

# Toxicological Sciences

## CONTENTS

Volume 98, Number 2, August 2007

### TOXICOLOGICAL HIGHLIGHT

#### HIGHLIGHTED ARTICLE:

##### Syzygy's Enlightenments

Robert E. Chapin ..... 311

### REVIEW

#### Mode-of-Action Framework for Evaluating the Relevance of Rodent Forestomach Tumors in Cancer Risk Assessment

Deborah M. Proctor, Nicole M. Gatto, Sandra J. Hong, and Krishna P. Allamneni ..... 313

### FORUM SERIES

#### Genetic Toxicity Assessment: Employing the Best Science for Human Safety Evaluation Part VI: When Salt and Sugar and Vegetables Are Positive, How Can Genotoxicity Data Serve to Inform Risk Assessment?

Lynn H. Pottenger, James S. Bus, and B. Bhaskar Gollapudi ..... 327

### FORUM

#### Human Health and Endocrine Disruption: A Simple Multicriteria Framework for the Qualitative Assessment of End Point-Specific Risks in a Context of Scientific Uncertainty

Olwenn V. Martin, John N. Lester, Nikolaos Voulvoulis, and Alan R. Boobis ..... 332

### BIOTRANSFORMATION AND TOXICOKINETICS

#### An Age-Dependent Physiologically Based Pharmacokinetic/Pharmacodynamic Model for the Organophosphorus Insecticide Chlorpyrifos in the Preweanling Rat

Charles Timchalk, Ahmed A. Kousba, and Torka S. Poet ..... 348

### CARCINOGENICITY

#### WY-14,643-Induced Cell Proliferation and Oxidative Stress in Mouse Liver are Independent of NADPH Oxidase

Courtney G. Woods, Amanda M. Burns, Blair U. Bradford, Pamela K. Ross, Oksana Kosyk, James A. Swenberg, Michael L. Cunningham, and Ivan Rusyn ..... 366

#### Polychlorinated Biphenyls-Modulated Tumorigenesis in Sprague-Dawley Rats: Correlation with Mixed Function Oxidase Activities and Superoxide ( $O_2^{\cdot-}$ ) Formation Potentials and Implied Mode of Action

John F. Brown Jr, Brian A. Mayes, Jay B. Silkworth, and Stephen B. Hamilton ..... 375

### ENDOCRINE TOXICOLOGY

#### Transcription of Key Genes Regulating Gonadal Steroidogenesis in Control and Ketoconazole- or Vinclozolin-Exposed Fathead Minnows

Daniel L. Villeneuve, Lindsey S. Blake, Jeffrey D. Brodin, Katie J. Greene, Iris Knoebl, Ann L. Miracle, Dalma Martinovic, and Gerald T. Ankley ..... 395

#### A Calcium-Binding Protein, Calbindin-D9k, Is Regulated through an Estrogen-Receptor-Mediated Mechanism following Xenoestrogen Exposure in the GH3 Cell Line

Vu Hoang Dang, Thi Hoa Nguyen, Kyung-Chul Choi, and Eui-Bae Jeung ..... 408

*Continued*

## ENVIRONMENTAL TOXICOLOGY

- The Environmental Estrogen, Nonylphenol, Activates the Constitutive Androstane Receptor**  
Juan P. Hernandez, Wendong Huang, Laura M. Chapman, Steven Chua, David D. Moore, and William S. Baldwin ..... 416
- Globin S-Propyl Cysteine and Urinary N-Acetyl-S-Propylcysteine as Internal Biomarkers of 1-Bromopropane Exposure**  
Holly Valentine, Kalyani Amarnath, Venkataraman Amarnath, Weihua Li, Xuncheng Ding, William M. Valentine, and Gaku Ichihara ..... 427
- A Proposed Mechanism for the Protective Effect of Dioxin against Breast Cancer**  
Erin L. Hsu, Diana Yoon, Hyun Ho Choi, Feng Wang, Robert T. Taylor, Natalie Chen, Ruixue Zhang, and Oliver Hankinson ..... 436

## GENETIC TOXICOLOGY

- Mutagenicity and DNA Adduct Formation by the Urban Air Pollutant 2-Nitrobenzanthrone**  
Volker M. Arlt, Hansruedi Glatt, Gonçalo Gamboa da Costa, Jóhannes Reynisson, Takeji Takamura-Enya, and David H. Phillips ..... 445

## IMMUNOTOXICOLOGY

- Modifications of Inflammatory Pathways in Rat Intestine Following Chronic Ingestion of Depleted Uranium**  
Isabelle Dublineau, Line Grandcolas, Stéphane Grison, Cédric Baudelin, François Paquet, Philippe Voisin, Jocelyne Aigueperse, and Patrick Gourmelon ..... 458

## IN VITRO TOXICOLOGY AND ALTERNATIVE TESTING

- Cytotoxicity and Gene Expression Profiles in Cell Cultures Exposed to Whole Smoke from Three Types of Cigarettes**  
Binbin Lu, Laura Kerepesi, Lynne Wisse, Keith Hitchman, and Quanxin Ryan Meng ..... 469
- Uranium Induces Apoptosis and Is Genotoxic to Normal Rat Kidney (NRK-52<sup>E</sup>) Proximal Cells**  
Céline Thiébaud, Marie Carrière, Sarah Milgram, Angélique Simon, Laure Avoscan, and Barbara Gouget ..... 479

## NEUROTOXICOLOGY

- Cadmium-Induced Toxicity in Rat Primary Mid-brain Neuroglia Cultures: Role of Oxidative Stress from Microglia**  
Zhengqin Yang, Sufen Yang, Steven Y. Qian, Jau-Shyong Hong, Maria B. Kadiiska, Raymond W. Tennant, Michael P. Waalkes, and Jie Liu ..... 488
- Normal Cellular Prion Protein Protects against Manganese-Induced Oxidative Stress and Apoptotic Cell Death**  
Christopher J. Choi, Vellareddy Anantharam, Nathan J. Saetveit, Robert S. Houk, Arthi Kanthasamy, and Anumantha G. Kanthasamy ..... 495
- JP-8 Jet Fuel Can Promote Auditory Impairment Resulting From Subsequent Noise Exposure in Rats**  
Laurence D. Fechter, Caroline Gearhart, Sherry Fulton, Jerry Campbell, Jeffrey Fisher, Kwangsam Na, David Cocker, Alisa Nelson-Miller, Patrick Moon, and Benoit Pouyatos ..... 510
- Neurotoxicity and Inflammation in the Nasal Airways of Mice Exposed to the Macrocyclic Trichothecene Mycotoxin Roridin A: Kinetics and Potentiation by Bacterial Lipopolysaccharide Coexposure**  
Zahidul Islam, Chidozie J. Amuzie, Jack R. Harkema, and James J. Pestka ..... 526
- Promotion of Noise-Induced Cochlear Injury by Toluene and Ethylbenzene in the Rat**  
Laurence D. Fechter, Caroline Gearhart, Sherry Fulton, Jerry Campbell, Jeffrey Fisher, Kwangsam Na, David Cocker, Alisa Nelson-Miller, Patrick Moon, and Benoit Pouyatos ..... 542

*Continued*

<b>Comparison of Acute Neurobehavioral and Cholinesterase Inhibitory Effects of N-Methylcarbamates in Rat</b> Katherine L. McDaniel, Stephanie Padilla, Renée S. Marshall, Pamela M. Phillips, Lynda Podhorniak, Yaorong Qian, and Virginia C. Moser .....	552
<b>Neurotoxic Mechanisms of Electrophilic Type-2 Alkenes: Soft–Soft Interactions Described by Quantum Mechanical Parameters</b> Richard M. LoPachin, Terrence Gavin, Brian C. Geohagen, and Soma Das .....	561
<b>REPRODUCTIVE AND DEVELOPMENTAL TOXICOLOGY</b>	
<b>Perfluorooctanoic Acid–Induced Developmental Toxicity in the Mouse is Dependent on Expression of Peroxisome Proliferator–Activated Receptor-alpha</b> Barbara D. Abbott, Cynthia J. Wolf, Judith E. Schmid, Kaberi P. Das, Robert D. Zehr, Laurence Helfant, Shoji Nakayama, Andrew B. Lindstrom, Mark J. Strynar, and Christopher Lau .....	571
<b>Relationship between Embryonic Histone Hyperacetylation and Axial Skeletal Defects in Mouse Exposed to the Three HDAC Inhibitors Apicidin, MS-275, and Sodium Butyrate</b> Francesca Di Renzo, Maria Luisa Broccia, Erminio Giavini, and Elena Menegola .....	582
<b>Concurrent Exposure to Perfluorooctane Sulfonate and Restraint Stress during Pregnancy in Mice: Effects on Postnatal Development and Behavior of the Offspring</b> Silvia Fuentes, Maria Teresa Colomina, Paloma Vicens, Neus Franco-Pons, and José L. Domingo .....	589
<b>LETTERS TO THE EDITOR</b>	
<b>Limitations in the National Cancer Institute Antitumor Drug Screening Database for Evaluating Hormesis</b> Kenny S. Crump .....	599
<b>Hormesis and High Throughput Studies: Crump’s Analysis Lacks Credibility</b> Edward J. Calabrese, John W. Staudenmayer, Edward J. Stanek, III, and George R. Hoffmann .....	602
<b>Letter to the Editor</b> Stephanie Padilla .....	604
<b>Reply to Letter to the Editor</b> Ahmed Kousba .....	605
<b>ERRATUM</b> .....	607