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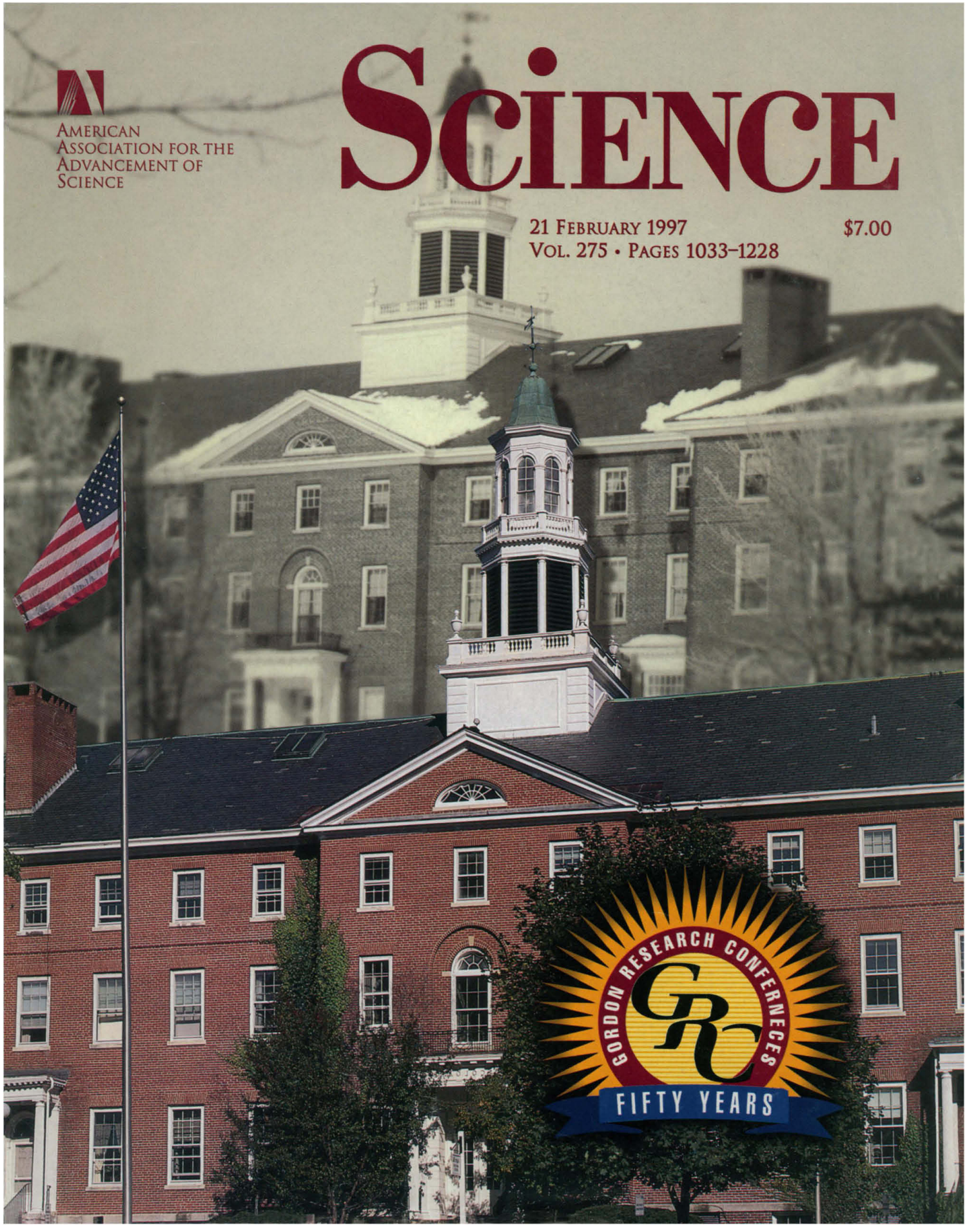

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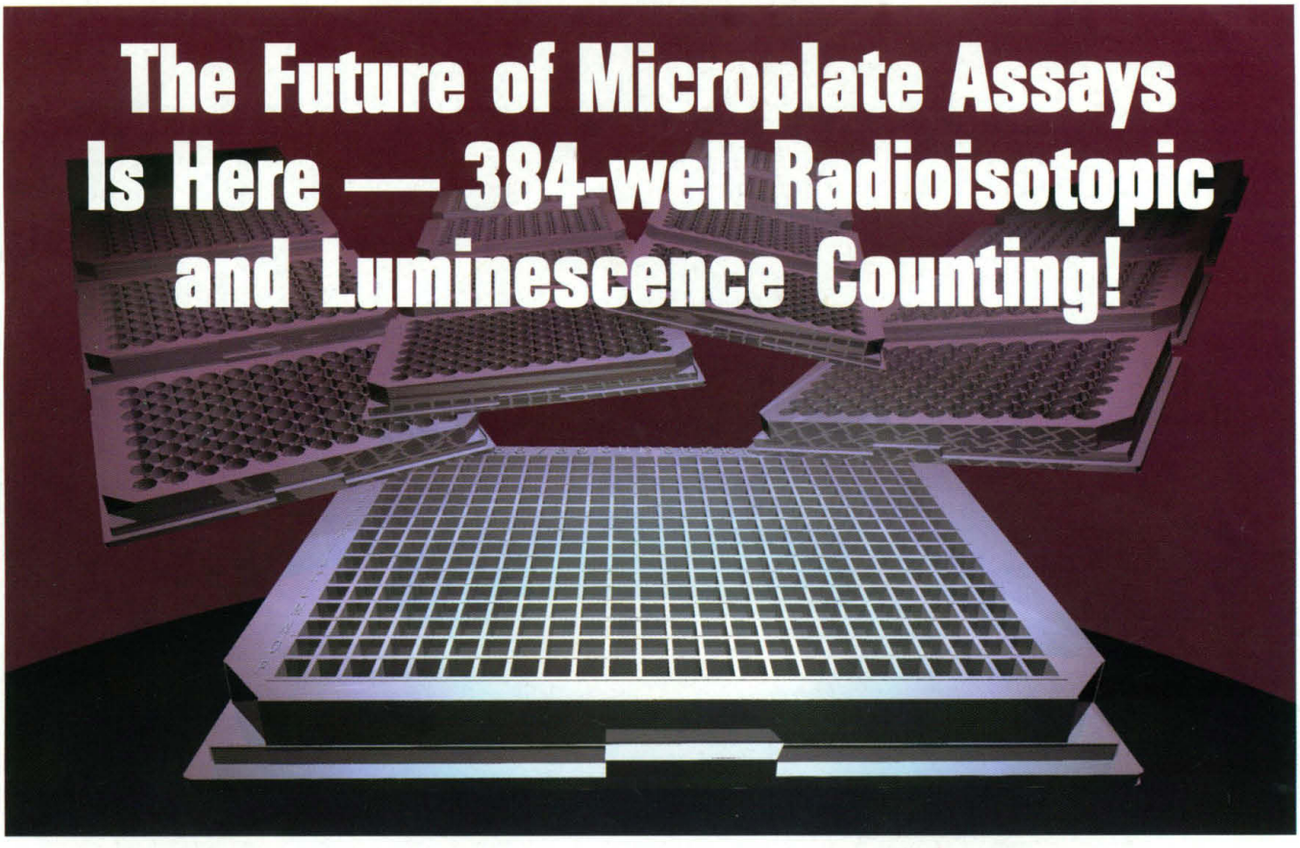

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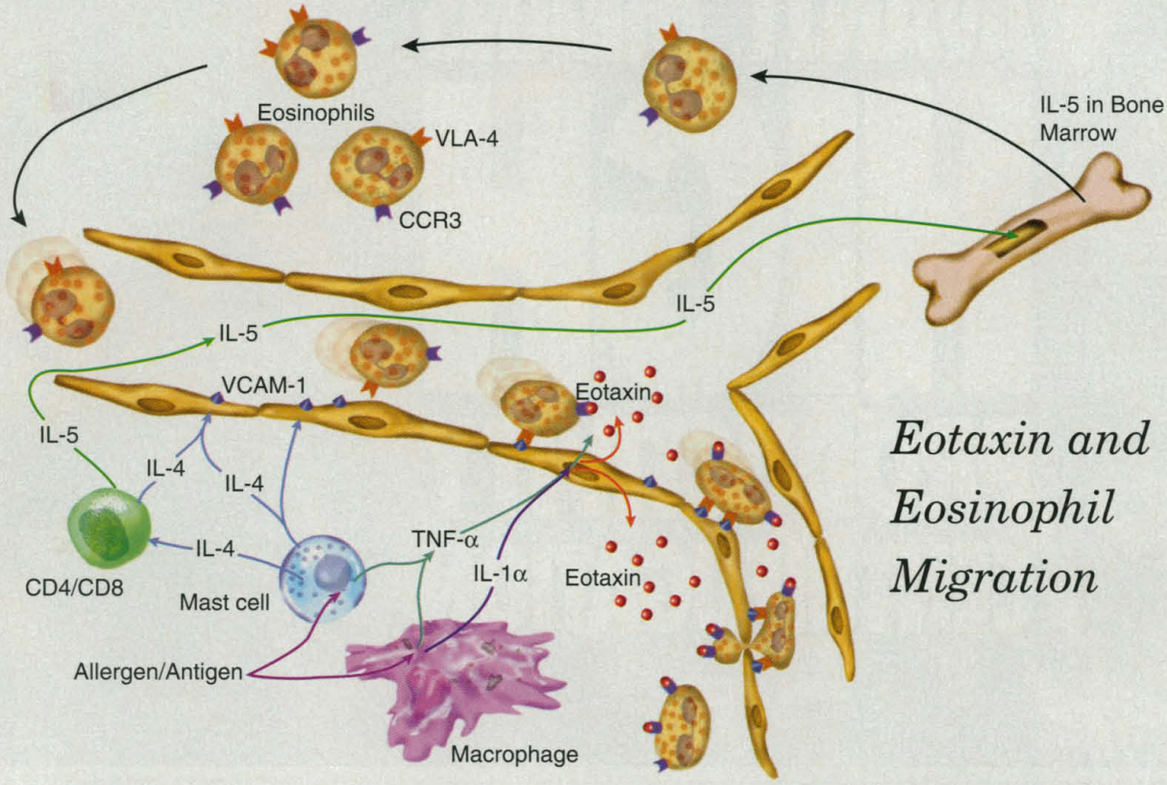

Eotaxin and Eosinophil Migration

	Recombinant human protein	Anti-human polyclonal antibody	Anti-human monoclonal antibody	Biotinylated anti-human polyclonal antibody	Recombinant mouse protein	Anti-mouse polyclonal antibody
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IL-1α	✔	✔			✔	✔
IL-1 RI	✔	✔	✔			
IL-1 RII	✔	✔	✔			
IL-4	✔	✔	✔	✔	✔	✔
IL-4 R	✔	✔	✔	✔		
IL-5	✔	✔	✔		✔	✔
IL-5 Rα	✔	✔				
TNF-α	✔	✔	✔	✔	✔	✔
TNF RI	✔	✔	✔		✔	
TNF RII	✔	✔	✔		✔	

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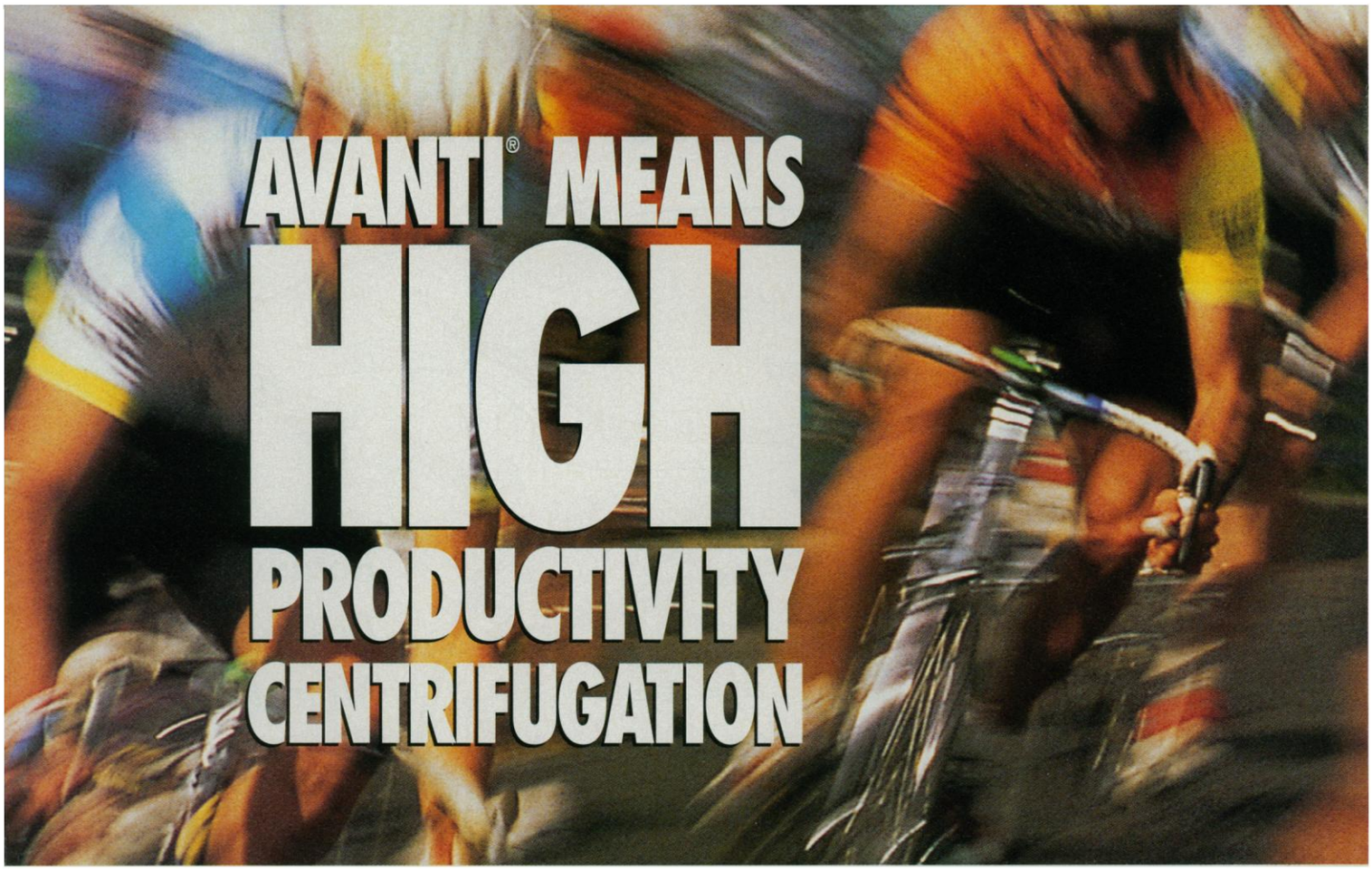
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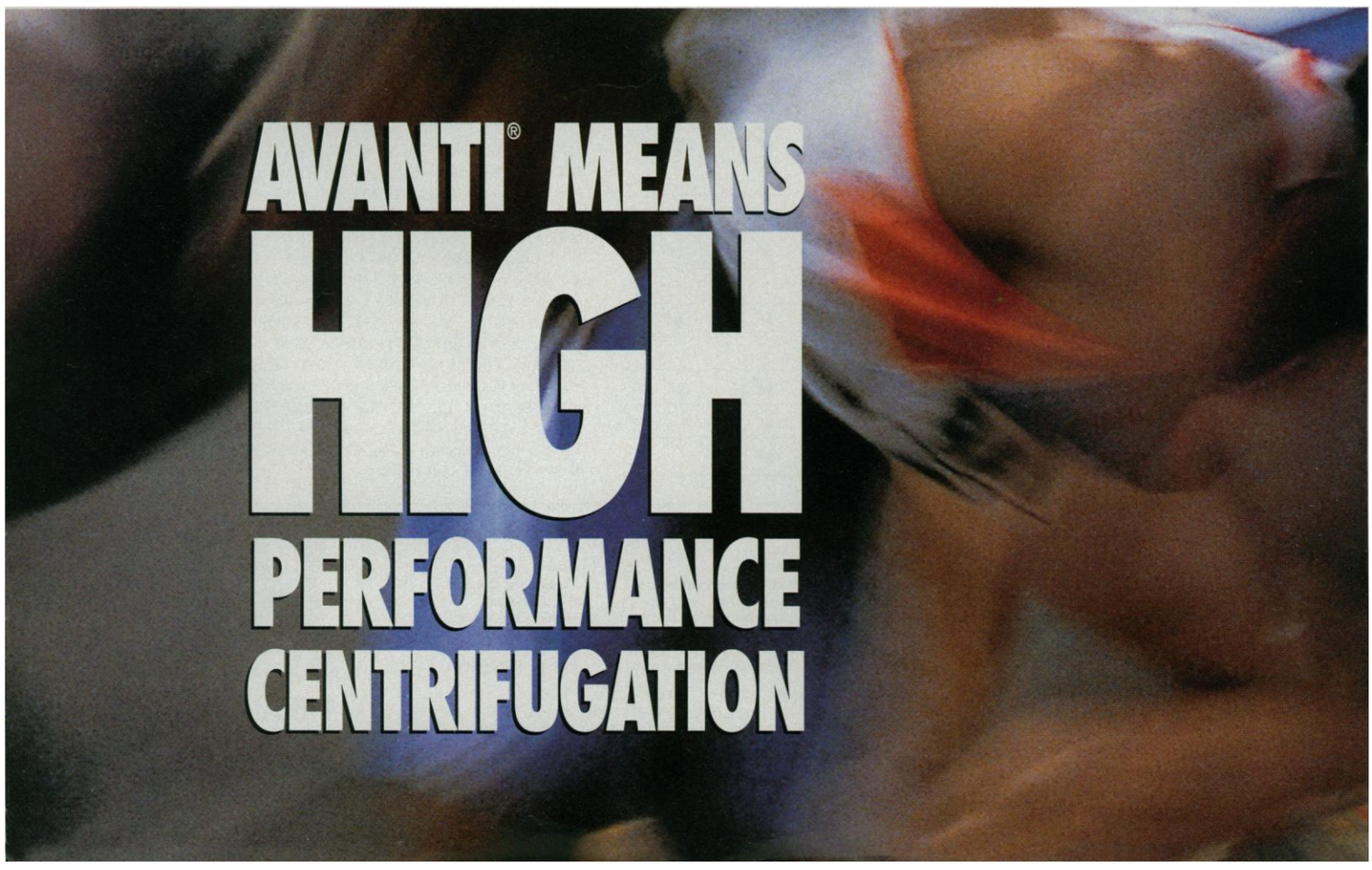
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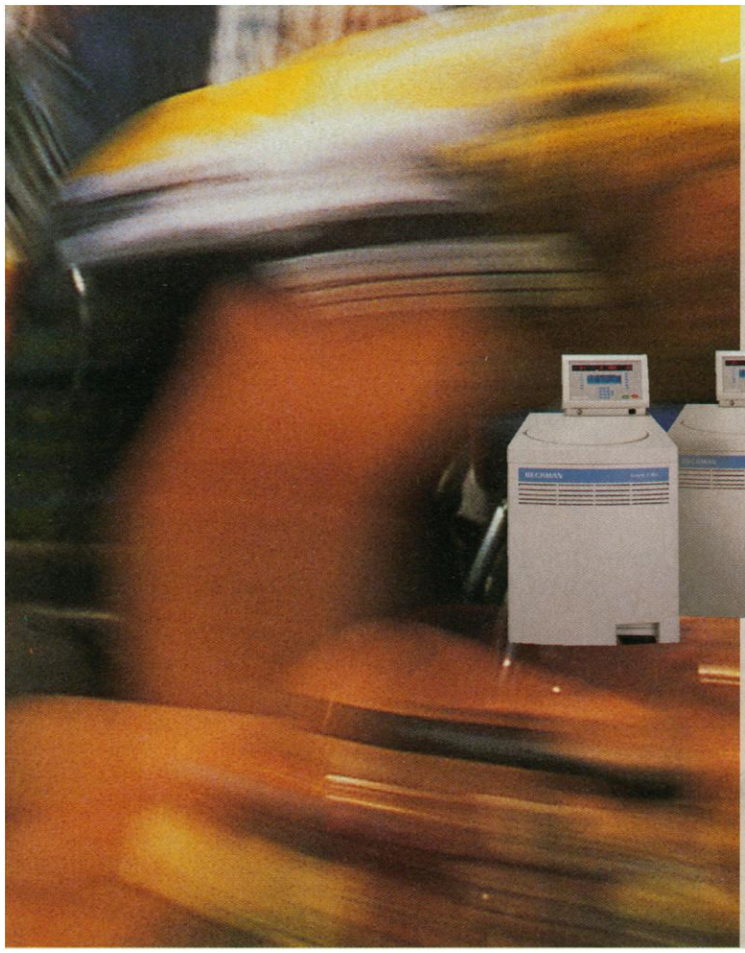

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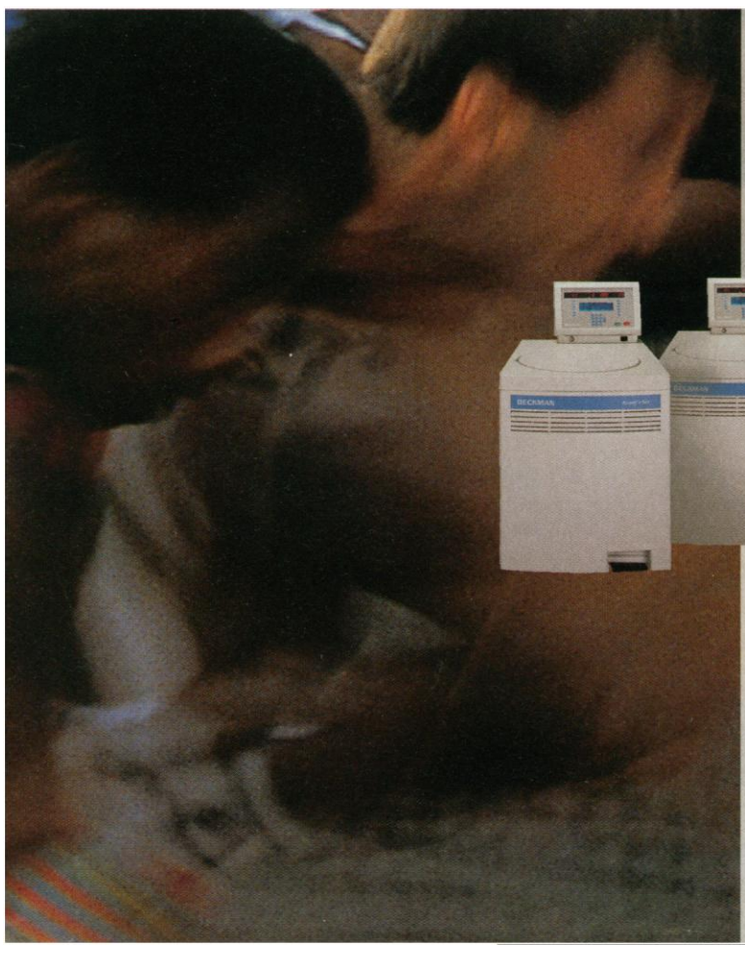

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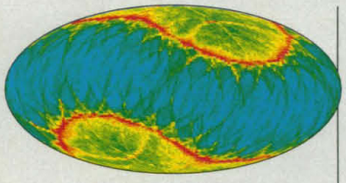

1064
Celestial mountainmaker

1080 & 1116
Spawning seaweed

NEWS & COMMENT

RESEARCH NEWS

PERSPECTIVES

RESEARCH ARTICLE

DEPARTMENTS

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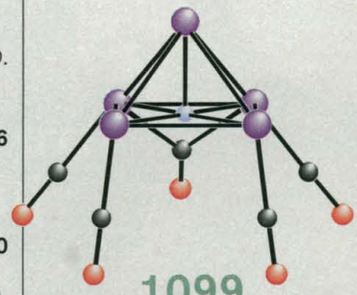
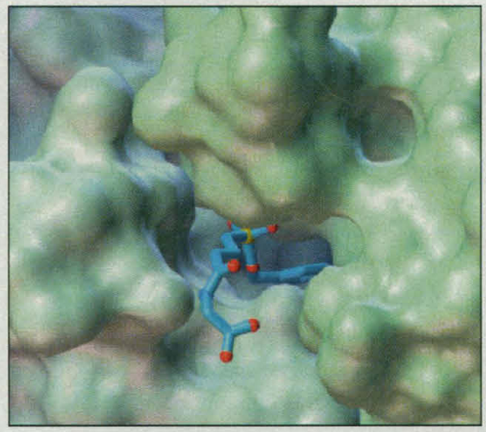
COVER

In 1947, after 16 years of meetings in the Maryland Chesapeake Bay region, the Gordon Research Conferences moved to Colby Junior College (now Colby-Sawyer College) in New London, New Hampshire. Of the 10 Gordon Conferences that met in the summer of 1947, seven will meet this year. The meetings will take place in California, New Hampshire, Rhode Island, and France and are noted with a "50 Years" symbol in the schedule announcement beginning on page 1143. [Photos: Colby-Sawyer College. Photo collage: Tracy Keaton Drew]

REPORTS



1099
Fivefold hold on hydrogen



1140
Hapten binding pocket of D2.3 Fab

Indicates accompanying feature

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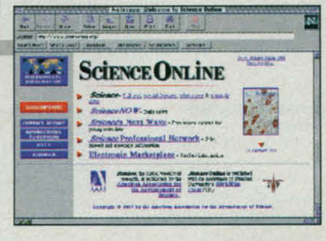

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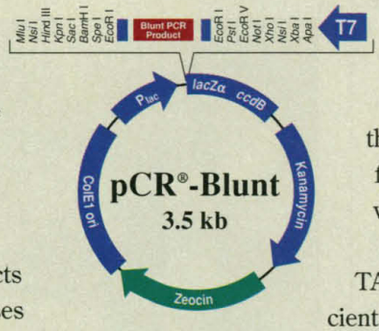

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edited by PHIL SZUROMI

Superconductivity and symmetry

There is still no complete model that explains why electrons form Cooper pairs in the high-temperature superconductors and cease to do so above their transition temperature. Zhang (p. 1089) now presents a theory which uses rotational symmetry in five dimensions, SO(5), to relate the *d*-wave superconducting state to antiferromagnetism in the higher temperature insulating state. Generalized phase diagrams can be constructed with the model to relate transitions to the chemical potential (doping level) of these oxide materials. In a Perspective, Nagaosa (p. 1078) discusses how this theory relates to previous models and outlines the challenges still to be met in understanding high-temperature superconductors.

■

Copper decorations

The scanning tunneling microscope has been used to place small copper clusters onto the surface of a gold electrode. Kolb *et al.* (p. 1097) deposited copper electrochemically from solution onto the end of the tip. The tip is given a controlled voltage pulse that causes it to touch the surface momentarily and transfer a small cluster. Patterns and arrays can be formed by repeating the process.

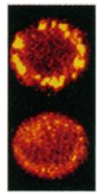
■

Singling out molecules

Two reports focus on single molecule measurements. Monitoring the diffusion of single molecules in free solution requires high temporal and spatial resolution. Xu and Yeung (p. 1106) show that fluorescence images of a thin layer of solution recorded with an intensified charge-coupled-device camera allows continuous monitoring of single molecules at submillisecond time scales. The diffusion coefficients of the molecules could be determined from these measurements. Nie and Emory (p. 1102) present a technique that provides complimentary information to the methods that are conventionally used in single-molecule studies, such as laser-induced fluorescence. Surface-induced Raman scattering of single molecules that were attached to nanoparticles showed enormous enhancements of their scattering efficiency for selected nanoparticles; the signals are more intense and stable than those obtained by fluorescence measurements.

Molecular connections in apoptosis

Insights into the role played by molecules that interact to regulate programmed cell death, or apoptosis, are presented in four reports (see also the Perspective by Golstein, p. 1081). Studies on the nematode (*Caenorhabditis elegans*) have shown that CED-9 (which corresponds to Bcl-2 in mammals) can protect cells from death induced by CED-3 (which corresponds to ICE, or interleukin-1β–converting enzyme, in mammals) and CED-4, but the mechanism for this inhibition has been unclear. Chinnaiyan *et al.* (p. 1122) show that CED-4 can simultaneously bind both CED-3 and CED-9, and Wu *et al.* (p. 1126) show that CED-9 localized CED-4 to intracellular membranes, thus removing it from the cytosol. Another role for Bcl-2 was identified by Yang *et al.* (p. 1129) and Kluck *et al.* (p. 1132), who showed that Bcl-2 can block apoptosis by preventing the release of cytochrome c from the mitochondria.



■

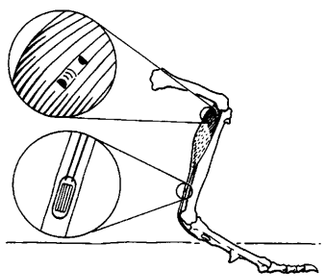
Five-coordinate hydrogen

Hydrogen is usually coordinated to only one or two atoms, but in a few rare cases, coordination numbers of three and six have been observed. Bau *et al.* (p. 1099) have synthesized a compound in which hydrogen is coordinated to five rhodium atoms in a metal cluster compound. The hydrogen atoms are located in square-pyramidal sites on the surface of the cluster. Only two of the six square pyramidal sites are occupied.

■

Turkey trot

Running takes a lot of energy, but for turkeys running on level ground, contracting muscles are not doing a lot of work. Roberts *et al.* (p. 1113; see the news story by Pennisi, p. 1067) implanted fiber-length and strain gauges to measure muscle force in the large calf muscles of running wild turkeys. The stretching and recoiling of tendons and the extended muscle (which acts as a spring) do most of the work. Active contracted muscle produces the high force needed to keep the turkey standing (and thus consumes metabolic energy), but contracts only a short distance and thus produces little work.



■

Mass survival

The origin and early evolution of birds has been widely debated, as has the effect of the extinction at the end of the Cretaceous, which marked the demise of the dinosaurs. Cooper and Penny (p. 1109) used molecular data from modern birds and estimates from the fossil record of minimum divergence times of pairs of related birds to estimate the number of modern bird lineages that survived through this extinction. Their analysis suggests that many lineages survived. Some of the implications and uncertainties related to the selection of the fossil pairs are discussed in a news story by Gibbons, p. 1068.

■

Busy terminal

The TATA-box binding protein (TBP) is required by all three RNA polymerases. The function of its nonconserved amino-terminal end has been unknown and its conserved carboxyl-terminal end can usually substitute for the full-length protein. Mittal and Hernadez (p. 1136) show that the nonconserved amino terminal mediates activity at the RNA polymerase III U6 small nuclear RNA (snRNA) promoter and recruits the snRNA activating protein complex to this site. It can also down-regulate TBP binding to the U6 TATA box and enhance U6 transcription.

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INTENDED FOR BEGINNERS IN MOLECULAR BIOLOGY: No previous experience in molecular biology is required or expected. Forty-eight participants per session will be selected from a variety of disciplines and academic backgrounds. Last year's participants included principal investigators, directors of programs, postdoctoral fellows, graduate students, and research assistants. Their fields of research included medicine, biochemistry, ecology, immunology, microbiology, pharmacology, plant biology, genetics, physiology and others. They came from large universities, small colleges, medical schools, hospitals, industry, and private foundations; 75% came from the USA, and 25% from overseas. With eight instructors, the student to teacher ratio is 6 to 1.

FEE: $3200 per participant includes lab manual, use of all equipment and supplies, and room and board (all rooms are singles). Fee includes the use of the libraries, computers, and all campus athletic facilities.

APPLICATIONS MUST BE RECEIVED BY March 10, 1997. Notification of acceptance status will be mailed by March 12, 1997. Late applications will be accepted for our wait list. Payment in full will be due by April 10, 1997. Your application should include a brief C.V. and a one page statement explaining your reasons for taking the course. Please specify the session to which you are applying (1, 2, 3) and indicate one of the other sessions as a second choice. Women and minorities are especially encouraged to apply. **For additional information, please visit our web site (http://math.smith.edu/~sawlab/neb.html) or contact us at (413) 247-3004.**

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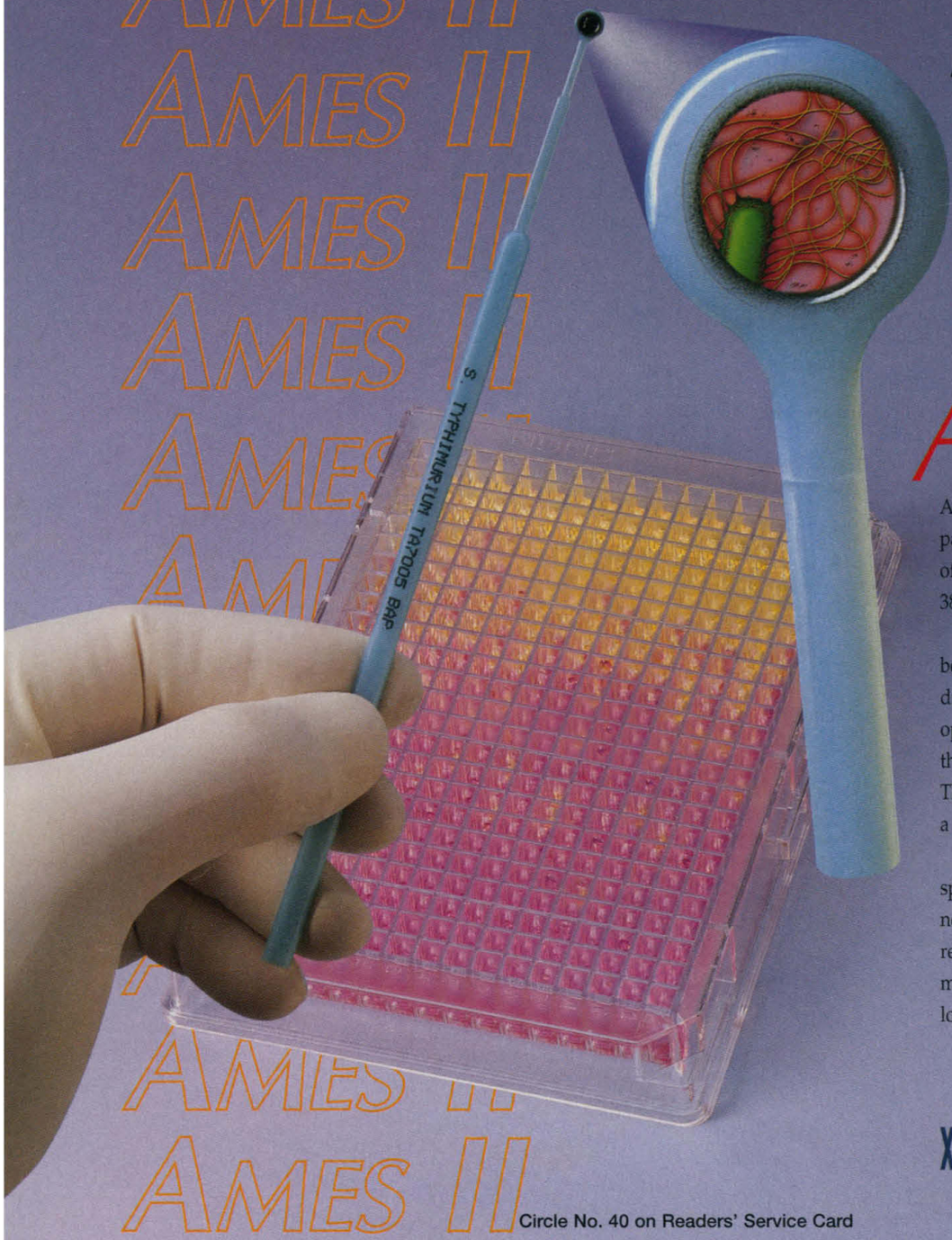

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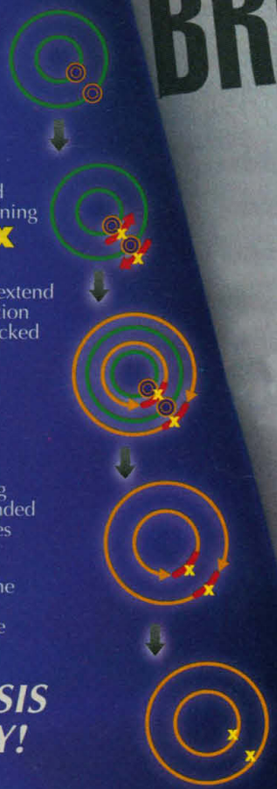

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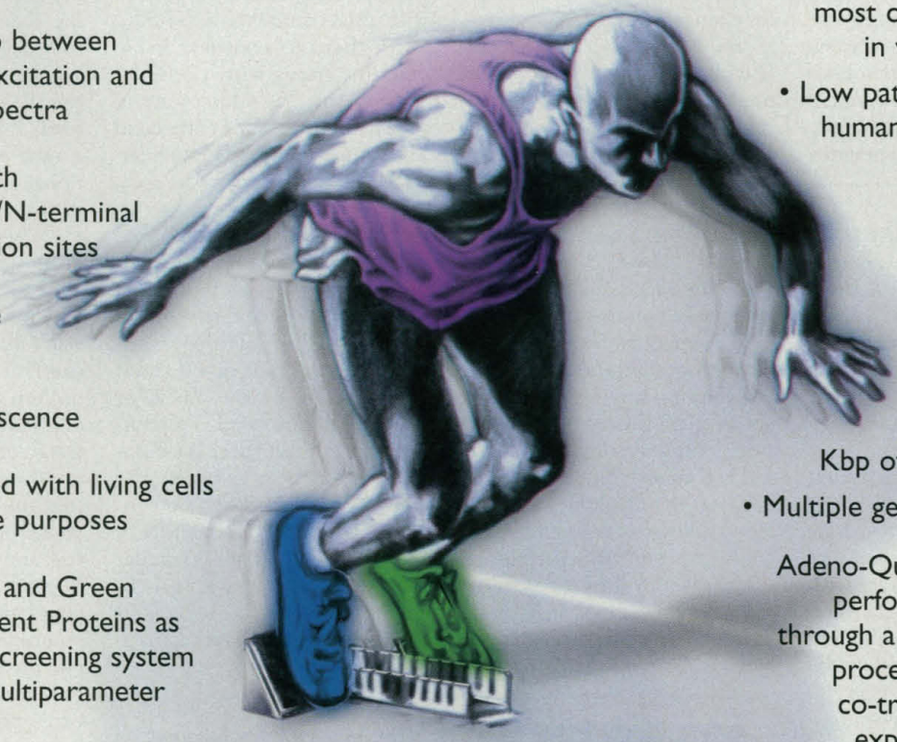

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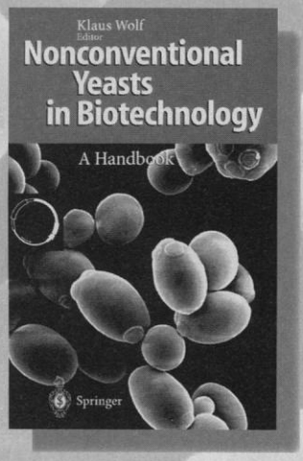

K. Wolf (Ed.)
Nonconventional Yeasts in Biotechnology
A Handbook
1996. XXII, 619 pages.
94 figures, 45 tables.
Hardcover DM 128,–
ISBN 3-540-59482-5

Nonconventional yeasts – all yeasts other than S. cerevisiae and S. pombe – are attracting increasing attention in basic research and biotechnological applications. Due to their exceptional metabolic pathways, they have been used in various biotechnological processes for producing foods or food additives, drugs or a variety of biochemicals. This book is the first to extensively cover nonconventional yeasts.

K. Faber
Biotransformations in Organic Chemistry
A Textbook
3rd completely rev. ed. 1997.
X, 402 pages. 36 figures,
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M. Stoeppler (Ed.)
Sampling and Sample Preparation
Practical Guide for Analytical Chemists
1997. Approx. 200 pages.
75 figures, 43 tables.
Hardcover DM 148,–
ISBN 3-540-61975-5

This book describes in great detail sampling and sample preparation in routine and research. All chapters are written for practitioners by experts in the field. The book provides well-documented and illustrated procedures for sampling and sample preparation prior to trace metal analysis. A careful selection of appropriate references to pitfalls, methods and strategies furnishes the information for a proper performance of the most crucial steps of any analytical procedures.

R. G. Berger
Aroma Biotechnology
1995. X, 240 pages.
61 figures, 48 tables.
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ISBN 3-540-58606-7

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J. F. Zayas
Functionality of Proteins in Food
1996. X, 373 pages.
86 figures, 21 tables.
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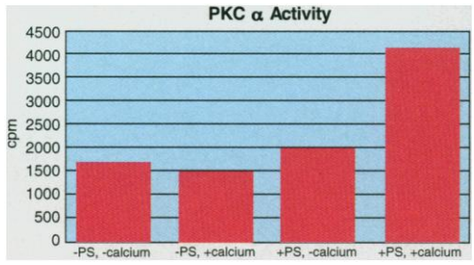

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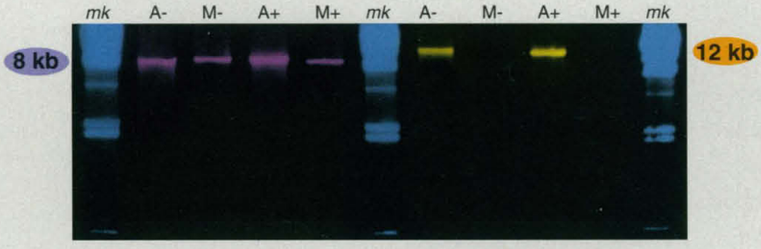

RT reactions were carried out under optimum conditions for each enzyme, AMV RTase and MMLV RTase, in duplicate. One sample from each pair was followed by RNase H treatment. Then using two different primer pairs for 8 kb and 12 kb amplification, PCR was performed with *TaKaRa LA Taq* for AMV RTase products and Long distance DNA polymerase for MMLV RTase products respectively. No full length cDNA of 12 kb was detected with MMLV RTase.

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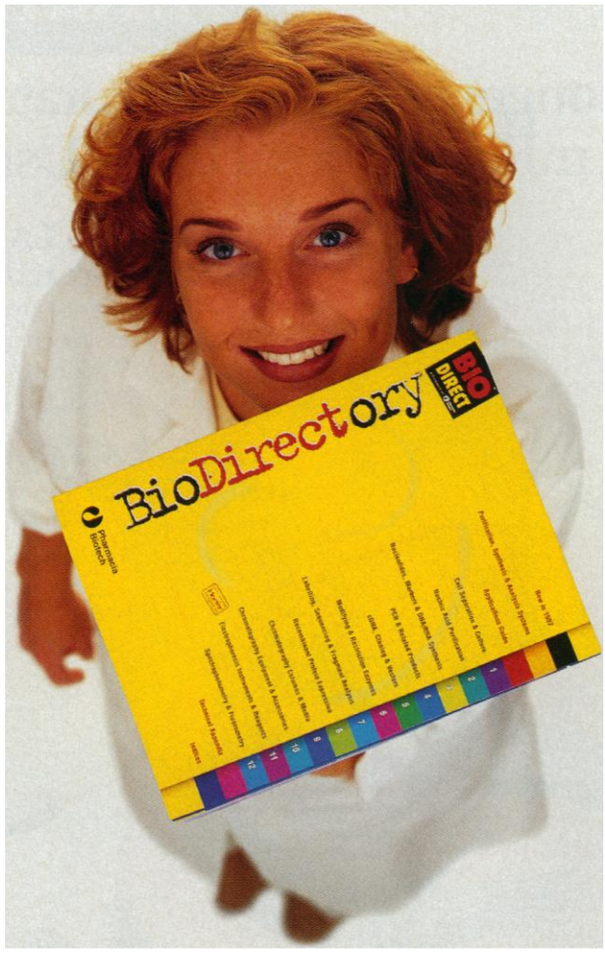

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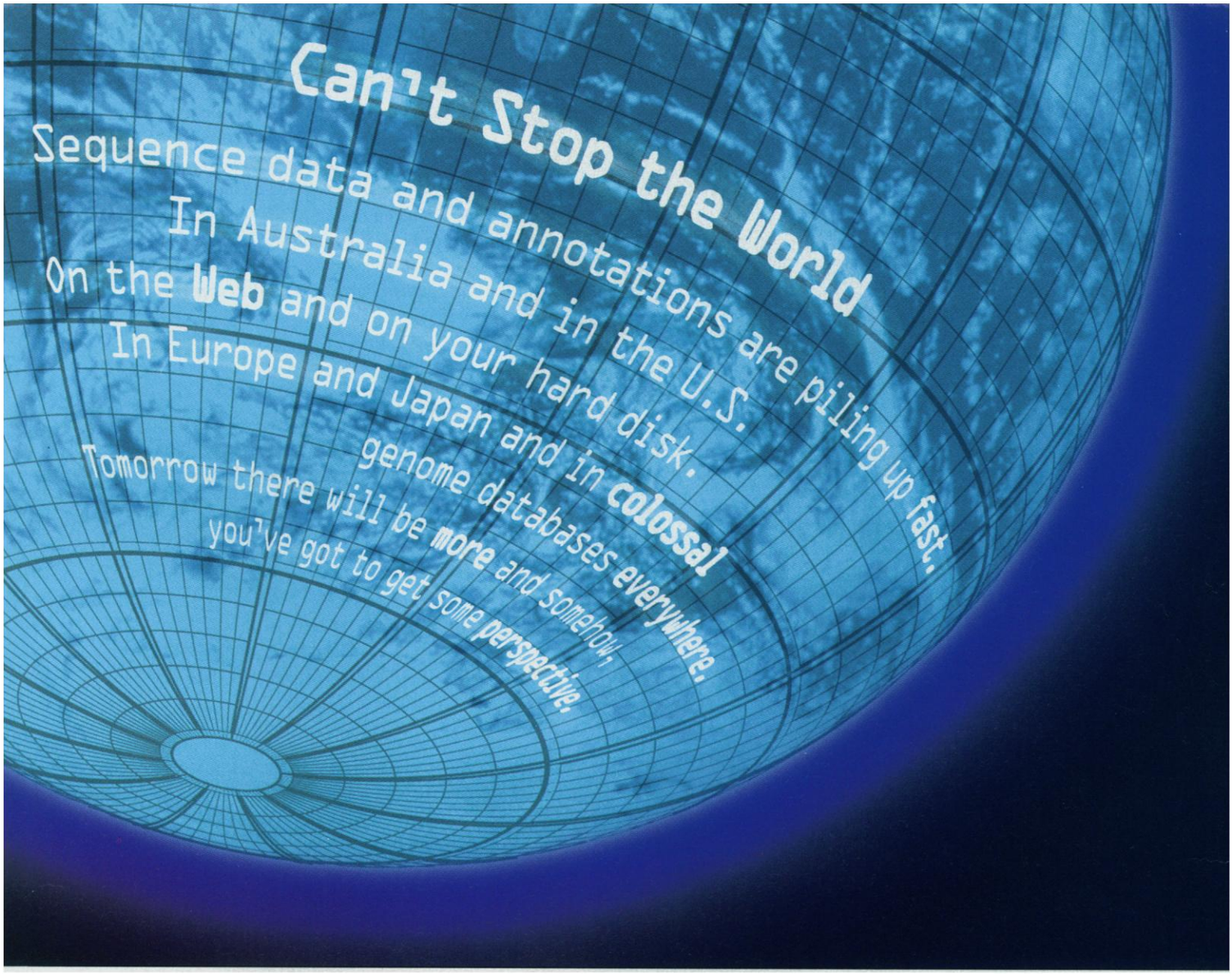

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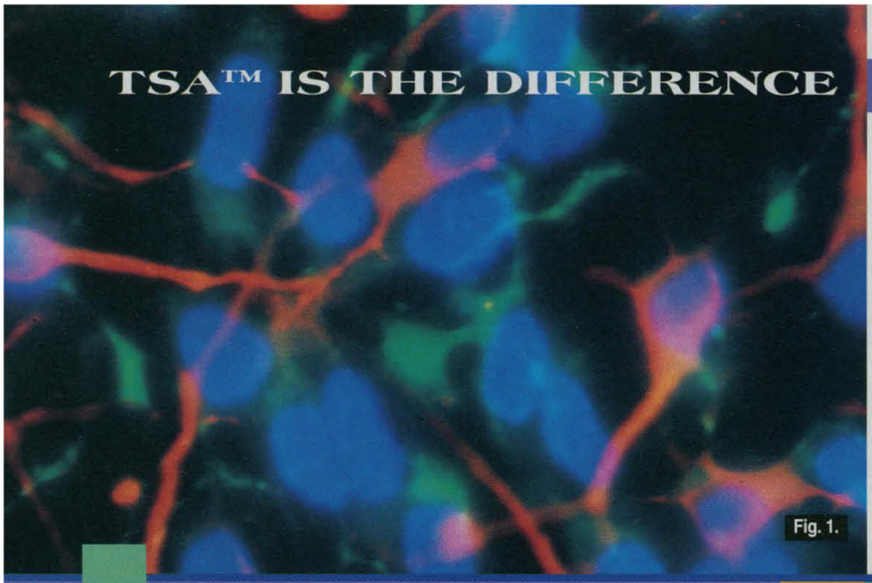

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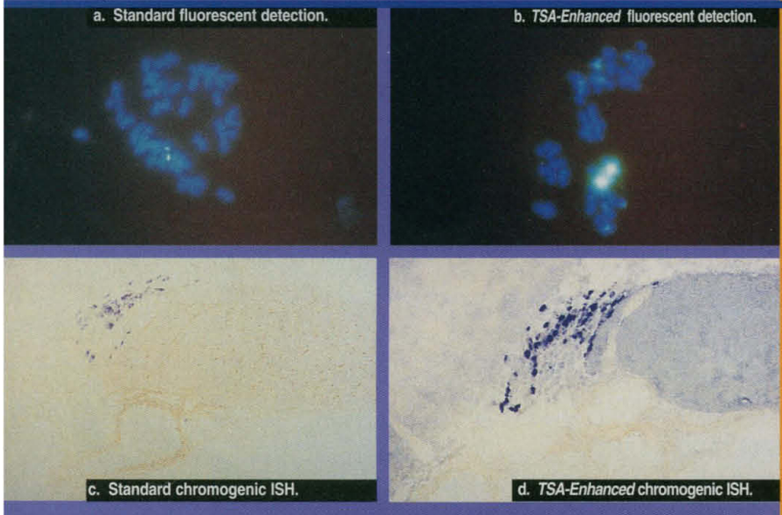

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Figs. 2 a-b. Fluorescent detection of chromosome centromere probes in metaphase spreads.
Figs. 2 c-d. In situ chromogenic detection of oxytocin in rat brain tissue sections.

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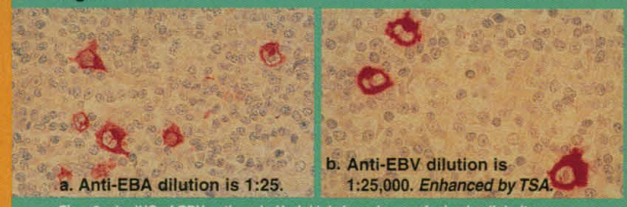
Fig. 3



Figs. 3 a-b. IHC of EBV antigen in Hodgkin's Lymphoma of mixed cellularity.
Courtesy of R. Von Wasielewski and S. Gignac, Pathologisches Institut de Medizinischen Hochscule, Hannover, Germany.

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