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OUR DEPARTMENT IS ABOUT... EDUCATION

SUSTAINING THE FUTURE OF ENVIRONMENTAL HEALTH

Our department prepares students to be successful in environmental and occupational health careers. Pictured above, left to right: Madeleine Greenheck, Marissa Matsuyama, Jennifer Gee, and Diana Kon (Philosophy). See full list of graduates on page 5.

Photo: Courtesy of Marissa Matsuyama

LIFE EXPECTANCY in the United States has improved dramatically in the last century, and 25 of the 30 additional years are attributable to advances in public health, said MPH student Stephanie Chan, who gave the Graduate Program Address at the department graduation ceremony on June 12. Environmental health, which protects the public’s health, involves a safe supply of food and drinking water, control of environmentally related diseases, managing solid and toxic wastes, and reducing air, water, food, and noise pollution.

In this issue of *Environmental Health News*, we showcase an educational program that trains high school teachers to incorporate environmental health topics into their curriculum. We congratulate our graduates and feature some of their research. We highlight a photo journal exhibit of tribal communities that improve their economies and protect their cultures by developing energy resources in more sustainable ways. And, we remember an environmental health scientist who contributed to our understanding of exposures to ambient air pollution. ■

ACADEMY FOR TEACHING ABOUT health and environment associations

State-wide Synergy Helps Teachers Integrate EH Concepts into their Classes



The ATHENA Project gives teachers resources to integrate hands-on activities into their lessons. Pictured above (l to r) are Maggie Rose, Ingraham High School in Seattle; Jill Geyen, River Ridge High School in Lacey; Audra Degg, On Track Academy in Longview; and Nancy Sedlacek, Yelm Extension School in Yelm. *Photo: Sarah Fish*

IN MAY 2011, a group of middle and high school teachers from across Washington state met to share their successes in integrating environmental health (EH) concepts into not just science classes, but also classes that cover health, social studies, and a wide range of career and technical education (CTE) topics. The 22 teachers were participants in the Academy for Teaching about Health and Environment Associations (ATHENA), a program supported by the department through a pilot project grant and facilitated by the Center for Ecogenetics and Environmental Health (CEEH). The center is funded by the National Institute of Environmental Health Sciences.

The teachers first met in August 2010 for a workshop in environmental health issues taught by researchers affiliated with our department. “It’s so helpful having contact with actual scientists doing work in the field,” said Heidi Kirk of Olympia High School. “I can give better examples when kids ask questions in class.”

During the school year, the educators prepared and presented EH curricula, often collaborating long distance with the help of CEEH administrator and ATHENA facilitator Jon Sharpe. “I feel I really have a network now,” said Lindzee Alvarez, who teaches at Interlake High School in Bellevue.

On May 19–20, 2011, the teachers gathered in Seattle for more researcher-led discussions, a boat tour of the Duwamish River, a federal Superfund site, and to share the lesson plans they had created, implemented, and evaluated since August 2010. Mario Godoy-Gonzalez of Royal High School in Royal City said that access to these teacher-tested lesson plans was extremely valuable. “We don’t have to start from zero.”

Food proved to be an effective theme to teach EH concepts across subjects to a wide range of students, including those in Advanced Placement, vocational, and credit retrieval programs. “Students really enjoy learning about topics that are relevant to them, like their diets,” said Nancy Keller of Heritage High School in Vancouver. Keller’s students studied

genetically modified (GM) foods, and many were startled to learn how many of the groceries in their kitchens at home contained GM ingredients. Heidi Kirk’s class calculated the food miles of their lunch. For example, they compared the miles generated by jam made from local berries that were either a) made into jam locally and sold at a farmers’ market or b) grown locally, shipped to the Midwest for processing, and then shipped back for sale. At Wenatchee High School, Jay Young’s students looked at the possible relationship between changes in diet and the epidemic of diabetes among members of the Confederated Tribes of the Colville Reservation. Students interviewed tribal elders, including one who said: “We went from deer, elk, and fish to hamburgers.”

Chickens were the topic of the EH curriculum in Martha Severn’s class at Havermale High School in Spokane. “We found out that chickens will eat anything,” said Severn. “They’ll eat whatever’s in your backyard.” So she asked her students what was in their backyards. Fertilizers? Pesticides? Chips of lead paint from older buildings? “We learned that it’s common for chickens to get lead poisoning,” said Severn. “Lead will accumulate in their meat and eggs, so you could be exposed to lead if you eat them.”

Severn asked her class to consider what their backyard was “before it was their backyard.” In Spokane, some neighborhoods have been built over old landfills, mines, and orchards. Students also studied issues related to commercial chicken culture, including genetic diversity and control of diseases from bacteria, such as *Listeria* and *Salmonella*.

As part of issue-based lessons, teachers presented basic toxicological concepts. They reported success in illustrating

dose-response using the method presented by Affiliate Professor Steven Gilbert in his book, *A Small Dose of Toxicology*. The same amount of food coloring is added to different volumes of water, representing people of different sizes. The color, representing the dose, will be most intense in the smallest volume of water.

Jaime Woodard of R. A. Long High School in Longview wanted to teach EH concepts to the pregnant teens and teen mothers in her Graduation, Reality, and Dual-role Skills (GRADS) class. Woodard’s students did hazard mapping of their apartments and the child-care centers their youngsters attended. “I wanted to give them tools to evaluate daycare options for their children,” said Woodard.

She also wanted to teach her class about duration of exposure, and Woodard had to do it cheaply. So the class microwaved marshmallow peeps. After five seconds the peeps were slightly wilted. Forty seconds of exposure turned them into charred puddles.

Helping students to develop skills in critical thinking was another common theme among presenters. Jennifer Wood of Stadium High School in Tacoma hopes to give her students the ability to be “smart consumers of food.” Rebecca Wallace, who teaches at Ridgeline Middle School and advises the Future Farmers of America chapter in Yelm, encourages student debate on contentious issues such as GM foods, animal testing, and agricultural policy. Wallace tells her students, “If you’re passionate about something and want to argue about it, you better know the opposite argument better than your own.” ■

In the photo on page 2, teachers “dissected” disposable diapers to study the super-absorbent polymer, polyacrylic acid, and learn how the acid can irritate a baby’s skin if the diaper is damaged. In addition, they found out how human health can be impacted by disposable diapers—from production, to use, to disposal—not an insignificant impact when one considers that Americans dispose of about 18 billion diapers a year.

Illustrations: Adapted from www.clipart.com



research day



At the annual Student Research Day on May 26, a second-year master's student from each graduate program was selected to give a presentation. Summaries of their research are given below. Faculty preceptors are listed in parentheses. The remainder of the graduating master's students (which included trainees from the Biostatistics, Epidemiologic, and Bioinformatic Training in Environmental Health) presented posters of their work. Thesis abstracts are online at http://depts.washington.edu/envhlth/research_days/srd_11.php.

Fluorescent Tracers and Pesticide Exposure

Hilary Zetlen, MPH, Environmental & Occupational Health (Richard Fenske)

Farmworkers, their families, and agricultural communities are at risk of pesticide exposure, so tools that can identify exposure pathways and effective exposure interventions are important. Zetlen studied the effectiveness of one such tool—fluorescent tracers (FTs)—as a pesticide surrogate. FTs are non-toxic chemicals that fluoresce under ultraviolet light and can be quantified using spectrofluorometry. In Zetlen's study, FTs were applied via air blast spray in a testing orchard, and samples of air and surfaces were analyzed in a spectrofluorometer. Her results showed that using FTs to monitor exposure was effective.

MRSA in the Pacific Northwest

Emily Edens, MS, Environmental Health (Marilyn Roberts)

Staphylococcus aureus and its methicillin-resistant strains, MRSA, have been isolated from marine water and intertidal sand samples from beaches in California, Florida, Hawaii, and the Pacific Northwest. Edens surveyed three Seattle-area beaches to investigate the prevalence of MRSA and characterize the strains present. Her study confirmed that MRSA is widely distributed. Freshwater streams that emptied onto recreational beaches had the highest number of MRSA-positive samples. More work is needed to determine the source of MRSA contamination and the risk MRSA poses to visitors at marine and freshwater recreational beaches.

Back-to-Work Predictors for Back Injuries

Louis Lim, MPH, Occupational & Environmental Medicine (Gary Franklin)

For the fiscal years 1999 through 2003 in Washington state, work-related injury claims that involved the back and upper extremities added up to \$1.7 billion. Most of the cost comes from a small number of claims characterized by escalating medical interventions, prolonged time away from work, and long-term disability. Using workers' compensation claim data, Lim identified factors that predict poor clinical outcomes at one year for patients with back injuries. They include: the worker's race, number of sites on the body with pain, prior back injury, and previous injury requiring a prolonged time off work. Further study is needed to understand how these factors influence clinical outcomes.

Fish and Low-Income Populations

Anna Schmidt, MS, Exposure Sciences (William Daniell)

Fish is an important part of a healthy diet; however, eating large amounts of fish from contaminated bodies of water



degrees awarded

opposite page, l to r: Hilary Zetlen, Emily Edens,
Louis Lim, Anna Schmidt, Leah Tait *Photos: Sarah Fish*

may negatively affect health. Schmidt's research characterized fish consumption and environmental concerns in a low-income and food-insecure population that often fish in local waterways to supplement their diet. She found that fish consumption behaviors were comparable to other high fish-consuming populations, such as Native Americans and Asian-Pacific Islanders. Environmental regulators use fish consumption rates to set water quality standards. This study suggests that low-income populations should be considered in policy decisions surrounding water quality.

Polyphenols and Antioxidant Boost

Leah Tait, MS, Toxicology (Lucio Costa)

Polyphenols are a class of compounds found in many foods and are of increasing interest because of their antioxidant and anti-inflammatory activities. Antioxidants are especially important in the brain, as they protect against oxidative stress. Neurodegenerative diseases such as Parkinson's disease can be caused by oxidative stress. Paraoxonase 2 (PON2) is an antioxidant found in the brain. Tait investigated the effect of the polyphenol, quercetin, on PON2 in mouse brain cell cultures. Her research shows that quercetin increases PON2 in the brain and that this increase is associated with protection from oxidative stress. ■

Autumn 2010

Jing Chen, PhD
Lani Gabriel, BS
Wint Wai, BS

Winter 2011

Chantrelle Johanson, MS
Matt Wilson, BS
Chantel Yanagawa, BS

Spring 2011

Sundee Bajwa, BS
Kendra Broadwater, BS
Zachary Christopher, BS
Jamie Chu, BS
Emily Edens, MS
Edward Evanson, MS
Hiroshi Fujita, MS
Jennifer Gee, BS
Amelia Greenhall, MS
Taylor Heiss, BS

Samantha Kantrowitz, MS
Amy Leang, BS
Louis Lim, MPH
Marissa Matsuyama, BS
Ahmed Mohamed, BS
Tiana Nizamic, BS
Stefani Penn, MS
Anna Schmidt, MS
Leah Tait, MS
Christina Tolley, BS
Vivian Yu, BS
Domonick Zonarini, MS
Hilary Zetlen, MPH

Summer 2011

Kelly Cabral, BS
Stephanie Chan, MPH
Madeleine Greenheck, BS
Paul Ho, BS
Elizabeth Kilcline, MS
Eric Smith, MPH

2011 BACHELOR OF SCIENCE GRADUATES

back row, l to r: Taylor Heiss, Ahmed Mohamed,
Sundee Bajwa, Zachary Christopher, Kelly Cabral,
Kendra Broadwater, Rohan Marrero

front row, l to r: Khaled Zaki, Tiana Nizamic,
Christina Tolley, Madeleine Greenheck, Vivian Yu,
Jennifer Gee, Jamie Chu, Marissa Matsuyama,
Amy Leang, Paul Ho

Photo: Sarah Fish





PHOTO JOURNAL EXHIBIT

holding mother earth sacred

Tribal Communities Create Sustainable Jobs, Honor Indigenous Beliefs

ENERGY EXPLORATION in the last century has often exploited resources on tribal lands: first oil from what is now Oklahoma, then uranium from the Southwest, and now tar sands in Canada. The extraction of resources has negatively impacted the environment and health of the tribal communities who live on and near these sites. As a result, they are working to improve their economies and protect their cultures by developing energy resources in more sustainable ways.

The photo journal exhibit, "Holding Mother Earth Sacred," documents such efforts. This past spring and summer our department's Northwest Center for Occupational Health & Safety sponsored a tour of the exhibit to the UW Spring Pow Wow, Northwest Indian College, and Squaxin Island Tribe Museum Library and Research Center, among other Northwest locations. The tour is co-sponsored and partially funded by the Mountain and Plains Education and Research Center (MAP ERC) and

the University of Colorado Denver Anschutz Medical Campus Office of Diversity and Inclusion.

"We're thrilled that the exhibit is traveling in Washington. That was one of the intentions, that it return to tribal communities," said Cindy Becnel, an industrial hygienist previously with the MAP ERC who created the exhibit with photographer Earl Dotter in collaboration with the tribal communities featured. Dotter took photographs while Becnel conducted interviews.

The exhibit features four tribal communities. The Southern Ute Indian Tribe in southwest Colorado are using the waste streams from the tribal production of coal-bed methane gas to grow microalgae, which in turn produces an oil that can be extracted and converted into a biofuel. The Diné (Navajo) communities in Arizona and New Mexico address health and cultural legacies of uranium mining while working to initiate green jobs programs. Lakota Solar Enterprises, developed by members of the

At left: Red Willow Production Company employees learn how to change out a filter on a natural gas pump. The Southern Ute Indian Tribe founded this company and others to manage their natural resources. *Photo: Earl Dotter*

Oglala Nation on the Pine Ridge Reservation in South Dakota, provides jobs and vocational training in the installation of solar heating systems and wind turbines. In Winnipeg, Canada, the Ojibway and Cree First Nations of Manitoba are using cross-cultural practices and guidance from Aboriginal Elders and leaders to enhance vocational training and worker health and safety.

Circles are very symbolic in indigenous cultures, so efforts to appropriately reflect American Indian and Aboriginal traditions were extended to the circular configuration of the exhibit. “Mother Earth of course is a circle, as is a sharing circle,” said Dotter.

“The tour has sparked many discussions about the topics raised in the exhibit, including energy development, job creation, and worker health and safety,” said Sean Schmidt, manager of the Northwest Center for Occupational Health & Safety.

“We hope this exhibit will foster future collaborations between NIOSH centers and tribal communities,” said Kenneth Scott, MAP ERC outreach director. “The centers can provide training, expertise, and applied research to help tribal communities solve problems. In return, tribal communities can help the centers develop training for our students and faculty members about Native American beliefs and value systems so we can do more effective collaboration and training.” ■

Below: The exhibit at Northwest Indian College coincided with an Earth Day lecture by Oren Lyons, Onondaga and Seneca Elder and Faithkeeper, who spoke on sustainable development in Indian country.

Photo: Sean Schmidt



HEALTHCARE ERGONOMICS CONFERENCE

A conference focused on ergonomics and safe patient handling in healthcare industries, held June 7–8, in Tacoma, Washington, brought together approximately 170 participants, speakers, and exhibitors. The conference was sponsored by the Washington State Safe Patient Handling Committee, the Oregon Coalition for HealthCare Ergonomics, and the Northwest Center for Occupational Health & Safety.

Lynda Enos, a consultant and ergonomist from the Oregon Nurses Association, reported that seven states have passed mandatory safe patient handling programs, including Washington, which passed its law in 2006. An investigation by this state’s Department of Labor & Industries Safety and Health Assessment and Research for Prevention (SHARP) program found a close relationship between patient and staff safety. Patient injury, such as from falls or skin scrapes, can stem from mishaps in manually lifting patients without proper resources or procedures. The strain also weighs heavy on the workers’ compensation system, with high numbers of claims for back injuries from hospitals and nursing homes.

In 2011, SHARP found workers’ compensation claims were decreasing. But reducing patient and healthcare worker injury rates may not be enough to sell and sustain support for safe patient handling programs, said Enos and Steven Hecker, senior lecturer and director of our department’s Continuing Education Programs. They led a workshop on how to measure the real costs associated with injuries and demonstrate the financial value of safe patient handling solutions.

Also included in the conference were workshops on designing a safe patient handling program, evaluation and benchmarking, promoting patient mobility, addressing violence and disruptive behaviors, and implementing safe patient handling best practices for long-term residents and obese patients in the hospital. ■



l to r: Thomas Burbacher,
Eric Vigoren, Jessica Lundin

Photos: Sarah Fish, Pat McGiffert,
Brandon Burmeister

WEB^{plus}*

Check out the list of current Environmental Health employment opportunities:
<http://depts.washington.edu/envhlth/job/job.php>

The University of Washington (UW) **Superfund Research Program** collaborated with the University of California, Riverside to organize the Pollutant Responses in Marine Organisms conference held in May in Long Beach, California. The conference was funded by the National Institute of Environmental Health Sciences (NIEHS). Also in May, the UW Superfund Research Program sponsored an educational summit in Seattle, bringing together more than 20 community organizations concerned with hazardous waste site issues. The program included a forum with Environmental Protection Agency (EPA) Region 10 Administrator Dennis McLerran and his staff.

The UW **Nanotoxicology Center** helped organize and host the NIEHS Centers for Nanotechnology Health Implications Research Consortium Meeting in Seattle on June 15–16.

Professor **Thomas Burbacher** serves on the scientific advisory board for the Food and Drug Administration Orthopaedic and Rehabilitation Devices Panel, which is reviewing mercury amalgam and a new procedure for bone grafting, and on two EPA panels to review the agency's draft documents: "National-scale mercury risk assessment supporting the appropriate and necessary finding for coal and oil-fired electric generating units" and "Toxicological review of methanol."

In March, Professor **Elaine Faustman** presented on the evolution of risk assessment at the Swedish Society of Toxicology annual meeting in Solna-Stockholm, Sweden, and in April, she taught at the International Union of Toxicology Latin American Risk Assessment Workshop in São Paulo, Brazil.

The Indoor Environmental Quality Committee awarded the 2010 Best Paper to "Where's the dust? Characterizing locations of azinphos-methyl residues in house and vehicle dust among farmworkers with young children," published in the *Journal of Occupational and Environmental Hygiene*, 7(12):663–671. Authors included Gloria Coronado and Beti Thompson from the Fred Hutchinson Cancer Research Center and from the Institute for Risk Analysis and Risk Communication: Director **Elaine Faustman**, Associate Director **William Griffith**, and Administrative Director **Eric Vigoren**.

In April, at the World Federation of Neurology Conference in Honolulu, Hawaii, Research Scientist **Susan Searles Nielsen** presented on variables that influence diagnosis of Parkinson's disease.

Department staff helped organize the American Industrial Hygiene Conference and Exhibition, May 14–19, in Portland, Oregon. DEOHS presenters included: Professor **Noah Seixas**, Senior Lecturer and Director of the Continuing Education Programs **Steven Hecker**, Senior Lecturer Emeritus **Lee Monteith**, **William Griffith**, Research Industrial Hygienists **Martin Cohen**, **Kit Galvin**, and **Nancy Beaudet**, Research Scientist **Richard Neitzel**, **Diana Ceballos** (PhD, Environmental and Occupational Hygiene, 2009), **Ryan Blood** (PhD student, Environmental and Occupational Hygiene), **Domonick Zanarini** (MS student, Exposure Sciences), **Hilary Zetlen** (MPH student, Environmental & Occupational Health) and undergraduate **Kendra Broadwater**. Approximately 125 alumni and friends attended the department-sponsored reception.

congratulations

Research Scientist **Bert Stover** worked with faculty from the UW, Makerere University in Kampala, and the Uganda Ministry of Health to assess the public's use of health services in Uganda.

On May 3, a new preschool, built with support from a national government organization co-founded by Clinical Instructor **Kate Stewart**, welcomed students in an impoverished neighborhood in Leon, Nicaragua.

On May 25, Dean **Howard Frumkin** and **Steven Hecker** presented at a Public Health-Seattle & King County Environmental Health Division staff conference. Frumkin discussed the impacts of climate change on human health, and Hecker spoke on environmental health impacts to the aging population. Hecker also presented on training construction pre-apprentices at an Oregon Health & Science University symposium on June 3, and Frumkin was the keynote speaker at the Washington Physicians for Social Responsibility's Annual Dinner on July 14.

In May in Hannover, Germany, Professor **John Kissel** participated in a peer review of the World Health Organization's Environmental Health Criteria document for dermal exposure. In June, at the Occupational and Environmental Exposures of Skin to Chemicals conference in Toronto, Canada, he presented on simulating the removal of chemicals from skin by washing, and **Amelia Greenhall** (MS student, Environmental Health) and **Alexander Domesle** (MS, Environmental Health, 2010) presented posters of their research.

Jessica Lundin, who is a research scientist working with Professor **Harvey Checkoway** and pursuing a PhD in Biology with a focus in environmental toxicology, received a STAR fellowship from the EPA. The three-year fellowship will support her research in evaluating the exposure of endangered killer whales to toxic contaminants present in Puget Sound. In March at the International Conference on Alzheimer's & Parkinson's Diseases in Barcelona, Spain, she presented on the increased risk of parkinsonism among welders.

Hilary Zetlen received a Bonderman Travel Fellowship, which was created through a gift from David Bonderman. Each Bonderman Fellow receives a \$20,000 travel award.

—continued on page 10



l to r: Zachariah Guerrette, Stephanie Chan

Photos: Elizabeth Sharpe, Sarah Fish

Associate Professor **William Daniell**, School of Public Health Outstanding Faculty Teaching Award

Professor **Joel Kaufman**, DEOHS Student Advisory Committee's 2011 Outstanding Faculty Mentor Award

Eric Vigoren (administrative director, Institute for Risk Analysis and Risk Communication), DEOHS Distinguished Staff Award

Zachariah Guerrette (PhD student, Toxicology), DEOHS Outstanding Student Award

Anna Schmidt (MS student, Exposure Sciences), Gilbert S. Omenn Award for Academic Excellence

Stephanie Chan (MPH student, Environmental and Occupational Health), DEOHS Outstanding Student Award

Undergraduate **Kendra Broadwater**, DEOHS Outstanding Student Award

Undergraduate student **Amy Leang**, 2011 Jack Hatlen Scholarship

Details on the award winners at http://depts.washington.edu/envhlth/news/award.php?content_ID=1277 ■



Edward Evanson, who graduated with an MS in Exposure Sciences, rode his bicycle to the department graduation ceremony on June 12. *Photo: Sarah Fish*

Stephanie Chan (MPH student, Environmental and Occupational Health) was named a 2011 Presidential Management Fellow in the two-year program for students interested in federal service.

Pamela Roque (PhD student, Toxicology) was awarded a National Institute of Health fellowship for her research on how alcohol may affect the formation of synapses in early brain development.

Anna Schmidt (MS student, Exposure Sciences) received a \$1,000 scholarship from Russell Castner, a supplementary gift to the endowed student research fund he established in 2007.

Elizabeth Cooper (MS student, Environmental Health) received a Mary P. Dole Medical Fellowship and was awarded \$4,500.

In June, at the American Thoracic Society International Conference in Denver, Colorado, post-doctoral scientist **Sun-Young Kim** presented on sources of particulate matter and semi-volatile organic compounds associated with cardiorespiratory effects; **Samantha Kantrowitz** (MS student, Toxicology) presented a poster on the relationship between diesel exhaust exposure and oxidative stress.

Vanessa Galaviz (PhD student, Environmental and Occupational Hygiene) received Casa Familiar's ABRAZO Award for her research on personal exposure and uptake

of diesel particulate matter among pedestrians who cross the US–Mexico border at San Ysidro, a community in south San Diego. Her work is part of the Healthy Borders Research Study coordinated by Penelope Quintana (associate professor, San Diego State University) and the San Diego Prevention Research Center and funded by the California Endowment and the San Diego Foundation. Casa Familiar has been advocating for San Ysidro residents to ensure the reconstruction of the US–Mexico border port-of-entry takes into account community concerns. Galaviz's research will be used to support recommendations and provide information to the San Ysidro Community Planning Group and the San Ysidro Smart Border Coalition.

Undergraduate students **Sundeep Bajwa**, **Kendra Broadwater**, **Michael Chen**, **Jamie Chu**, **Nick Ling**, and **Abbi McClintic** presented on May 20 at the Annual UW Undergraduate Research Symposium in Mary Gates Hall.

Undergraduate student **Andy Tang** received a grant from the Asian & Pacific Islander American Scholarship Fund (APIASF), and in June, he attended the APIASF Higher Education Summit in Washington, DC. The forum focused on the federal College Completion Agenda and its impact on the Asian American and Pacific Islander community.

Tang was one of eight undergraduates selected from a national pool of 180 applicants for the UW Environmental Health Research Experience Program, a nine-week summer experience for students interested in environmental health science research. The other undergraduates were: Desiree Ancar, University of Tennessee at Knoxville; Kristina Blank, SUNY at Buffalo; Mariela Medina Castellanos, California Polytechnic State University; Karena Smoll, University of California, Irvine; T'Shane Williams, Clark Atlanta University; Lisa Xiao, St. John's University; and Angele Zamarron, Evergreen State College. ■

IN MEMORIAM

Sally Liu

Sally Liu presented in 2004 at an elementary school in Seattle, one of the many community engagement activities that kept children involved in the Diesel Bus Study and their families informed and engaged in the research. *Photo: Mary Levin*



SALLY LIU, an affiliate professor in our department, passed away on June 6, 2011 in Switzerland. Since 2004, she had been an environmental health scientist and research professor at the Swiss Tropical and Public Health Institute, an associated institute of the University of Basel in Switzerland.

“In her 46 years, Sally accomplished so much and helped launch many other investigators’ careers,” said Professor David Kalman, chair of our department. “She was a great colleague and friend, highly energetic, and highly organized. She had so much enthusiasm for science and for environmental health; she inspired everyone around her. We continue to miss her deeply.”

Liu studied the health effects of exposure to ambient air pollution and made valuable contributions to large-scale studies and research centers, including the Swiss Study on Air Pollution and Lung Diseases in Adults, the European Study of Cohorts for Air Pollution Effects, the Multi-Ethnic Study of Atherosclerosis and Air Pollution (MESA Air), and the Northwest Research Center for Particulate Air Pollution and Health based at the UW.

“Sally Liu was a gifted, energetic scientist widely admired in the exposure science community,” said Professor John Kissel. “She was the 2003 recipient of the Joan Daisy Award of the International Society of Exposure Science, which is given annually to an outstanding young scientist. The fact that in 2010 the award was given to Ryan Allen, who completed his PhD at the UW under Sally’s direction, provides a hint of the loss her untimely passing represents.”

Liu studied atmospheric sciences as an undergraduate at National Taiwan University, where she helped develop Taiwan’s first probabilistic typhoon forecast program. She earned a Doctor of Science degree in Environmental

Health from Harvard University’s School of Public Health, where her research was the first to measure individual ozone exposures using a personal monitor. In 1998, Liu joined our department’s faculty as an assistant professor, and was promoted to associate professor in 2003. After her appointment in Basel, Switzerland, she traveled back and forth between Europe and the United States, continuing collaborations with researchers. Then in 2009, her appointment at the UW was changed to affiliate professor.

Liu’s recent projects included a five-year assessment of children’s exposure to diesel exhaust before and after the school bus fleets were retrofit with cleaner engine emission systems and fuels, a study funded by the National Institute of Environmental Health Sciences. “Her investigation of ‘self pollution’ in diesel school buses was particularly notable for its innovative and thorough design,” said Kissel. The UW Diesel Bus Study team led by Liu worked with 432 children from nearly 70 Seattle and Maple Valley schools and monitored more than 200 school buses to find out how they contributed to children’s daily exposures to air pollution.

“Sally was a dedicated and tireless scientist who was driven to conduct the highest quality scientific work and led those around her to work to their highest potential,” said Professor Joel Kaufman, director of MESA Air. “Sally was at the cutting edge of understanding exposures to air pollution, and her work has been and will continue to be critical to informing clean air policies on a global level and to protecting the health of the public,” said Kaufman. “It was my privilege to work with her.”

Liu leaves behind her husband, Anthony Rossini, their two sons, Matthias and Andreas, and many friends and family in Taiwan, Switzerland, and Seattle. ■



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COMINGS & goings

Richard Neitzel (PhD, Environmental and Occupational Hygiene, 2009), a research scientist in our department since 2000, accepted a position as assistant professor in the University of Michigan School of Public Health Risk Science Center.

Gennaro Giordano, who has been a senior fellow, was hired as research scientist in Professor Lucio Costa's laboratory.

Ranjini Krishnan is a new research scientist in the Multi-Ethnic Study of Atherosclerosis and Air Pollution.

Bill Pickert is the new budget analyst for the Exposure Sciences program and Northwest Center for Occupational Health & Safety.

Research Industrial Hygienist **Nancy Simcox** rejoined the Field Research and Consultation Group, where she had worked from 1995 to 2001.

Jordan Firestone accepted a faculty position at University of California, Berkeley. In his place, **June Spector**, acting instructor in the UW Department of Medicine, is serving as interim Occupational and Environmental Medicine Clinic director and medical director of the Harborview Center of Occupational Health and Education.

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