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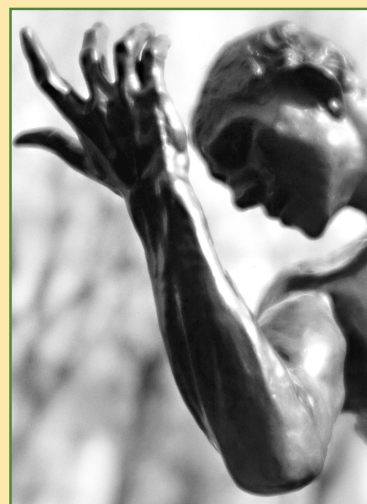
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OUTREACH



This issue features the photography of Dean Hanson, a retired Oregon State University professor of chemistry. Dean's photography has been shown at a variety of galleries in Oregon and more recently in Paris, France.

How CROET Research Helps Oregon

Imagine a satellite with a camera that can zoom in on anything, from a view of the whole Earth, all the way down to the smallest molecule. The Earth view shows us our planet, but provides little detail about its inner workings, whereas the molecular view affords us tremendous detail, but informs us little about the Earth as a whole. Taken together, however, these two views begin to give us a better perspective of our planet and its inner workings. Occupational and environmental health research at CROET is a lot like this camera: Each scientist has a specific focus, but also sees his/her research within the larger context of ultimately benefitting workers and employers within Oregon and beyond. Join us as we zoom in and out on a sampling of research being conducted by CROET scientists.

Recently (CROET Newsletter Vol. 9, no. 2), we reported on the work of Dr. Charles Allen, who investigates mechanisms governing circadian rhythms in nerve cells of the brain's suprachiasmatic nucleus. By understanding the function of these neurons—our biological clock—we can focus more widely to develop

education and other strategies to help shift workers avoid hazardous acts due to inattention.

Bruce Patton, PhD, focuses even more minutely to study molecules involved in synapse formation, which is the basic communication link among nerve cells and between nerve endings and muscle fibers. And at a similar level, Dr. Gary Banker studies the trafficking system nerve cells use to transport proteins over long distances, from the cell body where they are produced, to the tips of axons and dendrites where they are utilized as far as six feet away. By understanding how communication links are established and how trafficking mechanisms function within neurons, these scientists are providing information critical to the development of methods to prevent or mitigate the consequences of traumatic or toxic nerve injury and to speed recovery of neurological function following such injury.

Bruce Gold, PhD, is another scientist working at the molecular and cellular level to study neurological disorders and nerve injury. The focus of Dr. Gold's research is on mechanisms that govern nerve regeneration and drugs that may enhance or facilitate recovery following nerve injury. Dr. Gold was the first to discover that whole-body administration of a novel immunosuppressant drug, FK506, accelerates peripheral nerve regeneration and increases axonal regeneration following spinal cord injury in rats. Dr. Gold also found this drug to be effective in animal models of chemical-induced neurodegenerative diseases, such as Parkinson's. It is anticipated that drugs suitable for use in humans will be developed to treat a variety of work-related and other neurological conditions.

Oregon ranks second or third in the nation for the incidence of chronic neurodegenerative diseases such as Alzheimer's, Parkinson's and ALS, and it is suspected that chemicals we encounter play a role. Glen Kisby, PhD, is investigating the role that DNA-altering workplace and environmental chemicals play in injuring neurons of the central nervous system. Many of these DNA-altering chemicals also produce gene mutations that can lead to cancer. Mitchell Turker, PhD, works at the level of DNA to better understand how these gene mutational events occur. By identifying how chemicals can change our basic genetic structure and function, these scientists aim to benefit Oregon workers by preventing exposures that increase our chances of developing neurodegenerative diseases.

From a broader perspective, Dr. Valle Nazar-Stewart, PhD, is working to identify how individual genetic variations contribute to disease susceptibility, including cancer. Understanding the biology of disease susceptibility will allow us to establish workplace exposure standards at levels that protect all workers. Dr. Nazar-Stewart's research is complementary to CROET's newly funded toxicogenomics research consortium (featured in our last newsletter), which together will advance our understanding of gene-environment interactions and how they cause disease.

One important challenge facing the workplace is the issue of pain relief and drug addiction. Richard Allen, PhD, is investigating how cellular and molecular regulatory functions in the central nervous system are altered by chronic pain and drugs of abuse. Using cell culture and DNA cloning techniques, Dr. Allen's research may lead to the design of effective non-addictive pain

medications and a more complete understanding of addictive behaviors in general.

Another major CROET focus is to form research partnerships with labor, industry and community organizations, with the goal of increasing our understanding of potential risks that various working populations face every day. Several CROET scientists are working in this area. Linda McCauley, RN, PhD, FAAN, conducts research to assess pesticide exposure levels in migrant communities working in agriculture. These projects are designed to help reduce pesticide exposure in children of migrant workers. Growers are active participants in this research. This work involves gathering information on pesticide use and the proximity of migrant housing to agricultural land, and analyzing relationships between pesticide residues found in the homes with proximity to crops being grown. She is also developing methods for training adolescent migrant farm workers in the safe use and handling of pesticides.

Kent Anger, PhD, focuses on the detection of adverse neurological effects of chemical and physical agents and on developing effective occupational training methods to prevent them. By partnering with a wholesale nursery, a Spanish-language version of their computer-based training program has been developed and successfully applied to train migrant workers with as few as two years of formal education. His current work focuses on developing training programs for tractor safety, food preparation and ergonomics in construction. This research will assess the effectiveness of the training programs in changing workplace behaviors. By identifying occupational hazards in Oregon workers, detecting the early signs of nervous system injury and developing

more effective job training methods, Drs. McCauley and Anger both hope to reduce worker injury and Oregon worker's compensation claims.

Joan Rothlein, PhD, also focuses on pesticide as well as other hazardous substance use in Oregon. Dr. Rothlein has developed and organized a hazardous chemical surveillance database using existing databases of chemicals used and stored in Oregon. She has combined those databases with databases describing the incidence of human exposures and adverse health effects. Using GIS technology, the spatial distribution of chemicals throughout the state of Oregon can now be displayed visually on maps. The Oregon Chemical Database is the first step toward the goal of defining with precision the geographical distribution of specific chemical hazards. In addition, Dr. Rothlein has recently been working with the Multnomah County Sheriff's Dive Team to assess risks associated with diving in the Portland harbor, which is also a Superfund site where hazardous chemicals are found. Accurate knowledge of the locations and quantities of potentially hazardous chemicals used in Oregon, as well as human activities at Superfund sites, will aid in the prevention of disease and limit the potential for environmental damage.

These projects are only a small sample of the research performed by the 100 or so scientists and staff at CROET. No matter the focus, from the molecules moving within a cell, all the way out to the communities we live and work in, CROET research is providing current and future benefits to the health and economic well being of workers and businesses in Oregon, and beyond.

ISSUES

Become a Savvy Surfer: Your Guide to Evaluating Health-Related Web Sites

The Web has become a frequently turned-to source of health information because of its easy access and abundant information content.

It is estimated that almost 100 million people nationwide, or 75 percent of adults, look for health information online — and they do so on average three times a month (The Harris Poll, 2001).

But anyone can put information on the Web! There is no governing body and information is not screened or standardized in any way to verify its accuracy or usefulness. So how does one determine which Web sites provide reliable health information? We pose these questions when evaluating a Web site for accurate and well-balanced health information:

AUTHOR

- Is it clear who writes or is responsible for the material on the site?
- Are the author's credentials meritorious?
- Is there a sponsoring institution and if so, is it credible and well known? Is a third party supporting or sponsoring the site?
- Is contact information given for the author or sponsoring institution?

PURPOSE

- Is the purpose or mission of the Web site or sponsoring organization stated?
- Is the purpose to inform, persuade, sell, present a viewpoint, or create or change an attitude or belief?
- If there is advertising on the site, is it clearly differentiated from the informational content?

DATE

- When was the site last updated? Health and medical information changes rapidly and ongoing research leads to new insights.

CONTENT

- Does the site respect grammar, spelling and literary composition?
- Does the information consist of documented facts or personal opinion?
- Are the sources of factual information provided so they can be verified?
- Is there comprehensive coverage of the subject matter?
- Are there external links to other sources of information?
- Does an editorial board or health care professional review the content? What criteria do they use for selecting information displayed on the site?

For more information and resources to assist in evaluating the reliability of health-related websites, visit www.croetweb.com.

REASONS TO BE SKEPTICAL ABOUT THE INFORMATION ON A HEALTH-RELATED WEB SITE:

- No author or date
- Vague or sweeping generalizations
- Overstated significance
- Extreme tone or language
- Absence of source documentation, especially for numbers or statistics
- Personal testimonials as the only source of information
- Purported “miracle cure” recommended in lieu of prescribed medicine

To find out about the latest health-related hoaxes and rumors, visit www.cdc.gov/hoax_rumors.htm at the Centers for Disease Control and Prevention.

CROET AWARDS

CROET DIRECTOR RECEIVES NATIONAL RESEARCH AWARD

CROET director Peter Spencer, PhD, FRCPath, has received the 2002 Outstanding Investigator Award from the Society of Toxicology (SOT) Specialty Section on Neurotoxicology. The SOT was founded in 1961 as a professional and scholarly organization of scientists from academic institutions, government and industry representing the great variety of professionals who practice toxicology in the United States and abroad. The SOT has established 19 Specialty Sections and 17 Regional Chapters that foster scientific exchange throughout the year. The Neurotoxicology Specialty Section consists of members who are interested in the adverse actions of chemical, biological or physical agents on the structure and function of the nervous system. Neurotoxicology Specialty Section members have research, regulatory and/or industrial interests relating to synthetic and naturally occurring chemicals in the home, workplace and environment.

CROET POSTDOCTORAL FELLOW WINS 2002 AXON AWARD

Jan Voda, MD, PhD, was recently presented the 2002 Axon Award by the Oregon Chapter of the Society for Neuroscience during its annual meeting May 11-12, 2002. Dr. Voda, who works in the laboratory of Bruce Gold, PhD, earned the research award for his scientific presentation titled "FK506 and a nonimmunosuppressant derivative reduce axonal and myelin damage in autoimmune encephalomyelitis (EAE)". The Gold laboratory focuses on the development of drugs that may someday be suitable for use in humans to treat a variety neurological conditions.

CROET SCIENTIST RECEIVES OHSU OUTREACH AWARD

By Jim Newman

Mohammed Sabri, PhD, a senior investigator at CROET and an associate professor in the Department of Neurology in the OHSU School of Medicine, has been named a winner of one of

the university's Distinguished Science Educator Awards. A total of 21 faculty and students were nominated for their work to bring the resources of OHSU to the community. Of that group, seven winners were announced at an awards banquet in May 2002.

Sabri was nominated and recognized for his work with Saturday Academy's Apprenticeships in Science and Engineering Program. Since 1990, he has mentored 16 high school students. Several of those students went on to study science at Johns Hopkins, Stanford, Harvard, Oregon Health & Science University and other universities.

"Every time you reach a child, it encourages them to begin a science career," said OHSU President Peter Kohler at the beginning of the awards program. "When you reach out, it shows a child what the future holds for them."

His comments were followed by a presentation highlighting the many outreach activities in which OHSU employees and students take part.

Some of the many programs highlighted include:

- Oregon's THINK FIRST chapter at OHSU, a head injury prevention program for kids.
- Brain Awareness Week, a growing annual event that educates the public about neuroscience and the resources OHSU and its partners have to offer through free lectures and events like the Brain Fair.
- Gaining Electrical Engineering Knowledge through Collaborative Hands-on Instruction (GEEKCHIC), a unique program for young women interested in careers in electrical engineering.
- The OHSU Oregon National Primate Research Center's outreach efforts to educate students and teachers about research taking place at the primate center.
- Dangerous Decibels, a model program for schools and communities around the country on how to teach young people about the value of their hearing.

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CROET AWARDS CONTINUED

CROET FACULTY MEMBER RECEIVES NATIONAL RESEARCH AWARD

Linda McCauley, RN, PhD, FAAN, has been named the 2002 Recipient of the American Association of Occupational Health Nurses Mary Louise Brown Research Award. The award was announced at the American Occupational Health Conference in Chicago in April 2002. This award promotes and recognizes occupational and environmental health nurses who have

contributed significantly to the advancement of occupational and environmental health nursing, or to the occupational and environmental health field through research. Among Dr. McCauley's research activities at CROET are efforts to assess pesticide exposure levels in migrant communities working in agriculture. She is also developing methods for training adolescent migrant farm workers in the safe use and handling of pesticides.

KUDOS

CROET Sponsors Students From Saturday Academy's Apprenticeships in Science and Engineering Program

Josh Foster, a Lake Oswego Senior High School Student, worked under CROET's Dr. Juan Muñiz on a research project that is investigating the long term effects of pesticide exposure on human metabolism. Josh's experience is best expressed in a letter he wrote to CROET's Director, Dr. Peter Spencer:

"This was a once in a lifetime opportunity and I am thankful that you gave me the opportunity to experience it. This experience allowed me to apply all the science that I have been taught over the years to a real life experience. There is only so much you can learn in textbooks and this job allowed me to learn what science, especially chemistry, is all about. This job has helped guide me to a possible science major in college and I thank you for that. I would also like you to know a little bit about the work that I did and the people that I worked with. I worked in the Muñiz lab and there I tested urine for pesticide metabolites for a study that you are doing. I appreciate the fact that I was actually allowed to participate in a real study. My results are actually going to be used and that has allowed

me to feel like a part of the team. I would also like you to know that Juan and Julie [Julie Richman, a graduate student in the Muñiz lab] were the best possible people to work with. They made me feel a part of the lab and they were always there to help. They both took me under their wing and taught me everything there was to know about the lab. Juan and Julie made sure that I always knew what I was doing and why I was doing it. You have a great core of people in your lab and these are two of the finest. So once again, thank you for allowing me the opportunity to work in your lab."

Saturday Academy, a center for pre-college enrichment education, is a jointly sponsored program of Portland State University and Oregon Health & Science University in Portland and at four other centers in Oregon. The Academy's Apprenticeships in Science and Engineering Program completed its twelfth summer in 2001. This year, 150 students contributed to the work of their mentors at 62 organizations throughout Oregon and southwest Washington (see also, CROET Scientist Receives Outreach Award, page 6).

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 includes approximately 100 scientists and research staff exploring 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 chemical and other occupational exposures. 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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*Photography by
Dean Hanson*

OUTREACH

CROET has provided exhibits at the following conferences.

Central Oregon Occupational Safety & Health Conference

September 17-20, 2002
Eagle Crest Resort
Redmond, Oregon

Southern Oregon Occupational Safety & Health Conference

October 23-25, 2002
Smullin Center
Medford, Oregon

Western Pulp & Paper Workers Safety & Health Conference

December 3-6, 2002
Double Tree Hotel - Jantzen Beach
Portland, Oregon

Oregon Governor's Occupational Safety & Health Conference

March 3-6, 2003
Oregon Convention Center
Portland, Oregon

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Medicine and Nursing;
OHSU Hospital; dozens
of primary care and specialty
clinics; three research
institutes and several
outreach and public service
units. OHSU is an equal
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