SPECIAL EVENTS

All Events will be held at the Cincinnati Convention Center (CCC) unless otherwise listed.

SATURDAY
4:00 p.m. - 8:00 p.m.
CCC: Elm Street Lobby
Registration

SUNDAY
2:00 p.m. - 5:30 p.m.
Hyatt Regency - Ballroom
Preparing for a Career in Toxicology: An Undergraduate Educational Program

4:00 p.m. - 5:30 p.m.
Regal Hotel - Grand Ballroom
Placement Service Seminar: Career Development for Toxicologists

5:00 p.m. - 6:30 p.m.
CCC: Third Floor Ballroom
Welcoming Reception
Cash bar. Open to all registrants.

MONDAY
8:30 a.m. - 9:30 a.m.
CCC: Third Floor Ballroom
Plenary Lecture: Pandering to Fear: The Media’s Crisis Mentality, Lecturer: John Stossel

9:30 a.m. - 11:30 a.m.
CCC: Exhibit Hall A
Poster Session for Visiting Students

12:00 p.m. - 1:15 p.m.
CCC: Rooms 203/211-204/210
MRC/P&G Lecture: The Genetic and Biochemical Underpinnings of Cancer, Lecturer: J. Michael Bishop, MD

6:30 p.m. - 8:00 p.m.
Hyatt Regency - Ballrooms
Specialty Section Meetings: Inhalation - Ballroom C, Mechanisms - Ballroom A, Risk Assessment - Ballroom B, Veterinary - Ballroom E

TUESDAY
12:00 p.m. - 1:00 p.m.
CCC: Ballroom C
Graduate Student Luncheon
Open to all graduate students. Pre-registration required.

12:00 p.m. - 1:15 p.m.
CCC: Ballroom B
SOT/EUROTOX Debate: Endocrine Disruptors Pose a Major Risk to Human Health

1:30 p.m. - 5:00 p.m.
CCC: Room 206
Forum on Grantsmanship and Sources for Research Support

4:30 p.m. - 6:00 p.m.
CCC: Rooms 200/214-201/213
SOT Annual Business Meeting
Chaired by James S. Bus, SOT President
SOT Members Only.

5:00 p.m. - 6:30 p.m.
Listed Hotels
Regional Chapter Meetings: Pacific N.W. - Hyatt, Buckeye A, Ohio Valley - Omni, Salon D

6:00 p.m. - 10:00 p.m.
Forest View Gardens - Meet at Elm Street side of the Cincinnati Convention Center.
SOT Deutsch Night
Ticket required.

6:30 p.m. - 8:00 p.m.
Hyatt Regency - Ballrooms
Specialty Section Meetings: Reproductive and Developmental - Ballroom D, Metals - Ballroom C, Molecular Biology - Ballroom F, Neurotoxicology - Ballroom G

WEDNESDAY
12:00 p.m. - 1:00 p.m.
CCC: Ballroom A
Burroughs Wellcome Toxicology Scholar Award Lecture: Organophosphorus Insecticide Toxicity: A Comparative Approach, Lecturer: Janice E. Chambers

5:00 p.m. - 6:30 p.m.
Hyatt Regency
Regional Chapter Meetings: Northwest - Buckeye A, South Central - Buckeye B

6:30 p.m. - 8:00 p.m.
Hyatt Regency - Ballrooms

7:00 p.m. - 11:00 p.m.
Main Street - Meet at Elm Street side of the Cincinnati Convention Center.
SOT Night On Main Street
Ticket Required.

THURSDAY
12:00 p.m. - 1:30 p.m.
CCC: Rooms 200/214 - 201/213
SOT Issues Session: Dose-Response Characteristics of Endocrine-Mediated Toxicants
Moderator: James S. Bus, SOT President

5:00 p.m. - 6:00 p.m.
CCC: Ballrooms A & B
Final Night Awards Presentation

6:00 p.m. - 8:30 p.m.
CCC: Third Floor Ballroom
Final Night Reception
Cash bar. Open to all registrants.
# Table of Contents

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### CONTINUING EDUCATION COURSES

8:00 a.m. - 12:00 p.m.
1. Use of the Benchmark Dose in Risk Assessment (repeated as course #8 in the afternoon)
2. Endocrine Control of Reproductive Development — Normal and Abnormal Aspects
3. Toxicology of Agents: Metals
4. The Role of Toxicology in Assessing the Safety and Risk of New Food Technologies and Practices
5. Epidemiology for Toxicologists II, Methodology
6. Techniques for Determining Genetic Polymorphisms
7. Cell Signaling in Toxicology

1:00 p.m. - 5:00 p.m.
8. Use of the Benchmark Dose in Risk Assessment (same course as #1)
9. Neuroimmunology: Implications for Toxicology
10. Making Sense of Antisense
11. Methods for Assessing Chemical Interaction with Steroid Receptors
12. Molecular Basis of Genotoxicity Assays
13. Nephrotoxicity: Basic Mechanisms and Recent Advances
14. Unique Problems Associated with the Use of Animals in Inhalation Toxicology

### PLENARY LECTURE

8:30 a.m.
Pandering to Fear: The Media's Crisis Mentality, Lecturer: John Stossel

### SYMPOSIA

9:30 a.m.
Genomic Information as a Frontier of Toxicology: Building Bridges in Biology
Mechanisms of Toxicant-Induced Apoptosis: Insights from Reproduction and Development

1:30 p.m.
β-Carotene: Friend or Foe?
Cell Signaling and Cell Injury

### WORKSHOPS

9:30 a.m.
Design and Interpretation of Immunotoxicology Studies
Working for Toxicology — The Legislative and Regulatory Process

1:30 p.m.
Immunological Biomarkers: Measures of Exposure and Human Health Risks
Risk Characterization: A Bridge to Informed Decision Making

### PLATFORM SESSIONS

9:30 a.m.
Biomarkers: Effects, Exposure, and Susceptibility Inhalation Toxicology

1:30 p.m.
Methods

### POSTER DISCUSSION SESSIONS

9:30 a.m.
Inflammatory Cells and Tumor Necrosis Factors in Toxicity
Testing for Estrogenicity

1:30 p.m.
In Vitro Models of Hepatotoxicity
Gap Junctions

### POSTER SESSIONS

9:30 a.m.
Neurotoxicity: Pathology, Peripheral, *In Vivo*
P450 I — Human
Disposition/Pharmacokinetics I
Mechanism of Toxicity: Cellular and Molecular Mechanisms
Food Safety
Eye Toxicity
Cardiovascular System Toxicology

1:30 p.m.
Neurotoxicity: Behavior, Functional Effects
Neurotoxicity: Neurochemistry, *In Vitro*
Respiratory Tract Toxicology: Mechanisms
Glutathione
P450 II
Carcinogenesis: Mechanisms of Biotransformation
Developmental Toxicology I

### SYMPOSIA

8:30 a.m.
Chemical Modulation of Neuroreceptors and Ion Channels
Santesson Symposium: One Hundred Years of Research on Benzene Toxicity

1:30 p.m.
Retinoids and Teratogenesis: Molecular Mechanisms and Approaches
Intracellular Signaling Pathways and Responses to Pneumotoxic Agents

### WORKSHOPS

8:30 a.m.
Use of Moderate Dietary Restriction in Safety Assessment
average of Immunotoxicity by Multiparameter Flow Cytometry

1:30 p.m.
EPA's Neurotoxicity Risk Assessment Guidelines

### ROUNDTABLES

12:00 p.m.
Should Carcinogenesis Data from Transgenic Animals Be Applied to Safety Assessment, If So, How?
Chromium (III) and Chromium Picolinate Supplementation: Benefits and Hazards

### PLATFORM SESSIONS

8:30 a.m.
Oxidative Injury

1:30 p.m.
Polychlorinated Biphenyls

### POSTER DISCUSSION SESSIONS

8:30 a.m.
Dosimetry and Toxicology in the Upper Respiratory Tract
Intracellular Mediators of Metallothionein and Intracellular Calcium — Expression and Underlying Mechanisms

1:30 p.m.
Glutathione Homeostasis and Glutathione Conjugate Toxicity
Benzene-Toxicity, Mechanisms, and Pharmacokinetics

### POSTER SESSIONS

8:30 a.m.
Molecular Biology
Cell Proliferation
TCDD I
P450 III
Disposition/Pharmacokinetics II
Nephrotoxicology
Nematotoxicity
Mixture Toxicology

1:30 p.m.
Risk Assessment I — Policy, Models, Chemical Specific, Exposures
Toxicity and Carcinogenicity Evaluations
Safety Evaluation of Cancer Therapeutic Agents
Pathophysiology of Metals: Organ System Effects and Underlying Mechanisms
Skin Toxicity/Percutaneous Absorption
Hypersensitivity/Immunotoxicology
**OVERVIEW**

**Wednesday, March 12**

**SYMPOSIA**
8:30 a.m.
The Molecular Biology of Metal Carcinogenesis
Neurotransmitter Receptor Subtypes Involved in Cognition
1:30 p.m.
Peroxisome Proliferator Activated Receptors
Genetic Determinants of Susceptibility to Inhaled Pollutants

**WORKSHOPS**
8:30 a.m.
Measuring Local Doses in Portal-of-Entry Epithelia
1:30 p.m.
The Discovery and Development of Neurotrophic Factors in the Treatment of Human Disease

**PLATFORM SESSIONS**
8:30 a.m.
Hypersensitivity
1:30 p.m.
Metals: Human Health Risks and Exposure

**POSTER DISCUSSION SESSIONS**
8:30 a.m.
Uncertainty Analysis in Non-Cancer Risk Assessment
1:30 p.m.
Molecular Toxicology of the Ah Receptor
Molecular Aspects of Oxidative Stress

**POSTER SESSIONS**
8:30 a.m.
Reactive Intermediates
TCDD II
Polycyclic Aromatic Hydrocarbons
Hepatocarcinogenesis
Liver and Gastrointestinal Toxicology
Nutrition and Natural Products
1:30 p.m.
Apoptosis
Developmental Toxicology II
Immunotoxicology
Safety Evaluation
Environmental Toxicology: Mixtures, Mechanisms and Health Effects
Risk Assessment II — Environmental Site Specific

**Thursday, March 13**

**SYMPOSIA**
8:30 a.m.
Perturbation of the Mitosis/Apoptosis Balance: A Fundamental Mechanism in Toxicology
Advancing the Scientific Basis for Risk Assessment
1:30 p.m.
Toxicity of Non-Coplanar PCBs
Genetic Polymorphisms in Human Drug Metabolic Enzymes

**WORKSHOPS**
8:30 a.m.
Scientific and Regulatory Challenges for the Reduction, Refinement and Replacement of Animals in Toxicity Testing
Should Manganese Be Added to Gasoline: Making Rational Public Policy in the Face of Uncertainty
1:30 p.m.
Use of Mode of Action Information in Cancer Risk Assessment: Implementing EPA's Proposed Cancer Guidelines

**SOT ISSUES SESSION**
12:00 p.m.
Dose-Response Characteristics of Endocrine-Mediated Toxicants

**PLATFORM SESSIONS**
8:30 a.m.
Immunotoxicology
Cellular and Molecular Mechanisms of Arsenic and Mercury Toxicity

**POSTER DISCUSSION SESSIONS**
8:30 a.m.
Mechanisms of Estrogenicity
1:30 p.m.
Exposure Modeling for Metals
Kinetics and Toxicity of MTBE, ETBE, and TAME

**POSTER SESSIONS**
8:30 a.m.
Oxidative Injury
Genotoxicity
Biotransformation I
Halogenated Hydrocarbons
*In Vitro* — Toxicity and Methods
Respiratory Tract Toxicology: Models, Methods, Safety Evaluation
1:30 p.m.
Pesticides
Organophosphate Toxicity
Biotransformation II
Receptor Biology/Signal Transduction
Reproductive Toxicity
Toxicological Methods

**Special Events Sponsored by the Society of Toxicology**

**Saturday**
4:00 p.m.
Registration Opens

**Sunday**
2:00 p.m.
Preparing for a Career in Toxicology: An Undergraduate Educational Program
4:00 p.m.
Placement Service Seminar: Career Development for Toxicologists
5:00 p.m.
Welcoming Reception

**Monday**
9:30 a.m.
Poster Session for Visiting Students
12:00 p.m.
MRC/FGH Lecture: The Genetic & Biochemical Underpinnings of Cancer, Lecturer: J. Michael Bishop, MD
6:30 p.m.
Specialty Section Meetings: Inhalations, Mechanisms, Risk Assessment, Veterinary

**Tuesday**
12:00 p.m.
Graduate Student Luncheon
12:00 p.m.
SOT/EUROTOX Debate: Endocrine Disruptors Pose a Major Risk to Human Health
1:30 p.m.
Forum on Grantsmanship and Sources for Research Support
4:30 p.m.
Annual Business Meeting
5:00 p.m.
Regional Chapter Meetings: Pacific N.W., Ohio Valley
6:00 p.m.
SOT Deutsch Night
6:30 p.m.
Specialty Section Meetings: Reproductive and Development, Metals, Molecular Biology, Neurotoxicology

**Wednesday**
12:00 p.m.
Burroughs Wellcome Toxicology Scholar Award, Lecturer: Janice E. Chambers
5:00 p.m.
Regional Chapter Meetings: Northwest, South Central
6:30 p.m.
Specialty Section Meeting: Immunotoxicology, *In Vivo*, Carcinogenesis, Food Safety, Regulations and Safety
7:00 p.m.
SOT Night On Main Street

**Thursday**
5:00 p.m.
SOT Awards Ceremony
6:00 p.m.
Final Night Reception
GENERAL INFORMATION

Scientific Sessions and Special Events will be held at the Cincinnati Convention Center (CCC), unless otherwise noted.

**Registration Fees**

<table>
<thead>
<tr>
<th>GENERAL REGISTRATION:</th>
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<tr>
<td>Member</td>
<td>$235</td>
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<tr>
<td>Non-Member</td>
<td>$380</td>
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<tr>
<td>Retired Member</td>
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<tr>
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<td>Grad. or Undergrad. Student</td>
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<td>Guest</td>
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<td>SOT Corporate Member (one per company)</td>
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<td>Press</td>
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**CONTINUING EDUCATION COURSES:**
(Sunday, March 9, classes run concurrently)

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<th>On-Site</th>
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<tbody>
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<td>Press</td>
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Saturday, March 8 ....................... 4:00 p.m. - 7:00 p.m.
Sunday, March 9 ....................... 7:00 a.m. - 6:00 p.m.
Monday, March 10 ...................... 7:00 a.m. - 5:00 p.m.
Tuesday, March 11 ...................... 7:00 a.m. - 5:00 p.m.
Wednesday, March 12 ................... 8:00 a.m. - 4:00 p.m.
Thursday, March 13 ..................... 8:00 a.m. - 2:00 p.m.

When you arrive at the Cincinnati Convention Center, please go to the Elm Street Lobby registration area to register for the Annual Meeting or to pick up your registration materials: badge holder, Burroughs Wellcome Toxicology Scholar Award Lecture Brochure, Annual Meeting Calendar, Exhibits Directory and other supplemental materials (there will be packets containing these materials throughout this area).

Lost badges may be replaced at the registration desk for a $1 fee.

**Hotel Accommodations**

The Society of Toxicology 36th Annual Meeting is Co-Headquartered at the Omni Netherland Plaza and Hyatt Regency Cincinnati in downtown Cincinnati. The scientific sessions and exhibits are located across the street at the Cincinnati Convention Center.

**Message Center/Lodging Information Desk**

CINCINNATI CONVENTION CENTER

The SOT Message Center will be open in the registration area of the Cincinnati Convention Center during registration hours. Please inform your office and family of the Message Center number: (513) 784-6010.

Annual Meeting Attendee lodging information will be available at the Message Center/Lodging Information Desk. The lodging list will be based on hotel information as of one week prior to the meeting. If you do not wish to have your lodging information made available to others, please visit the Message Center/Lodging Information Desk and have your name removed from the listing.

**Receipt Of The Program and The Toxicologist**

1. SOT members in the U.S. and Canada will receive the Program and *The Toxicologist* (abstracts volume) prior to the meeting, as will U.S. and Canadian non-members who pre-register by January 17, 1997.

2. SOT members and non-member pre-registrants outside the U.S. and Canada, as well as non-members in the U.S. who register after January 17, will receive the Program and *The Toxicologist* at the registration desk on-site.

3. SOT members outside the U.S. and Canada who do not attend the meeting will receive their copies of the Program and *The Toxicologist* after the meeting.

**NOTE:** Please bring your copy of the Program and *The Toxicologist* with you to the meeting. Additional copies will cost $15 each on-site.

**Program Dex**

The SOT 1997 Annual Meeting program is available in a new Windows format, for use with Windows v3.1 and Windows 95, as well as the old Mac format. The Meeting Diskette Search Program provides the ability to search the abstract titles of papers and posters programmed for presentation at the Annual Meeting. The user can search the meeting program by key words and phrases, author names, and sessions. By printing your selections, you create your own personal itinerary for the meeting. Disks will be mailed out in February to everyone who has purchased the disk.

We hope use of this search program enhances your overall experience at the 1997 Society of Toxicology meeting.
The Greater Cincinnati/Northern Kentucky International Airport is the nearest airport serving downtown Cincinnati, and transportation to all convention hotels is provided by shuttle or taxi service. Shuttle desks are located in the baggage claim area. Advance reservations can be made through LEE TRAVEL by calling (800) 298-5338. The cost of a taxi from Greater Cincinnati/Northern Kentucky International Airport to most convention hotels is approximately $25.

Attendees who use either LEE TRAVEL or the special airline reference numbers when making their reservations receive discounts.

**Free Airline Ticket Drawing**
Attendees who purchase their tickets through Delta or Northwest Airlines and use SOT's reference numbers will automatically be entered into a special drawing for TWO FREE ROUND-TRIP TICKETS. Tickets are valid to anywhere in the continental U.S. for up to 12 months after the Annual Meeting. LEE TRAVEL will be glad to verify that you are entered in the drawing; stop by their booth in the SOT registration area of the Cincinnati Convention Center.

**U.S. Travel Discounts**
SOT has arranged special discounted rates with Delta and Northwest Airlines for travel originating in the U.S. These rates provide savings of 5% off the lowest applicable fare or 10% off a full coach fare. By staying over a Saturday night, you can take advantage of additional savings. LEE TRAVEL also offers great savings on discounted fares that do not require a Sunday night stay over.

**Canadian Travel Discounts**
For air travel originating in Canada, SOT special discounts can save up to 10% off the full coach fare, depending upon your departure city. A 14-day advance purchase is required and there may be penalties for changes or cancellations.

**International Attendees**
You can qualify for our FREE TICKET DRAWING by using the SOT reference numbers when you purchase your tickets. Send the SOT Flight Fax Form to LEE TRAVEL and they will make your SOT air travel reservations.

**Military/Government Tickets**
Special airline discounts may apply for travel and will qualify you for our FREE TICKET DRAWING by using the SOT reference numbers when you purchase your military/government tickets. Send the SOT Flight Fax Form to LEE TRAVEL and they will make your SOT air travel reservations.

**Reference Numbers**
Special airline discount reference numbers are assigned to SOT. Please be sure to use them when making your reservations.

<table>
<thead>
<tr>
<th>Airlines</th>
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<tbody>
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<td>Delta Airlines</td>
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<tr>
<td>Northwest Airlines</td>
<td>NYH2B</td>
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LEE TRAVEL's toll-free telephone number is (800) 298-5338. For overseas calls, or if you are unable to use the toll-free number from your city, please call (203) 254-3706.

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**Shuttle Bus**
Jet Port Express shuttle bus service is provided from the Greater Cincinnati/Northern Kentucky International Airport to all SOT designated hotels in the Cincinnati area with rates starting from $10 one way. Jet Port Express shuttle is located in the baggage claim area of Greater Cincinnati/Northern Kentucky International Airport. For more information call LEE TRAVEL at (800) 298-5338.

**Taxi**
The taxi fare from Greater Cincinnati/Northern Kentucky International Airport to the Cincinnati convention hotels is approximately $25 and prearranged limo service is approximately $70.

**Car Rental**
Special discount rates for rental cars are available from Avis by using SOT's reference number T524006. You may call Avis directly at (800) 331-1212, or LEE TRAVEL will make car rental arrangements for you when you make your airline reservations. SOT members may also receive this special discount with Avis throughout the year by using the reference number T524006.

If you need travel information or assistance during the Annual Meeting, please stop by the LEE TRAVEL desk located in the registration area of the Cincinnati Convention Center. The travel desk will be open Monday through Thursday during SOT's registration hours and its personnel will be happy to handle your airline ticket changes, car rental arrangements, tour and excursion trips, or verify your Free Airline Ticket Drawing entry.

**Membership Application**
Membership Applications and Brochures will be available at the SOT Membership Booth located in the Exhibit Hall. The next deadline for receipt of membership applications is April 1. All registrants are encouraged to visit the booth.
Welcoming Reception

SUNDAY, MARCH 9
5:00 p.m. - 6:30 p.m.
CCC: THIRD FLOOR BALLROOM

Greet your colleagues and plan your itinerary at the Welcoming Reception, which will be held in the Ballroom located on the third floor of the Cincinnati Convention Center. Enjoy light snacks and complimentary sodas provided by The Procter & Gamble Company and SOT — cash bars will also be available.

SOT Deutsch Night

TUESDAY, MARCH 11
6:00 p.m. - 10:00 p.m.
FOREST VIEW GARDENS

Great times await you at Forest View Gardens! Delight in friendly Old World traditions. Good Food, Good Drink, Good Times — served up in authentic Oktoberfest atmosphere. Your three-hour dinner seating is filled with Broadway music performed by talented young opera singers for a memorable experience. The cost is only $33 which includes your food, gratuity, entertainment and transportation to and from the restaurant. Buses will depart from the Elm Street side of the Cincinnati Convention Center at 6:00 p.m. and will return around 10:00 p.m. Sign up for you Coupon Card on the SOT Registration Form. Exchange your voucher at the SOT Sales Desk by Tuesday, March 11, before 12:00 noon.

SOT Night On Main Street

WEDNESDAY, MARCH 12
7:00 p.m. - 11:00 p.m.
MAIN STREET

Enjoy the music and ambiance of Cincinnati's newest hot spot — Main Street. Toast each other at the Main Street Brewery or dance the night away to jazz, progressive or good old rock n' roll music at the area's many night clubs. Challenge a friend or new acquaintance to a game of pool at the many billiard rooms.

For $5 you will receive round-trip transportation between the Cincinnati Convention Center and Main Street, as well as a Main Street Coupon Card good for discounts on drinks and food. Buses will depart from the Elm Street side of the Convention Center at 7:00 p.m. Sign up for your Coupon Card on the SOT Registration Form. Exchange your voucher at the SOT Sales Desk by Tuesday, March 11, before 12:00 noon.

Final Night Awards Presentation

THURSDAY, MARCH 13
5:00 p.m. - 6:00 p.m.
CCC: BALLROOMS A & B

At 5:00 p.m., in the Cincinnati Convention Center Ballrooms A & B, the Society of Toxicology will honor the following 1997 Award Recipients:

<table>
<thead>
<tr>
<th>Award</th>
<th>Recipient</th>
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</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>Kevin E. Driscoll</td>
</tr>
<tr>
<td>Arnold J. Lehman</td>
<td>N/A</td>
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<tr>
<td>Education</td>
<td>Albert E. Manson</td>
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<tr>
<td>Merit</td>
<td>Mary O. Amdur</td>
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<tr>
<td>Public Communications</td>
<td>Audrey Gotsch</td>
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<td>Zeneca Travelling Award Lectureships</td>
<td>Lucio G. Costa</td>
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Board of Publications Best Paper Awards in:

**Fundamental and Applied Toxicology**


- F.L. Fort
- H. Ando
- T. Suzuki
- M. Yamamoto
- T. Hamashina
- S. Sato
- T. Kitazaki
- M.C. Mahony
- G.D. Hodgen

**Toxicology and Applied Pharmacology**


- P.R.S. Kodavanti
- T.R. Ward
- J.D. McKinney
- C.L. Waller
- H.A. Tilson

New Honorary SOT Members:

- John E. Casida
- Roger W. Russell

Final Night Reception

THURSDAY, MARCH 13
6:00 p.m. - 8:30 p.m.
CCC: THIRD FLOOR BALLROOM

The Final Night Reception will be held in the Ballroom located on the third floor of the Cincinnati Convention Center and is free to all attendees. Enjoy socializing with your colleagues and celebrate the culmination of a successful SOT Meeting. Sponsors as of January 15 include: Ani Lytics Inc., Charles River Labs, Eli Lilly and Company, EPL Inc., Harlan Sprague Dawley, Pharmacia & UpJohn Inc., R.O.W. Science, Rhone-Poulenc Rorer, RJ Reynolds, Teklad, and Sanofi Winthrop Inc.
The SOT Guest Hospitality Center will be located in Salon F & G at
the Omni Netherland Plaza, 4th floor, to provide guest participants
(non-scientists) with a place to meet and socialize with other guests.
The Center will be staffed Sunday through Wednesday and informa-
tion on local attractions, rental cars, and tours will be available there.

Guests must be registered for the Annual Meeting to access the
Hospitality Center and should use the Annual Meeting Registration
Form. Guests must register on the same form as the person they are
accompanying. Guests are welcome to attend the Welcoming and
Final Night receptions but will not have access to the scientific ses-
sions or the exhibit hall.

HOSPITALITY CENTER HOURS:

Sunday - Wednesday ................. 9:00 a.m. - 4:00 p.m.
Thursday .................................. 9:00 a.m. - 12:00 p.m.
Saturday .................................. 2:00 p.m. - 4:00 p.m.
Sunday - Thursday ..................... 7:00 a.m. - 4:00 p.m.
Sunday - Wednesday ................... 8:00 a.m. - 5:00 p.m.
Thursday ................................. 8:00 a.m. - 4:00 p.m.

Used for the purpose of introducing the science of toxicology to the
general public, the SOT Fundamentals of Toxicology Slide Set will be
available for sale at the Sales Booth in the Registration Area of the
Cincinnati Convention Center (during registration hours) at a cost of
$150. The text is also available for an additional charge of $15.

Please see or call Nancy Dieter in the SOT Headquarters office at the
Convention Center if you need assistance determining the best handi-
capped access route to the meeting rooms and social functions or need
other assistance.

If an emergency occurs at the Cincinnati Convention Center, proceed
to the nearest phone, dial 0 and ask the operator to connect you to
security. State the telephone number and area from which you are
calling as well as the nature and location of the incident. The
Emergency Medical Team will arrive within minutes.

Should the fire alarm sound in the Cincinnati Convention Center,
please exit the building in an orderly manner through the first and
second floor exits.

The Society of Toxicology Placement Service provides employers and
candidates who are seeking jobs with the opportunity to establish con-
tacts relating to their specific needs and areas of interest. The pre-reg-
istration deadline was January 3, 1997; all other registrations may be
received at SOT Headquarters until February 14, 1997 and on site at
the Annual Meeting. The Placement Service will be located in the
Regal Cincinnati Hotel across the street from the Cincinnati
Convention Center. (Registration only for candidates and employers.
No computer searches or messages.)

Sunday .................................. 10:00 a.m. - 3:30 p.m.
Monday - Wednesday .................. 9:00 a.m. - 4:00 p.m.

The Message Center will be open Monday through Thursday. The
Placement Service will not arrange interviews; however, interview
cubicles will be available. Please call Nell Dillard at SOT
Headquarters for registration forms or print them from our home

MONDAY - WEDNESDAY, MARCH 10 - 12
9:30 a.m. - 5:00 p.m.

For many of the science professionals who attend, the focus of the
Society of Toxicology Annual Meeting is the three-day SOT exhibi-
tion. Here, state-of-the-art products and services directly relating to
the advancement of research within toxicology and associated areas
are displayed.

At the SOT exhibition, scientists have a first-hand opportunity to
examine, talk with the exhibitors, and learn about the products and
services on display by over 200 companies.

Complimentary coffee sponsored by the exhibitors and SOT will be
provided in the Exhibit Hall from 8:30 a.m. - 10:30 a.m., March 10 - 12.

Coffee, juices and quick-serve continental breakfast items will be
available for purchase from 8:00 a.m. to 10:00 a.m. and luncheon
items will be available for purchase from 11:00 a.m. to 2:00 p.m.
Monday through Wednesday in the exhibit hall. Coffee, soda and
snacks will be sold from 2:00 p.m. until the close of the exhibit hall
Monday through Wednesday afternoon.

SOT T-Shirts will be available for sale at the Sales Booth in the
Registration Area of the Cincinnati Convention Center (during regis-
tration hours) at a cost of $8 per shirt.
CONTINUING EDUCATION COURSES
(Pre-registration only)
All courses will be held on Sunday, March 9, 1997, at the Cincinnati Convention Center. Please check the signage in the Cincinnati Convention Center Foyer for room assignments. Note: Your course materials will be available in the course room immediately prior to the course (they will not be available at the registration area). If you have your course ticket, go directly to the assigned course room. If you have not received your course ticket, please go to the Continuing Education Information Booth in the Foyer at the Cincinnati Convention Center on Sunday (the booth will be open 7:00 a.m. - 2:00 p.m.).

8:00 a.m. - 12:00 p.m.
1. Use of the Benchmark Dose in Risk Assessment
2. Endocrine Control of Reproductive Development — Normal and Abnormal Aspects
3. Toxicology of Agents: Metals
4. The Role of Toxicology in Assessing the Safety and Risk of New Food Technologies and Practices
5. Epidemiology for Toxicologists II, Methodology
6. Techniques for Determining Genetic Polymorphisms
7. Cell Signaling in Toxicology

1:00 p.m. - 5:00 p.m.
8. Use of the Benchmark Dose in Risk Assessment
9. Neuroimmunology: Implications for Toxicology
10. Making Sense of Antisense
11. Methods for Assessing Chemical Interaction with Steroid Receptors
12. Molecular Basis of Genotoxicity Assays
13. Nephrotoxicity: Basic Mechanisms and Recent Advances
14. Unique Problems Associated with the Use of Animals in Inhalation Toxicology

SYMPOSIA

Day/Time | Topic/Abstract # | Room(s) | Page
--- | --- | --- | ---
Monday 9:30 a.m. | Genomic Information as a Frontier of Toxicology: Building Bridges in Biology #1-6 | Ballrooms A-C | 23
Monday 9:30 a.m. | Mechanisms of Toxicant-Induced Apoptosis: Insights from Reproduction and Development #7-11 | Rooms 200/214-201/213 | 24
Monday 1:30 p.m. | β-Carotene: Friend or Foe? #244-249 | Rooms 230/244-231/243 | 38
Monday 1:30 p.m. | Cell Signalling and Cell Injury #250-254 | Rooms 200/214-201/213 | 38
Tuesday 8:30 a.m. | Chemical Modulation of Neuroreceptors and Ion Channels #531-536 | Rooms 230/244-231/243 | 55
Tuesday 8:30 a.m. | Santesson Symposium: One Hundred Years of Research on Benzene Toxicity #537-541 | Ballroom B | 55
Tuesday 1:30 p.m. | Retinoids and Teratogenesis: Molecular Mechanisms and Approaches #784-788 | Ballroom A | 71

WORKSHOPS

Day/Time | Topic/Abstract # | Room(s) | Page
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Monday 9:30 a.m. | Design and Interpretation of Immunotoxicology Studies #12-17 | Rooms 232-242 | 24
Monday 9:30 a.m. | Working for Toxicology — The Legislative and Regulatory Process #18-22 | Rooms 230/244-231/243 | 25
Monday 1:30 p.m. | Immunological Biomarkers: Measures of Exposure and Human Health Risks #255-260 | Rooms 232-242 | 38
Monday 1:30 p.m. | Risk Characterization: A Bridge to Informed Decision Making #261-266 | Ballroom A | 39
Tuesday 8:30 a.m. | Use of Moderate Dietary Restriction in Safety Assessment, #542-547 | Ballroom A | 56
Tuesday 8:30 a.m. | Assessment of Immunotoxicity by Multiparameter Flow Cytometry #548-553 | Rooms 202-212 | 56
Tuesday 1:30 p.m. | EPA's Neurotoxicity Risk Assessment Guidelines #795-800 | Rooms 202-212 | 72
Wednesday 8:30 a.m. | Measuring Local Doses in Portal-Of-Entry Epithelia #1035-1039 | Rooms 230/244-231/243 | 87
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<td>The Discovery and Development of Neurotrophic Factors in the Treatment of Human Disease #1211-1215</td>
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<td>Scientific and Regulatory Challenges for the Redaction, Refinement and Replacement of Animals in Toxicity Testing #1462-1467</td>
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<td>Should Manganese Be Added to Gasoline: Making Rational Public Policy in the Face of Uncertainty #1468-1473</td>
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<td>Hyperosensitivity #1040-1051</td>
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<td>Metals: Human Health Risks and Exposure #1216-1215</td>
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### POSTER SESSIONS

All posters will be displayed from 8:30 a.m. to 12:00 p.m. or 1:30 p.m. to 5:00 p.m. Sessions indicated by an asterisk (*) will be attended from 8:30 a.m. to 10:15 a.m. or 1:30 p.m. to 3:15 p.m. (except Monday morning when they will be displayed from 9:30 a.m. to 12:00 p.m. and attended from 9:30 a.m. to 10:45 a.m.). Those without an asterisk will be attended from 10:15 a.m. to 12:00 p.m. or 3:15 p.m. to 5:00 p.m.

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<td><strong>Disposition/Pharmacokinetics #135-173</strong></td>
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<td>* Risk Assessment I — Policy, Models, Chemical Specific, Exposures #840-877</td>
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<td>* Polycyclic Aromatic Hydrocarbons #1109-1122</td>
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<td>* Liver and Gastrointestinal Toxicology #1150-1187</td>
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<td>Wednesday 8:30 a.m.</td>
<td>** Nutrition and Natural Products #1188-1198</td>
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<td>* Apoptosis #1256-1298</td>
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<td>** Developmental Toxicology II #1299-1328</td>
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<td>* Immunotoxicology #1329-1369</td>
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<td>** Safety Evaluation #1370-1406</td>
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<td>** Risk Assessment II — Environmental Site Specific #1426-1451</td>
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1997 Annual Meeting Sponsors
(as of January 15, 1997)

The Society of Toxicology thanks the following organizations for their generous sponsorship of activities at the Annual Meeting in Cincinnati, Ohio. The sponsors include:

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CIBA-GEIGY
Recipient: Russell S. Thomas
# 1142

Hoffmann-La Roche
Recipient: William F. Salminen, Jr.
# 1071

The Procter & Gamble Company
Recipient: Weston W. Porter
# 1506
## 1997 EXHIBITORS

### Alphabetical Listing

*(as of January 15, 1997)*

See Exhibitor Directory for product/service descriptions, a map of booth locations and other information.

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*TBA = Booth Number(s) To Be Announced*
EXHIBIT HALL DEMONSTRATIONS

Make the most of your lunch time break — grab a quick lunch in the exhibit hall concession area and join the exhibitors for informative demonstrations and discussion on the latest technologies and techniques available in the toxicology field.

MONDAY, MARCH 10, 1997

11:30 a.m.

INTRATRACHEAL AEROSOLIZERS (MICROSPRAYERS) - PENN-CENTURY

An intratracheal aerosolizer consists of a micro-aerosol generator located in the tip of a long, thin tube which can be inserted into the trachea. Intratracheal aerosolization has been shown to be 4 1/2 - 5 times as effective as other methods for the delivery of substances to the lungs.

12:00 p.m.

RAPID ANALYSIS OF DRUG INTERACTIONS IN MICROSOMAL INCUBATIONS USING ON-LINE MICRODIALYSIS SAMPLING PROBES - BIOANALYTICAL SYSTEMS INC.

Monitoring drug metabolism in microsomes or hepatocytes provides valuable information and a heavy analytical burden. Extraction of drugs from these matrices is difficult and time-consuming. When microdialysis probes are used to monitor a microsomal incubation, and are placed online with an LC, more data is generated faster. Sample extraction is handled by pores in the probe which exclude protein but pass drugs and metabolites diffusing into the probe as it is perfused with physiological saline.

12:30 p.m.

RECONSTITUTED ASSAYS FOR PURIFIED CYTOCHROME P450'S - PANVERA

The potential usefulness of purified recombinant cytochrome P450's in metabolic studies has long been promoted. One major obstacle to using these purified enzymes has been the complexity of the required reconstitution protocol.

A new "mix and metabolize" system has been developed that utilizes recombinant human cytochrome P450 isozymes and their associated electron transfer proteins in a two tube format that is suitable for both single tube and high throughput screens. A comparison will be made between the traditional protocol and this new technology for the reconstitution of cytochrome P450 isozymes.

1:00 p.m.

SOFTWARE FOR PROTOCOL AND REPORT ASSEMBLY - FRASER WILLIAMS

A demonstration of software incorporating the latest in Microsoft Windows technology which provides a consistent and controlled environment for the rapid generation of study-related documentation. Features include: advanced flexibility, access and security, template creation and use (document structure and layout, use of data fields, handling of differences), co-authors’ contributions, reviewers’ annotations, QA process improvements and audit trails. The system’s design was born out of strong partnerships with some of the leading pharmaceutical and chemical organizations. It is especially useful for the CRO, allowing report configuration to individual sponsor styles.

TUESDAY, MARCH 11, 1997

11:30 a.m.

ADVANCED CONTINUOUS SIMULATION LANGUAGE - MGA

Dr. Michael Peleakis and Shawn Johnson will demonstrate how to simulate toxicological studies using computer software. Modeling physiology with pharmacokinetic and pharmacodynamic computer models will be discussed.

12:00 p.m.

ONLINE DATABASE RESEARCH - CHEMICAL ABSTRACTS SERVICES

REGISTRY is an online database of more than 15 million substances. Records contain REGISTRY numbers, CA index names, commonly used synonyms, structure diagrams (many with stereochemical information), and molecular formulas. This information is vital to toxicological research. REGISTRY is accessible via STN International, the scientific and technological online search service.

12:30 p.m.

PRECISION FEEDING IN TOXICOLOGY RESEARCH - PURINA MILLS INC.

Dr. Dorrance Haught will detail and demonstrate the formation and application of aqua-mixed diets in studies using fish, and certified optimal diets used in rodent studies.

Aqua-mix diets provide researchers the ability to add components to diets used in fish toxicology studies.

Certified Opti-Diets provide toxicology studies with a constant nutrition feeding program that includes exact daily feeding by weight, controlled feed intake and waste. Opti-Diets aid in the age longevity of rodents used in research.
FLUORESCENT ASSAY FOR ENDOCRINE DISRUPTERS - PANVERA
The mechanism of action of endocrine disrupters is likely multi-variant, and hormone/receptor and receptor/DNA interactions are probably sites of antagonism and agonism. Two fluorescent assays have been developed to screen for competitors of the estrogen/estrogen receptor (ER) and ER/DNA interactions.

These competition assays are non-radioactive, homogeneous, amenable to high-throughput, do not use animals, and can be completed in a single day. An overview of these systems with specific data will be presented.

CONTINUOUS INTRAVENOUS INFUSION IN REGULATORY TOXICOLOGY - CHRYSLALIS INTERNATIONAL
Demonstration of the methods used for continuous intravenous infusion in regulatory toxicology studies. Particular reference will be made to reproductive toxicology studies, including embryotoxicity studies in the rat and rabbit, fertility studies and pre- and post-natal studies. Historical background data for these types of study will be presented.
Use of the Benchmark Dose in Risk Assessment

Chairpersons: Michael L. Dourson, Toxicology Excellence for Risk Assessment, Cincinnati, OH and Rashmi S. Nair, Monsanto Company, St. Louis, MO

Sponsored by the Risk Assessment and Mechanisms Specialty Sections

Scientists with several organizations have developed new methods for risk assessment over the last decade. One of these new methods is the benchmark dose approach. Numerous theoretical papers and applications on the benchmark dose have been published and several workshops conducted. The U.S. Environmental Protection Agency is also drafting guidance for its use of benchmark dose. The benchmark dose method, however, is not without its practical problems and theoretical limitations. This course is designed to discuss its utility and problems associated with its use. The risk assessment practitioner will be led through the basic definitions and modeling of the benchmark dose, its application for developing dose response assessments for cancer and noncancer toxicity, and shown approaches to incorporating toxicokinetics and dynamics into the assessment of health risk using a benchmark dose. In-depth case studies will highlight common problems encountered, and an overall conclusion will be stated on the use of this tool for risk assessment.

Introduction, Michael L. Dourson, Toxicology Excellence for Risk Assessment, Cincinnati, OH

Benchmark Dose: Definitions and Basic Modeling Procedures for Quantal and Continuous Data, Elaine Faustman, University of Washington, Seattle, WA

Application of the Benchmark Dose in Risk Assessment, Carole Kimmel, USEPA, Washington, DC

In-Depth Case Studies of Benchmark Dose Application, Bruce D. Naumann, Merck and Company, Inc., Whitehouse Station, NJ

Incorporating Toxicokinetics, Toxicodynamics, and Mechanistic Data in the Benchmark Dose Process, Harvey Clewell, ICF Kaiser, Ruston, LA

Conclusions, Rashmi S. Nair, Monsanto Company, St. Louis, MO

Endocrine Control of Reproductive Development — Normal and Abnormal Aspects

Chairperson: Robert J. Kavlock, USEPA, Research Triangle Park, NC

Sponsored by the Reproductive and Developmental Specialty Section

The hypothesis has been put forth that a variety of chemicals present in the environment are causing adverse health effects in both wildlife and humans through their interaction with the endocrine system during critical developmental periods. The biological plausibility of the theory, combined with the reality that such effects are occurring in at least highly exposed populations, and the potential enormous impact of such effects on population dynamics is translating into major research programs by a variety of organizations in an attempt to fill basic data gaps. This course will provide a solid foundation in the normal development of the male and female reproductive tract in mammals and a critical review of the types of effects on the reproductive system that result from xenobiotic perturbation of the endocrine system. The normal development talks, one for each sex, will cover the genetics, morphological differentiation (both primary and secondary sex characteristics), relevant hormones (sex steroids, and thyroid, adrenal and pituitary hormones) and peptides (growth factors and inhibiting substances and their receptors that regulate the phenotypic expression of each sex). Following each of these will be a review of the techniques available to detect alterations (e.g., molecular, morphological, physiological and behavioral), their relative sensitivity in detecting alterations, mechanisms by which the interaction occurs (to the extent known), types of chemicals which have been shown to alter reproductive development via endocrine-mediated mechanisms, the critical periods for exposure, and relevant interspecies differences.

Introduction to the Endocrine Disruptor Hypothesis, Robert J. Kavlock, USEPA, Research Triangle Park, NC

Endocrine Regulation of Male Reproductive Tract Development, Donald Coffey, Johns Hopkins Hospital, Baltimore, MD

Xenobiotic-induced Alterations in Male Reproductive Tract Development, Paul Foster, CIIT, Research Triangle Park, NC

Endocrine Regulation of Female Reproductive Tract Development, Tammy Greco, University of Michigan, Ann Arbor, MI

Xenobiotic-induced Alterations in Female Reproductive Tract Development, Earl Gray, USEPA, Research Triangle Park, NC

Toxicology of Agents: Metals

Chairperson: Michael P. Waalkes, National Cancer Institute-FCRDC, Frederick, MD

Sponsored by the Metals Specialty Section

Metals are among the highest priority hazardous substances and are unusual as toxins because they occur naturally, and often ubiquitously, in the environment, making exposure inevitable. Many metals are essential, but become toxic with increasing doses, posing a dilemma in risk assessment. Metals are also emerging as important factors in gene expression, and may be significant in signal transduction and gene activation or as components of regulatory proteins. This course’s first lecture covers basic principles of metals toxicology including metabolism, toxic mechanisms, tolerance and systemic toxicity. The second lecture concerns metals as carcinogens and includes a review of the known and suspected metallic carcinogens, and discussions on factors defining a target site and potential mechanisms of metal carcinogenesis. The next lecture discusses the role of metals in signal transduction and gene activation. The final lecture covers unique aspects of risk assessment of metals and includes exposure modeling and dose response modeling. The course is intended as a basic introduction to the area of metal toxicology.

Introduction, Michael P. Waalkes, National Cancer Institute, Frederick, MD

Basic Principles of Metal Toxicology, Curtis D. Klaassen, University of Kansas, Kansas City, KS

Metal Carcinogenesis, Michael P. Waalkes, National Cancer Institute, Frederick, MD

Metals and Gene Expression, James D. Koropatnick, University of Western Ontario, London, ON, Canada

Special Issues in Risk Assessment of Metals, Robert A. Goyer, National Institute of Environmental Health Sciences, Research Triangle Park, NC
The Role of Toxicology in Assessing the Safety and Risk of New Food Technologies and Practices  

Chairpersons: Ronald T. Riley, USDA ARS-RRD, Athens, GA and Michael P. Bolger, USDA, Washington, DC

Sponsored by the Food Safety and the Regulatory and Safety Evaluation Specialty Sections

The purpose of this course is to present examples of new and emerging food technologies and practices and novel uses that provide opportunities for toxicologists to furnish insights into potential public health risks. The safety/risk assessment of transgenic food crops will be reviewed using examples of recently commercialized varieties. The decision-tree guidelines used by regulatory agencies will be described. Examples will be presented of toxicological approaches used to ensure that unexpected adverse changes or interactions are not created in the development of new food processes designed to reduce food/feed-borne toxins. Current approaches for describing the risks associated with, and/or ensuring the safety of dietary supplements will be reviewed. The last presentation will focus on how toxicologists can contribute to improving our understanding of the mechanisms of pathogenesis of toxic-producing microorganisms. The factors of the mechanisms that determine whether exposure to a food-borne pathogen will result in life-threatening illness will be presented.

Transgenic Plants and Microorganisms — How Safety to Consumers Can Be Demonstrated, Bruce G. Hammond, Ceregen, St. Louis, MO

Chemopreventive Treatments and Processes to Reduce Mycotoxins in Food — Are There Hidden Risks?, Timothy D. Phillips, Texas A&M University, College Station, TX

Natural Products in Foods and Dietary Supplements — What are the Human Health Risk Standards and Do We Assess Them?, Michael P. Bolger, USDA, Washington, DC

Food-borne Microbial Pathogens and Their Toxins — Understanding Environmental and Host Response Factors that Regulate Toxic Production and Pathogenesis, Vernon L. Tesh, Texas A&M University, College Station, TX

Epidemiology for Toxicologists II, Methodology

Chairpersons: Richard A. Parent, Consultant, Limited, Damariscotta, ME and David E. Lilienfeld, FMAS Corporation, Rockville, MD

Sponsored by the Regulatory and Safety Evaluation Specialty Section

This course will build on the epidemiology CE course presented at the 1996 SOT meeting but will also be meaningful to those who did not attend this earlier course. The goal of the course is to explore in depth the major techniques used by epidemiologists in the conduct of their research. The first two lectures, by Drs. Sprafka and Lilienfeld, will review systematically the methods by which data are collected in the two principal kinds of epidemiologic studies, cohort and case-control studies. Particular emphasis will be given to the assimilation of toxological information into study designs. Examples will include observational studies related to benzene exposure and 2,4-D exposure. The third lecture, by Dr. Olsen, will illustrate the methods by which epidemiologic data are analyzed, including meta-analysis. The fourth lecture, by Dr. Schulte, will discuss the interface between epidemiology and toxicology, specifically the use of biomarkers in the conduct of epidemiologic observational studies. This course will demonstrate how epidemiology is applied to address the contributions of toxicants in the incidence and causation of human disease.

Methods Used in Cohort Studies, J. Michael Sprafka, Procter & Gamble Corporation, Cincinnati, OH

Methods Used in Case-Control Studies, David E. Lilienfeld, EMMES Corporation, Potomac, MD

Data Analysis Techniques Used in Epidemiologic Observational Studies, Gery W. Olsen, 3M Corporation, St. Paul, MN

The Interface of Epidemiology and Toxicology: Biomarkers in Observational Studies, Paul A. Schulte, NIOSH/CDC, Cincinnati, OH

Techniques for Determining Genetic Polymorphism

Chairpersons: Peter J. Wedlund, University of Kentucky, Lexington, KY and Mark S. Miller, Bowman Gray School of Medicine, Winston-Salem, NC

Sponsored by the Molecular Biology and Mechanisms Specialty Sections

The recognition that individual differences can affect response to exogenous substances has an ancient history. In the last 10 years, we have experienced a revolution in our capability to identify the molecular basis for inter-individual differences in toxicant susceptibility. This course will put this revolution in perspective. The course will describe how our understanding of genetic variation has evolved, and how newly developed tools are being used to identify genetic polymorphisms. The speakers will cover the use, limits, costs, and potential future applications of each method. The use of the polymerase chain reaction (PCR) will be described in detail by Dr. Bill Mattes. Dr. Fred Farin will describe how PCR can be coupled with oligonucleotide ligation for high throughput genetic screening. Dr. Maureen Cronin will finish the session by explaining the use of PCR coupled with nucleotide arrays and its potential application to genetic testing when numerous alleles are present or when more than one gene must be tested for allelic variants. Participants will see the challenges presented by genetic polymorphisms and some of the current solutions to these challenges. This course should provide toxicologists with a better appreciation for the rapidly evolving developments, directions, limitations and potential for detecting genetic variations.

A Historical Perspective on Genetic Variation, Peter J. Wedlund, University of Kentucky, Lexington, KY

Polymerase Chain Reaction (PCR) Methods and Limits, William B. Mattes, Ph.D., Ciba Geigy Corporation, Summit, NJ

Technical Solutions to High Throughput Screening, Fred Farin, M.D., University of Washington, Seattle, WA

A Solid State Biotechnology Interface for Genetic Testing, Maureen Cronin, Ph.D., Affymetrix, Santa Clara, CA

Cell Signaling in Toxicology

Chairperson: James L. Stevens, W. Alton Jones Cell Science Center, Lake Placid, NY

Sponsored by the Molecular Biology Specialty Section

The purpose of this advanced CE course is to provide an overview of cell signaling mechanisms and to integrate the complex fields of cell signaling and toxicology. There has been an explosion of information on how cell signaling pathways respond to toxicants, ionizing radiation and other environmental insults. It is now clear that activation or inactivation of signaling pathways mediates the effects of many toxicants on the cell cycle, gene transcription and cell death. Regulated changes in cellular Ca2+ , lipid metabolism, G-proteins and protein kinases lie at the heart of many signaling pathways and are important targets for toxicants. These topics will be discussed with an emphasis on new information and introduce the methodology necessary to approach cell signaling experimentally. A symposium entitled, "Cell Signaling in Toxicology," will be presented during the SOT meeting and will complement the course content.

Introduction, James L. Stevens, W. Alton Jones Cell Science Center, Lake Placid, NY

G-Proteins in Cell Signaling, Jeffrey Laskin, UMDNJ-Robert Wood Johnson Medical School, Friscatway, NJ

Signaling Through Serine-Threonine and Tyrosine Kinase Pathways, Tom Jelinek, Upstate Biotechnology, Lake Placid, NY

Lipid Metabolism in Cell Signaling, Susan Jaken, W. Alton Jones Cell Science Center, Lake Placid, NY

Methodologies to Study Ca2+ Metabolism and Cell Signaling, Fred Nagelkerke, Leiden University, The Netherlands
Use of the Benchmark Dose in Risk Assessment

AM #1 or PM #8

Chairpersons: Michael L. Dourson, Toxicology Excellence for Risk Assessment, Cincinnati, OH and Rashmi S. Nair, Monsanto Company, St. Louis, MO

Sponsored by the Risk Assessment and Mechanisms Specialty Sections

Scientists with several organizations have developed new methods for risk assessment over the last decade. One of these new methods is the benchmark dose approach. Numerous theoretical papers and applications on the benchmark dose have been published and several workshops conducted. The U.S. Environmental Protection Agency is also drafting guidance for its use of benchmark dose. The benchmark dose method, however, is not without its practical problems and theoretical limitations. This course is designed to discuss its utility and problems associated with its use. The risk assessment practitioner will be led through the basic definitions and modeling of the benchmark dose, its application for developing dose response assessments for cancer and noncancer toxicity, and shown approaches to incorporating toxicokinetics and dynamics into the assessment of health risk using a benchmark dose. In-depth case studies will highlight common problems encountered, and an overall conclusion will be stated on the use of this tool for risk assessment.

Introduction, Michael L. Dourson, Toxicology Excellence for Risk Assessment, Cincinnati, OH

Benchmark Dose: Definitions and Basic Modeling Procedures for Quantal and Continuous Data, Elaine Faustman, University of Washington, Seattle, WA

Application of the Benchmark Dose in Risk Assessment, Carole Kimmel, USEPA, Washington, DC

In-Depth Case Studies of Benchmark Dose Application, Bruce D. Naumann, Merck and Company, Inc., Whitehouse Station, NJ

Incorporating Toxicokinetics, Toxicodynamics, and Mechanistic Data in the Benchmark Dose Process, Harvey Clewell, ICF Kaiser, Ruston, LA

Conclusions, Rashmi S. Nair, Monsanto Company, St. Louis, MO

Neuroimmunology: Implications for Toxicology

PM #9

Chairperson: David A. Lawrence, Wadsworth Center, Albany, NY

Sponsored by the Immunotoxicology and Neurotoxicology Specialty Sections

This advanced course is intended to update toxicologists on the mechanisms by which the nervous and immune systems communicate with each other to influence each other’s functions. The presentations will summarize the neuroendocrine immune circuit and discuss how xenobiotics may selectively target a parameter of one system to ultimately disrupt functions associated with both systems. There are numerous environmental factors that may modify this circuit. Neuroimmunology is a burgeoning field with new factors and cellular interactions being discovered. The specific topics to be covered include cytokine modulation of CNS and immune system interactions and brain laterality effects on immunity; generalized CNS influences on immunity from a neural perspective with emphasis on brain structures, substances and molecular signals; anatomical and sensory innervation of lymphoid organs and the diversity of neuropeptides and neurotransmitters with regard to immune cells; and stress and sympathetic nervous system alteration of immune functions with emphasis on lymphoid subset regulation.

Introduction to Neuroimmunology and Brain Laterality Effects on Immunity, David A. Lawrence, Wadsworth Center, Albany, NY

CNS Influences on Immunity, Diane Miller, US EPA, Research Triangle Park, NC

Innervation of Lymphoid Organs and Neuropeptides/Neurotransmitters from the Immune System, Susan Felten, University of Rochester, Rochester, NY

CNS Influences on Regulatory Helper T Cell Subsets and Conditioning Effects, Jan A. Molyneux, University of Rochester Medical Center, Rochester, NY

Making Sense of Antisense

PM #10

Chairpersons: Arthur A. Levin, Isis Pharmaceuticals, Carlsbad, CA and Judith Marquis, HybriDx, Inc., Worcester, MA

Sponsored by the Molecular Biology Specialty Section

Antisense technology allows researchers to devise strategies to reduce the expression of specific proteins in cells and whole animals without having to create transgenics. Using Watson and Crick base-pairing rules it is possible to design oligonucleotides that will selectively hybridize with mRNAs for specific gene products. The result of this hybridization is an inhibition of the translation of mRNA and reduced protein levels. Because hybridization is sequence-dependent, it is possible to design antisense oligonucleotides that are specific for a single mRNA species. Therefore, antisense oligonucleotides represent highly specific inhibitors of gene expression. This specificity can be exploited for design of therapeutic agents and for the design of selective inhibitors of gene expression for research applications. The use of antisense technologies provides the basic scientist with a means to specifically inhibit gene expression without having to manipulate the genome as is done in homologous recombination. Thus, the role of specific enzymes in toxicologic phenomena can be assessed. This advanced continuing education course will provide an overview of antisense technology from designing and selecting the most effective antisense molecules, to utilizing the latest chemical modifications to oligonucleotide structure. Because the phosphodiester linkages in naturally occurring oligonucleotides are labile in biologic systems, chemical modifications have been made in synthetic oligonucleotides to increase their durability. The first generation of antisense therapeutic agents have used phosphorothioate linkages to increase nuclease resistance and increase the durability of the oligonucleotides. This chemical modification results in oligonucleotides with attractive pharmacokinetic properties for in vivo use. There are, however, some toxicities associated with this class of compounds. This course will explore the molecular biology behind the use of antisense oligonucleotides, the use of antisense oligonucleotides as research tools, and pharmacokinetics and biochemical mechanisms of toxicity of phosphorothioate oligonucleotides.

Antisense Oligonucleotides as Experimental Tools and Therapeutic Agents, Stanley Crooke, Isis Pharmaceuticals, Inc., Carlsbad, CA

Factors That Influence the Discovery of Antisense Oligonucleotide Inhibitors, Brett Monia, Isis Pharmaceuticals, Inc., Carlsbad, CA

Understanding the Molecular Biology of Opioid Behavior Through Antisense Mapping, Gawrii Pasternak, Memorial Sloan Kettering Cancer Center, New York, NY

Safety Assessment of Phosphorothioate Deoxyoligonucleotides: Defining the Toxicity Profile in Rodents and Monkeys, Scott P. Henry, Isis Pharmaceuticals, Inc., Carlsbad, CA

Pharmacokinetics and Disposition of Oligonucleotides, Michael Grindel, HybriDx, Worcester, MA

Methods for Assessing Chemical Interaction with Steroid Receptors

PM #11

Chairperson: Kevin W. Gaido, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Sponsored by the Molecular Biology Specialty Section

There has been increasing public concern that chemicals in the environment are affecting human health by disrupting normal endocrine function. Much of the attention regarding endocrine disruption has focused on environmental chemicals capable of interacting with steroid receptors. The objective of this course will be to familiarize toxicologists with methods to assess chemical interaction with steroid receptors. The course will present an overview of steroid receptor biology. Techniques for assessing chemical interaction with steroid receptors in vitro will be presented along with methods for assessing chemical modulation of endocrine function in vivo. The final talk will focus on use of mechanistic data gained from these assays to improve risk assessment for endocrine disrupting chemicals.

The New Biology of Steroid Hormones: Insights Into the Mechanism of Action of Environmental Endocrine Disruptors, Donald P. McDonnell, Duke University Medical Center, Durham, NC

In Vitro Assays for Detection of Chemical Interaction with Steroid Receptors, Kevin W. Gaido, CIIT, Research Triangle Park, NC
Molecular Basis of Genotoxicity Assays

Chairpersons: Robert H. Schiestl, Harvard University School of Public Health, Boston, MA and James T. MacGregor, SRI International, Menlo Park, CA

Sponsored by the Molecular Biology and Carcinogenesis Specialty Sections

Our understanding of the molecular basis of mutagenesis and of the relationship of genetic alterations to cancer has advanced dramatically in the past two decades, making possible improved regulatory schemes for assessing genotoxic and carcinogenic risk. The EPA and FDA have both proposed new guidelines for carcinogenic risk assessment that rely on the increased use of such data. Nonetheless, toxicologists and cancer researchers are often uncertain about how to interpret the results of assays and the implications for regulatory decision making. This continuing education course will review the molecular basis of currently-used and newer assays for genetic damage, and will discuss the value of these assays in genotoxic and carcinogenic risk assessment. Examples will be included that illustrate the selective response of these assays to specific types of genetic damage. For example, chemicals that alkylate DNA are positive in most genic toxicity assays because they cause DNA adducts resulting in point mutations (Salmonella assay). In addition, upon DNA replication or DNA repair, these same agents may cause DNA strand breaks leading to detection by clastogenicity assays. However, chemicals that principally cause DNA strand breaks, such as ionizing radiation of free radical damage, may be less, or not at all detectable by the Salmonella assay but are highly clastogenic. A DNA double strand break may cause a deletion of a gene, but does not cause a reversion of a particular point mutation as determined by the Salmonella assay. This continuing education course will include topics on the molecular basis of doseresponses in different assays, limits of detectability and reasons for a negative outcome with certain genotoxic chemicals. It will also feature a discussion of the inherent problems with the terms "nonmutagenic" and "noncarcinogenic" carcinogens.

The Molecular Basis for the Salmonella (Ames) Mutagenicity Assay, David DeMarini, USEPA, Research Triangle Park, NC
Mammalian Cell Forward Mutation Assays and Molecular Cyto genetic Methods for Measuring Chromosome Damage, James D. Tucker, Lawrence Livermore National Laboratory, Livermore, CA
DNA Recombination Based Assays, Robert H. Schiestl, Harvard School of Public Health, Boston, MA
Use of Genotoxicity Data for Regulatory Purposes, Rosalie K. Elespuru, FDA Center for Devices and Radiological Health, Rockville, MD

Nephrotoxicity: Basic Mechanisms and Recent Advances

Chairpersons: Adnan A. Elfarra, University of Wisconsin, Madison, WI and Lawrence H. Lash, Wayne State University, Detroit, MI

Sponsored by the Mechanisms Specialty Section

This course will focus on recent research elucidating mechanisms of nephrotoxicity and the physiological, biochemical, and molecular responses of renal cells to toxicants. It is intended for both beginning and experienced researchers in renal toxicology. Glomerular filtration and membrane transport mechanisms concentrate potentially toxic chemicals within renal cells, and the presence of bioactivation enzymes can enhance the susceptibility of renal cells to toxicants. The first talk will focus on membrane transport processes of proximal tubular cells that mediate uptake and intracellular accumulation of nephrotoxicants. The bioactivation enzymes that play major roles in chemically induced nephrotoxicity will be discussed in the second talk. The third talk will discuss biochemical factors that determine nephron segment-specific patterns of susceptibility, focusing on cell type differences in cellular energetics, metabolism and transport of glutathione.

The final talk will focus on xenobiotic-induced changes in gene expression in cultured human proximal tubular cells and their relationship to cytotoxic and pathologic responses in renal cells. The speakers will also address biochemical correlates of nephrotoxicity, and species-and sex-related differences in activation and adaptation mechanisms in order to provide information that may be useful in extrapolating animal data to potential human health effects.

Introduction, Lawrence H. Lash, Wayne State University, Detroit, MI
Role of Transport in Nephrotoxicity, Carlotta E. Groves, University of Florida, Gainesville, FL
Role of Biotransformation Reactions in Nephrotoxicity, Adnan A. Elfarra, University of Wisconsin, Madison, WI
Nephron Heterogeneity and Renal Cell Injury, Lawrence H. Lash, Wayne State University, Detroit, MI
Gene Regulation and Cytotoxicity in Cultured Human Proximal Tubular Cells, Donald A. Sens, West Virginia University, Morgantown, WV

Unique Problems Associated with the Use of Animals in Inhalation Toxicology

Chairpersons: David C. Dorman, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Sponsored by the Veterinary and Inhalation Specialty Sections

The objective of this course is to familiarize participants with the use of animals in inhalation toxicity research. The first lecture will provide a basic introduction to the comparative biology of the respiratory tract with a special emphasis on species selection. The second lecture will review inhalation exposure systems and exposure dosimetry. A lecture on the special husbandry needs of animals in inhalation studies will follow. Issues raised in this lecture will include the control of confounding factors that emerge when different species or sexes of animals are housed together during inhalation exposures. Few regulatory guidelines have adequately considered the impact of using inhalation as a route of animal exposure. This topic will be the focus of the last lecture which will review how the use of inhalation as a route of exposure impacts the toxicologist's ability to assess chemical-induced neurotoxicity, teratogenicity, or reproductive toxicity. Participants in this course will gain an appreciation of how the selection of species, exposure system, animals' restraint, and caging influence the inhalation exposure-dose-response paradigm and ultimately impact the interpretability of study results.

Overview of Interspecies Differences in Respiratory Anatomy and Response to Injury, Wanda Haschek-Hock, University of Illinois, Urbana, IL
Animal Exposure Systems: Conflicting Goals Between Inhalation Dosimetry and Animal Husbandry, Owen Moss, Chemical Industry Institute of Toxicology, Research Triangle Park, NC
Practical Considerations in Animal Care and Use in Inhalation Toxicology Studies, Jeff Everitt, Chemical Industry Institute of Toxicology, Research Triangle Park, NC
Confounders and Suggested Resolutions to Using Inhalation Exposures for Reproductive, Developmental, and Neurotoxicity Studies, Rochelle Tyl, Research Triangle Institute, Research Triangle Park, NC
Program Descriptions

Scientific Sessions and Special Events will be held at the Cincinnati Convention Center (CCC), unless otherwise noted.

SUNDAY AFTERNOON, MARCH 9

2:00 p.m. - 5:30 p.m.

HYATT REGENCY - BALLOON

SPECIAL EVENTS:
PREPARING FOR A CAREER IN TOXICOLOGY, AN UNDERGRADUATE EDUCATIONAL PROGRAM

Sponsored by: The Ehrlich Institute.

Organizers: I. E. Green, Ph.D., University of Alabama, Athens, AL; M. S. Nixon, Colorado State University, Fort Collins, CO.

A major goal of this program is to emphasize the continued need for participation of underrepresented minorities in toxicity research and to provide the opportunity for high school and college students interested in this field to explore various aspects of the discipline. The speakers will discuss the role of the student in toxicity education and research, and the role of the program in supporting minority students in Toxicology.

WELCOME: M. Green, Chairperson, Juried Academic._Chair, SOT

WHAT IS TOXICOLOGY? I. E. Green, M.D.

Medical College

RELEVANCE OF TOXICOLOGY TO MINORITIES.

I. E. Green, University of Alabama, Athens, AL

HOW TO GET INTO GRADUATE SCHOOL.

M. Nixon, Colorado State University, Fort Collins, CO

MENTORS AND MENTORING IN THIS DISCIPLINE OF TOXICOLOGY.

W. H. Oakley, University of Cincinnati

THE EXPECTATION OF RESEARCH IN TOXICOLOGY: A. Barlow, Veterinary Medicine

TRAINING FELLOWSHIP OPPORTUNITIES.

W. H. Oakley, University of Cincinnati, Environmental Health Science

INTRODUCTION TO THE DIRECTORS OF TOXICOLOGY PROGRAMS WITH RESUME.

Training Grants. Each state is represented.

Focus Group Participation and Voting

SUNDAY NIGHT, MARCH 9

6:00 p.m. - 8:30 p.m.

MEET-Hotel - Grand Ballroom

SPECIAL EVENTS:

PLACEMENT SERVICE SEMINAR: CAREER DEVELOPMENT FOR TOXICOLOGISTS

Sponsored by: The Placement Committee

Chairperson: I. E. Green, Bryn Mawr, PA

A panel of guest speakers will present their views on career development for Toxicologists. Specific discussion will provide the perspective of the pharmaceutical industry, contract laboratories, technology licensing, and graduate students. The panelists experience will help the audience recognize. The panelists offer a template for a successful career management and should be applied to pursue positions in government or industry.

- E. E. WELCOME: I. E. Green, Bryn Mawr, PA

- S. R. Stobbs, University of Florida, Gainesville, FL

- N. S. Anderson, Frederick Research Center, Frederick, MD

- P. Reynolds, Boise Pharmaceuticals, West Haven, CT

- D. Parks, Cato Research, Evanston, IL

- D._discussion

SUNDAY EVENING, MARCH 9

6:00 p.m. - 8:30 p.m.

CCC/Third Floor Ballroom

SPECIAL EVENT:

WELCOMING RECEPTION

Greet your colleagues and plan your itinerary at the Welcoming Reception. A buffet will be held in the Hallroom located on the third floor of the Cincinnati Convention Center. A buffet will be held from 6:00 p.m. to 8:00 p.m. All important announcements will be made at this time. The Hyatt & eligible Centers and SOT will be available to process.

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MONDAY MORNING, MARCH 10

9:30 a.m. - 11:45 a.m.
CCC: BALLROOMS A-C

SYMPOSIUM SESSION:
GENOMIC INFORMATION AS A FRONTIER OF TOXICOLOGY: BUILDING BRIDGES IN BIOLOGY

Sponsored by: The Carcinogenesis, Molecular Biology, and Veterinary Specialty Sections
Chairperson: James R. Beall, U.S. DOE, Germantown, MD

Science is making rapid strides in genome technology and in understanding genomic relationships among species. From sequence data, models of protein structure are soon to be derived and used to predict function. Changes in sequence may soon predict alterations of protein function. Toxicologists are pursuing ever more basic mechanisms to understand the interrelationships of exogenous substances, gene controls, molecular biology and toxicity. The fields of genomics and toxicology sciences are merging rapidly. For example, the DOE, which launched the human gene sequencing program in the mid-1980s, serves as the world's primary focus of genome technology development. DOE's health effects research program emphasizes studies that capitalize on the output of human genome research in understanding toxicological mechanisms. By highlighting the cutting edge of the merging fields of genomics and toxicology, SOT is helping to catalyze the merger of two fields while seeding new frontiers of toxicology.

#1 9:30 GENOMIC INFORMATION AS A FRONTIER OF TOXICOLOGY: BUILDING BRIDGES IN BIOLOGY. J R Beall, Health Effects Research, Department of Energy, Germantown, MD.


#3 10:00 GENOMICS AND DNA SEQUENCING TECHNOLOGIES: IMPLICATIONS FOR TOXICOLOGY AND HEALTH RESEARCH IN THE 21ST CENTURY. A V Carrano. Biology and Biotechnology Research Program, Lawrence Livermore National Laboratory, Livermore, CA. Sponsor: J Beall.

#4 10:25 MOLECULAR NUCLEAR MEDICINE: FROM GENOTYPE TO PHENOTYPE. H N Wagner, Jr. Johns Hopkins School of Public Health, Johns Hopkins University, Baltimore, MD. Sponsor: J R Beall.

#5 10:50 BUILDING GENETIC BRIDGES ACROSS BIOLOGICAL BARRIERS IN TOXICOLOGY. R P Woychik, Biology Division, Oak Ridge National Laboratory, Oak Ridge, TN. Sponsor: J R Beall.


11:30 DISCUSSION
MONDAY MORNING, MARCH 10
9:30 a.m. - 11:45 a.m.
CCC: ROOMS 200/214-201/213

SYMPOSIUM SESSION:
MECHANISMS OF TOXICANT-INDUCED
APOPTOSIS: INSIGHTS FROM
REPRODUCTION AND DEVELOPMENT

Sponsored by: The Reproductive and Developmental Specialty Section
Chairpersons: Kim Boekelheide, Brown University, Providence, RI;
Aptosis (programmed cell death) is a normal physiologic process necessary for
tissue modeling during development and germ cell selection during male
and female gametogenesis. Both ontologic and environmental cues are known to ac-
tivate a variety of pathways leading to cell death. Since research advances in this
area have been rapid and the paradigms for investigating apoptosis in development
and reproduction are relatively well established, now is an appropriate time to
highlight how this new fundamental biologic information may explain toxicologic
mechanisms and how toxicants can be used to identify critical steps in the apop-
totic sequence. The goal of this symposium is to go beyond the description of the
occurrence of toxicant-induced apoptosis by identifying important mechanisms
and pathways which signal and execute programmed cell death in response to tox-
icant exposure. Following an initial overview of the current state of the field, the
speakers will address apoptosis at the interface between biology and toxicology in
the areas of development, female reproduction, and male reproduction. The emphasis
of the presentations will be on principles and conclusions of general
importance.

#7  9:30  MECHANISMS OF TOXICANT-INDUCED APOPTOSIS: INSIGHTS FROM REPRODUCTION AND DEVELOPMENT. K Boekelheide1, M T Moslen2, P Mirkes3 and J L Tilly. 1Department of Pathology and Laboratory Medicine, Brown University, Providence, RI; 2Department of Pathology, University of Texas Medical Branch, Galveston, TX; 3Department of Pediatrics, University of Washington, Seattle, WA. The current state of the field is that research advances in this area have been rapid and the paradigms for investigating apoptosis in development and reproduction are relatively well established. Now is an appropriate time to highlight how this new fundamental biologic information may explain toxicologic mechanisms and how toxicants can be used to identify critical steps in the apoptotic sequence. The goal of this symposium is to go beyond the description of the occurrence of toxicant-induced apoptosis by identifying important mechanisms and pathways which signal and execute programmed cell death in response to toxicant exposure. Following an initial overview of the current state of the field, the speakers will address apoptosis at the interface between biology and toxicology in the areas of development, female reproduction, and male reproduction. The emphasis of the presentations will be on principles and conclusions of general importance.

#8  9:35  APOPTOSIS: SIGNALS AND RESPONSES. M T Moslen. University of Texas Medical Branch, Galveston, TX.

#9  10:05  THE BCL-2 GENE FAMILY, APOPTOSIS AND DEVELOPMENTAL TOXICOLOGY. P E Mirkes, S A Little and M A Shield. Birth Defects Research Laboratory, Division of Congenital Defects, Department of Pediatrics, University of Washington, Seattle, WA. The current state of the field is that research advances in this area have been rapid and the paradigms for investigating apoptosis in development and reproduction are relatively well established. Now is an appropriate time to highlight how this new fundamental biologic information may explain toxicologic mechanisms and how toxicants can be used to identify critical steps in the apoptotic sequence. The goal of this symposium is to go beyond the description of the occurrence of toxicant-induced apoptosis by identifying important mechanisms and pathways which signal and execute programmed cell death in response to toxicant exposure. Following an initial overview of the current state of the field, the speakers will address apoptosis at the interface between biology and toxicology in the areas of development, female reproduction, and male reproduction. The emphasis of the presentations will be on principles and conclusions of general importance.

#10  10:35  DEFINING THE GENES OF CELL DEATH AS POTENTIAL MEDIATORS OF TOXICANT-INDUCED OVARIAN GERM CELL DESTRUCTION. J L Tilly. Department of OB/GYN, Massachusetts General Hospital/Harvard Medical School, Boston, MA. The current state of the field is that research advances in this area have been rapid and the paradigms for investigating apoptosis in development and reproduction are relatively well established. Now is an appropriate time to highlight how this new fundamental biologic information may explain toxicologic mechanisms and how toxicants can be used to identify critical steps in the apoptotic sequence. The goal of this symposium is to go beyond the description of the occurrence of toxicant-induced apoptosis by identifying important mechanisms and pathways which signal and execute programmed cell death in response to toxicant exposure. Following an initial overview of the current state of the field, the speakers will address apoptosis at the interface between biology and toxicology in the areas of development, female reproduction, and male reproduction. The emphasis of the presentations will be on principles and conclusions of general importance.

#11  11:05  PARACRINE SIGNALLING OF TESTICULAR GERM CELL APOPTOSIS: THE EAS SYSTEM AS AN ENVIRONMENTAL SENSOR. K Boekelheide, J Lee and J H Richburg. Department of Pathology and Laboratory Medicine, Brown University, Providence, RI.

MONDAY MORNING, MARCH 10
9:30 a.m. - 11:45 a.m.
CCC: ROOMS 232-242

WORKSHOP SESSION:
DESIGN AND INTERPRETATION OF
IMMUNOTOXICOLOGY STUDIES

Sponsored by: The Immunotoxicology and Regulatory and Safety Evaluation
Specialty Sections
Chairperson: Peter T. Thomas, Corning-Hazleton Inc., Madison, WI

EPA, FDA, and OECD are incorporating immunotoxicology tests into their safety
assessment guidelines. A number of important issues relate to the implementation
and interpretation of the tests that comprise these guidelines. This program will
engage Government and Academic Scientists who are involved in assay develop-
ment and/or regulatory decisions in a discussion of these issues. Following a 20-
30 minute presentation by each of the participants, the moderator will conduct a
focused discussion that will attempt to answer the following questions: (1) Is histopathology sufficiently sensitive to screen for potential immunotoxicants or
should functional tests be included? (2) Will experimental immunization interfere
with other measures of toxicity in a safety assessment study? (3) Is the rat model
(phenotypic markers) sufficiently validated for immunotoxicity testing? (4) What
is the best way to assess risk to innate immunity? (5) From a risk and safety assess-
ment perspective, what is the significance (if any) of observed changes? SOT
members interested in this program include regulatory toxicologists, scientists
responsible for the design and implementation of preclinical and environmental
safety studies as well as persons involved in risk and safety assessment.

#12  9:30  DESIGN AND INTERPRETATION OF IMMUNOTOXICOLOGY STUDIES. P T Thomas. Corning-
Hazleton Inc., Madison, WI.

#13  9:35  EPA APPROACHES TO IMMUNOTOXICITY TESTING & RISK ASSESSMENT. M J Solgrade. National
Health & Environmental Effects Lab., U.S. EPA, Research
Triangle Park, NC.

#14  10:00  IMMUNOTOXICITY ASSESSMENT OF FOOD CHEMICALS-PERSPECTIVES ON THE SIGNIFI-
CANCE OF OBSERVED EFFECTS IN SAFETY EVALUATIONS. D M Hinton. Center for Food Safety
and Applied Nutrition, FDA, Laurel, MD.

Institute of Public Health and Environment, Biehuizen,
Netherlands.

#16  10:50  RELATIONSHIP BETWEEN IMMUNE FUNCTION AND HOST RESISTANCE TESTS. M T Luster.
National Institute for Occupational Safety and Health, Morgantown, WV.

#17  11:15  RISK ASSESSMENT IN IMMUNOTOXICOLOGY: A PRACTICAL PERSPECTIVE. A F Mansan. Department of Pharmacology & Toxicology, Virginia
Commonwealth University, Richmond, VA.

11:40 DISCUSSION
WORKSHOP SESSION:
WORKING FOR TOXICOLOGY — THE LEGISLATIVE AND REGULATORY PROCESS

Sponsored by: The RALA Committee
Chairpersons: Marion Ehrich, VA-MD Reg. College of Veterinary Medicine, Blacksburg, VA and Juanell Boyd, Corning, Inc., Corning, NY

The Society of Toxicology's overall vision includes being the leading organization for promoting sound regulatory practice and policy. In doing so, the Society seeks to represent the scientific and professional interests of its members. One of the most effective means for doing this is to participate in the legislative and regulatory processes. SOT has recently taken its first foray into public policy by developing a relationship with Capitol Associates, Inc. - a government relations firm located on Capitol Hill that specializes in health and science policy issues. Our relationship with Capitol Associates has initiated two processes simultaneously — the educational process of familiarizing SOT members with the way the legislative and executive branches of the Federal government operate, and the process of applying this knowledge to facilitate active participation in the legislative process and communication with key policy makers. The importance of contact with Members of Congress and Congressional staff cannot be overemphasized. To be effective, this contact must occur at two levels — from the Society as a professional organization and from the individual as both an SOT member and a constituent and voter. Elected officials are extremely interested in two-way communication with the voters who elected them. Letters, telephone calls, electronic mail, and personal visits, either in Washington, D.C., or the State office, are all incredibly effective and are strongly encouraged. How to communicate, when to communicate, and what to expect as a result of this communication will be discussed.


#21 10:40  TESTIFYING BEFORE CONGRESS — PERSONAL EXPERIENCE. J. A. Swenberg. RALA Committee, University of North Carolina, Chapel Hill, NC.

#22 11:00  THE LEGISLATIVE PROCESS — AN INSIDER'S VIEWPOINT. H. Spitzer. Environmental Network, Bethesda, MD. Sponsor: M. Ehrich.

11:25  DISCUSSION

PLATFORM SESSION:
BIOMARKERS: EFFECTS, EXPOSURE AND SUSCEPTIBILITY

Chairpersons: Michael J. Hooper, Clemson University, Pendleton, SC and David Warshawsky, University of Cincinnati, Cincinnati, OH

#23 9:30  A ONE YEAR STUDY OF CHANNEL CATFISH EXPOSED IN PONDS TO FIVE TREATMENTS OF CHLORPYRIFOS: I. CHOLINESTERASE INHIBITION AND CLINICAL PARAMETERS. J. E. Chambers, J. S. Boone, R. L. Carr, H. D. Mercer and C. H. Cubbison. Center for Environmental Health Sciences, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS and National Center for Environmental Assessment, US EPA, Cincinnati, OH.


#25 10:00  PORPHYRIN RESPONSIVENESS TO SUB-CHRONIC METHYL MERCUry TREATMENT IN DRINKING WATER: WILDLIFE AND LABORATORY MAMMALIAN SPECIES. K. T. Rummell, J. S. Woods and M. J. Hooper. Department of Environmental Toxicology and TIWET, Clemson University, Clemson, SC and Department of Environmental Health, University of Washington and Battelle Seattle Research Center, Seattle, WA.

#26 10:15  CS2 MEDIATED CROSS-LINKING OF HEMOGLOBIN IN VIVO. J. C. Erve, V. Amarnath, V. Amarnath, D. G. Graham, R. C. Sills, D. L. Morgan and W. M. Valentine. Vanderbilt Medical Center, Center in Molecular Toxicology, Department of Pathology, Nashville, TN and Environmental Toxicology Program, NIEHS, Research Triangle Park, NC.

#27 10:30  MEASUREMENT OF METALLOTHIONEIN IN URINE: PITFALLS AND SOLUTIONS. W. Tang and Z. A. Shaikh. Department of Biomedical Sciences, University of Rhode Island, Kingston, RI.

#28 10:45  INCREASED URINARY EXCRETION OF MONOMETHYLARSONIC ACID IN HUMANS GIVEN DMS. H.V. Apostian, A. Arroyo, M. E. Cebrian, L. M. Del Rosal, K. M. Hurlbut, R. C. Dart, D. Gonzalez-Ramirez, H. Kreppel, A. Smith, M. E. Gonesbatt, P. Ostrosky-Wegman and M. A. Apostian. University of Arizona, Tucson, AZ; Ministerio de Salud, Antofagasta, Chile; CINVESTAV-IPN, Mexico, D.F.; Rocky Mountain Poison & Drug Control Center, Denver, CO; IMSS, Monterrey, Mexico; University of Munich, Germany; University of California, Berkeley, CA and UNAM Mexico, D.F.
#29 11:00  EPIDEMIOLOGIC ASSESSMENT OF MEASURES USED TO INDICATE LOW LEVEL EXPOSURE TO MERCURY VAPOR (Hg). M E Cianciola1, D Echeverrira2, M D Martin3, H Y Aposkitian4 and J S Woods5.1 Department of Environmental Health, University of Washington, Seattle, WA; 2Bastelle Centers for Public Health Research and Evaluation, Seattle, WA; 3Department of Oral Medicine, University of Washington, Seattle, WA and 4Department of Molecular and Cellular Biology, University of Arizona, Tucson, AZ.


#31 11:30  UTILITY OF HUMAN UROEPITHELIAL CELLS AS MOLECULAR BIOMARKERS OF GENE EXPRESSION. S C Kirkner1, T A Lewandowski1, T J Kavanagh1, T Takaro2, J S Woods3 and E M Faustman4. 1Department of Environmental Health, University of Washington, Seattle, WA and 2Department of Occupational and Environmental Medicine, University of Washington, Seattle WA.

#32 11:45  DEVELOPMENT OF BIOMARKERS FOR RISK ASSESSMENT USING A PRIMARY TRACHEAL EPITHELIAL CELL SYSTEM. S Sharma1, M Misra1, B Wilkinson and V E Steele2. 1ManTech Environmental Technology, Inc., Research Triangle Park, NC and 2National Cancer Institute, Rockville, MD. Sponsor: D Morgan.

MONDAY MORNING, MARCH 10
9:30 a.m. - 11:45 a.m.
CCC: ROOMS 202-212

PLATFORM SESSION:
INHALATION TOXICOLOGY

Chairpersons: Thomas Hesterberg, Schuller International, Inc., Littleton, CO and Lung-Chi Chen, New York University Medical Center, Tuxedo, NY

#33 9:30 A COMPARISON OF THE EFFECTS OF CHRYSOTILE AND AMOSITE ASBESTOS IN HAMSTERS AFTER INHALATION — INTERIM RESULTS. E E McConnell1, W Miller2, T W Hesterberg2, P Thevenaz3 and C Axtena4. 1ToxPath, Inc, Raleigh, NC; 2Schuller Int., Denver, CO; 3RCC Group, Fullensdorf, Switzerland and 4NAMAI, Alexandria, VA.

#34 9:45 PULMONARY RESPONSES TO INHALED PARAARAMID RFP IN EXPOSED RATS AND HAMSTERS. D B Warheit1, S I Sajjad1, M A Hartuky and S R Frame. DuPont Haskell Lab, Newark, DE.

#35 10:00 SUBCHRONIC INHALATION STUDY OF FIBROUS GLASS IN THE SYRIAN GOLDEN HAMSTER. T W Hesterberg1, E E McConnell1, W Miller1, J Chevalier1, J Everict1, P Thevenaz1, H Fleissner1, G Hart1 and G Oberdörster2. 1Schuller, Denver, CO; 2Raleigh, NC; 3RCC, Füllensdorf, Switzerland; 4CIIT, Research Triangle Park, NC and 5University of Rochester, Rochester, NY.

#36 10:15 TOLERANCE AGAINST ULTRAFINE PARTICLE-INDUCED ACUTE LUNG INJURY. G Oberdörster1, J N Finkelstein1, C J Johnston, R Gelein, R Bags1, P Mercier and N Corson. Departments of Environmental Medicine and Pediatrics, University of Rochester, Rochester, NY.

#37 10:30 OIL FLY ASH EXPOSURE ENHANCES AIRWAY RESPONSIVENESS AND PULMONARY INFLAMMATION TO INFLUENZA VIRUS INFECTION IN RATS. M I Gilmour1, M J Daniels2, D Wissett3, D L Cosma4 and M J K Selgrade5. 1Center for Environmental Medicine & Lung Biology, UNC Chapel Hill, Chapel Hill, NC and 2US EPA, NHEERL, Research Triangle Park, NC.

#38 10:45 PM10 GENERATED FROM WOOD BURNING MAY BE RESPONSIBLE FOR INCREASED PULMONARY INFECTIONS: A TOXICOLOGICAL MODEL. J T Zelikoff, Y Li, C Nadezko, J C Chen and M D Cohen. New York University School of Medicine, Inst. Environmental Medicine, Tuxedo, NY.

#39 11:00 PULMONARY TOXICITY OF CO-EXPOSURE TO ACROLEIN AND AEROSOL PARTICLES IN F-344 RATS — H E C Kinney, T K Narayan, J E Reboulet and R L Carpenter. Geo-Centers, Inc. and Naval Medical Research Institute Detachment (Toxicology), Wright-Patterson Air Force Base, OH.

#40 11:15 ROLE OF INTERLEUKIN-10 (IL-10) IN PARTICLE-ELICITED RAT LUNG INFLAMMATION. J B Driscoll1, J M Carter2, R M Striter3, J D Kastin4 and T B Howard5. 1The Proctor & Gamble Company, Cincinnati, OH and 2University of Michigan, Ann Arbor, MI.

#41 11:30 INCREASED NITRIC OXIDE PRODUCTION FOLLOWING ACUTE OZONE INHALATION IS ASSOCIATED WITH ACTIVATION OF NUCLEAR TRANSCRIPTION FACTOR NF-κB. Y Guo, D E Heek, J D Laskin and D J Laskin. Joint Graduate Program in Toxicology, Rutgers University and UMDNJ-RW Johnson Medical School, Piscataway, NJ.

#42 11:45 INHALED CORTICOSTEROID SPEEDS THE REPAIR OF NASAL EPITHELIUM AFTER OZONE-INDUCED INJURY. J R Harbema1, C B Bennett1, E B Bari1, J M Benson2 and J A Hotchkiss3. 1Michigan State University, East Lansing, MI and 2Hahalan-Toxicology Research Institute, Albuquerque, NM.

MONDAY MORNING, MARCH 10
9:30 a.m. - 11:45 a.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
INFLAMMATORY CELLS AND TUMOR NECROSIS FACTORS IN TOXICITY

Chairpersons: Lawrence Schook, University of Minnesota, St. Paul, MN and Urs Boeslerli, University of Zurich, Schwenzenbach, Switzerland

Displayed: 9:30 a.m. - 11:45 a.m.
Discussed: 10:30 a.m. - 11:45 a.m.

#43 LIVER HISTOPATHOLOGY OF TNF RECEPTOR KNOCKOUT MICE DURING DIMETHYLTRIAZINE (DMN) EXPOSURE (IN VIVO). T L Horn1, T D O'Brien1, D G Fraser2, M S Rathert3 and L B Schenk4. 1Department of Toxicology, University of Minnesota, St. Paul, MN and 2Department of Veterinary Pathobiology, University of Minnesota, St. Paul, MN.

#44 EXPRESSION OF ACUTE PHASE PROTEINS DURING DIMETHYLTRIAZINE EXPOSURE IN MICE DEFICIENT IN TUMOR NECROSIS FACTOR RECEPTORS (TNFR). D G Fraser, T L Horn, V R Lappi, M S Rathert and L B Schenk. Department of Veterinary Pathobiology, University of Minnesota, St. Paul, MN.
MONDAY MORNING, MARCH 10
9:30 a.m. - 11:45 a.m.

POSTER DISCUSSION SESSION:
TESTING FOR ESTROGENICITY

Chairpersons: Jon C. Cook, Haskell Labs, E.I. du Pont de Nemours & Co., Newark, DE and Paul Foster, CITI, Research Triangle Park, NC

Displayed: 9:30 a.m. - 11:45 a.m.

Discussed: 10:30 a.m. - 11:45 a.m.

#55
WEAK ESTROGENIC ACTIVITY FROM CONTINUOUS-RELEASE PELLETS. J C O'Connor1, J C Cook1, C S Van Pe1, S F Arnold2 and J D Obourn2.
1DuPont-Haskell Laboratory, Newark, DE and 2Zulane University School of Public Health, New Orleans, LA.

#56
ESTROGENIC ACTION OF PCBs IN THE BALB/c MOUSE. J M Martinez and L A Jones. University of Texas at M.D. Anderson Cancer Center, Houston, TX. Sponsor: A Holian.

#57
ESTROGENICITY OF TRADITIONAL CHINESE AND WESTERN MEDICINAL BOTANICALS. C L Eagen, M S Ehm and P K Eagen. VA Medical Center and University of Pittsburgh School of Medicine, Pittsburgh, PA. Sponsor: K N Rao.

#58
REPRODUCTIVE IMPAIRMENT AND INDUCTION OF ALKALINE-LABILE PHOSPHATE. A BIO-MARKER OF ESTROGEN EXPOSURE, IN FAT-HEAD MINNOWS (PIMEPHALUS PROMELAS) EXPOSED TO WATERBORNE 17B-ESTRADIOL. V J Kramer1,2, S Miles-Richardson, S Pierres1 and J P Giese1. 1Fisheries and Wildlife Department, Institute for Environmental Toxicology, Pesticide Research Center, Michigan State University, East Lansing, MI and 2Toxicology Department, Rohm and Haas Company, Spring House, PA. Sponsor: K H Reinert.

#59
DEVELOPMENT OF A UTEROTROPIC RESPONSE ASSAY FOR THE ASSESSMENT OF ESTROGENIC ACTIVITY AND REPRODUCTIVE SYSTEM TOXICITY OF DERMALLY APPLIED INDUSTRIAL CHEMICALS AND ENVIRONMENTAL POLLUTANTS. G L DeGeorge, J M Mitchell, T Newcomb, G Newcomb, L Kieffer and D R Cerven. MB Research Laboratories, Spencer, PA.

#60
AN ESTUARINE FISH MODEL FOR ASSESSING THRESHOLD ESTROGENIC EFFECTS. E Zillieux1, I Johnson2, Y Kiparisovs1, J Wheat3 and S Ward4. 1Florida Power & Light Company, Juno Beach, FL; 2KBN-Golder Associates, Gainesville, FL; 3Trent University, Peterborough, ON, Canada and 4Toxikon Environmental Sciences, Jupiter, FL. Sponsor: S Roberts.

#61
FREE (UNBOUND) FRACTION OF XENOESTROGENS IN HUMAN SERUM. S C Nagel, F S vom Saal and W V Welbourn. 1Division of Biological Sciences, University of Missouri, Columbia, MO and 2Department of Veterinary Biomedical Sciences, University of Missouri, Columbia, MO. Sponsor: C Reddy.

#62
PLASMA SEX HORMONE-BINDING GLOBULIN: A POTENTIAL RESERVOIR FOR HYDROXY-POLYCHLORINATED DIPHENYLS. H H Jury, T Zacharewski and G L Hammond. Departments of Pharmacology & Toxicology, Oncology and Obstetrics & Gynecology, MRC Group in Fetal and Neonatal Health & Development, The University of Western Ontario, London, ON, Canada.
MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
NEUROTOXICITY: PATHOLOGY, PERIPHERAL, IN VIVO

Chairpersons: Prasada Kodavanti, U.S. EPA, Research Triangle Park, NC and Ellen Lehning, Montefiore Medical Center, Bronx, NY

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 9:30 a.m. - 10:45 a.m.

#63 IMPROVING STATISTICAL AND MECHANISTIC MODELS FOR THE YEAST-BASED STEROID HORMONE RECEPTOR GENE TRANSCRIPTION ASSAY. D Babai, P M Schlosser1, C J Porter2 and K W Gaido.1 Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 2National Institute of Environmental Health Sciences, Research Triangle Park, NC.

#64 A MATHEMATICAL MODEL OF GONADOTROPIN REGULATION DURING THE MENSTRUAL CYCLE IN WOMEN. P M Schlosser1 and J F Selgrade2. Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 2Department of Mathematics, North Carolina State University, Raleigh, NC.


#71 A MORPHOMETRIC ANALYSIS OF THE CEREBELLUM FOLLOWING GESTATIONAL METHYLMERCURY (MeHg) EXPOSURE. C B Flaugher, V P Markowski, R Rawleigh, B Weiss and R B Bagge. Departments of Environmental Medicine and Pathology and Laboratory Animal Medicine, University of Rochester, Rochester, NY.


#73 A VULNERABLE PERIOD TO THE TOXIC EFFECTS OF COLCHICINE DURING OPTIC NERVE REGENERATION IS ASSOCIATED WITH INHIBITION OF TUBULIN SYNTHESIS. J Dybowska and B W Agronoff. Neuroscience Laboratory, University of Michigan, Ann Arbor, MI.

#74 LACK OF CLINICAL OR NEUROPHYSIOLOGICAL CHANGES IN MIPAFAX EXPOSED MATURE LONG-EVANS RATS. P J Spencer1, J L Mattson2, F M McCorkle2 and K M Ken2.1 Dow Chemical Company, Health and Environmental Sciences, Midland, MI and 2Central Michigan University, Mt Pleasant, MI.

#75 NEUROTOXICITY OF TS-O01 IN THE CEREBELLAR CORTEX OF RATS. G Tanaka1 and R Okeda2.1 Taibo Pharmaceutical Co. Ltd., Tokyo, Japan and 2Tokyo Medical and Dental University, Tokyo, Japan. Sponsor: M I Luster.

#76 NEUROTOXICITY PRODUCED BY BREFLATE (NSC-456202), A BREFELDIN A PRODRUG, IN BEAGLE DOGS. A C Smith1, L E Reddard2, M Butt1, S Simpson1, J Steiss3, T L Daw3, L R Phillips1, S F Stinson4, D R Farnell5, J F Tomaszewski6 and J G Page7.1 National Cancer Institute, Bethesda, MD; 2Southern Research Institute, Birmingham, AL; 3Pai, Frederick, MD; 4Auburn University, Auburn, AL; 5SAIC, Frederick, MD.

#77 SUBCHRONIC CYANIDE TOXICITY IS ASSOCIATED WITH REGIO-SPECIFIC APOTOPSIS AND NECROSIS IN THE MOUSE BRAIN. E M Mills, P G Gunaseker and G E Isom. Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University, West Lafayette, IN. Sponsor: G E Isom.


#79 3-NITROPROPIONIC ACID (3-NPA) PRODUCES HYPOTERMIA AND INHIBITS HISTOCHEMICAL LABELING OF SUCINATE DEHYDROGENASE (SDH) IN RAT BRAIN. A C Scalliet, P Neary, R L Ronnrete, X Ye and Z Bienia. Division of Neurotoxicology, NCTR/FTD, Jefferson, AR.

#80 ELEVATION OF GLIAL FIBRILLARY ACIDIC PROTEIN IN THE RAT CNS: 13-WEEK TOLUENE AND TRICHLOROETHYLENE ORAL EXPOSURE STUDIES. C S Milet1, P N Sun1, M Holloman2, E Eronenje1 and M M Mantten1. 1MCTR, Texas Southern University, College of Pharmacy and Health Sciences, Houston, TX and 2Division of Toxicology, ATSDR, Atlanta, GA.
THE MAP KINASE CASCADE IS ACTIVATED PRIOR TO THE INDUCTION OF GLOSIS IN THE 1-METHYL-4-PHENYL-1,2,3,6-TETRAHYDROPYRIDINE (MPTP) MODEL OF NEURONAL DAMAGE. J E P O Callaghan, C W Qualls Jr., G Reddy, J M Martin, 1NHEERL, US EPA, Research Triangle Park, NC and 2University of North Carolina, Chapel Hill, NC.

THE ROLE OF NITRIC OXIDE AND THIAMINE AGONISTS AND ANTAGONISTS IN THE NEUROTOXICITY OF 1,3,5-TRINITROBENZENE (TNB), E L Stair, C W Qualls Jr., G Reddy and S Kim. Department of Anatomy, Pathology and Pharmacology, College of Veterinary Medicine, Oklahoma State University, Stillwater, OK and 1US Army Center for Health Promotion and Preventive Medicine, Aberdeen Proving Ground, MD.

INCREASING AGE DECREASES SUBCELLULAR LEVELS OF FATTY ACID BINDING PROTEINS (FABPS) IN MOUSE BRAIN. L Pu, U Igbavboa, W G Wood, J B Roth, A B Kier, F Spencer and F Schroeder. Department of Veterinary Physiology & Pharmacology, Texas A&M University, College Station, TX. Sponsor: K S Ramos.

1,3-DINITROBENZENE CAUSES CHANGES IN MITOCHONDRIAL OXIDATIVE PHOSPHORYLATION ENZYME ACTIVITIES. R L F Lightle, M J Beck and M A Philbert. University of Michigan School of Public Health, Ann Arbor, MI.

DISTRIBUTION AND INDUCTION OF CYTOCHROME P450 1A1 (CYP1A1) IN RAT BRAIN. D C Morse, A P Stein, P E Thomas and H F Lowndes. 1Department of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ and 2Laboratory for Cancer Research; Rutgers University, Piscataway, NJ.

EFFECTS OF METHAMPHETAMINE ON BLOOD AND LIVER S-ADENOSYL METHIONINE (SAM) IN MICE. C A Cooney, C K Wise, L A Pointer and S F Alli. 1Division of Nutritional Toxicology, National Center for Toxicological Research, Jefferson, AR and 2Division of Neurotoxicology, National Center for Toxicological Research, Jefferson, AR.

REGIONAL DISTRIBUTION OF 2,2', 4,4',5,5'- AND 3,3',4,4',5,5'-HEXACHLOROBIPHENYLS IN PUPERTUAL RAT BRAINS. L G Hansen, S A Sugihara, K R Holmes and P R Kodavanti. 1College of Veterinary Medicine, University of Illinois, Urbana, IL; 2Center for Environmental Toxicology and Colorado State University, Fort Collins, CO and 3Neurotoxicology Division, NHEERL/USEPA, Research Triangle Park, NC.

ENTRY OF ALUMINUM INTO THE CNS FROM INHALED SOLUBLE PARTICLES IN F344 RATS. J L Lewis, D A Kracko and E B Barr. Inhalation Toxicology Research Institute, Albuquerque, NM.

ENTRY OF INHALED XYLENE AND ITS METABOLITES INTO THE OLFATORY BULB OF FISCHER 344 RATS. K H Pyloros, A Dahl and J L Lewis. 1Inhalation Toxicology Research Institute, Albuquerque, NM and 2Department of Epidemiology and Cancer Control, University of New Mexico, Albuquerque, NM.

REGIONAL DISTRIBUTION OF METALLOTHIONEIN, ZINC, AND COPPER IN MOUSE BRAIN. S Ozo, J Komatpiatkow and M C Chorian. Department of Pathology, University of Western Ontario, London, ON, Canada.

AUTOANTIBODIES TO NERVOUS SYSTEM PROTEINS IN INDUSTRIAL POPULATIONS: GENDER DIFFERENCES. M Y Shamy, R M El-Gazzar, A Abdel Monem and H A El-Fawal. 1High Institute of Public Health University of Alexandria, Alexandria, Egypt; 2Institute of Environmental Medicine, New York University Medical Center, New York, NY and 3Mercy College, Dobbs Ferry, NY.

ELISAs FOR AUTOANTIBODIES TO NERVOUS SYSTEM PROTEINS: RELIABILITY AND SOURCES OF VARIABILITY. H A El-Fawal, E Frechener and M Y Shamy. 1Institute of Environmental Medicine, New York University Medical Center, Tuxedo, NY; 2Mercy College, Dobbs Ferry, NY and 3High Institute of Public Health, University of Alexandria, Egypt.

MODULATION OF PARATHION INDUCED NEUROTOXICITY BY GLUCOSE FEEDING. K Olivier, Jr., J Liu, P Harp, J Bounds, D Roome and C Pope. Divisions of Molecular Pharmacology and Toxicology, College of Pharmacy and Health Sciences, Northeast Louisiana University, Monroe, LA.


DEDIC PARALLELS CS TOXICITY BY MEDIATING THE COVALENT CROSS-LINKING OF PROTEINS AND THE ACCUMULATION OF NEUROFILAMENTS IN CENTRAL AND PERIPHERAL AXONS. D J Johnson, D G Graham, V A Arrma and J H Valentine, W M Valentine. 1Duke University Department of Pharmacology, Durham, NC and 2Vanderbilt University Department of Pathology, Nashville, TN.


NEUROPATHOLOGIC EFFECTS OF PHENYL-METHYL-SULFONYL FLUORIDE (PMSF)-INDUCED PROMOTION AND PROTECTION IN ORGANOPHOSPHORUS ESTER-INDUCED DELAYS NEUROTOXICITY (OPIDN) IN HENS. C Massicotte, K Dyer, M Ehrick and B S Jernor. Laboratory for Neurotoxicity Studies, Virginia Polytechnic Institute, Blacksburg, VA.

COMPARISON OF ORAL AND INTRAPERITONEAL ADMINISTRATION OF ACRYLAMIDE QUALITATIVE NEUROPATHOLOGY. K Dyer, E Lehman, B S Jernor and R LoPachin. Laboratory for Neurotoxicity Studies, Virginia Polytechnic Institute, Blacksburg, VA and 2Department of Anesthesiology, Montefiore Medical Center, Bronx, NY.
MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
P450 I — HUMAN

Chairpersons: Carol Green, SRI International, Menlo Park, CA and William Nichols, University of Utah, Salt Lake City, UT

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 10:45 a.m. - 12:00 p.m.

#108

#109
BACULOVIRUS MEDIATED EXPRESSION, PURIFICATION AND CATALYTIC ACTIVITY OF HUMAN CYP2A6. S J Thompson, L L Koemig, M B Fisher, D H Stone, D L Eaton and A E Rettie. Department of Medicinal Chemistry, University of Washington, Seattle, WA. and Department of Environmental Health, University of Washington, Seattle, WA.

#110
REGIONAL AND CELL SPECIFIC EXPRESSION OF CYTOCHROME P450 I A1 (CYP1 A1) IN HUMAN PLACENTA. B F Sleazak, J Fisher, M Alashari, J Schlezinger, J J Stegeman and J R Olson. Department of Pharmacology and Toxicology, SUNY, Buffalo, NY. and Department of Pathology, Children’s Hospital of Buffalo, Buffalo, NY and Biology Department, Woods Hole Oceanographic Institute, Woods Hole, MA.

#111
INDUCTION OF CYTOCHROME P450 I A1 (CYP1 A1) IN HUMAN PLACENTA WITH CIGARETTE SMOKING: EFFECT OF EXON-7 AND MSP1 POLYMORPHISM. Y F Deng, B F Sleazak, A T Drahushuk, J J Stegeman and J R Olson. Department of Pharmacology and Toxicology, SUNY, Buffalo, NY. and Biology Department, Woods Hole Oceanographic Institute, Woods Hole, MA.

#112

#113

#114
THE CYP1 A1 GENETIC POLYMORPHISMS AND RELATED METABOLIC ACTIVITIES IN HUMAN LUNGS. G B J Smith, S L Ali, A A Conlan, K Reid, D Peiskias, D A Bell and T E Massey. Departments of Pharmacology and Toxicology, Queens University, Kingston, ON, Canada; Department of Surgery, Queens University, Kingston, ON, Canada; Department of Medicine, Queens University, Kingston, ON, Canada and NIEHS-NIH, Research Triangle Park, NC.
#115 CYTOCHROME P450 CATALYZED OXIDATION OF HYDROQUINONE IN RODENT AND HUMAN MUCROSOMES. S S Law1, A F Sawalha1, J R Halpern1, D R Koop1 and T J Monks1. 1Division of Pharmacology and Toxicology, University of Texas, Austin, TX; 2Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ and 3Department of Pharmacology, Oregon Health Sciences University, Portland, OR.

#116 (R)-PULEGONE AND (R)-MENTHOFURAN METABOLISM BY CYTOCHROME P450 IN HUMAN LIVER. S C Khoeasteh-Bakht, K L Kunze and S D Nelson. Department of Medicinal Chemistry, University of Washington, Seattle, WA.

#117 MODULATION OF AROMATASE (CYP 19) ACTIVITY IN HUMAN CHORIOCARCINOMA JEG-3 CELLS BY SOME DIOXIN-LIKE CONTAMINANTS. H J Drent, C A Boorwman, W Scicca and M Van Den Berg. Research Institute of Toxicology, Utrecht University, The Netherlands.

#118 INDUCTION OF ESTRADIOL-2-HYDROXYLASE ACTIVITY IN MCF-7 HUMAN BREAST CANCER CELLS BY PESTICIDES AND CARCINOGENS. A McDougal, C Wilson and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

#119 THE ESTROGEN RECEPTOR DOES NOT DIRECTLY MODULATE INDUCTION OF CYPIA1 OR CYPIB1 EXPRESSION IN TWO HUMAN BREAST EPITHELIAL CELL LINES. W G R Angus, M Larsen and C R Jefcoate. Department of Pharmacology and Environmental Toxicology Center, University of Wisconsin, Madison, WI.

#120 CYPIB1 REPRESENTS THE MAJOR P450 RESPONSIVE CYTOCHROME CONSTITUTIVELY EXPRESSED IN NORMAL PRIMARY HMEC. M Larsen, W G R Angus, P Brake, S Etтом and C R Jefcoate. Department of Pharmacology and the Environmental Toxicology Center, University of Wisconsin, Madison, WI.

#121 CATALYTIC CHARACTERISTICS OF CYP3A4: REQUIREMENT FOR A PHENOLIC FUNCTION IN ORTHO- HYDROXYLATION OF ESTRADIOL (E2) AND MONO-O-DEMETHYLATED METHOXY-CHLOR (MONO-OH-M). D M Streser and D Kupfer. Worcester Foundation for Biomedical Research, Shrewsbury, MA.

#122 DIFFERENTIAL INDUCTION OF CYPIA1 AND CYPIB1 BY TCD2 IN HUMAN BREAST EPITHELIAL CELLS AND BREAST TUMOR CELLS. D C Spinke1, B C Spinke1, J O Cao1, J A DePasquale1, B T Pentecost1, Y Li1 and T R Sutter1. 1Wadsworth Center, New York State Department of Health, Albany, NY and 2Division of Toxicological Sciences, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD.

#123 CLONING AND CHARACTERIZATION OF A HUMAN NASAL cDNA RELATED TO OLFACTORY-SPECIFIC CYP2G1. J Sheng, Z Hua and X Ding. Wadsworth Center, New York State Department of Health, Albany, NY.

#124 ANTAGONISM OF ARYL HYDROCARBON RECEPTOR (AHR) FUNCTION BY PD 098059, J J Reiners, Jr., R E Clift, J Y Lee and C J Elferink. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

#125 QUANTITATIVE RT-PCR MEASUREMENT OF CYTOCHROME P450 2A6 AND 2E1 GENE EXPRESSION IN HUMAN BRONCHIAL EPITHELIAL CELLS. J C Willey, E L Coy, M J Ucell and M W Frampton. Department of Medicine, Medical College of Ohio, Toledo, OH.

#126 INTRA-INDIVIDUAL VARIATION OF CYTOCHROME P450 FORMS IN HUMAN HEPATIC MICROSOemes: CORRELATION OF INDIVIDUAL FORMS WITH XENOBIOtic METABOLISM. J E Snawder2 and J C Liposch2. National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Cincinnati, OH and 3USAF, Armstrong Laboratory, Toxicology Division, Wright-Patterson AFB, OH.

#127 INDUCTION OF CYPIA2A6 AND CYPIA3 MRNA IN CULTURED HUMAN HEPATOCYTES BY RIFAMPIN: MEASUREMENT WITH QUANTITATIVE RT-PCR. W B Matte1 and A P Li1. Experimental Toxicology, Ciba Pharmaceuticals, Summit, NJ and 1In Vitro Technologies, Baltimore, MD.


#129 BIOACTIVATION OF 3-METHYLNITROBENZYL BY HUMAN CYTOCHROME P450 ENZYMES EXPRESSED IN HUMAN LUNG CELLS. K W Skordas, W K Nichols, A M Pfeifer and G S Yost. Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT and Nestle Research Center, Lusanne, Switzerland.

#130 DEHYDROGENATION OF 3-METHYLNITROBENZYL BY CYPIF2 EXPRESSED IN HUMAN LYMHOBLASTOID CELLS. D L Lanza1, C L Crespi1 and G S Yost1. 1Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT and 2Gentest Corporation, Woburn, MA.

#131 BIOACTIVATION OF DDD BY HUMAN CYTOCHROME P450 ENZYMES EXPRESSED IN HUMAN LUNG CELLS. M W Judd1, W K Nichols1, A M Pfeifer1 and G S Yost. 1Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT and 2Nestle Research Ctr., Lusanne, Switzerland.

#132 COEXPRESSION OF CYPIA1 AND CYPIF2 IN HUMAN LIVER SLICES. M W Judd, T D Porter. College of Pharmacy and Graduate Center for Toxicology, University of Kentucky, Lexington. KY: Sponsor: M Hore.

#134 MODULATION OF CYTOCHROME P-450 (CYP) 1A1 AND 1A2 BY OMEPRAZOLE (OME) AND TCD2 IN DYNAMIC ORGAN CULTURE OF PRECISION-CUT HUMAN LIVER SLICES. J R Olson, A M Drahushak, B P McGarrigle and M D Alois. 'Department of Pharmacology and Toxicology, SUNY, Buffalo, NY and 2Drug Safety Evaluation, Pfizer, Inc., Groton, CT.
MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
DISPOSITION/PHARMACOKINETICS I

Chairpersons: Karla Thrall, Battelle Pacific Northwest Laboratories, Richland, WA and Kelly Dix, RTI, Research Triangle Park, NC

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 9:30 a.m. - 10:45 a.m.

#135
AN EQUILIBRIUM DISTRIBUTION (EQIDS) MODEL FOR PREDICTING BLOOD CONCENTRATIONS OF VOLATILE ORGANIC CHEMICALS (VOCs) IN HUMANS. C Milot and K Krishnan. Dép. méd. trav. hyg. mil., Université de Montréal, Montréal, QC, Canada.

#136

#137
PBPK MODELING OF SHORT-TERM INHALATION OF HALOGENATED HYDROCARBONS. A Vinegar and G W Jepson. ManTech Environmental Technology Inc. and Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH. Sponsor: D E Dodd.

#138
CONTRIBUTION OF TISSUES CLEARANCE TO TOTAL BODY CLEARANCE. K B Bischoff1, X Wang2 and G N Larn3. 1University of Delaware, Newark, DE; 2Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and 3CoCensys Inc, Irvine, CA. Sponsor: M J Santostefano.

#139

#140
PREDICTING TISSUE: BLOOD (t:b) PARTITION COEFFICIENTS (Pcs) OF HIGHLY LIPOPHILIC ORGANIC CHEMICALS SOLELY FROM TISSUE AND BLOOD LIPID LEVELS. K Krishnan, S Haddad and P Poulin. Université de Montréal, QC, Canada.

#141
MOLECULAR STRUCTURE BASED MODELING OF THE PHARMACOKINETICS OF HIGHLY METABOLIZED CHEMICALS (HMCs). P Poulin and K Krishnan. Université de Montréal, Montréal, QC, Canada.

#142
IN VITRO METABOLISM AND PHYSIOLOGICAL PHARMACOKINETICS OF PYRENE IN THE RAT. S Haddad1, J Withey2, F Law3, R Tardif2 and K Krishnan1. 1Department méd. trav. hyg. milieu, Université de Montréal, Montréal, QC, Canada; 2Health Canada, Ottawa, ON, Canada and 3Simon Fraser University, Burnaby, BC, Canada.

#143
PHYSIOLOGICAL PHARMACOKINETICS OF INTRAVENOUSLY-ADMINISTERED BENZO (A)PYRENE (BP) IN THE RAT. D Moell1, A Viau1, I Chu2, F C Law2 and K Krishnan1. 1Bureau of Chemical Hazards, Health Canada, Ottawa, Canada; 2Simon Fraser University, Burnaby, BC, Canada and 1Université de Montréal, Montréal, QC, Canada.

#144
A PBPK MODEL FOR PENTACHLOROBENZENE DISPOSITION IN MALE F344 RATS UNDERLYING ITO'S MEDIUM TERM LIVER CARCINOGENICITY BIOASSAY. R S Tang, S A Sugihir and R S Thomas. Center for Environmental Toxicology and Technology, Department for Environmental Health, Colorado State University, Fort Collins, CO.

#145
PRELIMINARY STUDIES OF PHYSIOLOGICALLY BASED PHARMACOKINETIC (PBPK) MODELING OF AZT IN HUMANS AND MICE. J R Morrison1, D L Gustafson1, J De Jongh2 and R S H Tang1. 1Center for Environmental Toxicology & Technology, Department for Environmental Health, Colorado State University, Fort Collins, CO and 2RITOX, Utrecht University, The Netherlands.

#146

#147
PHARMACOKINETICS, METABOLISM, AND DEVELOPMENT OF A PBPK MODEL OF BENZOCAINE IN CHANNEL CATFISH. K J Clarke1, D L Hayton1, W H Gingerich and G R Stehly2. 1Division of Pharmaceutics and Pharmaceutical Chemistry, College of Pharmacy, The Ohio State University, Columbus, OH and 2US Geological Service, Biological Resources Division, La Crosse, WI.

#148
DEVELOPMENT OF A PBPK MODEL FOR ISO-PROPYL BENZENE (CUMENE) IN RATS AND HUMANS. H J Clewell, III1, L L Haber2 and J M Gearhart1. 1KS Crump Division, ICF Kaiser Engineers, Inc., Ruston, LA and 2ICF Inc., Fairfax, VA.

#149
PHARMACOKINETICS OF SELECTED POLYCHLORINATED BIPHENYLS (PCBs) FOLLOWING DERMAL ADMINISTRATION. C E Garner and H B Matthews. NIEHS, Research Triangle Park, NC.

#150
APPLYING NICOTINE PHARMACOKINETIC MODELING TO ASSESS THE SUITABILITY OF USING PLASMA NICOTINE AND COTININE AS QUANTITATIVE BIOMARKERS FOR ETS EXPOSURE. K M Chung and J D deBathory. R.J. Reynolds Tobacco Company, Winston-Salem, NC.

#151
TOXICOKINETICS OF DDT: EFFECTS OF TWO GAVAGE DOSING VEHICLES ON THE UPTAKE OF pp'DDE. L You, M Casanova and H d'A Heck. CIIT, Research Triangle Park, NC.

#152

#153

#154
A TISSUE COMPOSITION-BASED PHYSIOLOGICALLY BASED PHARMACOKINETIC MODEL FOR ALDICARB (ALD) IN THE RAT. M Pelekis and K Krishnan. Dép. méd. trav. hyg. mil., Université de Montréal, Montréal, QC, Canada.
#155 A PHYSIOLOGICALLY-BASED PHARMACOKINETIC MODEL FOR DDT AND ITS METABOLITES. E. Gazi and R B Conolly. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#156 A PHYSIOLOGICALLY BASED PHARMACOKINETIC MODEL OF DI-(2-ETHYLHEXYL) PHTHALATE AND MONO-(2-ETHYLHEXYL) PHTHALATE IN ADULT AND JUVENILE MALE RATS. D A Keys2 and R B Conolly1. 1Biometrics Graduate Program, North Carolina State University, Raleigh, NC and 2Chemical Industry Institute of Toxicology, Research Triangle Park, NC.


#158 DEVELOPMENT OF A PHYSIOLOGICALLY BASED DOSIMETRY DESCRIPTION FOR ACRYLONITRILE (ACN) IN HUMANS. G E Kedders. CIIT, Research Triangle Park, NC.

#159 EXTRAPOLATION OF A PREVIOUS PBPK MODEL FOR TCDD ACROSS DOSES, ROUTES OF EXPOSURE AND GENDERS IN SPRAGUE-DAWLEY RATS. X Wang1, M J Santostefano1 and L S Birnbaum1. 1Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and 2US EPA, NHEERL, Research Triangle Park, NC.


#161 EVALUATING PHARMACOKINETICS AND PHARMACODYNAMICS FOR NONCANCER EFFECTS FROM TRICHLOROETHYLENE (TCE). T Covington1,2, H A Barton1 and H J Clewell, III1. 1ICF Kaiser, Ruston, LA and 2ICF Kaiser, Research Triangle Park, NC.

#162 A PHYSIOLOGICALLY-BASED PHARMACOKINETIC MODEL FOR INHALED TRICHLOROETHYLENE AND ITS MAJOR METABOLITES IN B6C3F1 MICE. M S Greenberg2, R A Abbas1 and J W Fisher1. 1Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; 2ManTech Environmental Technology, Inc., Dayton, OH and GEO-CENTERS, Inc., Wright-Patterson Air Force Base, OH.

#163 A PHYSIOLOGICALLY BASED PHARMACOKINETIC MODEL FOR INHALATION OF TRICHLOROETHYLENE IN HUMAN VOLUNTEERS. J W Fisher1, J D Pleas1, K L MacMahon1 and R R Abbas1. 1Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; 2National Exposure Research Laboratory, US EPA, Research Triangle Park, NC and 3GEO-Centers, Wright-Patterson Air Force Base, OH.

#164 DETERMINATION OF KINETIC RATE CONSTANTS FOR CHLORAL HYDRATE, TRICHLOROETHANOL, TRICHLOROACETIC ACID AND DICHLOROACETIC ACID — A PHYSIOLOGICALLY BASED MODELING APPROACH. R Abbas1, C S Scek1, K L MacMahon1 and J W Fisher1. 1Geo-Centers, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; 2ManTech Environmental Technology, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; and 3Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

#165 PROTEIN BINDING OF "CITRICHLOORACETATE IN FISCHER 344 RATS. D A Mahle1, J M Frazier1 and K O Yu2. 1ManTech Environmental Technology, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH and 2Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

#166 SPECIFIC AND NON-SPECIFIC BINDING OF "CITRICHLOORACETIC ACID TO SERUM ALBUMIN. J M Frazier and C Toxopeus. 1Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH and 2Wright State University, Dayton, OH.

#167 KINETICS OF BILIARY EXCRETION OF TRICHLOROACETIC ACID AND BROMOSULFAPHTHALEIN BY THE ISOLATED PERFUSED RAT LIVER. C Toxopeus1 and J M Frazier2. 1Wright State University, Dayton, OH and 2Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

#168 SPECIES DIFFERENCES IN THE TOXICOGENETICS OF DICHLOROACETATE AND TRICHLOROACETATE IN F344 RATS AND B6C3F1 MICE AFTER PROLONGED ADMINISTRATION IN DRINKING WATER. A Gonzalez-Leon1, R R Schultz1 and R J Bull2. 1Pharmacology/Toxicology Graduate Program Washington State University, Pullman, WA and 2Battelle, PNNL, Richland, WA.

#169 INTERSPECIES DIFFERENCES IN THE TOXICOGENETICS AND METABOLISM OF BROMODICHLOORACETATE IN F344 RATS AND B6C3F1 MICE. R R Schultz1, C Yu1, A Gonzalez-Leon1 and R J Bull2. 1Battelle PNNL, Richland, WA and 2PharmTox Program, Washington State University, Pullman, WA.

#170 RANDOM NOISE EFFECTS ON THE ABILITY TO MEASURE METABOLIC RATE USING A PHYSIOLOGICALLY BASED PHARMACOKINETIC (PBPK) MODEL FOR CARBON TETRACHLORIDE (CCl4) IN RATS. C R Eklund and M V Evans. US EPA/NHEERL, Research Triangle Park, NC.

#171 SENSITIVITY ANALYSIS OF A MULTI-ROUTE PHYSIOLOGICALLY-BASED PHARMACOKINETIC (PBPK) MODEL FOR CARBON TETRACHLORIDE (CCl4). J E Simmons1, T Limskakan1, M E Andersen1, J V Brucher1 and M V Evans1. 1NHEERL, US EPA, Research Triangle Park, NC; 2University of Georgia, Athens, GA and 3ICF Kaiser, Research Triangle Park, NC.

#172 A NEW APPROACH TO ESTIMATE POPULATION VARIABILITY IN TARGET DOSE BASED ON GENETIC POLYMORPHISM DATA AND PBTK MODELLING. F Jonsson1, G Johanson2 and F Bois1. 1National Institute for Working Life, Solna, Sweden; 2Department of Occupational and Environmental Medicine, Uppsala University Hospital, Sweden and 3Lawrence Berkeley Laboratory, Berkeley, CA.

#173 ESTIMATING THE UNCERTAINTY IN DOSE USING MESSERS AND TOXIM. C Smithies1, E Lee1, D B Menzel1, M Fukuda1, L Bic1, M B Dillencourt1 and R Friis1. 1Department of Community and Environmental Medicine, University of California, Irvine, CA; 2Department of Information and Computer Sciences, University of California, Irvine, CA; and 3California State University, Long Beach, CA.
MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
METAL TOXICITY: CELLULAR AND MOLECULAR MECHANISMS

Chairpersons: Mark Blazka, Colgate-Palmolive Co., Piscataway, NJ and Eric Spokas, UMDNJ, Newark, NJ

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 10:45 a.m. - 12:00 p.m.

#174
LACK OF IN VITRO ARSENITE AND MONOMETHYLARSONIC ACID METHYLTRANSFERASE ACTIVITY IN THE CHIMPANZEE AND SQUIRREL MONKEY. E K Wildfang1,2, R A Zakhraysan1 and H V Apostoli1.1 Center for Toxicology, 2Department of Pharmacology and Toxicology; and 3Department of Molecular and Cellular Biology, University of Arizona, Tucson, AZ.

#175
ORGANOTYPIC CULTURE OF HUMAN SKIN EQUIVALENTS ACCURATELY MODELS THE DERMATOPathology OF HUMAN ARSENICISM. W T Klimecki, R E Egbert, A H Borchers, D E Carter and G T Bowden. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

#176
INFLUENCE OF DIETARY.Selenium ON THE DISPOSITION OF ARSENATE IN THE FEMALE B6C3F1, MOUSE. E M Kenyon1, M F Hughes1, C T Mitchell1, B C Edwards1 and O A Levander1.1 US EPA, NHEERL, Research Triangle Park, NC and 2USDA, HNRRI, Beltsville, MD.

#177
KINETIC BEHAVIOR OF ARSENIC (As) IN ARSENATE (As5)-TREATED RABBIT ERYTHROCYTES. D J Thomas, M Styblo1 and K M Herbin-Davis1.1 NHEERL, US EPA, Research Triangle Park, NC and 2University of North Carolina, Chapel Hill, NC.

#178
NAPDH-OXIDASE-INDEPENDENT SUPEROXIDE ANION GENERATION IN HUMAN NEUTROPHILS ON EXPOSURE TO BERYLLIUM. B L Marrone, P K Narayanan and B E Lehnert. Life Sciences Division, Los Alamos National Laboratory, Los Alamos, NM.

#179
CADMIUM AND CHROMIUM INDUCED OXIDATIVE STRESS AND APOPTOTIC CELL DEATH IN CULTURED HUMAN CHRONIC MYELOGENOUS LEUKEMIC K562 CELLS. D Bagchi2, S S Joshi2, C Kuszynski1, M Bagchi1 and S J Stoik3.1 Creighton University School of Pharmacy & Allied Health Professions, Omaha, NE and 2University of Nebraska Medical Center, Omaha, NE.

#180
CADMIUM INDUCED HEPATOTOXICITY AND NEPHROTOXICITY ARE DUE TO OXIDATIVE DAMAGE. A Vu, K Zaman and Z A Shaikh. Department of Biomedical Sciences, University of Rhode Island, Kingston, RI.

#181

#182
CADMIUM DECREASES ALKALINE PHOSPHATASE (ALP) ACTIVITY IN RAT OSTEOSARCOMA (ROS 17/2.8) CELLS: A POSSIBLE ROLE OF PROTEIN KINASE C (PKC). G J Long. Olivet Nazarene University, Kankakee, IL.

#183
CADMIUM AND SMOOTH MUSCLE CELL SIGNALING. Z Wang and D M Templeton. Clinical Biochemistry, University of Toronto, Toronto, ON, Canada.

#184
INTERACTION OF CADMIUM WITH PEPTIDE B, A CALCIUM-BINDING POLYPEPTIDE ANALOG OF E-CADHERIN. W C Prozialek, J C Castellano and P C Lamar. Midwestern University, Downers Grove, IL.

#185
COMPARISON OF THE CYTOTOXIC EFFECTS OF CADMIUM IN HIGH AND LOW RESISTANCE STRAINS OF MDCK CELLS. G F Busse, P C Lamar and W C Prozialek. Midwestern University, Downers Grove, IL.

#186
CONTRASTING THE CYTOTOXIC MECHANISMS OF COPPER AND IRON WITH ISOLATED HEPATOCYTES. Y L Quah, S Khan and P J O'Brien. Faculty of Pharmacy, University of Toronto, ON, Canada. Sponsor: D M Templeton.

#187
CHANGES IN THE UPTAKE OF LEAD OVER WEANING IN INFANT RHESUS MONKEYS. M L Luck1, D R Smith1 and N K Laughlin1.1 University of Wisconsin-Madison, Madison, WI and 2University of California-Santa Cruz, Santa Cruz, CA.

#188
ALTERATION BY LEAD (Pb) OF THYROXINE TRANSPORT AT BLOOD-CEREBROSPINAL FLUID (CSF) BARRIER. W Zheng1,2, Q Zhao1, W S Blaner1 and J H Graziano1.1 Department of Environmental Health Sciences, Columbia University, New York, NY; 2Department of Pharmacology, Columbia University, New York, NY and 3Department of Human Nutrition, Columbia University, New York, NY.

#189
CHANGES IN BRAIN Pb WITH EDTA CHELATION DETERMINED WITH A STABLE LEAD ISOTOPE TRACER AND ICP-MS. J Lasman, D Wooldard and D R Smith1.1 Biology and Environmental Toxicology, University of California, Santa Cruz, CA.

#190
THE EFFECT OF LEAD ON NEUROGENESIS AND CHOLINERGIC ENZYME ACTIVITY. S L Higginbotham, A Ndifor and R R Reams. College of Pharmacy and Pharmaceutical Sciences, Florida A&M University, Tallahassee, FL. Sponsor: M Koita.

#191
EFFECTS OF LEAD ON PROTEIN TYROSINE KINASE PHOSPHORYLATION IN VIVO. D Desai1 and P J S Vieg. Department of Neurology, University of Mississippi Medical Center Jackson, MS.

#192
ROLE OF PKC IN MEDIATING EFFECTS OF LEAD ON VITAMIN D-DEPENDENT PRODUCTION OF OSTEOCALCIN. P Guity and J G Pounds. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

#193
INHIBITION OF TYROSINE HYDROXYLASE ACTIVITY BY LEAD. G T Ramesh and A L Jadhav. Minority Center for Toxicological Research, College of Pharmacy & Health Sciences, Texas Southern University, Houston, TX.

#194
RABBIT RENAL ORNITHINE DECARBOXYLASE (ODC) ACTIVITY IS INHIBITED IN A DOSE-DEPENDENT MANNER AS BLOOD LEVELS OF LEAD INCREASE. R E Savage, Jr, H Zhu, W Moorman and J Snodderly. Experimental Toxicology Branch, Division of Biomedical and Behavioral Sciences, National Institute for Occupational Safety and Health, Cincinnati, OH.
FUMONISIN EXPOSURE, BOTH IN VITRO AND IN VIVO, INCREASES SPHINGANINE AND SPHINGOSINE IN PORCINE PHAGOCYTIC CELLS. L A Gumprecht, W M Haeckel, H M Parker, M E Tumbleson and G K Wollenberg. 1Department of Veterinary Pathobiology, University of Illinois, Urbana, IL and 2Department of Veterinary Biosciences, University of Illinois, Urbana, IL.

IN VIVO TOXICITY OF Fusarium moniliforme ISOLATES WHICH PRODUCE FUMONISINS B2 OR B3 BUT NOT FUMONISIN B1. K A Haas, R D Platter, R T Riley and W P Norred. 1Toxicology and Mycotoxin Research Unit, ARS/USDA, Athens, GA and 2National Center for Agricultural Utilization Research, ARS/USDA, Peoria, IL.

TOXICITY AND DEGRADATION OF AFLATOXIN B1 IN FIELD-CONTAMINATED CORN TREATED WITH ELECTROTACTICALLY GENERATED OZONE GAS. K S McKenzie, A J Denve, T D Rogers, L F Kubena, K Mayoral, M R Dwyer and T D Phillips. 1Faculty of Toxicology, College of Veterinary Medicine, Texas A&M University, College Station, TX; 2Lynntech, Inc., College Station, TX and 3USDA ARS/FAP, College Station, TX.

FUMONISIN DEGRADATION PRODUCTS TESTED FOR INHIBITION OF POLYADENYLATE PYRIMIDINE PHOSPHODIESTERASE IN VITRO. M E Tumbleson, W M Haeckel, T M Schmidt and R A Roeh. 1Department of Veterinary Pathobiology, University of Illinois, Urbana, IL, and 2Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
FOOD SAFETY

Chairpersons: Diane Gerken, Ohio State University, Columbus, OH and Roger Coulombe, Jr., Utah State University, Logan, UT

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 9:30 a.m. - 10:45 a.m.

FUMONISIN INDUCED MORPHOLOGIC ALTERATIONS IN PORCINE PULMONARY ENDOHELIAL (PE) CELLS IN VIVO DID NOT OCCUR IN VITRO. W M Haeckel, L A Gumprecht, T M Schmidt and R A Roeh. 1Department of Veterinary Pathobiology, University of Illinois, Urbana, IL, and 2Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.
EFFECTS OF SAMBUTOXIN ON RABBIT PLATELET AGGREGATION: (IN VITRO INHIBITION AND MECHANISM OF RABBIT PLATELET AGGREGATION BY SAMBUTOXIN). C M Hong, D D Chang, Y W Lee and M H Cho. College of Veterinary Medicine, Seoul National University, Korea; Center for Toxicological Research, KFDA and College of Agriculture and Life Science, Seoul National University, Korea.

SUPERINDUCTION OF IL-2 GENE EXPRESSION BY VOMITOIXIN (DEOXYNIVALENOL) IN MURINE EL-4 THYMOMA INVOLVES INCREASED mRNA STABILITY: S Li, Y L Ouyang and J J Peatak. Department of Food Science and Human Nutrition, Michigan State University, East Lansing, MI and Institute for Environmental Toxicology, Michigan State University, East Lansing, MI.


HUMAN HEALTH RISK ASSESSMENT OF MERCURY CONTAMINATED FISH IN LOUISIANA. M-Y Wei, D J Harrington, R S Sudweeks, A Thiyagarajah, W R Hartley, D M Dugas and M C Metcalf. Department of Environmental Health Sciences, Tulane University School of Public Health and Tropical Medicine, New Orleans, LA and Louisiana Office of Public Health, Section of Environmental Epidemiology and Toxicology, New Orleans, LA. Sponsor: W A Toscano, Jr.


MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
EYE TOXICITY

Chairpersons: Richard Parent, Cossaltox Ltd., Damariscotta, ME and Roger D. Curren, Microbiological Associates, Inc., Rockville, MD

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 10:45 a.m. - 12:00 p.m.


DEMONSTRATING THE OCULAR SAFETY OF AN EYE COSMETIC PRODUCT USING ALTERNATIVES TO ANIMAL EYE IRRITATION TESTS: A Ghassemi, R Osborne, K A Kohrman, M T Roddy, J W Harbells and B E Kanengiser. The Procter & Gamble Company, Hunt Valley, MD and Cincinnati, OH.

EPIDEMIOLOGICAL PREDICTION MODEL: A REPRODUCIBLE IN VITRO TISSUE CULTURE MEANS OF PREDICTING DRAIZE SCORES. J Kubilius, H Sennott, A Maki and M Klausner. MatTek Corporation, Ashland, MA.


CORNEAL ENDOTHELIAL CELL LINES AS IN VITRO ALTERNATIVE MODELS FOR EVALUATING THE OCULAR CYTOTOXICITY AND EFFICACY OF DRUG CANDIDATES: I. IMMORTALIZATION AND INITIAL CHARACTERIZATIONS. C Yoo, D Wampler, K Hal, D Crouch, R Hackett and J Velman. Department of Research Toxicology, Alcon Laboratories, Inc., Fort Worth, TX and Department of Electron Microscopy, Alcon Laboratories, Inc., Fort Worth, TX.


MECHANISMS OF CIGLITAZONE (CIG)-INDUCED CATARACTOGENESIS. M D Also and C Welsh Chang. Pfizer, Inc., Groton, CT.


OPHTHALMOLOGICAL FEATURE OF BUPHALMIA IN JAPANESE WHITE RABBITS AND PRACTICAL VALUE FOR ANIMAL MODEL. T Hosokawa, Y Sasaki, T Yokoyama, H Tanase and N Matsunuma. Laboratory Animal Science and Toxicology Laboratories, Sanky Co., Ltd., Tokyo and Shizuoka, Japan and Pharmacology and Molecular Biology Research Laboratories, Sanky Co., Ltd., Tokyo, Japan.
MONDAY MORNING, MARCH 10
9:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
CARDIOVASCULAR SYSTEM TOXICOLOGY

Chairpersons: Alan Combs, University of Texas, Austin, TX and Eldon Smith, Geo-Center, Inc., Wright Patterson AFB, OH

Displayed: 9:30 a.m. - 12:00 p.m.
Attended: 9:30 a.m. - 10:45 a.m.

#230 EFFECTS OF BLOOD LEAD LEVEL AND BONE LEAD CONCENTRATION ON MATERNAL BLOOD PRESSURE DURING PREGNANCY. S J Rothenberg, F A Khati, M Jauregui, M Manalo, R Cuellar, S Acosta, S Reyes, M Sanchez, and V de Cutiis. Department of Anesthesiology, Drew University of Medicine & Science, Los Angeles, CA.

#231 DNA SYNTHESIS DURING MITOTIC INHIBITION IN BOVINE PULMONARY VASCULAR ENDOTHELIAL CELLS EXPOSED TO MONOCROTALINE PYRROLE. P B Lappin, R E King and R A Nath. Departments of Pathology, Pharmacology/Toxicology and of Biochemistry, and Nat. Ctr. for Food Safety and Toxicology, Michigan State University, East Lansing, MI.

#232 ANTIMONY ATTENUATES MOBILIZATION OF CA2+ DURING EXCITATION AND CONTRACTION IN CULTURED CARDIAC MYOCYTES. H E Wey, D E Richards, P J Mathias, E Kreig and M Toranzo. CDC/NIOSH, Cincinnati, OH.

#233 INITIAL EXPERIENCE WITH THE INTEGRATED TELEMETRY SYSTEM (ITS) FOR CARDIOVASCULAR MONITORING IN DOGS. C A Branch, W J Keller, K A Gossett and W D Korns. Safety Pharmacology, SmithKline Beecham Pharmaceuticals, King of Prussia, PA.

#234 HISTOLOGIC LESIONS IN CATTLE FED TOXIC TALL FESCUE GRASS. J W Oliver and A E Schultz. The University of Tennessee College of Veterinary Medicine, Knoxville, TN.

#235 LOCALIZATION AND EXPRESSION OF HEME OXYGENASE GENE IN THE ISCHEMIC REPERFUSED HEART. N Maulik, Molecular Cardiology Laboratory, Dept of Surgery, University of Connecticut School of Medicine, Farmington, CT and Institute of Chemical Toxicology, Wayne State University, Detroit, MI. Sponsor: V E Kagan.

#236 GLUTATHIONE PEROXIDASE KNOCKOUT MICE ARE SUSCEPTIBLE TO ISCHEMIA REPERFUSION INJURY. T Yoshida, N Maulik, R M Engelman, Y-S Ho, J-L Magnenat and D K Das. University of Connecticut School of Medicine, Farmington, CT. Sponsor: V E Kagan.

#237 ALTERATIONS IN EXPRESSION OF ANTIOXIDANT ENZYMES IN THE HEART OF RATS FED COPPER DEFICIENT DIET. J M Alexander, J T Searl and Y J Kang. Departments of Medicine and Pharmacology and Toxicology, University of Louisville School of Medicine, Louisville, KY and US Department of Agriculture, Grand Forks Human Nutrition Research Center, Grand Forks, ND.

#238 EFFECT OF DIETARY ETHANOL ON THE ELECTROCARDIOGRAM IN MALE SPRAGUE-DAWLEY RATS. C Hezel and A B Combs. Dept. of Human Ecology and College of Pharmacy, University of Texas, Austin, TX.

#239 OXIDATIVE STRESS DEVELOPED DURING THE REPERFUSION OF ISCHEMIC MYOCARDIUM INDUCES APOPTOSIS AND DNA LADDERING. N Maulik, T Yoshida and D K Kas. University of Connecticut School of Medicine, Farmington, CT. Sponsor: V E Kagan.


#241 IN VIVO QUANTITATIVE IMAGING OF RAPID CHANGES IN LUNG PERFUSION BY 81Kr SCINTIGRAPHY FOR SAFETY PHARMACOLOGY STUDIES. L Routledge, M Virat, J Descoeur and A Le Page. Pharmakon Europe, L'Arbresle, France; INSERM U 40, Lyon, France and INSERM U 316, CNRS, Tours, France.

#242 CARDIAC SENSITIZATION MODEL DEVELOPMENT: MECHANICAL PARAMETERS. E A Smith, R Hamlin, G B Briggs and K R Still. Tri-Service Toxicology Consortium, Wright Patterson Air Force Base, OH.

#243 MECHANISMS OF GROWTH REGULATION IN THE A7R5 VASCULAR SMOOTH MUSCLE CELL LINE. M E Maris and L G Jones. Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences, Little Rock, AR. Sponsor: R G Schinkelmann.

MONDAY AFTERNOON, MARCH 10
12:00 p.m. - 1:15 p.m.
CCC: ROOMS 209/211-204/210

SPECIAL EVENT
MEDICAL RESEARCH COUNCIL (MRC)/PROCTOR & GAMBLE (P&G) LECTURE:
THE GENETIC AND BIOCHEMICAL UNDERPINNINGS OF CANCER

Lecturer: J. Michael Bishop, MD

This year's lecture is co-sponsored by the MRC and The Proctor & Gamble Company. The sponsorship of this lecture reflects the commitment of these two organizations to the application of basic understanding in the fields of genetics and molecular biology to improving the outcome of oncology. Dr. Bishop is a University Professor at the University of California, San Francisco and Director of the G.W. Hooper Research Foundation. He received the Nobel Prize with Dr. Harold Varmus in 1989 for their discovery of cellular genes that could become cancer genes.
Cancer is one of the great nemises of human health and one of the great intellectual challenges for biomedical science. It once seemed that we might never fully understand cancer, which takes so many forms and has so many causes. But now that has changed. We have reduced the elements of cancer to two sorts of genes: proto-oncogenes and tumor suppressor genes, which serve respectively as accelerators and brakes for the engines of the cell. Jam an accelerator or remove a brake, and the cell is unleashed towards relentless proliferation. With this formulation, we can now construct a remarkably detailed portrait of cancer cells: of how they arise, of why they prosper, and of what new might be done against them.

Virtually every human tumor that has been properly examined contains a combination of lesions in proto-oncogenes and tumor suppressor genes. These combinations appear to embody the multiplicity of steps required to produce a malignant tumor: each individual lesion adds insult to injury, the eventual sum being a malignant tumor. In some few instances, it has even been possible to lay out an approximate order in which these insults generally accumulate.

How can we become more certain of these formulations? How can we explore the mechanisms of pathogenesis in more detail? What can we now say about the biochemical mechanisms of tumorigenesis? Dr. Bishop will address these questions with vignettes of experiment from his own laboratory, addressed to both the genetic underpinnings of cancer and the biochemical functions of the culprit genes. He will show how mouse models can be used to replicate and further dissect the pathogenesis of human cancer. He will demonstrate the role of cancer genes in signalling both among and within cells. And he will explore features of the signalling that account for the complexity of tumorigenesis and engender new strategies for the treatment of cancer.

MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 230/244-231/243

SYMPOSIUM SESSION:
β-CAROTENE: FRIEND OR FOE?

Sponsored by: The Food Safety Specialty Section
Chairperson: Stanley T. Omaye, University of Nevada, Reno, NV and Wayne R. Bidlack, California State Polytechnic University, Pomona, CA

The public has been exposed to a barrage of advertisement touting the magic-bullet benefits of antioxidants. Benefits include reducing the risk of increased cancers, heart disease, eye disorders, and aging. Thus, it's easy to see why Americans are spending millions on antioxidant supplements, $40 million on β-carotene alone. Given the enormous potential of β-carotene, the National Cancer Institute launched a number of β-carotene chemoprevention trials during the mid-1980s. In 1994, results from the α-tocopherol, β-carotene cancer prevention (ATBC) trial were revealed. More overall deaths of smokers due to lung cancers were found in the ATBC trial. Subsequently, early in 1996, the β-Carotene and Retinol Efficacy Trial (CARET) halted β-carotene supplementation because of potential harming participants. Reflecting on past and current studies, this symposium will seek to develop an understanding about the health benefits and toxicity of β-carotene supplementation. We will address questions such as: Are consumers hurting themselves — wasting their time with β-carotene supplements — or are they confounding factors contributing to the results of CARET, ATBC, and the Physician's Health studies. The evidence for potential benefits of β-carotene and antioxidant supplement will be discussed by the first speaker. The biochemical antioxidant/prooxidant mechanisms of β-carotene at cellular level will be discussed by the second and fourth speakers. The findings and conclusions of recent studies will be summarized and interpreted by the next speaker. The final speaker will discuss and later facilitate a panel forum on the direction of future work for research.

#244 1:30 β-CAROTENE: FRIEND OR FOE? ST Omaye and W R Bidlack. Department of Nutrition, University of Nevada, Reno, NV and College of Agriculture, California State Polytechnic University, Pomona, CA.

#245 1:35 HYPOTHETICAL HEALTH BENEFITS OF β-CAROTENE (β) AND OTHER CAROTENOIDS. N I Krinsky. Department of Biochemistry, School of Medicine and the Jean Mayer USDA Human Nutrition Research Center, Tufts University, Boston, MA. Sponsor: ST Omaye.


MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 232-242

WORKSHOP SESSION:
IMMUNOLOGICAL BIOMARKERS: MEASURES OF EXPOSURE AND HUMAN HEALTH RISKS

Sponsored by: The Immunotoxicology and Risk Assessment Specialty Sections
Chairpersons: Judith Zeikoff, NYU Medical Center, Tuxedo, NY; Nancy Kerkvliet, Oregon State University, Corvallis, OR; and Barbara Beck, Gradient Corp., Cambridge, MA

Monitoring the environment using biological test systems, so called biomarkers, provides promising ways to identify hazards to the health of humans and the environment. Although the origin of many illnesses in humans can be related to past exposures to toxic substances, the processes or mechanisms by which an agent present in the environment causes these effects is unknown for most xenobiotics. Epidemiologic and monitoring studies in exposed populations, together with experimental investigations in different test systems, use strategies to identify the molecular or cellular changes in biologic systems attributable to the exposure (biomarkers). When these biomarkers are evaluated in human populations, acceptable non-invasive techniques utilizing accessible surrogate compartments or tissues, such as urine or blood, are most often used. Because of the exquisite sensitivity of the immune system to respond to environmental toxicants, and its importance for maintaining host resistance against infectious diseases and cancer, immunoreactivity is actively being investigated as a marker of pollutant exposure/effects in humans. The first presentation in this Workshop will provide an overview of the human immune system and how its individual constituents and responses can be used to demonstrate prior chemical exposure and to predict human health risks. Later discussions will focus on specific markers of effects/exposure such as xenobiotic adducts, lymphocyte phenotyping, and autoantibodies. The final presentation will examine the relevance of immunological markers in human safety assessment.


1:40 IMMUNOLOGICAL BIOMARKERS OF HUMAN IMMUNE RISK. G. M. Henningsen and R. E. Biagioli. USEPA, EPR-PS, Denver, CO and NIOSH, DDBS/ABB, Cincinnati, OH.

2:10 XENOBIOTIC ADDUCTS OF ASTHMOGENS PROVIDE BIOMARKERS OF EXPOSURE IN HUMAN SYSTEMS. M. H. Karon, B. Day and C. Redlich. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA and Occupational and Environmental Medicine Program, Pulmonary and Critical Care Section, Department of Internal Medicine, Yale University, New Haven, CT.


2:05 RISK COMMISSION RECOMMENDATIONS OF SPECIAL INTEREST TO TOXICOLOGISTS AND RISK ASSESSORS. G. S. Otemm. School of Public Health and Community Medicine, University of Washington, Seattle, WA. Sponsor: E. V. Ohanian.

2:35 NEW ADVANCES IN RISK CHARACTERIZATION. S. C. Lewis. Exxon Biomedical Sciences, E. Millstone, NJ. Sponsor: E. V. Ohanian.


MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 202-212

PLATFORM SESSION:
METHODS

Chairperson: Stephanie Padilla, U.S. EPA, Research Triangle Park, NC and Jeffrey R. Hincks, Sanofi Research Division, Malvern, PA

#267 1:30

#268 1:45

#269 2:00

#270 2:15

#271 2:30
VALIDATION OF AN AUTOMATED BONE MARROW COLONY COUNTING SYSTEM. S J Hockett, D K Turka, R O Kringle and J R Hincks. Sanofi Winthrop, Inc., Sanofi Research Division, Malvern, PA.

#272 2:45
SIMULTANEOUS ANALYSIS OF 7-ETHOXYCOUMARIN, DEXTROMETHORPHAN, AND THEIR METABOLITES BY HPLC-UV. K A Navetta and M D Aleo. Pfizer Inc., Groton, CT

#273 3:00
SEQUENCING BY HYBRIDIZATION WITH OLGONUCLEOTIDE MICROCHIPS (SHOM) FOR TOXICOGENETIC ANALYSES. A D Mirzabekov1, M H Bhattacharyya1 and D A Stahl2. 1Argonne National Laboratory, Argonne, IL and 2Northwestern University, Evanston, IL.

#274 3:15
INFLUENCE OF STORAGE CONDITIONS OF THE STABILITY OF CHOLINESTERASE (ChE) ACTIVITY IN PLASMA AND BRAIN TISSUE TAKEN FROM CARBAMATE OR ORGANOPHOSPHATE-TREATED ANIMALS. D L Hunter1, S M Chandra1,2 and S Padilla1. 1Neurotox. Division, NHEERL, USEPA, Research Triangle Park, NC and 2Curr. in Toxicol., UNC-CH, Chapel Hill, NC.

#275 3:30

#276 3:45

#277 4:00
A METHOD FOR LEAD CONCENTRATION AND ISOPTIC ABUNDANCE ANALYSES BY INDUCTIVELY COUPLED PLASMA - MAGNETIC SECTOR MASS SPECTROMETRY. D Woolard1,2, R Franks1, D Sampson3 and D R Smith4. 1Institute of Marine Sciences, University of California, Santa Cruz, CA; 2Institute of Earth Sciences, University of California, Santa Cruz, CA and 3Biology and Environmental Toxicology, University of California, Santa Cruz, CA. Sponsor: D R Smith.

#278 4:15
DETERMINATION OF PLATELET LIFE-SPAN IN THE CYNOBOLUS MONKEY USING 22INDIUM. M Virtu1, L Routledge1, J Discoller2 and A Le Pape3. 1Pharmakon Europe, L'Arbresle, France; 2INSERM U 80, Lyon, France and 3INSERM U 316, CNRS, Tours, France.

MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
IN VITRO MODELS OF HEPATOTOXICITY

Chairpersons: Brian Lake, BIBRA Toxicology International, Carshalton Surrey, U.K., Mark Carfagna, Eli Lilly & Co., Greenfield, IN

Displayed: 1:30 p.m. - 4:30 p.m.
Discussed: 2:30 p.m. - 4:30 p.m.

#279
COCULTURES BETWEEN RAT KUPFFER CELLS AND HEPATO CYTES: CHEMICALLY INDUCED CYTOKINE RELEASE AND CELLULAR INTERACTIONS. N Milosevic, H P Schawaller and P Maier. Institute of Toxicology, Swiss Federal Institute of Technology and University of Zurich, Zurich, Switzerland.

#280
COMPARISON OF CADMUM TOXICITY IN VARIOUS IN VITRO HEPATO CYTE SYSTEMS. P J Korytko, T K Baker and M A Carfagna. Lilly Research Laboratories, Eli Lilly & Company, Greenfield, IN.

#281
COMPARATIVE IN VITRO TOXICITY OF ZAMIFECNACIN (UK-78,654) AND METABOLITES IN PRIMARY HEPATOCYTE CULTURES. D E Amacher, L M Fasulo, C Charuel and P Comby. Drug Safety Evaluation, Pfizer Central Research, Groton, CT and Centre De Recherche, Amboise, France.

#282

#283
IMPORTANCE OF OPTIMIZING HUMAN AND ANIMAL TISSUE SLICE CULTURES FOR BIOTRANSFORMATION AND TOXICITY STUDIES. R L Fisher, S J Hasal, A J Gandolfi and K Brendel. Department of Pharmacology, University of Arizona, Tucson, AZ.

#284
EFFECT OF SOME FLAVONOID ON XENOBIOTIC-INDUCED TOXICITY IN RAT AND HUMAN LIVER SLICES. J A Beamand1, J M Tredger1, P T Wield1, H Mistry1, A B Renwick1, R J Price1 and B G Lake1. 1BIBRA International, Carshalton, Surrey, UK and 2Institute of Liver Studies, King's College Hospital School of Medicine and Dentistry, London, UK.

ATTENUATION OF GOSSYPOL CYTOTOXICITY IN RAT LIVER CELLS BY Dicyclohexylamine. R W Hutchinson, R Barbom, J M Miles and R C Burghardt. Department of Veterinary Anatomy and Public Health, Texas A&M University, College Station, TX. Sponsor: S H Safe.

LOCALIZATION OF HEAT SHOCK PROTEIN 70 IN RAT LIVER SLICES WITH FLUORESCENCE MICROSCOPY. A K Payne, D W Croomey, R C Lantz, A J Gandolfi and K Bredel. Center for Toxicology, College of Pharmacy, University of Arizona, Tucson, AZ.

SEQUENTIAL INCUBATION OF CHLOROTRIFLUOROETHYLENE IN RAT LIVER AND KIDNEY SLICES. S J Hasel, A J Gandolfi and K Bredel. Department of Pharmacology, University of Arizona, Tucson, AZ.

ROLE OF BIOACTIVATION IN THE FORMATION OF FURAN-MEDIATED DNA DOUBLE STRAND BREAKS (DSB). C A Mugford and G L Kehdiaris. CIT, Research Triangle Park, NC.

HUMAN LIVER AND KIDNEY SLICE DISPOSITION OF THE CYCLOSPORINS CSA, IMM, OG, PSC AND EFFECT ON CELLULAR FUNCTIONS. A E Vickers, M Alagret, V Pilgrim, R Fisher, C Spans, R Jimenez and K Bredel. Sandoz Pharma, Basel, Switzerland and 2Department of Pharmacology, University of Arizona, Tucson, AZ.

IMMUNOCHEMICAL DETECTION OF ACETAMINOPHEN (APAP) PROTEIN ADDUCTS IN HUMAN LIVER SLICE IN VITRO. R P Tonge, W Chen, S Bruschi and S D Nelson. Department of Medicinal Chemistry, University of Washington, Seattle, WA.

INDUCTION OF CYPIA1 IN RAT AND MOUSE LIVER SLICES BY INDOLE-3-CARBONYL CONDENSATION PRODUCTS AND OTHER AH LIGANDS. A Oganesian and D E Williams. Toxicology Program, Oregon State University, Corvallis, OR.

MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 235-236

POSTER DISCUSSION SESSION: GAP JUNCTIONS

Chairpersons: James Klausig, Indiana University School of Medicine, Indianapolis, IN and James Troshko, Michigan State University, East Lansing, MI

Displayed: 1:30 p.m. - 4:30 p.m.
Discussed: 2:30 p.m. - 4:30 p.m.

MEASUREMENT OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION IN PROLIFERATING RODENT LIVER. H E Landis, J S Iseberg and J E Klausig. Division of Toxicology, Department of Pharmacology & Toxicology, Indiana University School of Medicine, Indianapolis, IN.

LINDANE INHIBITS GAP JUNCTIONAL COMMUNICATION IN MYOMETRIAL CELLS WITHOUT CHANGING THE ABUNDANCE OR PHOSPHORYLATION OF CONNEXIN (C34) PROTEIN. M M Galvez and R Lough-Caruso. Department of Environmental & Industrial Health, University of Michigan, Ann Arbor, MI.

ROTHENONE REVERSAL OF WW-14,643-INDUCED INHIBITION OF HEPATIC GAP JUNCTIONAL INTERCELLULAR COMMUNICATION. L M Karmendulis, J S Iseberg, T W Prow and J E Klausig. Division of Toxicology, Department of Pharmacology & Toxicology, Indiana University School of Medicine, Indianapolis, IN.

EFFECTS OF CADMIUM ON THE GAP JUNCTION, CELL PROLIFERATION, PROTEIN KINASE C ACTIVITY AND INTRACELLULAR CALCIUM LEVELS IN RAT LIVER EPITHELIAL CELLS. J H Cho, S H Jeong, J C Rhee and M H Chol. National Veterinary Research Institute, RDA, Korea and 2College of Veterinary Medicine, Seoul National University, Korea.

LIVER TUMOR SUPPRESSING ACTIVITY OF A GAP JUNCTION PROTEIN GENE, CONNEXIN 32. R J Ruch, R S Rae, P P Meltar and J E Troshko. Medical College of Ohio, Toledo, OH; 2GRECC, VAMC, University of Miami, Miami, FL and 2Michigan State University, East Lansing, MI.

INHIBITION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION BY TPA BUT NOT BY PHENOBARBITAL IN CONNEXIN32-EXPRESSING RAT LIVER EPITHELIAL CELLS. P Ren and R J Ruch. Medical College of Ohio, Toledo, OH.

PROPOFOL INHIBITS GAP JUNCTIONAL COMMUNICATION BY ACTIVATING PROTEIN KINASE C IN CULTURED RAT LIVER CELLS. S K Koo, D S Cho and C O Joe. Department of Biological Science, Korea Advanced Institute of Science and Technology, Taejon, Korea. Sponsor: K H Yang.

THE PCB MIXTURE AROCLOR 1242 (A1242) INHIBITS GAP JUNCTIONAL INTERCELLULAR COMMUNICATION (GJIC) IN A TRANSIENT MANNER IN RAT MYOMETRIAL CELLS. J Bae and R Lough-Caruso. Department of Environmental & Industrial Health, University of Michigan, Ann Arbor, MI.

DETERMINING A CORRELATION BETWEEN STRUCTURAL ELEMENTS OF POLYCYCLIC AROMATIC HYDROCARBONS AND INHIBITION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION. L M Wei, 2L B Upham, A M Rummel, S M Masten and J E Troshko. 2Department of Pediatrics and Human Development, Michigan State University, East Lansing, MI and 2Department of Pediatrics and Human Development, Michigan State University, East Lansing, MI.

INHIBITION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION BY PERFLUORINATED FATTY ACIDS WAS DEPENDENT ON THE CHAIN LENGTH OF THE FLUORINATED TAIL. B L Upham, N DesCampos, B Wurfl and J E Troshko. 2Department of Pediatrics and Human Development, Michigan State University, East Lansing, MI; 2National Food Safety and Toxicology Center, Michigan State University, East Lansing, MI and 2Institute for Environmental Toxicology, Michigan State University, East Lansing, MI.
THE EFFECTS OF ACRYLONITRILE ON GAP JUNCTIONAL INTERCELLULAR COMMUNICATION IN DI TNC1 RAT ASTROCYTES. T W Prox, H Zhang, J Jiang and J E Kleinstein. Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.

MONDAY AFTERNOON, MARCH 10

POSTER SESSION:
NEUROTOXICITY: BEHAVIOR, FUNCTIONAL EFFECTS

Chairperson: Susan Schantz, University of Illinois, Urbana, IL

Displayed: 1:30 p.m. - 5:00 p.m.
Attendees: 1:30 p.m. - 3:15 p.m.

SICK BUILDING SYNDROME: NEUROPSYCHOLOGICAL STUDY. R Singer. Independent Practice, Santa Fe, NM.

A DISCONNECTION BETWEEN SPATIAL LEARNING AND LTP IN YOUNG RATS CHRONICALLY EXPOSED TO LEAD. A Z Elliott and V Miletic. Department of Comparative Biosciences & The Environmental Toxicology Center, University of Wisconsin, Madison, WI.

MATERNAL LEAD (Pb) EXPOSURE IMPAIRS SPATIAL LEARNING IN ADULT RATS. T R Guijarres, A C Kuhlmann and J M McGlothin. Department of Environmental Health Sciences, Johns Hopkins University, SHPH, Baltimore, MD.

QUANTITATIVE ANALYSES OF THE DEFICITS IN HABITUATION IN POST NATAL LEAD-EXPOSED RATS. R C MacPhail, L Danzy and J Cohn. US EPA, NHEERL, Research Triangle Park, NC, "University of North Carolina, Chapel Hill, NC and "CIIT, Research Triangle Park, NC.

EFFECTS OF REPEATED EXPOSURE TO METHYLmercury ON EQUILIBRIUM BEHAVIOR, LOCOMOTOR AND EXPLORATORY ACTIVITY AND SPATIAL LEARNING IN RATS. P Mito, S Beaudin, C Bar, S Chakrabarti, H Durham and J C Panisset. "Département psychologie, Montréal, Québec, Canada.

INFLUENCE OF SHORT-TERM REPETITIVE EXPOSURE TO METHYLmercury ON SPATIAL LEARNING AND MOTOR BEHAVIOR IN RATS. S Beaudin, S Chakrabarti, P Mito, H Durham and J C Panisset. "Département psychologie, Montréal, Québec, Canada.

EFFECT OF w-CONOTOXIN GVIA AND NIMODIPINE ON METHYLmercury (MeHg)-INDUCED BLOCK OF WHOLE CELL BARIUM CURRENT IN CEREBELLAR GRANULE NEURONS. J E Stros and W D Aitchison. Department of Pharmacology/Toxicology and Institute of Environmental Toxicology, Michigan State University, East Lansing, MI.

REPEATED EXPOSURE TO 1,1,1-TRICHLOROETHANE PRODUCES BOTH TOLERANCE AND SENSITIZATION TO EFFECTS ON MOUSE BEHAVIOR. S E Bowen, H E Jones and R L Balster. Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA.

COGNITIVE EFFECTS SEEN IN RATS EXPOSED TO THE DIOXINFLAGELLATE PSEFIESTERIA. E D Levin, D E Schmechel, H B Glasgow, J D and J M Burkhof. Department of Psychiatry, Duke University Medical Center, Durham, NC, "Department of Medicine, Duke University Medical Center, Durham, NC, "Durham VA Medical Center, Durham, NC and "Department of Botany, North Carolina State University, Raleigh, NC.


PERINATAL EXPOSURE TO PCB 118: THYROID HORMONES AND OTOTOXICITY. D C Rice, W Cherry, L Kindt and K M Crofut. ThToxicology Research Division, Health Canada, Ottawa, ON, Canada and "Neurotoxicology, NHEERL, USEPA, Research Triangle Park, NC.


THREE MONTH INHALATION SCHEDULE-CONTROLLED OPERANT BEHAVIOR STUDY OF ISOBUTANOL IN THE RAT. T A Kaempfe, M A El, F L Speck, P E O'Donnell, W Faber, R E Ouelllet, T R Tyler, S L Jasti and M M Bantos. Environmental Health Laboratory, Monsanto Company, St. Louis, MO and "Chemical Manufacturers Association, Oxoprocess Panel, Arlington, VA.

ASSESSMENT OF ACUTE AND SUBCHRONIC NEUROTOXIC EFFECTS OF ISOBUTANOL VAPOR ON RATS. A A Li, D K Branch, T A Kaempfe, D Marie, J A Warneke, K M Shevlin, M M Bantos, W Faber, S R Murphy, R E Ouelllet, T R Tyler and D K Thake. Environmental Health Laboratory, Monsanto Company, St. Louis, MO and "Chemical Manufacturers Association, Oxoprocess Panel, Arlington, VA.

REPEATED EXPOSURE TO 1,1,1-TRICHLOROETHANE PRODUCES BOTH TOLERANCE AND SENSITIZATION TO EFFECTS ON MOUSE BEHAVIOR. S E Bowen, H E Jones and R L Balster. Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA.
#320 EFFECTS OF CHRONIC METHYLPHENIDATE ON OPERANT BEHAVIOR IN THE RHESUS MONKEY. P Morris, M P Gillam, C McCarty and J G Paul. Division of Neurotoxicology, NCTR, FDA, Jefferson, AR.

#321 ACUTE EFFECTS OF XYLENE ON MOTOR ACTIVITY, FUNCTIONAL OBSERVATIONAL MEASURES, LEARNED PERFORMANCES AND MEMORY. B M Kaulig and J H Lamners. Department of Neurotoxicology & Reproduction Toxicology, TNO Nutrition & Food Research Institute, Zeist, Netherlands.

#322 SUBCHRONIC INHALATION OF ACETONE VAPOR: SCHEDULE-CONTROLLED OPERANT BEHAVIOR AND TIME-COURSE OF BLOOD ACETONE CONCENTRATION IN RATS. G R Christoph, D A Keller and J C Stadler. DuPont Haskell Laboratory, Newark, DE.

#323 INHALATION TOXICITY/NEUROTOXICITY STUDY OF A LIGHT CATALYTIC CRACKED NAPHTHA DISTILLATE IN THE RAT. D M Burnett, R Breglia, Q Bui, F Kroehler, E Lapadula, P Podhasky, C Schneier, R White and R Mandella. 1Petroleum Product Stewardship Council (PPSC), Washington, DC and 2Huntingdon Life Sciences, East Milstone, NJ.

#324 EVIDENCE FOR BEHAVIORAL TOLERANCE TO REPEATED INHALATION OF TRICHLOROETHYLENE (TCE) IN RATS. P J Buchnell, B K Padnos and W M Oshiro. Neurotoxicology Division, NHEERL, US EPA, Research Triangle Park, NC.

#325 PREDICTING ACUTE EFFECTS OF INHALED TRICHLOROETHYLENE (TCE) ON RAT VISUAL FUNCTION WITH ESTIMATED BLOOD LEVELS. M Bereczey, M V Evans, J E Simmons and W K Boyer. USEPA, Research Triangle Park, NC.

#326 A FUNCTIONAL OBSERVATION BATTERY MODULE FOR RODENT GENERAL TOXICITY EVALUATIONS. L B Kinter, L I Morton, J Easter, M A Harris, N Futrow, G McIntire, B Bacon, C D Black and D K Johnson. 1Nycroem Inc, Wayne, PA and 2GTC Mason Laboratories, Worcester, MA.


#328 ACUTE AND SUBCHRONIC NEUROTOXICITY SCREENING STUDIES WITH THE CHLORONICOTINOXIDE IMIDACLOPRID. L P Sheets, B F Hamilton, G K Sangha and J H Thissen. Toxicology Department. Bayer, Stillwell, KS.

#329 NEUROBEHAVIORAL EFFECTS OF MPTP IN C57BL MICE: A COMPARISON OF DIFFERENT TREATMENT REGIMES. S G Gilbert. Biebsupport Inc., Seattle, WA.

#330 EFFECTS OF ALUMINUM EXPOSURE OVER THE LIFE SPAN ON BRAIN AND BEHAVIOR OF MICE. B Han, M S Golub and C L Keen. Departments of Internal Medicine and Nutrition, University of California, Davis, CA.

#331 EFFECTS OF THE NEUROTOXICANT 3,3'-IMIDOPROPIONITRILE (IDPN) ON ACOUSTIC STARTLE AND LOCOMOTOR ACTIVITY IN RATS: A COMPARISON OF FUNCTIONAL OBSERVATIONAL AND QUANTITATIVE STARTLE ASSESSMENT METHODS. M Fukumura, N Seth and C V Vorhees. Division of Developmental Biology, Children's Hospital Research Foundation and Department of Pediatrics, University of Cincinnati, Cincinnati, OH.

#332 ACUTE AND SUBCHRONIC EFFECTS OF INHALATION EXPOSURE TO PARA-DICHLOROBENZENE ON RATS. D K Branch, A A Li', T A Kaempfe', F L Speck', P E O'Donnell', J A Barton', R S Nair' and D C Thake. 1Environmental Health Lab, Monsanto Company. St. Louis, MO; 2PPG Industries, Pittsburgh, PA and 3Environmental Sciences and Health, Monsanto Business Services, St. Louis, MO.

#333 SUBCHRONIC TOXICITY WITH NEUROTOXICITY EVALUATION OF C18:3A, NORMAL PARAFFINIC FLUID IN RABBITS. D J O'Connore', A M Medirons', G W Trimmer, A Tzvet' and S Spenser. 1Exxon Biomedical Sciences, Inc., East Millstone, NJ and 2Center for Research on Occupational and Environmental Toxicology, Oregon Health Sciences University, Portland, OR.


#335 NOVEL N-METHYL-D-ASPARTATE (NMDA)/GLYCINE SITE ANTAGONISTS BLOCK COCAINE-INDUCED TOXICITY AND BEHAVIORAL SENSITIZATION. A G Kanthasamy and R R Matsumoto. 1Department of Neurology. University of California Irvine, Irvine, CA and 2Department of Pharmacology & Toxicology, University of Oklahoma Health Science Center, Oklahoma City, OK.

#336 THE SPINAL ANTINOCICEPTIVE EFFECT OF BUTORPHANOL THROUGH OPIOD RECEPTORS: COMPARED TO MORPHINE. W Wongchanapai, B K Tsang, Z He, J H Eichhorn and I K Ho. 1Department of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, MS and 2Department of Anesthesiology, University of Mississippi Medical Center, Jackson, MS.

#337 THE INTERACTIVE EFFECTS OF MORPHINE AND IBOGAINE IN RATS. K S Regan, J G Schaefer, T S Rogers, T A Page, J M Beaton and J B Terrill. 1MPI Research, Mattawan, MI and 2Southern Research Institute, Birmingham, AL and 3National Institute on Drug Abuse, Rockville, MD.
MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
NEUROTOXICITY: NEUROCHEMISTRY,
IN VITRO

Chairpersons: Steven Gilbert, Biosupport, Inc., Redmond, WA and Beverly Kulig, TNO Nutrition and Food Research Inst., Zeist, The Netherlands

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#338
INDUCTION OF IMMEDIATE EARLY RESPONSE GENES (IERG) BY LEAD (Pb)2+, K A Kim, T Chakraborti, G Goldstein and J Bressler. Kennedy Krieger Research Institute and Department of Environmental Health Sciences, Johns Hopkins University, Baltimore, MD.

#339
INCREASED IN VIVO Ca2+-INDEPENDENT GLUTAMATE (GLU) AND GABA RELEASE RESULTING FROM CHRONIC Pb EXPOSURE BEGUN AT CONCEPTION. S M Lasley1, M C Green1 and M E Gilbert2. 1Department of Biomedical & Ther. Science, University of Illinois, College of Medicine, Peoria, IL and 2National Research Council, Neurotoxicology Division, US EPA, Research Triangle Park, NC.

#340

#341
POSTNATAL LTP DEVELOPMENT IN DIFFERENT RAT HIPPOCAMPUS REGIONS DURING LOW LEVEL LEAD TREATMENT. H Weigand, M Gutowski and L Altmann. Medical Institute of Environmental Hygiene, Heinrich Heine University, Duesseldorf, Germany. Sponsor: T R Gullarte.

#342
LEAD STIMULATES TRANSMITTER RELEASE AND AFFECTS NMDA-MEDIATED POSTSYNAPTIC CURRENTS IN CULTURED HIPPOCAMPAL NEURONS. M Marchioro1, M Alkond3, M F Braga1,2, Y Aracava1, K L Swanson1 and E X Albuquerque2,1. 1Department of Pharmacology Exp. Ther., University of Maryland School of Medicine, Baltimore, MD and 2Laboratory of Molecular Pharmacology, IBCCF, UFRJ, Rio de Janeiro, Brazil.

#343
LOW-LEVEL LEAD (Pb) EXPOSURE PREFERENTIALLY INCREASES KC1-EVOKED DOPAMINE (DA) RELEASE IN NUCLEUS ACCUMBENS AS EVALUATED BY IN VIVO ELECTROCHEMISTRY. C L Zech1, D J O'Mara1 and D A Cory-Slechta1. 1Department of Neurobiology and Anatomy, University of Rochester Medical School, Rochester, NY and 2Department of Environmental Medicine, University of Rochester Medical School, Rochester, NY.

#344
LEAD-INDUCED DECREASES IN MK-801 BINDING ARE REVERSED BY CHRONIC DOPAMINE AGONIST TREATMENT. D A Cory-Slechta1, L M McCoy2 and E K Richfield. 1Department of Neurobiology and Anatomy, University of Rochester Medical School, Rochester, NY and 2Department of Neurology, University of Rochester Medical School, Rochester, NY.

#345
LEAD INHIBITS CALCIUM-MEDIATED INCREASES IN [PH]MK-801 BINDING TO THE NMDA RECEPTOR IN RAT BRAIN MEMBRANES. H Hashemzadeh-Gargari and T R Gullarte. Department of Environmental Health Sciences, Johns Hopkins University, SHPH, Baltimore, MD.

#346
EFFECTS OF CHRONIC LEAD EXPOSURE ON [PH]MK-801 BINDING IN THE BRAIN OF RAT. T Ma, H H Chan, H L Cheng, A S Hume and J K Ho. Department of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, MS.

#347
SUPPRESSION OF LONG TERM POTENTIATION (LTP) BY THE NMDA ANTAGONIST, MK-801, IS REDUCED BY DEVELOPMENTAL LEAD (Pb) EXPOSURE. M E Gilbert1,2, C M Mack3 and S M Lasley1. 1National Research Council, Neurotoxicology Division, US EPA, Research Triangle Park, NC; 2Neurotoxicology Division, US EPA, Research Triangle Park, NC and 3Department of Biomed. Ther. Sci., College of Medicine, University of Illinois, Peoria, IL.

#348
BLOCKING OF CARBACHOL-INDUCED CALCIUM MOBILIZATION BY GLUTAMATE RECEPTOR ANTAGONISTS IN VITRO. J Naaná, P Tervo and K Savolainen. Department of Pharmacology and Toxicology, University of Kuopio, Kuopio, Finland.

#349
IDENTIFICATION OF DIFFERENTIAL GENE EXPRESSION IN METHYLMERCURY (MEHg) EXPOSED RAT EMBRYO CNS CELLS BY DIFFERENTIAL DISPLAY. S Lu, S C Kirchner and E Faustman. Department of Environmental Health University of Washington, Seattle, WA.

#350
EFFECT OF REPEETITIVE EXPOSURE OF RATS TO METHYLMERCURY ON THE ACTIVITY OF MONOAMINE OXIDASE IN BRAIN SYNAPTOSOMES AND PLATELETS. S Chakraborti, K M Loula1, C Bat2, H Durham2 and J C Panisset1. 1Dép. médecine du travail et hygiène du milieu, Fac. médecine, Université de Montréal, Montréal, QC, Canada and 2Montreal Neurological Institute, Montreal, QC, Canada.

#351
EFFECTS OF METHYLMERCURY ON THE UPTAKE OF DOPAMINE, CHOLINE AND SEROTONIN BY AND BINDING OF RECEPTORS IN RAT BRAIN SYNAPTOSOMES, LYMPHOCYTES AND PLATELETS. K M Loula1, S Chakraborti1, H Durham2 and J C Panisset1. 1Dép. médecine du travail et hygiène du milieu, Fac. médecine, Université de Montréal, Montréal, QC, Canada and 2Montreal Neurological Institute, Montréal, QC, Canada.

#352
METALLOTHEININE INDUCTION PROTECTS SWOLLEN RAT PRIMARY ASTROCYTE CULTURES FROM METHYLMERCURY-INDUCED INHIBITION OF REGULATORY VOLUME DECREASE. D Vitarella1, H K Kimelberg2,3 and M Aschner1. 1Department of Pharmacology and Neuroscience, Albany Medical College, Albany, NY; 2Division of Neurosurgery, Albany Medical College, Albany, NY and 3Department of Physiology and Pharmacology, Bowman Gray School of Medicine, Winston-Salem, NC.

#353
EFFECTS OF MPTP ON BEHAVIORAL AND NEUROCHEMICAL ENDPOINTS IN RATS. S F Ali, D L Frederick, C M Fogle and M G Paule. Division of Neurotoxicology, NCTR/FDA, Jefferson, AR.
PERIPHERAL BENZODIAZEPINE RECEPTOR LEVELS ARE INCREASED IN RAT BRAIN FOLLOWING MFTP ADMINISTRATION. A C Kahalnman and T R Guiteras. Department of Environmental Health Sciences, Johns Hopkins University, SPHR, Baltimore, MD.

METALS SUPPLEMENTATION PROTECTS 1-METHYL-4-PHENYL-1,2,3,6-TETRAHYDROPYRIDINE NEUROTOXICITY. P Rojas and C Rios. National Institute of Neurology and Neurosurgery, Department of Neurochemistry, Mexico City, Mexico.

N-METHYL-1,2,3,4-TETRAHYDROISOQUINOLINE IS NOT METABOLIZED BY ASTROCYTIC MONOAMINE OXIDASE. J E Royland, D A Di Monte, I Irwin and J W Langston. The Parkinson’s Institute, Sunnyvale, CA.

NITRIC OXIDE AS A COMMON MEDIATOR OF DOPAMINERGIC NEUROTOXICITY. D A Di Monte, J E Royland, M W Juskowee and J W Langston. The Parkinson’s Institute, Sunnyvale, CA.

EFFECT OF SUBCHRONIC DIETARY ZINC OXIDE ON A N-METHYL-D-ASPARTATE (NMDA) RECEPTOR ANTAGONIST BINDING IN RATS. P S Terse and H L Komiskey. College of Pharmacy, Xavier University of Louisiana, New Orleans, LA.

DI AND D2 DOPAMINERGIC RECEPTOR ANTAGONISTS PREVENT METHAMPHETAMINE-INDUCED NEUROTOXICITY IN RATS BY BLOCKING METHAMPHETAMINE-INDUCED THERMOGENESIS. H W Broening, L M Morford and C V Voorhees. Division of Developmental Biology, Children’s Hospital Research Foundation, and Department of Pediatrics, University of Cincinnati, Cincinnati, OH.

RESERPINE OR COCAINE DECREASED MANGANESE CONCENTRATION IN THE RAT VENTRAL MESENCEPHALON. R T Ingerson1, E B Montgomery2, E V Apostol1 and H J Youkey. 1Center for Toxicology, University of Arizona, Tucson, AZ; 2Departments of Pharmacology & Toxicology, University of Arizona, Tucson, AZ; 3Department of Neurology, University of Arizona, Tucson, AZ; 4Department of Molecular & Cellular Biology, University of Arizona, Tucson, AZ.

EFFECTS OF ZINC AND IRON ON NOSITOL POLYPHOSPHATE (InsP) RECEPTORS AND NITRIC OXIDE SYNTHASE (NOS) IN RAT CEREBELLUM. C S Chetty, W Slikker and S F Al. 1Department of Biology, Savannah State University, Savannah, GA; 2Neurochemistry Laboratory, Division of Neurototoxicology, NCTR, Jefferson, AR.

EFFECT OF QUADRICYCLANE ON NEUROTRANSMITTER LEVELS IN SPRAGUE-DAWLEY RATS. L Narayanan1, R E Wolfe2, D R Mattie2 and H R Kinnedia. 1GEO-Centers, Inc., WPAFB, OH; 2ManTech Environmental Technology, Inc., WPAFB, OH.

ACETYLCHOLINESTERASE AS A SPECIFIC TARGET FOR METHAMPHETAMINES (METM). A L Camara, M F Braga1, Y Aracava, W M Centra, E S Rocha2, W S Cortes2, C M Barbosa3 and E X Albuquerque. 1Laboratory of Molecular Pharmacology II, UBCC, UFRJ, Rio de Janeiro, Brazil; 2Department of Pharmacol. Exper. Ther., University of Maryland School of Medicine, Baltimore, MD.

EFFECTS OF TRIMETHYLOPROPANE PHOSPHATE ON NEUROTRANSMITTER LEVELS IN THE RAT BRAIN. A Jung, T K Narayanan and J Rossi, III. 1-Geo-Centers Inc., Wright-Patterson Air Force Base, OH and 2Naval Medical Research Institute Detachment-Toxicology, Wright-Patterson Air Force Base, OH. Sponsor: E A Smith.

THE EFFECTS OF PRENATAL EXPOSURE TO ENVIRONMENTAL NEUROTOXICANTS ON CERTAIN CYTOPLASMIC PHOSPHOHOROTIUM BINDING PROPERTIES. K C Branston, L L Devaule, J Liu and J M Lauder. 1Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC; 2Department of Psychiatry, University of North Carolina, Chapel Hill, NC and 3Department of Cell Biology and Anatomy, University of North Carolina, Chapel Hill, NC. Sponsor: D J Halbrook.

THE EFFECT OF FUMONISIN BI ON SELECTED REGIONAL BRAIN NEUROTRANSMITTERS AND METABOLITES IN MICE. M Tsunoda, R R Dugyala and R P Sharma. University of Georgia, Athens, GA.

EFFECT OF 2,4-DITHIOBUTYRAT (DTB) ON [3H]DOPAMINE ([3H]DA) RELEASE INDUCED BY NEUROTRANSMITTERS. 1Department of Pharmacology, Institute of Environmental Toxicology and Neuroscience Program, Michigan State University, East Lansing, MI.

INTER- AND INTRA-SPECIES DIFFERENCES IN IN VITRO INHIBITION OF BRAIN ACETYLCHOLINESTERASE BY MONOCROTOPHOS AND ITS RELATIONSHIP WITH IN VIVO TOXICITY. S Y Qadri and M A Q Khan. Department of Biological Sciences, University of Illinois at Chicago, Chicago, IL.

AVERMECTIN B1, BINDS TO HIGH- AND LOW- AFFINITY SITES WITH DUAL EFFECTS ON THE GABA-GATED CHLORIDE CHANNEL. J Huang and J E Casida. Environmental Chemistry and Toxicology Laboratory, University of California, Berkeley, CA.

REGULATION OF GLUTATHIONE-S-TRANSFERSERASES (GSTs) AND QUINONE REDUCTASES (QR) IN PRIMARY NEURAL AND GLIAL CULTURES FROM RAT CEREBELLUM. J A Ahlgren, Beckendorf, J W Herder and J A Johnson. University of Kansas Medical Center, Kansas City, KS. Sponsor: G A Reed.

SELECTIVE INHIBITION OF ATP SYNTHESIS IN RETINAL MITOCHONDRIA BY FORMIC ACID. J T Eells, M M Salzeman and S N Milligan. Department of Pharmacology and Toxicology, Medical College of Wisconsin, Milwaukee, WI.

MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
RESPIRATORY TRACT TOXICITY: MECHANISMS

Chairpersons: Michelle Schaper, University of Pittsburgh, Pittsburgh, PA and Dennis Murphy, SmithKline Beecham Pharmaceuticals, King of Prussia, PA

Displayed: 1:30 p.m. - 5:00 p.m.
Attendeed: 1:30 p.m. - 3:15 p.m.

#373 INHALATION OF m-XYLENE ALTERS THE TOXICITY OF 1-NITRONAPHTHALENE IN THE RESPIRATORY TRACT OF THE RAT. J W D Roy, D Mongeaon and R A Schatz. Northeastern University, Toxicology Program, Boston MA.

#374 SELECTIVE CLARA CELL TOXICITY IN MOUSE LUNG FOLLOWING ACUTE COUMARIN ADMINISTRATION. S L Born\(^1\), A S Fix\(^2\) and L D Lehman-McKeeman\(^1\). 1Research Institute for Fragrance Materials, Hackensack, NJ and 2Procter & Gamble Company, Cincinnati, OH.


#376 BIOCHEMICAL RESPONSE TO INHALED N\(_2\)O IN RATS AND MICE. C J Johnston, J N Finkelstein, R Gelein, R Baggs and G Oberdörster. Departments of Environmental Medicine and Pediatrics, University of Rochester, Rochester, NY.

#377 AMIODARONE TOXICITY IN ISOLATED HAMSTER LUNGS. M W Bolt\(^1\), E Rafeiro, W J Ries, J F Brien\(^1\), T M Bray\(^2\) and T E Massey\(^2\). 1Department of Pharmacology and Toxicology, Queen’s University, Kingston, ON, Canada; 2Department of Nutritional Sciences, University of Guelph, Guelph, ON, Canada and 3Department of Medicine, Queen’s University, Kingston, ON, Canada.

#378 METABOLIC FUNCTIONS OF ALVEOLAR TYPE II CELLS IN ACUTE SILICOSIS. R D Levy\(^1\), A F Hubbs\(^1\), B S Ducatman\(^1\), G Singh\(^1\), V Vallyathan\(^1\), L Bowman and P R Miles. 1Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown, WV and 2Department of Pathology and Laboratory Medicine, Veterans Administration Hospital, Pittsburgh, PA. Sponsor: C Komingeni.

#379 MUTATIONAL SPECTRA IN THE HPRT GENE OF RAT LUNG EPITHELIAL CELLS AFTER QUARTZ EXPOSURE. D G Hassenstein, J M Carter, B W Howard and K E Driscoll. The Proctor & Gamble Company, Cincinnati, OH.

#380 IN VITRO TOXICITY IN RAT TYPE II PNEUMOCYTES AND ALVEOLAR MACROPHAGES OF TEXTILE PAINT COMPONENTS LINKED TO THE "ARDISTYL SYNDROME". P H M Hoet, M Leyva, F L Cottens, M Medema and B Nemery. Laboratory of Pneumology, K.U. Leuven, Leuven, Belgium. Sponsor: R Lauwerys.

#381 OZONE-INDUCED SIGNAL TRANSDUCTION IN RESPIRATORY EPITHELIAL CELLS: ROLE OF PROTEIN KINASE. I Jaspers, E Fleischer and L C Chen. Nelson Institute of Environmental Medicine, New York University Medical Center, New York, NY.

#382 ALPHA PARTICLES LIKE THOSE Emitted BY RADON INCREASE INTRACELLULAR SUPEROXIDE AND HYDROGEN PEROXIDE PRODUCTION IN HUMAN LUNG FIBROBLASTS. P K Narayan, E H Goodwin and B E Lehmann. Life Sciences Division, Los Alamos National Laboratory, Los Alamos, NM.

#383 THE CHANGE OF SURFACTANT-ASSOCIATE PROTEIN SP-B, C RNA EXPRESSION AND K-RAS MUTATION IN RAT TYPE II PNEUMOCYTE TREATED WITH EXTRACT OF AIRBORNE PARTICLES. Z Xian-si. Department of Preventive Medicine, School of Basic Medicine, Shanghai Tiedao University, Shanghai, China. Sponsor: J R Landolph.

#384 MODULATION OF SILICA-INDUCED PULMONARY TOXICITY BY DEXAMETHASONE-CONTAINING LIPOSOMES. M DiMaiteo and M J Reauser. Department of Pharmacology and Toxicology, West Virginia University, Morgantown, WV.

#385 EFFECTS OF INHALED DUST OVERLOAD CONCENTRATIONS ON ALVEOLAR MACROPHAGE (AM) CLEARANCE RESPONSES: THE ROLES OF HIGH DUST BURDEN AND PULMONARY INFLAMMATION. S I Snijdh, M A Hartsyke and D B Warheit. DuPont Haskell Laboratory, Newark, DE.

#386 COMPARISONS OF PULMONARY EFFECTS IN TWO STRAINS OF RATS EXPOSED TO INHALED CRYSTALLINE SILICA PARTICLES. M A Hartsky, K Kellar, T McHugh, G S Gavett and D B Warheit. DuPont Haskell Laboratory, Newark, DE.

#387 A COMPARISON OF IN VIVO AND EX VIVO PULMONARY RESPONSE TO INSOLUBLE PARTICLES. M Osier, R B Baggs and G Oberdörster. Department of Environmental Medicine, University of Rochester School of Medicine, Rochester, NY.


#389 CIGARETTE SMOKE-INDUCED IMPAIRMENT OF LUNG CLEARANCE IS GREATER IN MICE THAN IN RATS. G L Finch, E B Barr, W C Griffith, M D Hoover, D L Lundgren and C H Hobb. Inhalation Toxicology Research Institute, Albuquerque, NM.

#390 POLYMORPHONUCLEAR LEUKOCYTE-INDUCED ALTERATIONS IN PULMONARY TOXICITY FROM OZONE EXPOSURE. P G Reinhard and D K Bhalia. Department of Occupational and Environmental Health Sciences, Wayne State University, Detroit, MI.

#391 INTRA-AND EXTRA-PULMONARY EFFECTS OF REPEATED EXPOSURES OF GERIATIC RATS TO OZONE AND PM-10 ATMOSPHERES. D M Bolarin\(^1\), D K Bhalia\(^1\) and M T Kleinman\(^1\). 1Department of Pharmacology Science, Wayne State University, Detroit, MI; 2Department of Occupational and Environmental Health Science, Wayne State University, Detroit, MI and 3Department of Community and Environmental Medicine, University of California, Irvine, CA.
MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
GLUTATHIONE

Chairpersons: John Tor-Agbidye, Oregon Health Sciences University, Portland, OR and Yogesh Awasthi, University of Texas Medical Branch, Galveston, TX

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#400 OVEREXPRESSION OF HUMAN GLUTATHIONE REDUCTASE (HGR) IN CHINESE HAMSTER OVARY (CHO) CELLS PROTECTS AGAINST OXIDANT INJURY. C V Smilck, T Tamura, V R Rudus, H W McMicken* and T N Hansen. *Department of Pediatrics, Baylor College of Medicine, Houston, TX and 1Department of Pediatrics, Ohio State University, Columbus, OH.

#401 EXPRESSION OF GST AND GCL mRNA IN HT29 CELLS, AFTER TREATMENT WITH BIT AND NaB. D Diaz, S Thompson, W G Kirlin, D P Jones and T J Kavanagh. Department of Environmental Health, University of Washington, Seattle, WA.


#403 EFFECT OF LEAD ACETATE ON GLUTATHIONE TRANSFERASE ISOENZYMES IN FISHER 334 RATS. D A Daggett, T D O'Doherty, S A Nelson and F L Siegel. University of Wisconsin at Madison, Madison, WI.

#404 EFFECT OF XENOBIOTICS ON THE LEVEL OF SCHISTOSOMA MANSONI GSH S-TRANSFERASE. SmGST-1/3 mRNA. R N Jackson and J W Tracy. Department of Comparative Biosciences and Environmental Toxicology Center, Madison, WI.

#405 EXPRESSIN OF GLUTATHIONE S-TRANSFERASE π IN HUMAN LYMPHOCYTES FROM TYPE 1 DIABETIC PATIENTS. D Santiago*, F Aguilo* and B D Jimenez. *University of Puerto Rico, School of Pharmacy, San Juan, Puerto Rico and 'School of Medicine, University of Puerto Rico, San Juan, Puerto Rico.

#406 INHIBITION OF HUMAN LUNG GLUTATHIONE S-TRANSFERASE P1 BY SULFONAMIDES. F Valdez, S Tovola and H Ahmad. Department of Chemistry, University of Texas Pan American, Edinburg, TX. Sponsor: MY H Farooqui.

#407 RABBIT AORTA GLUTATHIONE S-TRANSFERASES AND THEIR ROLE IN BIOACTIVATION OF TRINITROGLYCERIN. J T Piper, S S Singhal, S K Srivastava, M Chaubey, J Bandorowicz-Pikula, S Awasthi and Y C Awasthi. The University of Texas Medical Branch, Galveston, TX.

#408 PHENOTYIPING OF GLUTATHIONE S-TRANSFERASES IN CAMEL TISSUES. H Raza, M S Lakhan, I Ahmed, A John, R Morgenstem and W Montague. Department of Biochemistry and Anatomy FMHS, UAE University, UAE and Department of Biochemistry and Anatomy, Karolinska Institute, Stockholm, Sweden.
POSTER SESSION:
P450 II

MORNING SESSION:

MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 5:00 p.m.

COC: EXHIBIT HALL

POSTER SESSION:
P450 II

Chairpersons: Brian Mayes, General Electric Company, Secaucus, NJ and Michael Iba, Rutgers University, Piscataway, NJ

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 1:30 p.m. - 3:15 p.m.

EFFECTS OF CHRONIC ETHANOL AND BEER CONSUMPTION ON HEPATIC MICROSMAL MONOOXYGENASE ACTIVITY AND CYTOCHROME P450 EXPRESSION IN THE PIG. T M Badger, R Hakak, D Iby, P Glover, K Lyons, C Harvey and M J J Ronis. Department of Pediatrics, University of Arkansas for Medical Sciences and Arkansas Children's Hospital Research Institute, Little Rock, AR.

EFFECT OF CIGARETTE SMOKE ON CYPIA AND CYTOCHROME P450 TRANSFERASE OF NASAL MUCOSAE INF 344 RATS. S A Wardlaw, D A Kracco, K J Nikola, G I Finch, A R Dahl and J R Thornton-Manning. Inhalation Toxicology Research Institute, Albuquerque, NM.

A RECOMBINANT RNA STANDARD FOR QUANTITATIVE COMPETITIVE RT-PCR OF RAT CYTOCHROME P450 GENE EXPRESSION. C Acharya, M R Andersen, F M Faris and C J Omiecinski. Department of Environmental Health, University of Washington, Seattle, WA.

EFFECT OF PROTEIN MALNUTRITION ON LIVER CYTOCHROME P450S. P C Lee1, J A Bezerra2 and B Duncan1.1 Department of Pediatrics, Medical College of Wisconsin, Milwaukee, WI; 2University of Cincinnati, Cincinnati, OH and 3Department of Pediatrics, University of Arizona, Tucson, AZ.

ANALYSIS OF CYTOCHROME P450 ISOENZYME INDUCTION BY NON-GENOTOXIC CARCINOGENS IN RATS. HEPATOCYTES USING RT-PCR AND WESTERN BLOTS. J C Davila and D L Morris. G.D. Searle & Company, Product Safety Assessment, Skokie, IL.

DIFFERENTIAL INHIBITORY EFFECTS ON THE METABOLISM OF CYTOCHROME P450 (CYP) 2B1 BY ADDITION OF AN ANTIPEDTPE ANTIBODY. S Krymgold1, E S Roberts1, E Y Kim2, D A Putt1, P F Hollenberg3 and H Kim1.1 Oxford Biomedical Research Inc., Oxford, MI and 3Department of Pharmacology, University of Michigan, Ann Arbor, MI.

HEPATIC MICROSMAL ENZYME INDUCTION IN THE ABSENCE OF LIVER INJURY IN PRE-CLINICAL TOXICOLOGY STUDIES. S J Schmaier and D E Amacher. Cellular Toxicology Lab, Drug Safety Evaluation, Pfizer Central Research, Groton, CT.

EVALUATION OF CYTOCHROME P450 ACTIVITY IN NORTHERN BOBCAT WILDLIFE AND WHITET-FOOTED DEER MICE FOLLOWING EXPOSURE TO VARYING CONCENTRATIONS OF SIX XENOBIOTICS. M Taylor, R L Dickerson, C Sills, J Matter and E E Smith. TIWET. Clemson University, Clemson, SC.

CYP1A1 IS INDUCED IN RAT PERIPHERAL BLOOD LYMPHOCYTES IN VIVO BY PROTOTYPIC AND NONPROTOTYPIC INDUCERS. J Fung1, L Chung1, P E Thomas1 and M M Iba2. 1Department of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ and 2Department of Chemical Biology, Rutgers University, Piscataway, NJ.

COMPARATIVE EXPRESSION OF CYPIA AND LIPID PEROXIDATION AND OF ENZYMES OF HEME METABOLISM IN RATS EXPOSED TO PYRIDINE ALONE OR WITH ACETONE. M M Iba1, P E Thomas1, J Fung1 and J Alam1. 1Departments of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ; 2Department of Chemical Biology Department, Rutgers University, Piscataway, NJ and 3Ochsner Medical Research Foundation, New Orleans, LA.

PURIFICATION, RECONSTITUTION AND CHARACTERIZATION OF EXPRESSED RECOMBINANT CYTOCHROME P450 2F3 FROM E. COLI. H Wang, D L Lanza and G S Host. Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT.

INDUCTION OF CYPIA AND 2B BY SUBCHRONIC LOW-LEVEL EXPOSURE TO AROCLOR 1260 IN LONG-EVANS RATS. J S Ngui and S M Bandera. Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, British Columbia, Canada.

AFBI AND DIBENZQLPYRENE METABOLISM BY TWO RAINBOW TROUT CYPIA CDNAs EXPRESSED IN YEAST. U Hartig, L You and G S Bailey. Marine/Freshwater Biomedical Center, Oregon State University, Corvallis, OR.

DISTINCT PROTEOLYTIC PATHWAYS IN THE DEGRADATION OF CY2E1 AND CY2B1 EXPRESSED IN TET-HELA CELLS. Y J Huan, J C Parazyn and D R Kepp. Department of Physiology and Pharmacology, Oregon Health Science University, Portland, OR.

LOCALIZATION OF CYPIB1 IN THE RAT ADRENAL GLAND. M E Wyde1,2, B D Miller1, G C Clark1, T R Turner1, G W Lucier2 and N J Walker1. 1Curriculum in Toxicology. University of North Carolina, Chapel Hill, NC; 2NIEHS, Research Triangle Park, NC; 3North Carolina State University, Raleigh, NC and 4Johns Hopkins University School of Hygiene and Public Health, Baltimore, MD.


THE EFFECT OF HIGH DOSE ENDOXIN ON HEPATIC CY3A EXPRESSION. G Warren1, A L Roe1, J How1, S Shedlofsky2,3 and R A Bloom1,2. 1Graduate Center for Toxicology; 2College of Pharmacy and 3Veteran's Administration Hospital, Lexington, KY.

THE EFFECT OF HIGH DOSE ENDOXIN ON NUCLEAR PROTEIN BINDING: IMPLICATIONS ON CY3A2 REGULATION. A L Roe1, G Howard1, S Shedlofsky2,3 and R A Bloom1,2. Graduate Center for Toxicology; 2College of Pharmacy and 3Veteran's Administration Hospital, University of Kentucky, Lexington, KY.

THE CYTOCHROME P-450 INHIBITOR 1-AMINOBENZOTRIAZOLE POTENTIATES OXYGEN-INDUCED LUNG INJURY IN RATS. B Moore, S E Welty, K M Parker and C V Smith. Department of Pediatrics, Baylor College of Medicine, Houston, TX.

EXPRESSION OF DRUG METABOLISM ENZYMES IN PRIMARY CULTURES OF RENAL PROXIMAL TUBULAR AND DISTAL TUBULAR CELLS. B S Cummings1, R C Zanger1, R F Novak1,2 and L H Lash1. 1Department of Pharmacology and 2Institute Chemical Toxicology, Wayne State University, Detroit, MI.

β-NAPHTHOFLAVONE AND 2,3,7,8-TETRA-CHLOROBENZO-P-DIION INDUCIBLE CYTOCHROME P450 1B1 IN MOUSE EPIDERMIS. M Lauter, R Aragai and H Muhitar. Department of Dermatology, Case Western Reserve University, Cleveland, OH.

STRUCTURE DEPENDENT INDUCTION OF CYPIA BY DIFFERENT PCBs IN HEPATOCYTES OF CYNOMOLGUS MONKEY (MACACA FASCICULARIS). A S A M van den Berg1, P J Clijsters1, M Tyskfind1, G J Horbach1 and M Van den Berg1. 1Research Institute of Toxicology, Utrecht University, Utrecht, The Netherlands and 2Institute of Environmental Chemistry, Umeå University, Sweden.

THE INDUCTION AND CHARACTERIZATION OF CYPIA PROTEINS IN CYNOMOLGUS MONKEYS HEPATOCYTES (MACACA FASCICULARIS) BY PCBs. A S A M van der Burg1, A P Knekkamp1, G J Horbach1 and M Van den Berg1. Research Institute of Toxicology, Utrecht University, The Netherlands.

THE EFFECTS PCB #126, PCB #118, PCB #153 OR 2,3,4,7,8-PeCDF ON CYTOCHROME P450 INDUCTION IN RATS FROM WEANING TO ADULTHOOD AFTER PERINATAL EXPOSURE. C A Bouwman1, K Fase1, M H Wajlens-Berendse1, A E Smits-van Rooij1, W Scien1 and M Van Der Berg1. 1Research Institute of Toxicology, University of Utrecht, Utrecht, The Netherlands and 2Department of Neurotoxicology and Reproduction Toxicology, TNO Toxicology, Zeist, The Netherlands.

INTERACTIVE INDUCTION OF CYPIA BY PYRIDINE AND ACETONE: DOSE-RESPONSE RELATIONSHIPS. H Schol1, J Fung1, P E Thomas1, J Alam1 and M M Iba1. 1Departments of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ; 2Department of Chemical Biology, Rutgers University, Piscataway, NJ and 3Ochsner Medical Research Foundation, New Orleans, LA.

METABOLISM OF THE NEUROTOXIC INSECTICIDE, CYPERMETHRIN, IN THE NERVOUS TISSUE OF HOUSE FLY. MUSCA DOMESTICA. P J Koryto1 and J G Scott. Department of Entomology, Cornell University, Ithaca, NY.

THE DURATIONAL EFFECTS OF m-XYLENE METABOLITES ON RESPIRATORY CY2B1 AND CYP1A1 IN RAT. D E Revery, D A Mongeon and R A Schatz. Northeastern University Toxicology Program, Boston, MA.
MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
CARCINOGENESIS: MECHANISMS OF
BIOTRANSFORMATION

Chairpersons: Joseph Landolph, University of Southern California, Los Angeles, CA and Myrtle Davis, University of Maryland, Baltimore, MD

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#451 SALMONELLA TEST NEGATIVE CARCINOGENS INDUCE OXIDATIVE STRESS IN YEAST. R J Brennan and R H Schiestl. Molecular and Cellular Toxicology, Harvard School of Public Health, Boston, MA.

#452 BIOLOGICAL SIGNIFICANCE OF INCREASED LEVELS OF C-MYC mRNA IN LEAD CHROMATE AND 3-METHYLCHOLANTHRENE TRANSFORMED 10T1/2 CELL LINES. L L Ozburn, M E Dews and J R Landolph. USC/Norris Comprehensive Cancer Center and Deps. of Molecular Microbiology/Immunology, Pathology and Molecular Pharmacology and Toxicology, U.S. Schools of Medicine and Pharmacy, Los Angeles, CA.

#453 MOLECULAR ANALYSES OF TRANSFORMED CH10T1/2 CL 8 MOUSE EMBRYO FIBROBLAST CELL LINES INDUCED BY INSOLUBLE NICKEL CARCINOGENS. A Verma and J R Landolph. Depts. of Molecular Microbiology and immunology, Pathology & Molecular Pharmacology & Toxicology, Norris Comprehensive Cancer Ctr., USC Schools of Med. & Pharmacy, Los Angeles, CA.


#455 APPLICATION OF THE SYRIAN HAMSTER EMBRYO (SHE) CELL TRANSFORMATION ASSAY TO EVALUATE POTENTIAL CHEMOPREVENTIVE AGENTS. S A Ayoubi, Y Xu and J E Klaunig. Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.

#456 EFFECTS OF NONGENOTOXIC CARCINOGENS ON MORPHOLOGICAL TRANSFORMATION IN THE SYRIAN HAMSTER EMBRYO (SHE) CELL ASSAY. H Zhang, S A Ayoubi, T K Baker and J E Klaunig. Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.

#457 ASSESSMENT OF THE CARCINOGENIC POTENTIAL OF ARSENIC AND ARSENIC-CONTAINING CHEMICAL MIXTURES USING THE SYRIAN HAMSTER EMBRYO (SHE) CELL ASSAY. T B Smith, K F Readon and R S H Yang. 1Center for Environmental Toxicology and Technology, Department of Chemical and Bioresource Engineering, Colorado State University, Fort Collins, CO and 2Center for Environmental Toxicology and Technology, Department of Environmental Health, Colorado State University, Fort Collins, CO.

#458 INCREASED GROWTH FACTOR-STIMULATED DNA SYNTESIS IN PRIMARY HUMAN FIBROBLASTS FOLLOWING SODIUM ARSENITE EXPOSURE. K Trouba and R L Vorce. Department of Pharmacology, University of Nebraska Medical Center, Omaha, NE. Sponsor: P Stemmer.

#459 BENZYLISOTHIOCYANATE, A DETOXIFICATION ENZYME INHIBITOR, ACTIVATES JUN KINASE IN HT29 HUMAN COLON CELLS. E Patton, D Brenner, L Licato, D P Jones and M J Delong. 1School of Public Health, Department of Environmental and Occupational Health Sciences, Emory University, Atlanta, GA; 2School of Medicine, Department of Biochemistry, Emory University, Atlanta, GA and 3School of Medicine, Department of Medicine, University of North Carolina, Chapel Hill, NC.

#460 ANALYSIS OF CHROMIUM MUTAGENESIS IN YEAST SACCHAROMYCES BY A YEAST/BACTERIA SHUTTLE VECTOR. L Cheng and K Dixon. Dept. of Environmental Health, College of Medicine, University of Cincinnati, Cincinnati OH.

#461 ULRAVIOLET MUTATIONAL SPECIFICITY IN A PLASMID REPPLICATED IN VITRO. N King, M Seidman and K Dixon. Department of Environmental Health, University of Cincinnati, Cincinnati, OH.

#462 MUTAGENIC AND CYTOTOXIC EFFECTS OF 4-AMINOBIPHENYL AND TWO OF ITS METABOLITES IN HUMAN TK-6 LYMPHOBLASTS. B Zayas-Rivera, C Knoll, M Romkes, S G Grunt and B W Day. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA.

#463 ANEUPLOIDOGENS AS POSSIBLE ETIOLOGIC FACTORS FOR THE CARCINOGENICITY OF WOOD DUST. B Haber, B Rosenberg and M Metzler. Institute of Food Chemistry, Department of Chemistry, University of Karlsruhe, Karlsruhe, Germany.

DETECTION OF N7, 3-ETHENOGUANINE BY GC/HR-MS IN BRAINS AND KIDNEYS IN VINYL FLUORIDE EXPOSED RODENTS. N Scheller,1 A Ranasinghe,1 M S BogdanOFF and J Swenberg.1 1Dept of Environmental Sciences & Engineering, Univ of North Carolina, Chapel Hill, NC and 1Haskell Laboratory, E I duPont Nemours, Newark, DE.

MOLECULAR DOSIMETRY OF N7-(2-HYDOXY-PROP-1Y)-GUANINE IN F344 RATS EXPOSED TO PROPYLENE OXIDE BY THE INHALATION ROUTE. M N Rios-Blanco and J A Swenberg. Curriculum in Toxicology and Department of Environmental Sciences and Eng. Unv. of NC, Chapel Hill, NC.

IMMUNOCHEMICAL AND CHROMATOGRAPHIC ANALYSIS OF DNA METHYL ADDUCTS IN INBRED MICE FOLLOWING AZOXYMETHANE (AM) TREATMENT. A Papantoniou,2 R C Shank3, D A Delker1 and D W Rosenblatt1. 1Toxicology Program, University of Connecticut, Storrs, CT and 1Department of Community and Environmental Medicine, University of California-Irvine, Irvine, CA.

DETECTION OF N7-METHYLETHENOGUANOSINE ADDUCT IN HUMAN GASTRIC CANCER USING HPLC AND 32P-POSTLABELLING ASSAY. D Kim1, D Y Kim1, H K Yang1, K Hemminki1 and M H Cho2. 1College of Veterinary Medicine, Seoul National University, Suwon, Korea; 2College of Medicine, Seoul National University, Seoul, Korea and 1Center for Nutrition and Toxicology, Karolinska Institute, Huddinge, Sweden.

FLAVIN-MEDIATED NITROSODUCTION OF THE CARCINOGEN, 1,6-DINITROPYRENE (DNP). M J Krautmann, W J Catullo, S A Barker, D H Swenson and J C Means. Louisiana State University, Baton Rouge, LA.

DNA ADDUCTS INDUCED BY CARCINOGENIC CR(VI) COMPOUNDS: CHARACTERIZATION OF ABUNDANT DNA CROSSLINKS WITH AMINO ACIDS AND GLUTATHIONE. V Voitik, A Zhnikovich and M Costa. Nelson Institute of Environmental Medicine, NYU Medical Center, NY.

REACTION OF DEOXYGUANOSINE WITH PHOSPHINE OXIDATION PRODUCTS. C-H Hsu and J E Casida. Environmental Chemistry and Toxicology Laboratory, University of California, Berkeley, CA. Sponsor: J Huang.

DIFFERENTIAL CELLULAR SENSITIVITY TO TNFα VIA A CERAMIDE MEDIATED DECREASE IN INTRACELLULAR GLUTATHIONE. F Oudj, N H Colburn and M A Davis. 1Department of Pathology, University of Maryland School of Medicine, Baltimore, MD and 1Laboratory of Biochemical Physiology, National Cancer Institute, Frederick, MD.

METABOLIC ACTIVATION OF N-HYDROXY-2-AMINOFLUORENE AND N-HYDROXY-2-ACETYLAMINOFLUORENE BY RECOMBINANT NAT1, NAT2 AND NAT3 DERIVED FROM RAPID AND SLOW ACETYLATOR MICE. D W Heim, A J Freeland, M A Doll, K Gray and Y Feng. Departments of Pharmacology and Toxicology and Surgery, University of North Dakota School of Medicine and Health Sciences, Grand Forks, ND.

ALTERATIONS OF DNA METHYLATION BY ACETAMINOPHEN. K Lertratanakongkoon1 and N Savaraj1. 1University of Texas Medical Branch, Galveston, TX and 1VA Medical Center, Miami, FL.

COMPARATIVE EFFECTS OF FOUR PAF ANTIOGONISTS ON CYCLOSPORINE-INDUCED LLC-PK1 OXIDATIVE INJURY STRUCTURE-ACTIVITY RELATIONSHIPS. F Masson1, F Heymans2, C Redeuilh3, C Martin,1 A Lamouri1, E Manno1, J-M Warner1, J J Godfroy1 and J R Claude.1 1Laboratoire de Toxicologie (EA 207), Faculté de Pharmacie, Université Paris VII, Paris, France and 1Laboratoire de Pharmacocimie Moléculaire, Université Paris VII, Paris, France.

RELATIONSHIP BETWEEN SELENIUM'S ANTICARCINOGENIC EFFECT AND ANTIOXIDANT ENZYME ACTIVITY. L Babibawnia and A L Hug. Department of Pharmacology/Toxicology, Ponce School of Medicine, Ponce, PR.

SENSITIVITY OF HUMAN LYMPHOCYTES TO ARSENITE GENOTOXICITY IS INVERSELY PROPORTIONAL TO THE LEVEL OF INDUCTION OF HEME OXYGENASE-1. D B Menzel1, R E Rasmussen1, E Lee1, B Said1, D M Mosher1, H Greene1 and R N Roth2. 1Department of Community and Environmental Medicine, University of California, Irvine, CA and 1ARCO, Los Angeles, CA.

CHARACTERIZATION OF PHOSPHODIESTER ADDUCTS PRODUCED BY THE REACTION OF ETHYLENE OXIDE WITH NUCLEOTIDES. L Selvaraj, T R Finnell and S C J Sumner. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

MECHANISM-BASED RISK ASSESSMENT: UTILIY OF DNA ADDUCTS IN MODEL SELECTION. K-Y Wu, A Ranasinghe, N Scheller, P Upton and J A Swenberg. Department of Environmental Sciences and Engineering, University of North Carolina, Chapel Hill, NC.

MONDAY AFTERNOON, MARCH 10
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
DEVELOPMENTAL TOXICOLOGY I

Chairpersons: John M. Rogers, U.S. EPA, Research Triangle Park, NC and Craig Harris, University of Michigan, Ann Arbor, MI

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 1:30 p.m. - 3:15 p.m.

CONFOCAL MICROSCOPIC ANALYSIS OF CELL-DEATH IN MURINE LIMB BUDS FOLLOWING EXPOSURE TO ALL-TRANS RETINOIC ACID (RA). K W Dean1, L J Graeter2, D A Warren1 and J R Latendresse1,2. 1Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH and 2ManTech Environmental Technology, Inc., Wright-Patterson AFB, OH.

QUANTITATIVE MULTIPARAMETRIC IMAGE ANALYSIS OF FETAL MOUSE FORELIMB MALFORMATIONS. J H Grabau1, J L Cambell1, W R Helton1, J W Fisher1 and D A Warren1. 1GEO-Centers, Inc., Armstrong Laboratory, Wright-Patterson AFB, OH; 2Environmental Health Services, University of Georgia, Athens, GA and 1Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.
DOSE-RESPONSE OF RETINOIC ACID-INDUCED FORELIMB MALFORMATIONS AS DETERMINED BY IMAGE ANALYSIS. J L Campbell, D A Warren, J H Graul, C D Fleming, W R Helton, and J W Fisher. Environmental Health Sciences, University of Georgia, Athens, GA; 1Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH; 2GEO-Centers, Inc.; 3Armstrong Laboratory, Wright-Patterson AFB, OH; and 4ManTech Environmental Technology, Inc., Armstrong Laboratory, Wright-Patterson AFB, OH.

REGULATION OF FETAL PLACENTAL BLOOD PRESSURE BY PGE2 DURING PARTURITION. M E Henceler and B V R Sathy. Department of Anesthesiology, Vanderbilt Medical Center, Nashville, TN.

GLUCOSE-6-PHOSPHATE DEHYROGENASE (G6PD) DEFICIENCY ENHANCES PHENOTYPIC INITIATED EMBRYONIC DNA OXIDATION AND TERATOGENICITY. C J Nicol and P G Wells. Dept. of Pharmacology and Faculty of Pharmacy, University of Toronto, Toronto, Canada.

EVIDENCE FOR NON-APOPTOTIC PATHWAYS MEDIATING PHENOTYPIC TERATOGENICITY IN MICE. R R Laposse, M J Wiley and P G Wells, Faculty of Pharmacy and Dept. of Anatomy and Pharmacology, University of Toronto, Toronto, Canada.

ETHANOL INHIBITION OF MUSCARinic RECEPTOR-INDUCED GLIaL CELL PROLIFERATION: ROLE OF PROTEIN KINASE C. M Guizzetti and L G Costa. Department of Environmental Health, University of Washington, Seattle, WA.

HUMAN PLACENTAL TRANSFORMED CELLS (Jar): CHARACTERIZATION OF CHOLINE ACETYLTRANSFERASE (ChAc) USING SPECIFIC INHIBITORS. V E Jansen and B V R Sathy. Departments of Anesthesiology and Pharmacology, Vanderbilt Medical Center, Nashville, TN.

THE AMINO ACID L-SERINE PROTECTS AGAINST 2-METHOXYETHANOL-INDELETED NEURAL TUBE DEFECTS IN CD-1 MICE. J L Ambrose, D B Stedman, K K Terry, B A Eisele, and F Wielch, Chemical Industry Institute of Toxicology, Research Triangle Park, NC and National Center for Toxicology Research, Jefferson, AR.

MECHANISTIC STUDIES OF DIAZINON TOXICITY IN EARLY LIFE STAGES OF MEDAKA. ORYZIAS LATIPES. J T Hamm, B W Wilson, and D E Hinton. 1Department of Anatomy, Physiology, and Cell Biology, University of California-Davis, Davis, CA and 2Department of Environmental Toxicology, University of California at Davis, Davis, CA.

MODULATION BY VITAMIN E SUCCINATE AND ELLAGIC ACID OF TCDD-INDUCED FETOXICITY AND OXIDATIVE STRESS IN FETAL AND PLACENTAL TISSUES OF C57BL/6J MICE. E A Hassan, A Walter, N Alcaro, and S J Sokol. 1Department of Pharmacology, College of Pharmacy, University of Toledo, Toledo, OH and 2School of Pharmacy and Allied Health Professions, Creighton University, Omaha, NE.

COMPARATIVE EMBRYOTOXICITY OF SPECIFIC PROTEIN KINASE INHIBITORS IN MOUSE WHOLE EMBRYO CULTURE. K W Ward, E H Rogers, and E S Hunter III. 1Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and 2Reproductive Toxicology Division, NHEERL, U.S. EPA, Research Triangle Park, NC.

HYPERTHERMIA-INDUCED ALTERATIONS OF CELL PROLIFERATION AND CELL DEATH DURING RAT EMBRYO DEVELOPMENT. J G Breen, T W Chugger, G L Kimmel, and C A Kimmel. Center for Devices and Radiologic Health, USFDA, Rockville, MD; Pathology Associates, Intl., Frederick, MD; and National Center for Environmental Assessment, USEPA, Washington, DC.

ROLE OF GLYCOLATE ANION AND METABOLIC ACIDOSIS IN THE DEVELOPMENTAL TOXICITY OF ETHYLENE GLYCOL. W Breslin, E Carney, N Freshour, D Dittenber and M Drygza. Toxicology Research Laboratory, The Dow Chemical Company, Midland, MI.

IN VITRO EMBRYOTOXICITY OF THE PESTICIDE AMINOCARB IN ORGANGENESIS STAGE RAT CONCEPTUSES. R M Berberian and C Harris. Toxicology Program, Department of Environmental and Industrial Health, University of Michigan, Ann Arbor, MI.

MECHANISMS OF MIREX-INDUCED POSTNATAL-CATARACTS. D C Carter, S Branch, I L Hall, and N Chernoff. 1North Carolina State University, Department of Biological Sciences, Raleigh, NC; 2North Carolina State University, Department of Toxicology, Raleigh, NC and 3U.S. EPA, NHEERL, DTD, Research Triangle Park, NC.


CRYPTIC BRAIN CELL INJURY CAUSED BY FETAL NICOTINE EXPOSURE IS ASSOCIATED WITH PERSISTENT ELEVATIONS OF c-FOS PROTOONOCENE EXPRESSION. F J Seidler and T A Slotkin. Department of Pharmacology, Duke University Medical Center, Durham, NC. Sponsor: E D Levin.


DOES FETAL NICOTINE EXPOSURE CAUSE SUDDEN INFANT DEATH SYNDROME (SIDS)? AN ANIMAL MODEL. T A Slotkin and F J Seidler. Department of Pharmacology, Duke University Medical Center, Durham, NC. Sponsor: E Levin.

THE EXPRESSION OF LIMB PATTERN FORMATION GENES IN THE PATHOGENESIS OF DRUG-INDUCED POSTAXIAL ECTRODACTYLY. S M Bell, C M Schreiner and W J Scott. Department of Pediatrics, Children's Hospital Research Foundation, Cincinnati, OH. Sponsor: R B Bellies.

DEVELOPMENTAL EXPRESSION OF N-ACETYLYTRANSFERASES IN C57BL/6 MICE. M K Mitchell, R W Futscher and C A McQueen. The University of Arizona, Tucson, AZ.

SEX DIFFERENCES IN HUMAN GLUTATHIONE-S-TRANSFERASE GENES: INCREASED RISK FOR CONGENITAL HEART DEFECTS. C A Loffredo and E K Silvergeld. Department of Epidemiology and Preventive Medicine, University of Maryland, Baltimore, MD.
MODULATION OF GLUTATHIONE ASSOCIATED WITH DEVELOPMENTAL METHYL-MERCURY EXPOSURE IN MICE. S A Thompson, C C White, C M Krejci, S C Kocher, Y C Ou, E M Faustman and T J Kavanaugh. Department of Environmental Health Toxicology, University of Washington, Seattle, WA.

SPATIAL AND TEMPORAL LOCALIZATION OF GLUTATHIONE (GSH) IN THE ORHANOGINESIS-STAGE RAT CONCEPTUS. C Harris, R L-F Lightle, S J V Larsen and M A Phibers. Toxicology Program, Dept. Environmental and Industrial Health, University of Michigan, Ann Arbor, MI.

MATERNAL EXPOSURE TO ACETAMINOPHEN INDUCES ALTERATIONS IN EMBRYONIC MITOCHONDRIAL ENZYME ACTIVITIES. M J Beek, R L Lightle, C Harris and M Phibers. University of Michigan School of Public Health, Ann Arbor, MI.

SEPTAL CHOLINERGIC CELL DEATH AND REDUCTION IN CHOLINERGIC INNERVATION OF HIPPOCAMPUS IN RESPONSE TO PERINATAL LOW-LEVEL LEAD EXPOSURE. N Bourjesty and J B Suszkiew. Department of Molecular and Cellular Physiology, University of Cincinnati College of Medicine, Cincinnati, OH.

METHANOL DISRUPTS DEVELOPMENT OF CRANIAL GANGLIA AND NERVES IN C57BL/6J MICE. J M Rogers, G S Massenburg and C Y Kawaniishi. Developmental Biology Branch, Reproductive Toxicology Division, NIEHS, U.S. EPA, Research Triangle Park, NC.

EARLY HISTOLOGIC EVALUATION OF METHANOL-INDUCED CRANIOFACIAL DEFECTS IN C57BL/6J MICE. S J Degitz; and J M Rogers. 1Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and 2Developmental Biology Branch, Reproductive Toxicology Division, NIEHS, U.S. EPA, Research Triangle Park, NC.

DEVELOPMENTAL TOXICITY OF A METALLOTHIONEIN INDUCER IS PREVENTABLE BY MATERNAL ZINC INFUSION. G F Daston and D Baines. The Procter & Gamble Co., Cincinnati, OH.

INVIVO EMBRYONIC GENE EXPRESSION AS MARKERS FOR DEVELOPMENTAL TOXICITY. P J Devine and E K Silberfeld. Toxicology Program, University of Maryland at Baltimore, Baltimore, MD.

RETINOIC ACID INDUCED ALTERATIONS OF TGFβ IN MOUSE FORELIMB DEVELOPMENT. N D Mylniczenko, S J Degitz, G L Foley and B M Francis. College of Veterinary Medicine and the Institute for Environmental Studies, University of Illinois, Urbana, Ill.

CROMAKALIM: EMBRYONIC EFFECTS AND REDUCTION OF TOLBUTAMIDE-INDUCED DYSMORPHOGENESIS IN VITRO. J W Smoak. Department of Anatomy, Physiological Sciences, and Radiology, North Carolina State University College of Veterinary Medicine, Raleigh, NC. Sponsor: C F Brownie.
SYMPOSIUM SESSION:
CHEMICAL MODULATION OF NEURORECEPTORS AND ION CHANNELS

Sponsored by: The Neurotoxicology Specialty Section
Chairperson: Toshio Narahashi, Northwestern University Medical School, Chicago, IL

Whereas the roles of G proteins and protein kinases in various neuroreceptors and ion channels have been studied extensively, their roles in the actions of drugs and toxicants on these receptors and channels remain to be elucidated. Almost all drugs and toxicants exert multiple actions on multiple target sites, and there is no reason to assume that a chemical modulates a receptor/channel via a single mechanism. In fact, experimental evidence is slowly but steadily being accumulated to indicate that certain drugs and toxicants modulate neuroreceptor/channel functions through interactions with intracellular components such as G proteins and protein kinases. Multiple actions of a toxicant on various receptors/channels may be explained on the basis of its interaction with the G protein/kinase system that is a common denominator of the target sites. This is a rich field that promises a quantum leap in the coming years. Each presentation and discussion will focus on expected future developments and potential significance in the field of neurotoxicology.

#531 8:30 CHEMICAL MODULATION OF NEURORECEPTORS AND ION CHANNELS, T. Narahashi. Department of Molecular Pharmacology and Biological Chemistry, Northwestern University Medical School, Chicago, IL.

#532 8:35 G PROTEIN MODULATION OF CALCIUM CHANNELS: MECHANISTIC INSIGHTS AND ROLE IN ALCOHOL ACTION. S. N. Teismann. Department of Pharmacology and Molecular Toxicology, University of Massachusetts Medical Center, Worcester, MA. Sponsor: T. Narahashi.

#533 9:10 ROLE OF G PROTEINS AND PROTEIN KINASES IN MERCURY MODULATION OF GABA, RECEPTOR, T. Narahashi and C-S. Huang. Department of Molecular Pharmacology and Biological Chemistry, Northwestern University Medical School, Chicago, IL.

#534 9:45 LEAD-PCC INTERACTIONS IN SECRETORY EXOCYTOSIS. J. B. Suszkiewicz and J. L. Tomasi. Department of Molecular and Cellular Physiology, University of Cincinnati College of Medicine, Cincinnati, OH. Sponsor: T. Narahashi.


#536 10:55 DISRUPTION OF INTRACELLULAR CALCIUM STORES BY METHYLMERCUY (MeHg). W. D. Aitchison. Department of Pharmacology and Toxicology and Neuroscience Program, Michigan State University, East Lansing, MI.

#537 8:30 SANTESSON SYMPOSIUM: ONE HUNDRED YEARS OF RESEARCH ON BENZENE TOXICITY. R. Snyder. EOHSI-Rutgers University. Piscataway, NJ.

#538 9:05 BENZENE METABOLISM AND PHARMACOKINETICS. M. A. Medinsky. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.


#540 10:15 EFFECTS OF THE BENZENE METABOLITE, HYDROQUINONE, ON REGULATION OF DIFFERENTIATION AND PROLIFERATION OF HUMAN HEMATOPOIETIC STEM AND PROGENITOR CELLS. R. D. Irons. Molecular Toxicology and Environmental Health Sciences Program, University of Colorado Health Sciences Center, Denver, CO.

#541 10:50 MECHANISM BASED RISK ASSESSMENT FOR BENZENE INDUCED LEUKEMIA. M. T. Smith and E. W. Fanning. School of Public Health, University of California, Berkeley, CA.
TUESDAY MORNING, MARCH 11
8:30 a.m. - 11:30 a.m.
CCC: BALLROOM A

WORKSHOP SESSION:
USE OF MODERATE DIETARY RESTRICTION IN SAFETY ASSESSMENT

Sponsored by: The Carcinogenesis and Food Safety Specialty Sections
Chairpersons: Rakesh Dixit, Merck Research Laboratories, West Point, PA and Sam Kacew, University of Ottawa, Ottawa, ON, Canada

The survival of laboratory rats, including the F344 and SD strains in 2-year carcinogenicity studies has been declining over the past three decades throughout the pharmaceutical and chemical industry. Recent evidence suggests that the moderate diet restriction serves as a means of achieving increased survival and of reducing the early morbidity and mortality associated with ad lib. overfeeding and preventing the early development of nephropathy and cardiomyopathy in SD rats. In contrast to moderate dietary restriction, a number of experimental studies suggest that a more severe form of diet or caloric restriction lowers the spontaneous and genotoxic chemical carcinogen-induced carcinogenesis in rodents. This has raised concerns whether the caloric restriction may decrease the sensitivity of the rats in carcinogenesis bioassays to potential pharmaceutical, industrial and/or environmental chemicals. The objective of this symposium is to understand how various forms of diet-feeding schedules and caloric restriction affect the aging process, toxicity and toxicokinetic profile of chemicals, and the spontaneous and chemically-induced carcinogenesis in rats and underlying mechanisms of dietary restriction. The presentations will focus on mechanistic studies of dietary restriction and delineating the differences among the overfeeding, moderate diet/caloric restriction and severe diet/caloric restriction regimens.

#542 8:30 USE OF MODERATE DIETARY RESTRICTION IN SAFETY ASSESSMENT. R Dixit1 and S Kacew1. Merck Research Laboratories, West Point PA and 2University of Ottawa, Ottawa, ON, Canada.

#543 9:00 INFLUENCE OF CALORIC INTAKE ON AGING AND ON THE RESPONSE TO STRESSORS. E J Masoro. Department of Physiology, University of Texas Health Science Center, San Antonio, TX. Sponsor: R Dixit.

#544 9:30 MOLECULAR MECHANISMS OF CARCINOGENESIS MODULATED BY CALORIC INTAKE. R W Hart. National Center for Toxicological Research, Jefferson, AR.

#545 10:00 THE UNCONTROLLED VARIABLE IN SAFETY ASSESSMENT: AD LIBITUM (AL) OVERFEED RODENTS. THE NEED FOR DIETARY CONTROL. K F Keenan. Department of Safety Assessment, Merck Research Laboratories, West Point, PA. Sponsor: R Dixit.


#547 11:00 F.D.A.'S POINTS TO CONSIDER DOCUMENTS — THE NEED FOR DIETARY CONTROL IN RODENT CHRONIC TOXICITY AND CARCINOGENICITY STUDIES. W T Allanb, A Turturro, J E A Leahy and R W Hart. Food and Drug Administration, National Center for Toxicological Research, Jefferson, AR.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 202-212

WORKSHOP SESSION:
ASSESSMENT OF IMMUNOTOXICITY BY MULTIPARAMETER FLOW CYTOMETRY

Sponsored by: The Immunotoxicology Specialty Section
Chairpersons: Scott W. Burchiel, University of New Mexico, Albuquerque, NM and Gregory Ladics, DuPont Co., Haskell Laboratory, Newark, DE

The purpose of this workshop will be to present recent improvements and applications of flow cytometry methods for assessment of the effects of chemical agents on the immune system of animals and humans. Flow cytometry is a unique technology useful in the examination of selective effects of immunotoxic agents on target cells of the immune system. Several laboratories have now applied flow cytometry to characterize chemical effects on surface marker-defined subsets of cells obtained from lymphoid tissues. Recent progress on the use of flow cytometry to characterize cytotoxic T lymphocyte (CTL) responses, inter-laboratory validation of flow cytometry procedures for use in rat splenic cell subtyping, and characterization of murine lymph node responses to chemical sensitizers and irritants will be presented. In addition, with the development of new fluorescent probes, it is now possible to examine mechanisms by which toxic agents alter biochemical pathways of cell activation and responses to oxidant-induced injury. Applications of flow cytometry methods for measurement of activation in cell signaling and apoptosis via Ca2+-dependent pathways, p53, Bel-2, surface thiol modification, and glutathione depletion will be presented and results discussed.

#548 8:30 ASSESSMENT OF IMMUNOTOXICITY BY MULTIPARAMETER FLOW CYTOMETRY. S W Burchiel1 and G S Ladics2. 1University of New Mexico, Albuquerque, NM and 2DuPont Co. Newark, DE.

#549 8:35 AN INTERLABORATORY EVALUATION OF THE QUANTIFICATION OF RAT SPLenic Lymphocyte Subtypes Using Immunofluorescent Staining And Flow Cytometry. G S Ladics1, G Farm1, C Gross1, E E Sikorski2, R J Smialek2 and M H Miller2. 1Haskell Laboratory, Newark, DE; 2CIIT, Research Triangle Park, NC; 3Monanto Company, St. Louis, MO; 4Procter & Gamble Company, Cincinnati, OH; 5U.S. EPA, Research Triangle Park, NC and 6Medical College VA/VCU, Richmond, VA.

#550 9:10 APPLICATIONS OF FLOW CYTOMETRY TO ASSESSMENT OF CYTOTOXIC T LYMPHOCYTE (CTL) FUNCTION. N I Kerkvliet and J A Oughton. Department of Agricultural Chemistry, Oregon State University, Corvallis, OR.

#551 9:45 DIFFERENTIATING CONTACT ALLERGENS FROM IRRITANTS IN HUMANS AND MICE USING FLOW CYTOMETRY. G F Gerberich. The Procter & Gamble Company, Miami Valley Laboratories, Cincinnati, OH.

#552 10:20 ANALYSIS OF HUMAN PERIPHERAL BLOOD LYMPHOCYTE ACTIVATION AND APOPTOSIS BY FLOW CYTOMETRY. S W Burchiel, B Mouho1, D R Davila1, V M Salar1, E T Lauer2 and L Seamer2. 1The University of New Mexico College of Pharmacy Toxicology Program, Albuquerque, NM and 2The University of New Mexico Health Sciences Center Flow Cytometry Core Lab, Albuquerque, NM.

#553 10:55 DETECTION OF OXIDANT-INDUCED INJURY IN HUMAN LYMPHOCYTES BY FLOW CYTOMETRY. D A Lawrence, J Krieger and R Song. Wadsworth Center, New York State Department of Health, Albany, NY.
TUESDAY MORNING, MARCH 11
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 300-302

PLATFORM SESSION:
OXIDATIVE INJURY

Chairpersons: J. Edward Schneider, Oklahoma Medical Res. Foundation, Oklahoma City, OK and Varlerian Kagan, University of Pittsburgh, Pittsburgh, PA

#554 8:30
CADMIUM-INDUCED FREE RADICAL GENERATION AND ANTIOXIDATION DEFENSES IN LIVER AND KIDNEY OF RAT. S L Reddy1, P S Reddy2 and D Dasangi1. 1Department of Zoology, Osmania University, Hyderabad, India and 2Division of Neurology, University Medical Center, Jackson, MS.

#555 8:45
MECHANISMS OF METHYLENE BLUE PHOTO-TOXICITY. J E Schneider, X Lin, R A Floyd, J Tang, P Marble and Q Pye. Oklahoma Medical Research Foundation, Oklahoma City, OK.

#556 9:00
OXIDATIVE STRESS IN SILICOSIS: KINETIC CLEARANCE ASSAY OF TEMPO RADICALS. V Valiyathan1, S Leonard2, P Kuppasamy1, D Pack1, M Zhanan1, S P Sanders1 and J Zweier3. 1NIOSH, Morgantown, WV and 2The Johns Hopkins Medical Institutions, Baltimore, MD. Sponsor: V Casnana.

#557 9:15
FORMATION OF 8-OXOGUANINE FROM THE IN VITRO UVA IRRADIATION OF CALF-THYMS DNA AND QUINOLONES. T E Spratt1, D Chen1, G Schlitter2 and G M Williams1. 1American Health Foundation, Valhalla, NY and 2Bayer AG, Wuppertal, Germany.

#558 9:30
INHIBITION OF HYPOXIA-REOXGENATION INJURY IN THE HEART OF CATALASE OVEREXPRESSION TRANSGENIC MICE. Y Chen1, J T Saa2 and Y J Kang1. 1Departments of Medicine and Pharmacology and Toxicology, University of Louisville School of Medicine. Louisville, KY and 2US Department of Agriculture, Grand Forks Human Nutrition Research Center, Grand Forks, ND.

#559 9:45
IN VIVO RADIPROTECTIVE EFFECTS OF OLTIPRAZ: THE ROLE OF ENHANCED GLUTATHIONE TRANSFERASE (GST) EXPRESSION. S G Kim and S Y Nam. College of Pharmacy, Dukunsg Women's University, Seoul, Korea.

#560 10:00
CALCIUM MEDIATES ONSET OF THE MITOCHONDRIAL PERMEABILITY TRANSITION DURING OXIDATIVE STRESS TO RAT HEPATOCYTES. A-L Nieminen1, A M Byrne1 and J J Lemasters2. 1Department of Anatomy, Case Western Reserve University, University of North Carolina, Chapel Hill, NC and 2Department of Cell Biology & Anatomy, University of North Carolina, Chapel Hill, NC.

#561 10:15
SENSITIVITY OF NORMAL HUMAN HEPATOCYTES TO REACTIVE OXYGEN AND NITROGEN. S M D'Ambrosio1 and F M Robertson. 1Department of Radiology, Ohio State University, Columbus, OH and 2Department of Medical Microbiology, Ohio State University, Columbus, OH.

= 562 10:30
EXPRESSION OF ALDEHYDE DEHYDROGENASE 3 (ALDH3) AND NADPH: MENDADIONE OXIDOREDUCTASE (NMO1) IN CORNEAL EPITHELIAL CELLS AS A RESPONSE TO OXIDATIVE STRESS. T-Y Shiao, D Siegel, K Aroki-Sasuki, D Ross and V Vasiliu. Department of Pharmaceutical Sciences, University of Colorado Health Sciences Center, Denver, CO.

#563 10:45
ANTIOXIDANT EFFECT OF BCL-2 AGAINST PHOSPHOLIPID PEROXIDATION IN PC12 RAT PHEOCHROMOCYTOMA CELLS. Y Y Tyrina1, V A Tyrin1, G Carta1, P J Quim1, F S Schor2 and V E Kagan3. 1Department of Environmental and Occupational Health, University of Pittsburgh, PA, 2Department of Pediatrics, Neurology and Pharmacology, University of Pittsburgh, PA and 3Division of Life Sciences, King's College, London.

#564 11:00
OXIDATION OF β-CASEIN BY HOCI IN VITRO. L K Rogers, C Y Yang, A Garcia-Pratts, S E Welty and C V Smith. Department of Pediatrics and Medicine, Baylor College of Medicine, Houston, TX.

#565 11:15
PEROXYNITRITE AND γ-TOCOPHEROL INTERACTION: PRODUCT IDENTIFICATION AND POSSIBLE REACTION MECHANISM. N C Hoglen, J A Burt, D C Liebler and J G Sipes. Department of Pharmacology/Toxicology, Center for Toxicology, College of Pharmacy, The University of Arizona, Tucson, AZ.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
DOSEMETRY AND TOXICOLOGY IN THE UPPER RESPIRATORY TRACT

Chairpersons: John B. Morris, University of Connecticut, Storrs, CT and Jack Harkema, Michigan State University, East Lansing, MI

Displayed: 8:30 a.m. - 11:30 a.m.
Discussed: 9:30 a.m. - 11:30 a.m.

#566

#567
A PHYSIOLOGICALLY-BASED PHARMACOKINETIC MODEL FOR ORGANIC ACIDS INCORPORATING REGIONAL VAPOR DEPOSITION IN THE NASAL CAVITY, SYSTEMIC CIRCULATION, AND SYSTEMIC TISSUE COMPARTMENTS. C B Frederick1, L G Lomas1, K ABlack1, M L Bush1, J S Ultman1, J S Kimbel2, K T Morgan3, R P Subramanian2 and J B Morris4. 1Rohm and Haas Company, Spring House, PA, 2Pennsylvania State University, University Park, PA, 3Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 4University of Connecticut, Storrs, CT.

#568

THE EFFECT OF INHIBITION OF ALDEHYDE DEHYDROGENASE ON NASAL UPTAKE OF INSPIRED ACETALDEHYDE. J Stanek and J B Morris. Toxicology Program, University of Connecticut, Storrs, CT.

EFFECT OF COBALT PROTOPORPHRYIN IX ON REGIONAL CHANGES IN CELL PROLIFERATION AFTER INHALATION EXPOSURE TO HMPA. A E Harman, J M Voigt, S R Frame and M S Bogdanoff. 1Philadelphia College of Pharmacy and Science, Philadelphia, PA and 2Upjohn Haskel Laboratory for Toxicology and Industrial Medicine, Newark, DE.


TOXICITY OF INHALED DIVINYLBENZENE FOR B6C3F1 MICE. D L Morgan, J F Mahler, M P Moorman, R E Wilson, H C Price and R W O’Connor. 1NIOSH, Research Triangle Park, NC and 2METI, Research Triangle Park, NC.

PROLIFERATIVE NASAL LESIONS INDUCED IN RATS BY ALACHLOR, ACETOCHELOR AND BUTACHLOR ORIGINATE IN SPECIFIC REGIONS OF THE OlfACTORY MUCOSA. K T Morgan, E A Gross, D R Joyner, J Ishmael and D Thake. 1Chemical Industry Institute of Toxicology, Research Triangle Park, NC; 2Zaneca, Central Toxicology Laboratory, Alderley Park, Cheshir, UK, UK and 3Monsanto Company, St Louis, MO.

OLFACTORY EPITHELIAL INJURY IN MONKEYS AFTER ACUTE INHALATION EXPOSURE TO ACRYLIC MONOMERS. J R Harkeula, J K Lee, K T Morgan and C B Frederichs. 1Department of Pathology, Michigan State University, East Lansing, MI; 2Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 3Rolan and Haas Co., Spring House, PA.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 235-236

POSTER DISCUSSION SESSION:
INTRACELLULAR MEDIATORS OF METALLOTHIONEIN AND INTRA-
CELLULAR CALCIUM — EXPRESSION AND UNDERLYING MECHANISMS

Chairpersons: Joel Pounds, Wayne State University, Detroit, MI and Robert Goyer, Chapel Hill, NC

Displayed: 8:30 a.m. - 11:30 a.m.
Discussed: 9:30 a.m. - 11:30 a.m.

METALLOTHIONEIN AND GLUCOCORTICOID RESPONSIVENESS. J M DeMoor, O M Collins, D C Lindsay and J Koropatnick. London Regional Cancer Center, London, ON, Canada.

NON-TOXIC TREATMENT OF HUMAN MONOCYTES WITH GROUP IIIA METALS DIMINISHES THEIR CAPACITY TO UNDERGO ACTIVATION AND DIFFERENTIATION. J Koropatnick, O M Collins and R K Zaltz. 1University of Western Ontario, London, ON, Canada and 2Mercer University School of Medicine, Macon, GA.

PROTECTIVE ROLE OF METALLOTHIONEIN FROM CADMIUM-INDUCED CYTOTOXIC AND GENOTOXIC EFFECTS IN CHO CELLS. L Cai and M G Cherian. Department of Pathology, The University of Western Ontario, London, ON, Canada. Sponsor: M G Cherian.


METALLOTHIONEIN EXPRESSION DURING EARLY DEVELOPMENT OF THE MOLLUSC CRASSOSTREA VIRGINICA. M E Unger, K M Hansen and G Roesijadi. University of Maryland, Chesapeake Biological Laboratory, Solomons, MD.

EFFECTS OF CADMIUM CHLORIDE (CdCl2) ON CALCIUM CURRENTS IN PC12 CELLS: COMPARISON WITH OTHER METALS. T J Sloper. Neurotoxicology Division, NHEML, US EPA, Research Triangle Park, NC.

LEAD IS TRANSPORTED INTO EXCITABLE GH, CELLS BY CALCIUM STORE-OPERATED CATION CHANNELS BUT NOT BY L-CHANNELS. P M Hinkle and L E Kerper. Department of Pharmacology and Physiology, University of Rochester School of Medicine, Rochester, NY.

LEAD UPTAKE IS ACTIVATED BY DEPLETION OF INTRACELLULAR CALCIUM STORES. L E Kerper and P M Hinkle. Department of Pharmacology and Physiology, University of Rochester School of Medicine, Rochester, NY.

EFFECTS OF DMSA ON INTRACELLULAR CALCIUM MOBILIZATION IN CULTURED Rhesus Monkey Kidney Cells IN THE PRESENCE AND ABSENCE OF LEAD. P L Pokorski, M J McCabe and J G Pounds. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.
THE RHESUS MONKEY AS AN ANIMAL MODEL TO EVALUATE THE EFFICACY OF SUCCELLER (CHEMEX) CHELATION THERAPY. N.K. Laughlin, D.R. Smith, B.A. Fowler, A.R. Flegal and M.L. Luck. 1University of Wisconsin-Madison, Madison, WI; 2University of California-Santa Cruz, Santa Cruz, CA and 3University of Maryland Baltimore County, Baltimore, MD.

BIOTRANSFORMATION OF MESO-2,3-DIMER-CAPTSOUCINIC ACID (DMSA) IN CHILDREN WITH ELEVATED BLOOD LEAD (BPb). X Ren, N Lolascono, J J Chisolm, J Graziano and W Zheng. 1Department of Environmental Health Sciences, Columbia University, New York, NY; 2Department of Pharmacology, Columbia University, New York, NY and 3Department of Pediatrics, Johns Hopkins University Medical Center, Baltimore, MD.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION: MOLECULAR BIOLOGY

Chairpersons: Ronald Hines, Wayne State University, Detroit, MI and Alvaro Puga, University of Cincinnati Medical Center, Cincinnati, OH

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

#586


#587

THE EFFECT OF MULTIPLE ORAL ADMINISTRATION ON THE FORMATION AND DISAPPEARANCE OF 4,4'-METHYLENE-BIS(2-CHLOROANILINE)-DNA ADDUCTS IN RAT LIVER. D. G. Dobson, J. L. Cocher, D. M. Werren, T. F. Swearener and R. E. Savage. 1National Institute for Occupational Safety and Health, Cincinnati, OH.

#588

HRAS MUTATIONAL ANALYSIS OF CHEMICALLY INDUCED MOUSE SKIN AND LIVER TUMORS. K. R. Mitchell and D. Warshawsky. Department of Environmental Health, University of Cincinnati, Cincinnati, OH.

#589

A NOVEL DNA REPAIR PROCESS IN CELL CYCLE DEPENDENT BUT P53 INDEPENDENT. N.A. Whisnant and S.A. Leadon. Curriculunm in Toxicology and Department of Radiation Oncology, University of North Carolina, Chapel Hill, NC. Sponsor: D.J. Holbrook.

#590

METHYLATED DNA-BINDING PROTEIN, MDBP-1, IS PRESENT IN B6C3F1 MOUSE LIVER. P.S. Samiec and J.J. Goodman. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

#591

ANALYSIS OF TRANSLACTENTALLY-INDUCED MURINE LUNG TUMORS FOR P53 MUTATIONS-IDENTIFICATION OF A GENETIC POLYMORPHISM. L.A. Rollins, M. Faris, K.M. Grebani, D.O. Schaeffer and M.S. Miller. 1Bowman Gray School of Medicine, Winston-Salem, NC and 2University of Tennessee, Knoxville, TN.

#592

REGULATION OF A STRESS-ACTIVATED PROTEIN KINASE CASCADE BY THE NON-TPA-TYPE TUMOR PROMOTER PAIETYTOXIN. D. W. Kuroki and E.V. Wattenberg. Division of Environmental and Occupational Health, School of Public Health, University of Minnesota, Minneapolis, MN.

#593

FUMONISIN B, (FB), INCREASES ACTINOMYCIN D CYTOTOXICITY VIA A PROTEIN KINASE C (PKC)-DEPENDENT MECHANISM. R. Guzman, I.A. Gumprecht, H.M. Parker, M.E. Tumbleson, W.M. Haschek and G.K. Wollenberg. Department of Veterinary Pathobiology and Veterinary Biosciences, University of Illinois, Urbana, IL.

#594

ALTERATIONS IN GROWTH-RELATED GENE EXPRESSION AND SIGNALLING IN PRECISION-CUT ADULT RAT LIVER SLICES BY BENZQAPYRANE, K. Brenchley, A R Parrish, R. Fisher, C M Bral and K S Ramos. 1Department of Pharmacology, University of Arizona, Tucson, AZ and 2Department of Veterinary and Physiology and Pharmacy, Texas A&M University, College Station, TX.

#595

MESENSYMAL-TO-EPITHELIAL TRANSITION IN RENAL GLOMERULAR MESANGIAL CELLS FOLLOWING REPEATED IN VITRO CHALLENGE WITH BENZQAPYRANE. K S Ramos, A R Parrish and R C Burghardt. Faculty of Toxicology and Departments of Veterinary Physiology and Pharmacology and Anatomy and Public Health, Texas A&M University, College Station, TX.
DEREGULATION OF c-Ha-RAS GENE EXPRESSION IN VASCULAR SMOOTH MUSCLE CELLS BY BENZO(A)PYRENE. Y Zhang and K S Ramos. Faculty of Toxicology and Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

MOLECULAR BASIS OF PROLIFERATIVE DEREGULATION OF VASCULAR SMOOTH MUSCLE CELLS BY ALLYLAMINE. A R Parrish and K S Ramos. Faculty of Toxicology and Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

INCREASED EXPRESSION OF INTERCELLULAR ADHESION MOLECULE-1 (ICAM-1) AS A BIO-MARKER FOR SILICA EXPOSED MICE. R C Narko and A K Hubbard. Department of Pharmaceutical Sciences, University of Connecticut, Storrs, CT.

K-RAS PROTEIN EXPRESSIO IN LUNG TISSUES FROM DIFFERENT STRAINS OF MICE AND EFFECTS OF 2,3,7,8- TETRACHLORODIBENZO-P- DIOXIN (TCDD). R Gayatri, I E Beebe and L M Anderson. Lab of Comparative Carcinogenesis, National Cancer Institute, Frederick, MD.

EXPRESSION OF INSULIN-LIKE GROWTH FACTOR 2 (IGF2) INCREASES WITH CELL DENSITY IN MOUSE LUNG E10 CELLS. W Yu and J M Anderson. Lab of Comparative Carcinogenesis, National Cancer Institute, Frederick, MD.

ACROLEIN-INDUCED INHIBITION OF LUNG ENDOTHELIAL CELL NITRIC OXIDE SYNTHASE: ROLE OF SULFHYDRYL MODULATION. J M Patel, J L Zhang and E R Block. University of Florida and VA Medical Hospital, Gainesville, FL.

EFFECT OF NITRIC OXIDE EXPOSURE ON PROTEIN SYNTHESIS AND VIMENTIN EXPRESSION IN PULMONARY ARTERY ENDOTHELIAL CELLS. Y D Li, J M Patel and E R Block. University of Florida and VA Medical Center, Gainesville, FL.

EXTENDED AUTOPROTECTION FROM 2-BUTOXYETHANOL UPON REPEATED ADMINISTRATION OF PROTECTIVE DOSES OF 2-BUTOXYETHANOL. S D Sawant, P Doucet, W Slo, B L Blaylock and H M Mendendale. Division of Toxicology and Louisiana Institute of Toxicology, Northeast Louisiana University, Monroe, LA.

PHOSPHORVOLATION MEDIATED CHANGE IN ANESTHETIC SENSITIVITY OF (BK-) K+ CHANNELS IN GUINEA-PIG SYMPATHETIC NEURONS. J M Oleweski and W H Stapelfeldt. Department of Anesthesiology & CCM, University of Pittsburgh School of Medicine, Pittsburgh, PA and VA Medical Center, Pittsburgh, PA. Sponsor: M M Schaper.

DIFFERENTIAL GENE EXPRESSION IN MOUSE LIVER INDUCED BY EXPOSURE TO DIETHYLPHTHALATE. C R Muhlenkamp and S S Gill. University of California Riverside, Riverside, CA.

DIFFERENTIAL GENE EXPRESSION IN C57B6 MICE EXPOSED TO DIETARY DEHP. X Q Ye and S S Gill. Environmental Toxicology Graduate Program, University of California, Riverside, CA.


IN VITRO COVALENT BINDING OF HEPATOOTOXICANTS TO ACETAMINOPHEN (APAP) BINDING PROTEINS. S E Sheehan-Johnson, S L Pólski, E A Khairallah and S D Cohen. Toxicology Program, Departments of Pharmaceutical Sciences and Molecular and Cell Biology, University of Connecticut, Storrs, CT.

A MOLECULAR CHARACTERIZATION OF THE GENE FAMILY OF ACETAMINOPHEN BINDING PROTEINS. C Navarro1, S D Cohen2 and E A Khairallah1. 'Toxicology Program, Departments of Molecular and Cell Biology, University of Connecticut, Storrs, CT and 2Department of Pharmaceutical Science, University of Connecticut, Storrs, CT.

SURVIVAL-ASSOCIATED EXPRESSION OF TAI, A NOVEL ONCOPETAL CDNA, FOLLOWING CARBON TETRACHLORIDE-INDUCED LIVER INJURY. V Shultz, R Lee, M Panzica and N Thompson. Rhode Island Hospital, Brown University, Providence, RI. Sponsor: K Keocheede.

USE OF DIFFERENTIAL DISPLAY TO IDENTIFY NOVEL GENES INVOLVED IN DIMETHYL-TROSAMINE (DMN)-INDUCED HEPATOTOXICITY. A Bhattacharjee1, M S Rutherford, T L Horn2 and L B Schook1, 2Department of Veterinary Pathobiology, University of Minnesota, St Paul, MN and 2Department of Toxicology, University of Minnesota, St Paul, MN.

IDENTIFICATION AND CHARACTERIZATION OF THE RABBIT FLAVIN-CONTAINING MONOXOGENASE 1 GENE. Z Luo and R N Hines. Wayne State University School of Medicine, Detroit, MI.

A STOCHASTIC MODEL OF CELL TOXICITY: COMPARISON WITH CELL CULTURE RESULTS. R L Carpenter, D P Gaver, T K Narayanan, P A Jacobs and A Jung. Tri Service Toxicology Consortium, Wright Patterson AFB, OH, and Department of Operations Research, NPG, Monterey, CA.

RNA AMPLIFICATION AND REVERSE NORTHERN ANALYSIS TO MEASURE GENE EXPRESSION IN MeHg EXPOSED MICE. S D Quigley, S A Thompson, S C Kirchner, E M Faustman and T J Kavanagh. Department of Environmental Health, University of Washington, Seattle, WA.

HIGH LEVEL P-GLYCOPROTEIN EXPRESSION REDUCES CYCLOSPORIN A POTENCY. P M Stemmer, W F Elmoquist, K L Fukata, S A Swanson and C E Prince. Departments of Pediatrics and Pharmaceutical Sciences, University of Nebraska Medical Center, Omaha, NE.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL
POSTER SESSION:
CELL PROLIFERATION

Chairpersons: Lloyd Dethloff, Parke-Davis Pharmaceutical Res., Ann Arbor, MI and Darlene Dixon, NIEHS, Research Triangle Park, NC

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 10:15 a.m. - 12:00 p.m.

#625 INFLUENCE OF NORMAL FIBROBLASTS (FB) ON UTERINE LEIOMYOMA CELL (LCC) GROWTH AND PROLIFERATING CELL NUCLEAR ANTIGEN (PCNA) LABELING IN VITRO. A D Bowser, J K Haseman and D Dixon. National Institute of Environmental Health Sciences, Research Triangle Park, NC.

#626 DIETHYLSTILBESTROL ABROGATES INHIBITORY EFFECTS OF TRANSFORMING GROWTH FACTOR-β ON CELL CYCLE REGULATION IN CULTURED NORMAL HUMAN ENDOMETRIAL EPITHELIAL CELLS. J Girdhar and D G Kaufman. Department of Pathology and Laboratory Medicine, University of North Carolina, Chapel Hill, NC.

#627 GROWTH INHIBITION BY 17 β-ESTRADIOL OF MDA-MB-468 BREAST CANCER CELLS STABLY TRANSFECTED WITH THE ESTROGEN RECEPTOR — EFFECTS ON CELL CYCLE PARAMETERS. W Wang, R Smith and S Safe. Departments of Vet. Physiol. and Pharmacol., Texas A&M University, College Station, CA and Department of Pathobiol., Texas A&M University, College Station, TX.

#628 INVOLVEMENT OF THE ELECTROPHILE RESPONSE ELEMENT (EpRE) IN THE CHEMORESISTANCE OF MCF-7 BREAST ADENOCARCINOMA CELLS TO CYCLOPHOSPHAMIDE. H Marks-Hull and V Vasiliou. Department of Pharmaceutical Sciences, University of Colorado Health Sciences Center, Denver, CO. Sponsor: D Roos.

#629 INDUCTION OF DNA SYNTHESIS AND EXPRESSION OF EARLY RESPONSE GENES IN CULTURED RAT LIVER SLICES. M S Gokhale, J D Bayer, S Yang and A M Diehl. Division of Toxicological Sciences, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD and Gastroenterology Division, Johns Hopkins School of Medicine, Baltimore, MD.

#630 PEROXISOME PROLIFERATORS INCREASE HEPATOCYTE PROLIFERATION PREDOMINANTLY BY MECHANISMS INVOLVING KUPFFER CELLS. M L Rose, D Germolec, R Schoenhooven and R G Thorman. Department of Pharmacy, University of North Carolina, Chapel Hill, NC; Dept of Environmental Science and Engineering, University of North Carolina, Chapel Hill, NC; Curr. in Toxicology, University of North Carolina, Chapel Hill, NC and NIEHS, Research Triangle Park, NC.

#631 BIOLOGICALLY MOTIVATED CELL CYCLE KINETIC MODEL. H A El-Masri, C J Porter and G W Lucas. Laboratory of Computational Biology and Risk Analysis, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

#632 CONDITIONS NECESSARY FOR INHALED CHLOROFORM TO INDUCE REGENERATIVE CELL PROLIFERATION IN THE FEMALE B6C3F1, MOUSE LIVER. A A Constan, D C Wolf, C S Sparkle, B A Wong and B E Buxtorf. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#633 COMPOSITIONAL CHANGES IN THE AP-I COMPLEX FOLLOWING CCI, TREATMENT. D J Kaplan and R F Novak. The Institute of Chemical Toxicology, Wayne State University, Detroit, MI.


#635 OCTAMETHYLCYCTOTRISILXANE (D4) PRODUCES TRANSIENT HEPATIC HYPERPLASIA IN A MANNER SIMILAR TO PHENOBARBITAL (PB). J M McKim, Jr, G B Kolesar, R Schoenhooven, J G Brein, L A Burns, P C Wilga, T. W Dochierman, J Regan, R Gallavan, J. E Stanton, J J Goodman and J A Swenberg. Dow Corning Corporation, Midland, MI; ‘Michigan State University, East Lansing, MI and University of North Carolina, Chapel Hill, NC.

#636 OUTCOME OF TOXICITY: TOXICODYNAMIC FUNCTION OF INJURY AND REPAIR. S G Kulkarni, A Warbritton, T J Bucci and H M Mehendale. Division of Toxicology and Louisiana Institute of Toxicology, College of Pharmacy and Health Sciences, NE Louisiana Univ., Monroe, LA and ‘Pathology Associates Inc., National Center for Toxicological Research, Jefferson, AR.

#637 HIGH GLUCOSE CONCENTRATION INHIBITS THIOACETAMIDE-STIMULATED CELL PROLIFERATION TO ALTER OUTCOME OF CYTOTOXICITY IN HEPATOMA CELLS. P S Rao, B D Lyn-Cook, E B Blann, N A Littlefield and H M Mehendale. Division of Toxicology and Louisiana Institute of Toxicology, College of Pharmacy and Health Sciences, NE Louisiana University, Monroe, LA and Division of Nutritional Toxicology, NCTR, Jefferson, AK.

#638 STIMULATION OF TISSUE REPAIR IS CONSISTENT WITH α-NAPHTHYLTHIOUREA AUTOPROTECTION: INHIBITION ABOLISHES AUTOPROTECTION. C C Barton and H M Mehendale. Division of Toxicology and Louisiana Institute of Toxicology, College of Pharmacy and Health Sciences, NE Louisiana University, Monroe, LA.

#639 AUGMENTED LIVER TISSUE REPAIR IS THE MECHANISM FOR PROTECTION FROM THIOACETAMIDE LETHALITY IN DIET RESTRICTED RATS. S K Ramath, M G Soni and H M Mehendale. Division of Toxicology and LA Institute of Toxicology, College of Pharmacy and Health Sciences, NE Louisiana University, Monroe, LA.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
TCDD 1

Chairpersons: Kathleen Shiverick, University of Florida, Gainesville, FL and
Gary Perdue, Pennsylvania State University, University Park, PA

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

DOSE-DEPENDENT EFFECTS OF TCDD ON AB RECEPTOR AND ARNT EXPRESSION IN LIVER
AND ADRENAALS OF FEMALE SPRAUGE-DAWLEY RATS. V M Richardson, M J Sanotostoefano and L S
Birnbaum. 1US EPA, NHEERL, Research Triangle Park, NC and 2Curriculum in Toxicology, University of North
Carolina, Chapel Hill, NC.

Ah RECEPTOR (ABR) AND Ah RECEPTOR
NUCLEAR TRANSLOCATOR (ARNT) LEVELS AS
PREDICTORS OF DIOXIN RESPONSIVENESS IN
HUMAN LYMPHOCYTES. S A Masten1, X Yang1, J A
Grassman1, N J Walker2, C R Miller1, D L Spencer1, K M
Lanier1, G C Clark1, T R Sutter 3 and G W Lucier.
1National Institute of Environmental Health Sciences,
Research Triangle Park, NC and 3Johns Hopkins
University School of Hygiene and Public Health,
Baltimore, MD.

TREATMENT OF PURIFIED Ah RECEPTOR WITH
TYROSINE-SPECIFIC PHOSPHATASE REDUCES ITS
DNA BINDING ACTIVITY. S K Park, E C Henry
and T A Gasiewicz. Department of Environmental
Medicine, University of Rochester School of Medicine,
Rochester, NY.

LOW DOSES OF RETINOIC ACIDS AND CONDI-
TIONED MEDIA FROM NEOPLASTIC CELLS INCREASES ENDOTHELIAL CELL PROLIFERA-
TION. L C Burgess, J C Allbritton and H M Deen.
Animal, Dairy and Veterinary Department, Utah State
University, Logan, UT.

BONE MARROW STROMAL CELL EXPRESSION
OF THE AROMATIC HYDROCARBON RECEPT-
OR, A L Lavin and T A Gasiewicz. Department of
Environmental Medicine, University of Rochester School of Medicine,
Rochester, NY.

FLOW CYTOMETRIC ANALYSIS OF BONE MAR-
ROW T-LYMPHOCYTE PROGENITOR DIFFEREN-
TIATION ALTERED BY TCDD. F G Murante, S Burde
and T A Gasiewicz. Department of Environmental
Medicine, University of Rochester School of Medicine and
Dentistry, Rochester, NY.

PROTEIN KINASE C (PKC) ACTIVATION ENHANCES AH RECEPTOR (ABR) TRANSACT-
IVATION. W P Long1, M Prosy-Grant1, M S Dennis1 and
G H Perdue. 1Graduate Program in Biochemistry, Cell
and Molecular Biology, Pennsylvania State University,
State College, PA; 2Department of Veterinary Science,
Pennsylvania State University, State College, PA; and
3Department of Environmental Toxicology, University of
California, Davis, CA.

TREATMENT OF GUINEA PIG HEPATIC CYTOSOL WITH TCDD RESULTS IN AH RESEP-
TOR COMPLEXING WITH MITOGEN-ACTIVATED
PROTEIN KINASE AND REARRANGING CELL
CYCLE SUBUNITS. X Ma, G D Wheelock, H Dong and
J G Babish. Section of Cellular Physiology, Paracelsian,
Inc., Ithaca, NY.

REGULATION OF ARYL HYDROCARBON RECEPT-
OR (AhR) mRNA ABUNDANCE BY 2,3,7,8-TETRA-
CHLORODIBENZO-P-DIOXIN (TCDD) IN A RAIN-
BOW TROUT GONAD CELL LINE (RTG-2). C C
Auten and R E Peterson 1, 2. 1Environmental Toxicology
Center, University of Wisconsin, Madison, WI and
2School of Pharmacy, University of Wisconsin, Madison,
WI.

TRYPTAMINE AND INDOLE ACETIC ACID ARE
ENDOGENOUS WATER SOLUBLE METABOLITES
OF TRYPTOPHAN THAT ARE WEAK AhR LIG-
ANDS. M S Denson, K Tullis, W J Rogers and S Heath-
Pagliuca. Department of Environmental Toxicology,
University of California, Davis, CA.

DETECTION OF Ah RECEPTOR LIGANDS IN
EXTRACTS FROM COMMERCIAL AND CON-
SUMER PRODUCTS USING RECOMBINANT
BIOSASSAY SYSTEMS. W J Rogers1, M Fair1, G Winter1,
V Li2, G Clark2, A Browner2 and M S Denson1.
1Department of Environmental Toxicology, University of
California, Davis, CA; 2Department of Toxicology,
Xenobiotic Detection Systems, Inc., Durham, NC and
3Ag. University of Wageningen, Netherlands.
DIFFERENTIAL EFFECTS OF 2,3,7,8-TCDD TETRACHLORODIBENZO-P-DIOXIN (TCDD) AND BENZO(a)PYRENE (BAP) ON CYTOKINE AND GROWTH FACTOR EXPRESSION IN A HUMAN ENDOMETRIAL CARCINOMA CELL LINE, G D Charles, T I Medrano and K T Shiverick. Department of Pharmacology and Therapeutics, University of Florida, Gainesville, FL.

EFFECTS OF GROWTH FACTORS AND CYTOKINES IN TCDD-TRANSFORMED HUMAN CELLS IN CULTURE, J H Yang, C Vogel and I Abel. 1Department of Pharmacology and Toxicology, School of Medicine, Catholic University of Taegu-Hyousung, Taegu, Korea and 2Medical Institute of Environmental Hygiene at the Heinrich-Heine University of Dusseldorf, Dusseldorf, Germany.

TIMING OF EXPOSURE: MAMMARY GLAND DIFFERENTIATION AND CELL PROLIFERATION IN RATS EXPOSED GESTATIONALLY AND NEONATALLY TO TCDD, N M Brown, P M Manzoillo, J X Zhang and C A Luimarinier. Department of Pharmacology and Toxicology, University of Alabama at Birmingham, Birmingham, AL.

IN VITRO INHIBITION OF OVARIAN THECA-INTERSTITIAL CELL STEROIDOGENESIS BY 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (TCDD), X Li, C C Taylor, K F Roby, K K Rozman and P F Terranova. 1Center for Reproductive Sciences; 2Department of Physiology; 3Anatomy and Cell Biology; 4Pharmacology, Toxicology and Therapeutics, University of Kansas Medical Center, Kansas City, KS and 5Section of Environ-Toxicol., GSF-Institut fur Toxikologie, Neuherberg, Germany.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
P450 III

Chairpersons: David Spink, NY State Dept. of Health, Albany, NY and Dana Pedersen, Northeastern University, Boston, MA

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 10:15 a.m. - 12:00 p.m.

AH RECEPTOR-INDEPENDENT INDUCTION OF CYP1A2 GENE EXPRESSION IN GENETICALLY-INBRED MICE. M Sethi. A Parrish, K Ramos, J Miggens, S Safe and J Womack. 1Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX and 2Department of Veterinary Pathobiology, Texas A&M University, College Station.

MUSK KETONE IS A PHENOBARBITAL LIKE INDUCER OF CYTOCHROME P450 ENZYMES IN MOUSE LIVER. S B Staud, D Caudill and L D Lehman-McKeeman. Miami Valley Laboratories, Proctor and Gable Co., Cincinnati, OH.
TIME-DEPENDENT DEPRESSION OF TOTAL CYTOCHROME P450 AND FORM-SPECIFIC ACTIVITIES IN MICE FOLLOWING INFECTION WITH THE MURINE RETROVIRUS, LP-BM5 (MAIDS). S. Shedoffsky, J. E. Swander, R. Tosheva, R. Avdiaishkio and D. Cohen. V.A. Medical Center, Department of Medicine, University of Kentucky, Lexington, KY; National Institute for Occupational Safety and Health/Centers for Disease Control and Prevention, Cincinnati, OH and Department of Microbiology and Immunology, College of Medicine, University of Kentucky, Lexington, KY.

EFFECT OF PHENOBARBITAL PREGNENOLONE-16α-CARBONITRILE AND ISOAZID ON CYTOCHROME P450 ISOENZYMES IN THE SPECIES MEWA EKOLUS I. Santos, A. Hupka and G. Winston. PSM, Ponce, PR and Louisiana State University, LA.

EFFECTS OF 5-BROMO-2-DEOXYURIDINE (BrdU) ON HEPATIC CYTOCHROME P450 CONTENT AND β-OXIDATION ACTIVITY IN RATS AND MICE. M. Applegate, L. Sulecki and L. B. Biegler. DuPont-Haskell Laboratory, Newark, DE.

INHALATION EXPOSURE TO 100 PPM ETHYLBENZENE HAS LITTLE EFFECT ON CYTOCHROME P450 ACTIVITY IN RATS. D. C. Pedersen, D. A. Mongeon and R. A. Schatz. Northeastern University Toxicology Program, Boston, MA.


CYT P450 ENZYMES AS BIOMARKERS FOR ASSESSMENT OF EXPOSURE TO POLYCYCLIC ARomatic HYDROCARBONS IN MICE. X. J. Zhang, P. E. Thomas, A. Yarborough, B. L. Ma and E. H. Weyand. College of Pharmacy, Rutgers, The State University of New Jersey, Piscataway, NJ.


OXIDATIVE INACTIVATION OF CYTP1A1 BY 3,3',4,4'-TETRACHLOROBIPHENYL AND RELEASE OF ACTIVE OXYGEN FROM HEPATIC MICROSONES STIMULATED BY SLOW CYP1A1 SUBSTRATES. J. J. Schleizinger, R. D. White and J. J. Stgemean. Department of Biology, Woods Hole Oceanographic Institute, Woods Hole, MA. Sponsor: M. E. Hahn.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
DISPOSITION/PHARMACOKINETICS II

Chairpersons: Charles Timebault, Dow Chemical Co., Midland, MI and Timothy Fennell, CBT, Research Triangle Park, NC

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

#703

DISPOSITION OF 3H-LABELLED CYTOFECTIN, A COMPONENT OF A PLASMID-DNA/CAUTION-C
LIPID COMPLEX, IN RICE FOLLOWING INTRAVENOUS ADMINISTRATION. S Ducharme1, E S
Ferdinand2, S E Parker1 and C J Wheeler1. 'Vical, San
Diego, CA and 'ClinTrials BioResearch Ltd, Senneville
(Montreal), QC, Canada. Sponsor: B Breonop.

#704

TRANSPORT OF NITROFURANTOIN INTO RAT
MILK. P M Gerk, E W Paxton, C V Oo and P J
McNamara. University of Kentucky, College of Pharmacy, Division of Pharmacology and Experimental Therapeutics, Lexington, KY. Sponsor: R A Yokel.

#705

QUANTITATIVE WHOLE-BODY AUTORADIO-
GRAPHIC DISPOSITION AND ELIMINATION IN
MALE RATS FOLLOWING A SINGLE ORAL 50
MG/KG DOSE OF [14C]LY3297802, A MUSCARINIC
ANALGESIC. S H Chay1, J L Herman1, L A Shipley2, T
L Abraham and R C Pohlman3. Toxicology Research Laboratories, Lilly Research Laboratories, Division of Eli Lilly and Company, Greenfield, IN and Department of Drug Metabolism and Disposition, Lilly Research Laboratories, Indianapolis, IN.

#706

QUANTITATIVE WHOLE-BODY AUTORADIO-
GRAPHIC DISPOSITIONAL ANALYSIS OF
[14C]LY303870, A NEUROKININ-1 ANTAGONIST, IN
MALE FISHER 344 RATS FOLLOWING SINGLE
AND MULTIPLE DOSES. I J Cykowski, S H Chay, J L
Herman and R C Pohlman3. Toxicology Research Laboratories, Lilly Research Laboratories, Eli Lilly and Company, Greenfield, IN.

#707

EFFECT OF PROBENCID COADMINISTRATION ON THE CHRONIC TOXICITY AND PHARMACOKINETICS OF ANTI-CYTMEGALOVIRUS
NUCLEOTIDE ANALOGUE CHIDOFIVIN MON-
KEYS, S A Lacy, K C Cundy, W A Lee and M J M

#708

INCORPORATION OF PIENCYCLIDINE INTO
HAIR: A COMPARISON WITH MELANIN CON-
CENTRATION. M H Slawson, D G Wilkins and D E
Rollins. Center for Human Toxicology, University of Utah, Salt Lake City, UT. Sponsor: D E Moody.

#709

ABSORPTION AND EXCRETION OF LACTOFERRIN
BY NEONATAL CALVES. L I Gorman1, D C
Borger, P L Schambach1 and L B Willet1. 'Ohio State
University, Ohio Agricultural Research and Development Center, Wooster, OH and 'College of Wooster, Wooster, OH.

#710

TOXICOKINETICS OF PHENOLPHTHALEIN
(PTH) IN MALE AND FEMALE RATS AND MICE. B
J Collins1, K J Dow1, T B Grizzle1, D R Brine2 and R W
Handy3. 'NIHHS, Research Triangle Park, NC and 'RTI
Research Triangle Park, NC.
TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
ENDOCRINE TOXICOLOGY

Chairperson: Kevin Gaido, CIIT, Research Triangle Park, NC

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 10:15 a.m. - 12:00 p.m.

#731
EFFECTS OF MIREX ON HORMONES OF GLUCOSE STRESS IN RATS. M A Q Khan, S A Levin, I. V Jovanovich, R Prasad and S Y Qadri. Department of Biological Sciences & Department of Pathology, University of Illinois at Chicago, Chicago, IL.

#732
PHTHALATE ESTER PLASTICIZERS DIFFERENTIALLY ACTIVATE THE PEROXISOME PROLIFERATOR-ACTIVATED RECEPTORS, P J Lapinika and J C Corton. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#733
COMPARISON OF THE EFFECTS OF 2,4-DICHLOROPHENOXACETIC ACID ON THYROID HORMONE HOMEOSTASIS WITH THOSE OF PHENOVARBITAL. V B Godfrey, R J Griffin and L T Burka. NIEHS, Research Triangle Park, NC.

#734
EFFECT OF ACUTE INHALATION EXPOSURE TO ISOMYXIL NITRITE (IAN) ON THE HYPOTHALAMIC- PITUITARY-ADRENAL (HPA) AXIS. V M Pise, T G Rejle, S Murshidhara and C E Dallas. Department of Pharmacology and Toxicology, College of Pharmacy, University of Georgia, Athens, GA.

#735
AN EVALUATION OF THE ANTIOXIDANT CAPACITY OF MELATONIN IN VIVO AND IN VITRO. C Seidell, A Milhajlovic and P J O'Brien. Faculty of Pharmacy, University of Toronto, ON, Canada.

#736
EFFECT OF HEPATIC PEROXISOME PROLIFERATORS (PPs) ON THE PARACRINE CONTROL OF RAT TESTICULAR INTERSTITIAL CELL FUNCTION BY SEMINIFEROUS TUBULES IN VITRO. R C M Liu and M E Hurst. The DuPont Co.; Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.

#737
A MATHEMATICAL MODEL FOR PINEAL MELATONIN PRODUCTION IN RATS. G M Blumenthal, M C Kohn and C J Portier. Laboratory of Computational Biology and Risk Analysis, National Institute of Environmental Health Sciences, Research Triangle Park, NC. Sponsor: H B Matthews.

#738
SUPPRESSION OF PUBERTAL GROWTH BY LIFE-TIME LEAD EXPOSURE IN THE MALE RAT INVOLES BOTH THE HYPOTHALAMIC-PITUITARY-HEPATIC AND THE HYPOTHALAMIC-PITUITARY-TESTICULAR AXIS. M J J Ronit, L M Bell, K Green, J Parker, C Rector, S J Shema, P K Roberson and T M Badger. Department of Pediatrics, University of Arkansas for Medical Sciences and Arkansas Children's Hospital Research Institute, Little Rock, AR.

#739
DELAVIRINE-INDUCED ADRENOCORTICAL HYPERFISTHONY IN THE RAT IS A FEEDBACK RESPONSE TO INHIBITION OF ADRENOCORTICOID BIOSYNTHESIS. T W Petry, H D Colly, D P Blakeman, R A Jolly and J E Lund. Worldwide Toxicology, Pharmacia & Upjohn, Kalamazoo, MI and 2Albany College of Pharmacy, Albany, NY.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
NEPHROTOXICITY

Chairpersons: Gary Rankin, Marshall University School of Medicine, Huntington, WV and Peter Harvison, Philadelphia College of Pharm. & Science, Philadelphia, PA

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

#740
N3-(3,5-DICHLOROPHENYL) SUCCINIMIDE (NDS) AND NDPS METABOLITE NEPHROTOXICITY IN GUNN RATS. S K Hong, D K Anestis, C C Skoggs, J G Ball and M A Valentino, Department of Pharmacology, Marshall University School of Medicine, Huntington, WV.

#741
DOSE DEPENDENT EFFECTS OF SODIUM SULFATE ON N3-(3,5-DICHLOROPHENYL)-SUCCINIMIDE (NDS) NEPHROTOXICITY. D K Anestis, S K Hong, J G Ball, M A Valentino and G O Rankin. Department of Pharmacology, Marshall University School of Medicine, Huntington, WV.

#742

#743
A ROLE FOR LEUKOTRIENES IN N3-(3,5-DICHLOROPHENYL) SUCCINIMIDE (NDS) AND NDPS METABOLITE NEPHROTOXICITY IN FISCHER 344 RATS. S K Hong, D K Anestis, J G Ball, M A Valentino and G O Rankin. Department of Pharmacology, Marshall University School of Medicine, Huntington, WV.

#744
IN VITRO NEPHROTOXICITY OF 2- AND 4-CHLORANILINES: COMPARISONS WITH 4-AMINO-3-CHLOROPHENOL, 2-AMINO-5-CHLOROPHENOL AND AMINOANAPHENOLS. M A Valentino, J G Ball, S K Hong and G O Rankin. Department of Pharmacology, Marshall University School of Medicine, Huntington, WV.

#745
EARLY RENAL FUNCTIONAL CHANGES IN PARA-AMINOPHENOL-INDUCED NEPHROTOXICITY: GLUCONEOGENESIS AND DNA FRAGMENTATION. T J Roethel and J K Tarbell. Division of Pharmacology and Toxicology, Philadelphia College of Pharmacy and Science, Philadelphia, PA.

#746

#747
CYTOTOXIC RESPONSE PROFILES OF RENAL MESENCHYMAL AND EPITHELIAL CELLS TO SELECTED AROMATIC HYDROCARBONS. N F Alejandro, R R Parrish, R C Bowes and K S Ramos. Faculty of Toxicology and Dept. of Veterinary Physiol. & Pharmacol., Texas A&M University, College Station, TX.

#748
TOXICITY OF NAPROXEN SODIUM ADMINISTERED ORALLY BY GAVAGE TO CYCLOMOLGUS MONKEYS FOR TWO WEEKS. M H Berardi, R J Johnson and M W Leach. Schering-Plough Research Institute, Lafayette, NJ.
RENEAL TOXICITY OF PHOSPHOROTHIOATE Oligonucleotides (ODN) IN RATS. L L Manza1, M M Butler1, C F Bennett2, A A Levin1, A De Peyster1 and D K Monteith3. San Diego State University, San Diego, CA; 1Isis Pharmaceuticals, Carlsbad, CA and 3Palomar College, San Marcos, CA.

EVALUATION OF THE RENAL EFFECTS OF PHOSPHOROTHIOATE Oligonucleotides (P=S ODN) IN MONKEYS. M J Horner1, D K Monteith1, N A Gillett2, M Butler1, S P Henry1, C F Bennett1 and A A Levin1. 1Sierra Biomedical, Sparks, NV and 2Isis Pharmaceuticals, Carlsbad, CA.

N-ACETYLCYSTEINE (NAC) PROTECTS THE KIDNEY AGAINST CISPLATIN (CP)-TOXICITY IN VITRO AND IN VIVO. V S Savoala1, W Parry1, V K Kanji1, B S Selkon1 and A K Salahudeen1. 1Jackson State University, Jackson, MS and 2University of Mississippi Medical Center, Jackson, MS. Sponsor: D Desalas.

TRANSETHHELIAL OCHRORATOXIN A (OTA) SECRETION IN PRIMARY CULTURES OF RABBIT RENAL PROXIMAL TUBULES. C E Groves1, M N Morales1 and S H Wright1. 1University of Florida College of Veterinary Medicine, Gainesville, FL and 2University of Arizona College of Medicine, Tucson, AZ.

RENAI AND CARDIOVASCULAR RESPONSES TO PROLONGED ENDOTHELIN-1 (ET-1) INFUSION IN CONSCIOUS DOGS. J M Ezraty, D T Thaddeus, J Schonenbeck, K A Gossett and C P Bell-Quilley. Department of Toxicology, SmithKline Beecham Pharmaceuticals, King of Prussia, PA. Sponsor: D Murphy.

THE ROLE OF ENDOTHELIN IN POTASSIUM DICROMATE-INDUCED ACUTE RENAL FAILURE. T S Leggost, L K Frizzell and M E Davis. 1Department of Pharmacology & Toxicology, West Virginia University Health Sciences Center, Morgantown, WV.

NITRIC OXIDE GENERATION MEDIATES LIPID A-INDUCED OXIDANT INJURY IN RENAL PROXIMAL TUBULES. L A Taylor and P R Mayeux. University of Arkansas for Medical Sciences, Little Rock, AR. Sponsor: R G Schnellmann.

DIFFERENCES IN RENAL CEPHALORIDINE TOXICITY AND ACCUMULATION FOLLOWING INSULIN PRETREATMENT OF DIABETIC RATS. J G Ball, R C Harmon and M A Valentin. Department of Pharmacology, Marshall University School of Medicine, Huntington, WV.

RABBIT PROXIMAL TUBE CELLS IN PRIMARY CULTURE ON COLLAGEN-IV POROUS MEMBRANES. APPLICATION TO PHARMACOTOXICOLOGY STUDIES. I Geneste1, E Le Prieur1, G Lorenzi1 and J P Morin1. 1Inserm U205, Rouen, France. and 2HMR/Roussel-Uclaf, Romainville, France. Sponsor: P Pallardy.

DECREASE IN KIDNEY CALBINDIN-D 28kDa AS A POSSIBLE MECHANISM OF CYCLOSPORINE AND FK-506 INDUCED CALCIURIA AND TUBULAR MINERALIZATION. L Aichert1, G Meier1, N L Anderson1, A Cordier1 and S Steiner1. 1DrugSafety / Sanofi Pharma Ltd. Basel, Switzerland and 2Large Scale Biology Corporation, Rockville, MD.


DIVERSE CYTOPROTECTANTS PREVENT CELL DEATH AND PROMOTE RECOVERY OF RESPIRATORY AND ION TRANSPORT. J H Moran and R G Schnellmann. Division of Toxicology, University of Arkansas for Medical Science, Little Rock, AR.

CALPAINS AND CAPACITATIVE CALCIUM ENTRY ARE MEDIATORS IN RENAL CELL DEATH. S L Waters, S S Sarang and R G Schnellmann. Dept. Pharmacol. & Toxicol., University of Arkansas for Medical Sciences, Little Rock, AR.

NOVEL CALPAIN INHIBITORS INHIBIT CALPAIN ACTIVITY AND TOXICANT-INDUCED RENAL CELL DEATH. J F Harriman1, S L Waters1, D L Che2, J C Powers2 and R G Schnellmann1. 1University of Arkansas for Medical Sciences, Little Rock, AR and 2Georgia Institute of Technology, Atlanta, GA.

EVIDENCE OF THE B-SUBUNIT OF THE NEURONAL GLYCINE RECEPTOR IN HUMAN AND RAT KIDNEY. S S Sarang, D F Grant, W B Reeves and R G Schnellmann. Divisions of Toxicology and Nephrology, University of Arkansas for Medical Sciences, Little Rock, AR.

THE ENDOGENOUS LIGAND OF MOUSE URETHRAL PROTEIN (MUP) CAUSES 02A-GLOBULIN NEPHROPATHY IN RATS. L D Lehman-McKeeman, D Caudill, C Edy and P R Rodriguez. Miami Valley Labs, Procter & Gamble Co., Cincinnati, OH.

RELATIONSHIP OF HYDROQUINONE-ASSOCIATED RAT RENAL TUMORS WITH SPONTANEOUS CHRONIC PROGRESSIVE NEPHROPATHY. G C Hard1, J Wynnser1, J C English1, E Zang1 and G M Williams1. 1American Health Foundation, Valhalla, NY and 2Eastman Kodak Company, Rochester, NY.


NEPHROTOXICITY OF LOW-OSMOLARITY CONTRAST MEDIA EVALUATED WITH LLC-PK1, CELLS AND RENAL CORtical SLICES. M Waszki1, E Tanaka2 and M Gemba1. 1Toxicology Laboratory, Mitsubishi Chemical Corporation, Yokohama, Japan and 2Division of Pharmacology, Osaka University of Pharmaceutical Sciences, Takatsuki, Japan. Sponsor: M Tsuchitani.

TUESDAY MORNING, MARCH 11
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL
POSTER SESSION:
MIXTURES TOXICOLOGY
Chairpersons: Kannan Krishnan, University de Montreal, Montreal, QC, Canada and Ii Chan, Dept. of National Health, Ottawa, ON, Canada
Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 10:15 a.m. - 12:00 p.m.

RAT-TO-HUMAN EXTRAPOLATION OF THE TOXICOKINETICS OF A TERNARY MIXTURE OF ALKYL BENZENES. R Tardif1, G Charest-Tardif1, J Brodeur1 and K Krishnan. Dép. méd. trav. lvg. milieu, Université de Montréal, Montréal, QC, Canada.

TOXICOLOGIC INTERACTIONS INVOLVING THREE CHEMICALS: KEPONE, CARBON TETRACHLORIDE AND 1,1,2,2-TEUTRACHLOROETHANE. S A Saghari, L Feng, H A El-Masri, S A Benjamin and R S H Yang. Center for Environmental Toxicology and Technology, Department of Pathology, Colorado State University, Fort Collins, CO and Department of Pathology, Colorado State University, Fort Collins, CO.

TOXICOLOGICAL MODELING OF COMPLEX MIXTURES. PBPK MODELING, QSAR ANALYSIS AND LUMPING THEORY TO MODEL TOXICOKINETICS OF JET FUELS. H J M Verhaar, J S Morrison, A F Reardon, D P Gasior, M L Carpenter and R S H Yang. RITOX, Utrecht University, The Netherlands.

INVIVO ASSESSMENT OF THE METABOLIC INTERACTION BETWEEN TRICHLOROETHYLENE, (TCE) AND CARBON TETRACHLORIDE (CCl4) IN RATS BY GAS UPTAKE INHALATION. M V Evans, D Terrell, J L Mansfield, A McDonald, Y M Sey and J E Simmon. US EPA/NHEERL, Research Triangle Park, NC and SEER, Research Triangle Park, NC.

THE ROLE OF MIXING RATIO IN INTERACTIVE TOXICITY OF SIMPLE MIXTURES. J Hader, M M Mumtaz and J G Pounds. Institute of Chemical Toxicology, Wayne State University, Detroit, MI and Division of Toxicology, ATSDR, Atlanta, GA.


INTERACTIVE EFFECTS OF TCDD AND PCBs IN RATS. J Chu, P Lecavalier, A Yagminas and R Poon. Health Protection Branch, Ottawa, ON, Canada.

SUBCHRONIC TOXICITY OF AIDS COMBINATION THERAPIES IN B6C3F1 MICE. G N Rao, C Lindaum 3F, J E Heath and H D Giles. National Institute of Environmental Health Sciences, Research Triangle Park, NC and Southern Research Institute, Birmingham, AL.

LACK OF PRENEOPLASTIC FOCI IN RATS EXPOSED TO A HAZARDOUS WASTE GROUNDWATER MIXTURE IN A MEDIUM-TERM HEPATIC INITIATION/PROMOTION ASSAY. S A Benjamin, I W Chubbs, C E Dean, H J D Tessori and R S H Yang. Center for Environmental Toxicology and Technology, Department of Pathology, Colorado State University, Fort Collins, CO and Center for Environmental Toxicology and Technology, Department of Environmental Health, Colorado State University, Fort Collins, CO.

GENOTOXICITY AND CYTOTOXICITY IN MICE FOLLOWING EXPOSURE TO MIXTURES OF BUTADIENE AND STYRENE. T L Leavert, G M Farriss, R A James, R Shah, V A Wong, M Marshall and J A Bond. Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

ENZYME ACTIVITY IN THE BINARY MIXTURE OF NON-PLANAR POLYCHLORINATED BIPHENYL (PCB) 2,3,7,8-TEUTRACHLOROBENZO-P-DIOXIN (TCDD). K Yu, D Tillitt, G Burton, Jr and J Fisher. Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.

ASSESSMENT OF THE HEPATOTOXIC INTERACTION BETWEEN CHLOROFORM (CHCL) AND BROMODICHLOROMETHANE (BDCM) BY DOSE ADDITION AND RESPONSE ADDITION. T E Keegan, R A Pugram and J E Simmons. ESE/Toxicology, UNC-Chapel Hill, Chapel Hill, NC and NHEERL, US EPA, Research Triangle Park, NC.

A SHORT TERM FEEDING PROTOCOL FOR EVALUATING THE AVAILABILITY OF CHEMICAL COMPONENTS OF MGP CONTAMINATED SOIL. K Rozett, B L Ma, D Spina and E H Weyand. College of Pharmacy, Rutgers, State University of New Jersey, Piscataway, NJ.

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TUESDAY AFTERNOON, MARCH 11

12:00 p.m. - 2:00 p.m.
CCC - BALLROOM C

SPECIAL EVENT:
GRADUATE STUDENT LUNCHEON

Sponsored by: The Education Committee

Chemical and related awards and research student presentations. This session includes presentations of the 1991 Graduate Student Fellowship. Graduate Students must sign up for the luncheon on the Registration Form when registering for the Annual Meeting.
TUESDAY AFTERNOON, MARCH 11
12:00 p.m. - 1:30 p.m.
CCC: BALLROOM A

ROUND TABLE SESSION:
SHOULD CARCINOGENESIS DATA FROM TRANSGENIC ANIMALS BE APPLIED TO SAFETY ASSESSMENT, IF SO, HOW?

Sponsored by: The Carcinogenesis and Risk Assessment Specialty Sections
Chairperson: Richard J. Bull, Battelle Pacific Northwest Labs, Richland, WA

Transgenic animals are a new research tool with promise for application in safety assessment. Regulatory agencies and industry must consider how data obtained from transgenic animals will be utilized in their decision making. The role of transgenics in regulation may be influenced differently by varying legislative authorities across and within agencies. Do varying legislative mandates allow protection against adverse health effects to be balanced against benefits? Those that deal with carcinogenic endpoints in an all-or-none fashion may make the application of this technology difficult. A series of scientific questions also has to be addressed. What are the false positive and negative response rates with these animals? Can (should) the results from experiments with transgenics be used in quantitative risk assessments? Dose-response models based upon a distribution of sensitivities may no longer be valid. What do transgenics say about mechanism of action? This roundtable will entail a discussion of the views of the research community, the regulated industries, and the current positions of the U.S. EPA and FDA. The discussion will focus on points of agreement and issues of concern regarding the application of this new technology to safety evaluations.

TUESDAY AFTERNOON, MARCH 11
12:00 p.m. - 1:30 p.m.
CCC: ROOMS 232-242

ROUND TABLE SESSION:
CHROMIUM (III) AND CHROMIUM PICOLINATE SUPPLEMENTATION: BENEFITS AND HAZARDS

Sponsored by: The Metals Specialty Section
Chairperson: Max Costa, New York University Medical Center, New York, NY

Supplementation of chromium(III) (i.e., Cr(III) picolinate) is widely used throughout the world today, not only in vitamin pills but also in adjunct therapy of muscle building and has recently been shown to be very effective in enhancing the action of insulin on glucose transport of diabetic patients. Max Costa will initiate the roundtable discussion with an overview of the essentiality and toxicity of Cr(III) and Cr(VI). Dr. Costa will cover the interesting and intriguing issue of how difficult it is to understand Cr(III) essentiality in view of its chemistry. Cr(III) tends to form very tight complexes that are inert to ligand substitution reactions and it is therefore unlikely that Cr(III) is involved in enzymatic function but may have some role in cellular structure. This will be followed by a presentation from Richard Anderson on the benefits of Cr(III) supplementation. Dr. Anderson will address the mechanisms of Cr(III) essentiality. This is to be followed by a presentation from Michael Gargas in the pharmacokinetics of Cr. Dr. Gargas has developed a model that is used to study and understand the distribution of Cr in humans. This will be followed by a presentation by Karen Wettenhahn of a model addressing concern about the accumulation of Cr(III) following its supplementation in humans. Dr. Wettenhahn will discuss the potential toxic consequences of such Cr(III) accumulation. Diane Stearns will discuss the elastogenicity and genotoxicity of Cr picolinate, the most commonly used form of Cr(III) supplementation. Dr. Stearns will point out that the picolinate may be the genotoxic component of Cr(III) picolinate. This will be followed by a discussion session and a conclusion/summary section.

#782 12:00

12:05 R W Tennant, NIEHS, Research Triangle Park, NC
12:12 J I Goodman, Michigan State University, East Lansing, MI
12:19 N J Gorelick, Procter & Gamble Company, Cincinnati, OH
12:24 P Fenner-Crip, US EPA, Washington, DC
12:29 B Hill, US FDA, Rockville, MD
12:34 DISCUSSION

#783 12:00
CHROMIUM (III) AND CHROMIUM PICOLINATE SUPPLEMENTATION: BENEFITS AND HAZARDS.
M Costa. Department of Environmental Medicine, New York University Medical Center, New York, NY.

12:10 R A Anderson, U.S.D.A., Beltsville, MD
12:20 M Gargas, ChemRisk, Cleveland, OH
12:30 K Wettenhahn, Dartmouth College, Hanover, NH
12:40 D Stearns, Dartmouth College, Hanover, NH
12:50 DISCUSSION
TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 4:30 p.m.
CCC: BALLROOM A

SYMPOSIUM SESSION:
RETINOIDs AND TERATOGENESIS:
MOLECULAR MECHANISMS AND APPROACHES

Sponsored by: The Molecular Biology and Reproductive and Developmental
Specialty Sections
Chairpersons: Arthur A. Levin, Isis Pharmaceuticals, Carlsbad, CA

Retinoids are a class of compounds related to vitamin A that play a key role in
embryonic development and have remarkable therapeutic activities. The use of
retinoids as therapeutic agents is limited by their profound toxicities including ter-
atogenesis. Recent discoveries on the molecular mechanisms of retinoid action
provide a means for understanding the toxicity of retinoids. Retinoids are now
thought to produce their biologic effects by interacting with two specific nuclear
receptor families for retinoic acid, the RARs and the RXRs. Each family consists
of three subtypes and numerous isotypes which result from the use of alternative
transcription start sites. These receptors are members of the steroid/thyroid super-
family of receptors and as such are ligand-dependent transcription factors. The
expression of each of the six known receptors and their isotypes is regulated in
embryonic development. As the first step in the pathway of retinoid activity, the
receptors are key molecular targets through which we can gain insight into the
mechanism of action (and toxicity) of retinoids. The RARs and the RXRs, control
the expression of a number of gene pathways through the activation (or repression)
of specific response elements, in the untranslated regions of retinoid-responsive
genes. Numerous retinoid-responsive genes have been identified and changes in
the expression of these genes is being examined as a means of understanding
retinoid-induced pharmacology and toxicity. One gene family thought to play a
significant role in retinoid-induced teratogenesis are the homeobox genes. The
homeobox genes are a retinoid-responsive gene family that is known to control
embryonic development and cellular differentiation. Evidence for a role of home-
obbox genes in retinoid teratogenesis includes the fact that retinoids modify the pat-
terns of normal homeobox gene expression in developing embryos and that trans-
genic mice with altered homeobox gene expression show malformations reminis-
cent of retinoid-induced teratogenesis. This symposium will examine the role of retinoid
receprtors in normal and abnormal development and will explore the relationships
between changes in the expression of retinoid-responsive genes and teratogenesis.

#784 1:30 RETINOIDS AND TERATOGENESIS: MOLECULAR MECHANISMS AND APPROACHES. A A Levin.
Isis Pharmaceuticals, Carlsbad, CA.

#785 1:35 LONGITUDINAL STUDY OF INFANTS EXPOSED TO ISOTRETINOIN (13-CIS-RETINOIC ACID) IN UTERO. E J Lammer. Children’s Hospital, Oakland, CA.
Sponsor: A A Levin.

#786 2:15 AN ESSENTIAL ROLE FOR RETINOID SIGNALING IN NEURAL PATTERNING AND NEURONAL DIFFERENTIATION. R Blumberg1 and R M Evans2.
1The Salk Institute for Biological Studies, San Diego, CA and 2Howard Hughes Medical Institute, Bethesda, MD.
Sponsor: A A Levin.

#787 3:05 CONTROL OF EARLY LIMB DEVELOPMENT BY RETINOIDS. G Eichele, H C La and C Thaller. Baylor College of Medicine, Houston, TX. Sponsor: A A Levin.

TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 4:30 p.m.
CCC: BALLROOM B

SYMPOSIUM SESSION:
INTRACELLULAR SIGNALLING PATHWAYS AND RESPONSES TO PNEUMOTOXIC AGENTS

Sponsored by: The Inhalation Specialty Section
Chairpersons: Kevin E. Driscoll, The Procter & Gamble Company, Cincinnati, OH and Henry J. Forman, University of Southern California, Los Angeles, CA

Significant advances have been made in our understanding of the intercellular signalling pathways regulating processes such as cell differentiation, replication and secretion. Along with this has come an appreciation that chemicals can elicit adverse responses in the respiratory tract and other tissues by activating or otherwise affecting signalling mechanisms within cells. Deciphering the signalling pathways influenced by chemical exposures can provide insight into the basic mechanisms by which cell function is altered and toxicity produced. This symposium will focus on signalling pathways and transcription factors important in cell cycle regulation and cytokine gene expression. Individual presentations will include brief reviews of various intercellular signalling pathways followed by specific examples of current research on pneumotoxic agents and their effects on intracellular signalling mechanisms in specific lung cell populations. The specific topics to be discussed include: 1) the MAP kinase signalling cascade, EGF receptor activation and fiber stimulation of mesothelial cells; 2) cell-cycle regulatory proteins and fiber-induced DNA damage to lung epithelium; 3) oxidant-dependent, NF-kB-mediated signalling pathways and particle activation of epithelial cell cytokine gene expression; 4) Protein kinase C and phosphatidylinositol signalling mechanisms and NO; activation of endothelial cells; and 5) oxidative stress and mechanisms of particle-induced apoptosis in alveolar macrophages.

#789 1:30 INTRACELLULAR SIGNALLING PATHWAYS AND RESPONSES TO PNEUMOTOXIC AGENTS. K E Driscoll1 and H J Forman2. The Procter & Gamble Company, Cincinnati, OH and 1University of Southern California, Los Angeles, CA.

#790 1:35 ACTIVATION OF THE MITOGEN-ACTIVATED PROTEIN KINASE (MAPK) BY ASBESTOS AND OXIDANTS IN RAT PLEURAL MESOTHELIAL CELLS. B T Mossman, C Zanella, L Jimenez, Y Janssen, J C Fache and C Timblin. Department of Pathology, University of Vermont College of Medicine, Burlington, VT. Sponsor: K E Driscoll.

#791 2:10 FIBER EXPOSURE AND DNA DAMAGE-INDUCIBLE GENES. N F Johnson. Inhalation Toxicology Research Institute, Albuquerque, NM.

#792 2:45 OXIDATIVE STRESS AND NUCLEAR FACTOR Kappa B: ROLE IN PARTICLE ACTIVATION OF CHEMOKINE GENE EXPRESSION. K E Driscoll1, B W Howard1, B T Mossman, Y M W Janssen2 and J M Carter1. The Procter & Gamble Company, Cincinnati, OH and 1University of Vermont, Burlington, VT.

#793 3:20 SIGNALING PATHWAYS UNDERLYING NITROGEN DIOXIDE-INDUCED EXPRESSION OF PROTEINS, J M Patel1 and Y D Lp. 1University of Florida and 1VA Medical Center, Gainesville, FL.

#794 3:55 SIGNAL TRANSDUCTION IN APOPTOSIS. A Holian, R Jyer and L Li. Toxicology Program, University of Texas Houston Health Science Center, Houston, TX.

TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 202-212

WORKSHOP SESSION:
EPA'S NEUROTOXICITY RISK ASSESSMENT GUIDELINES

Sponsored by: The Neurotoxicology and Risk Assessment Specialty Sections

The US Environmental Protection Agency recently published Proposals for Neurotoxicity Risk Assessment for public comment (Fed. Reg. 60(192)52032-52056). When final, these guidelines are intended to provide the scientific basis that EPA will use to make regulatory decisions on neurotoxicity data. The public comments have been received and the guidelines are being revised as needed to address the public comments. Many members of SOT could potentially be influenced by how EPA interprets neurotoxicity data. Therefore, the annual meeting of SOT will be a timely forum to discuss risk assessment principles and guidelines, the scientific basis of EPA's Neurotoxicity Risk Assessment Guidelines, how the guidelines will be used by EPA's Program Offices, quantitative alternatives to risk assessment, and the implications of the guidelines for industrial neurotoxicologists from both a FIFRA and TSCA perspective. The workshop is intended to provide a balance between structured presentations, panel discussions and question and answer opportunities for the members of the audience.

#795 1:30 EPA'S NEUROTOXICITY RISK ASSESSMENT GUIDELINES. W K Boyes. Neurotoxicology Division, National Health and Environmental Effects Research Laboratory, USEPA, Research Triangle Park, NC.

#796 1:40 RISK ASSESSMENT AND THE ROLE OF RISK ASSESSMENT GUIDELINES. M L Dowton. Toxicology Excellence for Risk Assessment, Cincinnati, OH.

#797 2:00 NEUROTOXICITY RISK ASSESSMENT GUIDELINES AND THEIR SCIENTIFIC BASIS. H A Tilson. Neurotoxicology Division, National Health and Environmental Effects Research Laboratory, USEPA, Research Triangle Park, NC.


#799 3:10 IMPLICATIONS OF EPA'S NEUROTOXICITY RISK ASSESSMENT GUIDELINES FROM A FIFRA PERSPECTIVE. A A Li. Monsanto Company, St Louis, MO.


4:00 DISCUSSION

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PLATFORM SESSION: POLYCHLORINATED BIPHENYLS

Chairpersons: Isaac Pessah, University of California, Davis, CA and Edward V. Ohanian, U.S. EPA, Washington, DC

1:30 PM


RISK ASSESSMENT OF POLYCHLORINATED BIPHENYLS (PCBs) ON-BOARD U.S. NAVY SHIPS. J M Clow, B J Larcom, E A Merrill, W J J Dederberg and K R Stihl. 1U.S. Army Medical Research Detachment/WRAIR, Wright-Patterson AFB, OH; 2Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH; 3Operational Technologies, Wright-Patterson AFB, OH and 4Naval Medical Research Institute/Toxicology Division, Wright-Patterson AFB, OH.


TISSUE LEVELS AND TUMOR RESPONSES OF SD RATS FED AROCLORS 1016, 1242, 1254, AND 1260 SUGGEST TWO PROCESSES CRITICAL TO HEPATOMORGENESIS. J B Silwitsch, B A Ayes, S B Hamilton and J F Brown, Jr. 1General Electric Corporate Research and Development, Schenectady, NY and 2General Electric Company, Fairfield, CT.

INDUCTION OF AP-1 TRANSCRIPTION FACTOR-MEDIATED GENE EXPRESSION BY POLYCHLORINATED BIPHENYLS (PCBs) IN A RAT PITTITARY CELL LINE GHS. B V Madhukar and X Y Zeng. Department of Pediatrics and Human Development, Michigan State University, East Lansing, MI.

COPLANAR POLYCHLORINATED BIPHENYLS AS INDUCERS AND INHIBITORS OF HUMAN CYTOCHROMES P450 1A1 AND 1B1. S Pung, IIOC, J Q Caro, C L Hayes, J R Sutter and D C Spink. 1Department of Environmental Health and Toxicology, State University of New York at Albany, Albany, NY; 2Wadhsworld Center, New York State Department of Health, Albany, NY and 3Department of Environmental Health Sciences, Johns Hopkins University, Baltimore, MD.

TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 4:30 p.m.

POSTER DISCUSSION SESSION: GLUTATHIONE HOMEOSTASIS AND GLUTATHIONE CONJUGATE TOXICITY

Chairpersons: Lawrence Lash, Wayne State University, Detroit, MI and Donald Reed, Oregon State University, Corvallis, OR

Displayed: 1:30 p.m. - 4:30 p.m.

Discussed: 2:30 p.m. - 4:30 p.m.

IMPURITY OF GLUTATHIONE HOMEOSTASIS IN TISSUE AND MITOCHONDRIA OF γ-GLUTAMYL TRANSPEPTIDASE (GGT) DEFICIENT KNOCKOUT MICE (GGT-KO). Y Will, M K Brown, M Lieberman and D J Reed. 1Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR and 2Department of Pathology, Baylor College of Medicine, Houston, TX.

REGULATION OF INTRACELLULAR GLUTATHIONE LEVELS AFTER ELECTROPHILE EXPOSURE. J M Bohn, D W Nebert and H G Shertzer. Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH.
KINETICS AND SPECIFICITY OF GSH TRANSPORT AND SYNTHESIS IN ISOLATED RAT RENAL PROXIMAL AND DISTAL TUBULAR CELLS. D A Putt and L H Lash. Department of Pharmacology, Wayne State University, Detroit, MI.

KINETICS AND SPECIFICITY OF GSH TRANSPORT IN RATENAL CORTICAL MITOCHONDRIA. Z Chen and L H Lash. Dept. of Pharmacology, Wayne State University, Detroit, MI.

NEPHROTOXICITY OF GLUTATHIONE AND CYSTEINE 5-CONJUGATES OF 2-(FLUOROMETHOXY)-1,3,5,5-PENTAFLUORO-1-PROPENE (COMPOUND A) IN MALE, FISCHER 344 RATS. R A 1yer and M W Anders. Dept. of Pharmacology and Physiology, University of Rochester, Rochester, NY.

HEAT SHOCK PROTEINS AND NEPHROTOXICITY OF S-(1,2,2-TETRAFLUOROETHYL)-L-CYSTEINE (TFEC). S Asmellash, H Liu and J L Stevens. W. Alton Jones Cell Science Center, Lake Placid, NY.

CHEMICALLY-INDUCED TUBULOINTERSTITIAL FIBROSIS AND HEPATOCYTE GROWTH FACTOR INDUCED RENAL PROXIMAL TUBULE EPITHELIAL CELL TUBULUSGENESIS IS REGULATED BY TRANSFORMING GROWTH FACTOR-(B. R C Bowers III, B van de Water and J L Stevens. W. Alton Jones Cell Science Center, Lake Placid, NY.

EFFECTS OF GSH, ALBUMIN, CYG-GLY AND L-CYS ON TOXICITY OF MERCURY CHLORIDE IN PORCINE RENAL PROXIMAL TUBULAR EPITHELIAL CELLS DOSED IN CY-S-FREE AND CY-S-CONTAINING MEDIA. F Ayala-Fierro, K K Divine, D S Barber and D E Carter. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

THE ADVERSE EFFECTS OF 1,2-DIBRO-METHANE METABOLISM IN ISOLATED RAT LIVER MITOCHONDRIA. C Thomas1, Y Wilf, S Schoenberg1 and D Reed2. 1Department of Chemistry, Central Washington University, Ellensburg, WA and 2Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR.

PROSTAGLANDIN E, GENERATION IN LLC-PK1 CELLS BY 6-LOEASE-DEPENDENT AND INDEPENDENT NEPHROTOXICANTS. K M Towsend, T J Monks and S S Lau. Division of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin, Austin, TX.

IMMUNOCHEMICAL ANALYSIS OF QUINONE-METHOETHER DERIVED COVALENT PROTEIN ADDUCTS IN SENSITIVE AND NON-SENSITIVE RODENT SPECIES. H T Kleiner1, T W Jones1, T J Monks1 and S S Lau. 1Division of Pharmacology and Toxicology, University of Texas, Austin, TX and 2Eli Lilly & Co., Greenfield, IN.

MECHANISTIC ANALYSIS OF S-(1,2-DICHLOROVINYL)-L-CYSTEINE (DCVC)-INDUCED CATASTOGENESIS. C Walsh Clung and M D Aleo. Pfizer, Inc. Groton, CT.

TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
BENZENE-TOXICITY, MECHANISMS, AND PHARMACOKINETICS


Displayed: 1:30 p.m. - 4:30 p.m.
Discussed: 2:30 p.m. - 4:30 p.m.


ON THE MECHANISM OF BENZENE CARCINOGENESIS: ANEUGENIC POTENTIAL OF BENZENE METABOLITES. G M Schirle, R Rosenberg and M Metzler. Institute of Food Chemistry, University of Karlsruhe, Karlsruhe, Germany.

INVITRO INVESTIGATION OF POTENTIAL GENOTOXIC EFFECTS FROM BENZENE. C R Mackler, C A Schreiner, G R Blackburn, F A Angelou and M V Reddy. Mobip Environmental & Health Sciences Lab, Princeton, NJ.

BENZENE METABOLITES INDUCE THE LOSS AND LONG ARM DELETION OF CHROMOSOMES 5 AND 7 IN HUMAN BLOOD CELLS. L Zhang, Y Wang, N Shang and M T Smith. School of Public Health, University of California, Berkeley, CA.

THE BENZENE METABOLITE, HYDROQUINONE, ALTERS PHENOTYPIC EXPRESSION OF HUMAN CD34+ CELLS IN LIQUID CULTURE. S Gross1, J Gramm1, K Helm, W Stillman2 and R Iron1.1 Molecular Toxicology & Environmental Health Sciences Program; 2Department of Pathology, School of Medicine and Cancer Center, University of Colorado Health Sciences Center, Denver, CO.

ANALYSIS OF DNA-PROTEIN CROSSLINKS FORMED IN HIL-69 CELLS FOLLOWING TREATMENT WITH TRANS, TRANS-MUCONALDEHYDE, A HEMATOMATOGENIC BENZENE METABOLITE. P Amin, T Y Ho, B D Goldstein and G Witz. Joint Graduate Program in Toxicology, Rutgers University/RWJ Medical School and EOHISI, Piscataway, NJ.

INTERACTIVE EFFECTS BETWEEN TRANS, TRANS-MUCONALDEHYDE AND HYDROGEN PEROXIDE IN THE INDUCTION OF DNA-PROTEIN CROSSLINKS (DNAPC) IN A CHEMICAL MODEL SYSTEM. D S Gaskin, R A Thakur, B D Goldstein and G Witz. Joint Graduate Program in Toxicology, Rutgers University/UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ.

EFFECTS OF TRANS, TRANS-MUCONALDEHYDE, A HEMATOMATOGENIC BENZENE METABOLITE, ON DNA-PROTEIN CROSSLINK LEVELS AND ON APOPTOSIS IN MOUSE BONE MARROW CELLS. H A Schoenfeld, O Mirochnitchenko, B D Goldstein and G Witz. Joint Graduate Program in Toxicology, Rutgers Universit/UMDNJ-RWJ Medical School and EOHISI and Department of Biochem, RWJ Medical School, Piscataway, NJ.


MECHANISTIC LINKAGE BETWEEN MULTISTAGE MODELS OF CARCINOGENESIS AND PHYSIOLOGICALLY-BASED PHARMACOKINETIC MODELS. C J Porter and G W Lucier. Laboratory of Computational Biology and Risk Analysis, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

COMBINATION OF PHYSIOLOGICALLY BASED PHARMACOKINETIC (PBPK) AND BENCHMARK DOSE (BMD) MODELING FOR VINYL CHLORIDE. L T Haber1, B C Aller1, D Guth2 and H J Clewell, III1. 1ICF Incorporated, Fairfax, VA; 2ICF Kaiser, Research Triangle Park, NC. 3NCEA, U.S. EPA, Research Triangle Park, NC and 4ICF Kaiser, Ruston, LA.

AN ALTERNATIVE APPROACH FOR ESTIMATING RELATIVE POTENCIES IN THE TEF METHODOLOGY. M G Menache, M J Devois, R C Graham1 and J S Birnbaum. 1CEM, Duke University, Durham, NC; 2U.S. EPA, NIH, Research Triangle Park, NC and 3METI, Research Triangle Park, NC.


THE USE OF BIOAVAILABILITY DATA IN SETTING OCCUPATIONAL EXPOSURE LIMITS. P A Weideman, B D Naumann, C F Shen, J M Thomas, B A Shelton, R Dixit and E V Sargent. Merck & Co., Inc., Whitehouse Station, NJ.

ABSORPTION ADJUSTMENT FACTOR DISTRIBUTIONS (AAFs) FOR PAHs. B H Magee1, P A Anderson1 and D Burmaster2. 1Odgen Environmental & Energy Services, Westford, MA and 2Alcon Corporation, Cambridge, MA.

USE OF HEMOGLOBIN ADDUCTS FOR MONITORING ACRYLONITRILE EXPOSURE IN RESIDENTIAL AND INDUSTRIAL POPULATIONS. J R Gagel, S R Myers, P A Quiggin, J Cai and C W Tamburo. Departments of Pharmacology and Toxicology, and Medicine, University of Louisville, Louisville, KY.

ACRYLONITRILE: RECOMMENDATIONS OF PEER REVIEW PANEL FOR CANCER RISK ASSESSMENT. S Felter and J Dollahite. Toxicality Excellence for Risk Assessment, Cincinnati, OH.

CANCER RISK FROM THE USE OF N-NITROSODIETHANOLAMINE (NDEA) IN PERSONAL CARE PRODUCTS. J E Riedy-Powder1, M J Fedoruk2 and R Scofield1. 1ENVIRON, Emeryville, CA and 2University of California, Irvine, CA.

COMPARISON OF CANCER POTENCY ACROSS ORAL DOSE ROUTES: CASE STUDIES WITH CHLOROFORM (CFM), VINYL CHLORIDE (VC) AND EPICHLOROHYDRIN (EPI). G L Glasberg1, D B Hutt1, D J Peltier2 and W E Pepele3. 1Connecticut Dept. of Public Health, Hartford, CT; 2Clark University, Worcester, MA and 3U.S. EPA, OHEA, Washington, DC.

OPTIONS IN DESIGNING A NONCANCER TOXICITY VALUE FOR CHRONIC EXPOSURE TO INHALED CHLOROFORM. P R McClure, J C Coleman and P M McGinnis. Syracuse Research Corporation, Syracuse, NY.

FUMONISIN RISK SCENARIOS. S H Humphreys, C Carrington and P M Bolger. U.S. FDA, Washington, DC.

REASSESSMENT OF THE ORAL CANCER POTENCY FACTOR FOR HEXACHLOROBENZENE (HCB). C R Kirman, B A Brien and M L Gargas. ChemRisk, a Division of McLaren/Hart Environmental Engineering, Cleveland, OH.

RISK ASSESSMENT OF SULFOLANE. J B Galvin and J Cruz. Phillips Petroleum Company, Bartlesville, OK.

HEALTH RISK ASSESSMENT OF 1,3,5-TRINITROTOLUENE (TNT). G Reddy1, T W Reddy2, H Choudhury3, P B Danai4 and G J Leach1. 1US Army Center for Health Promotion & Preventive Medicine, Aberdeen Proving Ground, MD and 2US Environmental Protection Agency, Cincinnati, OH.

ESTIMATES OF A SAFE LEVEL FOR VINYL CHLORIDE (VC) EXPOSURE ASSUMING OR NOT ASSUMING A PRACTICAL THRESHOLD IN ITS CARCINOGENIC EFFECT. J E Storm1 and K K Rossman2. 1Department of Pharmacology & Toxicology, University of Kansas Medical Center, Kansas City, KS and 2Sect. Environ. Toxicol., CSF-Institut für Toxikologie, Neuherberg, Germany.

CORRELATION OF ACTUAL STRAWBERRY HARVEST EXPOSURE WITH THAT PREDICTED FROM ARAMECTIN IN DISLODGEABLE FOLIAR RESIDUES. C L Lannanc, T A Wehner, J A Norton, D M Dunbar and L S Grosso. Merck & Company, Inc., Three Bridges, NJ.

ASSESSMENT OF RISKS AND CAUSES OF ADVERSE HEALTH EFFECTS ASSOCIATED WITH THE GULF WAR. K Franzien1, C Freeman2, C Williams1, R Less2, T A Al-Awadi3, H Abdali4 and R Harbisson5. 1Ecology & Environment, Inc., Buffalo, NY; 2State of Kuwait and 3College of Public Health, USF, Tampa, FL.

TOXICITY OF EMBEDDED DEPLETED URANIUM (DU) IN THE RAT. J Hogan, K A Benson, M R Landauer and T C Pellmar. Radiation Pathophysiology and Toxicology Department, AFPRRI, Bethesda, MD. Sponsor: T J Flynn.
A CASE STUDY IN BIOMATERIALS RISK ASSESSMENT: THE RELEASE OF 4,4'-METHYLENEDIANILINE (MIDA) FROM CERTAIN POLYURETHANE MEDICAL DEVICES. E Neumann1, B Lynch1, R Wilson2, J Daniels1, J Hingberg3, J Deka1 and M Rocheleau1. 1Can Tox Inc., 2Consultants in Toxicology, Mississauga ON, Canada; 3Can Tox, Vancouver BC, Canada and 4Medical Devices Bureau, Health Protection Branch, Health Canada, Ottawa ON, Canada.

APPLICATION OF METHODOLOGY FOR HAZARDS ANALYSIS OF CHEMICAL MIXTURES. D K Craig1, J S Davis2, D J Hansen3, A J Petrocchi4 and T J Powell1. 1Westinghouse Savannah River Company, Aiken, SC; 2WHC, Richland PA; 3BNL, Upton, Long Island, NY; 4Alpha TRAC, Westminster, CO and 5LLNL, Livermore, CA.


Tuesday Afternoon, March 11
1:30 p.m. - 5:00 p.m.
CCC: Exhibit Hall

Poster Session:
Toxicity and Carcinogenicity Evaluations

Chairpersons: David McCormick, IIT Research Institute, Chicago, IL and Myrna Weiner, FMC Corporation, Princeton, NJ

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#878
A COMPARATIVE SURVIVAL AND ONCOCENICITY STUDY IN FOUR STRAINS OF RATS; RESULTS AFTER 24 MONTHS. M J Palazzolo, T E Ryan, R L Hall and R D Alsaker. Corning Hazleton Inc., Madison, WI.

#879
ONCOCENICITY STUDY OF DI(SONONYL)PHALTATE IN MICE. J H Batalo1, M R Moore2, M A Cifone2, J R Bankston3 and B Astar4. 1Consultant, Pittsburgh, PA; 2Corning Hazleton, Vienna, VA; 3Aristech Chemical Corp. Pittsburgh, PA and 4Consultant, Spencerville, NY.

#880
CORRELATION OF PEROXISOME PROLIFERATION AND ONCOCENICITY OF DI(2-ETHYLETHER)-PHALTATE IN MICE. R M David1, M R Moore2, M A Cifone2, D C Finney2 and D Guest2. 1Eastman Kodak Company, Rochester, NY; 2Corning Hazleton, Vienna, VA and 3Eastman Chemical Company, Kingsport, TN.

#881
TRIBUTYL PHOSPHATE (TBP) EFFECTS ON URINE AND BLADDER EPITHELIUM IN MALE SPRAGUE-DAWLEY RATS. L A Arnold1, S M Cochen1, R Christensen1, M Cano1, M St. John1 and B S Wahle1. 1Univ. of Nebraska Medical Center, Omaha, NE and 2Bayer, Inc., Stilwell, KS.

#882
SUBCHRONIC DIETARY TOXICITY STUDY WITH TRIBUTYL PHOSPHATE IN THE MOUSE. C S Auletta1, W L Wooding2 and L A Kotokskie2. 1Huntington Life Sciences, East Millstone, NJ and 2FMC Corporation, Princeton, NJ.

A DIETARY ONCOCENICITY STUDY OF TRIBUTYL PHOSPHATE IN THE MOUSE. L A Kodoskie1, W R Richter2 and C S Auletta2. 1FMC Corporation, Princeton, NJ and 2Huntington Life Sciences, East Millstone, NJ.

A DIETARY ONCOCENICITY STUDY OF TRIBUTYL PHOSPHATE IN THE RAT. M L Weiner1, C S Auletta2 and W R Richter2. 1FMC Corporation, Princeton, NJ and 2Huntington Life Sciences, East Millstone, NJ.

TWO-YEAR DERMAL STUDY OF SODIUM XYLENESULFONATE IN F344 RATS AND B6C3F1 MICE. M R Heijermans1, P A Athey1, J D Toft1, A W Singer1, A E Radovsky2 and P J Korte2. 1Batelle, Columbus OH and 2NIHES/NTP Research Triangle Park, NC.

EFFECT OF IRRITATION ON THE TUMORIGENICITY OF PETROLEUM MIDDLE DISTILLATES IN A TWO-YEAR MOUSE SKIN PAINTING STUDY. C S Nissel, R J Priston, R H McKee, G Cruzan, A J Riley, R Hagemann and B J Simpson. CONCAWE, Brussels, Belgium.

INVESTIGATIONS ON THE CARCINOCENICITY OF NIFEDIPINE. E M Bombard and E Liser. Institute of Toxicology, Bayer AG, Wuppertal, Germany.

CARCINOGENICITY EVALUATION OF rhDNase IN RATS FOLLOWING INHALATION EXPOSURE. M Gross1, T Reynolds1, C Collins2, N Shepherd2, S Baughman3, D Sinicrope1 and D Thomas3. 1Gesentech, Inc., South SanFrancisco, CA and 2Corning Hazleton Europe, Harrogate, U.K. Sponsor: J L Bussiere.

LUNG TUMOR INDUCTION IN RATS AND MICE FROM INHALATION EXPOSURE TO MOLYBDENUM TRIOXIDE. P C Chan1, R A Herbert1 and B J Chou2. 1NIHES, Research Triangle Park, NC and 2Batelle Pacific Northwest Laboratories, Richland, WA. Sponsor: J R Bucher.

FURTHER STUDIES ON THE ANTIINEOPLASTIC ACTIVITY OF CADMIUM: INHIBITION OF THE GROWTH AND METASTASES OF HUMAN LUNG CANCER XENOGRAPHS IN ATHYMIC NUDE MICE. M P Wetherall, B A Dinwars, R M Barco and G T Smith. NCI and SAIC Frederick, FCRDC, Frederick, MD.


MOLECULAR ANALYSIS OF K-RAS GENE MUTATIONS IN 3.4 BENZOA(PYRENEDUCATED) LUNG TUMORS. Y Ishi1, L R Cox2, D B Warheit3, S R Frame1 and L Levy2. 1DuPont Haskell Laboratory, Newark, DE and 2MRC, Leicester, UK.

GLUTATHIONE-S-TRANSFERASE POLYMORPHISMS (GSTM1 & GSTT1) AND LUNG CANCER SUSCEPTIBILITY. J To-Figueras, J Gómez-Catalán, M Gené, M C Gallán, M Fuentes, M Rodamillán, J Estepé and J J Corbella. Toxicology Unit, Medical Oncology Unit, Hospital Clinic, University of Barcelona, Spain. Sponsor: J L Domingo.

SPECIFIC Ki-ras MUTATIONS CORRELATE WITH TUMOR STAGE IN TRANSLACENTALLY-INDUCED MOUSE LUNG TUMORS. S L Kabler1, L L Wessner2, M F McEntee1 and M S Miller2. 1Bowman Gray School of Medicine, Winston-Salem, NC and 2University of Tennessee, Knoxville, TN.
DIALYL SULFIDE INCREASES AZOXYMETHANE-INDUCED ABERRANT CRYPT FOCS AND K-RAS MUTATIONS IN FISCHER 344 RATS. D A Delker, A Papanikolaou and D W Rosenberg, Pharmaceutical Sciences, University of Connecticut, Storrs, CT.

PRESENCE OF AN A-T TRANSVERSION IN CODON 61 OF H-RAS IN BOTH NEOPLASTIC AND NON-NEOPLASTIC TISSUE FROM CRL-CD® (SD) BR RATS. L R Cox, Y Jin, S L Czerwinski and L G Davis. DuPont-Haskell Laboratory, Newark DE.

CHEMOPREVENTION OF SKIN TUMORIGENESIS IN THE v-Ha-ras/keratin K1 TRANSGENIC MOUSE BY RETINOIDS AND α-DIIFLUOROMETHYLORNITHINE. D L McCormick1, K V N Rao1, T A Grum1, V E Steele1, R A Lubet1 and G J Kellof1. 1ITI Research Institute, Chicago, IL, and 2National Cancer Institute, Bethesda, MD.

THE EFFECTS OF AD LIBITUM (AL) OVERFEEDING AND MODERATE OR MARKED DIETARY RESTRICTION (DR) ON BODY WEIGHT, SURVIVAL, AND CLINICAL PATHOLOGY OF SPRAGUE-DAWLEY (SD) RATS. J B Coleman1, B A Mattson1, K P Keenan1, W Cook1, K A Soper1, G Ballam2 and R Distl1. 1Merck Research Laboratories, Dept. of Safety Assessment, West Point, PA and 2Purina Mills Inc., St. Louis, MO.


THE EFFECTS OF DIET, AD LIBITUM (AL) OVERFEEDING AND MEASURED FEEDING REGIMENS (MFRs), ON VARIOUS CLINICAL PARAMETERS IN CONTROL SPRAGUE-DAWLEY (SD) RATS. M-F Hubert1, K P Keenan1, P Laroche2 and P Delort1. 1Merck Research Laboratories, Riom, France and 2Merck Research Laboratories, West Point, PA.

USE OF DIETARY RESTRICTION TO PRODUCE IDEALIZED WEIGHT CURVES FOR B6CF1 MICE. J E Leekay, J E Seng, A Tururto and R W Hart. Division of Biometry and Risk Assessment, NCTR, Jefferson, AR.

FOURTEEN-DAY TOXICITY EVALUATION OF META-DINITROANILINE (MDA) IN PEROMYSCUS LEUCOPUS (WHITE FOOTED MOUSE). TV Reddy1, F B Daniel1, B Wiechman1 and G R Olson1. 1U S EPA, NERL, Cincinnati, OH and 2PAI, Westchester, OH.

ACUTE TOXICITY OF BUTADIENE DIEPOXIDE IN B6CF1 MICE AND SPRAGUE-DAWLEY RATS. R F Henderson, J M Benson, F F Hahn, E B Barr, W E Bechtold, D G Burt and A R Dahl. Inhalation Toxicology Research Institute, Albuquerque, NM.

CELL PROLIFERATION AND APOPTOTIC CELL DEATH AS BIOMARKERS OF EARLY COLON CARCINOGENESIS IN RATS. C J Barnes, I L Cameron and M Lee. University of Texas Health Science Center, San Antonio, TX. Sponsor: J A Thomas.

CHOLECYSTOKININ DOES NOT MODULATE GABAPENTIN-INDUCED PANCREATIC ACINAR CELL TUMORS IN RATS. F A de la Iglesia, B M Tierney and L A Derkoff. Parke-Davis Pharmaceutical Research, Division of Warner-Lambert Co., Ann Arbor, MI.

COMPARATIVE 30-WEEK DERMAL TUMOR PROMOTION STUDIES OF MAINSTREAM SMOKE CONDENSATE FROM CIGARETTES WHICH PRIMARILY HEATS TOBACCO AND A REFERENCE CIGARETTE. D R Meckley1, A T Mosberg2, G T Burger1 and K R VanKampen2. 1RJ Reynolds Tobacco Co., Winston-Salem, NC and 2Veritas Laboratories, Inc., Burlington, NC.

CARCINOGENICITY OF INHALED 3P3O2 OR BERYLLIUM METAL IN TRANSGENIC HETEROZYGOUS p53 MICE. C H Hobbs, G L Finch, E B Barr, S A Belinsky, F F Hahn, M D Hoover, J F Lechner and K J Nikula. Inhalation Toxicology Research Institute, Albuquerque, NM.

EVALUATION OF OXYMETHOLONE IN THE TG.AC TRANSGENIC MOUSE MODEL FOR ACCELERATED CARCINOGENICITY DETECTION. E H Holden1, R E Stoll2, J W Spalding2 and R W Tennant1. 1Dept. of Toxicology and Safety Assessment, Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT and 2Laboratory of Environmental Carcinogenesis and Mutagenesis, NIEHS, Research Triangle Park, NC.

RESULTS FOR 277 CHEMICALS IN THE MEDIUM-TERM LIVER CARCINOGENICITY BIOSAY OF RATS. Y Yamaguchi1, R Hasegawa2, A Higawar3, M Hirose1, K Inama1, N It01 and T Shirai1. 1First Department of Pathology, Nagoya City University Medical School, Nagoya, Japan and 2Daiyukai Institute of Medical Science, Ichinomiya, Japan.

COMBINED EFFECTS OF PERILLA OR CORN OIL AND INDOMETHACIN IN A RAT MULTIORGAN CARCINOGENESIS MODEL. S Oria, M Hirose, M Futakuchi, M Kawabe, K Inama and T Shirai. First Department of Pathology, Nagoya City University Medical School, Nagoya, Japan. Sponsor: N lto.

CANCER RISK ASSESSMENT BY A MEDIUM-TERM CARCINOGENICITY BIOSASSAY USING REPEALED ADMINISTRATION OF D-GALACTOSAMINE. H C Kim1, C S Ha1, S W Cha1 and Y S Lee1. 1Toxicology Research Center, Korea Research Institute of Chemical Technology, Taegon, Korea, and 2Seoul National University, Suwon, Korea. Sponsor: T C Jeong.


TRENDS OVER 20 YEARS IN MORTALITY, GROWTH, AND TUMOR INCIDENCES IN WISTAR RATS. R Riben and E M Bomhard. Institute of Toxicology, Bayer AG, Wuppertal, Germany.

JUDGING CARCINOGENIC POTENTIAL OF CHEMICALS CAUSING BOTH INCREASES AND DECREASES IN SITE-SPECIFIC TUMOR RATES. G M Gray1, I Linkov2 and R Wilson2. 1Harvard Center for Risk Analysis, Harvard School of Public Health, Boston, MA and 2Department of Physics, Harvard University, Cambridge MA. Sponsor: B D Beck.

INFLUENCE OF RANDOM VARIATIONS AND WEIGHT DEPRESSION ON IDENTIFICATION OF CARCINOGENIC AND ANTICARCINOGENIC RESPONSES IN NATIONAL TOXICOLOGY PROGRAM RODENT BIOASSAYS. I Linkov, G M Gray and R Wilson. 1Department of Physics, Center for Risk Analysis, Harvard University, Cambridge, MA and 2Harvard School of Public Health, Boston, MA. Sponsor: B B Beck.

TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
SAFETY EVALUATION OF CANCER
ThERAPEUTIC AGENTS

Chairpersons: John MacDonald, MGI Pharma, Inc., Minnetonka, MN and Martha Leibbrandt, Chiron Corporation, Emeryville, CA

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 1:30 p.m. - 3:15 p.m.

SINGLE AND MULTIPLE-DOSE INTRAVENOUS TOXICITY OF MGI 114, A NOVEL CYTOTOXIC ANTITUMOR AGENT, IN RATS. A L Kiropes1, R F Marshall1 and J R MacDonald.1, Corning-Hazleton, Inc., Madison, WI and 2MGI PHARMA, INC., Minnetonka, MN.

SINGLE AND MULTIPLE-DOSE INTRAVENOUS TOXICITY OF MGI-114, A NOVEL CYTOTOXIC ANTITUMOR AGENT, IN BEAGLE DOGS. R F Marshall, A L Kiropes and J R MacDonald.1, MGI PHARMA INC., Minnetonka, MN and 2Corning-Hazleton, Inc., Madison, WI.

13-WEEK STUDY OF CARBOXYMIDE-AMINOIMIDAZOLE (CAI) IN BEAGLE DOGS. L E Rodman, H D Giles, D R Farnell, D S Weirnberg, J A Cowell and J G Page. 1Southern Research Institute, Birmingham, AL and 2National Cancer Institute, Bethesda, MD.

13-WEEK TOXICITY STUDY OF CARBOXYMIDE-AMINOIMIDAZOLE (CAI) IN SPRAGUE-DAWLEY RATS. J G Page, H D Giles, J E Heath, D S Weirnberg, J A Cowell and L E Rodman. 1Southern Research Institute, Birmingham, AL and 2National Center Institute, Bethesda, MD.


13-WEEK ORAL TOXICITY STUDY OF N-ACETYL-L-CYSTEINE AND OLTIPRAZ IN DOGS. W D Johnson, K V N Rao, R H Bruner, J A Cowell and D L McCormick. 1IIT Research Institute, Chicago, IL; 2Pathology Associates International, Cincinnati, OH and 3National Cancer Institute, Bethesda, MD.

TOXICOLOGY MODELS IN GENE THERAPY: EVALUATING THE SAFETY OF RETROVIRAL AND NAKED DNA VECTORS EXPRESSING HSV-TK, M E I Leibbrandt, C Gamba-Vitalio, M S Wersley, M Petrowski and D E Johnson. Chiron Corporation, Emeryville, CA; 2TSI Mason Laboratories, Worcester, MA and 3Batocile, Columbus, OH.

3-WEEK INTRAVENOUS TOXICITY OF CI-1010, A CYTOTOXIC RADIOTHERAPIC ZINCIMIDAZOLE, IN RATS. G Pelcher, M Graziano, M Breider and D Pegge. Pathology and Experimental Toxicology, Parke-Davis Pharmaceutical Research, Division of Warner-Lambert Co., Ann Arbor, MI.


INVITRO AND IN VITRO CHARACTERIZATION OF NOVEL DINITRILE PLATINUM COMPOUNDS. L A Eckel, A E Mansson, N Farrell and B J Meade. Pharmacology and Toxicology, Medical College of Virginia/VCU, Richmond, VA.


TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
PATHOPHYSIOLOGY OF METALS: ORGAN
SYSTEM EFFECTS AND UNDERLYING
MECHANISMS

Chairpersons: Steven Patierno, George Washington University Medical Center,
Washington, DC and Wilson Rumbolta, Michigan State University, East
Lansing, MI

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#930
INFLUENCE OF SUBCHRONIC ZINCOXIDE ON A
PASSIVE-AVOIDANCE RESPONSE IN MALE RATS.
H L Komitiskey and X F Chen. College of Pharmacy,
Xavier University of Louisiana, New Orleans, LA.

#931
ALTERATIONS IN ACQUISITION AND PATTERN
OF RESPONDING IN RATS EXPOSED TO LOW
LEVELS OF LEAD SUBCHRONICALLY. O O Areola
and A L Jadav. Minority Center for Toxicological
Research, College of Pharmacy & Health Sciences, Texas
Southern University, Houston, TX.

#932
CHANGES PRODUCED BY POSTWEANING LEAD
EXPOSURE ON AN FR - WAIT OPERANT PARA-
DIGM. B A Brocke and D A Cory-Slechta 1. Department of
Environmental Medicine, University of Rochester
School of Medicine, Rochester, NY and 2Department of
Neurobiology and Anatomy, University of Rochester
School of Medicine, Rochester, NY.

#933
ACUTE INFUSION OF Pb CAUSES DOPAMINE
RELEASE IN RAT BRAIN. A L Jadav 3 and P J
Wellman 4. Minority Center for Toxicological Research,
College of Pharmacy & Health Sciences, Texas Southern
University, Houston, TX and 2Department of Psychology,
Texas A M University, College Station, TX.

#934
EFFECTS OF Pb AND SUCCINIMER CHELATION
ON PROTEIN KINASE C ACTIVITY IN RAT BRAIN
FRONTAL CORTEX AND HIPPOCAMPUS. H E
Olsen 5, C Sexton 6, D Woolard 7 and D Smith 8.
1Environmental Toxicology, University of California,
Santa Cruz, CA and 2Department of Biology, University of
California, Santa Cruz, CA.

#935
COMPARATIVE NEUROTOXICITY OF ORAL
MANGANESE (II) CHLORIDE IN NEONATAL AND
ADULT CD RATS. D Vitarela 9, M F Struve 10, J Goetz 11,
F L Ledford 12, R Miller 13 and D C Dorman 14. 1CIT,
Research Triangle Park, NC and 2College of Veterinary Medicine,
NC State University, Raleigh, NC.

#936
A MONOCARBOXYLIC ACID TRANSPORTER
(MCT) AT THE BLOOD-BRAIN BARRIER (BBB)
MEDIATES THE EFFLUX OF ALUMINUM CIT-
RATE (Al-Cr) FROM BRAIN EXTRACELLULAR
FLUID. D C Ashby and R A Liskel. College of Pharmacy
and Graduate Center for Toxicology, University of
Kentucky, Lexington, KY.

#937
KINETICS OF BILARY SECRETION OF INGESTED
ALUMINUM BY UNANESTHETIZED RATS. J E
Sutherland 15 and J L Greger 16. Environmental Toxicology
Center, University of Wisconsin-Madison, Madison, WI
and 2Department of Nutritional Sciences, University of

#938
INVOLVEMENT OF IRON AND COPPER IN
ISCHEMIC OR HYDROGEN PEROXIDE INDUCED
HEPATOCELULAR INJURY. S Khan, Y L Quah and P J
O'Brien. Faculty of Pharmacy, University of Toronto, ON,
Canada. Sponsor: D M Templeton.

#939
ROLE OF THIOLS IN UPTAKE AND INTRACELLU-
LAR DISTRIBUTION OF INORGANIC MERCURY
IN RABBIT RENAL PROXIMAL TUBULAR AND
DISTAL TUBULAR CELLS. L H LaSh 17, D A Punt 15
and R K Zalups 18. 1Department of Pharmacology, Wayne State
University, Detroit, MI and 2Division of Basic Medical
Science, Mercer University, Macon, GA.

#940
ACCUMULATION OF HgCl, AND THREE SYN-
THESIZED Hg-S-CONJUGATES IN ISOLATED
RABBIT RENAL PROXIMAL TUBULE SUSPEN-
SIONS. H Wei, L Qiu, K K Divine, M D Ashbaugh, L
McEltyre, Q Fernando and A J Gandolfi. Center for
Toxicology, University of Arizona, Tucson, AZ.

#941
BOSSENTAN (B1), AN ET INHIBITOR, DOES NOT
PROTECT AGAINST MERCURY-INDUCED
NEPHROTOXICITY. L K Fritzel, G V Vedula and M E
Davis. Department of Pharmacology and Toxicology, West
Virginia University, Morgantown, WV.

#942
CHARACTERIZATION OF HEAVY METAL DEP-
POSITION IN RABBIT RENAL TISSUE USING
MICRO-PROTONINDUCED X-RAY EMISSION
(MUXE). R L Keith 19, L C McIntyre 13, M D Ashbaugh 18,
Q Fernando 20 and A J Gandolfi 21. 1Center for Toxicology,
University of Arizona, Tucson, AZ, 2Department of
Physics, University of Arizona, Tucson, AZ and
3Department of Chemistry, University of Arizona, Tucson,
AZ.

#943
RENAL AND HEPATIC FUNCTIONS, AND BONE
MINERAL DENSITY AFTER LONG-TERM ORAL
CADMIUM ADMINISTRATION IN FEMALE AND
MALE RATS. H Goto, M Nakatsuka, H Tanaka, Y Seki
and H Yoshikawa. Department of Occupational Health and
Toxicology, School of Allied Health Sciences, Kansai
University, Kanagawa, Japan.

#944
SECRETION OF INORGANIC MERCURY ALONG
THE INTESTINES. R K Zalups. Division of Basic
Medical Sciences, Mercer University School of Medicine,
Macon, GA.

#945
TWO-DIMENSIONAL ELECTROPHORETIC
ANALYSIS OF MYOCARDIAL PROTEINS FROM
LEAD-EXPOSED RABBITS. M Torasson 19, W
Moorman 18, P I Mathias 17, C Fute 17 and P Witzmann 18.
1CDC/NIOSH, Cincinnati, OH and 2Indiana University-
Purdue University, Columbus, IN.

#946
EFFECTS OF ACUTE AND SUBCHRONIC ORAL
ADMINISTRATION OF MERCURIC CHLORIDE
ON BLOOD CHEMISTRY PARAMETERS IN RATS.
S J Thompson, A T Khan, A Atkinson, T C Graham, J E
Webster, S Ali, C D Shannon and J A Ferguson. School of
Veterinary Medicine, Tuskegee University, Tuskegee, AL.
Sponsor: R R Dalvi.

#947
MURINE STRAIN DIFFERENCES IN CADMIUM-
INDUCED TESTICULAR TOXICITY. L M King, M B
Anderson, S C Sikka and W J George. Tulane University
School of Medicine, New Orleans, LA.

#948
EFFECT OF CADMIUM ON PROLIFERATION
AND DIFFERENTIATION OF HUMAN EXTRAVIL-
LOUS TROPHOBLAST (ETV). S S Powlin and R K
Miller. Departments of OB/GYN and Environmental
Medicine, Environmental Health Sciences Center,
University of Rochester, Rochester, NY.
IRON DEPOSITION AT MINERALIZATION FRONTS AND OSTEODE FORMATION BY CHRONIC CADMIUM EXPOSURE IN OVEARIENTIZED RATS. H Hiratsu, 1 O Katsuta, 1, M Tsuchitani 1 and T Umemura. 1Mitsubishi Chemical Safety Institute Ltd., Kashima, Ibaraki, Japan and 1Department of Veterinary Pathology, Tottori University, Tottori, Japan.

AN IN VITRO MODEL FOR THE EARLY BONE RESPONSE TO CADMIUM (Cd) EXPOSURE. A K Wilson and M H Bhattacharya. Argonne National Laboratory, Argonne, IL.

TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 5:00 p.m.

POSTER SESSION:
SKIN TOXICITY/PERCUTANEOUS ABSORPTION

Chairpersons: James McDougal, Geo-Centers, Inc., Wright Patterson AFB, OH and Mary Beth Ginter, University of Cincinnati, Cincinnati, OH

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 1:30 p.m. - 4:15 p.m.

IN VITRO DERMAL ABSORPTION OF CI. DIRECT BLACK 80 IN FISCHER 344 RATS. D X Wang, M L Cunningham, J M Sauer and J G Spero. Department of Pharmacology and Toxicology and Center for Toxicology, The University of Arizona, Tucson, AZ.

THE USE OF THERMAL GRAMMETRIC ANALYSIS TO EVALUATE TEMPERATURE, AGE, AND SEX EFFECTS ON HUMAN STRATUM CORNEUM ABSORPTION KINETICS FOR VOLATILE HALOGENATED CHEMICALS. G W Jepson, 1 Z Lison, 1 and J N McDougall. 1Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH and 1Israel Institute for Biological Research, Ness Ziona, Israel.

INVITRO DERMAL ABSORPTION OF DIBROMOMETHANE THROUGH THE SKIN OF THREE STRAINS OF RODENTS. J N McDougall, W H Weismann, 1 and K O Yu. 1Geo-Centers Inc, Wright-Patterson AFB, OH and 1Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.

PERCUTANEOUS ABSORPTION OF PERFLUOROHXIL IOIDE IN THREE RODENT STRAINS IN VIVO. C M Garrett, G W Jepson, 1 D R Muir, 1 and J N McDougall. 1Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH and 1GEO-CENTERS, Inc., Wright-Patterson AFB, OH.

INFLUENCE OF VEHICLE ON SKIN RESPONSE TO BENZOYL PEROXIDE (BPO) IN F344 RATS AND B6C3F1 MICE. R L Binder, 1 J M Forrester, 1 L C Tsonam, 1 E J Goldenhal, 1 J F Nash, 1 and A L Kraus. 1Procter & Gamble, Cincinnati, OH and 1SmithKline Beecham Consumer Healthcare, Parsippany, NJ.

EFFECT OF TOPICAL SUBCHRONIC TREATMENT WITH BENZOYL PEROXIDE (BPO) ON MEASURES OF CELL PROLIFERATION IN THE SKIN OF RODENTS. J F Nash, 2 J M Forrester, 1 R L Binder, 1 L C Tsonam, 1 E J Goldenhal, 1 M J Iatroponos, 1 G M Williams, 2 and A L Kraus. 1Procter & Gamble, Cincinnati, OH; 2SmithKline Beecham Consumer Healthcare, Parsippany, NJ, 1NDMA, Washington, DC; 2MPI Research, Matthew, MI and 2American Health Foundation, Valhalla, NY.

PERCUTANEOUS AND GI IN VITRO ABSORPTION AND METABOLISM OF 2-NITRO-P-HYDROXYPHENYLDIAZINE IN THE FUZZY RAT. J J Tourrick and R L Bronaugh. Office of Cosmetics and Colors, Food & Drug Administration, Laurel, MD.


PERCUTANEOUS ABSORPTION OF DEET AND PERMETHRIN MIXTURES APPLIED TO SKIN IN VITRO: DO THEY PLAY A ROLE IN THE "GULF WAR SYNDROME"? R E Baynes, K B Halling and J E Riviere. Cutaneous Pharmacology and Toxicology Center, North Carolina State University, Raleigh, NC.

PENTACHLOROPHENOL (PCP) DERMAL ABSORPTION AND DISPOSITION IN SOIL WITH PORCINE AND HUMAN MODELS. G L Qiao, J D Brooks and J E Riviere. Cutaneous Pharmacology and Toxicology Center, North Carolina State University, Raleigh, NC.

APPLICATION OF A 4 HOUR HUMAN PATCH TEST METHOD FOR COMPARATIVE AND INVESTIGATIVE ASSESSMENT OF SKIN IRRITATION. M K Robinson, 1 M A Perkins and D A Baskett. 1Procter & Gamble Co., Cincinnati, OH and 1Unilever, Sharnbrook, Bedford, UK. Sponsor: G F Gerberick.

HUMAN SKIN IRRITATION UNDER DIFFERENT PHYSICAL CONDITIONS. M A Fonge and D A Niehaus. The Procter & Gamble Co., Cincinnati, OH.

DERMAL TOXICITY EVALUATION OF TRIMETHYLPOLPROPANE TRIACRYLATE (TMPTA) AND PENTARYTHROL TRIACRYLATE (PETA) IN FISCHER 344 RATS AND B6C3F1 MICE. G B Freeman, 1 J A Collins 2, P M Athey, 1 D M Sells 1, J T Varrington, 1 M Hejmanack 2 and R Chhabra. 1Batelle Columbus Laboratories, Columbus, OH and 2NIHES, Research Triangle Park, NC.

VALIDATION AND SUBSEQUENT DEVELOPMENT OF THE DEREK SKIN SENSITIZATION RULE-BASED BY ANALYSIS OF THE BGV LIST OF CONTACT ALLERGENS. M O Baratt 1 and J J Langowski. 1Environmental Safety Laboratory, Unilever Research, Colworth House, Sharnbrook, Bedford, UK and 1LHASA UK Limited, School of Chemistry, University of Leeds, West Yorkshire, UK. Sponsor: P A Hepburn.

FLUORONATED 1,25-DIHYDROXY VITAMIN D3—DERMAL TOXICITY STUDIES. E Serk kino, 1 G Wagner, 1 E Hou, 1 T Doherty, 1 J Wallace and J Quigley. 1Penem Inc, Foster City, CA and 1Northview Pacific Inc, Berkeley, CA.
TUESDAY AFTERNOON, MARCH 11
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL
POSTER SESSION:
HYPERSENSITIVITY/IMMUNOTOXICOLOGY

Chairpersons: George Shopp, Genentech, Inc., S. San Francisco, CA and Michael McCabe, Wayne State University, Detroit, MI

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

MODULATION OF CYTOKINE MESSAGE IN THE EPIDERM IN VITRO SKIN MODEL FOLLOWING TREATMENT WITH CONTACT ALLERGENS AND SKIN IRRITANTS. E E Sikorski, G F Gerberick and L C Limardi. Procter & Gamble Company, Cincinnati, OH.

SYSTEMIC ANAPHYLAXIS IN GUINEA-PIGS: INTRALABORATORY VALIDATION. B Bratzkus1, B Coqueret1, B Darve1 and J Descotes1. 1Department of Pharmacology, Medical Toxicology & Environmental Medicine, INSERM U80, Lyon, France and 2Pasteur-Mérieux Sérum & Vaccins, Marey l'Etoile, France.

THE CORRELATION OF DRAINING LYMPH NODE CELL IGE PHENOTYPE DEVELOPMENT WITH TOTAL SERUM IMMUNOGLOBULIN LEVELS OF FISCHER 344 RATS EXPOSED TO CHEMICALS KNOWN TO ELICIT A TYPE I OR TYPE IV HYPERSENSITIVITY RESPONSE. T S Manet, A E Munson and BJ Meade. Department of Pharmacology and Toxicology, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA.

REACTIVITIES OF THE SKIN-SENSITIZATION TEST IN GUINEA PIG (GPT) IS A FUNCTION OF THREE INDEPENDENT PARAMETERS; INDUCTION DOSES, CHALLENGE DOSES, AND THE DIRECT EXPOSURE LEVEL IN HUMAN CASES. J Momma and T Inoue. Cellular and Molecular Toxicology Division, National Institute of Health Sciences, Tokyo, Japan. Sponsor: H Ono.

TOPICAL EXPOSURE TO 2-BUTOXYETHANOL DECREASES THE CONTACT HYPERSENSITIVITY RESPONSE TO OXAZOLIDONE IN BALB/C MICE. B Bleylock1, P Singh1, B J Morris1 and S D Holladay2. 1Louisiana Institute of Toxicology, College of Pharmacy and Health Sciences, Northeast Louisiana University, Monroe, LA and 2Virginia Polytechnical Institute, Blacksburg, VA.

EVALUATION OF A 5 DAY COMBINED IRRITANCY AND SENSITIZATION ASSAY IN B6C3F1 FEMALE MICE. B Hayes, M Woolhiser, P Gerber, S Griffe, A E Munson and B Meade. Department of Pharmacology and Toxicology, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA.
A SIMPLE SURGICAL METHOD FOR INTRATRACHEAL ADMINISTRATION OF CHEMICALS. K. Ebino, J.A Kramarik and M H Karol. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA.

PULMONARY INFLAMMATION ELICITED BY SURGICAL INTRATRACHEAL ADMINISTRATION OF TOLENE DISSOCYANATE IN MICE. M H Karol, K Ebino and J Kramarik. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA.


A QSAR MODEL OF HUMAN RESPIRATORY SENSITIZERS. C Gruhm, H S Rosenkranz and M H Karol. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA.


RESPIRATORY HYPERSENSITIVITY IN GUINEA-PIGS SENSITIZED TO TOLENE DISSOCYANATE: ANALYSIS OF PULMONARY REACTIONS FOLLOWING INTRADERMAL AND COMBINED INTRADERMAL/INHALATION INDUCTION. J Pauluhn. Institute of Toxicology, Bayer AG, Wuppertal, Germany.

SENSITIZATION TO TRIMELLITIC ANHYDRIDE IN THE BDFF1 MOUSE. K Sarlo and E D Clark. Procter & Gamble Company, Miami Valley Laboratories, Cincinnati, OH.

MODULATING EFFECTS OF LOW DOSE OF FORMALDEHYDE EXPOSURE ON EXPERIMENTALLY INDUCED ALLERGIC REACTIONS IN MICE. T Yoshida1 and F Kayama1. Department of Environmental Health, Tokai University School of Medicine, Japan and 1Department of Environmental Health, Chiba Medical School, Japan.


A MODIFIED LOCAL LYMPH NODE ASSAY: A NEW INDEX BY CYTOKINE PRODUCTION. T Tsuda1, M Hatako, T Hara, Y Katsumura1, H Ishikawa1 and S Kato1. Shiseido Safety and Analytical Research Center, Yokohama, Japan and 1MGH/ Harvard Cunaneous Biology Research Center, Harvard Medical School, Boston, MA.

ENHANCED ALLERGIC RESPONSE TO DUST MITE BY ORAL EXPOSURE TO CARBARYL. W Dong1, M I Gilmore1 and M J Segelgrade1. U.S. EPA, Research Triangle Park, NC and 1University of North Carolina, Chapel Hill, NC.

EFFECTS OF ULTRAVIOLET RADIATION ON CONTACT HYPERSENSITIVITY, PROTEIN KINASE C ISOFORMS, AND LANGHERANS CELLS IN BALB/C MOUSE SKIN. M E Viana1, D M Sailstad1, A L Gooden1, M J Segelgrade1 and R C Smart1. 1Department of Toxicology, North Carolina State University, Raleigh, NC and 1Immunotoxicology Division, U.S. EPA, Research Triangle Park, NC.

POLY I:C INCREASES THE INCIDENCE AND SEVERITY OF LUPUS IN PENCIALAMINE-TREATED RATS. E Sayeh and J P Uetrecht. Faculty of Pharmacy, University of Toronto, Toronto, Canada. Sponsor: P G Wells.

THE EFFECT OF 2,3,7,8-TETRACHLORO-P-DIOXIN ON THE DEVELOPMENT OF MURINE CONVENTIONAL (B-2) B LYMPHOCYTES. T S Thurmond and T A Gasiorowicz. Department of Environmental Medicine, University of Rochester School of Medicine, Rochester, NY.

THE EFFECTS OF ALKYLATED POLYCYCLIC AROMATIC HYDROCARBONS ON LYMPHOCYTE PROLIFERATION AND INTRACELLULAR CA++ LEVELS IN LEPOMIS MACROCHIRUS. H R Connelly and J C Means. School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA.

METABOLISM OF DMBA BY CYP1B1 IN BONE MARROW STROMAL CELLS IS INFLUENCED BY THE AH RECEPTOR. S M Heidel1, C J Czyczynski2 and C R Jeffcoat1. 1Department of Pathobiological Sciences, University of Wisconsin, Madison, WI and 2Department of Pharmacology, University of Wisconsin, Madison, WI.

THE ROLE OF CYTOCHROME P450 METABOLISM IN POLYCYCLIC AROMATIC HYDROCARBON (PAH)-INDUCED ALTERATIONS IN INTRACELLULAR CALCIUM MOBILIZATION IN HUMAN B CELLS. B J Moonho and S W Burchiel. College of Pharmacy Toxicology Program, University of New Mexico, Albuquerque, NM.


METALLOTHIONEIN: AN INTERMEDIATE IN TOXICANT-INDUCED IMMUNOMODULATION. M A Lyons, J Youn, L Borghesi, J C Lee, K C Crowthers and L D Shultz. Department of Molecular and Cell Biology, University of Connecticut, Storrs, CT and The Jackson Laboratory, Bay Harbor, ME.

2'-3'-DIDEOXYinosine (ddI) INHIBITS HUMORAL IMMUNITY IN MICE BY DIRECTLY TARGETING THE B LYMPHOCYTE. K E Phillips and A E Munson. Department of Pharmacology and Toxicology, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA.

IN VITRO DIFFERENTIAL EFFECTS OF ARSENIC ON LYMPHOCYTE PROLIFERATION INDUCED BY CONCANAVALIN A (CON A) AND PHOTOHEMAGGLUTININ (PHA). R Goyin, B Rivas, M E Cebrián and E S Calderón-Aranda. Sección Toxicología Ambiental, CINVESTAV IPN, Mexico DF. Sponsor: A Alberca.

INORGANIC MERCURY-INDUCED AUTOIMMUNE DISEASE IN MALE SPRAGUE DAWLEY RATS. M Glass, Y Martin, T C Graham, A Atkinson, A T Khan, S J Thompson, S Ali, C D Shannon, J E Webster and J A Ferguson. School of Veterinary Medicine, Tuskegee University, Tuskegee, AL. Sponsor: R R Dalvi.


LEAD (Pb) INDUCES A DIFFERENTIAL MODULATION OF THE ACTIVATION PATHWAYS OF TH1 AND TH2 CELLS. Y Hec, H Kishikawa and D A Lawrence. Wadsworth Center and School of Public Health, State University of New York at Albany, Albany, NY.

EXPOSURE TO LEAD IN UTERO PRODUCES PERSISTENT IMMUNE SYSTEM ALTERATIONS IN FISCHER 344 RATS. T E Miller, K A Golemboski, R S Ha and R R Dietert. 'Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH and 'Institute for Comparative and Environmental Toxicology and Dept. Microbiology and Immunology, College of Veterinary Medicine, Cornell University, Ithaca, NY.

SUPPRESSION OF MACROPHAGE METABOLITE PRODUCTION BY LEAD GLUTAMATE IN VITRO IS REVERSED BY MESO-2,3-DIMERCAPTOPRO SUCINIC ACID (DMSA). S Chen, T E Miller, K A Golemboski and R R Dietert. 'Institute for Comparative and Environmental Toxicology and Dept. of Microbiology & Immunology, College of Veterinary Medicine, Cornell University, Ithaca, NY and 'Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.

EXPOSURE TO LEAD IN VITRO AND IN VIVO ENHANCES T-CELL FUNCTION IN THE ALLOGENEIC MIXED LYMPHOCYTE RESPONSE. M J McCabe, Jr and J J Reiners, Jr. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

RAT STRAIN DIFFERENCES IN KUPPER CELL (KC) ACTIVITY FOLLOWING EXPOSURE TO WHITE MINERAL OIL. M J Miller, S J Waterman, N C Hoglen and J G Sipes. 'Exxon Biomedical Sciences, Inc., East Millstone, NJ and 'Department of Pharmacology/Toxicology, University of Arizona, Tucson, AZ.

HQ INHIBITS LYMPHOBLAST PROLIFERATION BY TWO DIFFERENT MECHANISMS. Q Li and B M Freed. Transplantation Immunology and Histocompatibility Lab, Albany Medical College, Albany, NY.

EFFECT OF ACUTE ETHANOL ADMINISTRATION ON TH10 LEVELS IN MURINE SPLENCYTES. J T Peoples and S B Pruett. Department of Biological Sciences, Mississippi State University, Mississippi State, MS.

THE HYPOTHALAMIC-PITUITARY-ADRENAL AXIS MEDIATES COCAINE-INDUCED IMMUNOMODULATION. D F Kampa, E D Stanulis, M P Hoiappelle, D H Conrad and J A Rosecrans. Department of Pharmacology & Toxicology, Medical College of VA/Virginia Commonwealth University, Richmond, VA.

EVALUATION OF MULTIVARIATE STATISTICAL METHODS AND THEIR APPLICATION IN QUANTITATIVE MODELLING OF IMMUNOTOXICOLOGY DATA. D E Keill, R Luebbel and S B Pruett. 'Department of Biology, Mississippi State University, Mississippi State, MS and 'US EPA, HERL, Research Triangle Park, NC.

PREPARATION AND TESTING OF MICROBIAL PESTICIDE ANTIGENS FOR DETECTION OF HUMAN HYPERSENSITIVITY. S I Terzieva, Z L Lumnus, M J Selgrade, J Kozel, J A Bernstein, D I Berstein and I L Bernstein. 'Department of Internal Medicine, University of Cincinnati College of Medicine, Cincinnati, OH and 'US EPA, NHEERL, Research Triangle Park, NC.

AN ALLERGY MODEL FOR THE BIO-PESTICIDE, METARHIZIUM ANISOPLAE. M D Ward, D M Sailstad and M J Selgrade. 'Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and 'US EPA, NHEERL, Research Triangle Park, NC.

RESPIRATORY AND CONTACT HYPERSENSITIVITY (CH) RESPONSES OF MICE TOPICALLY EXPOSED TO TRIMETHILIC ANHYDRIDE (TMA). D Sailstad, M Ward and M J Selgrade. 'Experimental Toxicology Division U.S. EPA, Research Triangle Park, NC and 'Curriculum in Toxicology, University of North Carolina at Chapel Hill, Chapel Hill, NC.

LOCALIZED HUMAN SEMINAL PLASMA HYPERSENSITIVITY: A POTENTIAL MODEL FOR GULF WAR "BURNING SEOMAN SYNDROME". J A Bernstein, R L Martin and Z L Lumnus. University of Cincinnati College of Medicine, Cincinnati, OH. Sponsor: R E Biagioni.

PROGESTERONE SENSITIVITY ASSOCIATED WITH IgE AND IgG ANTI-PROGESTERONE SERUM SPECIFIC ANTIBODIES. R L Martin, Z L Lumnus, J Scinto, D I Bernstein and J L Bernstein. Department of Internal Medicine, University of Cincinnati College of Medicine, Cincinnati, OH. Sponsor: R E Biagioni.

OCCUPATIONAL EXPOSURE TO AEROSOLIZED EGG ALLERGENS AT AN EGG PROCESSING FACILITY. M Boeinger, Z L Lumnus, R E Biagioni, M Massoud and D J Bernstein. 'The National Institute for Occupational Safety & Health, Centers for Disease Control, Cincinnati, OH and 'University of Cincinnati, Cincinnati, OH.
TUESDAY EVENING, MARCH 14
5:00 p.m. - 6:30 p.m.
LISTED HOTELS
REGIONAL CHAPTER MEETINGS:
PACIFIC N.W. - HYATT, BUCKEYE A
OHIO VALLEY - OMNI, SALON D

TUESDAY EVENING, MARCH 14
6:00 p.m. - 10 p.m.
FOREST VIEW GARDENS
SOT DEUTSCH NIGHT
Great times await you at Forest View Gardens! Delight in friendly Old World atmospheres: good food, good drink, good times — served up in authentic Oktoberfest atmosphere. Your three-hour dinner seating is filled with Broadway music performed by talented young opera singers for a memorable experience. The cost is only $33 which includes your food, gratuity, entertainment and transportation to and from the restaurant. Buses will depart from the Fifth Street side of the Cincinnati Convention Center at 6:00 p.m. and will return around 10:00 p.m. Sign up for your special G_STD on the SOT Registration Form. Exchange your ticket at the SOT Sales Desk by Tuesday, March 14, before 12:00 noon.

TUESDAY EVENING, MARCH 14
6:30 p.m. - 8:30 p.m.
HYATT REGENCY - BALL ROOMS
SPECIALTY SECTION MEETINGS:
REPRODUCTIVE & DEVELOPMENT - BALLROOM B
METALS - BALLROOM C
MOLECULAR BIOLOGY - BALLROOM F
NEUROTOXICOLOGY - BALLROOM G
SYMPOSIUM SESSION:
THE MOLECULAR BIOLOGY OF METAL CARCINOGENESIS

Sponsored by: The Carcinogenesis and Metals Specialty Sections
Chairpersons: Joseph R. Landolph, University of Southern California, Los Angeles, CA and Max Costa, New York University Medical Center, New York, NY

This symposium will explore recent advances in our understanding of the cellular/molecular mechanisms of metal carcinogenesis and the molecular biology of metal carcinogenesis. Dr. Loeb will discuss involvement of oxygen radicals in cancer and analyze types/frequencies of mutations produced in vitro by reactive oxygen species generated by metals associated with human cancers. Dr. Costa will discuss epigenetic mechanisms of nickel carcinogenesis, including cell transforming activities of insoluble nickel compounds and their ability to induce chromatin condensation and fix it via hypermethylation of cytosines in DNA, inactivating tumor suppressor genes. Dr. Landolph will describe arsenic, nickel, and chromium-induced neoplastic transformation of 10T1/2 mouse embry cell lines and anchorage independence in human fibroblasts without mutation to ras in-6-thioguanine resistance and discuss increased levels of c-myc RNA/protein and stabilization of c-myc RNA in lead chromate transformed 10T1/2 cell lines, RNA differential display analyses of chromium/nickel transformed 10T1/2 cell lines, and oncogenes overexpressed and tumor suppressor genes underexpressed in metal-transformed 10T1/2 cell lines. Dr. Karin will discuss mechanisms of AP-1-mediated tumor and anti-tumor promotion, Ap-1 activation of c-fos and c-jun downstream of MAP kinase kinase JNK, therefore AP-1 activation, and that anti-tumor promoters inhibit AP-1 activity.

#1025 8:30  THE MOLECULAR BIOLOGY OF METAL CARCINOGENESIS. J R Landolph and M Costa.

#1026 8:35  THE IN卷VEMENT OF OXYGEN FREE RADICALS IN CANCER. T Nowcom, A Jackson and L A Loeh. Departments of Pathology and Biochemistry, University of Washington, Seattle, WA. Sponsor: J R Landolph.

#1027 9:15  EPIGENETIC MECHANISMS OF NICKEL CARCINOGENESIS. M Costa. Department of Environmental Medicine, New York University Medical Center, New York, NY.

#1028 10:00  MOLECULAR BIOLOGY OF CHROMIUM AND NICKEL-INDUCED NEOPLASTIC TRANSFORMATION OF 10T1/2 MOUSE EMBRYO CELLS. J R Landolph, L 0oth and A Verma. Departments of Mol. Microbiology/Immun., Pathology and Molecular Pharm./Toxicol., University of Southern California Cancer Center, School of Medicine, University of Southern California, Los Angeles, CA.

#1029 10:40  MECHANISMS OF AP-1 MEDIATED TUMOR AND ANTI-TUMOR PROMOTION. M Karin and W Li. Department of Pharmacology, University of California, San Diego, La Jolla, CA. Sponsor: J R Landolph.

NEUROTRANSMITTER RECEPTOR SUBTYPES INVOLVED IN COGNITION

Sponsored by: The Mechanisms, Metals, and Neurotoxicology Specialty Sections
Chairpersons: Amira T. Eldefrawi, University of Maryland School of Medicine, Baltimore, MD

The diversity in neurotransmitter receptor subtypes is important in regulation of nervous system function, development and plasticity. Receptor cloning and use of selective ligands and toxins and novel electrophysiological and microscopic techniques, have revealed complexities and transformed our understanding of the roles of receptor subtypes in neurotoxicology. The focus of this symposium is receptor subtypes that play major roles in memory and learning, and the mechanisms of action of toxicants (e.g., lead and organophosphate insecticides) that selectively affect them. Subtypes may differ during development and aging and between locations, pre- or post-synaptically. To be discussed are muscarinic, nicotinic, dopaminergic and glutamatergic systems and their interactions. The objective is to illuminate the roles of relevant specific receptor subtypes in cognition, and to correlate between molecular, biochemical, biophysical, functional and behavioral data. This information is necessary for understanding the mechanisms of action of toxicants that affect memory and learning or may be risk factors for certain diseases.

#1030 8:30  NEUROTRANSMITTER RECEPTOR SUBTYPES INVOLVED IN COGNITION. A T Eldefrawi. Department of Pharmacology & Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD.

#1031 8:45  LEAD AS A RISK FACTOR? ALTERATIONS IN GLUTAMATERIC (GLU) AND DOPAMINERGIC (DA) FUNCTION IN MESOCORTICOLIMIC SYSTEMS. D A Cory-Slehta. Department of Neurobiology and Anatomy, University of Rochester Medical School, Rochester, NY.

#1032 9:25  HIPPOCAMPAL NICOTINIC RECEPTOR SUBTYPES AS TARGETS FOR LEAD. E X Albuquerque. Department of Pharmacology and Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD.

#1033 10:05  INTERACTION OF LEAD WITH HIPPOCAMPAL NMDA RECEPTOR SUBUNITS. T R Guillelto. Department of Environmental Health Sciences, School of Hygiene & Public Health, Johns Hopkins University, Baltimore, MD.


11:25  DISCUSSION
WORKSHOP SESSION:
MEASURING LOCAL DOSES IN PORTAL-OF-ENTRY EPITHELIUM

Sponsored by: The Inhalation and Risk Assessment Specialty Sections
Chairperson: Alan R. Dahl, TRSL, Albuquerque, NM

Cancers originating in portal-of-entry epithelial cells are common, including various forms of respiratory and GI tract cancer and skin cancer. Because they are the first cells exposed to environmental toxicants, high local doses to epithelial cells may play an important role in the etiology of these cancers. The epithelium must somehow rid itself of toxicants, often either by passing them into the systemic circulation before or after metabolism-or by sloughing the cells in which the toxicants or their metabolites are contained. The manner in which the toxicant is cleared from the epithelium depends upon both the physico-chemical properties of the toxicant molecules and the metabolic and other physiological properties of the affected cell. For example, many, but by no means all, compounds are absorbed from the small intestine unmetabolized both because of a deficiency of appropriate enzymes and because the proximity of the capillaries allows for rapid transport of all but the most highly lipophilic compounds. New methods for examining the fate of toxicants applied to epithelia have been developed in the last few years. Examples include an isolated-perfused skin preparation, and an experimentally validated mathematical model describing the clearance of toxicants from the respiratory tract. The purpose of this workshop is to draw together researchers at the forefront of research into portal-of-entry dosimetry. The speakers will highlight commonalities among three routes of exposure-cutaneous, oral, and inhalation. Listeners will benefit by becoming aware of new state-of-the-art techniques and theories of increasing importance for explaining and predicting the toxicity of portal-of-entry toxicants.

#1035 8:30 MEASURING LOCAL DOSES IN PORTAL-OF-ENTRY EPITHELIUM. A R Dahl, Inhalation Toxicology Research Institute, Albuquerque, NM.

#1036 8:45 INTESTINAL ABSORPTION AND METABOLISM OF TOXICANTS. J L Kaminiski, NY State Department of Health, Wadsworth Center, Albany, NY.


#1038 9:45 FLOW-CONTROLLED DOSIMETRY IN THE UPPER RESPIRATORY TRACT. J S Kimbell, E A Gross, R B Richardson, R B Conolly and K T Morgan, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#1039 10:15 BLOOD FLOW, DIFFUSION, METABOLISM, AND THE DOSE OF INHALED TOXICANTS IN AIRWAY EPITHELIUM. P Garde and A R Dahl, Inhalation Toxicology Research Institute, Albuquerque, NM.

10:45 DISCUSSION

DATA BASE UNCERTAINTY FACTOR DISTRIBUTION DEVELOPMENT. S J Baird and J C Swartout. 1Harvard Center for Risk Analysis, Harvard School of Public Health, Boston, MA and 2US. EPA, NCEA, Cincinnati, OH. Sponsor: H Choudhury.


WEDNESDAY MORNING, MARCH 12
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
REACTIVE INTERMEDIATES

Chairpersons: Jose Manastou, University of Connecticut, Storrs, CT and Judith Bolton, University of Illinois, Chicago, IL.

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

PROBING THE BIOACTIVATION MECHANISM OF TAMOXIFEN WITH α-HYDROXYTAMOXIFEN ANALOGS. K V Ramakrishna, P W Fan, C S Boyer and J L Bolton. 1Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago, IL and 2Central Research Division, Pfizer Inc., Groton, CT.

COMPETING MECHANISMS FOR ESTROGEN TOXICITY 1: AROMATIZATION OF THE B RING IN 4-HYDROXYQUINOLIN MARKEDLY ALTERS QUINOID FORMATION AND REACTIVITY. J L Bolton, L Shen, Z Huang and R B van Breenen. Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.

COMPETING MECHANISMS FOR ESTROGEN TOXICITY 2: BIOREDUCTIVE ACTIVATION OF CATECHOL ESTROGEN-ORTHO-QUINONE. L Shen, E Fisha, J M Pozzuto, E Krol, Z Alam and J L Bolton. Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago, IL.

DOSE-DEPENDENT INHIBITION OF HEPATIC CARBAMYL PHOSPHATE SYNTHETASE-I (CPS-I) AND GLUTAMINE SYNTHETASE (GS) ACTIVITIES BY ACETAMINOPHEN (AP) IN MICE. S Gupta, S K Taylor, L K Rogers and C V Smith. Department of Pediatrics, Baylor College of Medicine, Houston, TX.

INHIBITION OF PROTEIN PHOSPHATASE (PP) ACTIVITY IN CULTURED MOUSE HEPATOCYTES EXPOSED TO ACETAMINOPHEN (APAP). M K Bruno, S D Cohen and E A Khairallah. Departments of Molecular and Cell Biology and of Pharmaceutical Sciences, University of Connecticut, Storrs, CT.

GLUTATHIONE (GSH) DEPLETION ALONE IS NOT SUFFICIENT TO CAUSE TRANSLOCATION OF THE CYTOSOLIC 58 kDA ACETAMINOPHEN BINDING PROTEIN (SB-ABP) INTO THE NUCLEUS. A M Lucas, S E Shein-Johnson, D Sahakian, E A Khairallah and S D Cohen. Toxicology Program, Department of Pharmaceutical Sciences and Molecular Cell Biology, University of Connecticut, Storrs, CT.

FERROUS SULFATE POTENTIATES ACETAMINOPHEN-INDUCED HEPATOTOXICITY IN MICE. J D Gibson, R J Keller, N R Pamford, H E Palmer and J A Hinson. University of Arkansas for Medical Sciences, Little Rock, AR.

THE PPAR ACTIVATOR DOCOSAHExANOIC ACID (DHA) PREVENTS ACETAMINOPHEN (APAP) HEPATOTOXICITY WITHOUT INCREASING HEPATIC GLUTATHIONE CONTENT. K A Nguyen1, J M Carbone, C Chen, G B Hennig, H E Whiteley2 and J E Manuato. Toxicology Program, Department of Pharmaceutical Sciences, University of Connecticut, Storrs, CT and Department of Pathology, University of Connecticut, Storrs, CT.

IDENTIFICATION OF TARGET PROTEINS IN MOUSE LIVER FOLLOWING AN HEPATOGENIC DOSE OF COCAINE. F M Nildum-Moffor and S M Roberts. Center for Environmental and Human Toxicology, University of Florida, Gainesville, FL.

HEAT SHOCK PROTEIN INDUCTION BY AMPHETAMINE IN MICE: EFFECT ON HEPATOXYCITY OF ACETAMINOPHEN, BROMOBENZENE, COCAINE, AND CARBON TETRACHLORIDE. W F Salminen Jr, R M Veithly2 and S M Roberts2. University of Florida, Gainesville, FL and University of Miami, Miami, FL.

NORCOCAINE NITROXIDE HEPATOTOXICITY IN MICE. S M Roberts and F M Nildum-Moffor. Center for Environmental and Human Toxicology, University of Florida, Gainesville, FL.

PATHOLOGICAL EVALUATION OF COCAINE-INDUCED HEPATOXICITY. D J Price, C W Jones, C A Muro-Cacho and R D Harbison. Department of Environmental and Occupational Health, College of Public Health and Dept of Pathology, College of Medicine, University of South Florida, Tampa, FL.

HISTOPATHOLOGY AND DICLOFENAC PROTEIN ADDUCTS IN RAT LIVER AND INTESTINE. C R Atchison1, S J Hargus2, D Daiker1, J Aronson1, B West1 and M T Moslen1. University of Texas Medical Branch, Galveston, TX and NIH, Bethesda, MD.

DICLOFENAC FORMS PROTEIN ADDUCTS IN MULTIPLE TISSUES OF MICE. T Osma, C R Atchison, D Daiker, J Aronson and M T Moslen. The University of Texas Medical Branch, Galveston, TX.

CO-LOCALIZATION OF CYP2F1 AND 3-METHYLINDOLE ADDUCTS TO ANIMAL AND HUMAN CELLS. J K Kaster1, A Holian1 and G S Yost1. Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT and Pulmonary Division/Internal Medicine, University of Texas-Houston Health Science Center, Houston, TX.

FORMATION OF 3-METHYLINDOLE-GUANOSINE ADDUCT BY GOAT LUNG MICROSOMES. C Yuan, D L Lanza and G S Yost. Department of Pharmacology and Toxicology, University of Utah, Salt Lake City, UT.

IDENTIFICATION OF RAT LIVER PROTEINS ALKYLATED BY BUTYLATED HYDROXYTOLUENE. M D Reed and D C Thompson. Texas A&M University, College Station, TX. Sponsor: D Thompson.

IMMUNOCHEMICAL ASSAY FOR THE GLUTATHIONE CONJUGATE, 2,5-S-LUTATHIONYL ACETATE. P G Forkert, R S Collins, T F Dowsway and G M Ross. Departments of Anatomy & Cell Biology and Medicine, Queen's University, Kingston, ON, Canada. Sponsor: T E Massey.

PROTECTION AGAINST CYCLOPHOSPHAMIDE-MEDIATED LUNG AND BLADDER TOXICITY IN MICE BY 2,6-DIHTIOPURINE, K Dutta1, A Chia1, T Ahmed1, W G Qing2, K L Powell2, P Simhambhatla1, M C MacLeod1 and J Krueger1. Division of Pharmacology & Toxicology, College of Pharmacy, University of Texas at Austin, Austin, TX and Department of Carcinogenesis, University of Texas M.D. Anderson Cancer Center, Smithville, TX.

REDOX-MEDIATION AS A MODEL FOR PEROXI- DASE-DEPENDENT DNA DAMAGE BY HYDRAZINE. C A Reilly and S D Aust. Biotechnology Center, Utah State University, Logan, UT.

MALONDIALDEHYDE-MODIFIED PROTEINS IN LIVER MICROSOMES FROM DBA/2J MICE WITH CHRONIC DIETARY IRON OVERLOAD. L G Valerio Jr, D P Hartley and D R Petersen. Department of Pharmaceutical Science, University of Colorado Health Sciences Center, Denver, CO.

INFLUENCE OF BPDE-DAMAGED DNA ON NUCLEOSOME STRUCTURE UTILIZING SPIN-LABELED HISTONES. V L Burnett, J G Marx, M K Bowman, C G Edmonds and D L Springer. Pacific Northwest National Laboratory, Richland, WA.

COMPARATIVE TOXICITY OF EUGENOL AND ITS QUINONE METHIDE METABOLITE IN CULTURED LIVER CELLS USING KINETIC VITAL FLUORESCENCE BIOASSAYS. D C Thompson, R Barhoumi and R C Burghardt. Texas A&M University, College Station, TX.
LYMPHATIC ABSORPTION OF \textsuperscript{3}H-RETINOL IN SPRAGUE-DAWLEY RATS EXPOSED TO 2,3,7,8-TCDF (TCDD). A Hanberg, C Nilsson, C Trosvik and H Hakansson. Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.

REDUCTIONS IN HEPATIC RETINOID LEVELS AFTER SUBCHRONIC EXPOSURE TO DIOXIN-LIKE COMPOUNDS IN FEMALE MICE AND RATS. M J DeVito\textsuperscript{1}, J A Jackson\textsuperscript{1}, A P J M van Birgelen\textsuperscript{2} and I S Birnbaum\textsuperscript{1}. \textsuperscript{1}US EPA, NHEERL, Research Triangle Park, NC and \textsuperscript{2}University of North Carolina, Curriculum in Toxicology, Chapel Hill, NC.

2,3,7,8-TCDF AFFECTS HEPATIC UPTAKE AND PROCESSING OF VITAMIN A FROM CHYLOMICRONS. S K Kelley\textsuperscript{1}, M H Green\textsuperscript{1}, I B Green\textsuperscript{1}, C Nilsson\textsuperscript{2} and H Hakansson\textsuperscript{2}. \textsuperscript{1}Physiology and Nutrition Programs, Pennsylvania State University, University Park, PA and \textsuperscript{2}Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.

2,3,7,8-TCDF AFFECTS RETINOL ESTERIFICATION IN RAT HEPATIC STELLATE CELLS AND KIDNEYS. C Nilsson, A Hanberg, C Trosvik and H Hakansson. Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.

TCDD INCREASES INTRACELLULAR FREE CALCIUM AND ACTIVATES CYCLOXENASE-2 EXPRESSION IN MOUSE HEPATOMA CELLS. H G Shertzer, A Hoffer, S Zhou, J M Bohn, G D Leikauf and A Pugl. Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH.

EVIDENCE FOR THE STIMULATION BY IRON OF 2,3,7,8-TCDF DIOXIN (TCDD) HEPATIC TOXICITY IN C57BL/6J MICE BY AN OXIDATIVE MECHANISM. A G Smith\textsuperscript{1}, B Clothier\textsuperscript{1}, P Carthew\textsuperscript{1}, M Scullion\textsuperscript{1}, J L Luo\textsuperscript{1}, C K Lim\textsuperscript{2}, S Robinson\textsuperscript{1} and M B Toledano\textsuperscript{1}. \textsuperscript{1}IRC Toxicology Unit, Leicester University, Leicester, UK and \textsuperscript{2}Department of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ. Sponsor: S Gangolli.

2,3,7,8-TCDF MODULATES NITRIC OXIDE PRODUCTION IN HEPATIC ENDOTHELIAL CELLS. D E Heck, J D Laskin, M A Gallo, Y Tian and D L Laskin. Departments of Pharmacology & Toxicology, Rutgers University and Environmental and Community Medicine, UMDNJ-RW Johnson Medical School, Piscataway, NJ.

CYP1B1 AND CYP1A1 EXHIBIT DIFFERENTIAL INDUCIBILITY BY TCDD IN A SPRAGUE-DAWLEY RAT TUMOR PROMOTION MODEL. N J Walker\textsuperscript{1}, S P Lax\textsuperscript{1}, M Wyde\textsuperscript{1}, F G Crofts\textsuperscript{1}, G W Musci\textsuperscript{1} and T R Satter\textsuperscript{1}. \textsuperscript{1}Department of Environmental Health Sciences, Johns Hopkins Medical Institutions, Baltimore, MD; \textsuperscript{2}Department of Pathology, Johns Hopkins Medical Institutions, Baltimore, MD and \textsuperscript{3}NIEHS, Research Triangle Park, NC.

EFFECT OF HEPTA-CDD ON LIVER CYP2E1 AND TYPE I 5'-DEIODINASE (5'-DI) ACTIVITIES IN A 26-WEEK STUDY. M Lebofsky\textsuperscript{1}, M Vilukse\textsuperscript{1}, B U Stahl\textsuperscript{1} and K K Rozman\textsuperscript{2}. \textsuperscript{1}Department of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS and \textsuperscript{2}Sect. Environmental Toxicol., GSF-Institut für Toxikologie, Neuherberg, Germany.

EFFECT OF A MIXTURE OF FOUR CHLORINATED DIBENZO-P-DIIXINS (CDDs) ON LIVER CYP2E1 AND TYPE I 5'-DEIODINASE (5'-DI) ACTIVITIES IN A 26-WEEK STUDY. M Vilukse\textsuperscript{1}, M Lebofsky\textsuperscript{1}, B U Stahl\textsuperscript{1} and K K Rozman\textsuperscript{2}. \textsuperscript{1}Department of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS and \textsuperscript{2}Sect. Environmental Toxicol., GSF-Institut für Toxikologie, Neuherberg, Germany.

EFFECT OF HEPTA-CDD AND A MIXTURE OF FOUR CHLORINATED DIBENZO-P-DIIXINS (CDDs) ON KIDNEY PHOSPHOENOLPYRUVATE CARBOXYKINASE (PEPC) ACTIVITY IN TWO 26-WEEK STUDIES. C Redman\textsuperscript{1}, M Lebofsky\textsuperscript{1}, M Vilukse\textsuperscript{1}, B U Stahl\textsuperscript{1} and K K Rozman\textsuperscript{2}. \textsuperscript{1}Departments of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS and \textsuperscript{2}Sect. Environmental Toxicology, GSF-Institut für Toxikologie, Neuherberg, Germany.

LIVER CONCENTRATION OF 4 CHLORINATED DIBENZO-P-DIIXINS (CDDs) IN A 26-WEEK STUDY. K K Rozman\textsuperscript{2}, K-W Schramm\textsuperscript{3}, M Vilukse\textsuperscript{1}, B U Stahl\textsuperscript{1} and A Kettrep. \textsuperscript{1}Departments of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS; \textsuperscript{2}Sect. Environmental Toxicology, GSF-Institut für Toxikologie, Neuherberg, Germany and \textsuperscript{3}US EPA, NHEERL, ETD, Research Triangle Park, NC.

DIFFERENTIAL HEPATIC REGULATION OF CYPIB1, CYP1A1 AND CYP1A2 PROTEINS BY TCDD. M J Santostefano\textsuperscript{1}, D G Ross\textsuperscript{1}, U Savvas\textsuperscript{1}, C R Jefcoat\textsuperscript{2} and L S Birnbaum\textsuperscript{1}. \textsuperscript{1}Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC; \textsuperscript{2}US EPA, NHEERL, ETD, Research Triangle Park, NC and \textsuperscript{3}Department of Pharmacy, University of Wisconsin Madison, WI.

TOXIC AND BIOCHEMICAL RESPONSES IN TISSUE REFLECT 2,3,7,8-TCDF CONCENTRATION IN CORRESPONDING TISSUE AND 2,3,7,8-TCDF BODY BURDEN. A P J M van Birgelen\textsuperscript{2}, J J Diliberto\textsuperscript{1}, R J Smialowicz\textsuperscript{2} and L S Birnbaum\textsuperscript{1}. \textsuperscript{1}US EPA, NHEERL, Research Triangle Park, NC and \textsuperscript{2}University of North Carolina, Curriculum in Toxicology, Chapel Hill, NC.

RELATIVE POTENCY FACTORS DERIVED FROM CYTOCHROME P450 INDUCTION IN MICE PREDICT CYTOCHROME P450 INDUCTION IN RATS AFTER EXPOSURE TO A MIXTURE OF DIOXIN-LIKE COMPOUNDS, L S Birnbaum\textsuperscript{1}, M J Devito\textsuperscript{1} and A P J M van Birgelen\textsuperscript{2}. \textsuperscript{1}US EPA, NHEERL, Research Triangle Park, NC and \textsuperscript{2}University of North Carolina, Curriculum in Toxicology, Chapel Hill, NC.
SUPPRESSION OF SULFOTRANSFERASE GENE EXPRESSION BY TCDD IN PRIMARY RAT HEPATOCYTE CULTURE. M Runge-Morris and K Rose. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

THE EFFECT OF THE HISTONE DEACETYLASE INHIBITOR TRICHOSTATIN A ON THE RESPONSIVENESS OF RAT HEPATOCYTES TO DIOXIN. M F Ruh, L Xu and T S Ruh. Saint Louis University, St. Louis, MO. Sponsor: S Safe.

THE EFFECTS OF DIOXIN ON CULTURED HUMAN AND RAT HEPATOCYTES. L Xu, A Li, D Kaminski and M F Ruh. Saint Louis University, St. Louis, MO.

EVIDENCE FOR PROLIFERATIVE ARREST BY 2,3,7,8-TCDD IN THE TELOEST HEPATOCARCINOMA CELL LINE PLC-1. E V Hestermann, M E Hahn and J J Stegemann. Woods Hole Oceanographic Institution, Woods Hole, MA.

INDUCTION OF CYPIA1 mRNA IN CULTURED HUMAN EMBRYONIC CRANIOFACIAL TISSUE. B D Abbott, J Schmid, J G Brown and G Held. Reproductive Toxicology Division, US EPA, Research Triangle Park, NC.

COMPARISON OF CYPIA1 AND CYPIA1 RNA LEVELS IN DIOXIN-TREATED HUMAN LYMPHOCYTES. D L Spencer, N J Walker, S A Masten, X Yang, J A Grassman, C R Miller, K M Lanier, T R Sutter and G W Lucier. National Institute of Environmental Health Sciences, Research Triangle Park, NC and Johns Hopkins University School of Hygiene and Public Health, Baltimore, MD.

ROLE OF PROTEIN KINASE C IN TCDD-INDUCED CYPIA1 EXPRESSION IN LYMPHOCYTES. F D Stephen and J R Olson. Department of Pharmacology and Toxicology, SUNY, Buffalo, NY.

EXCRETION OF POLYCHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS INTO MILK OF COWS. G F Fries, D J Paustenbach, R J Wenning, D B Mathur and W J Luksemburg. USDA, ARS, Beltsville, MD. Sponsor: ChemRisk Division of McLaren/Hart, Alameda, CA and Alta Analytical Laboratory, El Dorado Hills, CA.

EFFECTS OF 2,3,7,8-TCDD ON MOLECULAR, CELLULAR, AND HISTOLOGIC MARKERS OF AVIAN CARDIAC MORPHOGENESIS. M K Walker and S M Smith. Department of Nutritional Sciences, University of Wisconsin, Madison, WI.

POSSIBLE BLADDER CANCER RISKS IN UNDERGROUND COAL MINERS BY PAH. K Golka, T Reckwitz, M Kempkes, I Casarotti, S E Reich, M Blaszewicz, I Roots, H Schulze and H M Bolt. Institute of Occupational Health at the University of Dortmund, Germany; Urological Department, Municipal Hospital, Dortmund, Germany; and Department of Clinical Pharmacology, Humboldt University, Berlin, Germany. Sponsor: H Greim.

EVALUATION OF THE TOXICITY OF POLYCYCLIC AROMATIC HYDROCARBONS FROM COAL TAR UTILIZING THE CHICK EMBRYOTOXICITY SCREENING TEST. (CHEST). K Mayurn, F Zhao, M R Dwyer, K S McKenney, K S Washburn, R H Bailey, K C Donnelly, J. F Kubena and T D Phillips. Faculty of Toxicology, College of Veterinary Medicine, Texas A&M University, College Station, TX and Food Animal Protection, USDA/ARS, College Station, TX.

COMPARATIVE IMMUNOTOXIC EFFECT OF DIETARY EXPOSURE TO POLYCYCLIC AROMATIC HYDROCARBONS IN FISCHER 344 RATS. M D Boudreau, D G Baker and J C Means. Department of Veterinary Physiology, Pharmacology, and Toxicology, Louisiana State University School of Veterinary Medicine, Baton Rouge, LA.

STRUCTURE ACTIVITY RELATIONSHIP (SAR) MODELS FOR ESTIMATING THE PERCUTANEOUS ABSORPTION OF POLYNUCLEAR AROMATIC HYDROCARBONS. T A Roy, W Neil, J J Yang, A J Kreuger and C R Mackeever. Mobil Environmental and Health Sciences Lab, Princeton, NJ.

POLYCYCLIC AROMATIC HYDROCARBON (PAH)-DNA BINDING IN MOUSE EPIDERMIS TREATED WITH COMPLEX PAH MIXTURES. C P Marston and W M Baird. Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University, West Lafayette, IN.

KINETICS OF 1-HYDROXYPYRENE IN URINE AFTER EXPOSURE TO BINARY AND TERNARY MIXTURES OF POLYCYCLIC AROMATIC HYDROCARBONS. M Bouchard and C Viall. Département de Médecine du Travail, Université de Montréal, Montréal, Canada.

ACUTE AND SUBCHRONIC TOXICITY OF FLUORANTHENE (FLA) IN F-344 RATS. M E Knuckles, D McCadden, F Inyang and A Ramiah. Department of Family and Preventive Medicine, Meharry Medical College, Nashville, TN. Sponsor: R G Meeks.

SUPPRESSION OF LOCOMOTOR ACTIVITY IN RATS AFTER ACUTE EXPOSURE TO FLUORANTHENE. C R Saunders, D C Shockley and M E Knuckles. Department of Pharmacology and Preventive Medicine, Meharry Medical College, Nashville, TN. Sponsor: R G Meeks.
NAPHTHALENE-INDUCED OXIDATIVE STRESS AND DNA DAMAGE IN CULTURED MACROPHAGE J774A.1 CELLS. S J Stohs, M Bagchi, J Balmoori and D Bagchi. Departments of Pharmacy & Administrative Sciences and Pharmacology, Creighton University, Omaha, NE.

THE USE OF CYP1A1/A2 INDUCTION FOR ASSESSING THE SYSTEMIC AVAILABILITY OF CHEMICAL COMPONENTS OF MGP CONTAMINATED SOILS. A Yarborough, B-L Ma, X-J Zhang, P E Thomas and E H Weyand. College of Pharmacy, Rutgers-The State University of New Jersey, Piscataway, NJ.

IMPROVED HPLC METHOD FOR THE SEPARATION OF CHEMICAL DNA ADDUCTS DERIVED FROM CHEMICAL COMPONENTS OF MGP. A Koganti, A Yarborough and E H Weyand. College of Pharmacy, Rutgers-The State University of New Jersey, Piscataway, NJ.

METABOLIC ACTIVATION OF DIBENZ[a,l]PYRENE (DBP) AND DBP-11,12-DIOLS TO DNA BINDING METABOLITES BY INDIVIDUAL CYTOCHROME P450s EXPRESSED IN CHINESE HAMSTERS V79 CELL CULTURES. S Coffing, J Doodrmer, A Luck, A Seidel and W M Baird. Department of Medicinal Chemistry, Purdue University, West Lafayette, IN; Technical University of Munich, Germany and University of Mainz, Germany.

EFFECT OF DIETHYLSTILBESTROL (DES) ON FORMATION AND PERSISTENCE OF BENZO(a)PYRENE [BaP]-DNA ADDUCTS IN MALE RAT REPRODUCTIVE TISSUES. A Ramesh, M Knuckles, F Inyong and D McCadden. Meharry Medical College, Department of Family and Preventive Medicine, Nashville, TN. Sponsor: R G Meeks.

DNA REPAIR OF POLYNUCLEAR AROMATIC HYDROCARBON ADDUCTS. E Braidwine, X Wu and Z Wang. Graduate Center for Toxicology, University of Kentucky, Lexington, KY. Sponsor: M Rive.

ATTENUATION OF GI CHECKPOINT RESPONSE IN MOUSE HEPATOCYTES BY THE NONGENOTOXIC CARCINOGEN PHENOBARBITAL. A J Gonzales, T L Goldworthy and T R Fox. Curriculum in Toxicology, The University of North Carolina at Chapel Hill, Chapel Hill, NC and 7 Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

SUSCEPTIBILITY AND CELL GROWTH IN MOUSE LIVER CARCINOGENESIS. R Fransson-Steen, E H Romach, C Dunn, L Healy, T Fox and T L. Goldworthy. Chemical Industry Institute of Toxicology. Research Triangle Park, NC.

OVEREXPRESSION OF TRANSFORMING GROWTH FACTOR-α (TGF-α) IN RAT LIVER CELLS DOES NOT INDUCE A TRANSFORMED PHENOTYPE. K L Steinmetz and J E Klaunig. Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.

DETECTION OF c-JUN IMMUNOREACTIVE PROTEINS IN MOUSE LIVER TUMOR. J Kato-Weinstein, D D Thrall and R J Bull. PharmacoTox Program, Washington State University, Pullman, WA and Battelle PNNL, Richland, WA.

c-JUN AND c-FOS IMMUNOREACTIVITY DIFFERENTIATES MODES OF ACTION AMONG HALOACETATES. A J Stauber and R J Bull. P Grad Program, Washington State University, Pullman, WA and Battelle PNNL, Richland, WA.

DICHLOROACETIC ACID (DCA) ALTERATION OF SERUM CORTICOSTERONE LEVELS IN MALE B6C3F1 MICE. T M Moore and A B Deangelo. U.S. EPA National Health and Environmental Effects Research Laboratory, Research Triangle Park, NC.

CHLOROFORM-INDUCED DNA DOUBLE-STRAND BREAKS IN FRESHLY ISOLATED MALE B6C3F, MOUSE AND F-344 RAT HEPATOCYTES. P Annam and G L Kelderis. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

DICHLOROACETIC ACID INDUCTION OF PEROXISOME PROLIFERATION IN CULTURED HEPATOCYTES. J Everhart Fauth, D T Kurtz and J M McMillan. Department of Pharmacology, Medical University of South Carolina, Charleston, SC.

DICHLOROMERCATE (DCA) MODULATES INSULIN SIGNALING. M K Smith, D D Thrall and R J Bull. Pharmacology/Toxicology Graduate Program, Washington State University, Pullman, WA and Pacific Northwest National Laboratory, Richland, WA.

THE INHIBITION OF GAP JUNCTIONAL INTERCELLULAR COMMUNICATION BY WV-14,643 THROUGH THE ACTIVATION OF PROTEIN KINASE C AND OXIDATIVE STRESS. C A Ketcham and J E Klaunig. Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.

INHIBITORY EFFECT OF ROTENONE ON WY-14,643 INDUCED HEPATIC FOCAL LESION GROWTH IN MICE. J S Isenberg, K L Kolaja, S A Ayoubi, J E Waterman and J E Klaunig. Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN and aMedical Science Program, Indiana University School of Medicine, Bloomington, IN.

INDUCTION OF GENE EXPRESSION AND DNA SYNTHESIS BY WY-14,643 (WY) IN PRIMARY RAT HEPATOCYTES (HPC) COCULTURED WITH NON-PARENCHYMAL CELLS (NPC). B I Ghanayem, T McIntyre and W G Karam. NIH/NIHES, Research Triangle Park, NC.


EVIDENCE OF CARCINOGENIC POTENTIAL OF 1,2,4,5-TETRACHLOROBENZENE BASED ON GST-P LIVER FOCI IN F344 RATS. A L Coulson, S A Sughrue, S A Benjamin and R S H Yang. Center for Environmental Toxicology and Technology, Department of Environmental Health, Colorado State University, Fort Collins, CO and aCenter for Environmental Toxicology and Technology, Department of Pathology, Colorado State University, Fort Collins, CO.

APOTHEOSIS AND PROLIFERATION IN GLUTATHIONE S-TRANSFERASE POSITIVE HEPATIC FOCI IN RATS USING AUTOMATED DOUBLE LABELING IMMUNOHISTOCHEMISTRY. D M Zimmerman, B G Short and L W Schwartz. SmithKline Beecham Pharmaceuticals, King of Prussia, PA.

ENHANCED EXPRESSIONS OF PI CLASS GLUTATHIONE S-TRANSFERASE (GST-P) WITH COLocalIZED AP-1 INDUCTION IN CHLOROBENZENE-INDUCED UROPORPHYRIA. R S Thomas, D L Gustafson, H S Ramsdell, S A Benjamin and R S H Yang. Center for Environmental Toxicology & Technology, Department of Environmental Health, Colorado State University, Fort Collins, CO.


HEPATIC ANGIOSARCOMA STUDIES WITH ARSENIC AND ARSENIC-CONTAINING MIXTURES. W A Pott, S A Benjamin and R S H Yang. Center for Environmental Toxicology & Technology, Department of Environmental Health, Colorado State University, Fort Collins, CO and aCenter for Environmental Toxicology & Technology, Department of Pathology, Colorado State University, Fort Collins, CO.

EARLY RESPONSES OF F344 RATS TO THE MOUSE HEPATOCARCINOGEN OXAZEPAM. M L Cunningham and J R Bucher. NEIHS, Research Triangle Park, NC.

DIGITIZED WHOLE LIVER SECTIONS FROM METHYL-DEFICIENT RATS. A V Sotnikov and P M Newberne. Boston University School of Medicine, Boston, MA.

COMPARISON OF TAMOXIFEN AND TOREMIFENE MUTAGENESIS IN THE LIVERS OF BIG BLUE TRANSGENIC F344 RATS. J A Styles, D Davies, R Hayes, N Hamah, N Hamah and T C Pitaro. 1McArdle Lab, Madison, WI and aNorthwestern University, Chicago, IL.

ENDOCRINE DISRUPTORS AND HEPATOCARCINOGENESIS: ALTERATIONS IN GENES OF CHOLESTEROL (CHI) METABOLISM AND GLUCOSE-6-PHOSPHATE DEHYDROGENASE (G6PD). K N Rao, P K Kagi, H Hinozok, E P Brady, B Rao, M S Ewen and R H Kelly. 1University of Pittsburgh Medical Center, Department of Pathology, Pittsburgh, PA; aUniversity of Pittsburgh Medical Center, Department of Medicine, Pittsburgh, PA and aVA Medical Center, Pittsburgh, PA.

WEDNESDAY MORNING, MARCH 12
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
LIVER AND GASTROINTESTINAL TOXICOLOGY

Chairpersons: Mary Kanz, University of Texas Medical Branch, Galveston, TX and Martin Ronis, University of Arkansas for Medical Science, Little Rock, AR

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

P-GLYCOPROTEIN SUBSTRATES PROTECT AGAINST STEREO D-RING GLUCURONIDE INDUCED CHOLESTASIS. L Huang and M Yore. Graduate Center for Toxicology, University of Kentucky, Lexington, KY.

BILIARY AND URINARY EXCRETION OF (4C)-METHYLENE DIANILINE IN FED AND FASTED RATS. S I Khan, H-L Liu and M Kanz. Department of Pathology, University of Texas Medical Branch Galveston, TX.

EFFECT OF METHYLEDIANILINE ON TIGHT JUNCTION PERMEABILITY OF THE BILARY TREE. V Santa Cruz, A Wang and M E Kanz. Department of Pathology, University of Texas Medical Branch, Galveston.

BILE DUCT EPITHELIAL CELLS EXPOSED TO ALPHA-NAPHTHYLISOTHIOCYANATE PRODUCE FACTORS WHICH MODULATE NEUTROPHILE DEPENDENT HEPATOCYTE INJURY IN VITRO. D A Hill and R A Roth. Department of Pharmacology and Toxicology, Institute for Environmental Toxicology, Michigan State University, East Lansing, MI.
NO CHANGE IN MULTIDRUG RESISTANCE (MDR) PROTEINS BUT INCREASED POLYCYCLIC AROMATIC HYDROCARBON BINDING IN HEPATIC CYTOSOL FROM DIELDRIN-FED RAINBOW TROUT. I. R. Curius, M. J. Hemmer and L. A. Courtney. 1Department of Environmental Health, East Tennessee State University, Johnson City, TN and 2Gulf Ecology Division, US EPA/ERL, Gulf Breeze, FL.

EARLY EFFECT OF EXPERIMENTAL SURGERY ON HEPATIC LEVELS OF ZINC (Zn) AND METALLOTHIONEINS (MT) IN FEMALE RATS. E M Brambila-Colombres, A Albores and J L Mulon-Sanchez. Facultad de Ciencias Quimicas, Universidad Autonoma de Puebla, Depart. de Bioquimica, Escuela Nacional de Ciencias Biologicas-IPN Seccion de Toxicologia Ambiental, CIENVESTAVIPN, Mexico City, Mexico.

PIMONIDAZOLE METABOLISM AND BINDING IS OXYGEN DEPENDENT IN RAT LIVER. G E Arzoo, J A Raleigh1,2 and R G Thurman1,3. 1Curriculum in Toxicology, 2Department of Radiation Oncology and 3Department of Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC.

HEPATOTOXICITY OF CHAPARRAL IN FISHER 344 RATS. J B Urich, J M Okano1, R A Chavez1, T L. Le1, M Mavededt2, J L. Bolle3, L J Zaval3, S K. Stringer4, C J Young5 and P Z. Nakazato1. 1Department of Surgery/Transplantation, The University of Arizona, Tucson, AZ; 2Mount Holyoke College, South Hadley, MA and 3Center for Toxicology, The University of Arizona, Tucson, AZ.

EFFECTS OF TOTAL ENTERAL NUTRITION AND CHRONIC ETHANOL TREATMENT ON LIVER DAMAGE IN MALE RATS. R Hakki1, S Korouian2, M J Ronis1 and T M Badger1. 1Departments of Pediatrics and Pathology, University of Arkansas for Medical Sciences Arkansas Children's Hospital Research Institute, Little Rock, AR and 2Arkansas Children's Hospital Research Institute, Little Rock, AR.

CONTRIBUTION OF OXIDATIVE STRESS TO BENZO(A)PYRENE-INDUCED HEPATOCYTE INJURY AND MODULATION OF GROWTH RELATED GENE EXPRESSION. W. Zhao and K S Ramos. Faculty of Toxicology and Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

PLASMA MEMBRANE PERMEABILITY CHANGES IN CULTURED SINUSOIDAL ENDOTHELIAL CELLS EXPOSED TO CVANIDE. Y Yishimura and J J Lemasters. Department of Cell Biology & Anatomy, University of North Carolina, Chapel Hill, NC.

KILLING OF RAT HEPATOCYTES BY SALICYLATE: ROLE OF THE MITOCHONDRIAL PERMEABILITY TRANSITION. L C Frost and J J Lemasters. Department of Cell Biology & Anatomy and Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC.


CYTOPROTECTION BY CYCLOSPORIN A (Cya) AND GLYCINE IN RELATION TO THE MITOCHONDRIAL PERMEABILITY TRANSITION (MPT) IN Ca2+ IONOPHORE TOXICITY AND pH-DEPENDENT REPERFUSION INJURY TO RAT HEPATOCYTES. T Qiong, B Horman and J J Lemasters. Department of Cell Biology & Anatomy, University of North Carolina, Chapel Hill, NC.

DIETARY GLYCINE PREVENTS ACUTE D-GALACTOSAMINE (DgaN) HEPATOTOXICITY. R F Scheckel and R G Thurman. Department of Pharmacology, University of North Carolina, Chapel Hill, NC.

EFFECTS OF HYPOLIPIDEMIC DRUGS IN CULTURED RAT AND HUMAN HEPATOCYTES. C E Perren and G M Williams. American Health Foundation, Valhalla, NY.

EVALUATION OF IMMUNE RESPONSES AND TOXICITY IN RAT LIVER AFTER INFUSION OF GLO-CROSSLINKED HEMOGLOBIN. J M Przybocisk, T A McCalden, J M Collier and R E Billings. Department Environmental Health, Colorado State University, Fort Collins, CO.

STIMULATION OF RAT LIVER SINUSOIDAL CELLS BY GLO-CROSSLINKED HEMOGLOBIN. A C Stoll and R E Billings. Department Environmental Health, Colorado State University, Fort Collins, CO.

EX VIVO HEPATOPROTECTIVE EFFECT OF THE DITERPENE LACTONE ANDROGRAPROLEIDE ON FLUTAMIDE TOXICITY. X Ma, L Lee, J Ringer and J G Bulik. Section of Cellular Physiology, Paracelsus, Inc., Itbska, NY.

ALTERATIONS IN HEPATIC MICROSONAL AND CYTOSOLIC PROTEIN PATTERN BY VARIOUS DIETARY INTAKE OF ASCORBIC ACID IN GUINEA PIGS ANALYZED BY TWO DIMENSIONAL GEL ELECTROPORHORESIS. M W Roomi and P J Wirtti. Linus Pauling Institute, Oregon State University, Corvallis, OR and 2-NIH, National Cancer Institute, Bethesda, MD.

ASSOCIATION BETWEEN HEPERLIPIDEMIA AND HEPATIC CYTOCHROME P450 INDUCTION IN GUINEA PIGS. C S Tsao1 and M W Roomi2,2. Linus Pauling Institute, Palo Alto, CA and 2Oregon State University, Corvallis, OR.

PROTECTIVE EFFECT OF DIMETHYL SULFOXIDE ON VIABILITY OF LIVERS FROM NON-HEART-BEATING DONOR FISHER 344 RATS. S K Stringer1, J B Urich2, C J Young1, T L. Le1, R A. Chavez1, J L. Bolle1, M Mavededt2, J L. Zaval3 and P Z Nakazato1. 1Department of Surgery/Transplantation, The University of Arizona, Tucson, AZ and 2Center for Toxicology, The University of Arizona, Tucson, AZ.

A DOSE ESCALATION TOXICITY STUDY OF DL-6,8-ThIOCTIC ACID (LIPOIC ACID) IN RHESUS MONKEYS. R C Couch, M Vigil, B Berkson, M A Thomas and G Sibert. Coulson Foundation, White Sands Research Center, Alamogordo, NM.

THE REGENERATIVE CAPACITY OF NORMAL HUMAN ADULT HEPATOCYTES: CLONAL EXPRESSION OF HEPATOCYTE FUNCTION IN CULTURE. R E Gibson-D'Ambrosio and S M D'Ambrosio. Department Radiology, The Ohio State University, Columbus, OH.
#1174 UPTAKE, METABOLISM AND PHOSPHOLIPIDOSIS INDUCTION BY A PYROLOPYRIMIDINE ANALOGUE IN CULTURED RAT AND HUMAN HEPATOCELLES. R G Urich, E L Sun, J Lin, S L Vanderfecht and G L Weber. Pharmacia & Upjohn Inc., Kalamazoo, MI.

#1175 LIPID PEROXIDATION AND GLUTATHIONE-TRANSFERASE VA ACTIVITY ARE INCREASED IN MICE WITH HEPATIC CELLULAR IRON OVERLOAD. R B Tjiaakens, L G Hulero, Jr. and D R Peterson. Molecular Toxicology and Environmental Health Sciences Program, University of Colorado Health Sciences Center, Denver, CO.

#1176 RELATIVE ROLES OF IRON AND CYTOCHROME P450IA2 IN EXPERIMENTAL UROPORPHYRIA. P R Sinclair, N Gorman, C P Honsinger, H S Walton, J Smilie, S Kuckel, A A Cuveit, M R Franklin, J D Phillips and J P Kushner. Department of Pharmacology and Toxicology and Division of Hematology - Oncology, Department of Medicine, University of Utah, Salt Lake City, UT.

#1177 SEPARATION OF CYPIA INDUCTION, UROPORPHYRIN GENETIC DEPRESSIVE AND Porphyrin ACCUMULATION IN A RAT MODEL OF PORPHYRIA CUTANEA TARDA (PCT). M R Franklin, J D Phillips and J P Kushner. Department of Pharmacology and Toxicology and Division of Hematology - Oncology, Department of Medicine, University of Utah, Salt Lake City, UT.

#1178 EFFECT OF A POTENTIAL HEPATOPROTECTIVE AGENT VH493 ON ALCOHOLIC FATTY LIVER GENERATION IN RATS. Y C Kim, K Ang and S K Kim. College of Pharmacy, Seoul National University, Seoul, Korea.

#1179 HELICOBACTER PYLORI-INDUCED OXIDATIVE STRESS AND DNA DAMAGE IN NORMAL HUMAN GASTRIC CELLS. B Buchanan, D Baghi, T R McGinn, M Baghi and S Stots. Departments of Pharmacy and Administrative Sciences and Pharmacology, Creighton University, Omaha, NE.


#1181 PANCREATIC ONCOGENIC EFFECTS OF WYETH 4,643. J D O'bourn, S R Frame, G S Elliot and J C Cook. DuPont Haskell Laboratory, Newark, DE.

#1182 ACUTE GASTROINTESTINAL TOXICITY OF THE ANTIMICROBIAL AGENT, CI-987 COMPARED TO INDOMETHACIN AND CYSTEAMINE. M Alhassam, D Clarke, B Houston and G Smith. Parke-Davis Research Institute, Mississauga, ON, Canada. Sponsor: R Walker.


#1185 INDUCTION OF PEROXISOME PROLIFERATION-ASSOCIATED GENES AFTER ADMINISTRATION OF TRICHLOROETHYLENE (TCE) TO MICE. K T Geiss, R S Young, G Randall, J K Kidney, S R Channel and R Abbas. Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.

#1186 PEROXISOME PROLIFERATION IN B6C3F1 MOUSE HEPATOCYTES FOLLOWING EXPOSURE TO TRICHLOROETHYLENE. J W Lane, J S Eggers, S R Channel, J H Graber and J R Latendresse. MannTech Environmental Technology, Inc., Wright-Patterson AFB, OH. "GEO-CENTERS Inc., Wright-Patterson AFB, OH and "Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.

#1187 LIVER PROTEIN CHANGES IN MICE AND HAMSTERS EXPOSED TO PEROXISOME PROLIFERATORS. C S Giorgetti, S L Tollefsen and M L Cunningham. Argonne National Laboratory, Argonne, IL and "NIEHS, Research Triangle Park, NC.

WEDNESDAY MORNING, MARCH 12
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
NUTRITION AND NATURAL PRODUCTS

Chairpersons: Wolfgang Dekant, University of Würzburg, Würzburg, Germany and Hugh E. Laird, Texas Tech University, Amarillo, TX

Displayed: 8:30 a.m. - 12:00 p.m.

Attended: 10:15 a.m. - 12:00 p.m.

#1185 AGE-DEPENDENT CHANGES IN IMMUNE FUNCTION CAUSED BY DIETARY INTAKE. K Golemboski, R Ha and R Diesert. Institute for Comparative and Environmental Toxicology and Department of Microbiology and Immunology, College of Veterinary Medicine, Cornell University, Ithaca, NY.

#1188 FAT OXIDATION IN THE SUCKLING, WEANLING AND ADULT RAT. J Stewart and T C Orton. Zoneca Pharmaceuticals, Alderley Park, Macclesfield, Cheshire, UK.

#1189 DETECTION OF THE ANTHRAQUINONES PHYSICIN AND CHRYSOEROLIN IN VEGETABLES, AND MUTAGENICITY IN MOUSE LYMOPHOMA CELLS. S C Mueller, W Dekant, H Stopper and W K Lust. Department of Toxicology, University of Würzburg, Germany.

#1190 SELENOPROTEIN W EXPRESSION IN MUSCLE AND BRAIN CELLS. Y Sun and P Whanger. Toxicology Program, Oregon State University, Corvallis, OR. Sponsor: J J Tiesley.


#1192 PHYTOCHEMICALS FROM MARIGOLDS: NEMATICIDAL AND MOSQUITOCIDAL COMPOUNDS. C Holifield and S Sriraman. Department of Agriculture, Virginia State University, Petersburg, VA. Sponsor: V Castronova.
WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 4:30 p.m.
BALLROOM A

SYMPOSIUM SESSION:
PEROXISOME PROLIFERATOR ACTIVATED RECEPTORS

Sponsored by: The Carcinogenesis and Molecular Biology Specialty Sections
Chairperson: Jack Vandenberghe, Purdue University, West Lafayette, IN

Peroxisome proliferators are a diverse group of chemicals which include several structurally unrelated hypolipidemic drugs, phthalate esters and halogenated solvents. The peroxisome proliferator-response has gained considerable interest due to demonstration that a number of these agents cause hepatocellular carcinoma in laboratory rodents. The mechanism by which peroxisome proliferators cause cancer and whether humans are at risk is not yet understood. A receptor designated peroxisome proliferator-activated receptor (PPAR), was discovered in 1990 and was found to be activated by a diverse array of these chemicals. This receptor is a member of the steroid receptor superfamily which includes important ligand-activated transcription factors. Subsequent to the identification of PPAR in mice, other members of this receptor family have been found in various species, including humans, and at least three subtypes identified (PPARα, also called NUCI and PPARo) and 9). The alpha form is most abundant in liver, the primary carcinogenic target site, and appears to be involved in maintaining lipid hemostasis. There are currently several unanswered questions regarding the PPAR function such as: What are the cellular transduction pathways utilized by PPARs? Which genes are regulated by peroxisome proliferators through its receptor? Are human PPARs similar to those found in rodents? and Is PPAR causally related to the car-
cinogenic process. This symposium will focus on these gaps in our knowledge about peroxisome proliferators and will highlight such divergent areas in toxicology as molecular biology, carcinogenesis and risk assessment.

#1200 1:30  
PEROXISOME PROLIFERATOR ACTIVATED RECEPTORS. J P Vanden Heuvel. Department of Veterinary Science, Penn State University, State College, PA.

#1201 1:50  
INTER-INDIVIDUAL DIFFERENCES IN HUMAN PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR ALPHA STRUCTURE AND FUNCTION. J D Tigges, K G Lambe and N J Woodby. ZENeca Central Toxicology Laboratory, Macclesfield, Cheshire, UK. Sponsor: J P Vanden Heuvel.

#1202 2:30  
USE OF PPARα-KNOCKOUT MICE IN RISK ASSESSMENT. F J Gonzalez and J M Peters. Division of Basic Sciences, National Cancer Institute, Bethesda, MD. Sponsor: J P Vanden Heuvel.

#1203 3:10  
REGULATION OF GENE EXPRESSION BY PEROXISOME PROLIFERATORS. J P Vanden Heuvel. Department of Veterinary Science, Pennsylvania State University, State College, PA.

#1204 3:50  
PEROXISOME PROLIFERATOR-ACTIVATED RECEPTORS (PPARs), PPAR-INTERACTING PROTEINS, AND PEROXISOME PROLIFERATOR RESPONSE ELEMENTS (PPREs) IN PEROXISOME PROLIFERATORS-INDUCED PLEITROPTIC RESPONSES. J Reddy. Department of Pathology, Northwestern University Medical School, Chicago, IL.

WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 230/244-231/243

SYMPOSIUM SESSION:
GENETIC DETERMINANTS OF SUSCEPTIBILITY TO INHALED POLLUTANTS

Sponsored by: The Inhalation Specialty Section
Chairpersons: Terry Gordon, New York University Medical Center, Tuxedo, NY and Steven R. Kleeberger, Johns Hopkins University, Baltimore, MD

As mandated by the U.S. Clean Air Act, the NAAQS for criteria air pollutants were established to protect all susceptible individuals. However, the means to identify a susceptible individual are not clear. Susceptibility is influenced by extrinsic factors such as socioeconomic status and genetic background. Several research fields have identified familial diseases determined by single or multiple gene inheritance. The role of genetic background is a host factor for lung diseases and responses to air pollutants has also been documented. Because genetic polymorphisms may contribute significantly to the interpretation of experimental results in nearly all aspects of toxicology. This symposium will provide a state-of-the-art presentation of the influence of genetic background on individual susceptibility to cancer and noncancer endpoints. This symposium will present mechanisms of genetic susceptibility as determined by inter-species comparisons and linkage analyses with inbred strains. Genetic epidemiology studies that analyze gene polymorphisms will address familial inheritance of environmental lung disease induced by air pollutants. The presenters will demonstrate that, although the field of toxicology is rooted to the axiom that the dose makes the poison, inter-individual differences in the response may be strongly linked to genetic determinants in addition to exposure dose.

#1205 1:30  
GENETIC DETERMINANTS OF SUSCEPTIBILITY TO INHALED POLLUTANTS. T Gordon. New York University Medical Center, Tuxedo, NY.

#1206 1:35  
GENETIC DETERMINANTS OF SUSCEPTIBILITY TO LUNG INJURY INDUCED BY AIR POLLUTANTS IN MICE. S R Kleeberger. Johns Hopkins Medical Institute, Baltimore, MD. Sponsor: T Gordon.

#1207 2:10  
MOLECULAR EPIDEMIOLOGY OF LUNG AND BREAST CANCER. P G Shields. Laboratory of Human Carcinogenesis, National Cancer Institute, Bethesda, MD. Sponsor: T Gordon.

#1208 2:45  

#1209 3:20  
GENE TARGETING FOR STUDIES OF GENES INFLUENCING SUSCEPTIBILITY TO PULMONARY DISEASE. J A Whitsett. Division of Pulmonary Biology, Children’s Hospital Medical Center, Cincinnati, OH. Sponsor: T Gordon.

#1210 3:55  
GENETIC DETERMINANTS OF SUSCEPTIBILITY TO LUNG TOXICITY AND CANCER. D W Nebert. Center for Environmental Genetics, University of Cincinnati Medical Center, Cincinnati, OH.

WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 4:30 p.m.
CCC: BALLROOM B

WORKSHOP SESSION:
THE DISCOVERY AND DEVELOPMENT OF NEUROTROPHIC FACTORS IN THE TREATMENT OF HUMAN DISEASE

Sponsored by: The Neurotoxicology and Regulatory and Safety Evaluation Specialty Sections
Chairpersons: Michael J. Taylor, Roche Bioscience, Palo Alto, CA and William Slikker, Jr., NCTR, Jefferson, AR

The therapeutic exploration of neurotrophic factors has begun. Amongst the neurotrophic factors in human clinical trials are: Nerve Growth Factor, Brain-Derived Neurotrophic Factor, the Neurotrophins, Ciliary Neurotrophic Factor, Insulin-like Growth Factor, and Glial-Derived Neurotrophic Factor. Though the genetic family of neurotrophic factors is diverse and complex, they share common traits as naturally occurring proteins, high potency, and having pharmacologic effects on different populations of neuronal and other cells. Though Nerve Growth Factor was first described more than 40 years ago, most of the neurotrophic factors have just recently been discovered, their genes isolated and sufficient quantities of the factors produced for study. As discovery of the factors is recent our understanding of their genetics, normative biology, and toxicology is rapidly expanding. The clinical evaluations of neurotrophic factors have thus far been restricted to peripheral administration, however, central administration is contemplated for use in treating diseases such as Alzheimer’s, Parkinson’s and Amyotrophic Lateral Sclerosis. Central administration of neurotrophic agents requires direct or indirect manipulation of the blood brain barrier and therefore an additional challenge to their therapeutic usage. As with any new therapeutic agent, assessment criteria for efficacy and safety are under development.

#1211 1:30  

#1212 1:40  
AN INTRODUCTION TO NEURAL GROWTH FACTORS. J A Kessler. Albert Einstein College of Medicine, Bronx, NY. Sponsor: M J Taylor.

#1213 2:20  
PRECLINICAL SAFETY ISSUES WITH GROWTH FACTORS. P A Day-Lollini, D G Fairchild and M J Taylor. Roche Bioscience, Palo Alto, CA.


4:20 DISCUSSION

WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 202-212

PLATFORM SESSION:
METALS: HUMAN HEALTH RISKS AND EXPOSURE

Chairpersons: Bruce Fowler, University of Maryland, Baltimore, MD and Rudolf Zalups, Mercer University School of Medicine, Macon, GA

ARSENIC EXPOSURE AND HEALTH EFFECTS IN HUMAN PROVINCE, CHINA. H Y He, Z G Wang and A M Fan. 1Beijing Medical College, Beijing, China and 2Office of Environmental Health Hazard Assessment, CAL/EPAC, Berkeley, CA.

ENDEMIC ARSENIC POISONING IN INNER MONGOLIA, CHINA. H Z Ma, T Z Sun, Y J Xian, G J Yu, F Q Wang and A M Fan. 1Institute of Prevention and Treatment of Endemic Disease of Inner Mongolia, Inner Mongolia, China; 2Medical College of Inner Mongolia, Inner Mongolia, China and 3OEHHA, California Environmental Protection Agency, Berkeley, CA.

SOME DETERMINANTS OF ALTERATIONS IN ARSENIC METABOLISM IN CRONICALLY EXPOSED INDIVIDUALS. L M Del Razo, G G Garcia-Vargas, C Santos-Burgos, M C Hernandez, A Albores and M E Cebrian. 1Seccion de Toxicologia Ambiental, CIFSTAV-IPN, Mexico, DF and 2Instituto de Salud Ambiente y Trabajo, Mexico, DF. Sponsor: A Albores.

HEME BIOSYNTHESSES IN INDIVIDUALS CRONICALLY EXPOSED TO ARSENIC IN MEXICO. A Hernandez-Zavaleta, L M Del Razo, C Aguilar, G Garcia-Vargas and M E Cebrian. Seccion de Toxicologia Ambiental, CIFSTAV-IPN, Mexico, DF. Sponsor: A Albores.

LEAD ISSUES IN HUMAN HEALTH AND RISK ASSESSMENT. M K Nihel, S L Wiley and A G Westerman. Department of Environmental Protection, Division of Environmental Services, NREPC, Frankfort, KY.


PREDICTION OF BLOOD LEAD LEVELS IN INDIVIDUALS USING THE IEUBK MODEL. L M Plunkett. ENVIRON Corporation, Houston, TX. Sponsor: K Wilmarth.


WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
MOLECULAR TOXICOLOGY OF THE AH RECEPTOR

Chairpersons: Hollie Swanson, University of Kentucky, Lexington, KY and Linda Birnbaum, U.S. EPA, Research Triangle Park, NC

DISPLAYED: 1:30 p.m. - 4:30 p.m.
Discussed: 2:30 p.m. - 4:30 p.m.

MAPPING THE PROTEIN/DNA CONTACT SITES OF THE AH RECEPTOR AND AH RECEPTOR NUCLEAR TRANSLATOR. H I Swanson and J Yang. Department of Pharmacology, University of Kentucky, Lexington, KY.

INTERACTION OF THE AH RECEPTOR WITH C-JUN AND C-FOS IN THE YEAST TWO-HYBRID SYSTEM. A Maier, T Denko and A Puga. Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH.

DIFFERENTIAL REGULATION OF THE MOUSE AH RECEPTOR GENE: ROLE OF SPI. C T FitzGerald, D W Nebert and A Puga. Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH.

VISUALIZATION OF AH RECEPTOR ACTIVATION WITH AN AHR-GFP FUSION PROTEIN. C Y Chang and A Puga. Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH.

AIP-A NOVEL TPR-MOTIF-CONTAINING PROTEIN THAT BINDS TO AH RECEPTOR AND ENHANCES ITS FUNCTION. Q Ma and J P Whitlock Jr. Department of Molecular Pharmacology, Stanford University, Stanford, CA.
THE AH-RECEPTOR IS RAPIDLY DEPLETED IN THE SPLEEN, LUNG AND THYMUS OF RATS FOLLOWING A SINGLE ORAL DOSE OF TCDD. R S Pollesz, M Santostefano, and L Bernebaum. 1Department of Biochemistry and Molecular Biology, Medical University of South Carolina, Charleston, SC; 2Curriculum in Toxicology, University of North Carolina at Chapel Hill, Chapel Hill, NC and 3US EPA, NHEERL/EID, Research Triangle Park, NC.


DISTRIBUTION, CONCENTRATION AND NUCLEAR LOCALIZATION OF ARNT IN HEPATIC AND NON-HEPATIC CELL LINES FROM VARIOUS SPECIES. R S Pollesz and J Holmes. Department of Biochemistry and Molecular Biology, Medical University of South Carolina, Charleston, SC. Sponsor: R E Peterson.

MOLECULAR CHARACTERIZATION OF CHICKEN AHR AND ARNT. M A Jackola, S M Smith and M K Walker. Department of Nutritional Sciences, University of Wisconsin, Madison, WI.

OVARIAN CELL TYPE-SPECIFIC expression of the aryl hydrocarbon receptor (AhR): A potential mediator of toxicant-induced apoptosis. J L Tilly, G I Perez, S Wang, L Leykin 1, and D H Sherr 1. 1Vincent Center for Reproductive Biology, Department of OB/GYN, Massachusetts General Hospital/Harvard Medical School, Boston, MA and 2Departments of Pathology/Laboratory Medicine and Environmental Health, Boston University School of Medicine, Boston, MA.

APOTOPSIS SIGNALS MEDIATED VIA THE AROMATIC HYDROCARBON RECEPTOR (AHR) HAVE different EFFICACY WITH DIFFERENT STROMAL LINES AND TOXINS. R I Near, R Matulka, A Sheider, K K Mann and D H Sherr. Boston University School of Medicine, Boston, MA.

DMBA-INDUCED PREB CELL APOPTOSIS IS BOTH STROMAL- AND AHR-DEPENDENT, BUT NOT P450IA MEDIATED. K K Mann 1, R A Matulka 2, A F Trombino 1, B P Lawrence 1, N J Kerkvliet 1, R I Near 1 and D H Sherr 1, 2Department of Pathology, Boston University School of Medicine and Public Health, Boston, MA; 3Department of Environmental Health, Boston University School of Medicine and Public Health, Boston, MA and 4Department of Agricultural Chemistry, Oregon State University, Corvallis, OR.

MODULATION OF AROMATIC HYDROCARBON RECEPTOR EXPRESSION IN 7,12-DIMETHYLBENZ[α]ANTHRACENE-INDUCED RAT MAMMARY TUMORS. A J Trombino, S Yang, L J Haralick, A N Qadri, A E Rogers 1 and D H Sherr 1, 2Department of Pathology, Boston University School of Medicine and Public Health; 3Department of Environmental Health, Boston University School of Medicine and Public Health and 4Mallory Institute of Pathology, Boston, MA.

KEY ROLE OF Ca2+ IN REACTIVE OXYGEN SPECIES AND IL-1α PRODUCTION BY TRIBUTYL Tin IN A MURINE KERATINOCYTE CELL LINE. M Marinovich, B Viviani, C L Galli and E Corsini. University of Milan, Institute of Pharmacological Sciences, Lab of Toxicology, Milan, Italy.

PHENOLIC ANTIOXIDANTS, BHA AND BHQ, ACTIVATE MITOGEN-ACTIVATED PROTEIN KINASES VIA DIFFERENTIAL OXIDATIVE PATHWAYS. R Yu, J J Jiao 1, T H Tan 1 and A N T Kong 1, 1Center for Pharmaceutical Biotechnology, University of Illinois, Chicago, IL and 2Baylor College of Medicine, Houston, TX.

INTERACTIONS BETWEEN GLUTATHIONE, OXIDATIVE STRESS, AND BENZO(A)PYRENE IN THE REGULATION OF c-Ha-RAS GENE EXPRESSION. J K Kerze and K S Ramos. Faculty of Toxicology and Dept. of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.


HUMAN PAPILLOMAVIRUS PROTEINS E6 AND E7 MODULATE H2b, INDUCED SENESCENT PHENOTYPE IN HUMAN DIPLOID FIBROBLAST CELLS. Q Chen, A Paler-Martinez, J Campisi and B N Ames. Division of Biochemistry & Molecular Biology, University of California, Berkeley, CA.

CONTROL OF THE SACCAROMYCES CEREVISIAE OXIDATIVE STRESS RESPONSE BY YAP1 AND SKN7: ISOLATION OF A GENE WHICH CONFRS RESISTANCE TO OXIDANTS. J Lee and M B Toledano. Joint Graduate Program in Toxicology, Rutgers University, UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ. Sponsor: R Snyder.

STRESS GENE INDUCTION FROM ALKYLATION COMPOUND EXPOSURE OF HEP G2 CELLS. J J Schlager. Pharmacology Division, United States Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD. Sponsor: T M Shih.

#1247 CELLULAR AND SUBCELLULAR LOCALIZATIONS OF OVEREXPRESSED HUMAN METALLOTHIONEIN II IN THE HEART OF TRANSGENIC MICE. Y J Kong, S Chakrabarti and M G Cheriian.1 Departments of Medicine and Pharmacology and Toxicology, University of Louisville School of Medicine, Louisville, KY and 2Department of Pathology, University of Western Ontario, London, ON, Canada.

#1248 ACETAMINOPHEN-INDUCED NECROTIC DEATH IS ASSOCIATED WITH DEPLETION OF PRIMARY AND IMMORTALIZED HUMAN AND MOUSE HEPATOCYTES FROM THE G0/G1 PHASE OF THE CELL CYCLE. G B Corcoran, M DeBetta, C A Stidley and A K Davis.1 Toxicology Program, College of Pharmacy, University of New Mexico Health Sciences Center, Albuquerque, NM and 2Department of Family and Community Medicine, University of New Mexico Health Sciences Center, Albuquerque, NM.

#1249 UPREGULATION OF THE Ca2+-BINDING PROTEIN CALRETICULIN PROTECTS AGAINST TOXICANT-INDUCED CELL DEATH. J L Stevens, H Liu, E Miller and R C Barnes III. W Alton Jones Cell Science Center, Lake Placid, NY.


#1251 ETHANOL-INDUCED APOPTOSIS IN A CO-CULTURE OF NORMAL HUMAN ITO CELLS AND HEP G2 CELLS. M G Neuman, R G Cameron, N H Shear, A Cosini and C Tinibelli.1 Division of Clinical Pharmacology, Sunnybrook HSC, North York, ON, Canada; 2Department of Pathology, Toronto Hospital, Toronto, ON, Canada and 3CSF, Department of BBCM, University of Trieste and Department of Gastroenterol, Univ Florence, Italy. Sponsor: D Sauder.

#1252 INDUCTION OF HEPATOCYTOPLIC APOPTOSIS BY ALIPHATIC ALCOHOLS IN NORMAL AND SPONTANEOUSLY HYPERTENSIVE STROKE PRONE RATS. T Manolois, A Wattamur and S Ray. Div of Pharmacol. & Toxicol., AMS Coll of Pharm. & Health Services, Long Island University, Brooklyn, NY.

#1253 DETECTION OF APOPTOSIS USING AN AUTOMATED IMMUNOHISTOCHEMICAL PROCEDURE. M A Smith,1 M C Gougha,2 A Warren and J R Latendresse.1 Environmental Health Sciences, University of Georgia, Athens, GA; 2The Medical College of Ohio, Toledo, OH.2 Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH and 3Mantech Environmental Technology, Inc, Wright-Patterson AFB, OH.


#1255 ALTERED EXPRESSION OF T CELL RECEPTOR AND OTHER ADHESION MOLECULES CORRELATES WITH THE INDUCTION OF APOPTOSIS IN THYMOCYTES OF MICE EXPOSED TO 2,3,7,8-TETRACHLORIDIBENZO-P-DIOXIN (TCDD). A B Kameth, H Xu, P S Nagarkatti and M Nagarkatti.1 Department of Biomedical Sciences and Pathobiology, Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA and 2Department of Biology, Virginia Polytechnic Institute, Blacksburg, VA.

#1256 SUPPRESSION OF APOPTOSIS IN RAT HEPATOYTES BY THE NON-GENOTOXIC RODENT HEPATOCARCINOGEN AND PEROXISOME PROLIFERATOR NAFENOPIN. J H Gill, N H James,1 C Dive1 and R A Roberts.1 School of Biological Sciences, University of Manchester, UK and 2Zeneca Central Toxicology Laboratories, Macclesfield, Cheshire, UK.

#1257 REGULATION OF APOPTOSIS IN MOUSE HEPATOYTES AND ALTERATIONS BY HEPATIC TUMOR PROMOTERS. J G Christensen1, A J Gonzalez1 and T I. Goldsworthy.2 Department of Toxicology, North Carolina State University, Raleigh, NC; 1Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 2Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC.

#1258 ACETAMINOPHEN INDUCES APOPTOSIS-LIKE DNA STRAND BREAKAGE BUT CAUSES NECROTIC DEATH OF PRIMARY AND IMMORTALIZED HUMAN AND MOUSE HEPATOCYTES. M DeBetta, G B Corcoran, D E Johnson, B Eightiad and A K Davis.1 Toxicology Program, College of Pharmacy, Albuquerque, NM; 2Department of Medicine and 3Department of Surgery, University of New Mexico Health Sciences Center, Albuquerque, NM.

#1259 DOES ETHANOL POTENTIATE ACETAMINOPHEN-INDUCED HEPATOCYTOPLIC APOPTOSIS? S D Ray. Division of Pharmacology & Toxicology, Arnold & Marie Schwartz College of Pharmacy & Health Sciences, Long Island University, Brooklyn, NY.
PEROXIDATION AND TRANSLATION OF PHOSPHATIDYLSTERINE IN MURINE 3T3 CELLS UNDERGOING PARAQUAT-INDUCED APOPTOSIS. J P Fabiniak, V B Rito, D E Johnson, J S Lazo and V E Kagan. Department of Pharmacology, University of Pittsburgh, Pittsburgh, PA. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA and Department of Medicine, University of Pittsburgh, Pittsburgh, PA.


INVOLVEMENT OF THE ICE FAMILY OF PROTEASES IN SILICA-INDUCED APOPTOSIS IN HUMAN ALVEOLAR MACROPHAGES. R Iyer and A Holian. Division of Pulmonary and Critical Care Medicine, University of Texas Medical School, Houston, TX.

ACTIVATION OF ICE PROTEASES IN BLEOMYCIN-INDUCED APOPTOSIS OF HUMAN ALVEOLAR MACROPHAGES. T B Foden, L Le, R F Hamilton, R Iyer, D Davis and A Holian. Department of Pharmaceutical Sciences, College of Pharmacy and Health Sciences, Texas Southern University, Houston, TX and Division of Pulmonary and Critical Care Medicine, University of Texas Medical School, Houston, TX.

MECHANISMS OF CHROMIUM(VI)-INDUCED APOPTOSIS. D L Carlisle, L J Blankenship and S R Patten. George Washington University, Washington, DC.

RESISTANCE OF BAX-DEFICIENT MOUSE OOCYTES TO APOPTOSIS INDUCED BY 7,12-DIMETHYLBENZ(A)ANTHRACENE (DMBA) IN VITRO. G I Perez, C M Kaudson, G A J Brown, S J Koosmeyer and J L Tilly. Vincent Center for Reproductive Biology, Department of OB/GYN, Massachusetts General Hospital/Harvard Medical School, Boston, MA and Howard Hughes Medical Institute/Departments of Medicine and Pathology, Washington University School of Medicine, St. Louis, MO. Sponsor: K Boekelheide.

THE ROLE OF GENE EXPRESSION AND APOPTOSIS IN CISPLATIN-INDUCED NEPHROTOXICITY. S T S Ng, G H I Wolfgang, S Clark, M L Heinzel and M E L Leibrandt. Chiron Corporation, Emeryville, CA.

ANTICANCER MICROTUBE BINDING DRUGS ACTIVATED JNK AND NOT ERK. S Mandelkar, R Yu, A Shih, T H Tsai and A N T Kong. Center for Pharmaceutical Bioengineering, Chicago, IL, Division of Genetics, University of Illinois at Chicago, Chicago, IL and Baylor College of Medicine, Houston, TX.

CYTOTOXIC EFFECT OF ACROLEIN ON HUMAN ALVEOLAR MACROPHAGES. L Li, R F Hamilton and A Holian. Pulmonary and Critical Care Medicine, University of Texas Houston Medical School, Houston, TX.

THE ROLES OF ERK-2 AND BCL-2 IN OKADAIC ACID-INDUCED APOPTOSIS OF NRK-52E RENAL EPITHELIAL CELLS. N Nguyen, M Ichimiya, P A Ansstad, B P Trump and D Davis. Department of Pathology, University of Maryland, School of Medicine, Baltimore, MD.

INDUCTION OF APOPTOSIS BY MICROINJECTION OF WILD-TYPE p53 GENE INTO NRK-52E CELLS. H H Chang, P C Phelps, I K Berezskiy, X W Wang, L W Elmore, J Courson, C C Harris and B F Trump. Department of Pathology, University of Maryland School of Medicine, Baltimore, MD and Laboratory of Human Carcinogenesis, NCI, NIH, Bethesda, MD.

RELATIONSHIP OF TRIMETHYLNITRO-INDUCED APOPTOSIS AND NECROSIS TO PROTEIN KINASE C MEDIATED NITRIC OXIDE SYNTHASE ACTIVATION. P G Gunasekaran, J L Borowitz and E E Isom. Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University, West Lafayette, IN.

ULTRAVIOLET LIGHT-INDUCED MODIFICATION OF KS65 p34A AND OF DNA-DEPENDENT PROTEIN KINASE p53. J Yao, M Miller, J Elliott, M Zernick-Kubak, K Dixon, T Carter and M P Cartly. Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH and Department of Biological Sciences, St. John's University, Queens, NY.

CELLULAR STRESS INDUCED SIGNALING LEADING TO APOPTOSIS: ROLE OF A DOUBLE-STRANDED RNA-DEPENDENT SERINE/THREONINE PROTEIN KINASE (PKR). S P Strivastava and R J Kaufman. Department of Biological Chemistry and the Howard Hughes Medical Institute, University of Michigan Medical Center, Ann Arbor, MI.

THE RETINAL EXPRESSION PATTERN AND ACTIVITY OF cGMP PHOSPHODIESTERASE (PDE) ARE ALTERED DURING APOPTOTIC ROD AND BIPOLAR CELL DEATH IN DEVELOPMENTALLY LEAD-EXPOSED RATS. L He, M L Campbell, D Strivastava and D A Fox. University of Houston, Houston, TX.

Ca\textsuperscript{2+} OVERLOAD UNDERLIES THE LEAD-INDUCED PRODUCTION OF 50-600 bp DNA FRAGMENTS DURING APOPTOTIC ROD CELL DEATH. A T Poblenz, M L Campbell and D A Fox. University of Houston, Houston, TX.

APOPTOTIC CELL DEATH INDUCED BY LOMEFLOXACIN (LEFLX) PHOTOTOXICITY IN VIVO AND IN VITRO. N Wagai, A Suzuki and M Kato. Drug Safety Research Laboratory, Daiichi Pharmaceutical Co Ltd., Tokyo, Japan.

DISTURBANCE OF FOCAL ADHESION SIGNALING PRECEDES TOXICANT-INDUCED APOPTOTIC CELL DEATH. B Van De Water, E J Nagelkerke and J L Stevens. WL Alton Jones Cell Science Center, Lake Placid, NY and Division of Toxicology, LACDR, Leiden University, Leiden, The Netherlands. Sponsor: J L Stevens.

ALLOPURINOL AND OXYPURINOL INHIBIT POLY(ADP-RIBOSE) POLYMERASE AND ALTER OXIDANT-INDUCED ENDOTHELIAL CELL DEATH. J A Walliser, W W Ma and R L Thies. Division of Pharmacology and Toxicology, Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC, Canada.

VERAPAMIL INDUCES LYMPHOCYTE TISSUE APOPTOSIS INDEPENDENT OF CALCIUM CHANNEL INHIBITION. A Balakumaran and M T Moshen. Department of Pathology, University of Texas Medical Branch, Galveston, TX.
RELATIVE RESISTANCE OF PERIPHERAL LYMPHOID TISSUES TO APOPTOTIC EFFECTS OF 2-METHOXYETHANOL. J L Jones, A Balakumar and M T Modlin. Department of Pathology, The University of Texas Medical Branch, Galveston, TX.

MERCURY (Hg) INDUCED REDUCTION IN MITOCHONDRIAL TRANSMEMBRANE POTENTIAL (ΔΨm) AND CLEAVAGE OF POLY (ADP-RIBOSE) POLYMERASE (PARP) IN HUMAN T CELLS. T L Gooi, S Datar, I M Shapira and B J Shenker.1 1Department of Pathology and 2Department of Biochemistry, School of Dental Medicine, University of Pennsylvania, Philadelphia, PA.

APOPTOSIS-MEDIATED IMMUNOTOXICITY OF POLYCHLORINATED BIPHENYLS (PCBs) IN MURINE SPLENOYTES. H M Kim, S B Han and B S Yoo. Korea Research Institute of Bioscience and Biotechnology, KiST, Taejon, Korea and 2Department of Biology, Kyonggi University, Suwon, Kyonggido, Korea. Sponsor: Y N Cha.

INVOLVEMENT OF GLUTOCORTICOIDS IN ETHANOL-INDUCED SPLENIC APOPTOSIS IN B6C3F1 MICE. S D Collier and S B Pruett. Department of Biological Sciences, Mississippi State University, Mississippi State, MS.

TIME COURSE OF 4-VINYLCYCLOHEXENE DIEPOXIDE-INDUCED DESTRUCTION OF SMALL PRE-ANTRAL FOLLICLES IN RATS AND MICE. S Kao, I G Sipes and P B Hoyer. Departments of Animal Sciences, Pharmacology/Toxicology, and Physiology, University of Arizona, Tucson AZ.

ELEVATED OVARIAN FOLLICULAR APOPTOSIS IN WHITE SUCKER EXPOSED TO BLEACHED KRAFT PULP MILL EFFLUENT. D M Janz, M E McMaster, K R Munkittrick and G Van Der Kraak. 1Department of Zoology, University of Guelph, Guelph, ON, Canada and 2Aquatic Ecosystem Conservation Branch, Environment Canada, Burlington, ON, Canada. Sponsor: M A Hayes.

METALLOTHIONEIN AND APOPTOSIS IN THYMUS AFTER RADIATION. D X Deng, L Cai and M G Cherian. Department of Pathology, University of Western Ontario, London, ON, Canada.

EFFECT OF UDP-GT INDUCERS ON THYROID FOLLICULAR CELL APOPTOSIS AND PROLIFERATION IN SPRAGUE-DAWLEY RATS. K L Kolaja, A M Hood and C D Klaassen. University of Kansas Med. Ctr., Kansas City, KS.

THE RELATIONSHIP OF INTRACELLULAR ZINC LEVEL AND THE RATE OF APOPTOSIS IN HL-60 CELLS. J Y Duffy, C M Miller, G M Ridder, M S Clegg and G P Daston. 1Procter & Gamble Co., Cincinnati, OH and 2Department of Nutrition, University of California, Davis, CA.

TRANS, TRANS-MUCONALDEHYDE AND 6-HYDROXY-(E,E)-2,4-HEXADIENAL MODULATE APOPTOSIS AND CHROMATIN DEGRADATION IN HL-60 CELLS. J L Moran, J C Claffey, J A Ruth and D Ross. Molecular Toxicology and Environmental Health Sciences Program, UCHSC, School of Pharmacy, Denver, CO.

STUDIES ON THE INDUCTION OF APOPTOSIS IN HL-60 CELLS BY TRANS, TRANS-MUCONALDEHYDE, A HEMATOXIC BENZENE METABOLITE. T F Ho and G Wiz. UMDNJ-Robert Wood Johnson Medical School and EOHSI, Piscataway, NJ.

METABOLISM AND TOXICITY OF QUINONE-METHIOETHERS IN HL-60 CELLS. T J Monks, S B Bratton and S Lau. Department of Pharmacology and Toxicology, College of Pharmacy, University of Texas at Austin, Austin, TX.

SELENIUM-INDUCED APOPTOSIS AND CELL CYCLE ALTERATIONS IN HUMAN PROSTATE CANCER CELLS. A T Barnes, C Redman, C Payne, L Clark and M A Nelson. Department of Pharmacology/Toxicology, Pathology Department, and The Arizona Cancer Center, Tucson, AZ.

MODE OF CELL DEATH IN NEURONALLY DIFFERENTIATING P19 CELLS TREATED WITH ALKYLYATING AGENTS. M R Seeley and E M Faustman. Department of Environmental Health, University of Washington, Seattle, WA.

HYPERGLYCEMIA INDUCES APOPTOSIS: EVALUATION OF CELL DEATH IN DIABETIC RAT TISSUES. N H Ansari, W Zhang, G Campbell and L L Chan. 1Departments of Human Biological Chemistry and Genetics, University of Texas Medical Branch, Galveston, TX and 2Department of Pathology, University of Texas Medical Branch, Galveston, TX. Sponsor: G A Ansari.

PROTECTION AGAINST RADIATION-INDUCED APOPTOSIS BY FREE RADICAL SCAVENGERS. A Phelka, M A Philbert, L Bestervelt, B Tierney and J Dethloff. Parke-Davis Pharm Res, Division of Warner-Lambert Co. and University of Michigan, Ann Arbor, MI.

WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION: DEVELOPMENTAL TOXICOLOGY II

Chairpersons: Virginia Moser, U.S. EPA, Research Triangle Park, NC and Robert Kapp, Jr., BioTox, Richmond, VA

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.


BEHAVIORAL EFFECTS OF GESTATIONAL EXPOSURE TO CHLORPYRIFOS IN RATS. P M Phillips, K L McDaniel, T L Lassiter, S Barone, Jr.1 and V C Moser. 1Neurotoxicology Division, NHEERL, U.S. EPA, Research Triangle Park, NC and 2Curriculum in Toxicology, University of North Carolina at Chapel Hill, NC.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY EVALUATION OF LIGHT CATALYTIC CRACKED NAPHTHA DISTILLATE IN RATS. Q Bu, R Breglia1, D Burnett, F Koschier1, E Lapadula1, P Podhasky, C Schrenier, R White and R Schroeder1. "Petroleum Products Laboratory, Esso Texaco, Richmont, VA; 2Research Triangle Institute, Research Triangle Park, NC; 3SBH Group, San Diego, CA; 4BP Chemicals, Cleveland, OH.

LACK OF SELECTIVE DEVELOPMENTAL TOXICITY IN RATS TREATED WITH CEKANOIC C8 ACID. L H Keller1, A I Niforov1, G W Trummer2 and S B Harris1. "Exxon Biomedical Sciences, Inc., East Millstone, NJ and 2Stephen B. Harris Group, San Diego, CA.

EFFECTS OF GESTATIONAL EXPOSURE TO CHLORPYRIFOS ON THE DEVELOPMENTAL PROFILES OF ACETYLCHOLINESTERASE (AChE) AND BUTYRYLCHOLINESTERASE (BuChE) ACTIVITY IN THE RAT BRAIN. T L Lasitter1, S Padilla2 and S Barone, Jr. "Curriculum in Toxicology, University of North Carolina at Chapel Hill, Chapel Hill, NC and 2Neurotox. Div., U.S. EPA, Research Triangle Park, NC.

ORAL DEVELOPMENTAL TOXICITY STUDIES OF α-DIFLUOROMETHYLDORFIN (DFMO) IN RATS AND RABBITS. D L Kline1, B S Kline2, R W 3 and C M D Mercieca1 and J A Crowell. "Toxicology Research Laboratory, Department of Pharmacology, University of Illinois at Chicago, Chicago, IL; 2Pathology Associates International, Frederick, MD and 3Chemos prevention Branch, National Cancer Institute, Rockville, MD.


DEVELOPMENTAL TOXICITY EVALUATION OF UNLEADED GASOLINE VAPOR IN THE RAT. L Roberts, R Schroeder2, P Newton, R White1, Q Bu1, W Daughtrey1, F Koschier1, S Rodney1, C Schrenier1, D Stearn1, R Breglia1 and R Roden3. "API Developmental Toxicity and Fuels Workgroups, Washington, DC and 2Huntington Life Sciences, East Millstone, NJ.

EVALUATION OF ORAL DOSING VEHICLES FOR USE IN DEVELOPMENTAL TOXICITY STUDIES IN THE RAT AND RABBIT. R L Lewis, M E Moxon and P A Botham. Zeneca Central Toxicology Laboratory, Macclesfield, Cheshire, UK. Sponsor: 1 Kimberly.

DEVELOPMENTAL TOXICITY INCLUDING TERT-ACTOGENICITY OF E, PROSTAGLANDINS IN RABBITS. G R Clement, K G Hibbs, R E Hartnagel, Jr1, G Schilder1 and J A Reynolds1. "Bayer Corporation, West Haven, CT; 2Eli Lilly & Company, Greenfield, IN; 3Consultant in Toxicology, Elkhart, IN and 4Bayer AG, Wuppertal, Germany.

A WEIGHT-OF-EVIDENCE REVIEW OF ACRYLONITRILE REPRODUCTIVE AND DEVELOPMENTAL TOXICITY. R W Kasp, Jr.1, R W Tyf, S B Harris1 and D E Stroher4. "BioTox, Richmond, VA; 2Research Triangle Institute, Research Triangle Park, NC; 3SBH Group, San Diego, CA and 4BP Chemicals, Cleveland, OH.

PREDICTION OF RISK BASED UPON PHYSICO-CHEMICAL PROPERTIES OF HUMAN DEVELOPMENTAL TOXICANTS. J Gomez, O M Macina, N Susman and D R Matton. Department of Environmental & Occupational Health, University of Pittsburgh, Pittsburgh, PA.
A STRUCTURE-ACTIVITY RELATIONSHIP MODEL OF DEVELOPMENTAL TOXICITY. O T Macina, M Ghanouni, Y P Zhang, H S Rosenkranz, D R Mattison and G Klopman. Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA and Department of Chemistry, Case Western Reserve University, Cleveland, OH.

BACKGROUND CONTROL DATA FOR RAT EMBRYOTOXICITY STUDIES USING CONTINUOUS AND INTERMITTENT IV INFUSION. I Leconte, P C Barrow and J Descotes. Pharmakon Europe, L’Arbrele, France and Department of Pharmacology and Medical Toxicology, INSERM U80, Lyon, France.

A CONTINUOUS IV INFUSION EMBRYO/FETAL DEVELOPMENT (METHOD VALIDATION) STUDY IN RATS. J Knapp, T Gleason, M Nemec and C Chengela. WH Research Laboratories, Inc., Ashland, OH.


DEVELOPMENTAL TOXICITY OF L-PHENYLALANINE IN INTACT DROSOPHILA. D W Lynch. Experimental Toxicology Branch, DBBS, NIH, Cincinnati, OH.

EVALUATING MECHANISMS OF ACTION OF DEVELOPMENT TOXICANTS USING FETAX AS A MODEL. D J Fort, T Propst and E L Stover. The Stover Group, Stillwater, OK.

DEVELOPMENT OF WHOLE-EMBRYO LIMB DEVELOPMENT ASSAY USING XENOPUS LAEVIS. E L Stover and D J Fort. The Stover Group, Stillwater, OK.

DEVELOPMENTAL TOXICITY SCREENS OF MILITARY PROPPELLANTS USING Hydra attenuata. P D Confer and R E Wolfe. GEO-Centers, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH, and MarTech Environmental Technology, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH, and Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH.

EFFECT OF IN VITRO TRIBUTYL Tin OXIDE (TBT) EXPOSURE ON LYMPhocyte PROLIFERATION AND CYTOKINE mRNA LEVELS IN RAI THYMCYTES, RAT SPLENOCYTES, AND HUMAN PBMC. R J Vanderbiel, B N Hudson, H J van Vlijmen, C L Schmitt and H R van Vlijmen. Laboratory of Pathology and Immunology, RIVM, Bilthoven, The Netherlands and Immunotoxicology, BIBRA, Carshalton, Surrey, UK.

FUNONSIN B1 AFFECTS CYTOKINES PRODUCED BY MACROPHAGES BUT NOT SPLENOcyTES. R R Dugyala, P P Sharma, M Tsunoda and R T Riley. University of Georgia, Athens, GA.

MODULATION OF PROINFLAMMATORY CYTOKINE EXPRESSION BY THE TRI- CHOTHECENE VOMITOXIN IN MURINE MACROPHAGE RAW 264.7 CELLS. S S Wong, H R Zhou, M L Martin-Martinez and J J Petka. Department of Food Science and Human Nutrition, Michigan State University, East Lansing, MI.

SELECTIVE INDUCTION OF CYTOKINE mRNAS IN MICE AFTER ORAL EXPOSURE TO THE TRI- CHOTHECENE VOMITOXIN (DEOXYVALEROL); DOSE RESPONSE AND TIME COURSE. H R Zhou, D Yan and J J Petka. Department of Food Science, Michigan State University, East Lansing, MI.

VANADIUM AFFECTS POLYIC-INDUCED RESPONSES IN RAT LUNG AND ALVEOLAR MACROPHAGES. M D Cohen, S Becker, R Devlin, R B Schleisinger and J T Zeikoff. Nelson Institute of Environmental Medicine, New York University, Tuxedo, NY and Human Studies Division, Health Effects Research Laboratory, U.S. EPA, Chapel Hill, NC.

ALTERED CYTOKINE PRODUCTION IN PERITONEAL MACROPHAGES AND LYMPhocytes DUE TO PHENOL IN THE DRINKING WATER OF MALE INSTITUTE OF CANCER RESEARCH MICE. J C Albrenten and I C Burgess. Department of Animal, Dairy and Veterinary Science, Utah State University, Logan, UT.

IDENTIFICATION OF TRANSCRIPTION FACTORS ADVERSELY REGULATED BY CANNABINoL. A C Harrington and N E Kaminski. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

INHIBITION OF AP-1 BINDING IN SPLENOcyTES BY CANNABINoL IS MEDIATED BY AN INHIBITION OF C-FOS. B L Faubert and N E Kaminski. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

MULTIPLE LOW DOSE STREPTOZOTOCIN IMMUNE RESPONSE AGAINST PANCREATIC B-CELLS IS ATTENUATED BY D-TETRAHYDRO- CANNABINoL. X Li, N E Kaminski and L J Fischer. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

ACETYLAMINOFLUORENE (AAF) INHIBITS NITRIC OXIDE PRODUCTION IN LPS-STIMULATED RAW 264.7 CELLS BY BLOCKING NF-κB/Rel ACTIVATION. Y J Jeon, Y W Lee, W S Koh, M Lee, S H Han, S Y You and K H Yang. Korea Advanced Institute of Science and Technology, Taejon, Korea.
NUCLEAR FACTOR-κB ACTIVATION AND REGULATION OF IL-2 RECEPTOR ALPHA-CHAIN EXPRESSION BY NICKEL CHLORIDE IN PRIMARY CD+ T LYMPHOCYTES. S W Luckey, D W Pyatt and R D Irons. Molecular Toxicology and Environmental Health Sciences, School of Pharmacy, University of Colorado Health Sciences Center, Denver, CO.

THE ALTERATION OF IgM AND IgG TITERS IN B6C3F1 MICE EXPOSED DERMALLY TO A COMPLEX MIXTURE OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHs). N Harper, C Llewellyn, J Ritter and K L White Jr. Virginia Commonwealth University, Department of Pharmacology and Toxicology, Richmond, VA.

HYDROXYLAMINE METABOLITES OF DAPSONE (DDS) SHOW GREATER CYTOTOXIC POTENCY THAN SULFAMETHOXAZOLE HYDROXYLAMINE (S-NOH) IN VITRO. T P Reilly, F H Bellevue III, P M Woster and C K Svensson. Department of Pharmaceutical Sciences, Wayne State University, Detroit, MI.

EVALUATION OF THE IMMUNE PARAMETERS IN PROPANOL EXPOSED FARM FAMILIES. G Y H McClure, R M Helm, K Stine, A W Burks, S M Jones and J Gandy. Division of Toxicology and Department of Pediatrics, University of Arkansas for Medical Sciences and Arkansas Children’s Hospital Research Institute, Little Rock, AR.

SERUM CORTICOSTERONE LEVELS ARE ELEVATED AFTER EXPOSURE TO OCTAMETHYL-CYCLOTETRAISILOXANE. S D Wilson and A E Munson. Department of Pharmacology and Toxicology, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA.

FAILURE OF SILICONE GEL TO EXACERBATE AUTOIMMUNE RESPONSES IN FEMALE NZB/W MICE. K L White1, L F Butterworth1, D W David1 and P Klykken.1 Medical College of Virginia/Virginia Commonwealth University, Richmond, VA and Dow Corning Corporation, Midland, MI.

DIFFERENTIAL EFFECTS OF OCTAMETHYL-CYCLOTETRAISILOXANE (D4) ON CD4+ AND CD8+ T CELL FUNCTIONS IN B6C3F1 MICE. U L Le and A E Munson. Department of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA.

THE IMMUNE STATUS OF FISHER 344 RATS ADMINISTERED OCTAMETHYL-CYCLOTETRAISILOXANE (D4) BY ORAL GAVAGE. A E Munson1, J A McCay2, R D Brown1, D L Musgrove1, L F Butterworth1, K L White1, T H Lane2 and P C Klykken1.1 Department of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond, VA and 2Dow Corning Corporation, Midland, MI.

ALTERATION OF IMMUNE FUNCTION PRODUCED BY TREATMENT WITH THALIDOMIDE IN B6C3F1 FEMALE MICE. J A McCay, R D Brown, D L Musgrove, L F Butterworth, K L White and A E Munson. Department of Pharmacology and Toxicology, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA.

EFFECTS OF DIETARY CHLOROPHYLLIN, CHLOROGENIC ACID AND QUERCETIN ON IMMUNE FUNCTION AND ABERANT CYRTOT C TUR FOCI FORMATION. J Eason, E H South, J Magnuson and K Hendrix. Department of Food Science and Toxicology, University of Idaho, Moscow, ID.


HOST AGE, 2,3,7,8-TETRA CHLORODIBENZO-P-DIOXIN (TCDD) EXPOSURE AND RESISTANCE TO T. spiralis (Ts) INFECTION. R W Luebfke, C B Copeland and D L Andrews. U.S. EPA, Research Triangle Park, NC.

QUANTITATION OF THYMUS CELLULARITY AND CD3/CD4/CD8 THYMOCYTE SUBSETS IN MICE TREATED WITH 1,2-EPOXYBUTENE-3, C M Zwicker, D Wieder and J E Klaunig. Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.


EVALUATION OF THE EFFECTS OF PATULIN ON IMMUNE FUNCTION IN FEMALE B6C3F1 MICE. G C Llewellyn, J A McCay, R D Brown, D L Musgrove, A E Munson and K L White. Department of Pharmacology and Toxicology, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA.

EFFECT OF ACUTE ADMINISTRATION OF MALATHION BY ORAL AND DERMAL ROUTES ON SERUM HISTAMINE LEVELS. S Xiong and K E Rodgers. University of Southern California, Los Angeles, CA.

EFFECT OF ADMINISTRATION OF MALATHION FOR 14 DAYS ON MACROPHAGE FUNCTION AND MAST CELL DEGRANULATION. K E Rodgers and S Xiong. University of Southern California, Los Angeles, CA.

IMMUNOGENICITY EVALUATION OF ProLease® bGH, A SUSTAINED RELEASE FORMULATION. N N Kim1, L Bailey1, T Olson1, C B Clifford2, F J Benso1, S J Sgurro1, E Duenas1, J L Ciel1, S D Pumey2 and M G I Riley1. Alkermes, Inc., Cambridge, MA, 2Charles River Laboratories, Wilmington, MA and 3Genentech, Inc., South San Francisco, CA.


FURTHER EVALUATION OF THE INCORPORATION OF AN IMMUNOTOXICOLOGICAL ASSESSING ASSESSMENT OF THE IMMUNE SYSTEM FOR HAZARD IDENTIFICATION PURPOSES IN RATS ON STANDARD TOXICOLOGY STUDIES. S E Loveless, C Smith and G S Laddas. The DuPont Company, Haskell Laboratory, Newark, DE.

IMMUNE STIMULATION BY PHOSPHOROTHIOATE (P=S) OLIGONUCLEOTIDES IN RODENTS. D K Monteith, S P Henry, R Howard, S Fournier, A A Levin, C F Bennett and S Y Crooke. Isis Pharmaceuticals, Carlsbad, CA.
WEDNESDAY AFTERNOON, MARCH 12
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
SAFETY EVALUATION

Chairpersons: John Kapeghan, Sierra Biomedical, Inc., Sparks, NV and
Jeanne Busseire, Genentech, Inc., San Francisco, CA

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#1370
RECENT EXPERIENCE WITH POLYVINYLPYRROLIDONE AS AN INTRA-
VENOUS VEHICLE IN TOXICOLOGY STUDIES IN THE BEAGLE DOG. J C Brown,
A A McGuire and D Robb. Inveresk Research, Tranent, East Lothian, Scotland.

#1371
ONE MONTH TOXICITY ASSESSMENT OF THE DRUG ABSORPTION ENHANCERS POLYSOR-
BATE 80 (FS-80), POLYETHYLENE GLYCOL 400 (PEG-400) AND LABRASOL (LAB) IN RATS. L D
Butler, J E Burkhart and M D Aloe. Pfizer Inc., Groton, CT.

#1372
EFFECTS OF ANIMAL SUPPLIER, CAGE TYPE, FOOD TYPE AND HYDROXYPROPYL-$
CYCLODEXTRIN ON CHRONIC TOXICITY/ORAL CARCINOGENICITY STUDY PARAMETERS IN
SPRAUGE-DAWLEY RATS. M E Shaw, D M Sells, T Sullivan and A Singer. Battelle, Columbus, OH.

#1373
EFFECTS OF CAGE TYPE, FOOD TYPE, AND HYDROXYPROPYL-$
CYCLODEXTRIN ON CHRONIC TOXICITY/ORAL CARCINOGENICITY STUDY PARAMETERS IN
CD-1 MICE. J J Wallery, M E Shaw, J T Yarrington, M S Welty, T M Sullivan and A
W Singer. Battelle, Columbus, OH.

#1374
NEUROTOXICITY TESTING; VALIDATION OF METHODOLOGY. K P Hazelden and S Wilcox.

#1375
THE ABSENCE OF TOXICITY FROM 4 WEEKS INTRANASAL INSTALLATION OF HNK20 TO
NEONATAL RABBITS. D J Naas, S K Acherman and L Selhorst. JWI Research Laboratories,

#1376
60-DAY REPEATED DOSE INHALATION TOXICITY
STUDY OF AN ANTI-IGE ANTIBODY IN
CYNOLOGUS MONKEYS. J L Bassiere, M C
Groso, J M Ruppel, M L Marini, M E Placke and N A
Turner. Genentech, Inc., South San Francisco, CA and
Battelle, Columbus, OH.

#1377
SAFETY AND PHARMACOKINETICS OF AN ANTI-
CD18 ANTIBODY IN CHIMPANZES. W J
Leach, M C Gross, G A Prawdzik, L E DeFusco, W C
Hobson, J T Rowell, J L Bassiere. Genentech, Inc.,
South San Francisco, CA; 3SBI, Sparks, NV and 4NIRC,
New Iberia, LA.

#1378
TWO DOSE INTRAVENOUS TOXICITY STUDY OF
SCH 25790, A HUMANIZED ANTI-H-5 MONO-
CLONAL ANTIBODY, IN CYNOLOGUS MON-
KEYS. M W Leach, 3E A Snyder, R J Johnson, 3 R
Indelicato, 3 K Cole, P Stakheevich, 3 S JSwanson and S H
Weiner. Schering-Plough Research Institute, Lafayette,
NJ and 3Schering-Plough Research Institute, Kenilworth,
NJ.
THE SAFETY PROFILE OF ProLease BGI, A SUSTAINED RELEASE FORMULATION. M G J Riley1, B J Christian1, M G Evans1, E Duenas1, J L Cleland1, S D Putney1 and N N Kim1. 1Alkermes, Inc., Cambridge, MA; 2Corning Hazleton Inc., Madison, WI; 3Pathology Associates International, Frederick, MD and 4Genentech, Inc., South San Francisco, CA.

PRECLINICAL SAFETY EVALUATION OF CGP 56901, A HUMANIZED ANTI-IGE MONOCLONAL ANTIBODY. J C Kapoggiann, K Huber1, H Lai, F Davis2, W Gordon, J Rojko1 and W Hall1. 1Ciba Pharmaceuticals Division, Summit, NJ; 2Tansol Biosystems, Inc., Houston, TX and 3Pathology Associates, Int., Frederick, MD.

ACUTE AND NINE-DAY REPEATED VAPOR TOXICITY STUDIES WITH 2-FORMYL-3,4-DIHYDRO-2H-PYRAN (EDP). M S Werley1 and B Ballantine2. 1Bushy Run Research Center, Export, PA and 2Union Carbide Corporation, Danbury, CT.


THE ACUTE TOXICITY, IRRITANCY, AND SENSITIZING POTENTIAL OF GLUTARIC ANHYDRIDE (GA). B Ballantine. Applied Toxicology Group, Union Carbide Corporation, Danbury, CT.

PROLEUKIN®: 4 WEEK TOXICITY STUDY IN RATS WITH ADMINISTRATION BY THE SUBCUTANEOUS ROUTE AND WITH 4-WEEK RECOVERY PERIOD. B D McCabe1, T Martin1, S A Chen1 and D E Johnson1. 1Department of Pharmacokinetics & Toxicology, Chiron Corporation, Emeryville, CA and 2Inveresk Research International, Tranent, Scotland.


52-WEEK ORAL TOXICITY STUDY OF TROGLITAZONE IN CYCLOMOLGUS MONKEYS. C E Rothwell1, M R Bleavins1, E J McGuire1, F A de la Iglesia1 and H Masuda1. 1Parke-Davis Pharmaceutical Research, Division of Warner-Lambert Company, Ann Arbor, MI and 2Sankyo Company, Tokyo, Japan.

SUBCHRONIC TOXICITY OF THE ANTIDiABETIC TROGLITAZONE IN Wistar Rats. J R Herman1, A L Metz1, E J McGuire1, F A de la Iglesia1 and H Masuda1. 1Parke-Davis Pharmaceutical Research, Division of Warner-Lambert Co., Ann Arbor, MI and 2Sankyo Company, Tokyo, Japan.

SUBCHRONIC TOXICITY OF THE ANTIDiABETIC TROGLITAZONE IN B6C3F1 MICE. E J McGuire1, L A Dehnhoff1, K M Walsh1, F A de la Iglesia1 and H Masuda1. 1Parke-Davis Pharmaceutical Research, Division of the Warner-Lambert Company, Ann Arbor, MI and 2Sankyo Pharmaceutical Company, Tokyo, Japan.

ASSESSMENT OF DECABROMODIPHENYL OXIDE (DBDPO) AS A CONTAMINANT IN THE MANUFACTURE OF A DRUG SUBSTANCE. J Daniels1, A Fenik2 and E Nestmam1. 1CanTox, Inc., Consultants in Toxicology, Mississauga, ON, Canada and 2CanTox US, Inc., Bridgewater, NJ.


TOXICITY OF CI-1011, A NOVEL LIPID REGULATING AGENT, IN RATS. H M Ulio1, D A Attrogge, M J Graziano and C D Latha. Parke-Davis Pharmaceutical Research Division, Warner-Lambert Co., Ann Arbor, MI.

TOXICITY OF LACTIDE IN DOGS AFTER 2 AND 13 WEEKS OF DAILY ORAL DOSING. C D Hebert1, J E Heath1 and R E Conn1. Southern Research Institute, Birmingham, AL and 2Cargill, Inc., Wayzata, MN.

PRECLINICAL SAFETY OF THE ANTIINFLAMMATORY, CT-1004. B Houston, M Albusamm, R Guttendorf, E Maclmillon and R Walker. Parke-Davis Research Institute, Mississauga, ON, Canada.

28-DAY TOXICITY STUDY IN RATS EXPOSED TO XRD-485, A REACTIVE COATINGS DILUENT. S J Waterman, L H Keller, G W Trimmer and F T Whitman. Exxon Biomedical Sciences, Inc., East Milestone, NJ.

THIRTEEN-WEEK VAPOR INHALE STUDY OF DOW CORNING®-120 IN RATS. W H Siddiqui1, N Rajendran1, J M Gerhart1 and S A Martin1. Dow Corning Corporation, Midland, MI and 2Life Sciences Department, ITT Research Institute, Chicago, IL.

THE SUBCHRONIC TOXICITY OF AMBISOME (LIPOSOMAL AMPHOTERICIN B) IN RATS. L Donald1, J Pallman1, L Ackerman1, I Bekssey2, G Boswell2 and C B Spainhour1. 1Pharmakon Research International, North America Operations, Oliphant, PA and 2Fuisawa USA Inc., Deerfield, IL.

SUBCHRONIC TOXICITY OF THE ANTICYANIDE AGENT WR242511 TARTRATE IN DOGS. B S Levine1, A P Brown1 and R L Merrimsy1. Toxicology Research Laboratory, University of Illinois at Chicago, Chicago, IL and 2Pathology Associates International, Chicago, IL.

SAFETY EVALUATION OF EPIDURAL DEPOFOAM™ ENCAPSULATED MORPHINE SULFATE IN DOGS. T L Yaks1, J C Dragani1, L M Rathbun1, R M Myers2 and F R Kohs1. 1Department of Anesthesiology, University of California, San Diego, La Jolla, CA and 2DepoTech Corp, San Diego, CA.


IDENTIFICATION OF AQUEOUS LEACHABLE ORGANIC CHEMICALS FROM ELASTOMERIC MATERIALS USED IN DRINKING WATER DISTRIBUTION SYSTEMS. D P McFadden, C L Steele, P S Eposein, J T Trencell and S S Hazan. NSF International, Ann Arbor, MI.
THE INTERACTION BETWEEN ARSINE AND HEMOGLOBIN. L T Rael, D S Barber and D E Carter. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

COMPARATIVE TOXICITY OF ARSENITE AND ARSINE IN PRECISION CUT TISSUE SLICES. D S Barber, L T Rael and D E Carter. University of Arizona, Department of Pharmacology and Toxicology, Tucson, AZ.

EFFECT OF 14 DAYS EXPOSURE OF MICE TO MERCURIC CHLORIDE ON BODY WEIGHT AND TISSUE DISTRIBUTION OF MERCURY. A T Khan, A Atkinson, T C Graham, S J Thompson, B Daturi, S Ali, J E Webster and J A Ferguson. School of Veterinary Medicine, Tuskegee University, Tuskegee, AL. Sponsor: R R Dalvi.

EFFECTS OF SUBCHRONIC EXPOSURE OF RATS TO NICKEL SULFATE ON ITS BIOACCUMULATION AND TOXICITY. E Obone1, C Bai1, M A Mallick1, S Chakrabarti1, L Lamontagne2 and K S Subramanian3. 1Dép. méd. travail hyg.milieu, Université de Montréal, Montréal, QC, Canada; 2Dép. sciences biologiques, UQAM, Montréal, QC, Canada and 3Santé Canada, Ottawa, ON, Canada.

CHARACTERIZATION AND QUANTIFICATION OF VARIOUS NICKEL SPECIES FROM INDUSTRIAL EMISSION FROM INCO PLANT, SUDbury, ONTARIO AND FROM NEARBY SOILS, SEDIMENTS AND WATER. C Bai1, P Courchesne2, S Chakrabarti1 and K S Subramanian3. 1Dép. médecine du travail et hygiène du milieu, Montréal, QC, Canada; 2Dép. géographie, Université de Montréal, QC, Canada and 3Health Canada, Ottawa, ON, Canada.

TRACE METALS IN SEDIMENTS, SOILS AND WATER OF URBAN BAYOU SAINT JOHN AND RURAL JEAN LATITFE NATIONAL PARK, L.A. C R Gonzalez1, M K Smith1, H W Mielke2 and S P Kale3. 1Institute of Bioenvironmental Toxicology, College of Pharmacy, Xavier University of Louisiana, New Orleans, LA and 2Institute of Bioenvironmental Toxicology, Biology Department, Xavier University of Louisiana, New Orleans, LA. Sponsor: H L Komiskey.


POLYNUCLEAR AROMATIC BINDING PROTEINS IN MARINE MOLLUSCS. K Willet, J Hornsen, C Wilson, W Porter and S Sause. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

EFFECTS OF KERATINS ON HEAVY METAL CHELATION AND TOXICITY IN AQUATIC ANIMALS. W F Coello, D G Prasad Rao and M A Q Khan. Department of Biological Sciences, University of Illinois at Chicago, Chicago, IL.
A ONE YEAR STUDY OF CHANNEL CATFISH EXPOSED IN PONDS TO FIVE TREATMENTS OF CHLORPYRIFOS: II. CHLORPYRIFOS CONCENTRATIONS AND XENOBIOTIC METABOLIZING ENZYMES. C H Cubislah1, R L Carr2, J S Boone3, H D Mercer4 and J E Chambers5. 1National Center for Environmental Assessment, US EPA, Cincinnati, OH and 2Center for Environmental Health Sciences, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS.


THE PESTICIDE ACCUMULATION IN KÖYCEĞIZ LAGOON SYSTEM. M Caliskan and S Yerli. Hacettepe University, Department of Biology, Aquatic Life Laboratory (SAL), Ankara, Turkey. Sponsor: R Nair.

EVALUATION OF SUBCHRONIC TOXICITY OF COMBINATIONS OF FLUORIDE AND BHC TO WISTAR RATS. N Ramesh, K S Pillai and P B K Murthy. Freidrick Institute of Plant Protection and Toxicology, Padappai, Tamil Nadu, India.

EFFECT OF CEMENT ON THE METABOLISM OF FRESHWATER PRAWN, MACROBRACHIUM LAMARII. P C S Reddy1 and T S N Reddy2. 1Department of Studies in Zoology, Gulbarga University, Gulbarga, Karnataka, India and 2Department of Pharmacy, Xavier University of Louisiana, New Orleans, LA. Sponsor: H L Komizkey.

DEGRADATION OF CROSSLINKED ACRYLIC POLYMERS BY WHITE-ROT FUNGI G R J Sutherland1, J Haselbach2 and S D Aust3. 1Biotechnology Center, Utah State University, Logan, UT and 2Stockhausen GmbH & Co., KG, Krefeld, Germany.


DETERMINATION OF A SAFE SOIL ARSENIC CONTENT. U A Madden and R C Iman. Office of Environmental Toxicology, State of Florida Department of Health and Rehabilitative Services, Tallahassee, FL.

COMPARISON OF TWO SAMPLING METHODS FOR AMBIENT AIRBORNE CHROMIUM (VI) IN CALIFORNIA: IMPLICATIONS FOR RISK ASSESSMENT. P M Underwood, D G Dodge, S Meyers, B D Kegerreis and D J Faustenbach. 1ChemRisk Division of McLaren/Hart, Inc., Irvine, CA; 2ERM West, Irvine, CA and 3ChemRisk Division of McLaren/Hart, Inc., Alameda, CA.

THE AMOUNT AND PARTICLE SIZE OF SOIL INGESTED BY CHILDREN. E J Calabrese and E J Stanek. School of Public Health, University of Massachusetts, Amherst, MA.


RISK ISOPHLET MAPS FOR GROUNDWATER CHARACTERIZATION. D McKeen, C Hassan, J McBride, S Sares, T Cledenim and K Fhrler. 1IT Corporation, Cincinnati, OH and 2Wright-Patterson AFB, OH.

ANALYSIS OF ATSDR PUBLIC HEALTH ASSESSMENTS: APPROACHES TO THE ASSESSMENT OF HEALTH HAZARDS POSED BY TRICHLOROETHYLENE (TCE) AND TETRACHLOROETHYLENE (PCE) IN GROUNDWATER. A S Sistwan and F C Schnell. Agency for Toxic Substances and Disease Registry, Atlanta, GA.

A WEIGHT OF EVIDENCE APPROACH TO ASSESSING HUMAN HEALTH RISKS ASSOCIATED WITH A MUNICIPAL WASTEWATER TREATMENT PLANT. J C Colman, G L Diamond, P E Goodrum, L D Ingerman, D A Gray and M R Kienbusch. 1Syracuse Research Corporation, Syracuse, NY and 2Galston Corporation, Syracuse, NY.

THE MAXIMUM DRINKING WATER LEVEL (MDWL) AND MAXIMUM ALLOWABLE LEVEL (MAL) FOR NICKEL IN POTABLE WATER. M K Manibusan, J M Donohue and D P McFadden. NSF International, Ann Arbor, MI.

ADSORPTION OF THE PENTACHLOROPHENOL BY CETYL PYRIDINIUM-MODIFIED ACIDIC CLAY. K R Springman, P G Grant, K S Washburn and T Phillips. Faculty of Toxicology, College of Veterinary Medicine, Texas A&M University, College Station, TX.

KEY CONSIDERATIONS FOR RISK ASSESSMENT AND RISK MANAGEMENT OF METHYL TERTIARY-BUTYL ETHER (MTBE) REGARDING LEAKING UNDERGROUND FUEL TANKS. B D Kegerreis, D G Dodge and R O Richter. ChemRisk Division of McLaren/Hart, Inc., Irvine, CA.
RISK ASSESSMENT CONSIDERATIONS IN UPDATING HEALTH ADVISORIES FOR SELENIUM IN FISH FROM CALIFORNIA. A M Fan, R Ames, M Gassel and G Ramos. Pesticide and Environmental Toxicology Section, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Berkeley, CA.

HEALTH RISK ASSESSMENT OF FISH AND SHELLFISH CONSUMPTION FROM THE MISSISSIPPI RIVER IN LOUISIANA. D J Harrington1, M-Y Wen1, R Lemus-Olalde1, S D Sudweeks2, W R Hartley3, A Thiyagarajan1, M D Heinrich1, A E Hindrichs1 and M B Fleming1. 1Department of Environmental Health Sciences, Tulane University School of Public Health and Tropical Medicine, New Orleans, LA and 2Louisiana Department of Environmental Quality, Water Quality Management Division, Baton Rouge, LA. Sponsor: W A Toscano Jr.

USE OF MICROEXOPOSED EVENT MODELING TO ESTIMATE POLYCHLORINATED PHTHIHYL (PCB) CONCENTRATIONS IN THE BLOOD OF ANGLERS WHO CONSUME CONTAMINATED FISH. J D Avantaggio1, P S Price1, S Hays2 and M Gargas2. 1ChemRisk, McLaren/Hart, Portland, ME and 2ChemRisk, McLaren/Hart, Cleveland, OH.

SEAFOOD CONSUMPTION BY ADULTS AND CHILDREN IN FLORIDA. H J Segerke1, R L Degner1, K M Porter2, Y Lin3 and C M Adams4. 1Florida Department of Health, Tallahassee, FL; 2Florida Agricultural Research Center, University of Florida, Gainesville, FL and 3Department of Statistics, University of Florida, Gainesville, FL.

ACUTE ECOTOXICITY OF LIGHT ALKYLATE NAPHTHA TO REPRESENTATIVE FRESHWATER AND MARINE ORGANISMS. M BenKinney1, D Burnet2, R Breglia3, Q Bu4, F Kocik5, E Lapadula6, P Podhasky7, C Schreiner8, R White1 and G Rausina1. 1Mobil Business Resources Corporation, Paulsboro, NJ; 2Petroleum Product Stewardship Council, Richmond, CA; 3Chevron Corporation, Richmond, CA.

DEVELOPMENT OF SITE-SPECIFIC TARGET LEVELS TO EXPEDITE CORRECTIVE ACTION DECISIONS. E J Hisson9, A M Shipps10, P C Cline11 and D E Price12. 1CHEM Hill, Austin, TX; 2K S Crump Division/ICF Kaiser, Ruston, LA and 3CHEM Hill, Gainesville, FL.

A DECISION MATRIX FOR ASSESSING HEALTH RISKS ASSOCIATED WITH EXPOSURE TO CONTAMINATED BUILDING SURFACES. C B Saloakes, M J Wade, D J Oudiz and B K Davis. California EPA, Department of Toxic Substances Control, Sacramento, CA.

CANCER RISK ASSESSMENT FOR SOIL CONTAMINANTS IN AUSTRALIA. P N Di Marco. Environmental Health Service, Health Department of Western Australia, Perth, Western Australia. Sponsor: C D Klaassen.

NEW SOIL AND WATER CLEANUP CRITERIA IN THE STATE OF MICHIGAN FACILITATE SITE CLOSURE. W F Kuhn and J Barkach. The Dragon Corporation, Farmington Hills, MI.

APPLICATION OF RISK-BASED APPROACHES TO THE REMEDIATION OF A REFINERY SITE IN POLAND. J M Kuperberg1, M G Kola2, E Wielis2 and C M Teeg2. 1Florida A&M University, Tallahassee, FL; 2Florida State University, Tallahassee, FL and 3Institute for the Ecology of Industrial Areas, Katowice, Poland.

AMBIENT CONCENTRATIONS OF ALDEHYDES IN A SOUTHEASTERN COASTAL CITY AND EVALUATION OF POTENTIAL HEALTH IMPACTS. R E Greene1, R O Manning1 and P L Williams1. 1Environmental Health Science Program, University of Georgia, Athens, GA and 2Georgia Department of Natural Resources, Atlanta, GA.

SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT OF AN INACTIVE URANIUM MINE SITE. M C Meyer1, M J Oberle1, T M Lenkend2 and E Redente1. 1Center for ERAM, Colorado State University, Fort Collins, CO and 2Department of Biology, University of Texas-El Paso, El Paso, TX. Sponsor: H S Remaell.

CLANDESTINE METHAMPHETAMINE LABORATORIES: DECONTAMINATION AND SURROGATE INDICATORS OF ACTIVITY. D B Chandler1, R S Skoglund2, R R Roy23, R Hoven1 and T Feely4. 1Department of Emergency Medicine, OHSU, Portland, OR; 2Poison Information Department, SPRMC, St. Paul, MN; 3Toxicology Graduate Program, University of Minnesota, Minneapolis, MN; 4Portland Police Department, Portland OR and 5Portland Fire Bureau, Portland, OR.
THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: BALLROOM B

SYMPOSIUM SESSION:
PERSISTATION OF THE MITOSIS/
APOPTOSIS BALANCE: A FUNDAMENTAL
MECHANISM IN TOXICOLOGY

Sponsored by: The Carcinogenesis Specialty Section
Chairpersons: Thomas L. Goldsworthy, CIIT, Research Triangle Park, NC and
Ruth A. Roberts, Zeneca CTL, Macclesfield, Cheshire, UK

Perturbations of the balance between cell gain via mitosis and cell loss by apoptosis play a pivotal role in mediating and modifying the action of carcinogens and other toxicants in tissues such as liver, brain, the immune system and the reproductive organs. This symposium will focus on induced changes in this critical balance as a key mechanism of action of a variety of diverse toxicants. This will start with a general overview of apoptosis and its relevance to toxicology. Building on this, speakers will present data describing the perturbation of apoptosis in various target tissues. The role of apoptosis in mediating the action of proreductases will be exemplified by the induction of testicular lesions by the phthalate, methyl ethyl hexyl phthalate (MEHP). Interestingly, MEHP is a member of the peroxosome proliferator (PP) class of nongenotoxic carcinogens that have been shown to perturb both hepatocyte apoptosis and mitosis. The species differences in carcinogenicity of PPs and their correlation with species differences in induction of hepatocytic S-phase and suppression of apoptosis will be examined. The symposium will conclude on a molecular level looking at dioxins, cell death and the Ah gene battery. Taken together, the data presented in this symposium will illustrate to the toxicologist the need to quantitate and interpret modulations in apoptosis alongside more conventional assessments of S-phase.

#1452 8:30  PERSISTATION OF THE MITOSIS/APOPTOSIS BALANCE: A FUNDAMENTAL MECHANISM IN TOXICOLOGY. R A Roberts¹ and T L Goldsworthy².
  ¹Zeneca Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, UK and ²CIIT, Research Triangle Park, NC.

#1453 8:35  RELEVANCE OF APOPTOSIS TO TOXICOLOGY. J A Hickman, D M Pritchard, A Watson and C S Potten, School of Biological Sciences, University of Manchester, Manchester, UK. Sponsor: T L Goldsworthy.

#1454 9:15  PHYTHALATE-INDUCED ALTERATIONS IN TESTICULAR GERM CELL APOPTOSIS. J H Richburg, J Lee and K Boekelheide, Department of Pathology and Laboratory Medicine, Brown University, Providence, RI.


#1456 10:35  POSSIBLE ROLE OF THE DIOXIN-INDUCIBLE [AH] GENE BATTERY IN APOPTOSIS. D W Nebert, T L Brown and A Puga, Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH.

11:15  DISCUSSION

THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: BALLROOM B

SYMPOSIUM SESSION:
ADVANCING THE SCIENTIFIC BASIS FOR RISK ASSESSMENT

Sponsored by: The Task Force to Improve the Scientific Basis of Risk Assessment

This symposium will focus on several issues of great interest or importance in contemporary risk assessment and the use of scientific data for improving the risk assessment process. The impact of good science will be critical for shaping the course of risk assessment over the next decade. A brief overview will highlight activities of the SOT Task Force on Improving the Scientific Basis for Risk Assessment. The first speaker will focus on the generation of data for scientifically-based risk assessment and how alternative approaches may increase the understanding of potential risk for carcinogenicity. The second speaker will discuss the rationale and scientific basis (or lack thereof) for differences in cancer and noncancer risk assessment and the need for harmonization of approaches based on science and mode of action rather than default policy decisions. The third speaker will focus on approaches to pharmacodynamic modeling for identifying rate-limiting steps in the pathogenic process. The final speaker will discuss the difficulties in acceptance of new science in the regulatory arena, when the science is mature enough to be used, and how consensus is achieved.

#1457 8:30  ADVANCING THE SCIENTIFIC BASIS FOR RISK ASSESSMENT. C A Kimmel¹ and M E Andersen².
  ¹National Center for Environmental Assessment, US Environmental Protection Agency, Washington, DC and ²ICF Kaiser, KS Crump Group, Research Triangle Park, NC.

#1458 8:55  GENERATING DATA FOR SCIENTIFICALLY-BASED RISK ASSESSMENT. J A Swenborg, Curriculum in Toxicology and Departments of Environmental Sciences and Engineering, and Pathology, University of North Carolina, Chapel Hill, NC.


#1460 10:05  PHARMACODYNAMIC MODELING: IDENTIFYING THE CRITICAL STEPS IN PATHOGENESIS TO AID IN LOW-DOSE AND INTERSPECIES EXTRAPOLATIONS. R B Connolly, Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#1461 10:40  INCORPORATING NEW SCIENCE INTO RISK ASSESSMENT: WHY IS IT SO DIFFICULT AND WHAT ARE THE HURDLES? B A Schwartz and D W Gaylord. FDA/National Center for Toxicological Research, Jefferson, AR.

11:15  DISCUSSION
THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 230/244-231/243

WORKSHOP SESSION:
SCIENTIFIC AND REGULATORY CHALLENGES FOR THE REDUCTION,
REFINEMENT AND REPLACEMENT OF ANIMALS IN TOXICITY TESTING

Sponsored by: The In Vitro Specialty Section
Chairpersons: Ian F. H. Purchase, Zeneca CTL, Macclesfield, Cheshire, UK
and Steve Frantz, Bristol-Myers Squibb Company, St. Louis, MO

Recent regulatory initiatives have emphasized the need to reduce, refine, or
replace animal-based toxicity tests. Since the nineteenth century, there has been a
strong movement in the Old and New Worlds opposed to the use of animals in med-
ical research. The response of the scientific community has been both self-regula-
tion and a willingness to abide by government legislation regulating animal exper-
iments. In the twentieth century, toxicity testing itself has become the object of
special regulation by government agencies in most countries. In the past ten years,
national regulatory agencies, international coordinating organizations and indus-
try have collaborated to harmonize test guidelines with the objective of avoiding
excessive test replication and animals used. Additionally, there has been active
development of in vitro and computational methods which reduce or replace the
use of animals. The European Union recognized these efforts in legislation aimed
at eliminating the use of animals in cosmetics testing by 1998. In the United States,
regulatory agencies have collaborated to produce guidelines that will help
scientists understand the problems associated with new test development and
describe the requirements for test validation and regulatory acceptance. These
initiatives will provide a strong foundation for progress in reduction, refinement and
replacement of animals used in toxicity testing. This introduction will provide a
historical perspective on alternative test methods and draw a roadmap for the way
ahead, based on the important regulatory initiatives which are the topic of this
symposium.

#1462 8:30  SCIENTIFIC AND REGULATORY CHALLENGES FOR THE REDUCTION, REFINEMENT AND REPLACEMENT OF ANIMALS IN TOXICITY TESTING. J M Frrazier, Armstrong Laboratory, US Air Force, Wright-Patterson Air Force Base, OH.

#1463 8:40  EUROPEAN LEGISLATIVE MANDATE. I F H Purchase, Zeneca Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, UK.


#1465 9:30  NEW TEST DEVELOPMENT I: PRACTICAL SCIENTIFIC ISSUES. O P Flint, Experimental Pathology, Bristol-Myers Squibb, Syracuse, NY.


#1467 10:30  NEW TEST DEVELOPMENT III: PITFALLS AND PROBLEMS OF TEST VALIDATION. P A Botham, Zeneca Central Toxicology Laboratory, Macclesfield, Cheshire, UK. Sponsor: I F H Purchase.

11:00  DISCUSSION

THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 232-242

WORKSHOP SESSION:
SHOULD MANGANESE BE ADDED TO GASOLINE: MAKING RATIONAL PUBLIC POLICY IN THE FACE OF UNCERTAINTY

Sponsored by: The Metals, Neurotoxicology and Risk Assessment Specialty Sections
Chairperson: Ellen K. Silbergeld, University of Maryland, Baltimore, MD

As of January 1996, the organomanganese compound MMT (manganese methyl tricarbonyl) has been permitted for use as a gasoline additive in the U.S. to
enhance octane. As with lead, the use of manganese will result in widespread dis-
ersion of a metal known to be neurotoxic at high doses. The EPA opposed
approval of MMT on the grounds that critical information is lacking on exposure
dose, and on low level chronic toxicity of manganese to humans. In overrul-
ing EPA, the court found that this uncertainty was insufficient to prevent its use.
This issue provides an unusual opportunity to review the way in which informa-
tion and uncertainty influence public policy. While manganese at high levels is a
known human neurotoxin, oral manganese is an essential trace element. New
information, from basic research, epidemiology and clinical medicine, provide
data on manganese's toxicokinetics, the effect of speciation on neurotoxicity, dispo-
sition of manganese in the human brain, and effects of low level exposures on
human neuropsychological function. These findings, combined with exposure
assessments for MMT, can be used to guide informed regulatory decision-making.

#1468 8:30  SHOULD MANGANESE BE ADDED TO GASO-
LINE: MAKING RATIONAL PUBLIC POLICY IN THE FACE OF UNCERTAINTY. E K Silbergeld.
University of Maryland at Baltimore, School of Medicine, Department of Epidemiology and Preventive Medicine, Baltimore, MD.

National Center for Environmental Assessment — Research Triangle Park, NC and National Exposure Research Laboratory, US Environmental Protection Agency, Research Triangle Park, NC.

#1470 9:00  MANGANESE HOMEOSTASIS IN THE CENTRAL NERVOUS SYSTEM. M Archer. Department of Physiology and Pharmacology, Bowman Gray School of Medicine, Winston-Salem, NC.

#1471 9:30  TRANSPORT AND CONTROL OF MANGANESE IONS IN THE CENTRAL NERVOUS SYSTEM. H V Aposhian; R T Ingersoll and E B Montgomery.
Center for Toxicology, University of Arizona, Tucson, AZ; Department of Molecular & Cellular Biology, University of Arizona, Tucson, AZ; Department of Pharmacology & Toxicology, University of Arizona, Tucson, AZ and Department of Neurology, University of Arizona, Tucson, AZ.

#1472 10:00  CLINICAL PERSPECTIVES ON MANGANESE NEUROTOXICITY. C W Olanow. Department of Neurology, Mt. Sinai School of Medicine, New York, NY. Sponsor: E K Silbergeld.

#1473 10:30  NEUROTOXIC EFFECTS OF LOW LEVEL EXPOSURE TO MANGANESE IN HUMAN POPULA-
TIONS. D Merger. CINBIOSE, Université du Québec a Montréal, Montréal, QC, Canada. Sponsor: E K Silbergeld.

11:00  DISCUSSION
THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 202-212

PLATFORM SESSION:
IMMUNOTOXICOLOGY

Chairpersons: Andrea Hubbard, University of Connecticut, Storrs, CT and Brian Freed, University of Colorado, Denver, CO

#1474 8:30 EXPOSURE TO THE ANESTHETIC AGENT HALOTHANE MODULATES LEVELS OF AUTOANTIBODIES TOWARDS THE DITYROPEPTIDE ACETYLTRANSFERASE SUBUNIT OF THE PYRUVATE DEHYDROGENASE COMPLEX IN B6.CAST MICE. N Frey1 and J Guile. 1Department of Pharmacology, Biocenter of the University, Basel, Switzerland and 2Ciba, Drug Metabolism & Exploratory Toxicology, Basel, Switzerland.

#1475 8:45 DIFFERENTIAL EFFECTS OF p-BQ AND NEM ON HUMAN T CELL ACTIVATION. B M Freed and L Geiselhart. Transplantation Immunology and Histocompatibility Lab, Albany Medical College, Albany, NY.

#1476 9:00 THE ROLE OF BENZO(A)PYRENE (BaP) METABOLITES IN APOPTOTIC DEATH IN THE DAUDDI HUMAN B CELL LINE. J M Salas, B J Monnho, F T Lauer and S W Burchiel. College of Pharmacy Toxicology Program, University of New Mexico, Albuquerque, NM.

#1477 9:15 ROLE OF PGE2, AND CYCLOOXYGENASE IN PDCC-DUDED IMMUNOSUPPRESSION. B P Lawrence and N J Kerkholt. Department of Ag. Chemistry and Environmental Health Sciences Center, Oregon State University, Corvallis, OR.

#1478 9:30 CHARACTERIZATION OF A CELLULAR MODEL TO ELUCIDATE THE ROLE OF THE AIR IN THE IMMUNOTOXIC EFFECTS OF TCDD. C E Sulentic1, M P Holzapfel2 and N E Kaminski. 1Department of Pharmacology & Toxicology, Michigan State University, East Lansing, MI and 2Dow Chemical Company, Midland, MI.

#1479 9:45 NON-COPLANAR POLYCHLORINATED BIPHENYLS STIMULATE NEUTROPHIL SUPER-OXIDE ANION PRODUCTION. A P Brown, W L Holdan and P E Ganey. Department of Pharmacology and Toxicology, Institute for Environmental Toxicology, Michigan State University, East Lansing, MI.

#1480 10:00 INVOLVEMENT OF CATECHOLAMINES AND GLUCOCORTICOIDS IN ETHANOL-INDUCED SUPPRESSION OF SPLENIC NATURAL KILLER CELL ACTIVITY IN A MOUSE MODEL FOR BINGE DRINKING. W Wu and S B Prueitt. Department of Biological Sciences, Mississippi State University, Mississippi State, MS.

#1481 10:15 TOLERANCE TO IMMUNE SUPPRESSION BY A9-THC EXHIBITS INCREASED CRF BINDING ACTIVITY WHICH IS NOT MEDIATED BY A cAMP SIGNALING-DEPENDENT MECHANISM. S G Hwang, S H Han and N E Kaminski. Department of Pharmacology & Toxicology, Michigan State University, East Lansing, MI.

#1482 10:30 ASSESSMENT OF THE RELATIVE SKIN SENSITIZING POTENTIALS OF DINITROHALOBENZENES IN THE LOCAL LYMPH NODE ASSAY. D Basketter1, R J Fearn1, J Hilton2 and J Kimber3. 1Unilever Environmental Safety Laboratory, Bedford, UK and 2Zeneca Central Toxicology Laboratory, Machesfield, Cheshire, UK.


#1484 11:00 POTENTIAL MECHANISM FOR PROTEASE ENZYME ENHANCEMENT OF ALLERGIC RESPONSES TO OTHER PROTEINS IN A GUINEA PIG MODEL OF ALLERGY. K Sarlo and E R Fletcher. The Procter & Gamble Company, Cincinnati, OH.


THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 300-302

PLATFORM SESSION:
CELLULAR AND MOLECULAR MECHANISMS OF ARSENIC AND MERCURY TOXICITY

Chairpersons: Curtis Klaassen, University of Kansas Medical Center, Kansas City, KS and Ernest Foulkes, University of Cincinnati, Cincinnati, OH

#1486 8:30 CLONING GENES WHICH INFER ARSENITE RESISTANCE IN MAMMALIAN CELLS. T G Rosenman, W Wang and N Dolezhalsky. The Nelson Institute of Environmental Medicine, New York University Medical Center, New York, NY. Sponsor: M Costa.

#1487 8:45 FURTHER STUDIES ON THE MOLECULAR EVENTS ASSOCIATED WITH ARSENIC-INDUCED MALIGNANT TRANSFORMATION IN RAT LIVER CELLS. Q Zhou1, M R Young1, J F Hochadel2 and M P Blackbroom1. 1NCL, FCRDC, Frederick, MD and 2SAIC Frederick, FCRDC, Frederick, MD.

#1488 9:00 ARSENITE AND HOMEOSTEINE INDUCE PROLIFERATION OF HUMAN ADRIA SMOOTH MUSCLE CELLS AND FIBROBLASTS IN B9 DEFICIENT MEDIA. S A Swanson and C R Angle. Department of Pediatrics, University of Nebraska Medical Center, Omaha, NE.

#1489 9:15 INDUCTION OF HIGH AFFINITY ARSENIC BINDING PROTEINS IN HUMAN LYMPHOMLASTOID (LB) CELLS BY ARSENITE. H Hamedeh1, D B Mense2, R E Rasmussen1, D M Meacher1, H Greene2 and R N Roth2. 1Department of Community and Environmental Medicine, University of California, Irvine, CA and 2ARCO, Los Angeles, CA.
ENZYMATIC REDUCTION OF ARSENATE TO ARSENITE IN MAMMALIAN LIVER. T R Radabaugh1 and H V Aposhian1,2. Committee on Genetics, University of Arizona, Tucson, AZ; 3Center for Toxicology, University of Arizona, Tucson, AZ; and 4Department of Molecular and Cellular Biology, University of Arizona, Tucson, AZ.

MERCURIC ION PREVENTS EXPRESSION OF NF-kB IN NORMAL RAT KIDNEY EPITHELIAL (NRK-52E) CELLS BY BLOCKING BINDING TO DNA. J S Woods, F J Dieguez and M E Ellis. Department of Environmental Health, University of Washington, Seattle, WA.


MODULATION OF MeHg-INDUCED TOXICITY AND GENE EXPRESSION IN RODENT EMBRYONIC CELLS BY N-ACETYL-L-CYSTEINE IN VITRO. J C Ou, J L Schroeder, C C White, T J Kavanagh and E M Faustman. Department of Environmental Health, University of Washington, Seattle, WA.

METHYLMERCURY (MeHg) INDUCES ELEVATIONS IN INTRACELLULAR Ca++ CONCENTRATION ([Ca++]i) IN RAT CEREBELLAR TYPE II ASTROCYTE CULTURES. M S Marty, S Master and W D Atchison. Department of Pharmacology and Toxicology3, Institute of Environmental Toxicology, Michigan State University, East Lansing, MI.

K+ DEPOLARIZATION DELAYS METHYLMERCURY-INDUCED ELEVATIONS IN INTRACELLULAR CALCIUM CONCENTRATION IN RAT CEREBELLAR GRANULE CELL CULTURES. D Cardona, M S Marty and W D Atchison. Department of Pharmacology and Toxicology, Institute of Environmental Toxicology, Michigan State University, East Lansing, MI.

THURSDAY MORNING, MARCH 13
8:30 a.m. - 11:30 a.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
MECHANISMS OF ESTROGENICITY

Chairpersons: Timothy Zacharewski, University of Western Ontario, London, ON, Canada and Stephen Sale, Texas A&M University, College Station, TX

Displayed: 8:30 a.m. - 11:30 a.m.
Discussed: 9:30 a.m. - 11:30 a.m.

LACK OF SYNERGISTIC ESTROGEN EFFECTS OF DIELDRIN AND ENDOSULFAN MIXTURES ON MCF-7 AND MVAL CELLS. T E Wiese1, C R Lambright2 and W R Kelce3. Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC and 2Reproductive Toxicology Division, NHEERL, US EPA, Research Triangle Park, NC.

ESTROGENIC ACTIVITY OF A DIELDRIN/TOXAPHENE MIXTURE IN THE MOUSE UTERUS, MCF-7 HUMAN BREAST CANCER CELLS AND YEAST-BASED ESTROGEN RECEPTOR ASSAYS: NO APPARENT SYNERGISM. S Safe1, K Ramamoorthy1, F Wang1, I-C Chen1, J D Norris2, D P McDonnell3, K W Guido4, J P Beechfain1 and K S Korach5. 1Vet. Physiology and Pharmacology, Texas A&M University, College Station, TX; 2Department of Pharmacology, Duke University Medical School, Durham, NC; 3Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 4Laboratory of Reproductive and Developmental Toxicology, National Institute of Environmental Health Science, Research Triangle Park, NC.

ESTROGENIC ACTIVITIES OF 2',3',4',5'-TETRA-CHLORO- AND 2',4',6'-TRICHLORO-4-BIPHENYL-4-OL: NO SYNERGISTIC INTERACTIONS. K Ramamoorthy1, F Wang1, I-C Chen1, S C Maness2, L Leon4, K Guido1 and S Safe1. 1Department of Veterinary Physiology & Pharmacology, Texas A&M University, College Station, TX and 2Chemical Industry Institute of Toxicology, Research Triangle Park, NC.


IN VITRO AND IN VIVO ASSESSMENTS OF THE ALLEGED ESTROGEN RECEPTOR-MEDIATED ACTIVITIES OF PHTHALATE ESTERS. M D Meek, J Clemens, Z F Wu, M R Fielden and T Zacharewski. Department of Pharmacology and Toxicology, University of Western Ontario, London, ON, Canada.

BISPHENOL A INTERACTS WITH THE ESTROGEN RECEPTOR IN A DISTINCT MANNER FROM ESTRADIOL. J C Gould1, L S Leonard1, D P McDonnell1, K Connor1, I Chen1, T Zacharewski2, S Safe3 and K W Guido4. 1Chemical Industry Institute of Toxicology, Research Triangle Park, NC; 2Department of Pharmacology, Duke University Medical School, Durham, NC; 3Vet. Physiology and Pharmacology, Texas A&M University, College Station, TX and 4Department of Pharmacology and Toxicology, University of Western Ontario, London, ON, Canada.

THE EFFECT OF BISPHENOLA ON THE EXPRESSION OF C-fos, c-myc, AND ESTROGEN RECEPTOR mRNA IN HUMAN ENDOMETRIAL CARCINOMA CELLS. R M Bergeron and K W Guido. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

LOCALIZATION OF ESTROGEN-RESPONSIVE ELEMENT IN THE C-FOS PROTOONCOGENE PROMOTER. R Duan, W Porter and S Safe. Department of Vet. Physiology and Pharmacology, Texas A&M University, College Station, TX.

REGULATION OF CATHEPSIND GENE EXPRESSION IN HUMAN ENDOMETRIAL CANCER CELLS. M Wormke1, D Hovik2, C Holtsappel1, L Stanker3 and S Safe1. 1Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX and 2USDA-ARS, College Station, TX.
THURSDAY MORNING, MARCH 13
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
OXIDATIVE INJURY

Chairpersons: Sari M. Sonani, Southern Illinois University, Springfield, IL and James Vager, Johns Hopkins University, Baltimore, MD

#1505 IDENTIFICATION OF A FUNCTIONAL IMPERFECT ESTROGEN-RESPONSIVE ELEMENT IN THE 5'-PROMOTER REGION OF THE HUMAN CATHEPSIN D GENE. F Wang, W Porter and S Safe. Dept. of Veterinary Physiology & Pharmacology, Texas A&M University, College Station, TX.

#1506 THE EFFECT OF ANTIESTROGENS ON BEAT SHOCK PROTEIN 27 GENE EXPRESSION IN MCF-7 HUMAN BREAST CANCER CELLS. W Porter, S Castro and S Safe. Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

#1507 VISUALIZATION OF ESTROGEN RECEPTORS IN LIVING CELLS: A NEW APPROACH FOR STUDYING STEROID HORMONE RECEPTORS. L J Mills, L. L. Coro and S M Baski. USEPA, NIEHRL, Atlantic Ecology Division, Narragansett, RI.

#1513 PRO-OXIDANT RESPONSES OF RESPIRATORY CELLS TO ORGANIC DUST EXTRACTS. G Cosma1, A Martinez2, D Ufferlig3 and V Vallathathan. 1Department of Environmental Health, Colorado State University, Fort Collins, CO and 2NIOSH, Morgantown, WV.

#1514 INCREASED LEVELS OF HEPTACILHCHLOROPOXIDE (HE) AND OXYCHLORODE (OC) IN NON-SURVIVING TRAUMA PATIENTS: ROLE OF NITRIC OXIDE IN CELL DEATH. R A Cassidy, A Delgado, D Kohler and D G Burleson. US Army Institute of Surgical Research, Fort Sam Houston, TX. Sponsor: W H Benson.

#1515 METHYLCYCLOPENTADIENYL MANGANESE TRICARBONYL-INDUCED REACTIVE SPECIES IN DIFFERENT RAT BRAIN REGIONS: AN IN VITRO STUDY. C J Williams1, H M Duhart1, M R I Soliman1, A Weaver2, W Slikker, Jr3 and S F Al4. 1College of Pharmacy, Florida A&M University, Tallahassee, FL and 2Division of Neurotoxicology, NCTR/FDA, Jefferson, AR.

#1516 EFFECT OF ACYCLAMIDE TREATMENT AND GLUTATHIONE MODULATION ON AP-J AND NFκB IN RAT GLIAL CELLS. J Bunting1, J K Kaster1, M A Friedman1 and J E Klaunig1. 1Division of Toxicology, Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN and 2Cytec Industries, Inc., West Patterson, NJ.

#1517 PRO-OXIDANT ACTIVITIES OF MORIN AND NARINGENIN. S C Sahu and G C Gray. Food and Drug Administration, Washington, DC.

#1518 PARTICIPATION OF ACTIVE OXYGEN SPECIES IN DAPSONE HYDROXYLAMINE-INDUCED HEMOLYTIC ANEMIA. D C McMillan and D J Jollow. Department of Pharmacology, Medical University of South Carolina, Charleston, SC.

#1519 HETEROLOGOUS EXPRESSION OF CARBONYL REDUCTASES IN AETHERS AGAINST PARAQUAT. M J Kelner. University of California, San Diego, CA.

#1520 REDUCING COSUBSTRATES INVOLVED IN REDUCING CARCINOCUS GLATUHONIOSE DUSUDE. J D Robertson1, J W Starnes2 and J P Cker1. 1Division of Pharmacology & Toxicology, College of Pharmacy, University of Texas at Austin, Austin, TX and 2Department of Kinesiology, University of Texas at Austin, Austin, TX.

#1521 NITRIC OXIDE PREVENTS TERT-BUTYLHYDROPEROXIDE-INDUCED FORMATION OF PEROXY RADICALS IN CAROMYOCYTES: ROLE OF ENDOGENOUS IRON. N V Gorbou2, E V Menshikova1, G Salama1, G J Argyros1, N M Elsayed1, H G Claycamp and V E Kagan3. 1University of Pittsburgh, Pittsburgh, PA and 2Walter Reed Army Institute of Research, Washington, DC.

#1522 EFFECT OF γ-IRRADIATION IN METALLOTHIONEIN SYNTHESIS AND LIPID PEROXIDATION IN TRANSGENIC MICE. J C Lau, H I Cai and M G Cherian. Department of Pathology, University of Western Ontario, London, ON, Canada.

#1523 MECHANISMS OF NITRIC OXIDE-MEDIATED TOXICITY. Y Jin, D E Heck, T Mariano and J D Laskin. Joint Graduate Program in Toxicology, Departments of Environmental & Community Medicine, UMDNJ — Robert Wood Johnson Medical School and Pharmacology & Toxicology, Rutgers University, Piscataway, NJ.
LIPID PEROXIDATION IN UDP-GLUCURONOSYLTRANSFERASE (UGT)-DEFICIENT RATS, AND IN VITRO SUBSTRATES FOR HUMAN BILIRUBIN UGT1A1: STUDIES WITH PHENYTOIN, 5-(4-HYDROXYPHENYL)-5-PHENYLHYDANTOIN (HPHP) AND ACETAMINOPHEN (APAP). P M Kim and PG Wells. Faculty of Pharmacy and Department of Pharmacology, University of Toronto, Toronto, Canada.


THE EFFECTS OF MELATONIN ON THE TOXICITY OF CADMIUM (Cd). C Y Kim1, D H Cho2 and J S Kim1. 1ARRC/Department of Veterinary Medicine, Kon Kuk University, Seoul, Korea and 2Korea Food Drug Administration, Seoul, Korea.

LIPID PEROXIDATION AND CIGUATERA TOXICITY IN THE LIVER OF THE CARIBBEAN BARRACUDA (Sphyraena barracuda). J Matta1, M Milad1, R Manger1 and T Toresson1. 1Ponce School of Medicine, Ponce, PR; 2Fred Hutchinson Cancer Research Center, Seattle, WA and 3University of Puerto Rico, Mayaguez, PR.

AUTOXIDATION OF CATECHOLAMINES AND PROTEIN OXIDATION INHIBITED BY TAURINE. R Dawson, Jr, E W Tang, M Hu and B Eppler. Department of Pharmacodynamics, University of Florida, Gainesville, FL.

DEVELOPMENT AND EXPERIMENTAL CALIBRATION OF PHYSIOLOGICALLY BASED PHARMACODYNAMIC MODEL FOR CCI-INDUCED ETHANE EXHALATION. J Z Byczkowski1, W J Schmidt1, M A Curran1, A P Moghadam1 and C S Seok1. 1ManTech Environmental Technology Inc., Wright-Patterson Air Force Base, OH and 2Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

EVALUATION OF A MULTIPARAMETER BIO-MARKER FOR OXIDATIVE DAMAGE INDUCED BY CARBON TETRACHLORIDE IN RATS. L L De Zwart, R Hermans, J N M Meerman, J N M Commandeur, P Salenik and N P E Vermeulen. Leiden/Amsterdam Center for Drug Research: Division of Toxicology, Free University, Amsterdam, The Netherlands.

STRESS PROTEIN INDUCTION BY COPPER AND DIETHYLTHIOCARBAMATE (DDTC) IN RAT HIPPOCAMPAL ASTROCYTES IN RELATION TO OXIDATIVE STRESS. M Hassan and L D Trompetta. St. John's University, New York, NY.


DOSE RESPONSE OF ETHANOL ON PLASMA ANTIOXIDANT SYSTEM IN RATS. D J Brown1, K Husain1, E C Schlutte2 and S M Somani1. 1Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL and 2Forensic, Analytical, Clinical Toxicology Consultants, Inc., Springfield, IL.

DOSE DEPENDENT EFFECT OF ETHANOL ON HEPATIC ANTIOXIDANT SYSTEM IN RATS. E C Schlutte1, K Husain1, D J Brown2 and S M Somani1. 1Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL and 2Forensic, Analytical, Clinical Toxicology Consultants, Inc., Springfield, IL.

EBSELEN PROTECTION AGAINST CISPLATIN-INDUCED NEPHROTOXICITY: ANTIOXIDANT SYSTEM. K Husain1, G L Tamme2, L P Rybak2 and S M Somani1. 1Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL; 2Department of Chemistry, University of Illinois at Springfield, Springfield, IL and 3Department of Surgery, Southern Illinois University School of Medicine, Springfield, IL.

EFFECT OF ETHANOL AND NICOTINE ON THE ANTIOXIDANT SYSTEM IN RAT BRAIN REGIONS. S M Somani, E Schlutte and K Husain. Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL.

CISPLATIN-INDUCED OTOTOXICITY PROTECTED BY EBSELEN: ANTIOXIDANT SYSTEM. L P Rybak1, K Husain1 and S M Somani1. 1Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL and 2Department of Psychiatry, Southern Illinois University School of Medicine, Springfield, IL.

DIETHYLTHIOCARBAMATE (DDTC)-INDUCED CHANGES IN ANTIOXIDANT SYSTEM OF RAT OLFATORY BULB. R G Struble1, K Husain1 and S M Somani1. 1Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL and 2Department of Psychology, Neurology and Medicine, Southern Illinois University School of Medicine, Springfield, IL.

EFFECT OF SMOKELESS TOBACCO EXTRACT (STE) ON DNA CELL CYCLE ANALYSIS, APOPTOSIS AND LIPID PEROXIDATION IN HUMAN ORAL KERATINOCYTES. M Bagchi1, C Kuzyskier1, D Bagchi2, T Sainsbury1 and S J Seok1. 1Creighton University School of Pharmacy & Allied Health Professions, Omaha, NE and 2University of Nebraska Medical Center, Omaha, NE.

EARLY ONSET OF AIRWAY HYPERRESPONSIVENESS IN OZONE-INJURED RAT LUNGS IS ASSOCIATED WITH TISSUE ACCUMULATION OF NEUROTROPHINS. M P DeLorime, H Yang, C L Elson and D J P Bassett. Wayne State University, Detroit, MI.

CARDIOSELECTIVE ACCUMULATION OF 8-HYDROXYDEOXYGUANOSINE ADDUCTS OF MITOCHONDRIAL DNA FOLLOWING ACUTE DOXORUBICIN ADMINISTRATION. C M Palmeira1, J Serrano2, D W Kuehl2 and K B Wallace1. 1Department of Biochemistry & Molecular Biology, University of Minnesota, Duluth, MN and 2Midcontinent Ecology Division, US EPA, Duluth, MN.

INHIBITION OF THALIDOMIDE-INITIATED DNA OXIDATION AND TERATOGENICITY IN RABBITS BY THE FREE RADICAL SPIN TRAPPING AGENT α-PHENYL-N-t-BUTYLNITRONE (PBN). T Parman, A S Mahendra, M J Wiley and P G Wells. Faculty of Pharmacy and Departments of Anatomy and Pharmacology, University of Toronto, Toronto, Canada.
THURSDAY MORNING, MARCH 13
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL
POSTER SESSION:
GENOTOXICITY

Chairpersons: Milton Marshall, Dermigen, Inc., Sugar Land, TX and Jonathan Ward, University of Texas Medical Branch, Galveston, TX

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 10:15 a.m. - 12:00 p.m.

#1551 DETERMINATION OF THE GENOTOXICITY OF AIRBORNE CONTAMINANTS USING QUANTITATIVE XL-PCR. Y. Rodriguez1, B. D. Jimenez2 and C. L. Cadilla3. University of Puerto Rico, School of Medicine, San Juan, PR and 2School of Pharmacy, Center for Environmental and Toxicological Research, EPA-EPSCoR, San Juan, PR.


#1553 GENOTOXICITY OF PETROLEUM COMBUSTION BYPRODUCTS IS DUE PREDOMINANTLY TO NITROCOMPOUNDS. A. D. Rahimtu and B. Prichett. Biochemistry Department, Memorial University, St. John's, NF, Canada.

#1554 BIOLOGICAL MONITORING OF OCCUPATIONAL EXPOSURES TO 1,3-BUTADIENE. J. B. Ward, Jr.1, M. M. Ammenheuser, W. E. Bechtold2, D. A. Hastings1 and M. S. Legator1. 1Department of Preventive Medicine and Community Health, University of Texas Medical Branch, Galveston, Texas and 2Inhalation Toxicology Research Institute, Albuquerque, NM.

#1555 A HUMAN MITOCHONDRIAL DNA STANDARD REFERENCE MATERIAL FOR QUALITY CONTROL IN IDENTIFICATION, MEDICAL DIAGNOSIS AND MUTATION DETECTION. B. C. Levin1, H. Cheng2 and D. J. Reeder1. 1National Institute of Standards and Technology, Gaithersburg, MD and 2GEO-CENTERS, Inc., Newton Centre, MA.


#1557 DNA RESPONSES IN HUMAN KERATINOCYTE CULTURES AFTER EXPOSURE TO BIS-(2-CHLOROETHYL) SULFIDE (BCES). M. F. DeCristofaro, I. A. Bernstein and F. L. Vaughan. Toxicology Program, Department of Environmental and Industrial Health, University of Michigan, Ann Arbor, MI.

#1558 DNA DAMAGE BY BIS-(2-CHLOROETHYL) SULFIDE (BCES) IN HUMAN KERATINOCYTES (HK). E. J. Gasiciel, I. A. Bernstein and F. L. Vaughan. Toxicology Program, Department of Environmental and Industrial Health, University of Michigan, Ann Arbor, MI.
THE BIOLOGICAL AND CYTOLOGICAL EFFECTS OF MESIOINIC COMPOUNDS, MEM AND MPM, ON CHINESE HAMSTER OVARIAN CELLS. K D Watson, G O Mbagwu and R M Mason. Virginia State University/ Medical College of Virginia MS to Ph.D. Transition Program, Petersburg, VA. Sponsor: P V Castrovilva.


MODE OF ACTION FOR THE TOXIC RESPONSE OF MOUSE LYMPHOMA CELLS FOLLOWING EXPOSURE TO ETHYL ACRYLATE. E Gicquel, P J O’Neill and Y L Vandenberghe. Department of Toxicology, Rohm & Haas Co., Spring House, PA.

DISCRIMINATION BETWEEN GENOTOXICITY AND CYTOTOXICITY IN THE PATHOGENESIS OF DNA DOUBLE-STRAND BREAKS: ASSESSMENT BY PULSED-FIELD GEL ELECTROPHORESIS IN CULTURED HUMAN LUNG EPITHELIAL CELLS. E H Vock, S Vanwauwe and W K Lutz. Department of Toxicology, University of Würzburg, Würzburg, Germany.

INDUCTION OF PS3 GENE MUTATIONS IN LLC-PK1 CELLS UPON LONG-TERM EXPOSURE TO CARCINOGENS WITH DIFFERENT MECHANISMS OF ACTION. S Vanwauwe and H Richter. Department of Toxicology, University of Würzburg, Würzburg, Germany.

ANEUPLOIDOGENIC POTENTIAL OF BISPHE- NOL PLASTIC MONOMERS. E Pfister and M Metzler. Institute of Food Chemistry, University of Karlsruhe, Karlsruhe, Germany.

STRUCTURAL AND MECHANISTIC BASES FOR THE INDUCTION OF CHROMosomal MALSEGREGATION IN YEAST. S G Grant1, M Liu1, O T Mucina2, G Klopman3 and H S Rosenkrantz. 1Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA and 2Department of Chemistry, Case Western Reserve University, Cleveland, OH.

MUTAGENICITY AT HPRT IN SPLenic T-CELLS OF MICE AND RATS EXPOSED BY INHALATION TO DIEPOXYBUTANE. Q Meng1, R F Henderson2 and V E Walker3. 1New York State Department of Health and State University of New York, Albany, NY and 3Inhalation Toxicology Research Institute, Albuquerque, NM.

IN VITRO AND IN VIVO MUTAGENICITY AT THE LACI TRANGENE AND INDUCTION OF MICRONUCLEI BY 1,3,4-DIEPOXYBUTANE. C J Saranko2, L Recio1 and R F Henderson. 1North Carolina State University, Raleigh, NC; 2Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 3Inhalation Toxicology Research Institute, Albuquerque, NM.


EVALUATION OF THE DIRECT GENOTOXIC POTENTIAL OF CADMIUM IN FOUR DIFFERENT CULTURED RODENT CELL LINES. R R Miao, G T Smith and M P Wiziker. National Cancer Institute, Frederick, MD.

CHARACTERIZATION OF N-OXYCITIDINE, O-OXYCITIDINE, AND N-OXYURIDINE ADDUCTS OF BUTADIENE MONOXIDE. R R Selzer and A A Elfera. Department of Comparative Biosciences and Environmental Toxicology Center, University of Wisconsin, Madison, WI.

TISSUE AND SPECIES SPECIFICITY OF MUTA- TION INDUCED BY TRIS(2,3-DIBROMOPROPYL) PHOSPHATE IN THE LACI GENE RECOVERED FROM BIG BLUE(r) RODENTS. B W Glickman1, M Cunningham2 and J de Boer1. 1Centre for Environmental Health, University of Victoria, Victoria, BC, Canada and 2NIHS, Research Triangle Park, NC. Sponsor: B Shane.


SEQUENCE SPECIFIC ATTACK OF DES METABO- LITE (S) TO MITOCHONDRIAL DNA: IMPLICA- TIONS IN THE INDUCTION OF MT. GENOMIC INSTABILITY IN KIDNEY OF SYRIAN HAM- STERS. R D Thomas1 and D Roy2. 1Environmental Toxicology Program, School of Pharmacy, Florida A&M University, Tallahassee, FL and 2Department of Environmental Health Science, University of Alabama, Birmingham, AL.

THE ROLES OF HYDROXYL RADICAL (OH) AND SINGLET OXYGEN (O2) IN PEROXYNITRITE (ONOO−)-INDUCED MUTAGENESIS. J K Jeong, M J Juedes and G H Wogan. Division of Toxicology, Massachusetts Institute of Technology, Cambridge, MA.

ASSESSMENT OF THE BINDING OF METHYL n-AMYL KETONE (MAK) TO RAT LIVER DNA AS INVESTIGATED BY A DIRECT (“C-LABLED MAK), AND “P-POSTLABELING TECHNIQUES. E D Barber1, K R Rantos1 and M V Reddy1. 1Eastman Kodak Company, Rochester, NY; 2Eastman Chemical Company, Kingsport, TN; “Shell Oil Company, Houston, TX and 4Corning Hazleton, Inc., Vienna, VA.

ASSAYS FOR DELETIONS DETECT CARCINO- GENS. R H Schiestl, R Brennan, A Galli, J Aubrecht, R Rugo and W Vap. Department of Molecular and Cellular Toxicology, Harvard School of Public Health, Boston, MA.

INNATE MUTAGENESIS EXHIBITED BY AN IMPERFECT INVERTED REPEAT SEQUENCE FROM THE HUMAN CI INHIBITOR GENE. J J Bissel and T Emery. Children’s Hospital Research Foundation, Cincinnati, OH. Sponsor: K Dixon.


DOSE FRACTIONATION ALTERS THE GENOTOXICOLOGY OF BENZO(A)PYRENE-9,10-DIHYDRODIOL-9,10-EPOXIDE IN HUMAN FIBROBLASTS. J C States and T Quan. Wayne State University, Detroit, MI. Sponsor: J G Founds.
USE OF THE REDUCED pH SYRIAN HAMSTER EMBRYO CELL TRANSFORMATION ASSAY FOR DETERMINING THE RodENT CARCINOGENICITY POTENTIAL OF CHEMICALS. G A Kerckaert1, R Brauningier2, R A LeBoey3 and R J Isfort1. 1Procter & Gamble Company, Cincinnati, OH and 2Corning Hazleton, Vienna, VA.

REPLICATION OF DAMAGED DNA IN XERODERMIA PIGMENTOSA VARIANT EXTRACTS. M P Carty1, K Dixon and C W Lawrence1. 1Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH and 2Department of Biophysics, University of Rochester, Rochester, NY.

MODULATION OF IN VIVO ETHYLENE DIBROMIDE MUTAGENICITY IN THE BIG BLUE™ TRANSGENIC RAT BY GLUTATHIONE DEPLETION. J R Milliet and B S Shane. Institute for Environmental Studies, Louisiana State University, Baton Rouge, LA.

THURSDAY MORNING, MARCH 13
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
BIOTRANSFORMATION I

Chairperson: John Leech, Medical College of Wisconsin, Milwaukee, WI

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 8:30 a.m. - 10:15 a.m.

FUNCTIONAL AND STRUCTURAL CHARACTERISATION OF HUMAN SULFOTRANSFERASES. L A Brix, X Zhu and M E McManus. Department of Physiology and Pharmacology, University of Queensland, Australia.

SPECIES DIFFERENCES IN THE METABOLISM OF MOLINATE. M K Ellis, C Courts, A Richardson, C Lovatt and G A Wickramanitne. Zemeca Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, UK. Sponsor: J Kønber.

EFFECT OF FIBRATES ON GLYCINE CONJUGATION OF BENZOIC ACID IN RATS. Z Gregus1, T Fekete1, E Halász1, Á Gyurasics1 and C D Klaassen2. 1University Medical School of Pécs, Pécs, Hungary and 2University of Kansas Medical Center, Kansas City, KS.

CYSTEINE S-CONJUGATE AND METHIONINE SULFOXIDATIONS BY HUMAN AND RABBIT FLAVIN-CONTAINING MONOOXYGENASE 3 (FMO3). S L Ripp1, R M Philpot2 and A A Elfarah1. 1Dept. of Comparative Biosciences and Environmental Toxicology Center, University of Wisconsin, Madison, WI and 2NIEHS, Research Triangle Park, NC.


THYROID HORMONE MODULATION OF RAT SULFOTRANSFERASE mRNA EXPRESSION. R T Dunn and C D Klaassen. University of Kansas Med. Ctr., Kansas City, KS.

CLONING AND PARTIAL SEQUENCE OF A GLUTATHIONE S-TRANSFERASE FROM CHANNEL CATFISH. EXPRESSION AND TISSUE DISTRIBUTION. P L Del Valle, M Haase, W Mulhy, A S Kane and J O Nelson1. 1University of Maryland, Toxicology Program, College Park, MD and 2University of Maryland, Chesapeake Biological Laboratory, Solomons, MD. 3U.S. Department of Agriculture ARS-SSML, Beltsville, MD.

METABOLISM OF SEVERAL 4-C-NONYLPHENOL ISOMERS BY RAINBOW TROUT. J J Leech, A C Meldahl and K Nithipatikom. Department of Pharmacology & Toxicology, Medical College of Wisconsin, Milwaukee, WI.

EFFECT OF ESTROGEN RECEPTOR (ER) TRANSFECTION ON GLUTATHIONE-S-TRANSFERASE (GST) EXPRESSION, 2,3,7,8-TETRA CHLOROBENZOC-PO-DIOXIN (TCDD) INDUCIBILITY AND DRUG SUSCEPTIBILITY IN HUMAN BREAST CANCER CELLS. D J Hovig, C L Wilson, L Wang and SH Safe. Dept. of Veterinary Physiology & Pharmacology, Texas A&M University, College Station, TX.

BIOTRANSFORMATION OF A NOVEL HUMAN SULFOTRANSFERASE, SULT1B2, WHICH SULFURATES THYROID HORMONES. J Wang and C N Falany. Department of Pharmacology and Toxicology, University of Alabama at Birmingham, Birmingham, AL.

EFFECTS OF MOLYBDATE (Mo) ON THE SULFATION OF DEHYDROEPIANDROSTERONE. J W Boies and C D Klaassen. University of Kansas Med. Ctr., Kansas City, KS.

ARSENITE METHYLTRANSFERASE ACTIVITY IN VARIOUS TISSUES OF B6C3F1 MICE ADMINISTERED SUBCHRONIC DOSES OF SODIUM ARSE NATE. S M Healy1, E A Cassareza1 and H Y Apostian1. 1Center for Toxicology, Department of Pharmacology & Toxicology, University of Arizona, Tucson, AZ and 2Center for Toxicology, Department of Molecular & Cellular Biology, University of Arizona, Tucson, AZ.

GLUTATHIONE (GSH) CONJUGATE FORMATION BY HUMAN TERM PLACENTAL LIPOXYGENASE (HTP-LO): A STUDY WITH ETHACRYNIC ACID (EA). M P Sajjan, J Hu and A P Kulkarni. Toxicology Research Program, College of Public Health, University of South Florida, Tampa, FL.

BIOTRANSFORMATION OF MCI-186 AND ITS CONJUGATES IN LIVER AND KIDNEY SOF RAT, DOG AND HUMAN. Y Fujimura, T Komatsu, H Nakai, K Akimoto, Y Takamatsu and Y Morimaka. Pharmacokinetics and Drug Metabolism Laboratory, Yokohama Research Center, Mitsubishi Chemical Co., Yokohama, Japan. Sponsor: T Suga.

BIOTRANSFORMATION OF PERCHLOROETHENE IN HUMANS: QUANTITATION OF URINARY METABOLITES FORMED BY GLUTATHIONE CONJUGATION AFTER INHALATION EXPOSURE. G Binner1, W Dekant1 and J C Parker2. 1Department of Toxicology, University of Würzburg, Würzburg, Germany and 2U.S. EPA, NCEA, Washington, DC.
MOLECULAR CLONING OF cDNA FOR MOUSE BILIRUBIN/PHENOXIDP-UDP-GLUCURONOSYLTRANSFERASE (mUGT1a). W Lei, Q Chu and A-N T Kong. Center for Pharmaceutical Biotechnology, Dept of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond, VA. Sponsor: K L White.


UDP-GLUCURONOSYLTRANSFERASE-INDUCING PROPERTIES OF OLTIPRAZ IN CULTURED HUMAN HEPATOXYCES: EVIDENCE FOR MIXED TYPE PHENOBARBITAL AND POLYCYCLIC AROMATIC-LIKE INDUCING SPECIFICITY. A Grovitz, F Keasler, M Thompson, J R Fisher and J K Ritter. Departments of Pharmacology and Toxicology, Medical College of Virginia, Richmond, VA and Department of Surgery, Medical College of Virginia, Richmond, VA. Sponsor: K L White.

EXPRESSION AND REGULATION OF CYTOSOLIC SULFOTRANSFERASES (STs) IN HUMAN ENDOMETRIUM. C N Falany, J L Falany and R Aziz. Departments of Pharmacology and Toxicology and Obstetrics and Gynecology, University of Alabama at Birmingham, Birmingham, AL.

METABOLISM AND TOXICITY OF PHENOTHIALEIN IN MOUSE, RAT, AND HUMAN LIVER MICROSOMES AND SLICES. J K Doerr-Siever, S Suwannaprucha and J B Mangold. Drug Metabolism/Pharmacokinetics, Drug Safety, and Central Technologies, Preclinical Research, Sandoz Pharmaceuticals Corp., East Hanover, NJ.


UPTAKE AND METABOLISM OF 1,1,1,2-TETRACHLOROETHANE, (HFCS134a) IN RAT. T Green, K L Dow, K Lee and B S Bo. M A Collins and M K Ellis. Zenaeta Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire, UK. Zenaeta Pharmaceuticals, Alderley Park, Macclesfield, Cheshire, UK and ICI Chemicals and Polymers Ltd., Runcorn, UK. Sponsor: I Kimber.

THE ELIMINATION AND METABOLISM OF ['C]-3',3',4',4'-TETRACHLOROAZOXYBENZENE (TCAOB) IN ORAL ANTIBIOTIC PRETREATED AND UNPRETREATED MALE F-344 RATS. T L Ziegler, M J Katting, H S Younis, T McClure and J G Sipes. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ and Center for Toxicology, University of Arizona, Tucson, AZ.

EFFECTS OF ETHANOL ON METABOLISM OF ACRYLONITRILE IN RATS. N Ochoa, K Kieffer and M Y H Faraqui. Department of Biology, University of Texas Pan American, Edinburg, TX.

STEREOCHEMICAL ASPECTS OF BUTADIENE METABOLISM AND TOXICITY IN RATS AND MICE. J L Niewmca, C Maniglet-Poulet, D J Claffey, J A Ruth and D Ross. University of Colorado Health Sciences Center, School of Pharmacy, Denver, CO.

EFFECTS OF OLTIPRAZ AND FURAFYLLINE ON CYTOCHROME P450-MEDIATED ACTIVATION OF AFLATOXIN B, IN PRECISION HUMAN LIVER SLICES. J T Heironen, T K Bammler and D L Eaton. Department of Environmental Health, University of Washington, Seattle, WA.

TISSUE CONCENTRATIONS OF BUTADIENE EPOXIDES IN FEMALE SPRAGUE-DAWLEY RATS FOLLOWING EXPOSURES TO 8000 PPM 1,3-BUTADIENE BY INHALATION. J R Thornton, Manning, A R Dahl, W E Bechtold, M L Allen, W C Griffith and R F Henderson. Inhalation Toxicology Research Institute, Albuquerque, NM.

DESTRUCTION OF CYTOCHROMES P450 IN VIVO BY TRICHLOROETHYLENE: LOSS OF CYP2A AND CYP1A ACTIVITY. J C Lipscomb, R K Black, T J Janicki, D A Muhle, J W Fisher and R Abbot. Armstray Laboratory, Toxicology Division, Wright-Patterson AFB, OH. 'ManTech Environmental, Inc., Wright-Patterson AFB, OH and *GEO-Centers, Wright-Patterson AFB, OH.

METABOLISM OF TRICHLOROETHYLENE AND TRICHLORACETIC ACID BY MOUSE GUT MICROFLORA. A P Moghadam, R Abbot, J W Fisher, S Stavrou and J C Lipscomb. Armstrong Laboratory, Toxicology Division, Wright-Patterson AFB, OH and *GEO-Centers, Wright-Patterson AFB, OH.

PHYSIOLOGICALLY BASED PHARMACOKINETIC MODELING OF 1,3-BUTADIENE, 1,2-EPOXY-3-BUTENE, AND 1,2,3,4-DIEPOXYBUTANE TOXICOLOGY IN MICE AND RATS. L M Sweeney, P M Schlosser, M A Medinsky and J A Bond. *Concurrent Technologies Corporation, Johnstown, PA and *Chemical Industry Institute of Toxicology, Research Triangle Park, NC.


OXIDATION OF 3-BUTENE-1,2-DIOL BY MOUSE, RAT, AND HUMAN LIVER MICROSOMES. R A Kemper, R J Krause and A A Elfarra. Dept. of Comparative Biosciences and Center for Environmental Toxicology, University of Wisconsin, Madison, WI.

EVALUATION OF PENTACHLOROPHENOL GENOTOXICITY: FREE RADICALS OR DNA ADDUCTS. Y C Jeong, Y S Lee, B S Youn, D H Cho and M H Cho. 'College of Veterinary Medicine, Seoul National University, Suwon, Korea; 'College of Science, Kyungki University, Korea and 'Center for Toxicological Research, KFDA, Korea.

CYTOSOLIC BIOTRANSFORMATION OF DICHLORACETIC ACID (DCA) IN THE SPRAGUE-DAWLEY RAT. R Corrunt, Z Yan, G Henderson, P W Stapaolo and M O James. Department of Medicinal Chemistry, University of Florida, College of Pharmacy, Gainesville, FL.
URINARY THIODIACETIC ACID: A SELECTIVE BIOMARKER FOR THE CYTOCHROME P450 CATALYZED OXIDATION OF 1,2-DIBROMOETHANE IN THE RAT. L W Wormhoudt¹, A M Hissink¹, J N Commandeur, R S Abdouelghof², A Makansi¹, F J van Heek² and N P E Vermeulen. ¹Department of Pharmacology, Division of Molecular Toxicology, Vrije Universiteit, Amsterdam, The Netherlands and ²Division of Toxicology, TNO Nutrition and Food Research Institute, Zeist, The Netherlands. Sponsor: N P E Vermeulen.


THURSDAY MORNING, MARCH 13
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
HALOGENATED HYDROCARBONS

Chairpersons: Jane Ellen Simmons, U.S. EPA, Research Triangle Park, NC and Marc Pariss, Washington State University, Pullman, WA

Displayed: 8:30 a.m. - 12:00 p.m.
Attended: 10:15 a.m. - 12:00 p.m.

TRICHLOROETHYLENE-INDUCED HEPATIC PROTEIN PATTERN ALTERATIONS IN MICE. F A Witzmann¹, C J Fulzi² and J C Lipscomb³. ¹Molecular Anatomy Lab, Indiana University, Purdue University, Columbus IN and ²USA, Armstrong Laboratory, Tri-Service Toxicology, Wright-Patterson AFB, OH.

PROMOTION BY TRICHLOROETHYLENE OF N-METHYL-N-NITROSOURA-INITIATED LIVER CANCER IN FEMALE B6C3F1 MICE. P M Kramer¹, J S Eggers², J R Latendresse³ and M A Pereira.¹ Medical College of Ohio, Department of Pathology, Toledo, OH and ²Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

HEPATOXICITY OF TRIHALOMETHANES (THMs) IN FEMALE MICE. A McDonald¹, C Gennings², Y M Sev³, W H Carter, Jr², L K Teuschler² and J E Simmons¹. ¹NHHEEL, US EPA, Research Triangle Park, NC; ²MVC, VCU, Richmond, VA and ³NCE, US EPA, Cincinnati, OH.

HEPATOPROTECTION RESULTING FROM ADMINISTRATION OF DIMETHYL SULFOXIDE TWENTY-FOUR HOURS AFTER CHLOROFORM OR BROMOBENZENE. R C Lind and A J Gandolfi. Department of Anesthesiology, University of Arizona, Tucson, AZ.

LOAEI AND NOAEI DETERMINATION FOR ACUTE, ORAL HEPATOXICITY OF CHLOROFORM AND BROMODICHLOROMETHANE (BDCM) IN F344 RATS. R A Pegram¹, J E Simmons¹, T M Ross¹, A McDonald¹ and T E Keegan¹. ¹U.S. EPA, NHHEEL, Research Triangle Park, NC and ²ESE/Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC.

EXTENT AND TIMELINESS OF TISSUE REPAIR DETERMINES THE DOSE-RELATED INCREASE IN TOXICITY OF TRICHLOROETHYLENE. G G Smith, R S Margiand and H M Meunier. Division of Toxicology and Louisiana Institute of Toxicology, College of Pharmacy and Health Sciences, Northeast Louisiana University, Monroe, LA.

LOSS OF HETEROZYGOosity ON CHROMOSOME 6 IN DICHLOROACETIC ACID- AND TRICHLOROACETIC ACID-INDUCED LIVER TUMORS IN FEMALE B6C3F1 MICE. L Tao, K Li, P M Kramer and M A Pereira. Medical College of Ohio, Department of Pathology, Toledo, OH.

DISINFECTION BY-PRODUCTS (DBPs): PREDICTION OF VARIOUS HEALTH EFFECTS ENDPOINTS USING QSAR. R Bruce. US EPA, National Center for Environmental Assessment-Cincinnati, Cincinnati, OH. Sponsor: H Choudhury.

EFFECTS OF TRICHLOROACETIC ACID ON PHOSPHORUS METABOLISM IN PERFUSED RAT LIVER. N V Reo¹ and T Hwang². ¹Department of Biochemistry and Molecular Biology, Wright State University Dayton, OH and ²Department of Medicine, Magnetic Resonance Lab, Wright State University, Dayton, OH. Sponsor: J M Frazier.

STRESS PROTEIN EXPRESSION BY DRINKING WATER CONTAMINANTS VINYLIDENE CHLORIDE AND CHLOROACETIC ACIDS IN PRECISION-CUT RAT LIVER. J B Wijesingera, X H Zeng, A J Gomoldji and K Dresdel. Department of Anestheology, University of Arizona, Tucson, AZ.

TRICHLOROETHYLENE-PROTEIN ADDUCTS IN CULTURED HUMAN AND RAT HEPATOCYTES. J M Griffin¹, J C Lipscomb² and N R Farnsworth.¹ University of Arkansas for Medical Sciences, Little Rock, AR and ²Tri-Service Toxicology, Wright-Patterson Air Force Base, OH.

ANALYSIS OF TRICHLOROETHYLENE IN BIOLOGICAL SAMPLES. C T Bishop¹, W T Brashear², D L Pollard³ and R Abbas¹. ¹Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; ²ManTech Environmental Technology, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH and ³USAF, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

AN ELECTRON CAPTURE GAS CHROMATOGRAPHY METHOD FOR ANALYSIS OF DICHLOROACETIC ACID, TRICHLOROACETIC ACID AND TRICHLOROETHANOL IN BIOLOGICAL MATRICES. H M Zhang¹, W T Brashear, G T Buttler², P Callaghan², R Black³ and R Abbas³. ¹ManTech Environmental Technology, Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; ²Naval Medical Research Institute, Detachment (Toxicology), Wright-Patterson Air Force Base, OH; ³Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH and ³USAF, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.
ELECTROSPIRY ANALYSIS OF BIOLOGICAL SAMPLES FOR TRACE AMOUNTS OF TRICHLOROACETIC ACID, DICHLOROACETIC ACID, AND MONOCHLOROACETIC ACID, WT Bratant, C.T. Bishop, and R. Abbas. ManTech Environmental Technology, Inc., Toxology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; *Toxology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH; and **GEO-Centers, Inc., Toxology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

THE INCREASED SENSITIVITY OF OLD FISCHER-344 RATS TO CARBON TETRACHLORIDE (CCL4)-INDUCED HEPATOTOXICITY DOES NOT APPEAR TO BE CAUSED BY AN INCREASE IN METABOLIC ACTIVATION OF CCL4, D.J. Schooff, J.P. Bruckner, Y.M. Sey, and J.E. Simmons. *Department of Pharmacology and Toxicology, University of Georgia, Athens, GA; and **NHEERL/U.S. EPA, Research Triangle Park, NC.

PRETREATMENT WITH ASCORBIC ACID (VITAMIN C) POTENTIATES CARBON TETRACHLORIDE-INDUCED HEPATOTOXICITY IN THE MALE SWISS WEBSTER MOUSE. R.J. Rosegren. Department of Pharmaceutical Sciences, College of Pharmacy, Nova Southeastern University, Davie, FL.

VITAMIN A AND GADOLINIUM CHLORIDE: COULD THEIR EFFECTS ON CYTOCHROME P-450 EXPLAIN THEIR EFFECTS ON CCL4-INDUCED LIVER INJURY? D.A. Badger, R.K. Kiester, J.M. Sauer, and J.G. Spies. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ.

EFFECTS OF a-TOCOPHEROL (T) AND a-TOCOPHERYL SUCINATE (TS) ADMINISTRATION ON RAT LIVER T AND TS SUBCELLULAR DISTRIBUTION AND PROTECTION AGAINST CARBON TETRACHLORIDE-INDUCED HEPATOTOXICITY. M.A. Timmerstein and M.W. Fariss. Department of Pharmaceutical Sciences, Washington State University, Pullman, WA.

INVESTIGATION OF THE MECHANISMS UNDERLYING METHANOL POTENTIATION OF CARBON TETRACHLORIDE (CCL4) HEPATOTOXICITY. S Chandl, A. McDonald, V.M. Sey, and J.E. Simmons. *Curriculum in Toxicology, University of North Carolina at Chapel Hill, Chapel Hill, NC; and **NHEERL, Research Triangle Park, NC.

ROLE OF OXIDATIVE STRESS IN CARBON TETRACHLORIDE-INDUCED LIVER INJURY IN RATS — IMMUNOHISTOCHEMICAL ANALYSIS USING ANTI-OHSG ANTIBODY. T. Ito, S. Takahashi, M. Hirose, K. Ogawa, and T. Shirai. 1st Department Pathology, Nagoya City University Medical School, Nagoya, Japan. Sponsor: N. Ito.

DEVELOPMENT OF A NEW CYTOTOXICITY ASSAY USING RECOMBINANT BACULOVIRUS INFECTED SF-21 CELLS THAT OVEREXPRESS GLUTATHIONE-S-TRANSFERASES. L.C. Maddox, N.C. Hames, and D.F. Grant. University of Arkansas for Medical Sciences, Little Rock, AR.


USING RECOMBINANT HUMAN KERATINOCTE CELL LINES TO MONITOR RESPONSES TO UV RADIATION AND SUNSCREEN FORMULATIONS. B.C. Jones, L. Paut, S. Cappal, M. Todd, and P. Gee. Mary Kay Inc., Dallas, TX; and **Nexematrix, Inc., Boulder, CO.

ASSESSMENT OF IN VITRO RENAL TOXICITY OF S-(1,2-DICHLOROVINYL)-L-CYSTEINE (DCVC) AND N-ACETYL DCVC (NA-DCVC) UTILIZING KIDNEY SLICES FROM RATS AND MICE. K.M. Lee, E.J. Mar, J.C. Parker, and R.J. Bull. Battelle PNRL, Richland, WA; and **NCEA, USEPA, Washington, DC.

VALIDATION OF THE CYTOSORPENT FOR IN VITRO CYTOTOXICITY STUDIES. A.T. Eldefrawi, C.J. Cao, R.J. Mioduszewski, D.E. Menking, J.J. Vales, V.L. Cestari, and M.E. Eldefrawi. *Department Pharmacology Exp. Therapy, University of Maryland School of Medicine, Baltimore, MD; and **Technology Directorate, US Army ERDC, Aberdeen Proving Ground, MD.

DIFFERENTIAL EFFECTS OF Pb2+ ON CRAT AND TH ACTIVITIES IN PC12 CELLS. X. Tian, X. Sun, and J.B. Sazsk. Department of Molecular and Cellular Physiology, University of Cincinnati, Cincinnati, OH.

ALTERATIONS OF CYTOSKELETAL TAU PROTEIN OF SH-SYSY HUMAN NEUROBLASTOMA CELLS EXPOSED TO MPTP. M. Ehrich and X. Song. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA.


ALTERATION OF INTRINSIC CALCIUM OSCILLATIONS IN CULTURED RAT ASTROCYTES BY TCD2 AND LEAD. R Barhoumi, E Tiffany-Castiglioni, S HSafe and R C Burghardt. Faculty of Toxicology, Texas A&M University, College Station, TX.

ALTERATION OF OXYTOCIN-INDUCED CALCIUM OSCILLATIONS IN HUMAN MYOMETRIAL CELLS. R C Burghardt1, R Barhoumi1, J Anderson1 and B M Sanborn1. 1 Texas A&M University, College of Veterinary Medicine, College Station, TX; 2SUNY at Stony Brook School of Medicine, Long Island, NY and 3University of Texas Medical School at Houston, Houston, TX. Sponsor: S HSafe.

IN VITRO EFFECT OF 4-VINYLCYCLOHEXENE DIEPOXIDE ON VIABILITY OF ISOLATED MOUSE PRE-ANTRAL FOLLICLES. E A Hollis, I G Sipes and P B Hoyer. Departments of Physiology and Pharmacology/Toxicology, University of Arizona, Tucson, AZ.

DIFFERENTIAL INHIBITION OF HEPATIC AND PANCREATIC FATTY ACID ETHER ESTER SYNTHASE BY TRM-1-COLY PHOSPHATE. B S Kaphalia, S M Green, V Santa Cruz and G A Ansari. Department of Pathology, University of Texas Medical Branch, Galveston, TX.

INTERACTIONS OF CADMIUM AND CALCIUM IN REGULATING HUMAN TROPHOBLAST (JAR) CELL PROLIFERATION, ROLE OF N-6 AMINOHEXYL)-5-CHLORO-1-NAPHTHALENE SULFONAMIDE (W7). R K Miller and S S Powlin. Departments of OB/GYN and Environmental Medicine, Environmental Health Sciences Ctr, University of Rochester, NY.

EVALUATION OF THE CYTOTOXICITY OF KETOCONAZOLE AND DE-N-ACETYL KETOCONAZOLE USING PRIMARY CULTURES OF NEONATAL RAT VENTRICULAR MYOCYTES. A M Benitez-Graham and D Acosta. College of Pharmacy, University of Texas at Austin, Austin, TX.

MEASUREMENT OF TRIGEMINAL NEURAL RESPONSES TO CHEMICAL IRRITANTS USING DIGITAL FLUORESCENCE IMAGING OF INTRACELLULAR CALCIUM (Ca2+). B P Bryant. Monell Chemical Senses Center, Philadelphia, PA. Sponsor: J Domanski.


TOXICITY IN MOUSE BONE MARROW CELLS TREATED WITH MONOCROTALINE PYRROLE (MCTP). A E Schulze1, J A Czart1 and R A Roth1. 1The University of Tennessee, College of Veterinary Medicine, Knoxville, TN and 2Michigan State University College of Veterinary Medicine, East Lansing, MI.

THURSDAY MORNING, MARCH 13
8:30 a.m. - 12:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
RESPIRATORY TRACT TOXICOLOGY:
MODELS, METHODS, SAFETY EVALUATION


Displayed: 8:30 a.m. - 12:00 p.m.

Attended: 10:15 a.m. - 12:00 p.m.

#1658 THE 1994 ICRP66 HUMAN RESPIRATORY TRACT MODEL AS A TOOL FOR PREDICTING LUNG BURDENS FOR RISK ASSESSMENT OF AMBIENT AEROSOLS. A M Jarabek, A C James2 and M B Snipes1. 1National Center for Environmental Assessment, USEPA, Research Triangle Park, NC; 2ACI and Associates, Richland, WA and Inhalation Toxicology Research Institute, Lovelace Biomedical and Environmental Research Institute, Albuquerque, NM.

VALIDATING A DOSIMETRIC INTRATRACHEAL NEBULIZATION TECHNIQUE FOR EVALUATION OF PULMONARY ANTI-INFLAMMATORY AGENTS TO PULMONARY RESPONSES. E J Price, J C Price, E Schonberg, J W亮点, R J Spengler, C G Schonberg, J R Brauer and J W亮点. Departments of Occupational and Environmental Health, University of Michigan, Ann Arbor, MI.


APPLICATION OF A CLOSED INHALATION EXPOSURE SYSTEM FOR STRESS-INDUCED MEASUREMENT OF METABOLIC AND PHYSIOLOGICAL RESPONSES TO TRAJECTORY DEPENDENCY. D K Donohue, M T Keeson, R E Smith, J W电台, J D Schaefer and J D Schaefer. 1US EPA/NEERL, Research Triangle Park, NC; 2US EPA/NEERL, Research Triangle Park, NC and 3University of North Carolina, Chapel Hill, NC.


INFLUENCE OF ORGANIC FILMS ON REACTIVITY AND HYDROSCOPICITY OF SULFURIC ACID AEROSOL. J G Xiong, C P Fang, L C Chen and M Lippmann. Nelson Institute of Environmental Medicine, New York University Medical Center, Tuxedo, NY.
THE USE OF PRECISION-CUT RAT LUNG SLICES AS AN IN VITRO TOOL IN TOXICOLOGY: EFFECTS OF DIESEL EXHAUST. C Montesi, F Fouquet, M Guerbet, J M Jouani, J P Morin. 1Laboratoire de Toxicologie, Rouen and 2INSERM U295, Rouen.

COMBUSTION OF ADVANCED COMPOSITE MATERIAL: MULTIVARIATE ANALYSIS OF SMOKE PARTICulates. C D Fleming, W J Lane, J H Graham and B J Larcom. 1ManTech Environmental Technology, Inc., Wright-Patterson Air Force Base, OH; 2Geo-Centers Inc., Wright-Patterson Air Force Base, OH and 3Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH. Sponsor: R. E. Wolfe.

BIOAEROSOL EXPOSURE ASSESSMENT USING FLUORESCENT IN SITU HYBRIDIZATION (FISH) WITH AUTOMATED DETECTION. P S Thorne, J L Lange and N A Lynch. Department of Preventive Medicine & Environmental Health, University of Iowa, Iowa City, IA.

EFFECT OF MILD TO MODERATE BRONCHOCONSTRICTION ON THE BREATHING PATTERN OF CONSCIOUS RATS. D J Murphy, J P Remminger, J A Williams and K A Gossett. SmithKline Beecham Pharmaceuticals, Toxicology US, King of Prussia, PA.

CAPSICIN POTENTIATES THE CHOLINERGICALLY-MEDIATED CONTRACTILE RESPONSE IN FORMALIN-TREATED HUMAN AIRWAY SMOOTH MUSCLE. S Bahn and I S Richards. Airways Reactivity Laboratory, College of Public Health, University of South Florida, Tampa, FL.

SENSORY IRRITATION IN MICE WITH CARPET EMISSION CHEMICALS. J C Studier and D A Lavoie. E. J. DuPont de Nemours and Co, Haskell Laboratory for Toxicology and Industrial Medicine, Newark, DE.

POTENTIAL OF 13 CARPET-ASSOCIATED CHEMICALS TO CAUSE SENSORY IRRITATION AT AMBIENT CONDITIONS. B R Duke, T A Karpeneck, C L Betchel, J E Mueller and R G Orb. 1Environmental Health Laboratory, Monsanto Company, St. Louis, MO and 2Environmental Sciences Center, Monsanto Company, St. Louis, MO.


COMPARISON OF ACUTE INHALATION TOXICITY OF FOUR CHLOROSULFONIC. S L Mudgett, J M Tobin, M S Macomber, L W Dochterman and G B Kolerar. Dow Corning Corporation, Midland, MI.

EDEMAGENESIS IN F-344 RATS EXPOSED TO SFE (FORMULATION A) ATMOSPHERES. E A Smith, E C Kimmel, S Prues, J E Reboulet, K Zepp, J English and R L Carpenter. Tri-Service Toxicology Consortium, Wright-Patterson Air Force Base, OH.

BAL SCREENING AND TWO-WEEK INHALATION STUDIES WITH ZELEC ELECTROCONDUCTIVE POWDERS IN RATS. D P Kelly, D B Warheit and T W Stone. DuPONT Haskell Laboratory, Newark, DE.

REVERSIBILITY OF ACUTE PULMONARY FIBROSIS IN RATS INHALING SIZE-SEPARATED CHRYSOTILE ASBESTOS FIBERS. K E Pinkerton, A Elliot, S R Frame and D B Warheit. 1University of California, Davis, CA and 2DuPont Haskell Laboratories, Newark, DE.


1,1,1,2-TETRACFLUOROETHANE (HFA-134a); ABSENCE OF CHRONIC INHALATION TOXICITY IN RATS AND DOGS. D J Alexander, Glaxo Wellcome Research & Development, Ware, Hertfordshire, UK. Sponsor: D G Perkins.

ACUTE, SUBCHRONIC AND REPRODUCTIVE TOXICITY EVALUATION OF QUADRICYCLANE VAPOR ON SPRAGUE-DAWLEY RATS. R E Wolfe, E R Kinkead, J M Feldmann, H F Leahy, L Narayanan and J S Eggers. 1ManTech Environmental Technology, Inc., Wright-Patterson Air Force Base, OH; 2Geo-Centers Inc., Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH and 3Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

INHALATION TOXICITY/NEUROTOXICITY STUDY OF A LIGHT ALKYLATE NAPHTHA DISTILLATE IN RATS. C Schreiner, E Lapadula, R Breglioli, Q Bu, D Burnett, F Koschier, P Podasky, R White and R Mandella. 1Petroleum Product Stewardship Council, Washington, DC and 2Huntingdon Life Sciences, East Millstone, NJ.


ACUTE TOXICITY EVALUATION OF JP-8 JET FUEL CONTAINING ADDITIVES. M L Feldmann, R E Wolfe, E R Kinkead, H F Leahy, W W Jederberg and D R Mattie. 1ManTech Environmental Technology, Inc., Wright-Patterson Air Force Base, OH; 2Naval Medical Research Institute, Toxicology Division, Wright-Patterson Air Force Base, OH and 3Toxicology Division, Armstrong Laboratory, Wright-Patterson Air Force Base, OH.

SUBSTANCE P RECEPTOR AGONIST AMELIORATES JP-8 JET FUEL-INDUCED LUNG INJURY. R F Robledo, V C Breeden, S Wang, R C Lantz and M L Witter. 1Department of Pharmacology/Toxicology, University of Arizona, Tucson, AZ and 2Steele Memorial Children’s Research Center, University of Arizona, Tucson, AZ.

FORMATION AND LOSS OF THE 4-AMINO-4-BIPHENYL-HEMOGLOBIN ADDUCTS IN RATS EXPOSED TO SIDESTREAM CIGARETTE SMOKE. S R Myers, M T Frazier-Godby, J A Spinnato, J Jordan and C G Garela. 1Department of Pharmacology and Toxicology, University of Louisville School of Medicine, Louisville, KY and 2University of Kentucky, Lexington, KY.
THURSDAY AFTERNOON, MARCH 13

1:30 p.m. - 4:30 p.m.
CCC: ROOMS 220/224-221/243

SYMPOSIUM SESSION:
TOXICITY OF NON-COPLANAR PCBs

Sponsored by: The Mechanisms, Regulatory and Safety Evaluation and Risk Assessment Specialty Sections
Chairperson: Lawrence J. Fischer, Michigan State University, East Lansing, MI

Research into the toxicity of PCBs has focused on the Ah-receptor. However, it is becoming increasingly clear that certain ortho-chlorine-substituted, non-coplanar PCB congeners have low affinity for the Ah-receptor, exhibit important biological activities. Actions of non-coplanar PCB congeners in a variety of biological systems have been discovered and the mechanisms for these effects are being elucidated. The objectives of this symposium are to examine the state of knowledge concerning the mechanisms of toxic action of non-coplanar PCBs and to identify similarities and differences using a variety of biological systems. Effects to be considered will include: neurotoxicity, estrogenicity, insulin release, neutrophil function, calcium regulation and relevant signal transduction systems. Finally, the symposium will address the need to consider non-coplanar congeners within the context of risk assessment. The use of Ah-receptor binding and its associated biological effects to assess the total toxicity of PCBs may no longer be defensible because of the actions produced by non-coplanar congeners. This symposium will provide documentation for that conclusion as well as focus attention on emerging mechanisms of PCB action that have received relatively little attention to date. The topics presented should be of interest to toxicologists interested in mechanisms of action, in PCB risk assessment and in regulatory toxicology.

#1688 1:30
TOXICITY OF NON-COPLANAR PCBs. L J Fischer. Institute for Environmental Toxicology and Department of Pharmacology/Toxicoogy, Michigan State University, East Lansing, MI.

#1689 1:35
INSULIN RELEASE PRODUCED BY NON-COPLANAR PCBs. L J Fischer. Institute of Environmental Toxicology and Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI.

#1690 2:05

#1691 2:40
MECHANISMS OF ACTIVATION OF NEURO-TROPHINS BY POLYCHLORINATED BIPHENYLS (PCBs). P E Ganey. Department of Pharmacology and Toxicology, National Food Safety and Toxicology Center, Institute for Environmental Toxicology, Michigan State University, East Lansing, MI.

#1692 3:15
NON-COPLANAR PCBs ALTER NEURONAL Ca+ REGULATION AND NEUROPLASTICITY BY A FKB12/RYANODINE RECEPTOR-MEDIATED MECHANISM. J N Possin. Department of Molecular Biosciences, School of Veterinary Medicine, University of California, Davis, CA.

#1693 3:50
NON-COPLANAR POLYCHLORINATED BIPHENYLS AND SECOND MESSENGER SYSTEMS IN NEURONS: STRUCTURE-ACTIVITY RELATIONSHIPS AND MODELS. P R S Kodavanti. Neurotoxicology Division, NIEHS/EPA, Research Triangle Park, NC.

4:25 DISCUSSION
THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 4:30 p.m.
CCC: BALLROOM C

WORKSHOP SESSION:
USE OF MODE OF ACTION INFORMATION IN CANCER RISK ASSESSMENT:
IMPLEMENTING EPA'S PROPOSED CANCER GUIDELINES


The practice of risk assessment is evolving within the USEPA and elsewhere within-in the U.S. Federal government. Current approaches focus on attempts to incorporate more of the available information into weight of the evidence decisions on hazard and risk. These approaches have been published within the context of the revised USEPA Proposed Guidelines for Carcinogen Risk Assessment (1). These new guidelines stress the importance of understanding and describing how an agent induces tumors (i.e. mode of action) in determining and estimating human cancer risk. The guidelines are meant to be flexible enough to allow for the advances in the science of carcinogenesis. Past practice of identifying cancer hazards through toxicologic testing is being replaced by efforts to characterize hazards by evaluating mechanistic data and developing biologically-based models. This approach may help to further define the concept of "situational" carcinogenesis and break down the dichotomy between traditional methods used in the evaluation of cancer and noncancer effects. New approaches to dose-response assessment include increased emphasis on biologically-based dose-response models and an explicit evaluation of dose-response in two steps. The first step focuses on dose response within the range of the available data. The second step involves the use of all of the data to infer the shape of the dose-response curve in the range of extrapolation. The guidelines detail approaches to describe a point of departure for extrapolation which is data dependent and comparable to benchmark dose approaches used for many noncancer endpoints. They also discuss the use simple default approaches to extrapolation including the development of either probablistic estimates of risk or margins-of-exposure (M-O-E). Case studies provide a useful approach to demonstrate these attributes of the proposed guidelines. (1) U.S. Environmental Protection Agency (1996). Proposed guidelines for carcinogen risk assessment. Federal Register 61 (No. 79), 17960-18011.

#1699 1:30 IMPLEMENTING EPA'S PROPOSED CANCER GUIDELINES. W H Farland. National Center for Environmental Assessment, U.S. Environmental Protection Agency (USEPA), Washington, DC.
#1702 2:50 CHLOROFORM: EXPLORING NON-LINEAR AND LINEAR EXTRAPOLATION MODELS. M E Anderson and D Robinson. International Life Sciences Institute (ILSI), Washington, DC.
#1704 3:50 SUMMARY AND REGULATORY IMPLICATIONS. P A Fenner-Crisp. U.S. Environmental Protection Agency, Washington, DC.

4:10 DISCUSSION
THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 235-236

POSTER DISCUSSION SESSION:
EXPOSURE MODELING FOR METALS


Displayed: 1:30 p.m. - 4:30 p.m.
Discussed: 2:30 p.m. - 4:30 p.m.

#1705 FITTING A SCALED PHYSIOLOGICALLY-BASED MODEL OF Cr(III) AND Cr(VI) KINETICS TO HUMAN PLASMA, RED CELL, AND URINE CONCENTRATION MEASUREMENTS. E J O'Flaherty1, B D Kerger2, G E Corbett3, S Hays4 and D J Paukenbach5. 1University of Cincinnati, Department of Environmental Health, Cincinnati, OH and 2ChemRisk Division of McLaren/Hart, Irvine, CA.

#1706 PREDICTED VERSUS OBSERVED BLOOD LEAD LEVELS FOR A SMELTER SITE. J S Tsuji1, K She1 and J R Frickel2. 1Kleinfelder, Inc., Bellevue, WA and 2Advanced GeoServices Corporation, Salt Lake City, UT. Sponsor: R C Custer.

#1707 CHANGES IN CHILDHOOD LEAD EXPOSURE ASSOCIATED WITH SOIL ABATEMENT IN URBAN AREAS. R W Elias and A H Marcus. National Center for Environmental Assessment, US Environmental Protection Agency, Research Triangle Park, NC.


#1709 KEY CONSIDERATIONS FOR ASSESSMENT OF CHROMIUM (VI) EXPOSURES AND RISKS FROM COOLING TOWER AEROSOLS. R O Richter1, B D Kerger2 and D Suder2. 1ChemRisk Division of McLaren/Hart, Inc., Irvine, CA and 2Precise Environmental Consultants, Davis, CA.

#1710 DETOXIFICATION THRESHOLDS FOR INGESTION AND INHALATION EXPOSURES TO HEXAVALENT CHROMIUM IN HUMANS BASED ON MEASURED REDUCING CAPACITIES OF ORGANS, CELLS, POPULATIONS, AND BODY FLUIDS. G E Corbett1, B D Kerger2, A Camoinano2, M Baginisse2, C Benicelli2 and S De Fred1. 1ChemRisk Division of McLaren/Hart, Inc., Irvine, CA and 2Institute of Hygiene and Preventive Medicine, University of Genoa, Italy.

#1711 STEADY-STATE OBSERVATIONS IN BLOOD AND URINE OF HUMAN VOLUNTEERS FOLLOWING INGESTION OF HEXAVALENT CHROMIUM IN DRINKING WATER. D J Paukenbach1, D G Dodge2, B E Multi3, S M Hays4, B A Brien5 and B D Kerger6. 1ChemRisk Division of McLaren/Hart, Inc., Alameda, CA; 2ChemRisk Division of McLaren/Hart, Lake Mary, FL and 3ChemRisk Division of McLaren/Hart, Inc., Irvine, CA and 4ChemRisk Division of McLaren/Hart, Inc., Cleveland, OH.

#1712 EFFECTS OF SUCCIMER ON TISSUE Pb AND Pb EXCRETION IN RHESUS MONKEYS DETERMINED USING A STABLE Pb ISOTOPE TRACER. D R Smith1, D Woolard1, M Lack2 and N Laflin2. 1Biological Sciences & Environmental Toxicology, University of California, Santa Cruz, CA and 2Harlow Primate Laboratory, University of Wisconsin, Madison, WI.

#1713 THE SKELETON AS AN ENDGENOUS SOURCE OF Pb EXPOSURE AND THE EFFECTS OF BONE Pb AND THERAPEUTIC TREATMENTS ON BONE LOSSES DUE TO OSTEOPOROSIS. C L Seaton1, J Osterholz2 and D R Smith1. 1Biological Sciences and Environmental Toxicology, University of California, Santa Cruz, CA and 2Laboratory Medicine, University of California, San Francisco, CA.

#1714 MONTE CARLO MODELING OF CHILDHOOD LEAD EXPOSURE: DEVELOPMENT OF A PROBABILISTIC METHODOLOGY FOR USE WITH THE US EPA IEUBK MODEL FOR LEAD IN CHILDREN. P E Goodrum2, G L Diamant1, N J Hassett3 and D L Johnson1. 1USNY College of Environmental Science and Forestry, Syracuse, NY and 2Syracuse Research Corporation, Syracuse, NY.

#1715 USE OF A MONTE CARLO EXPOSURE MODEL TO ESTIMATE BLOOD LEAD DISTRIBUTIONS IN U.S. CHILDREN. J T Cohen, M A Lampson and B D Beck. Gradient Corporation, Cambridge, MA.

THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 4:30 p.m.
CCC: ROOMS 205-207

POSTER DISCUSSION SESSION:
KINETICS AND TOXICITY OF MTBE, ETBE, AND TAME


Displayed: 1:30 p.m. - 4:30 p.m.
Discussed: 2:30 p.m. - 4:30 p.m.

#1716 CELL PROLIFERATION IN F344 RAT KIDNEY AND CD-1 MOUSE LIVER FOLLOWING INHALATION OF ETHYL TERTIARY-BUTYL ETHER (ETBE). D C Wolf, B Wong, M A Medinsky and J A Bond. CIIT, Research Triangle Park, NC.

#1717 METABOLISM OF METHYL T-BUTYL ETHER IN F-344 RAT LIVER MICROSOVES. T S Post and S Borghoff. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#1718 EVALUATION OF THE DEVELOPMENTAL TOXICITY OF INHALED TERTIARY-AMYL METHYL ETHER IN MICE AND RATS. F Helck1, R W Tyf2, M C Marr3, C B Myers2, B Elswick1, R A James1 and D H Ponder. 1Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 2Research Triangle Institute, Research Triangle Park, NC.

#1719 BLOOD PHARMACOKINETICS OF TERTIARY-AMYL METHYL ETHER IN MALE AND FEMALE RATS AND MICE FOLLOWING INHALATION EXPOSURE. S C Sunner, B Asgharian and T R Fennell. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.
THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION: PESTICIDES

Chairpersons: Philip Chambers, University of Dublin, Dublin, Ireland and Robert Chapin, NIEHS, Research Triangle Park, NC

Displayed: 1:30 p.m. - 5:00 p.m.
Attendees: 1:30 p.m. - 3:15 p.m.

#1729

PHYSIOLOGICALLY-BASED PHARMACOKINETIC (PBPK) MODEL ASSESSMENT OF METHYL-1-BUTYL ETHER (MTBE) IN GROUNDWATER FOR A BATHING AND SHOWERING DETERMINATION.
H V Rao and G L Ginsberg, State of Connecticut, Department of Public Health, Hartford, CT.

#1720

ELIMINATION OF 14C-ETHYL-1-BUTYL ETHER (ETBE)-DERIVED RADIOACTIVITY FROM RATS AND MICE FOLLOWING SINGLE AND REPEATED EXPOSURES. S J Borghoff, C L Laether, M Turner, K Roberts, B Asgharian and G Wright. CIIT, Research Triangle Park, NC and 1ARCO Chemical Company, Newtown Square, PA.

#1721

LACK OF EVIDENCE FOR THE INVOLVEMENT OF FORMALDEHYDE IN THE HEPATOCARCINOCBOOSTIVITY OF METHYL-1-BUTYL ETHER (MTBE).
M Casanova, C Laether and D A Heck.
CIIT, Research Triangle Park, NC.

#1722

ACUTE EFFECTS OF ETHYL-1-BUTYL ETHER (ETBE) IN MALE VOLUNTEERS. A Niithinen, G Johanson and A Loef. Department of Toxicology and Chemistry, National Institute for Working Life, Solna, Sweden and 1Department of Occupational and Environmental Medicine, University Hospital, Uppsala, Sweden.

#1723


#1724

TOXICOKINETICS OF ETHYL-1-BUTYL ETHER (ETBE) IN MALE VOLUNTEERS. A Loef, A Niithinen and G Johanson. Department of Toxicology and Chemistry, National Institute for Working Life, Solna, Sweden and 1Department of Occupational and Environmental Medicine, University Hospital, Uppsala, Sweden.

#1725

EFFECT OF A THIRTEEN-WEEK INHALATION EXPOSURE TO ETHYL TERTIARY-BUTYL ETHER ON F344 RATS AND CD-I MICE. M A Medinsky, D C Wolf, R C Cattley, B Wong, D B Janszen, D C Dorman, K Morgan, G Farris, G A Wright and J A Bond. Chemical Industry Institute of Toxicology, Research Triangle Park, NC and 1ARCO Chemical Company, Newtown Square, PA.

#1726

CHEMICAL BINDING TO α2u-GLOBULIN FOLLOWING GAVAGE DOING OF 14C-METHYL TERTIARY-BUTYL ETHER (MTBE) IN F-344 RATS. J S Prescott-Mathews, M J Garrett and S J Borghoff. Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

#1727

INDUCTION OF APOPTOSIS IN INDIVIDUALS EXPOSED TO METHYL TERTIARY-BUTYL ETHER (MTBE). E Mordechai, A Vojdani, I Magtoto, P C Choppa and N Brautbar. ImmunoSciences Lab., Inc., Beverly Hills, CA; 1Drew University School of Medicine and Science, Los Angeles, CA and 1Center for Internal Occupational and Toxicological Medicine, Los Angeles, CA. Sponsor: M Mehlman.

#1728

DETECTION OF CIRCULATING METHYL TERTIARY-BUTYL ETHER (MTBEA) ANTIBODIES IN PETROL STATION ATTENDANTS. A Vojdani, E Mordechai and N Brautbar. ImmunoSciences Lab., Inc., Beverly Hills, CA; 1Drew University School of Medicine and Science, Los Angeles, CA and 1Center for Internal Occupational and Toxicological Medicine, Los Angeles, CA. Sponsor: M Mehlman.

#1729

COMPARISON OF EFFECTS OF UREA PESTICIDES AND THE METABOLITES IN RAT FRESHLY ISOLATED AND CULTURED HEPATOCYTES.

#1730

COMBINATION TOXICOLOGY OF GLYPHOSATE WITH SURFACTANTS AND OTHER HERBICIDES. W F Hayward and D R Farmer. Monsanto Company, St. Louis, MO.

#1732

SUBCHRONIC TOXICITY OF ROUNDUP® HERBICIDE AND GLYPHOSATE TO CATTLE. D R Farmer, A M Kirk and W F Hayward. Monsanto Company, St. Louis, MO.

#1733


#1734

RESULTS OF A TWO-YEAR DIETARY TOXICITY/ONCOGENICITY STUDY OF ORTHO-PHENYLPHENOL (OPP) IN B6C3F1 MICE. J F Quast, R J McGuirk and R J Rocitta. The Toxicology Research Laboratory, The Dow Chemical Company, Midland, MI.

#1735

A 90-DAY INHALATION NEUROTOXICITY STUDY OF PHOSPHINE IN RATS. G J Schaefer, D G Shaheen, M Gruenberg, W M Busey and P E Newton. 1MPI Research, Mattawan, MI; 2Experimental Pathology Laboratories Inc., Herndon, VA and 3DEGESCH America, Inc., Weyers Cave, VA.

#1736

AN ACUTE INHALATION NEUROTOXICITY STUDY OF PHOSPHINE IN RATS. W M Busey, G J Schaefer, M Gruenberg, P E Newton and D G Shaheen. Experimental Pathology Laboratories, Herndon, VA; 1MPI Research, Mattawan, MI and 2DEGESCH America, Inc., Weyers Cave, VA.

#1737

EFFECTS OF PHOTOSOMERS OF CYCLODIENE INSECTICIDES ON LIVER AND MICROSMAL CYTOCHROME P-450 IN RATS. L V Jovanovich, L T Martin, A A Podowski and M A Q Khan. Department of Biological Sciences, University of Illinois at Chicago, Chicago, IL.
CAPILLARY ELECTROPHORESIS (CE) METHODS FOR THE SEPARATION OF CHIRAL AND ACHIRAL PESTICIDES. K F Pennetta, R L Reilly and D Sheu. Department of Toxicology, North Carolina State University, Raleigh, NC.

RISK-ASSESSMENT BASED REGULATION IS ESSENTIAL TO AN EFFECTIVE PESTICIDE POISONING REDUCTION PROGRAM. P Sinhaseni. Chulalongkorn University, Bangkok, Thailand.

BIOCHEMICAL TOXICITY OF 1,3-DIFLUORO-2-PROPANOL (DFP), THE MAJOR INGREDIENT OF THE PESTICIDE GLIFOTON; THE POTENTIAL OF 4-METHYLPIRAZOLE (4MP) AS AN ANTIDOTE. R J Mead, M G Feldwick, U Prause, P S Nokales and P J Kozyniak. School of Biological and Environmental Sciences, Murdoch University, Murdoch, Western Australia and Toxicology Research Center, University at Buffalo, Buffalo, NY.

NEUROTOXICITY OF THE ORGANOCARBON INSECTICIDE ΗΕΠΤΑΧΛΟΡ AND ITS ROLE IN PARKINSONISM. M L Kirby and J R Bloemquist. Department of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, VA.

HEPTACHLOR INCREASES DOPAMINE TRANSPORTER PROTEIN EXPRESSION: POSSIBLE MECHANISM OF INCREASED RISK OF PARKINSON'S DISEASE BY PESTICIDES. G W Miller, M Kirby, J Bloemquist and A J Levey. Department of Neurology, Emory University, Atlanta, GA.

A MODEL FOR THE TRANSLATION AND METABOLISM OF WATER SOLUBLE PESTICIDES USING DUCK AND HEN EGGS. C M Chambers, L M McMahon and P L Chambers. Department of Pharmacology and Therapeutics, University of Dublin, Trinity College, Dublin, Ireland.

DEET BLOOD LEVEL STUDIES IN HUMANS FOLLOWING DERMAL APPLICATION AND IN DOGS FOLLOWING ORAL ADMINISTRATION. T G Oshini, M W Gill, K L Gabriel, R E Ouellette and G P Schoeny. DEET Joint Venture/Chemical Specialties Manufacturers Association, Washington, DC.

ACOION OF IMIDACLOPRID INSECTICIDE AND ITS METABOLITES AT NICOITIC ACETYLCHOLINE RECEPTOR OF MOUSE BRAIN. S I Chao, B Latli and J E Cauda. Environmental Chemistry and Toxicology Laboratory, Department of Environmental Science, Policy, and Management, University of California, Berkeley, CA. Sponsor: H. Huang.


Analytical Sciences, Durham, NC and ImmunoToxicology Branch, U.S. EPA, Research Triangle Park, NC.

INHIBITION AND INDUCTION OF CYP1A EXPRESSION IN RAINBOW TROUT (ONCHARUS MYRINUS) BY PROPICONAZOLE. S L Levine and J T Otis. Center for Environmental Toxicology and Statistics, Department of Zoology, Miami University, Oxford, OH. Sponsor: J W Fisher.

THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
ORGANOPHOSPHATE TOXICITY

Chairpersons: Marion Ehrich, Virginia-Maryland Regional College of Vet. Med., Blacksburg, VA and Rudy Richardson, University of Michigan, Ann Arbor, MI

Display: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

ANTAGONISM OF ORGANOPHOSPHORUS INTOXICATION WITH STERICALLY STABILIZED LIPOSOMES (SL) ENCAPSULATING RECOMBINANT PARAOXONASE. I Petrikovics, Q Hu, K Hong, L Pei, W D McGuire, L E Cannons, D Papahadjopoulos and J L Wray. Department of Medical Pharmacology and Toxicology, Texas A&M University, College of Medicine, College Station, TX and Department of Cellular and Molecular Pharmacology, University of San Francisco, CA.

IN VITRO PROPERTIES OF STERICALLY STABILIZED LIPOSOMES ENCAPSULATING RECOMBINANT PARAOXONASE. Q Hu, I Petrikovics, K Hong, D Papahadjopoulos, L Pei, W D McGuire, G Samburov and J L Wray. Department of Medical Pharmacology and Toxicology, Texas A&M University, College of Medicine, College Station, TX and Department of Cellular and Molecular Pharmacology, University of California, San Francisco, CA.

INVESTIGATION OF SEQUENTIAL EXPOSURE OF MOUSE NEUROBLASTOMA CELLS TO ORGANOPHOSPHORUS ESTERS (OPs). L Carroll, M Ehrich and B Veronelli. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA and U.S. EPA, HERL, Research Triangle Park, NC.

INTERACTIONS OF PARAOXON WITH MOUSE BRAIN ACETYLCHOLINESTERASE. S A Kardos and L G Salinas. UMDNJ, Graduate School of Biomedical Sciences, Newark, NJ.

TISSUE ACETYLCHOLINESTERASE SENSITIVITY TO CHLORPYRIFOS-OXON: WHAT DO TISSUE IC50 VALUES REPRESENT? S R Mortensen, S Brimijoin, M J Hooper and S Padilla. 1Department of Environmental Toxicology and TIWET, Clemson University, Clemson, SC; 2Department of Pharmacology, Mayo Clinic, Rochester, MN and 3Neurotoxicology Division, U.S. EPA, Research Triangle Park, NC.

DEVELOPMENTAL PROFILES OF TWO ORGANOPHOSPHATE DETOXIFYING ENZYMES: CARBOXYLESTERASE AND A-ESTERASE. S M Chanda1, S R Mortensen2, S Barone, J R, V C Moser and S Padilla. 1Curriculum in Toxicology, University of North Carolina at Chapel Hill, Chapel Hill, NC; 2Department of Environmental Toxicology and TIWET, Clemson University, Clemson, SC and 3Neurotoxicology Division, NHEERL, U.S EPA, Research Triangle Park, NC.

CHLORPYRIFOS (CPF) INTERFERES WITH VISUALLY-CONTROLLED EYE GROWTH IN CHICKENS. A M Geller, A A Abdel-Rahman, R I. Peiffer, M B Abova-Dona and W K Boyes. U.S. EPA, NHEERL, Research Triangle Park, NC; Duke University, Durham, NC and 3University of North Carolina, Chapel Hill, NC.

DIRECT ACTION OF CHLORPYRIFOS, PARATHION AND THEIR OXONS ON THE NICOTINIC ACETYLCHOLINE RECEPTOR OF TURBID ELECTROPLAX. E J Katz, M E Eslafarzi and T Eldefrawi. Department of Pharmacology and Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD.

THE EFFECTS OF CHLORPYRIFOS EXPOSURE ON ESTERASE ACTIVITIES OF NEONATAL RATS. J Tang, J E Chambers, R L Carr and L L Ho. Center for Environmental Health Sciences, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS.

STEREOSELECTIVE INHIBITION OF ERYTHROCYTE ACHE FROM THREE SPECIES BY ISOMALTATHION. S Jianmenglu, C E Berkman, C M Thompson and R J Richardson. Toxicology Program, University of Michigan, Ann Arbor, MI; 2Department of Chemistry and Biochemistry, San Francisco State University, San Francisco, CA and 3Department of Chemistry, University of Montana, Missoula, MT.

AN ORGANOPHOSPHATE FROM THE SOLUBLE FRACTION OF MAMMALIAN LIVER. S L Primo-Parma, C Hau, S Billecke, C A Broomfield and B N La Du. 1Department of Anesthesiology, University of Michigan, Ann Arbor, MI and 2United States Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, Aberdeen, MD. Sponsor: W Weber.

NEUROPATHY IN MAN FOLLOWING ISOENZYMATIC POISONING. A Moretz and M Letti. Università degli Studi di Padova, Padua, Italy.

STANDARDIZING BLOOD CHOLINESTERASE DETERMINATIONS FOR MONITORING PESTICIDE EXPOSURES. S W Wilson, J E Billett, I D Henderson, M A O'Malley, J R Sanborn and K Or. 1Department of Avian Science, University of California, Davis, CA and 2Department of Pesticide Regulation, California EPA.
INVESTIGATION INTO THE ROLES OF CYP1A1 AND CYP2B1 IN THE DESULFURATION OF THE PHOSPHOROTHIONATE INSECTICIDES PARATHION AND CHLORPYRIFOS IN RAT LUNG MICROSONES. J.S. Boone, L. Ho and J. Chambers. Center for Environmental Health Sciences, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS.

DEVELOPMENTAL CHANGES IN A-ESTERASE ACTIVITY TOWARD PHOSPHOROTHIONATE OXONS IN MALE AND FEMALE RATS. T.T. Atteberry, H.W. Chambers and J.E. Chambers. 'Center for Environmental Health Sciences, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS and Department of Entomology, Mississippi State University, Mississippi State, MS.

EFFECT OF CHLORPYRIFOS ON HEPATIC ɣ-GLUTAMYL TRANSFERASE (GGT) AND XENOBIO- TIC METABOLIZING ENZYMES IN RATS. K.H. Hidasa and R.R. Dalvi. School of Veterinary Medicine, Tuskegee University, Tuskegee, AL.

ESTerase INHIBITION BY DIAZINON POTENTIATES ETHYL CARBAMATE-INDUCED IMMUNOSUPPRESSION IN FEMALE BALB/c MICE. J.C. Jeong, S.W. Cha, H.J. Kim, H.C. Kim and K.P. Lee. Toxicology Research Center, Korea Research Institute of Chemical Technology, Taejon, Korea.

TRICHLOROETHYLENE METABOLISM BY THE JAPANESE MEDAKA (IN VITRO). M.R. Miller, G.W. Butler, P.D. Confer, S.M. Bandiera, C. Stamni and J.C. Lipscomb. 'Department of Biochemistry, West Virginia University Medical Center, Morgantown, WV; 'ManTech Environmental, Wright-Patterson AFB, OH; 'Geo-Centers, Inc., Wright-Patterson AFB, OH; 'Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC, Canada and 'Toxicology Division, Armstrong Laboratory, Wright-Patterson AFB, OH. Sponsor: R. Wolfe.

CYP1A INDUCTION AND ITS INFLUENCE ON AFLATOXIN B1 METABOLISM AND DNA BINDING IN ZEBRAFISH (DANIO RERIO). C.M. Truxel, D.R. Bukler, J.D. Hendricks and G.S. Bailey. Oregon State University, Corvallis, OR.

BIOTRANSFORMATION OF 7-ETHOXYCOUMARIN BY PRECISION-CUT TROUT LIVER SLICES. K.M. Kleinow, J.W. Gooch and W. de Wolf. 'Louisiana State University, School of Veterinary Medicine, Baton Rouge, LA; 'Procter & Gamble Co., ESD, Cincinnati, OH and 'Procter & Gamble NV, ETC, Strombeck-Bever, Belgium. Sponsor: L. Sauers.


EFFECTS OF INDUCERS AND INHIBITORS ON THE MICROSOMAL METABOLISM OF STYRENE TO STYRENE OXIDE IN MICE. G.P. Carlson. School of Health Sciences, Purdue University, West Lafayette, IN.

MASS SPECTRAL PATTERN RECOGNITION FOR THE IDENTIFICATION OF UNKNOWN ANABOLIC STEROIDS. T.M. Williams, A.K. Kind and D.W. Hill. Departments of Pharmaceutical Sciences and Microchemistry, University of Connecticut, Storrs, CT.

RATIONAL ENZYME DESIGN: COMPUTER MODELING AND SITE-DIRECTED MUTAGENESIS AS TOOLS TO IMPROVE CATALYTIC ACTIVITY AND SPECIFICITY OF ORGANOPHOSPHORUS HYDROLASE. B.D. Kuhlmann, L. Scapozza, K. Lai, J. Grimsley and J. Wild. 'Department of Biochemistry and Biophysics, Texas A&M University, College Station, TX and 'Department of Pharmacy, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland. Sponsor: K. Ramos.

ɣ-GLUTAMYLTRANSPEPTIDASE (GGT) ACTIVITY IN RAT LIVER IS INCREASED IN STREPTOCOCCUS-INDUCED (STZ) DIABETES. P.D. Cornwall, B.H. Morel, H.M. Smith, R.A. Sanders, J.E. Klausing and J.B. Watkins. Medical Sciences Program, Indiana University School of Medicine, Bloomington, IN and 'Department of Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN.


METABOLISM AND DISPOSITION OF 1-C-PHEN- NOLPHTHALIN IN FEMALE F344 RATS AND B6C3F1 MICE. K.J. Griffin, V. Godfrey and L.T. Burke. NIEHS, Research Triangle Park, NC.

FLAVIN-CONTAINING MONOOXYGENASE (FMO) IN RHESUS MACAQUE LUNG: EXPRESSION OF FM20PROTEIN, mRNA AND ANALYSIS OF THE eDNA. M.F. Yueh, S.K. Kraeger and D.E. Williams. Toxicology Program, Oregon State University, Corvallis, OR.

SPECIES-DOSE- AND SEX-DEPENDENT METABOLISM OF GEMFIBROZIL (GEM) IN RATS AND HAMSTERS. D.P. Coleman, K.J. Dix, A.R. Jeffcoat and H.B. Matthews. Research Triangle Institute, Research Triangle Park, NC and 'NIEHS, Research Triangle Park, NC.


EFFECTS OF DIETARY CASEIN LEVELS IN F344 RATS ON THE HEPATIC S9-MEDIATED Muta- GENIC ACTIVATION OF AFLATOXIN B1 IN SALT- MONELLA. G.M. Woodall, W.M. Hagemann and D.M. DeMarini. Pacific Environmental Services, Inc., Research Triangle Park, NC; 'North Carolina State University, Raleigh, NC and 'US EPA, NIEERL, Research Triangle Park, NC.

OXIDATION OF DICLOFENAC TO A REACTIVE INTERMEDIATE BY ACTIVATED NEUTROPHILS. J.P. Uetrecht and G. Miyamoto. Faculty of Pharmacy, University of Toronto, Toronto, Canada. Sponsor: P.G. Wells.

OXIDATION OF A METABOLITE OF INDOMETHACIN (DOM) TO REACTIVE INTERMED- IATES BY ACTIVATED NEUTROPHILS, HCL, AND THE MYELOPEROXIDASE SYSTEM. C. Ju and J.P. Uetrecht. Faculty of Pharmacy, University of Toronto, Toronto, Canada. Sponsor: P.G. Wells.
THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
RECEPTOR BIOLOGY/SIGNAL TRANSDUCTION

Chairpersons: Brian D. Thrall, Battelle Pacific Northwest Laboratory, Richland, WA and Coral A. Lamantiaire, University of Alabama at Birmingham, Birmingham, AL.

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 5:00 p.m.

#1795 STUDIES ON THE MECHANISM OF PEROXISOME PROLIFERATION BY CLOFIBRIC ACID ANALOGS. S M Rongwala, M L O'Brien, J W Lawrence, P J Echol, V Tortorella, F Loiodice, A Longo, D J Noonan and D R Feller. "The Ohio State University, Columbus, OH; "University of Kentucky, Lexington, KY; "Eli Lilly and Company, Indianapolis, IN; "University of Bar, Bari, Italy and "The University of Mississippi, University, MS.


#1785 EFFECTS OF TRICHLORACETIC ACID (TCA) AND CLOFIBRIC ACID (CFA) ON DNA BINDING ACTIVITY TOWARDS THE SPI CONSENSUS SEQUENCE. G A Orner, M K Smith, B J Bull and D Thrall. Molecular Biosciences Department, Pacific Northwest National Laboratory, Richland, WA.

#1798 IDENTIFICATION OF NOVEL CIS-ACTING ELEMENTS RESPONSIVE TO BENZO(A)PYRENE WITHIN THE c-fa-RAS PROMOTER. C M Bral and K S Ramos. Faculty of Toxicology, Texas A&M University, College Station, TX.

#1799 THE XENOESTROGEN p,p'-DEDD FUNCTIONS AS A XENOBIOGEN IN HUMAN BREAST EPITHELIAL CELLS: DIFFERENTIAL EFFECTS OF ESTROGENIC AGENTS ON PROLIFERATION. K Shen and R F Novak. Institute of Chemical Toxicology, Wayne State University, Detroit, MI.

#1800 EGF AND CELL PROLIFERATION IN MAMMARY GLANDS OF FEMALE RATS EXPOSED TO TCDD. A Dalu, N M Brown and C A Lamantiaire. Department of Pharmacology and Toxicology, University of Alabama at Birmingham, Birmingham, AL.

#1805 THE Ca2+ SIGNAL IS IMPAIRED BY HEAVY METALS IN MADIN-DARBY CANINE KIDNEY CELLS (MDCK). R Indurti, S Wong, S Casio and J Bressler. Kennedy Krieger Research Institute and Department of Environmental Health Sciences, Johns Hopkins University, Baltimore, MD.

#1806 EFFECTS OF DEVELOPMENTAL METHYL-MERCURY EXPOSURE ON PROTEIN KINASE C ISOFORMS. D K Parran, W M Mundy, W C Wetsel and S B Barone, Jr. "Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC; "Neurotoxicology Division, US EPA, Research Triangle Park, NC and "National Institute of Environmental Health Sciences, Research Triangle Park, NC.

THURSDAY AFTERNOON, MARCH 13
1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL

POSTER SESSION:
REPRODUCTIVE TOXICITY

Chairpersons: Kimberly Treinen, SmithKline Beecham Pharmaceuticals, King of Prussia, PA and Stephen B. Harris, Stephen B. Harris Group, San Diego, CA.

Displayed: 1:30 p.m. - 5:00 p.m.
Attended: 3:15 p.m. - 3:15 p.m.

#1801 EFFECTS OF PEROXYANODATE ON EPIDERMAL GROWTH FACTOR (EGF)- AND INSULIN-DEPENDENT GROWTH AND SIGNAL TRANSDUCTION IN NORMAL MOUSE MAMMARY EPITHELIAL CELLS. B S McIntyre and P W Sylvester. Hormonal Carcinogenetics Laboratory, Pharmacology and Toxicology Program, College of Pharmacy, Washington State University, Pullman, WA.

#1802 PHOSPHORYLATION OF C-JUN STIMULATED IN PRIMARY CULTURED RAT LIVER PARENCHYMA L CELLS BY A COPLANAR POLYCHLORINATED DIPHENYL. K Tanno and Y Aoki. National Institute for Environmental Studies, Tsukuba, Ibaraki, Japan.

#1803 N-DEOXY-4,4,6-DIMETHYL PROSTAGLANDIN E, MEDIATED CYTOTOXICITY IN LLC-PK1 CELLS IS SENSITIVE TO A THROMBOXANE RECEPTOR ANTAGONIST. T J Weber, S S Lau and T J Monks. Division of Pharmacology & Toxicology, University of Texas at Austin, Austin, TX.

#1804 THE TOXICITIES IN MICE OF A NOVEL ANTI-SENSE COMPOUND TARGETING C-RAF KINASE. J Pullman, L Ackerman, D K Monteith, R S Geary and C B Spankohl. Pharmaron Research International, Olpany, PA and *ISIS Pharmaceuticals, Inc., Carlsbad, CA.


#1808 EVALUATION OF THE REPRODUCTIVE TOXICITY OF ORTHO-PHENYLDIENOL (OPP) IN A TWO-GENERATION RAT REPRODUCTIVE TOXICITY STUDY. D A Eigenberg, S G Lale, G K Sangha and J H Thysen. Bayer Corporation, Agriculture Division, Toxicology Department, Stilwell, KS.
DIET-INDUCED CHANGES IN TESTICULAR TOXICITY OF FLUTAMI DE ARE MEDIATED VIA ALTERED LH AND HYDROXYFLUTAMI DE LEVELS. C W Chang1, J E Singh, J E Leatney2, R W Hart and J Gandy. University of Arkansas for Medical Sciences, Little Rock, AR and the National Center for Toxicological Research, Jefferson, AR.

MITOGEN-ACTIVATED KINASES (MAPK) ARE INVOLVED IN THE REGULATION OF OVARIAN APOPTOSIS. A N Hirshfield, J A Flaws, A M DeSantis, E E Silberge d, and M A Davis. Department of Anatomy, University of Maryland, Baltimore, MD; Department of Epidemiology and Preventive Medicine, University of Maryland, Baltimore, MD; Department of Pathology, University of Maryland, Baltimore, MD.

EFFECT OF IN UTERO KEPONE EXPOSURE ON THE FEMALE RAT UROGENITAL TRACT. J A Flaws, A M DeSantis, P J Devine, A N Hirshfield and E E Silberge d. Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine, Baltimore, MD; Department of Anatomy, University of Maryland School of Medicine, Baltimore, MD; and Toxicology Program, University of Maryland, Baltimore, MD.


VALIDATION OF COMPUTER-ASSISTED SPERM ANALYSIS FOR MOTILITY AND CONCENTRATION IN THE RABBIT. T L Feeman, D G Stump, K J Clevendere, M D Nemeec and J F Holson. WIL Research Laboratories, Inc., Ashland, OH.

INHALATION REPETITIVE TOXICITY STUDY OF OCTAMETHYLCYCLOTRISILXANOLE (DS) IN FEMALE RATS. R W Maste, J F Holson, D G Stump, M D Nemeec and V L Reynolds. Dow Corning Corporation, Midland, MI, and WIL Research Laboratories, Ashland, OH.

REPRODUCTIVE AND HEMATOPOIETIC TOXICITY OF 2-BROMOPROPANE. G Ichihara, N Asaeda, T Kumazawa, Y Tagawa, M Kamijima, X Yu, H Kondo, N Nakajima, W Kisho, I H Yu, H H Moon, N Hisanaga and Y Takeshi. Nagoya University School of Medicine, Nagoya, Japan; Sanwa Kagaku Kenkyusho Co., Ltd., Mie, Japan; Shinshu University School of Medicine, Matsumoto, Japan; and Research Institute of Industrial Health, Incheon, Korea and the National Institute of Industrial Health, Kawasaki, Japan.

EFFECT OF 2-BROMOPROPANE (2-Br) ON FEMALE REPRODUCTIVE FUNCTION IN SPRAGUE DAWLEY RATS. C H Lim, S H Maeng, J Y Lee, Y H Chung, J H Park, H Y Kim, H H Moon and J Y Yu. Department of Industrial Toxicology, Industrial Health Research Institute, Incheon, Korea.


DEGBPA: TWO-GENERATION ORAL GAVAGE REPRODUCTION STUDY IN SPRAGUE-DAWLEY RATS. T R Hanley, Jr1, A R Hager2, V D Sullivan1, K E Stebbins1 and J M Waechter. Dow Chemical Company, Midland, MI and Pfizer Inc., Groton, CT.

SPECIFICITY OF PLASMA LDH-X ACTIVITY FOR QUANTIFICATION OF TESTICULAR DAMAGE. S B Hoover, K L Allen and G U Lee. Animal Disease Diagnostic Laboratory and Department of Veterinary Pathobiology, Purdue University, West Lafayette, IN.

MALE REPRODUCTIVE TOXICITY OF A QUINOLONE ANTINFECTIVE, CI-990, IN RATS. R E Sigler, J A Dlass, J W Henck and J A Anderson. Parke-Davis Pharmaceutical Research, Division of Warner-Lambert Co., Ann Arbor, MI.

ETHYLENE GLYCOL MONOMETHYL ETHER EFFECTS PROGESTERONE PRODUCTION IN CULTURED HUMAN LUTEAL CELLS. D E Lennard, J L Almekinder, D K Walmer1 and B J Davis. Laboratory of Experimental Pathology, NIEHS, Research Triangle Park, NC and the Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, NC.


EVALUATION OF THE REPRODUCTIVE AND DEVELOPMENTAL TOXICITY OF THE ESTROGEN RECEPTOR ANTAGONIST/AGONIST IDOXIFENE IN FEMALE RATS AND RABBITS. K Treinen, S Rehm and P Wier. SmithKline Beecham Pharmaceuticals, King of Prussia, PA.

THE EFFECT OF PHENOLPHTHALEIN ON B6C3F1 MOUSE OVARIIES. P B Hofer, B Boese and I G Sipes. Departments of Physiology and Pharmacology/Toxiology, University of Arizona, Tucson, AZ.

LEAD EXPOSURE CAUSES ALTERED SPERMIOGENESIS IN RABBITS. D Sharpnack1, C Childress2, W Moorman1, S Schroder1 and R Chopra1. NIOSH, Cincinnati, OH and NIEHS, Research Triangle Park, NC.

LACK OF TRANSGENERATIONAL REPRODUCTIVE EFFECTS FOLLOWING TREATMENT WITH DI-SODECYL PHTHALATE. A J Nikiforov1, G W Trimmer2, L H Keller3 and S B Harris1. Exxon BioMedical Sciences, Inc., Toxicology Division, East Millstone, NJ and Stephen B. Harris Group, San Diego, CA.

ALTERATIONS OF HUMAN SPERMATOZOA PENETRATION OF HAMSTER OOCYTES AFTER EXPOSURE TO ACTINOMYCIN D (FACTD) AND DOXORUBICIN (DOX). M J Scoebey1, R S Jeyendran1 and D P Walker2. University of Illinois at Chicago, Chicago, IL and 1Andrology Lab Services, Chicago, IL.
UPREGULATION OF ESTROGEN RECEPTOR IMMUNO-EXPRESSION BY BROMOETHANE (BE) IN THE UTERUS OF OVARIECTOMIZED B6C3F1 MICE. H Aoyama, J K Hausman and D Dixon. National Institute of Environmental Health Sciences, Research Triangle Park, NC.

ADENOVIRUS-MEDIATED GENE TRANSFER TO RAT TESTIS IN VIVO. K T Blanchard and K Boekelheide. Pathology and Laboratory Medicine, Brown University, Providence, RI.

GERM CELL APOPTOSIS AFTER ADMINISTRATION OF 1,3-DINITROBENZENE. C Strandgaard and M G Miller. Department of Environmental Toxicology, University of California at Davis, Davis, CA.

MOLINATE-INDUCED TESTICULAR TOXICITY: METABOLIC ACTIVATION IN RAT AND HUMAN LIVER. W T Jewell and M G Miller. Department of Environmental Toxicology, University of California at Davis, Davis, CA.

THURSDAY AFTERNOON, MARCH 13 1:30 p.m. - 5:00 p.m.
CCC: EXHIBIT HALL
POSTER SESSION: TOXICOLOGICAL METHODS
Chairpersons: Lisa Biegel, Haskell Laboratory for Indus. Med., Newark, DE and Jean-Roger Claude, University Rene-Deschates, Paris, France

Display: 1:30 p.m. - 5:00 p.m.
Attend: 3:15 p.m. - 5:00 p.m.


THE INHALATION ACUTE TOXIC CLASS (ATC) METHOD: AN ALTERNATIVE TO THE LCL50 TEST. W Diener, D Kaysor and E Schlede. Federal Institute for Health Protection of Consumers and Veterinary Medicine (BfV) Berlin, Germany. Sponsor: J Paulhau.


OPTIMIZATION OF IMMUNOCONJUGATE PRODUCTION BETWEEN PROTEINS AND LOW MOLECULAR WEIGHT RESPIRATORY ALLERGENS. G M Trakshel, T N Asquith, T W Kewoug, K Sarlo, E D Clark and M P Lacey. Procter & Gamble Co., Miami Valley Laboratories, Cincinnati, OH.

CHARACTERIZATION AND TISSUE DISTRIBUTION OF DIMETHYL POLYSILXANES BY GAS CHROMATOGRAPHY/ATOMIC EMISSION AND MASS SPECTROMETRIC DETECTIONS. S V Kala, E D Lykissa, C M Montgomery, R Faith, J Hurley and R M Lebovitz. Department of Pathology, Baylor College of Medicine, Houston, TX. Sponsor: D A Fox.
A PRECISE GAS CHROMATOGRAPHIC METHOD FOR THE DETERMINATION OF BENZENE IN WATER USING A HEAD SPACE SAMPLER. B L Kamath, M Welt, V Williams and T Poasapakkam. Xavier University, College of Pharmacy, New Orleans, LA. Sponsor: H Komiskey.

CHIRAL HPLC DETERMINATION OF METHADONE ENANTIOMERS AND ITS MAJOR METABOLITE IN HUMAN URINE. N Chiki-Chorfi1, C Pham-Huy1, H Galons2, N Aymard3, N Sadegi, P Massicot, H Dutertre-Catella, J-M Warnet and J-R Claude1. 1Laboratoire de Toxicologie, Faculté de Pharmacie; 2EA207, de Chimie Organique, Faculté de Pharmacie, and 3de Pharmacie, Faculté de Pharmacie, Université Paris V, Paris, France.

SEPARATION OF TAMOXIFEN METABOLITES IN SERUM BY CAPILLARY ELECTROPHORESIS (CE) CHROMATOGRAPHY. J M Sanders, L T Burka, M D Shelby, R R Newbold and M L Cunningham. NIEHS, Research Triangle Park, NC.

SIMULTANEOUS DETERMINATION OF CYCLOHEXENE OXIDE AND ITS METABOLITES IN RAT PLASMA AND URINE BY GAS CHROMATOGRAPHY. J O Bao, R L Smith, J-M Sauer, U Pillai and J G Sipes. Department of Pharmacology and the Center for Toxicology, University of Arizona, Tucson, AZ.


QUANTITATION BY GC/MS OF N-CARBOXYLMETHYL-VALINE ADDUCT IN HEMOGLOBIN. J Cai and H E Hurst. Department of Pharmacology and Toxicology, University of Louisville School of Medicine, Louisville, KY.


COMPARISON OF ELECTRON MICROSCOPY AND FLOW CYTOMETRY FOR DETECTION OF PHOSPHOLIPID ACCUMULATION IN PERIPHERAL WHITE BLOOD CELLS. J A Handler, B E Maloof, D M Williams, P J Bugelski and T K Hart. Department of Toxicology, SmithKline Beecham Pharmaceuticals, King of Prussia, PA.

CHOROID PLEXUS IN CULTURE: AN IN VITRO MODEL OF BLOOD-CSF BARRIER. Q Zhao1, W Zheng1 and J H Graziano2,3. 1Department of Environmental Health Sciences, Columbia University, New York, NY and 2Department of Pharmacology, Columbia University, New York, NY. Sponsor: 4375.

A HIGH THROUGHPUT GENOTYPING ASSAY FOR IDENTIFICATION OF A GLUTATHIONE S-TRANSFERASE PI (GST PI) POLYMORPHISM. J M Van Loo1, P Stapleton1, P Farrel1, D Eaton1, H Nazar-Stewart1, L W Harries1 and C R Wolf1. 1University of Washington, Department of Environmental Health, Seattle, WA; 2University of Pittsburgh Cancer Institute, Pittsburgh, PA and 3Imperial Cancer Research Fund, Biomedical Research Centre, Ninewells Hospital and Medical School, Dundee, Scotland.

VALIDATION OF THE PROPOSED GUIDELINES FOR ANALYSIS OF NON-REVERSIBLE CHOLINESTERASE INHIBITORS IN RAT ERYTHROCYTES AND BRAIN TISSUE USING HITACHI 717 AND 911 AUTOANALYZERS. R A Spies1, S Padilla1, D L Hunter2, B Pillsbury1, J Tabase1 and C M Kelly1. 1Huntington Life Sciences, East Millstone, NJ and 2Neurotoxicology Division, US EPA, NHEERL, RTP, NC.

NEW CLINICAL METHOD FOR THE DETECTION IN HUMAN SERA OF ACUTE CIGUATERA INTOXICATION. J L Matta1, M Milad1, J Navas1, T Frazer1 and R Magner2. 1Ponce School of Medicine, Ponce, PR and 2Fred Hutchinson Cancer Research Center, Seattle, WA.

THERMAL DECOMPOSITION PRODUCTS OF ADVANCED COMPOSITE MATERIALS. D L Courson1, J C Lipscomb1, B J Larcom1 and J M Cline2. 1Materials Environmental Technology Inc. WPAFB, OH; 2US Air Force Armstrong Laboratory, Toxicology Division WPAFB, OH and 3US Army Medical Research Detachment WPAFB, OH. Sponsor: R E Wolfe.

USE OF A THRESHOLD ADDITIVITY MODEL IN CHARACTERIZING INTERACTION. C Gennings, P Schwartz1, W H Carter, M and J E Simmons. 1Medical College of Virginia, Virginia Commonwealth University, Richmond, VA; 2Pfizer Inc, Groton, CT and 3US EPA, NHEERL, Research Triangle Park, NC.

CONSCIOUS BABOON MODEL FOR COMPARING CARBON MONOXIDE POISONING THERAPIES. W Switzer and J L Orr. Southwest Research Institute, San Antonio, TX.


A METHOD FOR EVALUATION OF THE POTENTIAL TOXICITY TO THE NEONATE FROM EXPOSURE TO XENOBIOTICS VIA MOTHER'S MILK — APPLICATION TO THREE FRAGRANCE MATERIALS. R A Ford and A Bottomley. 1Research Institute for Fragrance Materials, Inc., Hackensack, NJ and 2Huntingdon Life Sciences, Ltd., Huntingdon, UK.


HUMAN SERUM/PLASMA LEAD: EVALUATION OF "ULTRA-CLEAN" VS. VACUETAINER METHODS USING ICP-MS. J D Osterloh1, R P Illustre1 and D R Smith1. 1Laboratory Medicine, University of California, San Francisco, CA and 2Biology and Environmental Toxicology, University of California, Santa Cruz, CA.
THURSDAY AFTERNOON, MARCH 13
5:00 p.m. - 6:00 p.m.
CCC BALLROOMS A & B

FINAL NIGHT AWARDS PRESENTATION

At 5:00 p.m., in the Cincinnati Convention Center, Ballroom A & B, the Society of Toxicology will honor the following 1997 Award Recipients:

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Increased U-Phytoestrogen Binding in Estrogen-Deficient Female C3H/HeJ Mice and Inhibition of OATP Receptor Activity in Rat Carcinogens by Phytoestrogens. (1999). Vol. 129, pp. 281-286

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THURSDAY EVENING, MARCH 13
6:00 p.m. - 9:30 p.m.
CCC: THIRD FLOOR BALLROOM

FINAL NIGHT RECEPTION

The Final Night Reception will be held in the Ballroom located on the third floor of the Cincinnati Convention Center and is free to all attendees. Enjoy an evening with your colleagues and celebrate the conclusion of a successful SOT Meeting.
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Christopher A. Bradfield

NEUROTOXICOLOGY
President: Amira E. Eldefrawi
Vice President: Michael Aschner
Vice President-Elect: Janice E. Chambers
Secretary/Treasurer: Kevin M. Crofton
Councilors: William Slitt, Jr. (Past President),
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Stephanie Padilla

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President: Richard A. Parent
President-Elect: D. Reid Patterson
Vice President: Sharon J. Northrup
Secretary/Treasurer: Sandra L. Monath
Councilors: Jack A. Reynolds (Past President),
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President: Richard Morrissey
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Lori Ann Dostal

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President: John A. Moore
Vice President: Rory B. Connolly
Vice President-Elect: Clay Frederick
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Elaine Faustman

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President: Dawn G. Goodman
Vice President: Vernon L. Carter
Vice President-Elect: Cecil Fitz-George Brownie
Secretary/Treasurer: Anita M. Kore
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Michael L. Biehl,
Anthony A. Frank
(H.B. “SKIP” MATTHEWS, LIAISON)

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President: Vincent Castanov
President-Elect: James A. Barter
Vice President: Barbara J. Henry
Secretary/Treasurer: Maryanne F. Stock
Councilors: Frances D. Lucas (Past President),
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President: Gregory A. Reed
President-Elect: John A. Pickrell
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GULF COAST
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Vice-President: Evelyn Tiffany-Castiglioni
Vice-President-Elect: John A. Thomas
Secretary: Andrij Holian
Councilors: Terrence J. Monks (Past-President),
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President: Raymond David
Vice President: Claire Gavin
Secretary: Dale Marino
Treasurer: Cheri Hinckman
Councilors: Laurie Fiorica, Michael Schlosser,
Douglas Topping

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President: Lawrence H. Lash
President-Elect: Ronald N. Hines
Secretary-Treasurer: Cindy M. Hoorn
Councilors: Rita Loch-Caruso (Past President),
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President: Carol S. Auletta
Vice President: James J. Freeman
Vice President-Elect: Robin S. Goldstein
Secretary-Treasurer: Charles S. Schwartz
Councilors: Irwin Y. Rosenblum (Past President),
Sue M. Ford, Timothy P. Coogan, Lydia R. Cox,
Student Councilor: Heidi A. Schoenfeld

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President: Peter F. Smith
President-Elect: Elizabeth H. Jeffery
Secretary: Daniel M. Wilson
Treasurer: Bruce C. Dickie
Councilors: Timothy J. Raczkiak (Past President),
Robert V. House, Sabrina Morton, Patricia Frank, Daniel Goon

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President: Ruth E. Billings
Vice President: Garold S. Yost
Vice President-Elect: Geroge G. Corcoran
Secretary: Janice R. Thornton-Manning
Treasurer: Howard S. Ramsdell
Councilors: Daniel C. Liebler (Past President),
William K. Nichols, Richard D. Irons
Student Councilors: Tom Ziegler, Luis Valerio

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President: John G. Keller
Vice President/President-Elect: Lorraine E. Tvedt
Secretary: Ronald S. Slesinski
Treasurer: Joy A. Cavagnaro
Councilors: Harry Salem (Past President),
Scott R. Baker, Steve D. Baskin, Robert J. Rubin, Steven R. Paterno

NORTH CAROLINA
President: Hugh A. Tilsen
President-Elect: Thomas L. Goldsworthy
Vice-President: Michael L. Cunningham
Secretary-Treasurer: Kevin W. Gaido
Councilors: Henry d’A. Heck (Past President),
Barbara D. Abbott, Susan J. Borghoff
Student Councilor: Lori Mollanen

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President: Betty Ann Pettersen
President-Elect: William P. Beierschmitt
Vice President: Susan G. Emney Hart
Secretary/Treasurer: John C. Pettersen
Councilors: Mitchell W. Sauerhoff (Past President),
Michael Lyness, Kim Boekelheide, Jose E. Manautou

NORTHERN CALIFORNIA
President: John P. Christopher
President-Elect: Marion G. Miller
Vice President: Dale E. Johnson
Secretary: Linval DePass
Treasurer: Susan A. Rice
Councilors: Lee Shull (Past President),
Anne E. Chestter, Mary E. Prevo

OHIO VALLEY
President: James E. Klaunig
President-Elect: Darol E. Dodd
Secretary-Treasurer: Carl Potter
Councilors: Gary Stoner (Past President),
W. Mark Lafranconi, Larry W. Robertson, William J. Waddell,
Jon Reid, Theresa S. Chen

PACIFIC NORTHWEST
President: David E. Williams
Vice President: Terrance J. Kavanagh
Vice President-Elect: Richard T. Okita
Secretary-Treasurer: Jane O. Koenig
Councilors: Jerry H. Exon (Past President),
Donald R. Buelfer, Richard J. Bull, Nancy I. Kerkvliet

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President: Jay Gandy
President-Elect: Bernard A. Schwartz
Vice President: Carey N. Pope
Secretary: Lawrence D. Fechter
Treasurer: Andrew Scullet
Councilors: Durisa Desai (Past President)
John Matthews, Steven Pruett

SOUtheASTERN
President: Robert A. Young
President-Elect: to be elected
Secretary/Treasurer: Kenneth E. Ferslew
Councilors: Chess E. Dallas (Past President)
Ronald T. Riley

SOUTHERN CALIFORNIA
President: Carl P. LeBel
President-Elect: Ronald Alkana
Vice President: to be elected
Secretary/Treasurer: Tina Leakokes
Councilors: Ann de Pernier (Past President)
Jim Adams, Charles E. Lambert, Alex Sevanian, Judy Spencer

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Abbott Laboratories
Abbott Park, Illinois

Aeon Laboratories, Inc.
Ft. Worth, Texas

AlliedSignal Inc.
Morristown, New Jersey

American Cyanamid Company
Wayne, New York

American Petroleum Institute
Washington, D.C.

AMOCO Corporation
Chicago, Illinois

ARCO
Los Angeles, California

ARCO Chemical Company
Newtown Square, Pennsylvania

Bayer
Stilwell, Kansas

Berlex Laboratories, Inc.
Cedar Knolls, New Jersey

BIODEVELOPMENT Laboratories, Inc.
Cambridge, Massachusetts

BP America Inc.
Cleveland, Ohio

Bristol-Myers Squibb Company
(Chilorn Products Division)
New Brunswick, New Jersey

CanTox Inc.
Mississauga, Ontario, Canada

Chevron Research & Technology Company
Richmond, California

CIBA-GEIGY Corp.
Greensboro, North Carolina

Coca-Cola Company
Atlanta, Georgia

Colgate-Palmolive Company
Piscataway, New Jersey

Corning Hazleton
Vienna, Virginia

Dow Chemical Company
Midland, Michigan

Dow Corning Corporation
Midland, Michigan

DowElanco
Indianapolis, Indiana

E.I. du Pont de Nemours & Company
Wilmington, Delaware

Eastman Kodak Company
Rochester, New York

Eli Lilly & Company
Greenfield, Indiana

Exxon Biomedical Sciences, Inc.
East Millstone, New Jersey

Genentech, Inc.
S. San Francisco, California

The Gillette Company
Boston, Massachusetts

Glaxo Welcome Inc.
Research Triangle Park, North Carolina

Gradient Corporation
Cambridge, Massachusetts

Hoechst Celanese Corporation
Somerville, New Jersey

Hoechst Marion Roussel, Inc.
Kansas City, Missouri

Hoffmann-La Roche, Inc.
Nutley, New Jersey

Huntingdon Life Sciences
E. Millstone, New Jersey
(Huntingdon Life Sciences Ltd.,
Huntingdon, UK)

Johnson & Johnson
New Brunswick, New Jersey

Lorillard Tobacco Company
Greensboro, North Carolina

Merk & Co., Inc.
West Point, Pennsylvania

Monsanto Company
St. Louis, Missouri

Motorola Inc.
Scottsdale, Arizona

Ortho Pharmaceutical Corporation
New Brunswick, New Jersey

Pfizer Inc.
Groton, Connecticut

Pharmacia & Upjohn, Inc.
Kalamazoo, Michigan

The Procter & Gamble Company
Cincinnati, Ohio

Rhone-Poulenc
Research Triangle Park, North Carolina

Rhone-Poulenc Rorer Central Research
Collegeville, Pennsylvania

RJR Nabisco, Inc.
Winston-Salem, North Carolina

Sandoz Pharmaceuticals Corporation
East Hanover, New Jersey

Sankyo Company, Ltd.
Fukuori, Japan

Sanofi Winthrop, Inc.
Malvern, Pennsylvania

Schering Plough Research Institute
Kenilworth, New Jersey

Searle
Skokie, Illinois

SmithKline Beecham Pharmaceuticals
King of Prussia, Pennsylvania

Southern Research Institute
Birmingham, Alabama
(Frederick Research Center, Frederick, Maryland)

Unilever Research U.S., Inc.
Edgewater, New Jersey

Union Carbide Corporation
Danbury, Connecticut

UNOCAL Corporation
Los Angeles, California

Warner Lambert Company
(Parker-Davis Pharmaceutical Research)
Ann Arbor, Michigan

Wyeth-Ayerst Research
Chazy, New York

ZENECA Ltd.
Macclesfield, Cheshire, U.K.
Academy of Toxicological Sciences
John A. Thomas

American Academy of Clinical Toxicology
Carol R. Angell

American Academy of Veterinary and Comparative Toxicology
Jane F. Robens

Association for Assessment and Accreditation of Laboratory Animal Care, Intl.
Loren Koller

American Association for the Advancement of Science
John G. Keller

American Association for Cancer Research
Richard H. Adamson

American Association for Pharmaceutical Scientists
Dale Johnson

American Board of Forensic Toxicology
Randall C. Baselt

American Board of Toxicology
Robert M. Joy

American Board of Veterinary Toxicology
Gary D. Osweiler

American College of Laboratory Animal Medicine
Ghanta N. Rao

American College of Toxicology
Michael G. Farrow

American College of Veterinary Pathology
Robert H. Denlinger

American Industrial Hygiene Association
Robert T. Drew

American Institute of Nutrition
Stanley T. Omaye

American Society for Biochemical and Molecular Biology
Jerold A. Last

American Society for Pharmacology & Experimental Therapeutics
James L. Way

Asian Society of Toxicology
Insu P. Lee

Behavioral Toxicology Society
Hugh L. Evans

British Toxicology Society
I.F.H. Purchase

Environmental Mutagen Society
James M. LaVelle

EUROTOX
Karl K. Rozman

Institute of Food Technologists
Stanley T. Omaye

International Society of Regulatory Toxicology and Pharmacology
Frederick Coulston

International Society for the Study of Xenobiotics
Robert Snyder

International Society of Ecotoxicology and Environmental Safety
Frederick Coulston

International Society on Toxicology
Philip Rosenberg

Society of Environmental Toxicology and Chemistry
Keith Cooper

Society for Epidemiological Research
James S. Woods

Society for Forensic Toxicology
Randall C. Baselt

Society for Quality Assurance
Robert S. DeWoskin

Society for Risk Analysis
Thomas B. Starr

Society for the Study of Reproduction
Walter N. Piper

Society for Toxicologic Pathologists
Wanda Haschek-Hock

Society of Toxicology of Canada
Bruce B. Virgo

Swedish Society of Toxicology
Torbjorn Malmfors

Teratology Society
Jeanne M. Manson

Tissue Culture Association
Daniel Acosta

The Toxicology Forum
Donald Hughes

World Federation of Associations of Clinical Toxicology Centers and Poison Control Centers
Frederick W. Oehme
The Society of Toxicology annually presents the Achievement Award, the Arnold J. Lehman Award, the Board of Publications Awards for the Best Paper in Toxicology and Applied Pharmacology and the Best Paper in Fundamental and Applied Toxicology, the Merit Award, the Public Communications Award, and the Toxicology Education Award. The Robert L. Dixon Award is presented every three years. Special awards may also be presented at the discretion of the Council.

The Achievement Award is presented to a member of the Society of Toxicology who has less than 15 years experience since obtaining his/her highest earned degree in the year of the Annual Meeting of the Society of Toxicology and who has made significant contributions to toxicology. This award consists of a plaque and a cash stipend.

The Arnold J. Lehman Award is presented by the Society of Toxicology to recognize an individual who has made major contributions(s) to the control of chemical agents, including pharmaceuticals. The contribution may have resulted from the application of sound scientific principles to regulation and/or from research activities that have significantly influenced institution of appropriate regulatory processes. The nominee may be employed in academia, government, or industry and need not be a member of the Society. This award consists of a plaque and a cash stipend.

The Board of Publications Awards for the Best Paper in Toxicology and Applied Pharmacology and the Best Paper in Fundamental and Applied Toxicology are presented to the author(s) of the best paper published in each of the official SOT publications during a 12-month period terminating with the June issue of the calendar year preceding the Annual Meeting at which the award is presented. The author(s) need not be a member of the Society of Toxicology. These awards consist of a plaque and a cash stipend. Submissions should include a one-page summary of the paper's contribution to the science of toxicology and a copy of the article for which the nomination is being made. Any member of the Society may submit one title for consideration per journal award. In addition, the titles of no more than six papers to be considered for each award are submitted by the editors of each official SOT publication. All papers submitted will be evaluated by the Board of Publications.

The Merit Award is presented to a member of the Society of Toxicology in recognition of a distinguished career in toxicology. This award consists of a plaque and a cash stipend.

The Public Communications Award is presented by the Society of Toxicology to recognize an individual who has made a major contribution to broadening the awareness of the general public on toxicological issues through any aspect of public communications. The award should reflect accomplishments made over a significant period of time. Examples of qualifying media in which the nominated communication may appear are: books, brochures, Continuing Education courses, data bases, extension bulletins, magazines, newspapers (local or national), public presentations, public forums, radio and television scripts, and workshops. The award consists of a plaque and a cash stipend.

The Toxicology Education Award is presented to an individual who is distinguished by the teaching and training of toxicologists and who has made significant contributions to education in the broad field of toxicology. This award consists of a plaque and a cash stipend.

All nominations, along with a CV, supporting documentation, and other relevant data for the Awards are to be submitted, in writing, to the Chairperson of the Awards Committee c/o the SOT Headquarters office. It is recommended that each nomination be submitted by a sponsor and secender, and up to three additional supporters who are members of the Society of Toxicology. Nominations may be submitted at any time; however, the deadline for consideration of a nomination is October 1 preceding the Annual Meeting at which the award will be presented. Nominations received after October 1 are considered for the following year. The files of unsuccessful nominees are considered for two additional years unless the sponsor withdraws the nomination. Complete updating of the file is required for renominations after that time. The Awards Committee reviews all material received and makes recommendations to the Council.
SOCIETY OF TOXICOLOGY AWARDS

ACHIEVEMENT

1967 - Gabriel L. Plaa
1968 - Allan H. Conney
1969 - Samuel S. Epstein
1970 - Sheldon D. Murphy
1971 - Yves Alarie
1972 - Robert L. Dixon
1973 - No Award
1974 - Morris F. Cranmer
1975 - Ian C. Munro
1976 - Curtis D. Klaassen
1977 - James E. Gibson
1978 - Raymond D. Harbison
1979 - Michael R. Boyd
1980 - Philip G. Watanabe
1981 - No Award
1982 - Frederick P. Guengerich
1983 - No Award
1984 - Melvin E. Andersen
1985 - Alan R. Buckpitt
1986 - Sam Kacew
1987 - James S. Bus
1988 - Jeanne M. Manson
1989 - James P. Kehrer
1990 - Michael P. Waalkes
1991 - Debra Lynn Laskia
1992 - Michael P. Holsapple
1993 - David L. Eaton
1994 - James L. Stevens
1995 - Lucio G. Costa
1996 - Kenneth Ramos
1997 - Kevin E. Driscoll

MERIT

1967 - Arnold J. Lehman
1968 - R.T. Williams
1969 - Harold C. Hodge
1970 - Don D. Irish
1971 - Kenneth P. DuBois
1972 - D. Garth Fitzhugh
1973 - Herbert E. Stokinger
1974 - William B. Deichmann
1975 - Frederick Coulston
1976 - Verle K. Rowe
1977 - Harry W. Hays
1978 - Julius M. Coon
1979 - David W. Fassett
1980 - Bernard L. Oser
1981 - John H. Weisburger
1982 - Harold M. Peck
1983 - Perry J. Gehring
1984 - Tom S. Miya
1985 - Carrol S. Weil
1986 - Ted A. Loomis
1987 - Bo Holmstedt
1988 - Seymour L. Friess
1989 - Wayland J. Hayes, Jr.
1990 - Sheldon D. Murphy
1991 - Toshiro Narahashi
1992 - W. Norman Aldridge
1993 - John Douil
1994 - Ernest Hodgson
1995 - Robert A. Scala
1996 - Gabriel L. Plaa
1997 - Mary O. Amidur

ARNOLD J. LEHMAN

1980 - Allan H. Conney
1981 - Gabriel L. Plaa
1982 - Gary M. Williams
1983 - David P. Rall
1984 - Tibor Balazs
1985 - Frederick Coulston
1986 - Gerrit Johannes Van Esch
1987 - John P. Frawley
1988 - Kundan S. Khurana
1989 - Richard H. Adamson
1990 - Harold C. Grice
1991 - Bernard A. Schwetz
1992 - Roger O. McClellan
1993 - Thomas W. Clarkson
1994 - Bruce Ames
1995 - Emil A. Pfister
1996 - John F. Rosen
1997 - No Award

EDUCATION

1975 - Harold C. Hodge
1976 - Ted A. Loomis
1977 - Robert B. Forney
1978 - No Award
1979 - Sheldon D. Murphy
1980 - Herbert H. Cornish
1981 - Frederick Sperling
1982 - Lloyd H. Hazleton
1983 - Julius M. Coon
1984 - Frank Guthrie, Ernest Hodgson
1985 - William B. Buck
1986 - Robert J. Krieger
1987 - Gabriel L. Plaa
1988 - John Autian
1989 - Tom S. Miya
1990 - Charles H. Hine
1991 - Hanspeter R. Wischi
1992 - Dean E. Carter
1993 - Curtis D. Klaassen
1994 - Robert A. Neal
1995 - William Carlton
1996 - Robert Snyder
1997 - Albert E. Munson
FRANK R. BLOOD
1974 ........................................... Yves Alaie
1975 ........................................... Donald J. Ecobichon
........................................... G.J. Johnstone, O. Hutzinger
1976 ........................................... Richard D. Brown
1977 ........................................... J. Dedinas
........................................... George D. DiVincenzo, C.J. Kaplan
1978 ........................................... Perry J. Gehring,
........................................... E.O. Madrid, G.R. McGowan, Philip G. Watanabe
1979 ........................................... R. Fradkin,
........................................... E.J. Ritter, W.J. Scott, James G. Wilson
1980 ........................................... Jerold A. Last,
........................................... Peter F. Moore, Otto G. Raabe, Brian K. Tarkington
1981 ........................................... Yves Alaie,
........................................... Martin Brady, Christine Dixon, Meryl Karol
1982 ........................................... Michael L. Gargas, Lawrence J. Jenkins, Jr.,
........................................... Robert A. Jones
1983 ........................................... Henry D. Heck
1984 ........................................... Erik Dybing,
........................................... Sidney Nelson, Erik Soderlund, Christfer Von Bahr
1985 ........................................... Nobumasa Imura,
........................................... Masae Inokawa, Kyoko Miura
1986 ........................................... Calvin C. Wilhite,
........................................... M.I. Dawson, K.J. Williams
1987 ........................................... John Kao,
........................................... Frances K. Patterson, Jerry Hall
1988 ........................................... Debra L. Laskin,
........................................... Sungchul Ji, Anne M. Pilaro
1989 ........................................... R.G. Cuddihy,
........................................... W.C. Griffith, Rogene F. Henderson, Joe L. Mauderly,
........................................... Roger O. McClellan, M.D. Snipes, Ronald K. Wolff
1990 ........................................... William P. Beierschmitt,
........................................... Joseph T. Brady, John B. Bartolone, D. Stuart Wyand,
........................................... Edward A. Khairallah, Steven D. Cohen
1991 ........................................... Jay Babcock Silkworth,
........................................... Daryl Cutler, LuAnn Antrim, Don Houston,
........................................... Casimir Tumasonis, Laurence S. Kaminsky
1992 ........................................... Donald A. Fox,
........................................... Steve D. Rubinstein, Pauline Hsu
1993 ........................................... Thomas Mably,
........................................... Robert W. Moore, Robert W. Goy, Richard E. Peterson
1994 ........................................... Susan J. Borchoff and William H. Lagarde

BOARD OF PUBLICATIONS AWARDS FOR
THE BEST PAPER IN:
FUNDAMENTAL AND APPLIED TOXICOLOGY
1995 ........................................... J.L. Larson, D.C. Wolf, B.E. Butterworth
1995 ........................................... M.I. Luster, C. Portier, D.G. Pait,
........................................... G.J. Rosenthal, D.R. Germolec, E. Corsini,
........................................... B.L. Blaylock, P. Pollock, Y. Kouchi, W. Craig,
........................................... K.L. White, A.E. Munson, C.E. Comment
1996 ........................................... B.C. Allen, R.J. Kavlock,
........................................... C.A. Kimmel, E.M. Faustman
1997 ........................................... F.L. Fort, H. Ando, T. Suzuki,
........................................... M. Yamamoto, T. Hamashima, S. Sato, T. Kitazaki,
........................................... M.C. Matony, G.D. Hodgen

BOARD OF PUBLICATIONS AWARDS FOR
THE BEST PAPER IN:
TOXICOLOGY AND APPLIED PHARMACOLOGY
1995 ........................................... M.F. Denny, M.E. Ware, W.D. Atchison
1996 ........................................... T.A. Slotkin, C. Lau, E.C. McCook,
........................................... S.E. Lappi, F.I. Seidler
1997 ........................................... P.R.S. Kodavanti, T.R. Ward, J.D. McKinney,
........................................... C.T. Waller, H.A. Tilson

ROBERT L. DIXON
1989 ........................................... Kevin L. Stark
1992 ........................................... Daland Richard Juberg
1995 ........................................... Xuelin Li

PUBLIC COMMUNICATIONS
1994 ........................................... Michael A. Kamrin
1995 ........................................... Philip Abelson
1996 ........................................... Bruce N. Ames
1997 ........................................... Audrey Gotsch

GRADUATE STUDENT TRAVEL GRANTS
Graduate Student Travel Grants are available on a one-time only basis to
graduate students presenting papers or posters at the Annual Meeting.
Applications are available from SOT Headquarters.
BURROUGHS WELLCOME FUND TOXICOLOGY SCHOLAR AWARDS

The Burroughs Wellcome Fund offers five-year scholar awards of $400,000 to support career development in toxicology. These awards are intended to identify and encourage the development of established independent investigators whose work will advance the understanding of toxicological processes on both fundamental and physiologic levels.

The awards are open to investigators working in established toxicology programs as well as investigators in other fields who want to apply their scientific training to research issues in toxicology. The awards are intended to provide recipients with the freedom and flexibility to pursue higher-risk and innovative approaches in their research.

Candidates must be citizens or permanent residents of the United States or Canada, and research activities must take place at accredited degree-granting U.S. or Canadian institutions.

1981 ......................................................... Alan P. Poland .......................... 1989 ......................................................... Stephen H. Safe
1982 ......................................................... Curtis D. Klaassen ................. 1990 ......................................................... Mahin D. Maines
1983 ......................................................... Frederick P. Guengerich, R. Craig Schnell 1991 ......................................................... Robert A. Roth
1984 ......................................................... Philip Guzelian .................. 1992 ......................................................... Janice E. Chambers
1985 ......................................................... J. Glenn Sipes ..................... 1993 ......................................................... Debra Lynn Laskin, Leona Samson
1986 ......................................................... Daniel Acosta ..................... 1994 ......................................................... Kim Boekelheide, Dennis Thiele
1987 ......................................................... Bruce D. Hammock, Richard P. Mailman 1995 ......................................................... Ellen Li, Curtis J. Omiecinski
1988 ......................................................... Harihara M. Mehdendale .......... 1996 ......................................................... Christopher Bradfield, Bennett Van Houten

GRADUATE STUDENT FELLOWSHIP AWARDS

The Society of Toxicology Graduate Student Fellowship Awards are open to any graduate student with at least two years of graduate study towards a Ph.D. degree in the area of toxicology and whose major professor is a member of the Society of Toxicology. Evaluation by the Education Committee is based primarily on originality of the dissertation research, research productivity, relevance to toxicology, scholastic achievement and letters of recommendation. Applications are available from SOT Headquarters.

CIBA-GEIGY CORPORATION FELLOWSHIPS

1989 ......................................................... Timothy Zacharewski .......... 1993 ......................................................... Christopher Martenson
1990 ......................................................... Mary Suzanne Stefaniak ..... 1994 ......................................................... Nyla Harper
1991 ......................................................... Donald Bjerke .................. 1995 ......................................................... Heather E. Klein
1992 ......................................................... Lhanoo Gunawardhana .... 1996 ......................................................... Russell S. Thomas

HAZLETON LABORATORIES CORPORATION FELLOWSHIP

1984 ......................................................... Patricia Ganey .................. 1989 ......................................................... Lorraine E. Twerdok
1985 ......................................................... Kevin Gaido ...................... 1991 ......................................................... Dale Morris
1986 ......................................................... Lisa Naser ......................... 1993 ......................................................... Michael F. Denny
1987 ......................................................... Marjorie Romkes .......... 1995 ......................................................... Michael DiMatteo
1988 ......................................................... Caroline J. Decker ....

HOFFMANN-LA ROCHE, INC. FELLOWSHIP

1987 ......................................................... Andrew G. King ............... 1992 ......................................................... Anton Bennett
1988 ......................................................... Dori J. Thomas ............... 1993 ......................................................... Bevin Engelward
1989 ......................................................... Timothy J. Shafer ............ 1994 ......................................................... Jennifer Counts
1990 ......................................................... Justin Lane Green .......... 1995 ......................................................... Radoslav Goldman
THE PROCTER & GAMBLE COMPANY FELLOWSHIP

1979 ......................................................... Paul W. Ferguson 1988 ................................. Lawrence J. Dahm
1980 .......................................................... Anthony P. De Capri 1989 .......................... Christopher M. Weghorst
1981 .......................................................... Cheng Wang 1990 .................................. Enrique Chacon
1983 .......................................................... Laurie Basting 1992 ............................. Melcita Archuleta
1984 .......................................................... Philip Bartholomew 1993 ........................ Regina Donohoe
1985 .......................................................... Russell Esterline 1994 ................................... Gary Miller
1986 .......................................................... Leonard Sours 1995 .................................. Sanjay Jain
1987 .......................................................... Randall Ruch 1996 .................................. Weston W. Porter

STAUFFER CHEMICAL COMPANY FELLOWSHIP

1987 .......................................................... Lydia R. Cox 1988 .......................... Hyo J. Kim

COLGATE-PALMOLIVE POST-DOCTORAL FELLOWSHIP AWARD

IN IN VITRO TOXICOLOGY

The Colgate-Palmolive Company sponsors this Post-Doctoral Fellowship Award through the Society of Toxicology, directed specifically toward the study of in vitro toxicity or other alternatives to animal testing. This includes dermal, ocular, mutagenesis, molecular biology, cell culture, or metabolism. Any post-doctoral trainees in their first year of study beyond the Ph.D., M.D., or D.V.M. degree who are employed by academic institutions, federal/national laboratories, or research institutes worldwide may apply.

1988 ......................................................... Ernest Bloom 1992 .................................. Qin Chen
1989 ......................................................... Gin Hsieh 1993 .................................. Erika Creton
1990 ......................................................... Dennis E. Chapman 1994 ................................ William Chan
1991 ......................................................... Anne Walsh 1995 ................................ Bob Van de Water

COLGATE-PALMOLIVE VISITING PROFESSORSHIP AWARDS

This new award emphasizes in vitro toxicity and awards up to four competing institutions who desire a renowned in vitro toxicologist to visit their institution.

1996 ........................................ University of Mississippi Medical Center, 1996 ........................................ Mississippi State University,
 .................................................. Jackson, MS, .................................................. Mississippi State, MS,
 .................................................. Visiting Professor: Tetsuo Satoh .................................................. Visiting Professor: Michael Holsapple
1996 ........................................ University of Illinois @ Urbana, 1996 ........................................ Washington State University,
 .................................................. Champagne, IL, .................................................. Pullman, WA
 .................................................. Visiting Professor: Julio Davila .................................................. Visiting Professor: Daniel Acosta

ZENECA, LTD. (FORMERLY ICI) TRAVELING LECTURESHIPS

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1993 .................................................. Terrence James Monks, Harishara H. Mehendale
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