# 2002 Conference Overview

**Title and Site for International Hormesis Society's 2002 Annual Conference**
June 11 – 13, 2002

**NON-LINEAR DOSE-RESPONSE RELATIONSHIPS IN BIOLOGY, TOXICOLOGY, AND MEDICINE 2002**

*Scientific Foundations for Pharmaceuticals and Environmental Risk Assessment*

University of Massachusetts, Amherst, MA US

## Conference Coordinator
Denise Leonard, MSc

## Registration Fees
- Full Three Days: **$399**
- Government and Academic Rate: **$199**
- Student Rate: **$99**

## Award Recipient for "Outstanding New Researcher in the Field of Hormesis"
Instituted in 2007

## Award Recipient for "Outstanding Senior Researcher in the Field of Hormesis"
Instituted in 2007

## Platform Presentation: Plenary
**Moderator:** Paul T. Kostecki, *University of Massachusetts, Amherst, MA*

- **Biphasic Dose Responses in the Biological Sciences**
  Edward J. Calabrese, *University of Massachusetts, Amherst, MA*

- **Implications of Non-Linearity for Ecotoxicological Risk Assessment**
  Keith Solomon, *University of Guelph, Guelph, Ontario, Canada*

- **Evolutionary Foundations of Non-Linearity**
  Lorenz Rhomberg, *Gradient Corporation, Cambridge, MA*

- **Risk Assessment Implications of Non-Linear Dose-Responses**
  William F. Greenlee, *Chemical Industry Institute of Toxicology, Research Triangle Park, NC*; Frederick J. Miller, *CIIT Centers for Health Research, Research Triangle Park, NC*; Rory B. Conolly, *Center for Computational Biology & Extrapolation Modeling, Research Triangle Park, NC*

## Platform Presentation: Chemical
**Moderator:** John DeSesso, *Mitretek Systems, Inc., Falls Church, VA*

- **Complex Shapes of Dose-Response Curves as the Summation of Underlying Low-Dose-Linear and Saturable Processes**
  Rory Conolly, *CIIT Centers for Health Research, Research Triangle Park, NC*
  Kevin W. Gaido, *CIIT Centers for Health Research, Research Triangle Park, NC*
  Werner K. Lutz, *University of Wurzburg, Wurzburg*

- **From Mice to Men, Cancers Are Not Certain at Old Age**
  Francesco Pompei & Richard Wilson, *Harvard University, Cambridge, MA*
Implications of Hormesis in Developmental Toxicology Risk Assessment
Mehdi Razzaghi, Bloomsburg University, Bloomsburg, PA

Using Dose and Time to Predict Acute and Chronic Toxicity
Karl Rozman, University of Kansas Medical Center, Kansas City, KS

Experiences with Non-Linear Dose-Response Relationships in Chemical Evaluations
Dennis Jones, ATSDR, Atlanta, GA

Risk Modeling Implications of Mechanistic Differences between Low and High Dose Effects of Arsenic
Christopher Wells, Tracey M. Slayton, Barbara C. Beck & Thomas A. Lewandowski, Gradient Corporation, Cambridge, MA

Hormesis, Low Dose Carcinogenicity and Low Dose Anti-Carcinogenicity Occur in the Same Animal and with the Same Chemical
Richard Wilson, Harvard University, Cambridge, MA

Data for Trichloroethylene-Induced Kidney Tumors in Rodents Suggest an Epigenetic Mechanism of Action
Amy Lavin, International Life Sciences Institute, Washington, DC
Catherine F. Jacobson & John M. Desesso, Mitretek Systems, Inc., Falls Church, VA

Quantitation of the Dose Response for Formation of DNA Adducts in Rat Liver by 2-Acetylaminofluorene
Gary Williams, Michael J. Iatropolous, Jian-Dong Duan & Alan M. Jeffrey, New York Medical College, Valhalla, NY

Platform Presentation: Radiation
Moderator: Klaus Becker, Berlin, Germany

Impact of Cellular Defense Mechanisms and Bystander Effects on a Multi-Stage Carcinogenesis Model
Helmut Schalénberger, University of Salzburg, Salzburg, Austria/Europe; Margaret G. Menache, University of New Mexico, Albuquerque, NM; Rod Stewart, Pacific Northwest National Laboratory (PNNL), Richland, WA; Werner Hofmann, University of Salzburg, Salzburg, Austria/Europe

Human Cells Respond to Changes in Background Radiation by Inducing Specific Heat Shock Protein Members
Satya P. Saxena, Neerad C. Mishra, & Steven P. Allen, Lovelace Respiratory Research Institute, Albuquerque, NM; Raymond A. Guilmette, Los Alamos National Laboratory, Los Alamos, NM

Low-Dose Protective Mechanisms: Implications for Risk Assessment
Bobby R. Scott, Dale M. Walker, Vernon Walker, James A. Den, & Yohannes Tesfaigzi, Lovelace Respiratory Research Institute, Albuquerque, NM

Non-Linear Dose-Response Curves in the Immune System Following Whole-Body X-Irradiation
Shu-Zheng Liu, Norman Bethune University of Medical Sciences, Changchun, China

The Hormetic Health Effects of Radiation Observed in the Incident of Co-60 Contaminated Apartments in Taiwan

Dose-Response Relationship: Chromosome Aberrations in Residents at the High Background Radiation Areas in Ramsar, Iran
S.M. Javad Mortazavi & Takaji Ikushima, Kyoto University of Education, Kyoto, Japan; P. Andrew Karam, University of Rochester, Rochester, NY

Residential Radon in U.S. Counties vs. Lung Cancer in Women who Predominantly Never Smoked
K.T. Bogen, Lawrence Livermore National Laboratory, Livermore, CA; J. Cullen, University of California Berkeley, Berkeley, CA

Treatment of Confounding Factors in Ecological Study Test of Linear-No Threshold Theory
Bernard Cohen, University of Pittsburgh, Pittsburgh, PA

The Bolton-Brush Radiographic Growth Studies
B. Holly Broadbent & P.S. Rao, Case Western Reserve University, Cleveland, OH
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<th>Platform Presentation:</th>
<th>Moderator: Wayne Jonas, Samueli Institute, Alexandria, VA</th>
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<td>Ultra-Low Doses and Medicine</td>
<td><strong>Effects of Low Dose Cadmium on Stress Proteins and Survival in Human Prostate Cells</strong>&lt;br&gt;Jaya Gaddipati, Rajesh Kumar NV, Uniformed Services University of the Health Sciences, Bethesda, MD; William Achanzar, NCI at NIEHS, Research Triangle Park, NC; Radha K. Maheshwari, Wayne Jonas, Uniformed Services University of the Health Sciences, Bethesda, MD</td>
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<td><strong>Non-Immunological Sensitization: A Nonlinear Host Dose-Response to Repeated Low Level Chemical Exposures</strong>&lt;br&gt;Iris Bell, The University of Arizona College of Medicine, Tucson, AZ; Carol Baldwin, Gary E. Schwartz, University of Arizona, Tucson, AZ</td>
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<td><strong>Ultra-low Doses and Biological Responses: A Review of the Literature and Recent Experiments</strong>&lt;br&gt;Wayne B. Jonas, Samueli Institute, Alexandria, VA</td>
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<td><strong>High Sensitivity 1H-NMR Studies of Homeopathic Remedies: Unexplained Peaks in the Spectra of Some Samples</strong>&lt;br&gt;David Anick, Harvard University, Cambridge, MA</td>
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<td><strong>Challenges to the Investigation of Low and Ultra-Low Dose Effects</strong>&lt;br&gt;Roeland van Wijk, University of Utrecht, Geldermalsen, The Netherlands</td>
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<td><strong>Low Dose Effects in Pulmonary Disease</strong>&lt;br&gt;Rebecca Bascom, Penn State Milton S. Hershey Medical Center, Hershey, PA</td>
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<th>Platform Presentation:</th>
<th>Moderator: David Diamond, University of South Florida, Tampa, FL</th>
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<td>Biomedical</td>
<td><strong>Non-Linear Functions between Stress Hormones, Brain Plasticity and Memory</strong>&lt;br&gt;David Diamond, University of South Florida, Tampa, FL</td>
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<td><strong>Biphasic Effects of Progesterone Treatment on Proliferation of Normal and Malignant Human Ovarian Surface Epithelial Cells</strong>&lt;br&gt;Viqar Syed &amp; Shuk-Mei Ho, University of Massachusetts Medical School, Worcester, MA</td>
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<td><strong>Two Examples of Paradoxical Pharmacology Using In Vivo Animal Models of Disease</strong>&lt;br&gt;Kenda L. Evans, Zsuzsanna Callaerts-Vegh, University of Houston, Houston, TX; Felix Shardanandofsky, Texas Children’s Hospital, Houston, TX; Heather Giles, GlaxoSmithKline, Hertfordshire, UK; Richard Bond, University of Houston, Houston, TX</td>
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<td><strong>Using C. elegans to Model Induced Stress Resistance and Life Span Hormesis</strong>&lt;br&gt;James Cypser &amp; Thomas E. Johnson, University of Colorado, Boulder, CO</td>
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<td><strong>Biological Aging and Its Hormetic Modulation by Repeated Challenge</strong>&lt;br&gt;Suresh Rattan, University of Aarhus, Aarhus, Denmark</td>
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<td><strong>Hormetic vs Inhibitory Effects in Sea Urchin Bioassays</strong>&lt;br&gt;Giovanni Pagano, Istituto Nazionale Tumori, Naples, Italy</td>
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<td><strong>Non Linear Factors Affecting Exposure and Risk to Anthrax</strong>&lt;br&gt;Dennis Jones, ATSDR, Atlanta, GA</td>
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<td><strong>Biphasic Effects of Cardiac Glycosides (Ouabain) on Vascular Smooth Muscle Cell Proliferation</strong>&lt;br&gt;Julius Allen, Joel Abramowitz &amp; Ashihan Aydemir-Koksoy, Baylor College of Medicine, Houston, TX</td>
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<td><strong>Altered Phenotype in Glial Cells Underlies the Low-Dose Neuroprotection Against Neurotoxicity</strong>&lt;br&gt;Victor M. Pentreath, University of Salford, Salford, UK; Mark R. Cookson, Mayo Clinic, Jacksonville, FL; Carole Mead, Christie Hospital, Manchester, UK; Debbie Slamon, AstraZeneca Pharmaceuticals, Cheshire, UK</td>
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<td><strong>Is the Hygiene Hypothesis an Example of Hormesis?</strong>&lt;br&gt;John A. Bukowski, ExxonMobil Biomedical Sciences, Inc., Annandale, NJ; Philip G. Lewis, Rohm and Haas Company, Bristol, PA</td>
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Tissue-Specific Dysfunction Induced by Menadione in Blood Vessels: Mechanisms for U-shape Dose-Response Curve
Jin-Ho Chung & Jee-Yeon Han, Seoul National University, Seoul, Korea

Platform Presentation:
Risk Assessment

Moderator: Gary Marchant, Arizona State University, Tempe, AZ

Non-Linear Dose Response: Legal Standards for the Admission of Novel Scientific Theories in Regulatory Decision-Making
Gary Marchant, Arizona State University College of Law, Tempe, AZ

Implications of Hormesis for Industrial Hygiene
Michael Jayjock, Rohm and Haas Company, Spring House, PA;
Philip G. Lewis, Rohm and Haas Company, Bristol, PA

Do We Need any Legal Limits for Radon below about 500 Bq/m3?
Klaus Becker, Berlin, Germany

Some Thoughts about How to Incorporate Hormesis Into the Risk Assessment Process
Brent L. Finley, Exponent, Santa Rosa, CA;
Dennis J. Paustenbach, Exponent, Menlo Park, CA

Radiation Hormesis: Molecular-Cellular Biology, Epidemiology, and Prevention and Therapy of Cancer
Myron Pollycove, University of California, North Bethesda, MD;
Ludwig E. Feinendegen, Heinrich-Heine-University Dusseldorf, Lindau, Germany

Basic Research Needs Panel (DOE, NIEHS, CIIT, Air Force, Pharmaceutical Industry)
Kenneth A. Mundt, Applied Epidemiology, Inc., Amherst, MA;
Wayne Jonas, SUHS, Bethesda, MD, Klaus Becker, Berlin, Germany;
Antone L. Brooks, Washington State University, Richland, WA;
Rory B. Conolly, Center for Computational Biology & Extrapolation Modeling, Research Triangle Park, NC

Luncheon Speaker:
Joscelyn Kaiser
Science News Reporter, Science

Luncheon Speaker:
John Doull, M.D., Ph.D.
Dept of Pharmacy, Toxicology and Therapeutics, University of Kansas Medical Center

Risk Assessment Milestones

Poster Sessions

Neurobehavioral Hormesis: The Exclusion of Compounds that Activate Arousal Systems in the Brain
Marni Y.V. Bekkedal, Glenn D. Ritchie, Kenneth R. Still & John Rossi III, Naval Health Research Center Detachment (Toxicology), Wright-Patterson Air Force Base, OH

Debates Over Linearity: Much Abo About Evidence; Not Enough About Relevance Nor Preference
Kevin P. Brand, University of Ottawa, Ottawa, ON, Canada;
Lorenz Rhomberg, Gradient Corporation, Cambridge, MA

Effects of Superlow Doses
Elena B. Burlakova & Alexander A. Konradov, Russian Academy of Sciences, Moscow, Russia

New Approaches to Modeling of Living Systems Response to Ultra Weak Actions
Elena B. Burlakova, Russian Academy of Sciences, Moscow, Russia

Effects of a ‘Lead-free’ Environment on Fertility and Reproductive Function in Female Mice
Ivo Iavicoli, Giovanni Carelli & Nicolo Castellino, Catholic University of the Sacred Heart, Rome, Italy

Pseudo Hormesis: An Explanation in Search of a Manifestation
Susan M. Chemerynski & Jonathen Borak, Yale University, New Haven, CT; Greg Sirianni, University of New Haven, West Haven, CT; Bernard L. Cohen, University of Pittsburgh, Pittsburgh, PA

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Usefulness of Very Low-Doses of Cisplatin in Regulation of Animal and People Health Conditions
Elzbieta Deranalowicz-Malarczyk, Martyna Kandefer-Szerszen, Anna Jarosz-Wilkolazka, Agnieszka Szuster-Ciesielska & Liliana Borowska, Marie Curie-Sklodowska University, Lublin, Poland

The Effect of Low-Dose of Guaiacol on Enzymatic Activity of Fungal Cells
Elzbieta Deranalowicz-Malarczyk, Anna Jarosz-Wilkolazka & Janina Kochmanska-Rdest, Marie Curie-Sklodowska University, Lublin, Poland

Ultra-weak Secondary Radiation Chemiluminescence of Humic Acid Induced by Gamma-irradiation
Wieslaw Goraczko & Janusz Slawinski, Poznan University of Techical, Poznan, Poland

Linear and Non-linear Effects of Lead on Behavior of Drosophila melanogaster
Helmut V.B. Hirsch, John D. Mercer, Tara Torno, Diane Stark & Helen Ghiradella, The University at Albany, SUNY, Albany, NY

Bimodal Type of Regulation of Protein Kinase C by Antioxidants Down to Ultra-Low Doses
Elena L. Maltseva & Nadya P. Palmina, Institute of Biochemical Physics RAS, Moscow, Russia; Konstantin Gurevich, Lomonosov Moscow University, Moscow, Russia

Adaptation to Radiation: Reductions in Risk after Low Doses in vivo

The History of Chemical Hormesis and Potential Implications for Modern Risk Assessment and Epidemiology
Kenneth A. Mundt, Applied Epidemiology, Inc., Amherst, MA
Edward J. Calabrese & Linda A. Baldwin, University of Massachusetts, Amherst, MA

The Development of a Reproducible Toxicological Bioassay to Elucidate Hormesis
Marc A. Nascarella, John G. Stoffolano, Jr. & Edward J. Calabrese, University of Massachusetts, Amherst, MA

Hyperbolic Radiopathogenic Processes for Chernobyl-touched Children
Eugene A. Neyfakh, Institute of Biochemical Physics, Moscow, Russia

Continuous Low Dose-Rate Gamma-Irradiation Induce Non-Linear Changes of DNA-Protein Cross-Links in Lymphocytes of Mice
Andreyan N. Osipov & Alexander L. Elakov, Moscow SIA "Radon", Moscow, Russia; Galina Ya. Kolomijtseva, M.V.Lomonosov Moscow State University, Moscow, Russia; Vyacheslav D. Sypin, Moscow SIA "Radon", Moscow, Russia

The Effect of Antioxidants in Ultra Low Doses on Lipid Peroxide Oxidation in Biological Membranes
Nadezchda P. Palmina, Lyubov V. Kledova & Tatyana V. Pankova, Emanuel Institute of Biochemical Physics RAS, Moscow, Russia

Nonlinear Dose-Response Behavior and Multiple Solutions for a Model of the Menstrual Cycle
Paul M. Schlosser, CIIT Centers for Health Research, Research Triangle Park, NC; James F. Selgrade & Leona Harris, North Carolina State University, Raleigh, NC

Extremely Low Frequency Electromagnetic Field (ELF-EMF)-Stress Induced DNA Damage in Human Peripheral Blood Leukocytes Evaluated by Comet
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