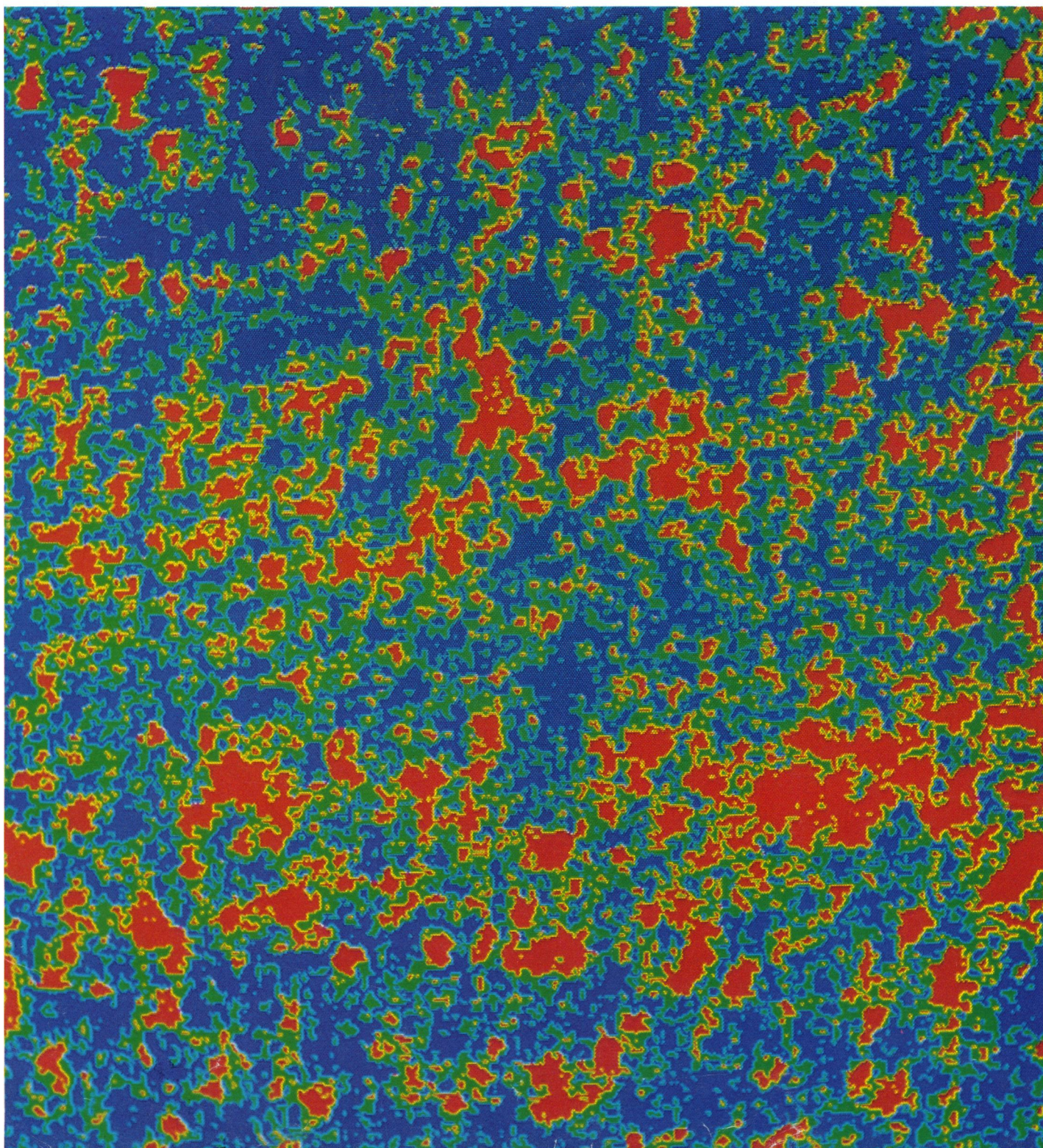


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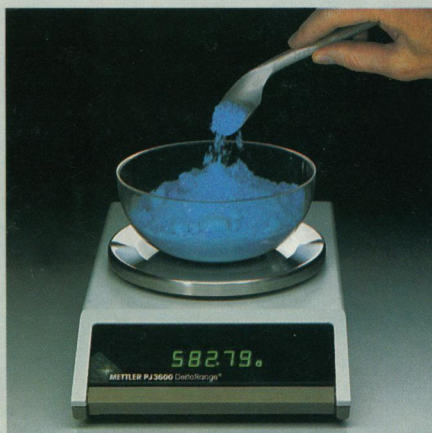


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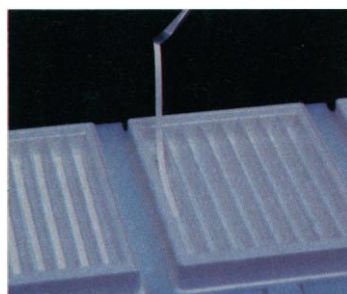
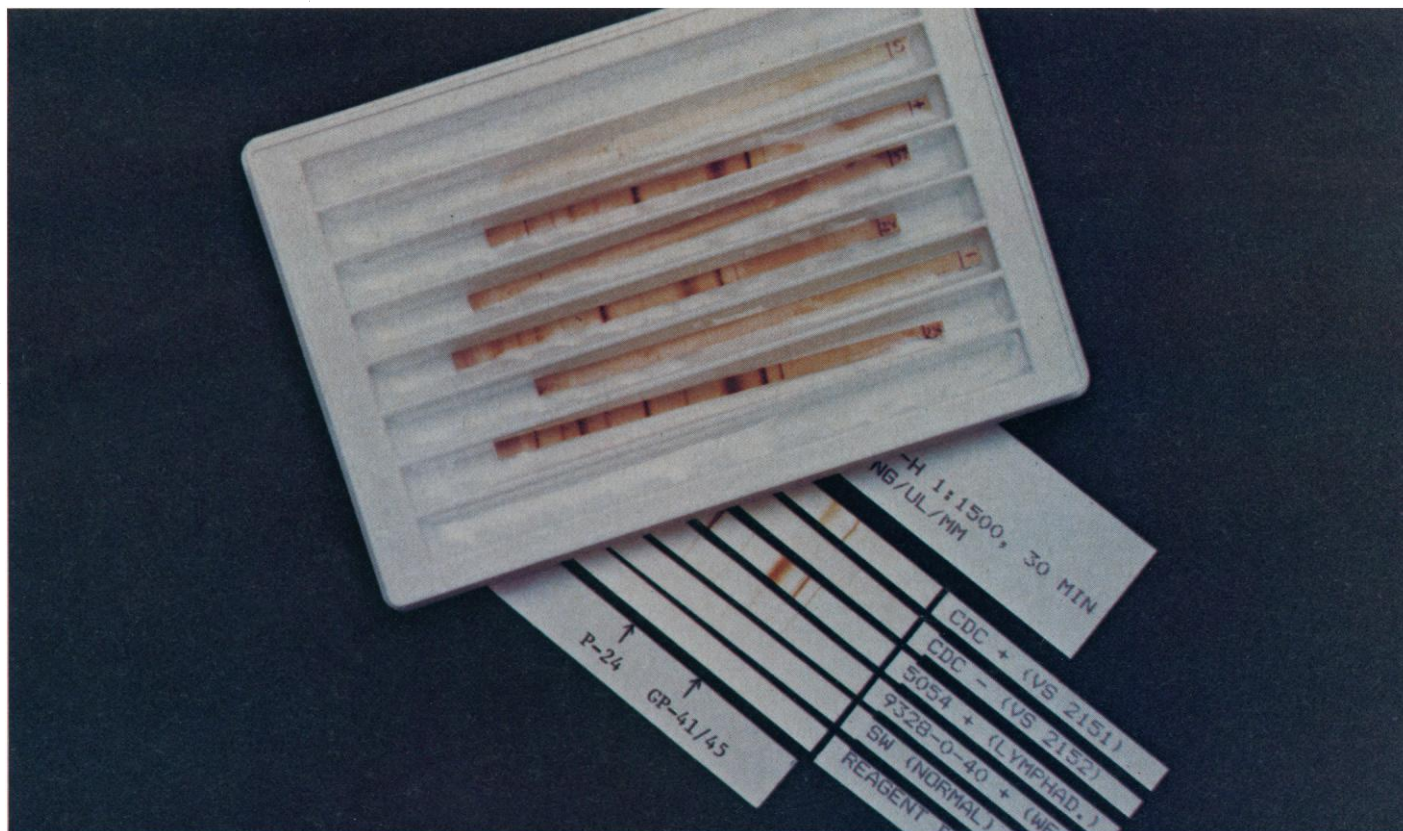
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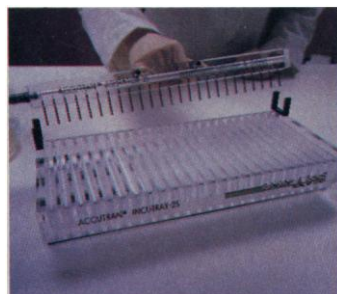
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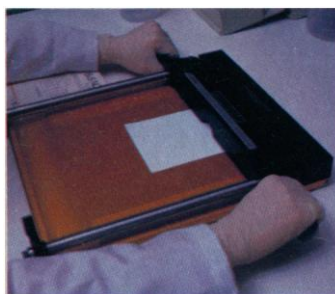
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COVER A color graphic display of an optical density scan of prefrontal cortex from a cynomolgus monkey, hybridized with an RNA probe transcribed from complementary DNA clone λ Am4 coding for Alzheimer β amyloid polypeptide. Each color represents an optical density range of grain clusters, with red as highest, green as intermediate, and blue as lowest density. See page 873. [Graphic provided by John H. Morrison, Gerald A. Higgins, David A. Lewis, and Michael C. Wilson, Scripps Clinic and Research Foundation, La Jolla, CA 92037; and Sina Bahmanyar, Dmitry Goldgaber, S. K. Shankar, and D. Carleton Gajdusek, National Institutes of Health, Bethesda, MD 20205; computer software (E.M.M.A.) by Warren Young and Mark Shin, Scripps Clinic and Research Foundation]

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This Week in SCIENCE

Seabed resources

WATER covers three-quarters of the earth, making the seafloor an obvious potential source of minerals and other materials now mined onshore (page 853). But, based on the economics of extracting materials from the seabed as well as the apparent long-term supplies of land resources, Broadus predicts that seabed mining is not likely to be widespread in the near future. Technologic know-how cannot yet solve many of the mining problems specific to the deep sea. And, resource extraction is, in general, more expensive at greater depths. (Sometimes, however, if a deposit is large and rich enough, the payoff may be worth the expenditure; offshore gas and oil deposits are examples of this.) Interestingly, despite the evidence that seabed mining is not usually cost-effective, interest remains high in it; in part this reflects international tensions over who has rights to the sea and its resources. Important spinoffs from seabed exploration include new approaches for locating resources on land and insights into the geochemistry and geophysics of the earth.

Self, nonself

THE immune system can discriminate what is foreign from what is self (page 865). Peptides of foreign antigens bind to cells on which they become physically associated with class II molecules on the surface; the peptides are presented to and activate antigen-responsive T cells, and eventually immune responsiveness or tolerance results. Guillet *et al.* found that peptides of diverse antigens can bind to the same class II molecule; such peptides had regions of homology with each other and with their associated class II molecule. Avid binding in vitro between a peptide and a class II molecule that appeared, in previous studies, not to be a permissible combination suggested that, although sometimes unresponsiveness may occur if peptides find no suitable class II molecules, at other times

unresponsiveness may occur if antigen-responsive T cells are missing from the host's repertoire; a hole in the T cell population of mice was indeed found. The studies suggest that, for a peptide to be immunogenic, its homology (structural or functional) with class II molecules must be sufficient for binding but not so exact that, when associated with the class II molecule, the complex looks like self. Marx discusses research on self, nonself discrimination and the implications of the hypotheses engendered by these data for explaining how the immune system works (page 843).

Alzheimer's disease

SIGNIFICANT progress has been made toward defining biochemical and genetic processes that contribute to the development of Alzheimer's disease, which causes progressive loss of ability to function both mentally and physically (pages 873, 877, 880, and 885). There is no cure or treatment and in the most heavily afflicted groups the prevalence is greater than 5%. In the brains of victims, degenerating axons of nerve cells surround deposits of amyloid protein and form tangled masses. Similar "neuritic plaques" are deposited in brains of Down syndrome victims and aging animals (Selkoe *et al.*); these plaques may form by a common mechanism. The DNA encoding amyloid has been isolated, cloned, and characterized (Goldgaber *et al.* and Tanzi *et al.*). It was used to study where the amyloid gene was expressed in Alzheimer's and Down syndrome brains and to map the chromosomal location of the gene in Alzheimer's disease (to chromosome 21). Several families were studied in which Alzheimer's is inherited; the genetic defect mapped to chromosome 21 (St George-Hyslop *et al.*). (In addition, chromosome 21 is associated with Down syndrome.) Whether the amyloid gene and the Alzheimer's gene are the same or only close on the chromosome is yet to be determined. Barnes elaborates on the significance of this research, the techniques used, and is-

sues that remain for associating pathology with a genetic factor (page 846).

Dangerous combination

EPILEPTICS who take valproic acid (VPA) in conjunction with phenobarbital to control convulsions are at greater risk of experiencing liver damage and death than are those who receive VPA alone (page 890). The damage is thought to be caused by a metabolic product of VPA, Δ^4 -VPA; Rettie *et al.* investigated why more of this metabolite is generated during combination therapy. In vitro, when VPA was incubated with microsomal preparations from rats that had been treated with phenobarbital, large quantities of Δ^4 -VPA were produced; parent VPA was converted to Δ^4 -VPA by an enzyme from microsomes induced by phenobarbital. Epileptics who are treated with combination therapies need close scrutiny so that signs of liver damage can be detected early and reversed.

Reversing resistance

PARASITES causing malaria have been treated effectively with the drug chloroquine, but, increasingly, isolates appear that are resistant to this drug (page 899). Often, multiple-drug resistance develops both to chloroquine and to other drugs not structurally related to it. Such resistance may result from active transport of drugs out of the cell, such that buildup of toxic levels of drug in the cytoplasm is precluded. If transport could be blocked, keeping a drug within the cell, the cytotoxic effect of a drug might be restored. Martin *et al.* evaluated how verapamil affected chloroquine-resistant malaria parasites; in tumor cells, which can also develop multiple-drug resistance, verapamil interferes with drug effluxes. Verapamil was found to make chloroquine-resistant parasites sensitive; whether the channel-blocking effect or some other activity of verapamil is involved has not yet been determined.

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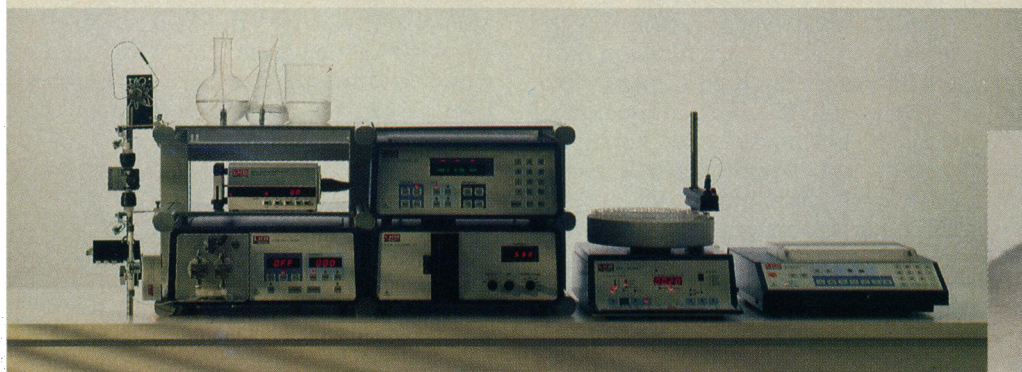
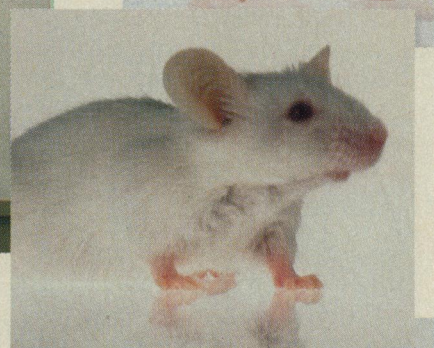
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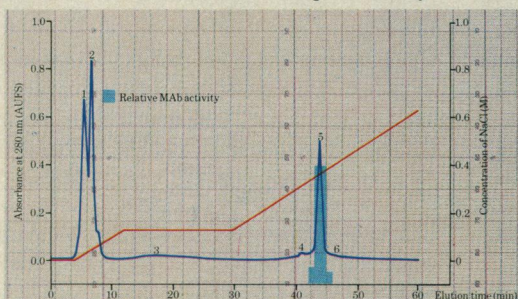
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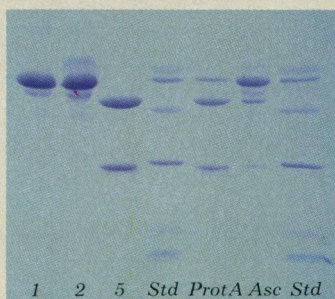
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United States Trade

Fundamental changes have occurred in this country's role in the world that have not been adequately recognized by many citizens. In a few short years, a wealthy creditor nation has become the number one debtor. The underlying reason is that the United States has largely lost its ability to compete successfully in international trade. Trends are most strikingly evident for the total of items other than energy. In 1980, our trade surplus in these was \$51 billion. Then followed a steady drop to a deficit of about \$136 billion in 1986. By far the major factor was an imbalance in trade of manufactured goods.

We have not paid much attention to low technology. A deficit in those items, which include cars, clothing, and steel, went from \$16 billion in 1981 to \$111 billion in 1985. More painful to our pride was performance in high-technology items. In 1981, high-tech exports were \$59.6 billion, while imports were \$31 billion. By 1985, exports had grown slowly to \$68.4 billion, while imports had more than doubled to \$64.8 billion. Were it not for exports of aircraft, we would have had a deficit in high-tech items.

A recently issued publication from the U.S. Department of Commerce is the source of these and much other data.* It also provides analyses of contributing factors. One that has often been cited was the high exchange rate of the dollar. However, more than half our imbalance is with nations such as Taiwan, whose currency moves up and down with the dollar. Moreover, during the last half of 1986, when the dollar had already weakened sharply against the yen and mark, our imbalance continued to worsen.

Another factor cited in the publication is comparatively limited gains in productivity in the United States. Manufacturing capabilities have been growing in both developed and developing countries, often at rates faster than in the United States. There has been technological progress in many countries. Gains have been particularly strong in Taiwan, South Korea, Hong Kong, and Singapore.

Other factors cited include high savings rates elsewhere, rising educational levels, and improved infrastructures. These conditions tend to support efficient high-quality manufacturing industries that produce both basic products and high-technology items. At the same time, wage rates are generally lower in many of the other countries.

The narrowing of longtime U.S. advantages in technology and manufacturing and the lower wages abroad have made it more difficult for many U.S. industries to compete from factories located in this country. This has led to changes in the strategies of some of the multinational companies. Some have de-emphasized exporting from the United States. They have increased the use of foreign countries as the sources of parts, both in manufactures destined for markets in the United States and for other nations. With U.S. manufacturing less competitive, they have put more emphasis on joint ventures abroad and on the licensing and sale of technology. These tendencies have been facilitated by faster international communication and transportation. One example quoted in the trade press involves a large automobile manufacturer. The body structure of one of its expensive cars is made in Italy. It is flown to the United States by air transport.

Some of our largest, hitherto most reputable companies obtain abroad many of the goods they distribute. They then place their nameplate on them. This practice has raised concerns that our manufacturing base may wither away, leaving the United States a nation of "hollow corporations" that perform only financial and marketing services.

The United States required nearly 70 years to attain a creditor position of \$150 billion, reached in 1982. By the end of 1985, the United States had a net debtor status of \$107 billion. As of now, the debtor status is about \$250 billion. Some analysts project that the debtor position could approach or exceed \$800 billion by 1990. As time goes on, the cost of servicing the debt will contribute to a further weakening of our position.

At present, the debts of the United States are denominated in dollars, and there are attractive investments here for foreigners. At some point, however, and in some way, we will find it necessary to deal with a disagreeable and changed status.—PHILIP H. ABELSON

*Department of Commerce, *United States Trade* (Washington, DC, October 1986).

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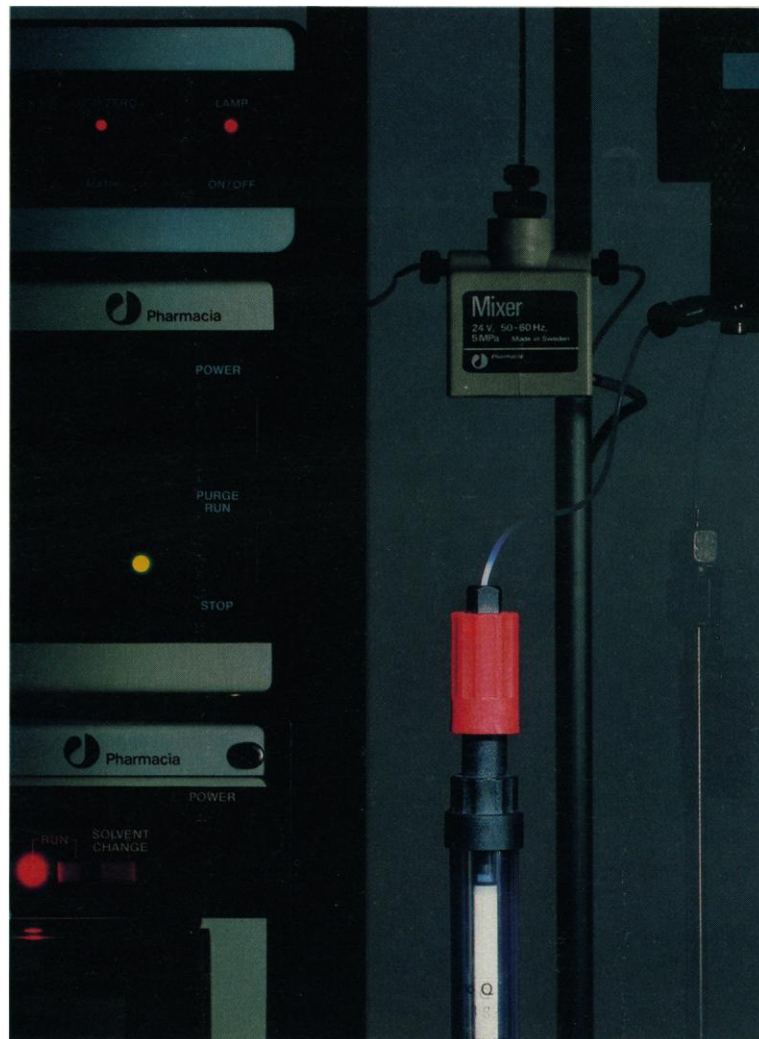
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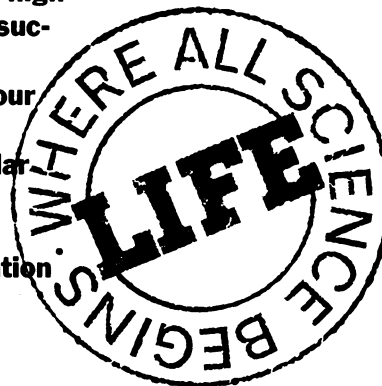
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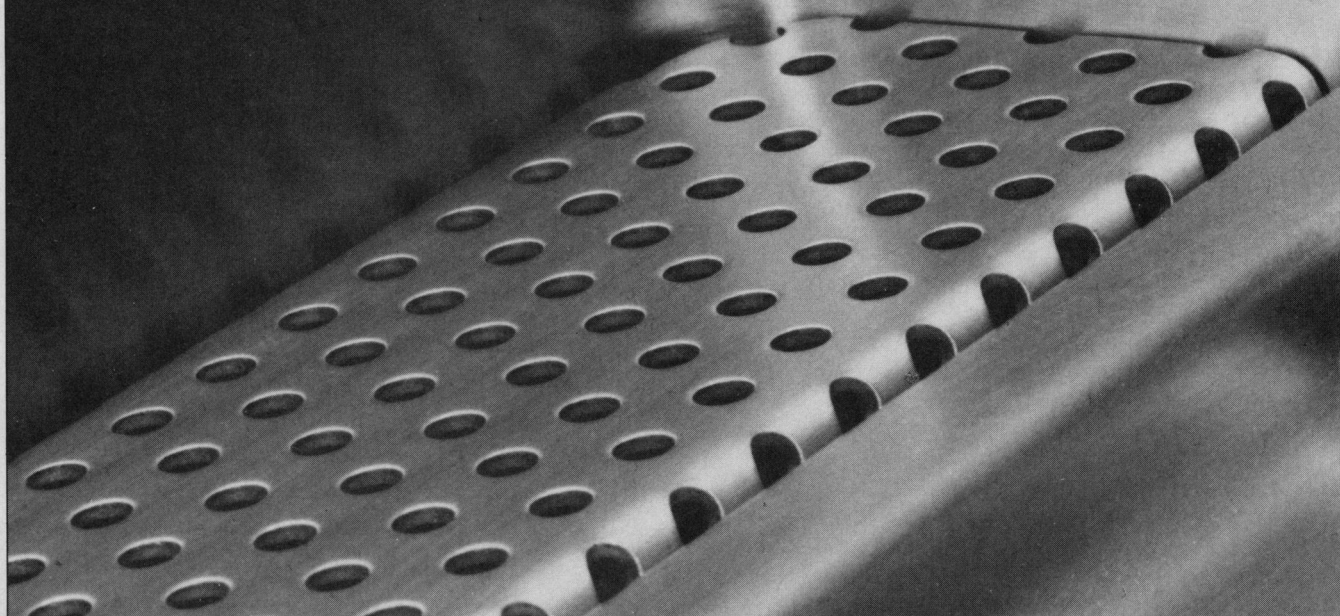
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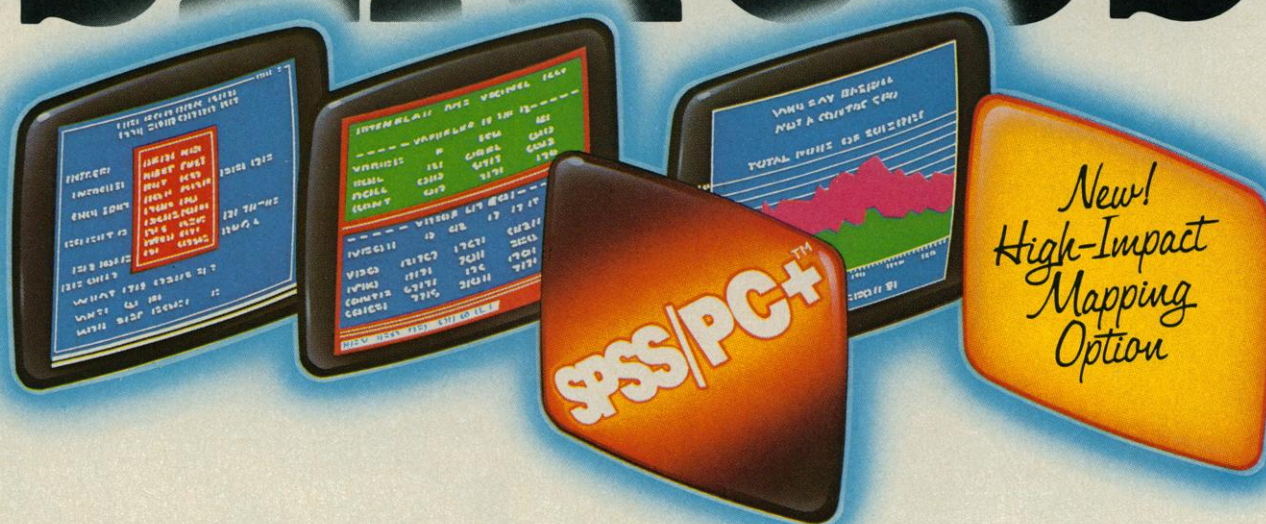
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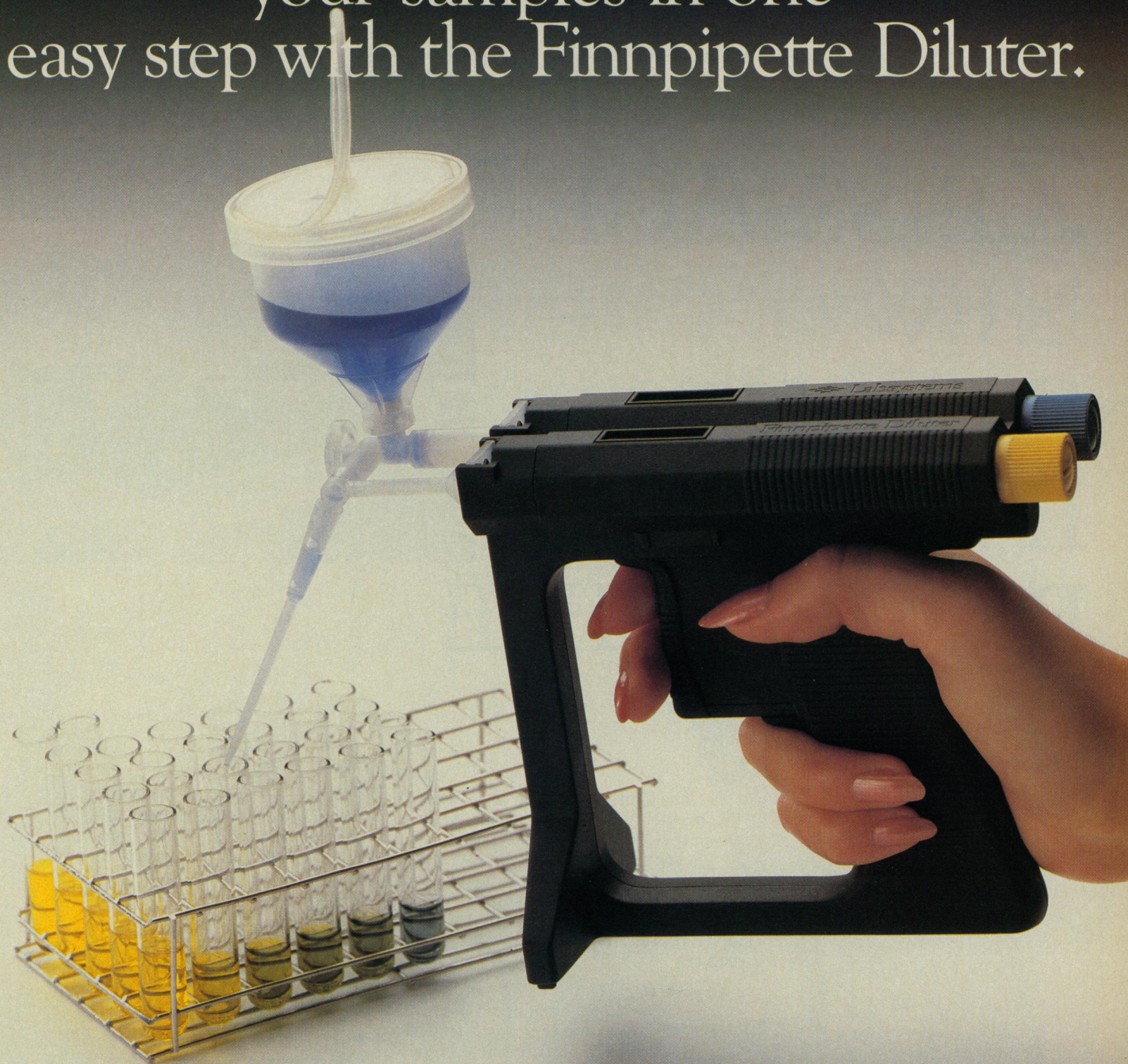
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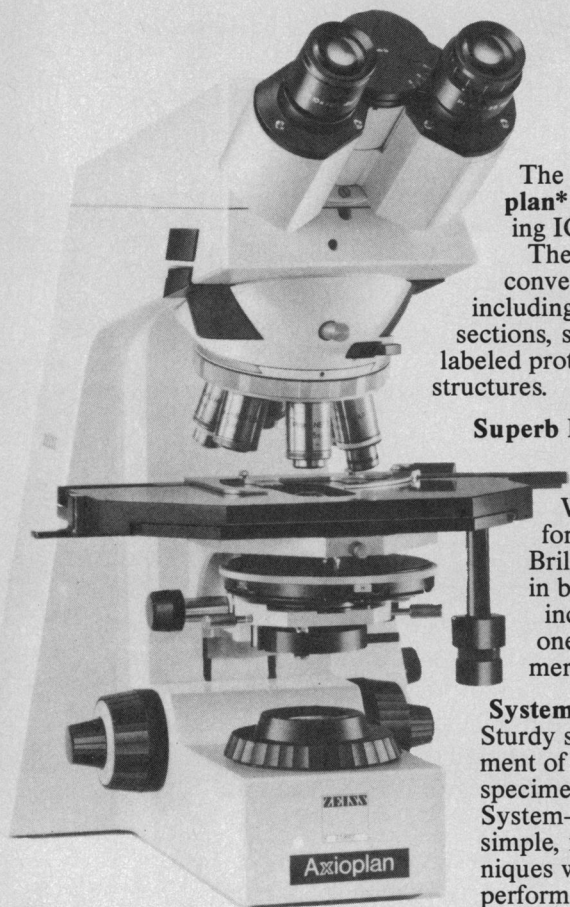
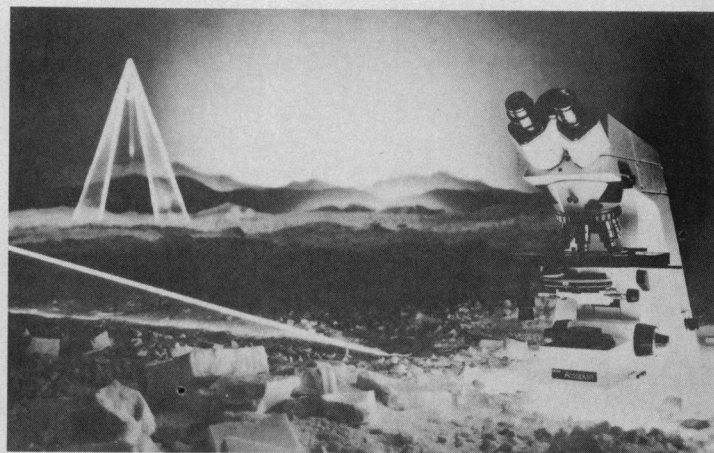
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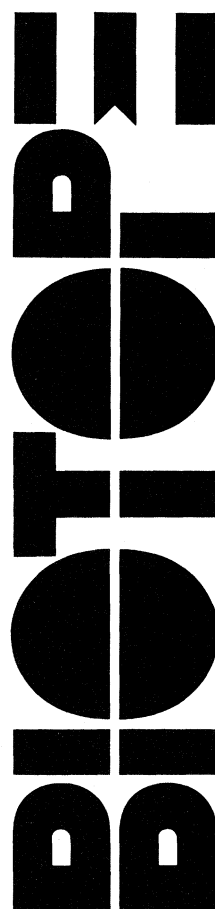
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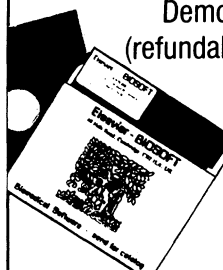


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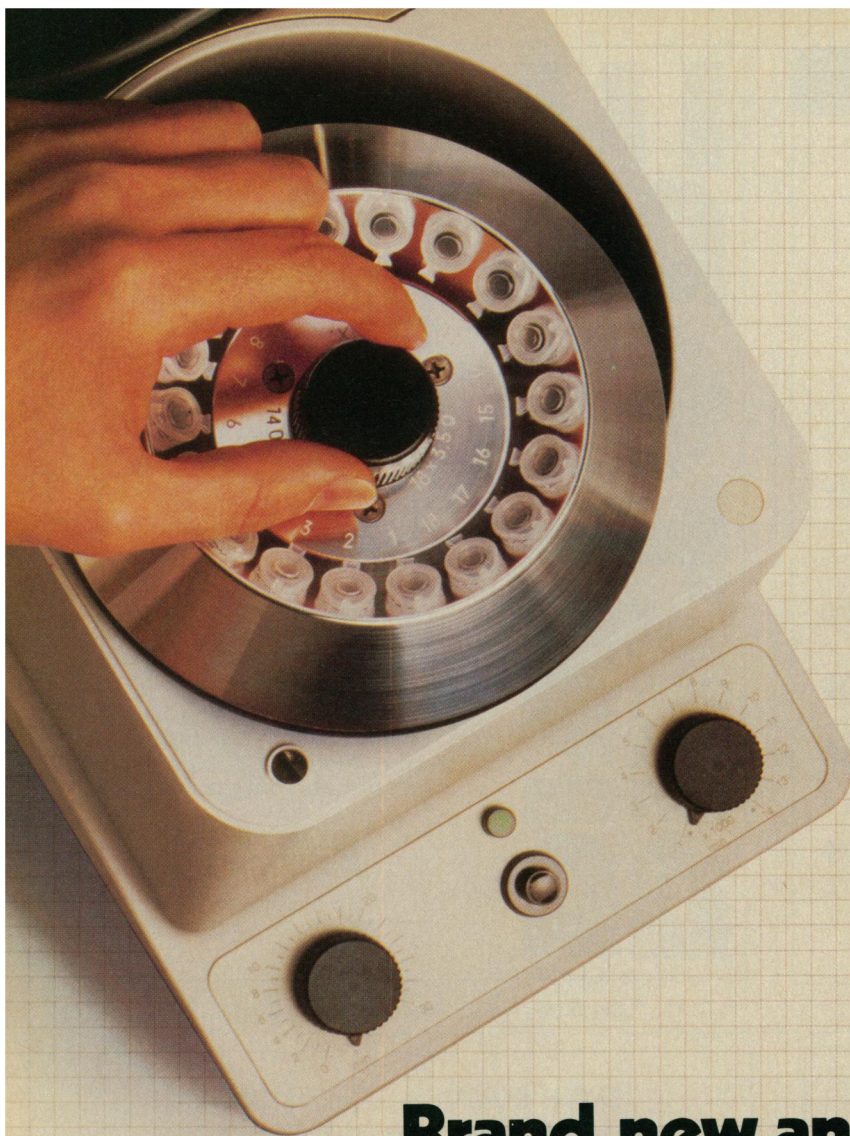
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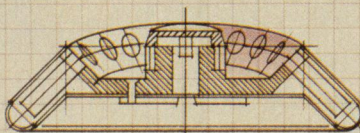
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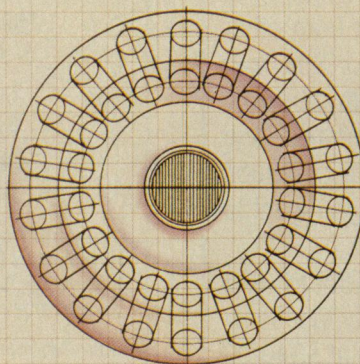
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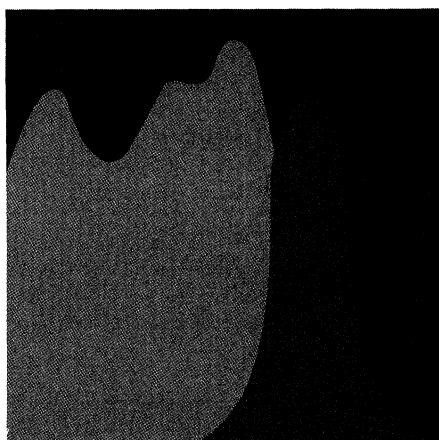
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Co-chairmen – **DNA:** Walter L. Miller, Peter Gruss

HYBRIDOMA: Zenon Steplewski, Hilary Koprowski, Joseph Davie

KEYNOTE ADDRESS (Sunday p.m.) Stephen Goff, Columbia University, Alexander Rich, M.I.T.

ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)

Chairman: Erling Norrby, Karolinska Institutet, Stockholm, Sweden

(Monday a.m.)

IMMUNOPATHOPHYSIOLOGY OF AIDS

Luc Montagnier, Paris

HTLV-III AND OTHER FACTORS IN THE ORIGIN OF AIDS AND ASSOCIATED MALIGNANCIES

Robert C. Gallo, Bethesda

IMMUNOLOGIC AND MOLECULAR FEATURES OF HIV INFECTION

Jay A. Levy, San Francisco

MOLECULAR BIOLOGY OF IMMUNOSUPPRESSIVE RETROVIRUS

Simon Wain-Hobson, Paris

DEFINING THE VIRAL GENES FOR HTLV-III REPLICATION AND CYTOPATHOGENICITY

Flossie Wong-Staal, Bethesda

(Monday p.m.)

MOLECULAR BIOLOGY OF THE AIDS VIRUS

William Haseltine, Boston

RELATIVE IMMUNOGENICITY OF HTLV-III, HTLV-IV, AND STLV-III PROTEINS

Myron Essex, Boston

ENVELOPE PROPERTIES OF HIV

Robin Weiss, London

TARGETS FOR IMMUNE ATTACK IN RETRO VIRUSES ASSOCIATED WITH AIDS

Dani P. Bolognesi, Durham

USE OF VACCINIA VECTORS TO STUDY EXPRESSION AND IMMUNOGENICITY OF RETROVIRAL PROTEINS

Bernard Moss, Bethesda

DNA SESSIONS

CHROMATIN (Monday p.m.)

Chairman, Gary Felsenfeld

TRANSCRIPTION (Tuesday a.m.)

Chairman, George Khoury

INTRACELLULAR PROTEIN TARGETING (Tuesday p.m.)

Chairman, Harvey Lodish

NEUROBIOLOGY (Wednesday a.m.)

Chairman, James L. Roberts

DEVELOPMENTAL BIOLOGY (Wednesday p.m.)

Chairman, Peter Gruss

HYBRIDOMA SESSIONS

TRANSGENIC MICE AS TOOL IN IMMUNOLOGY (Tuesday a.m.)

Chairman, Davor Solter

ANTI-IDIOTYPE VACCINES (Tuesday p.m.)

Chairman, J. Donald Capra

THE USE OF HYBRIDOMAS IN DETERMINING CYTOKINE STRUCTURES AND FUNCTIONS (Wednesday a.m.)

Chairman, Robert Schreiber

ANTI-CARBOHYDRATE MAB'S IN THE STUDY OF GLYCOLIPID-MEDIATED CELLULAR EFFECTS (Wednesday a.m.)

Chairman, Jan Thurin

SUMMARY

Chairman, Joseph Davie

Working Group Meetings will meet in closed sessions. The consensus reached by working groups will be presented to the whole Congress.

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Chairman, Michael Mastrangelo

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Compound Semiconductors (*J. Brown and T.S. Kuan*)

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Scanned Image Microscopy (*M. Isaacson*)

Technologist's Forum Symposium

Immunocytochemical Methods and Applications: TEM and SEM



THE DEADLINE FOR RECEIPT OF ALL PAPERS IS MARCH 16, 1987

CONTRIBUTED PAPERS ON SUBJECTS DEALING WITH MICROSCOPY AND RELATED MATTERS OF SPECIMEN PREPARATION AND IMAGE PROCESSING WILL BE WELCOME. Particular attention will be given at this meeting to scanning electron microscopy, cryoelectron microscopy, high voltage electron microscopy, and the relationship between light and electron microscopy.

FOR FURTHER INFORMATION CONTACT:

Program Chair
J. Richard McIntosh, PhD
Department of M.C.D. Biology
University of Colorado
Boulder, CO 80309-0347
Phone 303 492-8533

Circle No. 190 on Readers' Service Card

AMSTERDAM BIOTECHNOLOGY 87

15 - 18 June 1987

A commercial exhibition on biotechnology to be held in conjunction with the 4th European Congress on Biotechnology, **ECB 4**.

This congress will be attended by some 2000 biotechnologists.

Commercial exhibition and congress together show every promise of becoming a unique presentation of the state-of-the-art in biotechnology.

Both exhibition and congress will pay attention to all aspects of the entire, broad field of biotechnology.

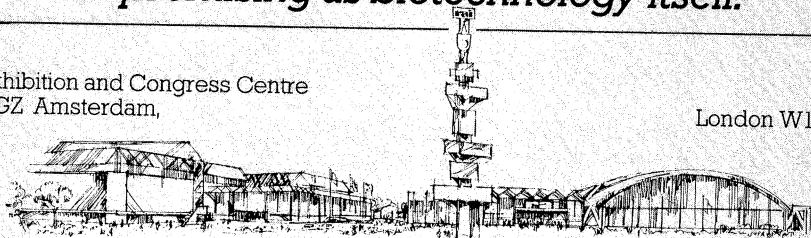
This is why participation in AMSTERDAM BIOTECHNOLOGY 87 is interesting for a wide variety of companies and institutions.

*Amsterdam Biotechnology 87
as promising as biotechnology itself.*

Information

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London W1R 7FD, Great Britain
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INTERNATIONAL EXHIBITION AND CONGRESS CENTRE RAI AMSTERDAM

Call for Symposium Proposals

1988 AAAS Annual Meeting ♦ Boston ♦ 11 – 16 February

Please return this form no later than 1 April 1987 to:
AAAS Meetings Program; 1333 H Street, NW, Washington, DC 20005 • Telephone: (202) 326-6448

Principal Organizer (primary contact for correspondence):

Name _____

Affiliation _____

Mailing Address _____

Telephone _____
(Area Code) (Number)

Co-Organizer (if applicable):

Name _____

Affiliation _____

Mailing Address _____

Telephone _____
(Area Code) (Number)

Title of Proposed Symposium _____

Proposed Sponsor(s) (AAAS Section, Office, or Affiliate only) _____	No. of 3-hr. Sessions Requested _____
--	--

1. Speaker _____

Affiliation _____

Topic _____

2. Speaker _____

Affiliation _____

Topic _____

3. Speaker _____

Affiliation _____

Topic _____

4. Speaker _____

Affiliation _____

Topic _____

5. Speaker _____

Affiliation _____

Topic _____

**Please attach synopsis of
objectives of proposed symposium
(approximately 200 words).**

Instructions: AAAS members are invited to submit symposium proposals for the next Annual Meeting in Boston, 11–16 February 1988. Please complete the form above, attach a “Synopsis of Objectives” (about 200 words), and send it to us **no later than 1 April 1987**.

We are particularly interested in symposia dealing with the latest developments in science and technology, and the implications of these developments for society. Coordinated contributed paper sessions are also welcome; inquire for details with this submission.

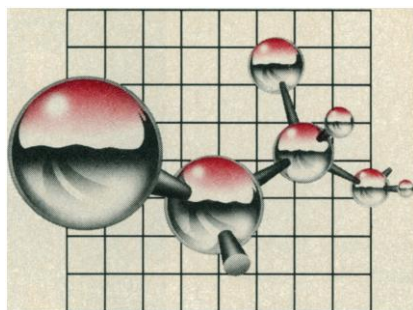
All symposium proposals are subject to review. If the information submitted is inadequate for reviewing, the proposal will be returned. Endorsement (sponsorship) by a AAAS Section Committee expedites the review process. It is therefore in the interest of the proposer to

send a copy of the proposal to the appropriate Section Secretary (see “AAAS News” section in *Science*, first issue of each month, for names) for endorsement at the same time the original is sent to the AAAS Meetings Office.

Speakers should *not* be confirmed at this time; however, sufficient information about probable speakers and their topics should be provided to allow for evaluation of the proposal. Please note that AAAS does not pay honoraria to speakers.

Some Deadlines: **June**—You will be notified about the acceptability of your proposal. **July**—Preliminary programs with confirmed speakers are due. **September**—Final program copy, suitable for publication, is due.

August 9-13, 1987
San Diego, California



**First
Symposium
of the
Protein
Society**

The Protein Society

A scholarly society of scientists interested in the structure and function of proteins. The purpose of the society is fundamental; to foster discussion and interaction among scientists interested in all aspects of protein structure and function. The society already has over 700 members covering a broad spectrum of the different disciplines bearing on protein structure and function.

Interaction among many types of investigators utilizing the myriad of approaches and techniques to probe protein molecules is essential. The Protein Society ensures these interactions will occur by providing regular opportunities for protein scientists to meet and exchange ideas and findings.

Full Membership

Individuals holding a doctoral degree or equivalent experience with a demonstrated interest in the structure and function of proteins. \$50, 2 yrs.

Associate Membership

Individuals with an interest in proteins not qualifying for full membership. \$25, 2 yrs.

Corporate Membership

Commercial/Industrial companies interested in fostering a synergistic involvement of industry in protein chemistry. \$1500, 2 yrs.

**The Second Symposium—
San Diego, August 9-13, 1987**

The first biannual symposium of the Protein Society.

Location

The second San Diego symposium is the first opportunity for the membership of the Protein Society to meet and interact. The program of this first meeting is designed to attract a variety of individuals representing all the differing aspects of protein research.

The program committee under the chairmanship of Professor Jack Richards of CalTech is made up of expertise in all disciplines of protein structure and function enforcing the purpose of the Protein Society.

The symposium program is made up of plenary sessions focusing on major impact topics of general interest.

Dr. Eisenberg of UCLA and Dr. Huber of the Max Planck Institute will open the meeting. The meeting will close with plenary lectures from Dr. Wütrich of ETH, Zurich and Dr. Hood of CalTech.

To facilitate interaction among protein chemists from all aspects of the science, the remainder of the program is given over to minisymposia and poster presentations on the following topics:

**Session Topics and Invited
Speakers for San Diego '87**

1. 3D Structure: Theory Folding and Dynamics.
(Baldwin, Goddard, Rose)
2. MicroAnalytical Strategies: Structural Analysis and Micro Purification.
(Simpson, Kent, Beiman)
3. Protein Kinases: Biological Control of Protein Function.
(Walsh, Ullrich)
4. Protein/Nucleic Acid Interactions.
(Altman, McPherson)
5. Studies with Synthetic Peptides and Proteins.
(Kaiser, Degradó, Lerner, Richards)
6. Photoreceptors as Signal Transducers.
(Khorana, Zucker)
7. Expression, Processing and Secretion.
(Varshavsky, Beckwith, Wickner)
8. Mutagenic Studies of Protein Function: Design and Selection.
(Schimmel, Shortle, Winters)
9. New Developments in Instrumentation, Chemicals and Accessories for the Protein Chemistry Lab.

**Stein and Moore Award and
Symposium**

Part of the program will be used to honor the recipient of the first Stein and Moore award in the form of a half day symposium. The subject and the speakers taking part will be selected by the recipient of the award. Announcement of the awardee and the subject to be presented will be made in the spring of 1987. The award, to be presented biannually by the Protein Society will recognize significant achievement in protein research. In addition to the symposium, the awardee will receive \$5000 and a commemorative plaque presented at a banquet which will feature Dan Koshland as an after dinner speaker.

Sample Workshop

All registrants will be invited to participate in a workshop designed to demonstrate the variety of modern techniques available for the study of protein structure and function.

Scientific Exhibition

Leading manufacturers of scientific instrumentation and techniques relevant to protein research will be represented.

Symposium Registration

\$275—Full Members
\$150—Associate Members
\$330—Non Members
\$180—Students

**Symposium Announcement
and Call for Papers is scheduled to go out January '87**

If you are interested in becoming a member of the Protein Society or attending the San Diego Symposium of the Protein Society, please circle number 186 on the reader information card, or contact the Protein Society directly:

The Protein Society

Ralph Bradshaw
UC Irvine
Department of Biological Chemistry
California College of Medicine
Irvine, CA 92717
714/856-6236

First Symposium
American Protein Chemists
September, 1985
San Diego, California
Second Symposium
The Protein Society
August 9-13, 1987

Book Reviews

Environmentalism and Equity

Distributional Conflicts in Environmental-Resource Policy. ALLAN SCHNAIBERG, NICHOLAS WATTS, and KLAUS ZIMMERMANN, Eds. St. Martin's, New York, 1986. xii, 455 pp., illus. \$45. From a symposium, Berlin, F.R.G., March 1984.

Is the environment strictly a quality-of-life issue for upper-middle-class backpackers and gardeners? Do the poor, who suffer greater ill effects of environmental depredation in the workplace and at home, constitute a hidden cache of environmentalists? Will business people and workers form a coalition to eliminate environmental regulations that inhibit economic growth and take away jobs? Can environmental regulation benefit all members of society equally by protecting present and future generations from the consequences of past, present, and future depredations?

This book attempts to reconcile these conflicting questions by addressing issues of distribution and equity involved in environmental policy making in the United States and western Europe. The examination includes an economic and political analysis of the differential effects of environmental regulation, an evaluation of the meaning of public opinion data on environmental consciousness, and consideration of business, labor, state, and generational perspectives on environmental issues. A diversity of provocative models exist, but, as Schnaiberg notes, there are insufficient data to test them adequately. A useful follow-up to this volume would be a short, focused account of the available data sets and their lacunae and recommendations for remedying defects.

I can recommend this book to anyone interested in exposure to the "state of the art" of social science analysis of environmental policy. As an outcome of a conference sponsored by the Volkswagenwerk Foundation, this volume has many of the benefits (geographical and interdisciplinary diversity) and a few of the costs (repetition) of conference documents. A variety of social science points of view are represented, from economics, sociology, and political science. The political spectrum is more narrowly represented, from moderate to left-liberal. No outright Gaians or Reaganites were invited. The major findings, both expected and unexpected, are:

1) Despite significant differences in regulatory approach there is little difference in

regulatory outcome among the United States, France, and Germany. The United States espouses strong principles in law that are whittled down in administrative and judicial practice. Legal requirements for elaborate technical procedures and the construction of large-scale data bases slow implementation. In Europe, on the other hand, relatively loose and informal administrative procedures operated by a technical cadre are strengthened in practice as a result of scientific evidence, often gained free-rider from U.S. environmental agency research and from local experience with disasters.

2) A new group of environmental policy theorists, emphasizing market mechanisms over traditional regulatory standards, gained ascendance in the discipline of economics in the '70s. Backed by the attack of sectors of the corporate world on environmental regulation, holders of this view gained influential positions in U.S. federal environmental agencies during the early '80s. Reformulating much of the policy debate in terms of markets and property rights, they put their theories into practice in the form of bubble concepts that allow entrepreneurs to buy and sell pollution rights.

3) Identifiable human-caused disaster, whether experienced at first or at second hand, is the most salient factor in developing environmental consciousness. The environmental movement has created broad political support for environmental regulation that transcends class differences by conceptualizing the effects of deleterious industrial processes on the environment, identifying the sources of human causation, and publicizing them through the mass media.

4) Contrary to the expectations of some social science researchers, environmental consciousness has not declined. Indeed, it is broadly spread across the social spectrum and comes close to constituting a consensus. The working class strongly supports environmental regulation despite expectations of opposition due to threat of job loss. Blacks are more likely than whites to support tougher environmental regulations.

5) U.S. industry's protestations about environmental add-ons to the cost of production often hide unwillingness to modernize plants and equipment. Environmental regulations requiring changes in production processes are sometimes used as an excuse to close plants that management intended to close for other reasons, for example, to



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