

Thirty-Fourth Annual Briefing NEW HORIZONS IN SCIENCE

*October 27 through 31, 1996
Tremont Plaza Hotel
Baltimore, Maryland*

CASW Council for the
Advancement of
Science
Writing, Inc.

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Ben Patrusky, Executive Director, CASW

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Sunday, October 27
6:30 p.m. to 9:00 p.m.

WELCOME RECEPTION
Tremont Plaza Hotel

Monday, October 28
8:30 a.m. to 11:30 a.m.

NEUROIMMUNOPHILINS

Solomon H. Snyder, M.D., Director, Department of Neuroscience, and Distinguished Professor of Neuroscience, Pharmacology and Psychiatry, Johns Hopkins University School of Medicine

If you've yet to meet the *neuroimmunophilins*, now's the time – given their enormous therapeutic potential. About immunophilins: The tag applies to a class of protein receptors that act to mediate the rejection-thwarting action of immunosuppressive drugs. Following their discovery in the immune system, immunophilins were also detected in the central nervous system, where they proved capable of stimulating growth of nerve cells (hence the *neuro* affix) and by a mechanism other than that seen in immunosuppression. Those findings have now led to development of agents that show great promise in treating an array of neurological disorders.

PREDICTING PROTEINS

George D. Rose, Ph.D., Professor of Biophysics and Biophysical Chemistry, Johns Hopkins University School of Medicine

"Prediction is very uncertain, especially about the future." That caveat of Neils Bohr's notwithstanding, protein researchers now dare to suggest that one of the most daunting of scientific conundrums – that elusive bit of biological origami known as *the protein folding problem* – will be solved by decade's end. For proteins, function follows form. Thus, once armed with the means to divine the 3-D configuration of proteins from the linear sequence of the amino acids that go into their manufacture, scientists will have it in their power to: design new therapeutic agents; help unmask the role of newly discovered genes. A critical test comes in December.

Monday, October 28
2:30 p.m. to 5:30 p.m.

DIBS DEMYSTIFIED

Peter P. Sorokin, Ph.D., IBM Fellow, IBM Thomas J. Watson Research Center,
Yorktown Heights, NY

A laser pioneer who professes to never having peered through a telescope may have solved a puzzle that has had space scientists stymied for 70 years. It has to do with a complex pattern of spectroscopic absorption lines called DIBS (diffuse interstellar bands). Over the years, all manner of cosmic interlopers have been proposed to account for the bands, ranging from fullerenes to chlorophyll to impurities more commonly associated with automobile exhaust. Even alien bacteria. Our laser specialist has come up with a more down-to-earth answer – and, in so doing, may have also unraveled yet another cosmic mystery, that of the Red Rectangle.

HUBBLE II – FIRST LOOK

H. S. (Peter) Stockman, Ph.D., Astronomer, NGST Study Scientist, Space Telescope
Science Institute, Baltimore

When the Hubble Space Telescope (HST) completes its nominal mission in 2005, what then? NASA and two other aerospace teams have been exploring different approaches to the Next Generation Space Telescope (NGST), which will seek to train its advanced infrared gaze upon the “dark ages” of the early universe, a time when the first generation of stars and galaxies was coming to light. Results from these competitive studies have now been meshed into a unified, integrated vision of how – and with what – NGST will likely, come launch, go about its spectacular business.

6:00 p.m.

Hospitality Suite open.

Tuesday, October 29

8:30 a.m. to 11:30 a.m.

SOCIAL MICROBIOLOGY

Alessio Fasano, M.D., Professor of Pediatrics and Medicine, and Director, Pediatric Gastroenterology and Nutrition, University of Maryland School of Medicine, Baltimore

In seeking to understand how a hitherto unknown bacterial toxin was acting and toward what end – and the human response to it – scientists have succeeded in devising a novel strategy for the oral administration of insulin and other agents previously undeliverable by mouth. That's just one of the striking results emerging from a new discipline that its practitioners call cellular microbiology but that could well be dubbed social microbiology. By whatever name, it seeks to tune in on the molecular cross-talk that goes on between a microorganism and its human host, in the hope that knowledge gained from eavesdropping on these biomurmurs will find its way to clinical utility.

MAMMALIAN GENE WARS

Shirley M. Tilghman, Ph.D., Howard A. Prior Professor of Life Sciences, Princeton University, and Investigator, Howard Hughes Medical Institute, Princeton, NJ

For the vast majority of genes, copies from both parents have a say in the development of offspring. For a small number of mammalian genes, however, only one copy, either from mom or dad, gets expressed. Why, scientists ask, would an organism silence a perfectly good gene, in light of the attendant risk? What's the selective advantage? Now, a growing body of evidence – including what's currently being gathered from a newly discovered sub-species of monogamous mouse – has researchers convinced that they are close to unraveling the mystery of genomic imprinting, both the how of it and the why.

Tuesday, October 29
2:00 p.m. to 5:00 p.m.

IN SEARCH OF SUPERSYMMETRY

Gordon L. Kane, Ph.D., Professor of Physics, University of Michigan, Ann Arbor

Physicists have been extremely well served by the Standard Model in explaining the properties of sub-atomic particles and the forces acting upon them. But big gaps remain (e.g. accounting for particle mass) – gaps that supersymmetry, another theory of how the universe works, would help fill, once researchers acquire the requisite experimental evidence needed to verify it. Efforts are now underway to do just that (i.e. catch a glimpse of particles predicted to exist in a supersymmetric world) in colliders at CERN and Fermilab, something that could happen anytime soon.

REWRITING THE HISTORY OF THE ANCIENT SOUTHWEST

Stephen H. Lekson, Ph.D., Research Associate, University Museum, University of Colorado, Boulder

Within just the last year, new discoveries, re-evaluation of old archaeological data and new satellite-based global positioning measurements have combined to catalyze a sharp revision in thinking about Pueblo Indian history and settlement of the ancient Southwest (from A.D. 850 - 1500 along a precise North-South meridian stretching 450 miles). The new interpretation attests to the Anasazi's previously unappreciated, astonishing mastery of large-scale geometries (embracing a world beyond visible horizons) and calls for renewed exploration of how these spatial concepts affected the development of the Pueblo social landscape.

7:00 p.m.

RECEPTION AND ANNUAL CASW BANQUET

Admiral Fell Inn located in historic Fells Point. Buses depart hotel at 6:30 p.m.

Presentation of the 1996 National Association of Science Writers' Science-in-Society Journalism Awards.

Featured Speaker: John G. Bartlett, M.D., Chief, Division of Infectious Diseases, and Professor of Medicine, Johns Hopkins University School of Medicine, will present "The Academy Awards of Infectious Diseases."

Wednesday, October 30

8:15 a.m.

Buses depart for sessions in the Tilghman Room, Turner Auditorium Concourse, on the Johns Hopkins Medical Institutions campus.

9:00 a.m. to 12:30 p.m.

NEW WEAPONS IN THE WAR ON CANCER

David Sidransky, M.D., Associate Professor of Otolaryngology – Head & Neck Surgery and Oncology, Johns Hopkins University School of Medicine

Michael B. Kastan, M.D., Ph.D., Associate Professor of Oncology, Pediatrics, and Molecular Biology and Genetics, Johns Hopkins University School of Medicine

Elizabeth M. Jaffee, M.D., Assistant Professor of Oncology and Immunology, Johns Hopkins School of Medicine

Reports from the research front on promising advances in diagnosis, treatment and prevention, including: a novel means for detecting malignancy in its earliest, eminently treatable stages, when very few tumor cells exist amid a large population of normal cells; new insights into the genetics of cell death that open the way to more selective killing of tumor (v. normal) cells with chemo- and/or radiotherapy, thereby averting the troublesome side-effects associated with current treatment; new vaccine approaches aimed both at destroying extant tumors and preventing onset by directing immune-system attention to carefully defined molecular targets.

FRONTIERS OF THE HEART

Elliot R. McVeigh, Ph.D., Associate Professor of Biomedical Engineering and Radiology, Johns Hopkins University School of Medicine

Raimond L. Winslow, Ph.D., Associate Professor of Biomedical Engineering, Johns Hopkins University School of Medicine

Two major advances in 3-D cardiac visualization, at the level of both the whole organ and the single cell, herald changes in the way specialists will soon be dealing with heart ills. For instance, researchers spearheading development of MRI myocardial tagging – a non-invasive means of looking moment-by-moment at heart muscle contraction, coronary blood flow and cell viability – expect it to cut the need for such invasive diagnostic measures as catheterization. As for single-cell computer modeling, investigators see it as leading to deeper understanding and better treatment of heart arrhythmias and congestive heart failure.

Wednesday, October 30
12:30 p.m.

Lunch

1:30 p.m. to 3:30 p.m.

An opportunity to visit Johns Hopkins University advanced research laboratories and meet with investigators one-on-one.

6:30 p.m.

GALA RECEPTION

Hosted by Johns Hopkins University at Evergreen House, the magnificent 48-room mansion that serves as the University's fine arts museum and rare book library. Buses depart hotel at 6:00 p.m.

Thursday, October 31

8:30 a.m. to 11:30 a.m.

EXPERIMENTAL ECONOMICS

Charles R. Plott, Ph.D., The Edward S. Harkness Professor of Economics and Political Science, California Institute of Technology, Pasadena

Two decades ago, with barely a handful of researchers engaged in the calling, experimental economics seemed more academic curiosity than true scientific discipline. How times have changed. Today, at least 70 labs, employing hundreds, have taken sturdy root around the world. Prompting this transformation is the hard-won recognition that small-scale trials in the lab do, in fact, have major, predictive relevance in the marketplace – and that failure to pay heed, especially now, in this era of globalization and growing complexity, may have costly consequences. Among the latest beneficiaries: the FCC and NASA.

INFORMATION STORAGE/RETRIEVAL: THE LONG VIEW

David A. Thompson, IBM Fellow, IBM Almaden Research Center, San Jose, CA

Seems there will never be enough storage capacity for the Information Age. Hence, technology's unceasing quest for ways to inscribe more and more data onto tinier and tinier spaces. Those efforts, in league with novel data-mining strategies, now point the way to a variety of new applications, including, among other things, what may well be the last word in personal diaries – a "memory prosthesis" able to capture everything you see and hear over the course of a year. Worn, say, as a jewelry-like accessory (and linked to a computer in your wrist watch), the diary would provide instant "recall" of anything learned, including matching names to faces.

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