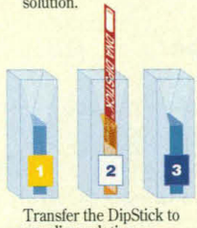

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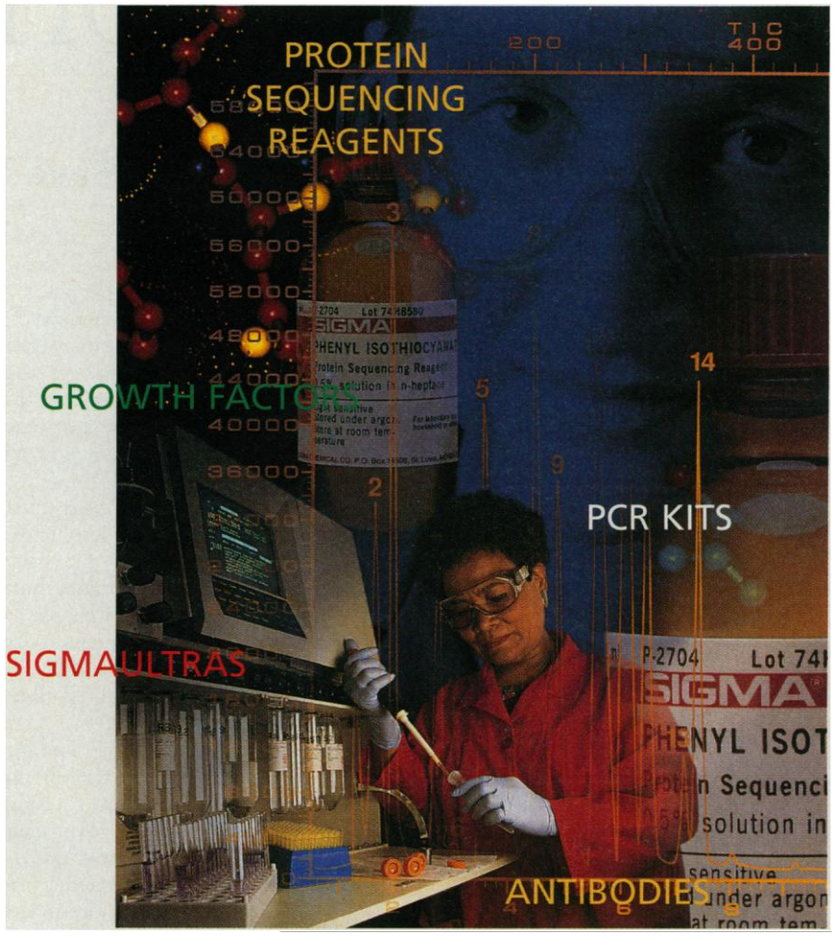

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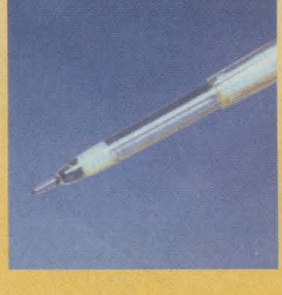

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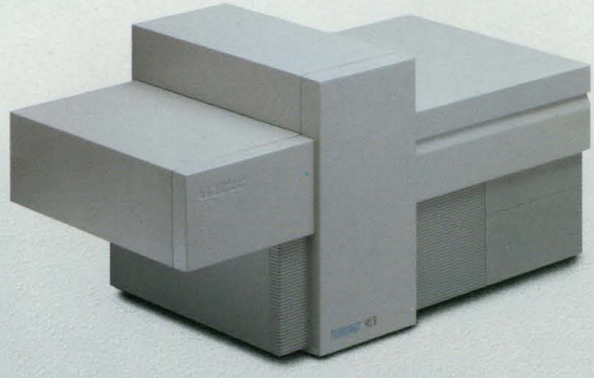

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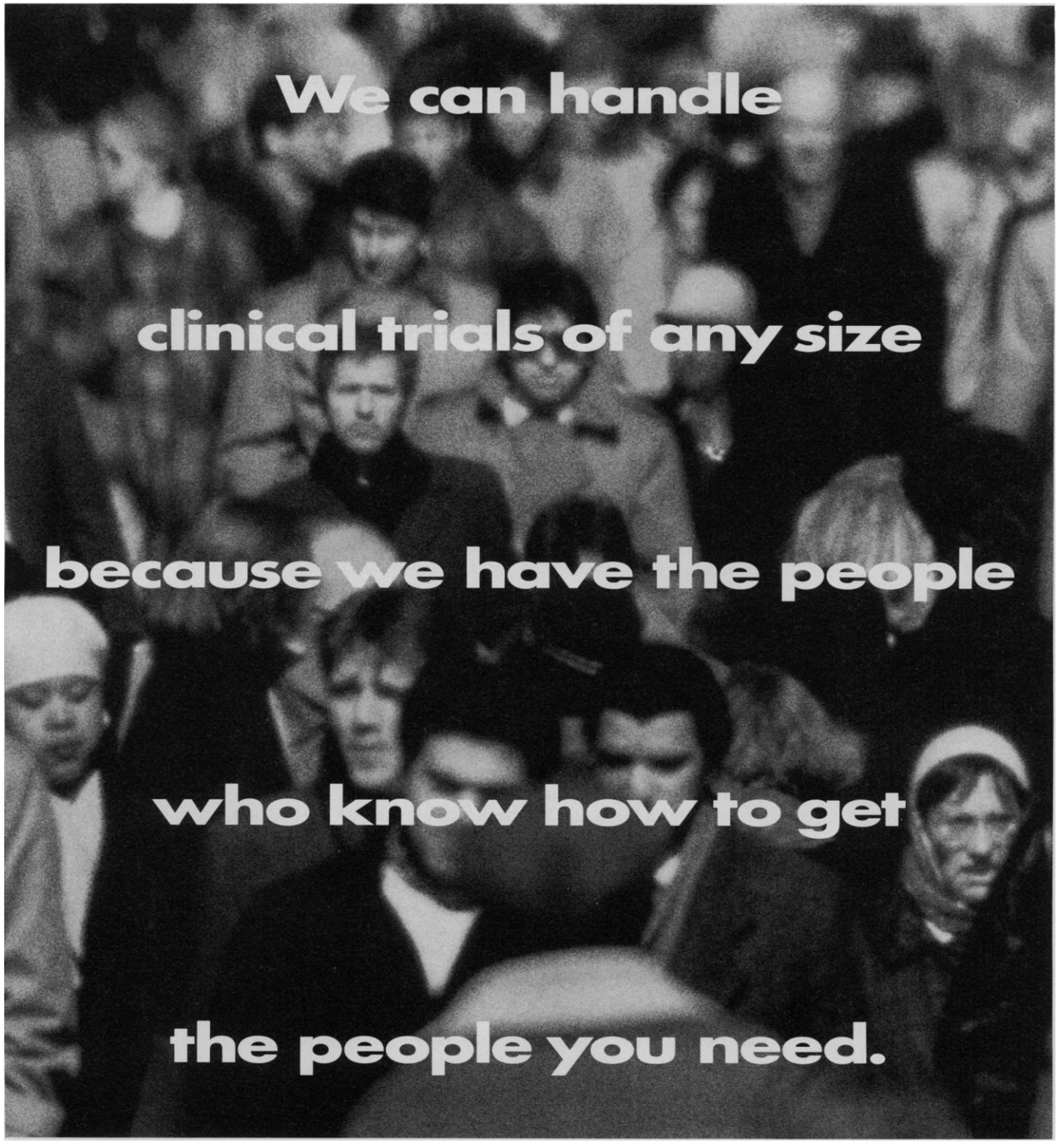

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Why we've put together an extensive network of high-quality investigator sites.

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EMPLOYMENT EXCHANGE '95
AAAS Annual Meeting and
Science Innovation Expo
Atlanta Marriott Marquis
17-21 February

HOURS OF OPERATION

17 February, Friday

SCIENCE CAREER DAY Job Fair- 11:00 am-5:00 pm
Employer/Candidate Registration, Interview Scheduling

18 February, Saturday

Career Development Seminars - 8:30 am-4:00 pm
"How to Give Technical Presentations"
presented by Dr. Paul Antaki, Antaki & Associates, Inc. [8:30-11:45 am]
"Your Personal Marketing Campaign - Insider's Secrets to Finding A Job in Science"
presented by Dave Jensen, Search Masters International, Inc. [12:45-2:15 pm]
"Tactics for Surviving Corporate Downsizing"
presented by Ed Bocko, Jr., ProTran Resources, Inc. [2:30-4:00 pm]

Employer/Candidate Registration - 10:00 am-6:00 pm
Interview Scheduling/Interviews

19 February, Sunday

Career Development Seminars - 8:30 am-5:30 pm
"White Shirts and Birkenstocks: How to Succeed in Today's Biotech Workplace Environment"
presented by Dave Jensen, Search Masters International, Inc. [8:30-10:00 am]
"Projection on Job Outlook in the Biotech Industry"
presented by Ed Bocko, Jr., ProTran Resources, Inc. [10:15-11:45 am]
"Career Change Issues: From Academia to Industry"
presented by Ed Bocko, Jr., ProTran Resources, Inc. [12:45-2:15 pm]
"Resume Writing Seminar and Workshop: Resume Writing/Critique"
presented by Alison French and Greg Stokes, AAAS Human Resources Office [2:30-5:30 pm]

Employer/Candidate Registration - 10:00 am-6:00 pm
Interview Scheduling/Interviews

20 February, Monday

Career Development Seminars - 8:30 am-5:30 pm
"Your Personal Marketing Campaign - Insider's Secrets to Finding a Job in Science"
presented by Dave Jensen, Search Masters International, Inc. [8:30-10:00 am]
"Interview and Presentation Skills"
presented by Alison French and Greg Stokes, AAAS Human Resources Office [10:15-11:45 am]
"Resume Writing Seminar and Workshop: Resume Writing/Critique"
presented by Alison French and Greg Stokes, AAAS Human Resources Office [2:30-5:30 pm]

Employer/Candidate Registration - 10:00 am-6:00 pm
Interview Scheduling/Interviews

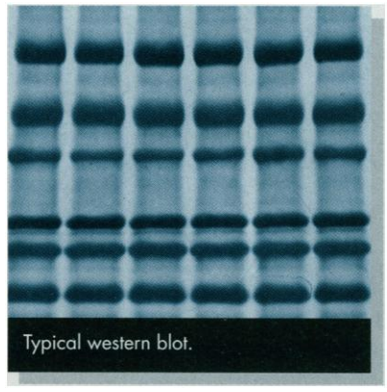
21 February, Tuesday

Scheduled Interviews Only - 9:00 am-1:00 pm

DON'T MISS THE AMSIE95 EMPLOYMENT EXCHANGE! THERE IS STILL TIME TO ENROLL!! For enrollment forms and more information, contact: Kevin M. Bullock, AAAS Employment Exchange, 1333 H Street, NW, Suite 1159, Washington, DC 20005. Or via phone: 202-326-7049; via fax: 202-289-4021; via internet: kbullock@aaas.org. Recruiters wishing to reserve booth space for the SCIENCE CAREER DAY Job Fair should contact Kevin Bullock immediately! Limited space is still available.

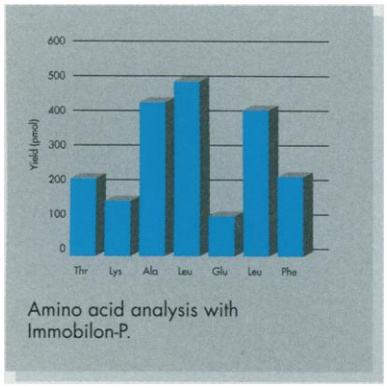
Onsite enrollment for the Employment Exchange begins at 11:00 am, Friday, 17 February.

Call For A Free Sample.

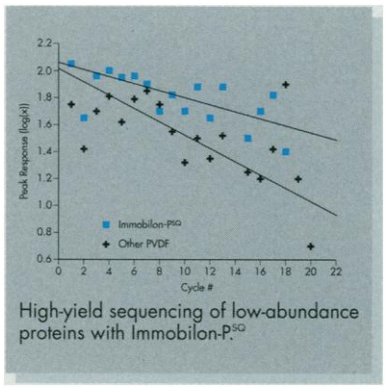


Typical western blot.

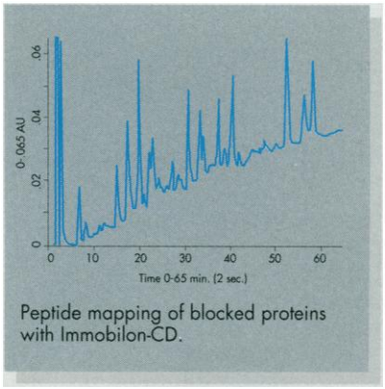
Information.



Amino acid analysis with Immobilon-P.



High-yield sequencing of low-abundance proteins with Immobilon-P^{SQ}.



Peptide mapping of blocked proteins with Immobilon-CD.

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For peptide mapping of N-terminally blocked proteins, there's no better choice than Immobilon-CD. Its cationically-charged PVDF surface permits reversible sample immobilization, allowing protein bands to be eluted from the membrane after transfer for sequencing.

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- Oversized, relaxed fit
- Made in the USA
- Full front imprint of SCIENCE logo in blue

Child's size available $12.00

$18.00
AAAS Member Price.
Includes shipping in U.S.
Non-member price: $20

Science Pictogram T-shirt, Style #1201

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- White Hanes Beefy-T, super heavy-weight 100% cotton jersey knit
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- Slightly oversized fit
- Made in the USA
- Full front and left sleeve imprint in blue

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ATTN: Corrine Harris / 1333 H Street, NW /
Washington, DC 20005 USA

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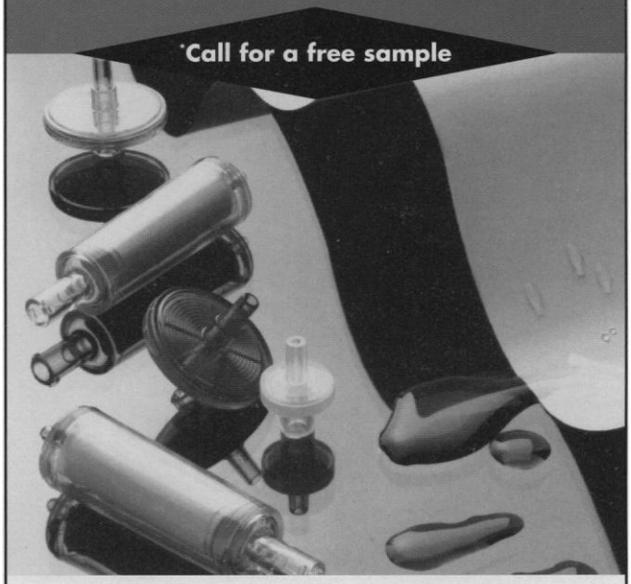

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ENDOCRINOLOGY

International Symposium on SEXUAL DIFFERENTIATION AND MATURATION
Scientific Organization: I. Hibi (J) • Tokyo, Japan • March 2-3

10th Workshop on DEVELOPMENT AND FUNCTION OF THE REPRODUCTIVE ORGANS
Scientific Organization: K. Ahrén and T. Hillensjö (S) • Stockholm, Sweden • May 29-31

SEX DIFFERENTIATION: CLINICAL AND BIOLOGICAL ASPECTS
Scientific Organization: I. A. Hughes (UK) • Cambridge, United Kingdom • July 1-3

THE ROLE OF INSULIN-LIKE GROWTH FACTORS IN OVARIAN PHYSIOLOGY
Scientific Organization: D. LeRoith (USA) • Montpellier, France • September 15-16

IMMUNOLOGY

PREVENTION AND EARLY DETECTION OF HUMAN TUMORS
Scientific Organization: F. Gavosto (I) • Turin, Italy • September 29-30

RECENT ADVANCES IN:

4th Conference on RESEARCH POLICIES AND QUALITY ASSURANCE
Scientific Organization: A. E. Shamoo (USA)
Montecarlo, Monaco • June 25-28

2nd International Symposium on TRANSPLANT TOLERANCE
Scientific Organization: S. Garattini (I) and G. Remuzzi (I)
Bergamo, Italy • October 12

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1995

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Il Ciocco, Barga, Italy • April 30-May 5

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Il Ciocco, Barga, Italy • April 30-May 5

BIOLOGY OF AGING
Il Ciocco, Barga, Italy • May 7-12

CATECHOLAMINES
Il Ciocco, Barga, Italy • May 7-12

SUPERCONDUCTIVITY
Eurotel, Les Diablerets, Switzerland • September 17-22

MAGNETIC NANOSTRUCTURES
Kloster Irsee, Irsee, Germany • September 17-22

SOLID STATE CHEMISTRY
Kloster Irsee, Irsee, Germany • September 24-29

STAPHYLOCOCCAL DISEASES
Kloster Irsee, Irsee, Germany • October 1-6

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