

The 12th Annual International Conference on

DOSE-RESPONSE 2013:

**Implications for Toxicology,
Medicine, and Risk Assessment**

*The Annual Meeting of the
International Dose-Response Society*

April 23-24, 2013

University of Massachusetts, Amherst, MA

Conference Directors: Edward J. Calabrese, Ph.D., Paul Kostecky, Ph.D.

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

DEAR COLLEAGUE,

The Dose-Response Conference addresses some of the most critical challenges facing the field of toxicology, pharmacology, radiation biology and medicine today, that is, the significance of the biological effects of low level exposures. Toxicology is in rapid transition from that of a high dose hazard assessment profession to one that addresses the nature of more realistic exposures, which are predominantly in the low dose zone. Knowledge of low dose effects is becoming a driving force in the field of risk assessment and chemotherapeutics. This conference provides a significant opportunity to bring together leading scientists across a broad range of biological disciplines to seek common understandings on how biological systems respond to low level stresses and their implications within society. One of the critical goals of the conference is to recognize that professionals in different fields of biology have utilized different terminologies for similar appearing dose response phenomena. These terms include adaptive, bidirectional, dual effects, opposite effects, biphasic, hormetic, non-monotonic, u-shaped, j-shaped, and paradoxical. The convergence of scientists from multiple disciplines on this topic is designed to provide a greater interactive focus on the topic of low dose responses and hopefully prevent further professional/academic isolation with respect to language, concept and interpretation of low dose effects. The conference will also provide the most current advances in the nature of the dose response with respect to chemical and radiation induced stresses as well as a host of effects of pharmaceutical agents that have profound biomedical and risk assessment implications. It is our hope that you share the belief that determining the nature of the dose response in the low-dose zone will drive the future of toxicology, pharmacology and risk assessment and will take the opportunity to attend this conference on **DOSE-RESPONSE 2013: IMPLICATIONS FOR TOXICOLOGY, MEDICINE, AND RISK ASSESSMENT**

Edward J Calabrese, Ph.D.

Paul T. Kostecki, Ph.D.

Conference Directors

INTERNATIONAL DOSE-RESPONSE SOCIETY

A growing number of scientists, including toxicologists, pharmacologists, biostatisticians, epidemiologists, occupational and environmental medical researchers and others have begun to display considerable interest in the topic of hormesis, a dose response phenomenon characterized by a low dose stimulation and a high dose inhibition. While there are many professional societies that have a general interest in dose response relationships, none explicitly is devoted to the topic of understanding the nature of the dose response in general and hormesis in particular. The diversity of professional societies that may consider dose response issues, including hormesis, is nonetheless quite broad ranging from the agricultural to the biomedical and clinical sciences. However, nearly without exception, these societies tend to be strongly organized around professional advancement and not focused on specific scientific concepts. This makes the issue of hormesis one of diffuse interest across a broad range of professions. The present situation represents a major obstacle for the integrated assessment of the dose response in general and hormesis in particular. In order to provide intellectual and research leadership on the topic of hormesis, a professional association was created in 2005 called the International Dose-Response Society.

The Society is dedicated to the enhancement, exchange, and dissemination of ongoing global research efforts in the field of hormesis. In addition, the Society also strongly encourages the assessment of the implications of hormesis for such diverse fields as toxicology, risk assessment, risk communication, medicine, numerous areas of biomedical research, and all other biological disciplines including relevant engineering domains dealing with the dose response.

The International Dose-Response Society is administered by the School of Public Health & Health Sciences at the University of Massachusetts at Amherst.

If you would like additional information about the society including information on becoming a member, please contact Alfred Sorensen at sorensen@ehs.umass.edu or visit the society webpage www.dose-response.org.

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. Annual membership rates are as follows: Corporate Membership \$5000 (US), Sustaining Membership \$1000 (US), Individual Membership - 1yr. \$125 (US), Individual Membership - 2yr. \$225 (US), Retiree Membership - 1yr. \$75 (US), Retiree Membership - 2yr. \$125 (US), Post-Graduate Membership (up to three years post-graduation) - 1yr. \$75 (US), Post-Graduate Membership (up to three years post-graduation) - 2yr. \$125 (US), Student Membership - 1yr. \$10 (US) and Student Membership - 2yr. \$15 (US).

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 2013: 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

PLATFORM PRESENTATIONS

TUESDAY, APRIL 23, 2013

Morning

WELCOME 8:45AM

PLENARY SESSION 9:00AM - Noon

Epigenetic Responses to Low Dose Radiation

Rancy L. Jirtle, *University of Wisconsin-Madison, Madison, WI*

Non-ionizing, Electromagnetic Stimulation of Hormetic Responses: Fact or Fancy?

Walter Kozumbo, *University of Massachusetts, Amherst, MA*

Central Role of the Brain in Stress and Adaptation: Allostasis and Allostatic Load

Bruce S. McEwen, *The Rockefeller University, New York, NY*

LUNCH

Noon

RADIATION / ENVIRONMENTAL SESSION

1:00PM - 5:00PM

Precious Knowledge: The Linear Concentration-Response Non-Threshold Model as the Golden Ratio

Aalt Bast, *Maastricht University, The Netherlands*, **Jaap C. Hanekamp**, *Roosevelt Academy, Middelburg, The Netherlands*

Nonlinear Effects of Nanoparticles: Biological Variability from Hormetic Doses, Small Sizes, and Dynamic Adaptive Interactions.

Iris R. Bell, *University of Arizona College of Medicine, Tucson, AZ*, **John A. Ives**, *Samueli Institute, Alexandria, VA*, **Wayne B. Jonas**, *Samueli Institute, Alexandria, VA*

Twenty-Four Months Eating Radium

Carmel Mothersill, *McMaster University, Hamilton, ON, Canada*, **RW Smith**, *McMaster University, Hamilton, ON, Canada*, **D Lariviere**, *Laval University, Quebec City, Canada*, **CB Seymour**, *McMaster University, Hamilton, ON, Canada*

The p53/NFkB-Mediated Metabolic Response to Irradiation

Rajuli Lall, *Suthakar Ganapathy and Zhi-Min Yuan*, *Harvard University School of Public Health, Boston, MA*

~400-fold Natural Background Radiation Does Not Induce Detectable DNA Damage *in vivo*

Werner Olipitz, **Dominika Wiktor-Brown**, **Joe Shuga**, **Bo Pang**, **Jose McFaline**, **Pallavi Lonka**, **Aline Thomas**, **James T. Mutamba**, *Massachusetts Institute of Technology, Cambridge, MA*, **Joel S. Greenberger**, *University of Pittsburgh, Pittsburgh, PA*, **Leona D. Samson**, **Peter C. Dedon**, **Jacquelyn C. Yanch**, **Bevin P. Engelward**, *Massachusetts Institute of Technology, Cambridge, MA*

The Importance of Radiation Dose-Rate

Jacqueline Yanch, *MIT, Cambridge, MA*

Hormesis, Guilt and Market Science

Colin Seymour, *McMasters University, Hamilton, ON, Canada*

POSTER SESSION AND SOCIAL

5:00PM

DINNER AND AWARDS PRESENTATION

6:30 PM

PLATFORM PRESENTATIONS (cont.)

WEDNESDAY, APRIL 24, 2013

Morning

BIOMEDICAL SESSION 8:30AM - Noon

The Importance of Dose Response for the Biology of Synthetic Triterpenoids

Karen Liby, *Dartmouth, Hanover, NH*

Molecular Signatures of Adaptive Stress Responses

Reinhard Wetzker, *Jena University Hospital, Jena, Germany*

Testing the Hormesis Hypothesis of Dietary Restriction

Chris Hine and **Jay Mitchell**, *Harvard School of Public Health, Boston, MA*

Nutrient Overload and Divergence in Adaptive Redox Responses between Heart and Skeletal Muscle

Ethan J. Anderson, Kelsey H. Fisher-Wellman, Taylor A. Mattox, Kathleen Thayne, Lalage A. Katunga, Justin D. La Favor, P. Darrell Neuffer, Robert C. Hickner, Christopher J. Wingard, *East Carolina University, Greenville, NC*

Molecular Events in Biophasic Non-genomic Estrogen and Antiestrogen Signaling

Xintian Zhang and **Zhaoyi Wang**, *Creighton University Medical School, Omaha, NE*

The Brain, Energy Metabolism and Hormetic Pathways to Optimal Health

Mark Mattson, *National Institute on Aging Intramural Research Program, Baltimore, MD*

LUNCH

Noon

WEDNESDAY, APRIL 24, 2013

Afternoon

BIOMEDICAL (Continued) 1:00PM - 3:30PM

Astrocyte Plasticity Revealed by Adaptations to Severe Proteotoxic Stress

Rehana Leak, Amanda M. Titler, Jessica M. Posimo, *Duquesne University, Pittsburgh, PA*

Phytocannabinoid Metabolic Reprogramming: Explaining Medicinal Properties through Dose-Response – An Old Treatment for a Modern World

Alistair Nunn, *Imperial College London, London, UK*, Geoffrey Guy, *GW Pharmaceuticals, Wiltshire, UK*, Jimmy D Bell, *Imperial College London, London, UK*

Non-Monotonic Dose Responses in Studies of Endocrine Disrupting Chemicals: Bisphenol A as a Case Study

Laura Vanderberg, *Tufts University, Medford, MA*

Antibiotic-induced Biofilm Formation

Jeffrey Kaplan, *American University, Washington DC*

Application of the Disregulated Adaptive Hyperplasia (DAH) Tumorigenesis Model to Estimate Low-Dose Dibenzo[a,l]pyrene Tumor Risk

Kenneth T. Bogen, *Exponent, Oakland, CA*

CALL FOR POSTERS

We invite you to submit an
ABSTRACT
for poster presentation at
*The 12th Annual International
Conference on*
**DOSE-RESPONSE 2013:
IMPLICATIONS FOR
TOXICOLOGY, MEDICINE,
AND RISK ASSESSMENT**

*Sponsored by
The International
Dose-Response Society*

APRIL 23-24, 2013

University of Massachusetts at Amherst

The conference will address a multidisciplinary and mechanistic focus in toxicology, medicine, pharmacology, radiation, risk assessment for dose-response relationships.

Please visit conference website

www.dose-response.org

For abstract submission guidelines as well as information about the conference and the Dose-Response society

Or email Conference Coordinator,
Denise Leonard at

dleonard@schoolph.umass.edu

Deadline for abstract submissions for the Dose-Response 2013 Conference poster session is March 28, 2013.

**DEADLINE FOR SUBMISSION
March 28, 2013**

E-mail to dleonard@schoolph.umass.edu

CALL FOR PAPERS

DOSE-RESPONSE:

An International Journal

*Dose-Response is indexed in Pub Med,
Web of Science and most other indexes.*

AREAS OF INTEREST

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

www.dose-response.com

For further Information contact

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April 23 - 24, 2013
University of Massachusetts, Amherst, MA

R E G I S T R A T I O N F O R M

To Register: Form should be received on or before **April 9, 2013** with full payment.

Mail or fax to: **University Conference Services - CS13-126**

918 Campus Center

University of Massachusetts

Amherst, MA 01003

Phone: 413-577-8102 • Fax: 413- 577-8130

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Registration: Includes all sessions and refreshment breaks

Full Two Days	\$399
Full Two Days for International Dose-Response Society Members*	\$299
Government and Academic Rate.....	\$199
Government and Academic Rate for International Dose-Response Society Members*	\$149
Student Rate.....	\$99
Student Rate for International Dose-Response Society Members*	\$74

**Must be a member at the time of registration to receive the International Dose-Response Society Members rate*

Sub Total _____

Hot Buffet Lunch: \$26 each day Tuesday Wednesday

Lunch Total _____

Hot Buffet Dinner: \$36 Tuesday

Dinner _____

Note: All registrations received after **April 9, 2013**, will be assessed a \$50 late fee

Late Fee _____

Total _____

Visa Amex Master Card Diners Discover Check payable to: UMass/Conference Services CS13-126

Card Number: _____ Expiration Date: _____

Name on Card (print): _____ 3 digit CVV/Security Code: _____

Signature (all charges must be signed): _____

Hotel Reservations: CONFERENCE ATTENDEES ARE RESPONSIBLE FOR THEIR OWN HOTEL RESERVATIONS

Encumbered Purchase Orders will be accepted from institutions and agencies for the purpose of pre-registration only. Full payment including those pre-registrations secured by P.O. must be remitted at the on-site registration. Non-compliance will result in a \$35 processing fee for any resulting billings. Phone in registrations will not be accepted. Cancellations made on or before April 19, 2013 will receive a full refund minus a \$35 cancellation fee. Checks must be redeemable at US banks. Any processing fees will be billed to registrant. In order to process refunds we will need your personal social security number or your business identification number. There will be no refunds for cancellations made after April 19, 2013. Registrations should be received on or before April 9, 2013. After April 9, 2013, a \$50 late fee is assessed.

For more conference information contact: INTERNATIONAL DOSE-RESPONSE SOCIETY
Phone: 413-545-3164 • Fax: 413-545-4692 • Email: dleonard@schoolph.umass.edu

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AREA HOTEL INFORMATION Registrants are responsible for making their own hotel arrangements. (We recommend you make reservations early)

Amherst	Single/Double	Hadley	Single/Double
Allen House Inn (413) 253-5000	\$75-150	Econo Lodge (413) 582-7077	\$79-149
Amherst Motel (413) 256-8122	\$59-85	Hampton Inn (413) 586-4851	\$119-179
Black Walnut Inn (413) 549-5649	\$108-159	Holiday Inn Express (413) 582-0002	\$119-200
Campus Center Hotel (UMass) (413) 549-6000	\$109	Howard Johnson (413) 586-0114	\$85-179
Lord Jeffrey Inn (413) 253-2576	\$129-259	Norwottuck Inn (413) 587-9866	\$159-179
University Motor Lodge (413) 256-8111	\$70-150	Quality Inn (413) 584-9816	\$69-145
Deerfield	Single/Double	Northampton	Single/Double
Deerfield Inn (413) 774-5587	\$170-270	Autumn Inn (413) 584-7660	\$99-180
Red Roof Inn (413) 665-7161	\$75-125	Best Western (413) 586-1500	\$69-149
Holyoke	Single/Double	Clarion Hotel (413) 586-1211	\$100-235
Country Inn & Suites (413) 533-2100	\$89-189	Hotel Northampton (413) 584-3100	\$145-180
Holyoke Holiday Inn (413) 534-3311	\$120-150		

* For those attendees wishing to stay at the Campus Center Hotel where the conference will be held, telephone the hotel directly at (413) 549-6000. IDENTIFY THE CONFERENCE AS HOTEL BLOCK 1812C.

University Conference Services does not guarantee the accuracy of any of the rates listed above.

LOCATION AND TRAVEL INFORMATION

The conference will take place in the Murray D. Lincoln Campus Center, University of Massachusetts at Amherst, located in the scenic Connecticut River Valley. Amherst is served by major airlines through Bradley International Airport in Windsor Locks, Connecticut (about 1 1/4 hours by car) and Logan Airport in Boston (about 2 1/2 hours by car). Rental cars and bus service are available from both airports.

There are two services that provide shuttle service to and from both airports, Amtrak and bus stations to the University of Massachusetts - Seemo Shuttle Service and Valley Transporter.

Seemo Shuttle Service - call (800) 908-2829 or (413) 586-1120 or visit www.seemoshuttle.com

The Valley Transporter - RESERVATIONS ARE REQUIRED, call (800) 872-8752 or (413) 253-1350 or visit www.valleytransporter.com.

REGISTRATION

All Registrations for the conference must be received by the University Conference Services no later than April 9, 2013 in order to avoid late registration fee of \$50.

To register for the conference please fill out and return the accompanying registration form to:

University Conference Services - CS13-126

918 Campus Center

University of Massachusetts

Amherst, MA 01003

Phone: 413-577-8102; Fax: 413-577-8130

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Phone: 413-545-3164; Fax: 413-545-4692

Email: dleonard@schoolph.umass.edu

www.dose-response.org

FOR CONFERENCE INFORMATION Please contact the conference coordinator: **Denise Leonard 413-545-1239**