The 9th Annual International Conference on

DOSE-RESPONSE 2010:

Implications for Toxicology, Medicine, and Risk Assessment

The Annual Meeting of the International Dose-Response Society

April 27-28, 2010

University of Massachusetts, Amherst, MA

Conference Directors: Edward J. Calabrese, Ph.D., Paul T. Kostecki, Ph.D.

THRESHOLD • ADAPTIVE • BIDIRECTIONAL • BIPHASIC
HORMETIC • NON-MONOTONIC • U/J-SHAPED • PARADOXICAL

PLATFORM PRESENTATIONS

TUESDAY, APRIL 27, 2010

Morning

9:00am **Welcome**

Session I: PLENARY *164 Campus Center*

Moderator: Colin Seymour, *McMaster University, Hamilton, ON*

9:15am **Hormesis: Its Integration into the Risk Assessment Process**
Steve Lewis, *Integrative Risk Management, Annandale, NJ*

10:00am **Break**

10:30am **Default Low-Dose Linearity for All Endpoints? Implications for Risk Assessment and Risk Management**
Lorenz Rohmberg, *Gradient Corporation, Cambridge, MA*

11:15am **Hormesis in Regulatory Risk Assessment: Science and Science Policy**
George Gray, *former Assistant Administrator, Office of Research and Development, EPA, currently George Washington University School of Public Health and Health Services, Washington DC*

Noon **Lunch**

Afternoon

Session II: TOXICOLOGY/RISK ASSESSMENT SESSION *164 Campus Center*

Moderator: Brian G. Palestis, *Wagner College, Staten Island, NY*

1:00pm **No Genotoxic Consequences of Daily Doses of EMS Inducing up to 380'000 DNA-Alkylations/ Cell/Day**
Elmar Gocke, Lutz Müller, Thomas Pfister and Thierry Lavé, *F. Hoffmann-La Roche Ltd, Basel, Switzerland*

1:30pm **Generic Hockey-Stick Model for Unbiased Benchmark-dose and Net-potency Estimation**
Kenneth T. Bogen, *Exponent, Oakland, CA*

2:00pm **The Alcohol and NPC Meta-Analysis in the Context of other Dose-Response Relationships vs. Alcohol and other Outcomes**
Eliseo Guallar, *Johns Hopkins University, Baltimore, MD*

2:30pm **Agriculture, Insects and Hormesis: Evidence and Considerations for Study**
G. Christopher Cutler, *Nova Scotia Agricultural College, Truro, NS*

3:00pm **Break**

3:30pm **Exposure to Nanoparticles and Hormesis**
Ivo Iavicoli, *Catholic University of Sacred Heart, Roma, Italy*
Marc Nascarella, *Gradient, Cambridge, MA*
Edward Calabrese, *University of Massachusetts, Amherst, MA*

4:00pm **A Novel Model for the Cytotoxicity of Insoluble Metallic Nanoparticles**
Bobby R. Scott, *Lovelace Respiratory Research Institute, Albuquerque, NM*

4:30pm **A New Platform Technology for the Self-Assembly of 3D Living Microtissues**
Jeffrey R. Morgan, *Brown University, Providence, RI*

Poster Session

5:30 – 7:00pm

Amherst Room, 10th Floor Campus Center

5:30pm Social & Dinner

Amherst Room, 10th Floor Campus Center

PLATFORM PRESENTATIONS (cont.)

WEDNESDAY, APRIL 28, 2010

8am - 5pm

Session I: BIOMEDICAL *164 Campus Center*

Moderator: Steve Lewis, *Integrative Risk Management, Annandale, NJ*

8:00am **Low-Dose Cardiotonic Steroids Increase Sodium-Potassium ATPase Activity and Prevent Hippocampal Neuronal Loss from Experimental Ischemia**
Peter Bergold, Martin Oselkin and Dezhi Tian, *SUNY-Downstate Medical Center, Brooklyn, NY*

8:30am **Methamphetamine Preconditioning Causes Changes in Striatal Transcriptional Responses to Large Doses of the Drug**
Jean Lud Cadet, Christie Brannock, Bruce Ladenheim, Michael T. McCoy, and Irina N. Krasnova, *Molecular Neuropsychiatry Research Branch, DHHS/NIH/NIDA Baltimore, MD*

9:00am **Brain Adaptation and Hormesis**
Jun Chen, *Uniformed Services University of the Health Sciences, Bethesda, MD*
Robert H. Lipsky, *Inova Fairfax Hospital, Falls Church, VA*
Anabel Pérez-Gómez, Angeles Torreblaca, David Cabrera, Maria Teresa Fernández-Sánchez and Antonello Novelli, *University of Oviedo, Oviedo, Spain*
Ann Marini, *Uniformed Services University of Health Sciences, Bethesda, MD*

9:30am **Cognitive Activation by Deep Brain Stimulation: The Yerkes-Dodson Law Revisited**
Ronald Mair, *University of New Hampshire, Durham, NH*

10:00am **Break**

10:30am **Cortisol Exhibits Bi-Directional Control of Human Inflammatory Responses in Vivo**
Mark P. Yeager, *Dartmouth-Hitchcock Medical Center, Lebanon, NH*
Patricia A. Pioli and Paul M. Guyre, *Dartmouth Medical School, Hanover, NH*

11:00am **U-Shaped Dose Responses and Antitumor Activity**
Kashi Javaherian, *Harvard Medical School, and Tufts University School of Medicine, Boston, MA*

11:30am **Hormetic Response to Lifelong Mitochondrial Oxidative Stress**
Sano Motoaki, *Keio University School of Medicine, Tokyo, Japan*

Noon **Lunch**

1:00pm **Hormesis and Exercise: Support for an Inverted-U Response to Acute and Chronic Work**
Bradley D. Hatfield, *University of Maryland, College Park, MD*

1:30pm **The Use of Modified Streptolysin O to Induce Accelerated Wound Healing and Connective Tissue Repair**
Volken M. Gurel, *Beech Tree Labs, Inc., Providence, RI*
Marjana Tomic, *University of Miami, Miami, FL*
Stephen Mamber, *USDA Food Safety and Inspection Service, Washington, DC*
John McMichael, *Beech Tree Labs, Inc., Delanson, NY*

Session II: RADIATION *164 Campus Center*

Moderator: Bobby R. Scott, *Lovelace Respiratory Research Institute, Albuquerque, NM*

2:00pm **Epidemiological Evidence for Possible Radiation Hormesis from Radon Exposure: A Case-Control Study Conducted in Worcester, MA**
Richard Thompson, *Johns Hopkins University, Baltimore, MD*

2:30pm **Radiation-Induced Non Targeted Effects of Low Doses – What, Why and How?**
Carmel Mothersill and Colin Seymor, *McMasters University, Hamilton, Ontario, Canada*

3:00pm **Break**

3:30pm **Radiation Hormesis and Policy Considerations**
Colin Seymor and Carmel Mothersill, *McMasters University, Hamilton, Ontario, Canada*

4:00pm **Why CT Scans are Like Exercise and Can Reduce Cancer Risk**
Douglas Boreham, Nghi Phan, Mike DeLisio and Gianni Parise, *McMasters University, Hamilton, Ontario, Canada*

4:30pm **New Evidence for the Prevention of Diabetes and its Complications by LDR: Potential Clinical Application**
Lu Cai, *University of Louisville, Louisville, KY*

2010 INTERNATIONAL DOSE-RESPONSE SOCIETY AWARDS

OVERVIEW

The International Dose-Response Society *is proud to announce the recipients of the annual awards for* ***Outstanding Leadership, Outstanding Career Achievement*** *and* ***Outstanding New Investigator.*** *These awards are presented to individuals in each category who have made outstanding contributions to the field of* ***Dose Response.*** *The awards committee selecting the recipients was Barbara Callahan, University Research; Helmut Hirsch, University at Albany; Ken Mundt, Environ.*

This year's awards go to ***Carmel Mothersill*** *for Outstanding Leadership,* ***Myron Pollycove*** *for Outstanding Career Achievement and* ***Qiang Zhang*** *for Outstanding New Investigator. Congratulations to all.*

2010 INTERNATIONAL DOSE-RESPONSE SOCIETY AWARDS

AWARDEE PROFILE: LEADERSHIP

Carmel Mothersill

Prior to 2003 Dr Mothersill ran the Radiation and Environmental Science Centre at the Dublin Institute of Technology, a centre which she and her husband Dr Seymour founded and developed. At the time of moving to Canada the centre had trained over 30 PhD students in radiobiology and was at the forefront of research in the low dose radiobiology field. Following the offer of a Canada Research Chair at McMaster University, Dr Mothersill developed a new laboratory and now has a program of research mainly centered around the implications of low dose effects of radiation in the environment. She continues to train graduate students and develop new courses in radiation biology and radioecology, including the first ever on-site course at the Chernobyl Reactor last year where 24 students from all areas of science, social science and engineering got to see the inside of the reactor and heard lectures from the Ukrainian and Belorussian scientists working there and in Gomel. Dr Mothersill's research is mainly concerned with the role bystander effects play in enabling organisms to respond to and adapt to stressors such as radiation in the environment. Bystander effects result from signaling mechanisms, which transmit information concerning stressors to cells, tissues and organisms, which have not (yet) been exposed. Recipients induce responses, which appear to be protective. The Dublin laboratory and later the McMaster laboratory have pioneered this field and most recently showed that whole organisms can emit and respond to these signals. These findings call into question the current LNT models used in risk assessment and clearly demonstrate much more complex but exquisitely sensitive mechanisms, which clearly evolved to deal with environmental changes. Dr Mothersill has organized major conferences including an ICRR in 1999 and secured the 4th International Congress on Radioecology and Environmental Radioactivity for Canada for 2011. She also ran a NATO Advanced Research Workshop on Multiple Stressors in Belarus and several smaller conferences and workshops. She was awarded an honorary DSc by Heriot Watt University in Scotland, the Irish Academy of Medicine's St Luke's Lecture the Timofeev-Ressovsky medal by the Russian Academy of Sciences

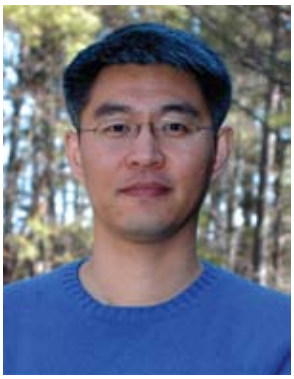
Awardee Profile: CAREER ACHIEVEMENT

Myron Pollycove

Dr. Pollycove began his biomedical research in 1951 at the US Army Chemical Center with two-year establishment of the cause of non hemorrhagic fatal traumatic shock. Hematology research began in 1953 at Boston VA Hospital using Chromium-51 and Iron-59 to quantify iron and red cell kinetics in normal subjects and patients. This research was refined and expanded at UCB. Metabolic studies of glucose, monocarbon pool, folic acid, and vitamin B 12 were initiated at Domes Laboratory, UCB and continued at San Francisco General Hospital (110 publications, 66 abstracts). As Director of the Clinical Laboratory SFGH, he was responsible for services of the Chemistry, Microbiology, and Immunology Divisions and also additionally responsible as Division Chief of the Nuclear Medicine, Hematology, and Blood Bank services. Teaching of Nuclear Medicine, Hematology, and Clinical Pathology to residents, medical students and house officers was also a major responsibility. Participation in numerous national and international organizations and activities served to develop the specialties of nuclear medicine, hematology, and clinical pathology.

As an NRC Visiting Medical Fellow, he was expected to understand and be familiar with the charge, policy and function of the NRC; to provide the NRC with expertise in the medical use of radioisotopes, both diagnostic and therapeutic; and be an effective liaison responsive interface and good communicant between the NRC and the medical community. In addition, a number of projects were of special importance: The Quality Management Program and extension to Pregnancy and Breast Feeding; The National Academy of Science Institute of Medicine Review and Assessment of NRC Regulation of Medical Activities; General Morbidity and Mortality Risks of General Anesthesia, Surgery, Chemotherapy, Radiation Therapy and Radiation Therapy Misadministration; International Symposium and Workshop on Quality Guidelines in Nuclear Medicine; Evaluation of EPA Risk Analysis of I-129 Release from a Spent Fuel Repository; the Sacred Heart Hospital Investigation, and Evaluation and Communication of the Radiobiological Effects of Low Level Radiation Exposures. This evaluation and analysis continues to be his primary research project because of its overriding importance to our understanding of low-dose radiation in health and disease and its consequent impact on prevention and therapy of cancer, the disposal of radioactive waste and the needless expenditure of many hundreds of billions of dollars. This project includes conferences, lectures, publications, collaboration with the United Nations Scientific Committee on the Effects of Atomic Radiation in preparing Annex B of the UNSCEAR 1994 report, and support of Biological Effects of Low Level Exposures (BELLE) activities and the future of nuclear energy (1991-2009).

Awardee Profile: NEW INVESTIGATOR ACHIEVEMENT



Qiang Zhang

Despite his extensive biomedical training, Dr. Qiang Zhang has always thought of himself as a physicist or engineer. He started his career by studying for an M.D. degree in Harbin Medical University, China from 1988 to 1995. He then came to the United States to pursue his Ph.D. degree in Physiology at the University of Connecticut in 1997. By the time he was about to graduate, he decided to obtain training in computational systems biology realizing that quantitative skills are essential in future biological research, as they have been in physics and engineering. He went on to receive his computational biology training as a postdoctoral fellow at The Hamner Institutes for Health Sciences in North Carolina in 2003. Under supervisions by Drs. Rory Conolly and Melvin Andersen, he focused on understanding the shape of dose response curves for chemical toxicity using computer simulations of biological systems.

Dr. Zhang believes that dose response curves can be better understood and predicted by improving knowledge of how biological networks/circuits in the cell behave in the face of external perturbations. Through his research, it has become clear that with robust homeostatic mechanisms operating in biological organisms, including feedforward and feedback controls, dose response relationships for exogenous stressors are intrinsically nonlinear, especially in the low-dose region. His research also predicts that for steroid mimics, a U-shaped response in the low-dose region can appear as a result of steroid receptor homodimerization. His research contributes to the appreciation that cell-cell variability associated with stochastic gene expression plays a crucial role in shaping dose response curves.

Dr. Zhang has also contributed considerably to educating biologists and toxicologists on the emerging computational tools for dose response modeling. He has organized workshops/short courses which focus on how nonlinear responses to external perturbations arise through molecular circuits composed of a variety of signaling motifs.

Currently as the Director of the Center for Dose Response Modeling at the Hamner Institutes, Dr. Zhang collaborates closely with experimental toxicologists to understand the health consequences of perturbation induced by low-dose oxidative stressors to molecular circuits and toxicity pathways.

ANNOUNCEMENT

The 10th International Conference on

DOSE-RESPONSE 2011: IMPLICATIONS FOR TOXICOLOGY, MEDICINE, AND RISK ASSESSMENT

The Annual Meeting of the International Dose-Response Society

April 26-27, 2011

University of Massachusetts at Amherst

• Adaptive • Bidirectional • Biphasic • Hormetic • Non-Monotonic • Yerkes-Dodson Law (Psychology) • U-Shaped • J-Shaped • Subsidy-Stress Gradient (Ecology) • Reverse Dose-Responses

TOPICS WILL INCLUDE:

- Molecular mechanisms
- Pharmacological effects
- Chemical and radiation toxicology
- Risk assessment implications
- Low-dose modeling
- Evolutionary foundations
- Ecological effects
- Clinical/therapeutic effects
- Psychological/behavioral responses
- Bioengineering processes
- Exercise science
- Epidemiology of low doses
- Industrial hygiene
- Legal implications

Please visit our website for more information, Abstract Submission Guidelines and Abstract Submission

www.dose-response.org

For further Information contact
Edward J. Calabrese, Ph.D. or Paul T. Kostecki, Ph.D.
Environmental Health Sciences • Morrill I, N344 • University of Massachusetts Amherst, MA 01003
Phone: (413) 545-3164 • FAX: (413) 545-4692 • edwardc@schoolph.umass.edu

DEADLINE FOR SUBMISSION - December 15, 2010

***E-mail to* dleonard@schoolph.umass.edu**

INTERNATIONAL DOSE-RESPONSE SOCIETY MEMBERSHIP

The INTERNATIONAL DOSE-RESPONSE SOCIETY is a professional society designed to enhance understanding of the nature of the dose response and its implications for science and society. Those Individuals with a professional interest in these areas are invited to join the Society. Applications for membership can be found at www.dose-response.org.

As part of the INTERNATIONAL DOSE-RESPONSE SOCIETY membership, each member will receive a subscription to the e-journal Dose-Response, which is a peer-reviewed quarterly journal. In addition, there is a Society Newsletter developed for the membership. Members will receive a 25% reduction in registration fees to Dose-Response 2010: Implications for Toxicology, Medicine, and Risk Assessment, the Annual Meeting of the International Dose-Response Society.

To Become a Member, Visit **www.dose-response.org**

INTERNATIONAL DOSE-RESPONSE SOCIETY

2010 Membership Form for New and Renewing Members

Renewal Membership ❑ New Membership ❑

Please choose one membership catagory (Payment in US Funds):

Individual Membership	❑	$125–1 year
Individual Membership	❑	$225–2 years
Retiree Membership	❑	$75–1 year
Retiree Membership	❑	$125–2 years
Post-Graduate Membership	❑	$75–1 year (up to three years post-graduation)
Post-Graduate Membership	❑	$125–2 years (up to three years post-graduation)
Student Membership	❑	$10–1 year
Student Membership	❑	$15–2 years
Sustaining Member	❑	$1000/year
Corporate Membership	❑	$5000/year

Please type or print clearly in ink only:

Last Name: _____ Middle Initial(s): _____

First Name: _____ Date of Birth: _____

Title: _____

Address: _____
Organization

_____
Department

_____
Street / P.O. Box

City: _____ State: _____

Country: _____ Postal Code: _____

Telephone: _____/_____/ _____
Country code *Area code* *Number*

Fax: _____/_____/ _____
Country code *Area code* *Number*

Email Address: _____

Payment (check one credit card type):

❑ American Express ❑ Master Card ❑ Visa ❑ Discover ❑ Check *(Payable to Univ. of Mass. Dose-Response)*

Account Numer: _____ Expiration Date: _____

Completed application forms should be mailed, emailed or faxed to:

Dose-Response/BELLE Offices
Environmental Health Sciences Program, School of Public Health
Morrill 1, Room N344
University of Massachusetts
Amherst, MA 01003
Telephone: 413-545-3164 • Fax: 413-545-4692 • Email: Sorensen@ehs.umass.edu