Forty-Fifth Annual Briefing NEW HORIZONS IN SCIENCE

October 20 through October 23, 2007 The Davenport Hotel Spokane, Washington

Council for the Advancement of Science riting. Inc.

Cristine Russell, President, CASW Ben Patrusky, Executive Director Diane McGurgan, Administrative Secretary

Program by: Paul Raeburn, New Horizons Program Director

Sponsored by: Pacific Northwest National Laboratory, with Washington State University and the University of Washington

With support from: Burroughs Wellcome Fund

Saturday, October 20th

9 a.m. to 5:15 p.m.

NASW Science in Society meeting.

5:30 p.m. to 6 p.m.

NASW business meeting. (Open to all members.)

7 p.m. to 9:30 p.m.

CASW Welcome Reception, Northwest Museum of Arts & Culture.

Join us for hors-d'oeuvres, conversation, and a museum visit. Shuttle buses will leave the hotel beginning at 6:30 p.m.

9 p.m. to 12 p.m.

Welcome Party, hosted by the Northwest Science Writers Association

Shake it with the Billy Joe and the Dusty 45s at CenterStage, near the Davenport Hotel (directions at <u>www.spokanecenterstage.com</u>). NSWA says "Billy Joe's trumpet still spouts flames." Fire-resistant clothing recommended!

Sunday, October 21st

8:15 a.m.

Welcoming remarks.

8:30 a.m. to 10 a.m.

THE PSYCHOLOGY OF PREJUDICE

Mahzarin Banaji, Ph.D., Richard Clarke Cabot Professor of Social Ethics, Department of Psychology; and Carol K. Pforzheimer Professor at the Radcliffe Institute for Advanced Study, Harvard University, Cambridge, MA.

How do thoughts and emotions shape our social judgments? Much of this is unconscious—we're not aware of it, and we don't plan it. Banaji uses what's called the Implicit Association Test to reveal these unconscious preferences in rather blunt fashion, showing that they can contradict the values we think we hold. She will demonstrate the test using the audience and herself as subjects. We won't embarrass anyone, but it's a chance for us to find out what unconscious prejudices and stereotypes we might hold—even if we consciously reject them. She will also present her latest findings using this test with different social groups, including data on whether these unconscious thoughts and behaviors can be changed. She will talk about other behavioral studies, including the use of functional MRI scans, in children and young adults. And she'll address what all of this means for theories of individual responsibility and social justice.

10 a.m. to 11 a.m.

DIET, EVOLUTION, AND AGING.

Matt Kaeberlein, Ph.D., Assistant Professor, Department of Pathology, University of Washington, Seattle.

Researchers have known for some time now that a calorie-restricted diet can increase longevity in animals, even in the humble yeast. And calorie-restricted animals are less likely to get age-associated diseases. Exactly how this happens, however, hasn't been clear. Is this some product-or by-product-of evolution? New research aimed at identifying the pathways that regulate longevity is starting to shed some light on this. Researchers have now discovered several genes that play key roles in determining how diet influences aging. This work is providing insights into how dietary restriction can help the body repair and replace damaged proteins. More importantly, these studies suggest a way to develop dietary restriction "mimetics"-compounds that could provide the health benefits of dietary restriction, without the sacrifice. Yes, we've heard this promise about diet drugs many times before-but Kaeberlein will tell us why these might be the drugs that really work.

11 a.m. to 11:15 a.m.

BREAK

11:15 a.m. to 12:30 p.m.

REPRODUCTIVE TOXINS

Patricia Hunt, Ph.D., Meyer Distinguished Professor, School of Molecular Biosciences, Washington State University, Pullman.

Hunt and her colleagues were trying to understand why older women face an increased risk of having a baby with chromosomal abnormalities—such as Down syndrome. They were using laboratory mice to test the hypothesis that agerelated changes in hormone levels influence the egg. Suddenly, and with no apparent reason, the data for the normal control animals went haywire—destroying their experiments. After a thorough investigation, lasting months, they discovered that the use of the wrong detergent to wash the mice's plastic cages had damaged the cages and the mice's water bottles. The damage to the plastic cages was causing the release of a substance called bisphenol A, which is widely used in plastics and resins. After half of century of widespread use of plastics, it's now ubiquitous in our environment. Hunt is now finding potential reproductive hazards in many everyday products, and she's trying to determine the risks to our offspring. Could this be partly responsible for the explosion in use of fertility treatment?

12:30 p.m. to 2 p.m.

MEET THE SCIENTISTS LUNCH. Pick a table and chat with a scientist. The topics include nuclear non-proliferation, *childhood* obesity, cybersecurity, alternative energy production, astrobiology, fish reproduction and many others.

2 p.m. to 3:30 p.m.

LEARNING LANGUAGE

Patricia K. Kuhl, Ph.D., Co-director, Institute for Learning and Brain Sciences, and Professor, Department of Speech and Hearing Sciences, University of Washington, Seattle.

Infants are born citizens of the world with regard to language. They can distinguish among languages from around the globe. But by the first year of life, they specialize in one, and their ability to discern sounds from other languages declines. Kuhl's research is showing that infants use computation to crack speech codes, and that their social skills play an important role in language learning. So does "parentese," the exaggerated, high pitched language we use to speak to infants—baby talk. Such chatter is used by parents in every language studied, from Mandarin to Zulu. Kuhl is trying to untangle how infants learn all of this, and how environment contributes to language learning. She's also looking at infants who are, in one way or another, deficient in language. When she looks at behavior that represents the precursors of language, she sees large differences in children with autism, compared to others. She will explain how the analysis of a baby's babbling might even lead to early diagnosis of autism.

3:30 p.m. to 3:45 p.m.

BREAK

3:45 p.m. to 4:45 p.m.

MAYA PYRAMIDS AND MUONS

Roy F. Schwitters, Ph.D., S.W. Richardson Foundation Regental Professor of Physics, University of Texas, Austin.

More than two millennia ago, Teotihuacán, in Belize, was a thriving city, possibly the largest in the world. Much might be learned about the lives of its residents if archeologists could peer inside Teotihuacán's Pyramid of the Sun. The problem is: How can the pyramid be explored without dismantling it or disturbing its ancient stones? A similar problem was solved in the 1960s, when the Nobel-laureate physicist Luis Alvarez used a technique called muon tomography to explore the Second Pyramid of Chephren in Egypt. It was a kind of archeological CT scan. But it was never feasible in Belize, because there was no way to get a muon detector underneath the pyramid. The chance discovery of a small tunnel under the pyramid, however, has now made that possible. Schwitters and his colleagues at the University of Texas have built and are testing a prototype muon detector. In addition to providing a fascinating glimpse inside the Pyramid of the Sun, the technology is potentially useful for studying underground aquifers and other sub-surface structures.

4:45 p.m. to 5:45 p.m.

IVORY, WHALES AND DNA.

Samuel K. Wasser, Ph.D., Director, Center for Conservation Biology, and Research Professor, Department of Biology, University of Washington, Seattle.

The illegal trade in elephant ivory is once again booming. Illegal ivory seizures have tripled in the last couple years, with no concomitant increases in enforcement efforts. The price of high quality ivory has simultaneously quadrupled-to \$850 per kilogram over the same period. Shadowy organized crime figures in Hong Kong, Japan and China are driving this illegal trade, some of which also has links with the narcotics and arms trades. Wasser and his colleagues-who are collaborating with Interpol to block the ivory trade-will tell us how they track elephant DNA to determine locations of poaching hotspots. That, in turn, can help law enforcement officials-with their always scarce resources-to target the most critical regions, and force countries to accept responsibility for the trade. Wasser has also developed unique methods using dogs to track wildlife health over large remote areas, in species ranging from spotted owls to whales. Tracking whales with dogs: Sound impossible? Wasser has done it.

7 p.m. to 10 p.m.

NASW/CASW Annual Reception and Banquet. Marie Antoinette Ballroom.

Join us for the 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.

The hospitality suite, in the Davenport Hotel's Early Bird Room, will be open until midnight.

SPEAKER BIOGRAPHIES



MAHZARIN BANAJI, PH.D. was raised in India and received her Ph.D. from Ohio State University. Since 2002, she has been at Harvard University as Richard Clarke Cabot Professor of Social Ethics in the Department of Psychology. She is also the Carol K. Pforzheimer Professor at the Radcliffe Institute for Advanced Study. Banaji studies human thinking and feeling in a social context. Her focus is primarily on mental systems that operate unconsciously or implicitly. She is especially interested in unconscious assessments of self and other people that reflect feelings and knowledge about age, race and ethnicity, gender, and class. She and her colleagues maintain an experimental website (www.implicit.harvard.edu) to collect information on implicit beliefs. (http://www.people.fas.harvard.edu/~banaji/, 617-384-9203)

PATRICIA HUNT, PH.D., is Meyer Distinguished Professor in the School of Molecular Biosciences at Washington State University. Her research focuses on germ cells in mammals. In humans, the incidence of pregnancy loss due to chromosome abnormalities is very high. She is trying to understand how this occurs, and the way in which a woman's aging increases the likelihood of errors. In addition, an accidental exposure in her animal facility has led to a new avenue of research. Mice were exposed to an estrogen mimic, bisphenol A, in cages and water bottles. Hunt and her colleagues found that the exposure could disrupt the reproductive process. Current studies focus on determining the reproductive effects of exposure to chemicals with estrogen-like activity during different developmental time points. (http://www.crb.wsu.edu/3FacultyPages/Hunt.html, 509-335-4954)

LISA JONES-ENGEL, PH.D., is a Research Scientist in the Division of International Programs of the Washington National Primate Research Center, at the University of Washington. She studies viruses that can jump between humans and monkeys. HIV is one example of a virus associated with human and monkey contact in Africa. And there are others, many of which can be detrimental to both monkeys and humans. She made a key breakthrough in 2005 when she and her husband, Dr. Gregory Engel, identified the first reported case of primate-to-human transmission of simian foamy virus (SFV) in Asia. Most of her research has been done in Asia, where much less is known about monkey viruses and human-monkey interactions. Her team examines primates and people in temples, zoos, markets, nature preserves, and homes where monkeys are kept as pets. Jones-Engel began her career at the age of 17 as a field assistant to Birute Galdikas. (jonesengel@bart.rprc.washington.edu, 206-221-6843)

MATT KAEBERLEIN, PH.D., Assistant Professor in the Department of Pathology at the University of Washington, and a native of Seattle, completed his Ph.D. in the laboratory of Leonard Guarente at M.I.T., where he first became interested in the basic biology of aging. As a graduate student, he discovered the key role of Sir2 as a regulator of aging in yeast. Until 2003, Dr. Kaeberlein was vice-president of research at Longevity Inc., where he developed technologies to identify biomarkers of aging and age-associated disease. At the University of Washington, he is working to identify the genes that determine longevity, and on translating that knowledge into therapies for age-related illnesses. (kaeber@u.washington.edu, http://www.kaeberleinlab.org, 206-543-4849)

TRACY KENNEDY is a Research Consultant in virtual and physical worlds, and a Ph.D. candidate in sociology at the University of Toronto. Her doctoral thesis examines the integration of the Internet into Canadian house-holds. She has organized several virtual world events, such as the 2007 Second Life Conference—for the Communication & Information Technology section of the American Sociology Association—and a blended reality event at Vancouver's Centre for Digital Media in British Columbia that featured an Open House in both worlds. Tracy recently returned from an internship with Microsoft in Redmond, Washington where she worked with the Community Technologies Group and Games User Research Group to examine women's online gaming experiences on Xbox Live, and the issues the industry faces in attracting non-traditional gamers. (tkennedy@net-women.ca, http://www.netwomen.ca, 425-705-1403)

PATRICIA KUHL, PH.D., is a Professor of Speech and Hearing Sciences at the University of Washington, and Co-director of its Institute for Learning and Brain Sciences and its NSF Science of Learning Center. Her work has played a major role in demonstrating how early exposure to language alters the brain. It has implications for development, for bilingual education and reading readiness, for developmental disabilities involving language, and for research on computer understanding of speech. She was one of six scientists invited to the White House in 1997 to make a presentation at a Clinton conference on early learning and the brain. In 2001, she was invited to make a presentation at a Bush White House Summit called Early Cognitive Development: Ready to Read, Ready to Learn. She is co-author of *The Scientist in the Crib: Minds, Brains, and How Children Learn* (Morrow Press). (pkkuhl@u.washington.edu, 206-685-1921)

KRISTIN LANE, PH.D., is a professor of psychology at Bard College in Annandale-on-Hudson, N.Y. She received her doctoral degree under the tutelage of Mahzarin Banaji at Harvard, and, like Banaji, studies prejudice, stereotyping, and implicit social attitudes. She's also interested in the psychology of gender, including how social environments can shape implicit gender biases, particularly as they relate to the gender disparity in the sciences. She has worked with the Implicit Association Test, or IAT. And she has investigated how research on implicit prejudices and stereotypes might be incorporated into the legal system. (<u>http://inside.bard.edu/~lane</u>, 845.758.7224)

BENOIT MANDELBROT, PH.D. originated fractal geometry — a geometry of roughness in mathematics, in nature, and in culture. After receiving his Ph.D. from the University of Paris, he came to the United States, where he was sponsored by John von Neumann at the Institute for Advanced Study in Princeton. In 1958, he began a 35-year relationship with IBM as an IBM Fellow in Yorktown Heights, N.Y. He then moved to Yale University as Sterling Professor of Mathematical Sciences, and until recently he was affiliated with the Pacific Northwest National Laboratory. He has received numerous honors and awards. This is his second appearance at New Horizons in Science. (benoit.mandelbrot@yale.edu, 617-620-6598)

PETE MCGRAIL, PH.D. has been at PNNL for more than 24 years and now holds the position of Laboratory Fellow, the highest level of scientific achievement at the lab. He is the chief scientist at PNNL responsible for carbon management technologies, which cover all aspects of the science and technology of carbon capture and subsurface sequestration. McGrail manages several projects related to geological sequestration, including a basalt field pilot study, basic science studies related to geological sequestration, and projects on gas and oil production. (Pete.McGrail@pnl.gov, 509-371-7077)

JAAK PANKSEPP, PH.D., Baily Endowed Chair for Animal Well-Being Science at the College of Veterinary Medicine, Washington State University, is a recognized authority on the emotions in mammals, focusing particularly on sadness and joy. He is now using genetic techniques and brain imaging to refine the understanding of animals' emotions biologically, and exploring the consequences of this work for better understanding of human mental health. (jpanksepp@vetmed.wsu.edu, 509-335-5803)

CAROLYN PORCO, PH.D., is the Leader of the Cassini Imaging Team and the Director of the Cassini Imaging Central Laboratory for Operations (or CICLOPS) in Boulder, CO, which is the hub of the uplink and downlink operations of the Cassini imaging experiment. She is also an Adjunct Professor at the University of Colorado in Boulder. (carolyn@ciclops.org, 720-974-5849)

ROY F. SCHWITTERS, PH.D., an experimental high-energy physicist, is the S.W. Richardson Regental Professor of Physics at the University of Texas at Austin. He was the director of the Superconducting Supercollider laboratory in Dallas from 1989 until 1993, when it was canceled by Congress. Since 1996, he has been a member of JASON, a group of academic scientists and engineers who advise agencies of the US government on technical matters related to national security. He is currently chair of the JASON steering committee. He received his Ph.D. from the Massachusetts Institute of Technology. Before coming to Texas he was at Harvard University and the Stanford Linear Accelerator Center. (schwitters@physics.utexas.edu, 512-471-9962)

SAMUEL WASSER, PH.D., holder of the Endowed Chair in Conservation Biology at the University of Washington, is an acknowledged pioneer of non-invasive wildlife monitoring methods. He has worked with conservation programs in Africa and North America, in collaboration with state, federal, and international organizations. He was coordinator of the Smithsonian Institution's Wildlife Conservation and Management Training Program for African Nationals. He is a co-editor of *Biogeography and Ecology of the Rain Forests of Eastern Africa*. (wassers@u.washington.edu, 206-543-1669)

Monday, October 22nd

7:30 a.m. to 4 p.m.

All-day field trip to some of Eastern Washington's unique geology (with an expert guide), and to the laboratories at PNNL.

Board buses at the Davenport Hotel at 7:30 a.m. A continental breakfast will be served on the bus as we travel through Eastern Washington, tracing the geological history of Ice-Age floods, with a stop at the impressive Palouse Falls.

At noon, we will arrive at PNNL, where we'll have lunch and tour some of the lab's facilities. The tours will include a stop at the William R. Wiley Environmental Molecular Sciences Laboratory—for a striking demonstration of how information can be made visual—and a visit to the unique, world-renowned proteomics laboratory of Dick Smith. Then we'll see the Electricity Infrastructure Operations Center, a fully capable control center for electric power grids. It's used for research that could help cure our ailing national power grids, and for testing and training. It includes real-time grid data from the nation's eastern and western power grids, allowing a broader view of the national electric power system than any other control room in the U.S. Take the controls and see what it would feel like to shut off power to millions of Americans! We'll also explore the Grid-Friendly Appliance Laboratory, where refrigerators and dryers are tuned in to the energy grid, so they can respond to changes and help stabilize the grid when it's stressed. And because we want to make sure science writers are sharply dressed, before you leave you will have the chance to be "intellifited" for clothing in a high-tech cylindrical chamber that takes a series of precise measurements of your body—without touching you. And, by the way, it will also show whether you're carrying any liquid explosives or bombs.

4:30 p.m. to 6:30 p.m.

Continue to the Terra Blanca Winery, one of the finest of Eastern Washington's wineries, which are increasingly being recognized for the superb quality of their vintages. We'll have dinner and a wine tasting, and we'll learn something about the science of Washington viticulture. Strictly educational, of course. We will return to the Davenport about 9:30, where the doors to the hospitality suite will be flung open until midnight.

Tuesday, October 23rd

8:30 a.m. to 10 a.m.

FRACTALS ON WALL STREET

Benoit Mandelbrot, Ph.D., Battelle Fellow Emeritus, Pacific Northwest National Laboratory, Richland, Wash., and Sterling Professor of Mathematical Sciences, Emeritus, Yale University, New Haven, CT.

Markets, like oceans, are turbulent. They're rough and jittery, with small changes on some days and large changes on others. Mandelbrot, the father of fractal geometry–whose work extends from snowflakes to coastlines and the structure of broccoli–is interested in shapes that appear similar at different magnifications, patterns that repeat at different scales. Mandelbrot argues that markets are not mysterious; they are complex systems that can be studied. Individuals move on their own paths, but they come together at certain moments to trade. They aren't rational, and they don't think alike. And markets are composed of thousands or millions of their interactions. But that doesn't mean their actions can't be analyzed. Fractal analysis is a mathematical tool for separating these market complexities into pieces that can be described realistically–to see how they inter-relate and interact. Mandelbrot's analysis suggests some interesting real-world trading strategies. If you have the stomach, you might want to try them on your own portfolio.

10 a.m. to 11 a.m.

PRIMATES AND DISEASE.

Lisa Jones-Engel, Ph.D., Research Scientist, Division of International Programs, Washington National Primate Research Center, University of Washington, Seattle.

The transmission of disease from non-human primates to humans is an important—and often unrecognized—threat to public health. Likewise, human diseases pose a significant danger to non-human primates, especially those on the brink of extinction. The problem is rapidly getting worse, aggravated by economic development, globalization, and human population growth. We'll learn how people, primates, and pathogens interact in the rapidly changing global environment—and how studying these interactions can prevent disease outbreaks in both people and animals. Most of the examples will come from Asia, with its rich diversity of non-human primates and a long tradition of close contact between people and animals. This contact occurs in a variety of circumstances, ranging from the exotic monkey temples of Bali to the performing-primate schools of Japan. Asia's booming economies and spreading transportation infrastructure are accelerating contact between people and non-human primates, and that is speeding the spread of primate-borne infections, not only in Asia but around the world.

11 a.m. to 11:15 a.m.

BREAK

11:15 a.m. to 12:15 p.m.

DEEP SEQUESTRATION AND CLIMATE

Pete McGrail, Ph.D., Laboratory Fellow, Pacific Northwest National Laboratory, Richland, Wash.

Carbon sequestration has frequently been proposed as a way to mitigate the planetary rise in atmospheric carbon dioxide. But questions have been raised about its stability, and whether it can make a long-term contribution toward easing climate change. Much of the talk about sequestration has dealt with preserving forests, or ambitious tree-planting campaigns. But McGrail and his colleagues are proposing sequestration of carbon in deep basalt formations, where the carbon can fuse with the rock, locking it in place far below the surface. McGrail will tell us about a variety of ways to grab and sequester carbon, including capturing it with carbon nanotubes. He'll talk about how this might be done, where it can be done, and what impact it could have on global climate change.

12:15 a.m. to 1:45 p.m.

Lunch on your own.

1:45 p.m. to 2:45 p.m.

EMOTIONS, PLAY, ADHD AND DEPRESSION

Jaak Panksepp, Ph.D., Baily Endowed Chair for Animal Well-Being Science at the College of Veterinary Medicine, Washington State University, Pullman.

The basic science of emotion—a topic that has proven difficult to study—has been transformed by the novel approach of what's called affective neuroscience. That's Panksepp's specialty. He has spent 30 years studying basic emotions, especially the distress caused by social separation, when young animals are left alone. The work on separation was the first step toward a comprehensive science of emotions, a field now paying rich dividends. Panksepp has shown that separation distress in animals is related to sadness in humans, yielding new ideas on how to treat depression. More recently he has shown that "social joy" is common in animals, as in humans, and it can be studied systematically. One notable result of this work was the discovery of laughter (yes, laughter!) in rats. The research has also shown that emotions are closely related to the body's opioid system. Sadness in humans is marked by low opioid levels, while joy is characterized by high opioid activity. He will tell us about the role of play, which, in new genetic studies, has been found to sharply alter gene expression in the brain's frontal lobes—in as little as an hour. That, in turn, has led him to a new theory of attention-deficit disorder—as a consequence of insufficient play time. He will show how this new understanding of the emotional systems of the brain is leading to new ideas about the genesis and treatment of various psychiatric disorders.

2:45 p.m. to 3 p.m.

BREAK

3 p.m. to 4 p.m.

A VISIT TO SATURN AND TITAN.

Carolyn Porco, Ph.D., Leader of the Cassini Imaging Team, Director of the Cassini Imaging Central Laboratory for Operations (or CICLOPS) in Boulder, CO, and Adjunct Professor at the University of Colorado in Boulder.

For seven bitterly cold, lonely years, the Cassini spacecraft and its Huygens probe traveled billions of miles on a journey to Saturn and its rings. When it arrived, the flying-saucer-shaped Huygens descended through a hazy atmosphere to land on the alien surface of Titan. The Cassini mission has been—and continues to be—one of the most successful planetary missions ever. Porco will review the fascinating data that Cassini and Huygens have sent us so far, which is providing unprecedented understanding of a remote planetary system. She will also preview for us the findings that are yet to come, which will further deepen our understanding of this distant, softly-hued planetary neighbor. And we'll see some stunning planetary images. Buckle your seat belts.

4 p.m. to 5 p.m.

VIRTUAL WORLDS AND WEB 3D

Tracy Kennedy, Research Consultant in virtual and physical worlds, and Ph.D. candidate in sociology at the University of Toronto.

In 2003, Linden Research launched the virtual world Second Life, with only a small community of residents. Now there are almost 9 million registrants. Kennedy will tell us about Second Life and examine its appeal. This interactive, three-dimensional world has given rise to new leisure and social activities, business and marketing ventures, educational opportunities, political campaigns, arts, entertainment–nearly everything that's available in the physical world. Of special note to science writers, Second Life offers a broad array of virtual magazines, news sites, and television stations. (Create an avatar to do your writing for you?) Kennedy will, however, include a cautionary note: Virtual worlds are not inherently utopian. With new worlds come social problems of the kind we're familiar with in the real world. She'll tell us about current research on social norms and behavior in virtual worlds; the future of virtual worlds; and whether Second Life is a passing fancy–or the harbinger of what's now being called Web 3.0, or Web 3D.

Tuesday evening

Dinner on your own. The hospitality suite will be open from 9 p.m. until midnight.

Wednesday, October 24th

ALL-DAY BONUS TOUR OF THE MANHATTAN PROJECT'S HANFORD SITE.

The U.S. Department of Energy's 586-square-mile Hanford Site, in south-central Washington State, once produced plutonium for the nation's atomic weapons. The plutonium production left, in its wake, contamination that is now the focus of one of the world's largest environmental restoration projects. Workers are cleaning up a lethal soup of radioactive and chemical waste left over from years of plutonium production. The tour will feature a visit to the world's first full-scale nuclear reactor, known as B reactor, built as part of the Manhattan Project. And we'll enjoy a working lunch.

Anyone with questions on the tour should contact Mike Berriochoa at Hanford (<u>berriochoa@rl.gov</u>, 509-376-4710). All attendees must bring a photo I.D. and wear sturdy footwear-no sandals or open-toed shoes. Hard hats and eye protection will be provided when needed.

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