

# Center for Research on Occupational and Environmental Toxicology



*View of the OHSU tram and Mt. Hood.*

# NEWSLETTER

*This photograph was taken from a unique vantage point on Kohler Pavilion by CROET's Dan Austin.*

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## **Promoting Diversity and Excellence at CROET**

Encouraging diversity is a key component of Oregon Health and Science University's vision and core values. And, over the past several years, the university has made strides in promoting diversity within the campus community. But to achieve even greater progress in such a large and complex institution, OHSU has established the President's Diversity Advisory Council (DAC) to advise the president on matters of diversity, multiculturalism, and equal opportunity relating to all aspects of the university's mission of teaching, healing, research and community service.

CROET has been and continues to be a strong supporter of the DAC initiative, both within and outside OHSU, due in large part to the leadership of CROET Director Dr. Peter Spencer. Dr. Spencer has taken the lead in recruiting qualified women and minorities into faculty and post-doctoral positions, believing that human diversity promotes diversity of thought and creativity in the scientific endeavor. As a result, more than one-third of CROET's scientific faculty and staff are women and underrepresented minorities. Dr. Spencer's commitment to diversity extends beyond CROET and



OREGON  
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OHSU: he holds numerous honorary appointments abroad and serves as interim director of the OHSU Global Health Center, which facilitates the university's collaboration with the global health community to promote quality and equity in health care internationally.

With diversity and excellence as the focus, here we present just a few of the many diverse people who make CROET such an excellent center of research and discovery.

**Valerie Palmer:** Valerie is head of CROET's toxicogenomics laboratory, where she is a member of a research team investigating gene-chemical interactions



Valerie Palmer

that result in crippling diseases. Valerie serves on the OHSU Diversity Advisory Council, the Steering Committee of the OHSU Global Health Center, and the OHSU Institutional Review Board for human research subjects. She was recently appointed to the board of Portland's Immigrant Refugee Community Organization (IRCO) and serves as President of

IRCO's Africa House. A refugee herself, Valerie was born into the rural farming community of KwaZulu, South Africa. Surrounded by poverty, disease, food, water and firewood shortages, she experienced many hardships including racial discrimination within the community and from the government. With no hope of receiving a higher education and under constant fear of political persecution, she left South Africa at the age of 17 for London, England to escape increasing threats and suffocating apartheid. Refused asylum in the U.K., Valerie traveled to New York City where she again applied for asylum. She married and raised a daughter — now a doctoral student of anthropology and language. Settled in the USA, Valerie sought opportunities to fulfill her dream of studying and contributing to the health of the underserved she had left behind. Between 1983 and 1988, Valerie served as a research consultant at New York's Albert Einstein College of Medicine, Institute of Neurotoxicology, where she worked in the laboratory and participated in expeditions designed to understand the causes of neurodegenerative diseases among indigenous people of Africa, Asia, and Oceania. Shocked by the lack of research funding for neglected diseases, she

created the Third World Medical Research Foundation to sponsor and conduct multidisciplinary research and education on nutritional, toxic and other disorders affecting the very poor. After moving to Portland, she continued laboratory work on the nutritional toxic disease *Konzo* (see page 5, top right), and studied biology, chemistry and toxicology. For a while, she worked in the Movement Disorders clinic and later joined the OHSU School of Medicine department of Neurology as an ALS (Lou Gehrig's disease) Research Associate. She interviewed and gathered data from Gulf War veterans with ALS as part of a research study on the causes of ALS, sponsored by the U.S. Department of Veterans Affairs. Valerie has participated in the development and organization of many international research educational workshops and conferences, was nominated for the Africa Prize for The Sustainable End to Hunger in 1988 for her work on the International Network for the Improvement of *Lathyrus sativus* and Eradication of Lathyrism project (see page 5, top right), has been recognized for her work with the African Society of Toxicological Sciences, and has co-authored numerous scientific papers and contributed to scholarly texts.

**Desire Tshala-Katumbay:** Desire holds positions as Staff Scientist, CROET, Assistant Professor of Neurology, OHSU School of Medicine, and Adjunct Professor of Neurology, Kinshasa School of Medicine, Democratic Republic of Congo (DRC). He earned his M.D. degree from the University of Kinshasa, Zaire, and a Ph.D. degree from the University of Uppsala in the city of Uppsala, Sweden. His area of expertise is in tropical neurology and neuroepidemiology, clinical neurotoxicology, and experimental neurotoxicology. Desire is especially interested in global health and research capacity building in the developing world. He has worked with underserved communities of sub-Saharan Africa and initiated collaboration with various academic institutions internationally. Desire is involved with IBRO — the International Brain Research Organization, an umbrella organization of the societies for neurosciences — as a lecturer on neuroscience topics and mentors students who are interested in global neuroscience partnerships. He



Desire Tshala-Katumbay



also serves on the Committee on Aid and Education in Neurochemistry of the International Society of Neurochemistry, to help develop basic neurosciences in the developing world. Through these experiences, he has developed a good understanding of the principles and pitfalls in international aid, collaboration, and health interventions. Desire's current areas of research focus on the mechanisms of toxicant-induced axonopathy, which produces pathology similar to several neurological diseases, including amyotrophic lateral sclerosis (ALS, Lou Gehrig disease). Desire is also exploring the mechanisms underlying the susceptibility of the motor system to naturally existing food toxicants. Much of his research is conducted on *Konzo*, a distinct neurological disease associated with heavy reliance on insufficiently processed bitter cassava as staple food in poor populations of sub-Saharan Africa.

**Irina Minko:** Irina, a Staff Scientist at CROET, grew up in Tutaev, a small historical city on the upper reaches of the Volga River, 200 miles northeast of Moscow. Her interest in biological sciences was inspired and fostered in high school by her biology teacher. Irina received her M.S. *summa cum laude* in Soil Science and Agricultural Chemistry at the M. V. Lomonosov Moscow State University and her Ph.D. in Biochemistry at the A. N.



Irina Minko

Bakh Institute of Biochemistry, Russian Academy of Sciences. In 1997, Irina was awarded a prestigious NSF-NATO Postdoctoral Fellowship in Science, which allowed her to obtain training in molecular biology at the University of Texas in Austin with David Herrin. Later, she joined the laboratory of Stephen Lloyd at the University of Texas Medical Branch, and when Dr. Lloyd accepted a position at CROET, she chose to continue her research at Oregon Health & Science University. Irina has worked in various diverse fields of biology, including ecology of polluted soils, fungus-plant interactions, and the biogenesis and function of cellular organelles. Working in the laboratory of Dr. Lloyd, she has become very interested in DNA damage and repair. Her research centers on studies of the cellular repair of DNA-protein crosslinks, which are the deleterious DNA lesions caused by many endogen-

ous reactive chemical species, environmental agents, and anticancer drugs. Another significant area of Irina's expertise is in how DNA lesions are sometimes bypassed by the repair/replication machinery. This area of Irina's research is important, since in humans, defects in the processing of DNA damage are manifested in severe disorders, including cancer, neurodegeneration and premature aging. Irina's contribution to the field of DNA repair and replication includes almost 20 papers, all of which are published in highly ranked journals, including *Proceeding of the National Academy of Sciences*, *Molecular and Cellular Biology* and *Journal of Biological Chemistry*.

Irina, Desire and Valerie are just three of the many excellent representatives of CROET who strive to find scientific answers to questions about the health and wellbeing of the working people of Oregon and beyond. As you read further into this issue, you will also see the faces of many other diverse and excellent people who serve the mission of CROET.

## CROET's Sabri Retires

Mohammad Sabri, Ph.D., a founding faculty member of CROET, has retired after nearly 20 years of service to OHSU. Dr. Sabri joined OHSU as Senior Staff Scientist in 1988 and held academic appointments as Associate Professor, OHSU Department of Neurology; faculty member, OHSU Neuroscience Graduate Program; adjunct graduate faculty, Oregon State University department of Environmental and Molecular Toxicology; and adjunct faculty, OSU College of Veterinary Medicine.

In research, Sabri made important and original contributions to the neurosciences, particularly in the field of axonal transport. His studies had a direct impact on isolating and characterizing the molecular motors that move cellular materials within nerves. His research laid down the groundwork for understanding the role of energetics on fast axonal transport and neurode-



generation. He employed neurotoxic agents as experimental probes to investigate mechanisms of nerve-cell degeneration. These studies showed for the first time that disruption of energy-dependent axonal transport is one of the major causes of nerve-cell damage by toxic agents.

Sabri has published over 200 research papers, book chapters and abstracts. He served as a member of several National Institutes of Health grant review panels and study sections and as Editorial Board Member for the journals *Neurochemistry* and *Neurotoxicology*. He is a founding member of the Society for Neuroscience and American Society for Neurochemistry. His membership in other scientific bodies includes: International Brain Research Organization, American Association for the Advancement of Science and Indian Academy of Neuroscience.

Sabri was actively involved in teaching and training graduate, undergraduate and high school students, and was formally recognized by OHSU past-president Peter Kohler for his outstanding contributions in science education. He was also presented the 'Mentor Hall of Fame Award' by the Oregon Graduate Institute of Science and Engineering's Saturday Academy in recognition of his excellent contributions to science education. Sabri was also involved in the activities of several national and international scientific societies. He organized and chaired numerous scientific sessions at national and international meetings and, as chair of the local host committee, orchestrated organization of the highly successful 2006 American Society of Neurochemistry annual meeting in Portland. He has also been a member of a variety of committees at OHSU and CROET, and was recognized by the OHSU School of Medicine for his outstanding contributions on the School of Medicine Admissions Committee.

In recognition of his research contributions in neurochemistry and neuroscience, Sabri was awarded several awards and honors, including a prestigious "Senior Investigator" Award by the Association of Indian scientists at the 1997 Annual Meeting of the Society of Neuroscience, USA. Sabri has been appointed as OHSU Emeritus Faculty by the Provost and Vice President for Academic Affairs, in recognition of his lifelong devotion to teaching and research at OHSU.

## CROET Contributes to Global Health Efforts

Imagine an industrial revolution that transforms a nation over the span of a few decades from developing-country backwater to global powerhouse. China has achieved this remarkable transition, but not without a huge cost in occupational disease, injuries and fatalities. Trying to prevent illness among Chinese workers while learning about the effects of chemical overexposures, has led to productive scientific exchanges since the inception of CROET. An early initiative was to introduce Shanghai's Professor You-Xin Liang and colleagues to methods in neurobehavioral assessment developed by CROET Senior Scientist and Associate Director W. Kent Anger, Ph.D. Dr. Anger has carried out research in South America and is presently funded



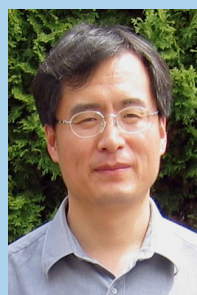
Kent Anger, PhD

to study the effects of pesticide and solvent exposures in Egypt and Lebanon, respectively. Research collaboration with Chinese scientists has also been developed by Dr. Peter Spencer, CROET Senior Scientist and Director. Initial contacts were with the late Professor Fengsheng He, clinical neurotoxicologist, of Beijing's Centers for Disease Control (CDC). Dongren Yang, Ph.D., student of Fengsheng He, has worked for many

years in the CROET research laboratories of Dr. Bruce Patton and Dr. Pam Lein. He recently completed translation into Mandarin of the introductory chapters of Spencer and Schaumburg's year-2000 text on experimental and clinical neurotoxicology, with the intent of providing free access to Mandarin speakers on the World Wide Web. Dr. Yang periodically returns to China to



Peter Spencer, CROET Director



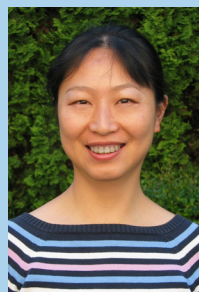
Dongren Yang, PhD

continue his research career in occupational and environmental medicine. He recently accompanied Dr. Spencer to teach colleagues in the China CDC and Shenzhen Hospital for Occupational Disease the principles of establishing an institutional review board to review and approve human research. CROET scientists have

sought funding jointly with these Chinese institutions to research the genetic factors that underlie susceptibility to neurological disease from workplace exposure to organic solvents. Understanding of this



worldwide problem, gleaned from research conducted by Dr. Spencer's group among others, has been shared with physicians and scientists across China and India. CROET Staff Scientist Dr. Fei-fei Yan, who for the past 5 years has carried out molecular studies on the normal and abnormal function of insulin-producing pancreatic cells that regulate blood glucose in health and disease in the laboratory of CROET Scientist Show-Ling Shyng, PhD, herself from Taiwan, is another example of the benefits of collaboration with Chinese scientists.



Fei-fei Yan, PhD

Studies of foci of high-incidence disease in various parts of the world have provided other valuable opportunities for information exchange. While many of these conditions do not occur in the continental USA, they are worthy of intensive study because of their similarities to diseases that plague Oregonians and others worldwide, and their solution may advance understanding for all. Examples include a remarkable neurodegenerative disorder with features of amyotrophic lateral sclerosis (Lou Gehrig's disease), Parkinsonism and Alzheimer-like dementia, which occurs in three genetically distinct populations in the Pacific Islands of Guam (Chamorros), Honshu (Japanese) and New Guinea (Auyu, Jaqai). Decline of disease in all three high-incidence foci points to a common environmental factor that has slowly disappeared as these populations have acculturated to modern lifestyles. Focus on the neurotoxic properties of chemicals in seed of the cycad plant, a traditional source of food and/or medicine in all three affected populations, has been under intensive study by CROET Scientist Dr. Glen Kisby, by Dr. Spencer and his toxicogenomics research team, and in cooperation with research scientists at MIT, University of Washington, Fred Hutchinson Cancer Research Center and University of Medicine and Dentistry of New Jersey. Field research on these conditions, the subject of a BBC documentary entitled *The Poison that Waits*, was carried out with Third World Medical Research Foundation (TWMRF). Founded by CROET Research Associate Valerie Palmer, TWMRF has also joined with CROET scientists to study the crippling disease lathyrism, a form of spinal cord motor-system degeneration caused by food dependency on the grass pea, an environmentally tolerant legume



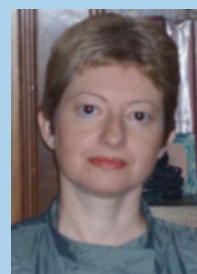
Glen Kisby, PhD



Show-Ling Shyng, PhD

used for food in Bangladesh, India, and Ethiopia. A clinically related condition (*Konzo*), resulting from dietary reliance on the root crop cassava, has been the subject of clinical study in the Democratic Republic of Congo by Assistant Professor of Neurology and CROET Staff Scientist D. Desire Tshala-Katumbay, MD, PhD. Parallel experimental studies of these three human neurodegenerative disorders, conducted by CROET Senior Scientist Charles Allen, PhD, former CROET Scientist Stephen Ross, PhD, and John Tor, DVM, PhD, a former graduate student with Dr. Spencer's team, revealed novel molecular mechanisms by which the culpable plant toxins induce nerve cell degeneration.

With the recent arrival in CROET of Elena Herrero-Hernandez MD, PhD, an occupational physician-researcher who has studied brain degeneration among welders and other workers in Italy and China, experiments have begun to examine the deleterious effects on the brain of occupational exposure to manganese. Such studies are also relevant to the rash of parkinsonism cases in countries of the former Soviet Union where drug users are over-exposed to this neurotoxic element. The goal is to uncover mechanisms underlying brain vulnerability that set the stage for Parkinson's and related diseases that plague Oregonians.



Dr. Elena Herrero-Hernandez

CROET's other contributions are directed to the public as well as the biomedical community. Fred Berman, DVM, PhD, who directs CROET's Toxicology Information Center (TIC), is working with the National Library of Medicine to develop a worldwide toxicology resource. Oregon's immigrants and refugees from overseas are assisted by the efforts of Joan Rothlein, PhD and Valerie Palmer, who leads Africa House, a component of Portland's Immigrant and Refugee Community Organization. CROET health scientists Gary Rischi-telli MD, JD, MPH, Dede Montgomery, MS, CIH, Fred Berman, DVM, PhD, and Peter Spencer, PhD developed an advisory paper on occupational safety and health for the China Academy of Safety Sciences & Technology, Dr.



Fred Berman, DVM, PhD



Joan Rothlein, PhD

Herrero-Hernandez has taught occupational health to students worldwide through the International Labor Organization, and Dr. Spencer has advised the World Health Organization on



Gary Rischitelli,  
MD, JD, MPH

disease outbreaks in Angola, Colombia, Cuba and Sudan.

CROET's many contributions to health at home and abroad have led naturally to its involvement in the creation of OHSU's new institution-wide Global Health Center. Presently housed in CROET's TIC, the Global Health Center (GHC) is serving the education needs of OHSU's professional students and promoting clinical and research excellence in community health worldwide. CROET helps support this important OHSU initiative through the volunteer efforts of its scientific and administrative staff, including Dr. Spencer, who serves as GHC interim director.



Dede Montgomery,  
MS, CIH

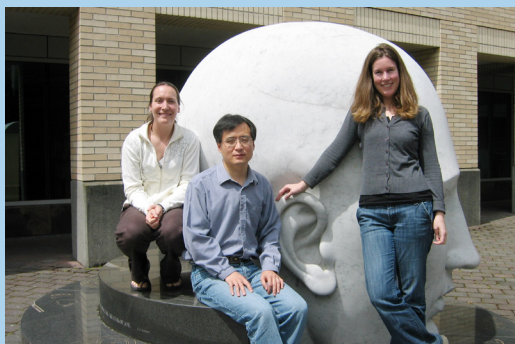
Gordon Smith, Dr. Ed Neuwelt from OHSU, Dr. Judith Eisen from UO and Dr. Jane Ishmael from OSU.

## CROET Hosts Dutch Interns

For the past several years, the Institute for Life Sciences & Chemistry at Utrecht College, The Netherlands, has sponsored a study-abroad program for undergraduate students. Although the program offers their nine-to-ten month long internships to a variety of research institutions, many students have chosen to come to OHSU because of its reputation as a top-notch research university. CROET became involved with the program in Spring 2005 when Dr. Mario van Berlo, coordinator of student internships at Utrecht, contacted Ben de Graaf, a graduate student in the CROET laboratory of Dr. Amanda McCullough. Ben is a former student of Utrecht College and previously participated as an intern at OHSU. Dr. McCullough took one student, who interned at CROET from September 2005 to

## Three From CROET Win Awards

Two graduate students and one post-doc from CROET were awarded prizes for outstanding scientific presentations during the 9<sup>th</sup> annual Society for Neuroscience Oregon Chapter meeting, held May 9-10 at the Edgefield Winery in Troutdale, Oregon. Sixty-eight participants from OHSU, UO and OSU presented their work at this event. Ten post-doctoral fellows and graduate students gave oral presentations, while students, post-docs and faculty presented 22 posters. Outstanding



Society for Neuroscience awardees Jill Wentzell, Dongren Yang and Jennifer Peterson.

scientific discussions were presented throughout the course of this meeting. A panel of judges awarded \$100 prizes and certificates for the best presentations. Among the winners were graduate student Jennifer Peterson from the Banker Lab at CROET for best poster; graduate student Jill Wentzell from the Kretschmar lab at CROET for best talk; and post-doc Dongren Yang from the Lein lab at CROET for best poster. Invited speakers included Dr. Evan Snyder, a world-renowned expert on both clinical and basic science studies on neural stem cells from the Burnham Institute in La Jolla, CA., Kerry Tymchuk, the chief of staff for Senator



Ben de Graaf (second from left), poses with Dutch interns Marijn Schouten (left), Hanil Quirindongo and Erik Bom (intern Wendy Timmermans not pictured).

June 2006. The student's experience was so positive that the following year, four more students signed up with a desire to come to CROET! Dr. McCullough was able to place all four interns at OHSU, three in CROET and one in the School of Dentistry. Those students and their sponsoring labs are: Erik Bom - McCullough lab; Marijn Schouten - Dr. Show-Ling Shyng's lab; Hanil Quirindongo - Dr. Doris Kretschmar's lab; and Wendy Timmermans - Dr. David Morton's lab (OHSU School of Dentistry). The students arrived in September and were here until June. "This was a great opportunity for them to get hands-on experience in a cutting-edge research environment as well as to have a great life experience in Portland", said Dr. McCullough. She also reiterated that a good deal of credit for the continuing success of this program goes to Ben de Graaf, who has served as the primary liaison between the Dutch Institute and CROET.



# Center for Research on Occupational and Environmental Toxicology

CROET, the Center for Research on Occupational and Environmental Toxicology at Oregon Health & Science University, conducts research, provides consultations and offers information on hazardous chemicals and their health effects. CROET's scientists and research staff explore a range of questions relating to health and the prevention of injury and disease in the workforce of Oregon and beyond. CROET's Toxicology Information Center is open to the public and is staffed to answer Oregonians' questions about hazardous substances in the workplace and elsewhere. CROET's Web site also provides answers to questions about industries found in Oregon through links on a series of pages devoted to industry-specific topics.

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# OUTREACH

*CROET will exhibit at the following conferences.*

## **Central Oregon Occupational Safety & Health Conference**

Eagle Crest Resort - Redmond, Oregon

September 17 - 18, 2008

## **Southern Oregon Occupational Safety & Health Conference**

Smullin Center - Medford, Oregon

October 15-16, 2008

## **2008 Northwest Occupational Health Conference**

Hilton Seattle Airport & Conference Center - Seattle, Washington

October 15-17, 2008

## **Western Pulp and Paper Workers Safety and Health Conference**

Red Lion Hotel on the River - Portland, Oregon

December 2-5, 2008

## Join our monthly E-mail list

Join CROET's e-mail list for monthly updates about additions to the CROET web site, news and upcoming events. To subscribe or read past updates, go to <http://www.croetweb.com/newslet>.

Oregon Health & Science University includes the Schools of Dentistry, Medicine and Nursing; OHSU Hospital; numerous primary care and specialty clinics; multiple research institutes and several outreach and public service units. OHSU is an equal opportunity, affirmative action institution.

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