Forty-Fourth Annual Briefing NEW HORIZONS IN SCIENCE

October 28 through October 31, 2006
Tremont Plaza Hotel
Baltimore, Maryland

CASW *Council for the Advancement of Science Writing, Inc.*

Ben Patrusky, Executive Director, CASW

Program by:
Paul Raeburn, New Horizons Program Director, CASW

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Friday, October 27
10:30 a.m. to 5:45 p.m.

NASW Annual Workshops. (See program at www.nasw.org for details.)

7 p.m.

Science Cabaret reception, Grand Tremont, Corinthian Room.

Saturday, October 28
7:45 a.m. to 9 a.m.

NASW business meeting and continental breakfast.

9:30 a.m. to 11 a.m.

NASW workshops conclude.

12:30 to 2:15

Joint NASW/CASW "Science smorgasbord" lunch.
Pick a table with a topic of interest and have lunch with a scientist.

New Horizons in Science briefing

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

RITUALS IN ANCIENT EGYPT.
Betsy Bryan, Ph.D., Alexander Badawy Professor of Egyptian Art and Archaeology in the Near Eastern Studies Department, Johns Hopkins University.

The Egyptian New Kingdom, from 1550 B.C.E. to 1069 B.C.E., has not been known as the cultural ancestor of Janis Joplin or the Grateful Dead. New evidence being unearthed from a temple in Luxor, however, is leading to surprising findings about some Egyptians' concept of the divine, and how they celebrated it. Rituals of drunkenness and sexuality characterized some large festivals in Egypt, including some of the festivals often illustrated in paintings from tombs. Many of the rituals were also accompanied by music. Or, as archaeologists are being forced to conclude: In ancient Egypt, it was all about sex, drugs and rock & roll.

HORMONE NEUROTRANSMITTERS.
Gregory Ball, Professor, Department of Psychological & Brain Sciences, Johns Hopkins University.

For a century, biologists have divided hormones and neurotransmitters into separate categories. Both are used for communication, but in different ways. Steroid hormones are released by the endocrine glands to act at distant targets, and they usually act relatively slowly. Neurotransmitters, on the other hand, act quickly over short distances in the brain. Increasingly, however, new data is confounding that traditional view, as new data so often does. The brain has been found to produce hormones that act at distant sites. And nitric oxide and carbon monoxide have been found to sometimes act as neurotransmitters. New findings suggest that estrogen, in addition to its hormonal functions, may also function as a rapid acting neurotransmitter. If that's true, it could broaden researchers' understanding of the brain and maybe even illuminate the accusations against Barry Bonds and Floyd Landis.

7 p.m. to 10 p.m.

WELCOME RECEPTION.

Rusty Scupper Inner Harbor. Buses will leave the hotel beginning at 6 pm; the last bus leaves at 6:45 pm.

We will also take this opportunity for a special toast to John Wilkes, at 6:00 pm at the Rusty Scupper. John recently retired as director of science communications at the University of California, Santa Cruz. (For those attending this event, the Rusty Scupper is within walking distance, and cabs are available at the hotel.)

Sunday, October 29
8:30 a.m. to 11:30 a.m.

EPIGENOMICS.
Andrew Feinberg, M.D., M.P.H., King Fahd Professor of Medicine, Departments of Molecular Biology and Genetics, and Professor, Department of Oncology, Johns Hopkins University School of Medicine.

If DNA is the alphabet that spells out the messages that direct our construction, epigenomics is the grammar that allows those messages to be understood. It comprises another code, another collection of information, that is associated with DNA but independent of the DNA sequence itself. Researchers know far less about the information in this code than they do about the information in DNA's double helix. And unlike your genes, which you're stuck with, the epigenomic code changes over your lifetime. It's important in the production of stem cells, the genesis of tumors, and even allows your environment to influence your cells' programs. New findings including reports on work in progress will describe the role of epigenetics in tumor formation and show how the epigenomic code might be manipulated to prevent illness.

VOTER PSYCHOLOGY.
Ted Brader, Associate Professor of Political Science, College of Literature, Science and the Arts, University of Michigan, Ann Arbor, MI.

As an elite, educated group, we all cast our votes based on thoughtful consideration of the issues, of course. But maybe there's a little more to it than that. In some of the first studies to look at the role of emotions in voters' decisions, researchers are doing psychological experiments to examine not only how voters respond to emotional ads, but exactly how politicians exploit voters' emotions to sway the vote. Researchers are also looking at contentious issues outside elections, such as the immigration debate. Which elements of that issue are most likely to trigger anxiety, and why? We'll learn about a new, unpublished analysis of the use of emotion in ads from the 2000 campaign; research sorting out the role of fear, anger and enthusiasm in elections; and we'll get a glimpse of forthcoming studies on the role of sympathy and anger in the response to Hurricane Katrina, and the role of shame and humor in political debate, focusing on the speeches of Martin Luther King and the Daily Show.

11:30 am to 1 p.m.

Lunch on your own.

Sunday, October 29
1:30 p.m. to 4:30 p.m.

PARTICLE PHYSICS AND COSMOLOGY (I).
Raman Sundrum, Ph.D., Professor, Department of Physics and Astronomy, Johns Hopkins University.

Late next year, the Large Hadron Collider at CERN, the European Center for Nuclear Research, will be turned on, offering a new window into the smallest physics (particles) and the largest (cosmology). Testing is being completed now, and substantial quantities of data are expected by 2008. What will the LHC tell us? Using what is essentially the world's largest microscope, physicists will address some of the leading theoretical questions in their field: What is the origin of mass? What are quarks made of? And can we finally get a glimpse of the elusive Higgs boson? How many dimensions does the universe have? Why is gravity so weak? (Why, in other words, does it take an entire planet to keep a small child on the ground.) A leading theorist will tell us what to watch for, and explain how the findings might upset physicists' notions of how the world works.

PARTICLE PHYSICS AND COSMOLOGY (2).
EDWARD W. "ROCKY" KOLB, Ph.D., Professor and Chairman, Department of Astronomy and Astrophysics, University of Chicago, Chicago, IL.

Dark energy is the dominant component of the universe, but physicists still don't have a good explanation for why it's there or how extensive it really is. Understanding what's going on will probably demand a revolutionary breakthrough in fundamental physics, making the questions about dark energy among the most compelling puzzles in all of physics. The answers could require alterations to Einstein's theory of gravity. We'll get a look at an ambitious experimental program aimed at answering questions about dark energy, something that would have seemed impossible only a short time ago.

PREDICTION MARKETS.
JUSTIN WOLFERS, Ph.D., Assistant Professor of Business and Public Policy, The Wharton School, University of Pennsylvania, Philadelphia, PA.

Many of us encountered simple markets when we sold lemonade in front of the house as kids. But simple markets can be subtle and powerful tools, useful for aggregating widely dispersed information into efficient forecasts of future events. Using examples from financial markets, sports, politics, science, and entertainment, we will discover that market-generated forecasts are accurate enough to out-perform most other forecasts. They reveal not only what the market expects, but how much uncertainty there is in the forecast. We'll hear the latest findings and get a glimpse of future research directions.

7 p.m. to 10 p.m.

NASW/CASW ANNUAL RECEPTION AND BANQUET.
Baltimore Aquarium.

Presentation of NASW's Science-in-Society Awards, CASW's Victor Cohn Prize for Excellence in Medical Science Reporting, and the Evert Clark/Seth Payne Award for young science journalists. Buses will leave the hotel beginning at 5 pm for those who wish to go early and visit the aquarium exhibits before the banquet. The last bus will leave at 6:30 pm.

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

Today's sessions will be held on the Johns Hopkins campus. Buses will leave for the campus at 7:30 am; the last bus leaves at 7:45 am. A bus will return after lunch, for those not touring campus labs, and buses will return to the hotel again at the end of the day after the tours conclude.

ENVIRONMENTAL TOXINS.
Rolf Halden, Assistant Professor, Department of Environmental Health Sciences, Johns Hopkins Bloomberg School of Public Health.

Certain hand soaps carry the antimicrobial agent triclocarban, or TCC, even though the chemical has no clear benefit to the average consumer. Sewage systems carry triclocarban to wastewater treatment plants. Researchers have found that the plants are very effective at removing but not destroying the antimicrobial agent, which is toxic when ingested and can cause reproductive problems. The agent collects in the sludge removed from wastewater treatment, which is often recycled as a fertilizer and soil conditioner. We will learn where else researchers have found TCC, and what the consequences might be.

FOSSIL FORESTS.
Hope Jahren, Ph.D., Professor, Department of Earth and Planetary Sciences, Johns Hopkins University.

Some of the most dramatic evidence of climate and other environmental changes due to human activity are found near the north and south poles, where decreases in ice mass and increases in temperature have upset natural ecosystems. To understand the present, however, it's important to understand what happened in the polar regions in the past. Researchers would like to know more about the teeming plants and animals that flourished in conifer forests that covered an ice-free Siberia, Greenland and Arctic Canada during the Eocene, about 45 million years ago. How did these plant communities live through three months of total darkness? What was the status of the greenhouse effect in the atmosphere at that time? The discovery of a fabulous wealth of exquisitely preserved fossils on a remote northern Canadian island is allowing researchers to answer those questions. Using high-tech chemical forensics, they are vastly expanding the classical paleontological work at the poles.

Noon

Lunch on campus.

1:15 to 5:00 p.m.

CAMPUS VISITS AND FIELD TRIPS. For those not making campus visits, a bus will leave at 1:30 for the hotel. Other buses will leave for the hotel at approximately 5:15. For more information on the tours, see www.jhu.edu/newhorizons/

Monday, October 30
7 p.m. to 10 p.m.

CASW/NASW party at the historic Cross Street Market in Baltimore's Federal Hill.
Music, festivities, and dining on shrimp, oysters, and sushi.

Tuesday, October 31
8:00 a.m. to 11:00 a.m.

REBUILDING BLOOD VESSEL WALLS.
Harry C. Dietz, M.D., Victor A. McKusick Professor of Medicine and Genetics, Johns Hopkins, and a Howard Hughes Medical Institute investigator.

Marfan syndrome is a disorder of connective tissue that leads to the excessive growth of long bones, and problems with mitral valves, aortic aneurysm, emphysema, dislocations of the lens of the eye and a predisposition to sudden death from rupture of blood vessels. Fifteen years ago, Dietz and his colleagues made a major breakthrough when they identified the gene responsible for the disorder, but the celebration was short lived. The gene, called fibrillin-1 is required for the growth of elastic tissues in many parts of the body, and the thinking was that if the gene was defective, little could be done to correct the illness. It was too late to make more elastic tissue, and so the risks of sudden death couldn't be controlled. In April, 2006, however, Dietz reported a surprising new finding in mice. An off-the-shelf blood pressure medication could prevent worsening of the syndrome and might even repair the damage to the aorta, potentially reducing the risk of early death. The aim now is to see whether the drug might work the same way in humans–a risky, uncertain, and possibly life-saving experiment.

PLASTIC ELECTRONICS.
Richard D. McCullough, Ph.D., Dean, Mellon College of Science, Carnegie Mellon University, Pittsburgh, PA.

In the 1990s, researchers discovered a family of electricity-conducting plastics with unusual–and potentially highly useful–properties. Indeed, these novel polymers are on the way to commercial application as solar cells, but of a kind that could be printed on large rolls, and sprayed or painted on buildings or used as window coatings. That's only one of the applications. These printable plastics are also useful in transistors, flexible computer displays, and as chemical sensors. Researchers are currently exploring their use in the detection of nerve gases and chemical and biological warfare agents, along with other commercial and workplace settings. We'll get an advance look at what's been done so far, and where that research is headed.

1 p.m. to 6 p.m.

BONUS TOUR OF GODDARD SPACE FLIGHT CENTER.

Goddard Space Flight Center is one of NASA's largest science and R&D centers, home to more than 5,000 scientists and engineers working on climate change, astrophysics, and solar system exploration. You will see the newest instruments being readied for launch to the Hubble Space Telescope, mission control for NASA's fleet of Earth-observing satellites, robot walkers in development for missions to the Moon and Mars, and a huge one-of-a-kind 3D display of the Earth's changing atmosphere and oceans as seen from space. You will also meet with NASA's top scientists and talk about the state of the world's ice sheets, explosive storms from the Sun, the U.S. return to the Moon, the 2006 hurricane season, and more-and still make it back to Baltimore for dinner. Buses will pick you up at the hotel and bring you back. Parking is available if you prefer to drive. For questions, contact Rani Chohan at Goddard, at 301-286-2483 or rchohan@pop100.gsfc.nasa.gov.

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