Society of Toxicology NEWSLETTER

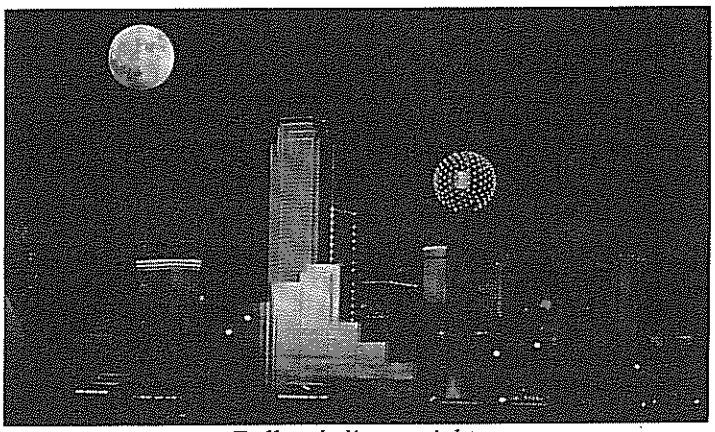
NOVEMBER/DECEMBER 1993

MARCH 13-17, 1994 SOCIETY OF TOXICOLOGY DALLAS

New Specialty Section: Veterinary Specialty Section

The Society of Toxicology is pleased to announce the formation of a new Specialty Section: the Veterinary Specialty Section. The Veterinary Specialty Section is inclusive of veterinary and comparative toxicology and other related disciplines. Members who are engaged in animal research, clinical and diagnostic services and laboratory animal care would certainly contribute to this group. Members of the SOT are invited to join the Veterinary Specialty Section as we chart the future of this specialty. Founding officers are: **Loren D. Koller** - President; **Gerry M. Henningsen** - Vice President; **Carl T. Olson** - Secretary-Treasurer, and the Councilors are: **Roger O. McClellan, Fred Oehme** and **Val R. Beasley**. The initial meeting of the Veterinary Specialty Section is scheduled for Tuesday, March 15, 1994, 6:30 p.m. to 8:00 p.m., Loews Anatole Hotel, Dallas, Texas. See you in Dallas.●

The Society of Toxicology Information Line Telephone Number is 703/715-2797



Dallas skyline at night.

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Society of Toxicology

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Deadline for next issues:
April 10, 1994
June 10, 1994
August 10, 1994
October 10, 1994

1994 Annual Meeting:
March 13-17
Dallas, TX

1995 Annual Meeting:
March 5-9
Baltimore, MD

1996 Annual Meeting:
March 10-14
Anaheim, CA

1997 Annual Meeting:
March 9-13
Cincinnati, OH

President's Letter

In 1986, the Society of Toxicology adopted a position statement regarding the use of animals in toxicology. In order to fulfill the mission of the Society of Toxicology, which is to develop knowledge for the improvement of the health and safety of living beings and the protection of their environment, the Society viewed as necessary the use of laboratory animals in toxicological research. During the ensuing years, this view has not changed. Appropriate *in vitro* systems and computer models still cannot serve as surrogates for living beings. It was also stated in the 1986 position statement that the Society strongly encourages and supports the development of valid, scientific alternatives to animal research testing procedures. To underscore this support, SOT includes in the program of its Annual Meetings, continuing education courses, symposia, workshops and poster discussion sessions that encourage the continued discussion and debate on alternatives to the use of animals in toxicological research. The 1994 Annual Meeting will be no exception. Two examples include a Continuing Education course entitled "*In vitro* Neurotoxicity: Principles, Practice and Paradigms" and a symposium entitled "Use of Human Cells and Tissues in Toxicology and Carcinogenesis Research." Individual presentations in other symposia, workshops, and issues sessions as well as those of volunteer presentations, will certainly provide other opportunities to discuss important new developments in the area of alternatives to animals in toxicity testing.

However, SOT's activities in this area do not stop with the Annual Meeting. Both *Toxicology and Applied Pharmacology* and *Fundamental and Applied Toxicology* encourage submission of papers dealing with alternatives to the use of experimental animals in research. SOT members contribute enthusiastically to the activities of other organizations that also recognize the importance of animals in biomedical research and that strive to develop alternative models that will reduce, where scientifically feasible, the number of animals used in research. The position of the Society of Toxicology is clearly stated in a new publication "The Importance of Animals in the Science of Toxicology," which is included in this issue of the Newsletter. This brochure will be a very valuable aid as we communicate to the public and to legislators (see article page 4) the importance of the proper use of animals in toxicological research.

Sincerely,

I. Glenn Sipes

I. Glenn Sipes, Ph.D.

Communicating With Congress

by the Regulatory Affairs and Legislative Assistance Committee

The Federal government is affected by many factors. In particular, our elected representatives are influenced by the input they receive from their constituents. Many issues addressed by the U.S. Congress affect our profession, and some of those actions are significant enough to require our input. One such issue is the use of animals in research, the number one issue upon which the White House and President Clinton receive mail. We, as toxicologists, need to be certain that our voice is strong and clear on this issue.

The Animals in Research Committee has developed an excellent brochure describing SOT's official position on the use of animals in research. Recently, SOT President Glenn Sipes sent a letter and one of these brochures to the White House and selected Congressional Committee members to alert them to the Society's position. This letter went to the members of the following Congressional Committees, each of whom has a special role in the regulation of the use of animals in research:

HOUSE OF REPRESENTATIVES

Energy and Commerce Committee
Health and Environment Subcommittee

Appropriations Committee
Labor—Health and Human Services—Education
Rural Development, Agriculture and Related

Agriculture Committee
Department Operations and Nutrition Subcommittee

SENATE

Labor and Human Resources Committee

Appropriations Committee
Labor—Health and Human Services—Education Subcommittee
Agriculture, Rural Development and Related Agencies Subcommittee

Agriculture, Nutrition and Forestry Committee

A copy of Glenn Sipes' letter is attached.

We encourage SOT members to write letters of their own that support the Society's position. Following, are some suggestions that should increase the effectiveness of the letters:

1. State the purpose or position in the first paragraph and keep the letter short and to the point.

2. Use your own words—form letters do not count for much.

3. Be courteous, and avoid personal or overly critical language.

4. If you are writing about a particular bill, refer to the bill number.

If you need names or addresses for your representatives, please call either the Chair of the Regulatory Affairs and Legislative Assistance Committee (**Jim Lamb**, 202-789-3332) or SOT Headquarters (Shawn Lopez, 703-438-3115).●

September 17, 1993

The Honorable Bill Clinton
The President
The White House
Washington, DC 20500

Dear Mr. President:

I would like to take this opportunity to provide you with a copy of a recent brochure prepared by the Society of Toxicology (SOT) that summarizes the position of SOT members on the use of animals in research. As you know, this is a topic that generates considerable discussion and we anticipate that this brochure will be of value to you.

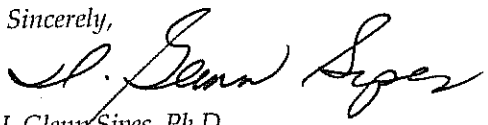
Briefly, I want to familiarize you with the SOT and our position on the use of animals in the science of toxicology. The SOT was founded in the United States in 1961, consists of 3,400 members, and is the largest professional organization in the country dedicated to the study of toxicology with members from academia, government, and industry.

Toxicologists study the harmful effects of substances upon living organisms. SOT members address a broad range of health-related issues, including identification of hazardous agents and assessment of potential health risks from domestic, environmental, and occupational exposures to chemicals in air, water, soil, and food. We play a critical role in the development of important new products, such as drugs to combat diseases including Alzheimer's, AIDS, cystic fibrosis, cancer, cardiovascular disease, and a host of others. The SOT is dedicated to acquiring knowledge that improves the health and safety of humans and animals and protects the environment. Studies developed by our members are used directly in the promulgation of federal health and safety regulations.

To meet the objective of adequately testing substances, the Society is committed to support the highest quality research possible and views as necessary the use of laboratory animals in toxicological research and testing, except in those instances where alternative techniques have been adequately validated. The Society advocates the humane care of animals used in toxicology studies and encourages, wherever possible, the development of scientifically valid alternative techniques to the use of animals for research.

The Society and its members are available to assist and advise you on these matters as needed. Thank you for this opportunity to make you aware of the SOT and our position on this important issue. If you have any questions or you would like further information, please fee free to contact me.

Sincerely,



I. Glenn Sipes, Ph.D.
President

SOCIETY OF TOXICOLOGY

1994 Annual Meeting: March 13-17, Dallas

The Society of Toxicology will hold its 33rd Annual Meeting at the Loews Anatole Hotel in Dallas, Texas. The SOT meeting is the largest toxicology program in the world, attracting more than 4500 attendees. This year's meeting includes innovative science and quality research in a comprehensive program. An overview of the meeting schedule is located on the last page of this newsletter. The Preliminary Program, which includes a registration form, hotel, and travel reservation forms, will be sent to members in December. Continuing Education course descriptions were included in the September/October newsletter; symposia descriptions and special sessions are published in this newsletter; workshops and roundtables will be described in the January/February Newsletter. The Final Program and Toxicologist will be mailed to members in February.

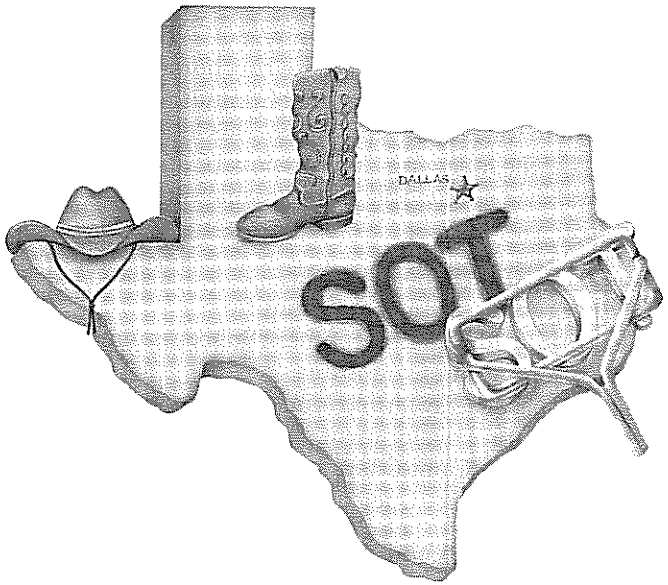
Regional Chapters and Specialty Sections

Chapter Meetings will be held on Wednesday, March 16 from 5:30 p.m.- 7:00 p.m., at the Loews Anatole Hotel immediately before the SOT Banquet and Awards Presentation.

The Inhalation, Mechanisms, Metals, Risk Assessment, and Regulatory Specialty Sections will meet on Monday, 5:00 p.m. - 6:30 p.m. The Carcinogenesis, Immunotoxicology, Neorotoxicology, and Reproductive Specialty Sections will meet Monday, 6:30 p.m. - 8:00 p.m. The Food Safety, Molecular Biology, and Veterinary Specialty Sections will meet Tuesday, 6:30 p.m. - 8:00 p.m.

Guest Hospitality Program

The Hospitality Center, staffed Sunday through Wednesday, 9:00 a.m.- 4:00 p.m., and Thursday, 9:00 a.m.-12:00 noon, will provide guest participants with a place to meet and socialize with other guests. The Hospitality Center will also provide information on local attractions, rental cars and tours.



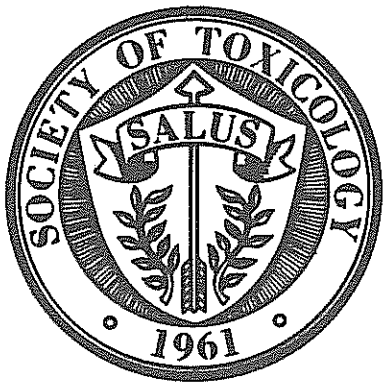
Placement Service

The Society of Toxicology Placement Service provides employers and candidates seeking jobs with an opportunity to establish contacts relating to their specific needs and areas of interest. The pre-registration deadline is **January 10, 1994.** If you would like further information, please call SOT Headquarters.

Sponsorship Opportunities

Event sponsoring opportunities are available for the 1994 SOT Annual Meeting. Events to be sponsored include student, minority program, and general sessions. Co-sponsoring opportunities are available for as little as $500.

Participating companies will be recognized in the on-site SOT Program, Calendar and Exhibitor Directory (distributed to 4500+ attendees); the January/February and May/June SOT Newsletters (mailed to 3,400 SOT members); and through signage on-site. If you are interested in the SOT Sponsorship Program, please contact Mary Guthrie at SOT Headquarters for a list of available events.



The SOT Exhibition offers attendees a first-hand opportunity to examine a diverse range of products and services on display.

Educational Program for Minority Students

Sunday, March 13, 2:00 p.m. - 5:30 p.m.

Chairpersons: S. E. P. Hayes. Squibb & Sons, Inc., New Brunswick, NJ, and G. S. Yost, University of Utah, Salt Lake City, UT

SOT members, undergraduate and graduate students, and others interested in toxicology education and early recruitment of minorities are invited to attend this program, which will focus on graduate education and is sponsored by the SOT Education Committee. Presentations include information on career opportunities in government, academia and industry.

Placement Service Seminar

Sunday, March 13, 5:00 p.m - 6:30 p.m.

Chairperson: J. Powers, Jr., R.W. Johnson Pharmaceutical Research, Raritan, NJ

A panel of guest speakers will present their views on the present and future career opportunities and necessary requirements for entry into the areas of academic, industrial consulting, or government toxicology. The speakers will also present an overview of what an employer looks for in a candidate interview, an employer's expectations of job performance, and the potential remunerations.

Special Poster Session For Visiting Students

Monday, March 14 , 9:30 a.m. - 11:30 a.m.

Chairpersons: C. McGowan, Schering-Plough Corporation, Kenilworth, NJ and S. S. Lau, University of Texas at Austin, Austin, TX

This session, sponsored by the ad hoc Tox 90s Educational Issues Task Force and the SOT Education Committee, provides an overview of research in toxicology by minority scientists and others. The session is organized to demonstrate the diversity of the discipline of toxicology to minority undergraduates and others attending the Annual Meeting who are interested in learning about a variety of areas associated with toxicological investigations.

Graduate Student Luncheon

Monday, March 14, 12:00 noon - 1:00 p.m.

Sponsored by the SOT Education Committee. Open to all travel awardees and graduate student registrants. This session includes presentations of the 1994 Graduate Student Fellowships and Colgate Palmolive Post Doctoral Fellowship Awards.

SOT/EUROTOX Debate

Tuesday, March 15, 12:00 noon - 1:30 p.m.

Sponsored by: SOT and the European Society of Toxicology (EUROTOX)

Resolved That Apoptosis Is The Most Important and Critical Pathway in Toxicant-Induced Cell Death

Moderator: D. J. Reed, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR

Discussant for the Motion: J.A. Hickman, Department of Physiological Sciences, School of Biological Sciences, University of Manchester, Manchester, UK

Discussant Against the Motion: R.G. Schnellmann, Department of Physiology and Pharmacology, College of Veterinary Medicine, The University of Georgia, Athens, GA

It is generally recognized that cell death can occur through two distinct pathways, necrosis and apoptosis. Apoptosis is a tightly controlled process that is morphologically characterized by nuclear and cytoplasmic condensation. In contrast, necrosis is an uncontrolled process that is morphologically characterized by organelle and cytoplasmic swelling and cell rupture. While chemical-induced necrosis has been extensively studied, the identification that apoptosis plays a role in chemical-induced cell death has only recently been examined. The goal of this debate is to discuss the relative roles of apoptosis and necrosis in toxicant-induced cell death.

Burroughs Wellcome Toxicology Scholar Award Lecture

Wednesday, March 16, 12:00 noon - 1:00 p.m.

Environmental Estrogens Versus Antiestrogens - Is There an Impact on Human Health?, by S. Safe, Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX

Several recent reports have suggested that the intake of estrogenic compounds from environmental, dietary and medicinal sources may play a role in the observed increased incidence of human breast cancer in women and in decreased sperm counts in men. However, several laboratories have also reported that other dietary compounds, including the industrial by-product 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), and related halogenated aromatic hydrocarbons exhibit antiestrogenic activity and therefore may counteract the putative effects of dietary estrogens. Research in this laboratory has focused on the cellular and molecular biology of TCDD as an antiestrogen and the interaction between the aryl hydrocarbon (Ah) receptor and estrogen receptor (ER) signal transduction pathways in human breast cancer cell lines. The results of these studies demonstrate that although most Ah receptor agonists do not bind to the ER, these compounds inhibit diverse estrogen-induced responses including the development of mammary cancer in rodents. The mode of action of TCDD as an antiestrogen is complex and the results of molecular biology studies indicate that the mechanisms are dependent on the target gene. The antiestrogenic activity of a series of alkyl-substituted polycholrinated dibenzofurans (PCDFs) have also been investigated and the results indicate that these compounds represent a new structural class of antiestrogens that are relatively nontoxic and therefore may be useful as chemotherapeutic agents for the clinical treatment of breast cancer.

SOT Issues Session

Animal Rights in the Classroom: Tackling Scientific Illiteracy

Thursday, March 17, 12 noon - 1:30 p.m.

Chairperson and Moderator: I. G. Sipes, Department of Pharmacology and Toxicology, University of Arizona, College of Pharmacy, Tucson, AZ

Less than 7% of the U.S. general population can be considered scientifically literate. If the public does not understand the scientific method, it cannot begin to comprehend the rationale for use of animals in applied or basic biomedical research. This lack of understanding opens the door for acceptance of misinformation provided by animal rights groups. This illiteracy decreases the small number of school children interested in science, reduces the numbers of potential graduate students and places federal funding of most scientific and biomedical research at risk, since it is taxpayer dollars that pay for most basic research carried out in this country. Animal rights groups have openly declared that they are directing their efforts at school children (grades K-12) with entries in the Weekly Reader, direct classroom 'teaching' materials and increased pressure on school-board members. It is imperative that the U.S. public understand and support the value of basic research. The purpose of the 1994 SOT Issues Session is to present to the membership the magnitude and scope of the current problem and to offer suggestions from those with experience in dealing with this problem.

Animal Rights in the Classroom: Magnitude and Extent of the Problem, P.H. Cleveland, Department of Opthamology, University of California, San Diego, CA

People & Animals: United for Health Teaching Curriculum, D.H. Cavalier, Massachusetts Society for Medical Research, Waltam, MA

What Are We Doing in the School Systems on Animal Outreach?, M.J. Schmidt, Pathology & Developmental Toxicology, Lilly Research Laboratories, Greenfield, IN

Annual Meeting Symposia

The Biliary Tree: A Target for Chemically-Induced Injury and Proliferation

Chairpersons: R.S. Goldstein and D.M. Dulik, SmithKline Beecham, King of Prussia, PA

Sponsored by the Mechanisms Specialty Section

Research efforts in advancing our understanding of the mechanisms of chemically induced hepatotoxicity have focused primarily on parenchymal cells. However, increasing evidence suggests that biliary epithelial cells are also important targets for chemically-induced injury and

proliferation. Until recently, technical difficulties in isolation of this cell population have hampered efforts to characterize their biochemical and metabolic properties, as well as the ability to investigate toxicant-induced damage and/or proliferation. It is now known that biliary epithelial cells have the capabilities to secrete and reabsorb electrolytes/water and metabolize xenobiotics. This symposium will review our current state of knowledge of the physiology, biochemistry and morphology of biliary epithelial cells and the mechanisms by which chemicals may induce biliary epithelial cell injury and proliferation. Recent findings from diverse research disciplines will highlight: 1) the biochemistry, physiology and morphology of the biliary tree; 2) the heterogeneous response of biliary epithelial cells to toxic insult; 3) the potential role of reactive Phase II metabolites in biliary epithelial cell injury; 4) the relationship of bile duct obstruction to the development of biliary epithelial cell hyperplasia, and 5) a molecular basis for the proliferative response of the biliary epithelium, with particular emphasis on growth factors and oncogene expression. This symposium will integrate recent biochemical, physiologic, and molecular factors which contribute to the rapidly evolving field of hepatobiliary toxicity.

The Biliary Tree: A Target for Chemically-Induced Injury and Proliferation: Introduction, R.S. Goldstein, SmithKline Beecham, King of Prussia, PA

Biological Reactivity of Acyl Glucuronides and Biliary Ductular Toxicity, P.G. Pearson, Upjohn Labortories, Kalamazoo, MI

Biliary Epithelial Cell Hyperplasia: Relationship to Bile Duct Obstruction, P.C. Meunier, DuPont Merck Pharmaceuticals, Newark, DE. M.F. Kanz, University of Texas Medical Branch, Galveston, TX

New Evidence for a Bile Ductular Stem-Like Cell in Rat Liver, A.E. Sirica, Medical College of VA/VCU, Richmond, VA

Chemically-Induced Biliary Epithelial Cell Injury, M.F. Kanz, University of Texas Medical Branch, Galveston, TX

Morphologic, Physiologic, and Biochemical Properties of the Biliary Tree, N.F. La Russo, Mayo Medical School, Clinic and Foundation, Rochester, MN

Caloric Restriction and Toxicity

Chairperson: R.W. Hart, NCTR, Jefferson, AR

Decreasing survival of control animals under chronic animal bioassay conditions has led to the suggestion that since caloric restriction extends lifespan, reduction in food consumption can be used to provide a longer lived model. The observation by symposium participants that the body weights of control animals of the same species, strain, and sex may vary by between two and threefold, correlates with spontaneous tumor incidence and also raises significant concerns about present bioassay procedures. This session will summarize the impact of caloric restriction and body weight control on various toxicological parameters and how this information might be used in the interpretation of results arising from various *in vitro* and *in vivo* bioassay procedures utilizing these approaches. It will become apparent over the course of these presentations that while reduced caloric intake and body weight control may achieve the desired results of a healthier animal model, care must be taken in how the studies are conducted and the data evaluated. It will also become apparent that caloric control does alter a number of toxicological parameters, that such alterations are already occurring in our present *ad libitum* studies, and that our failure to control for these events may be significantly compromising our interpretations of both *in vivo* and *in vitro* bioassay data.

Caloric Restriction and Toxicity: Introduction, R.W. Hart, NCTR, Jefferson, AR

The Effects of Diet, Overfeeding and Moderate Dietary Restriction (DR) on Sprague-Dawley (SD) Rat Survival, Carcinogenesis and the Toxicologic Response to Compounds, K.P. Keenan, Merck Research Laboratories, West Point, PA

Caloric Restriction and its Modulation of Chronic Toxicity, A. Turturro, FDA/NCTR, Jefferson, AR

Caloric Restriction and its Effect on Drug Metabolizing Enzymes, Pharmacokinetics and Detoxification, J.E.A. Leakey, FDA/NCTR, Jefferson, AR

The Effect of Caloric Restriction on Short-term Tests of Toxicity and Possible Mechanisms, B.D. Lyn-Cook, FDA/NCTR, Jefferson, AR

The Effect of Feed Restriction on the Sensitivity of the NTP Carcinogenicity Bioassay, K.M. Abdo, NIEHS, Research Triangle Park, NC

Contemporary Issues in Fiber Toxicology

Chairperson: D.B. Warheit, DuPont Haskell Lab, Newark, NJ

Sponsored by the Inhalation Specialty Section

The commercial use of asbestos fibers likely will be curtailed in the near future. Accordingly, man-made fibers are being promoted as substitutes. The concern for these materials exists because some fibers can cause pulmonary disease similar to asbestos. This symposium will provide an overview of some new techniques and issues currently used in studying the toxicity of fibrous materials. In the first talk, 4 basic tenets of fiber toxicology: Dose, Dimension, Distribution, and Durability will be discussed. The importance of these parameters is elucidated by demonstrating the pulmonary effects in exposed rodents. The next presentation focuses on the role of macrophage-derived cytokines and inflammation in the pathogenesis of fiber-related lung injury. The third presentation provides an update of the "overload issue" in assessing the pulmonary

toxicity of inhaled particles/fibers. It has been shown that alveolar clearance of particles is impaired following deposition of excessively high burdens of broadly diverse, relatively insoluble particulate materials. This is followed by a discussion of the molecular approaches to investigating mechanisms of mesthelioma, which have yielded fundamental information on the importance of cellular oncogenes and tumor suppressor genes in many types of human and rodent cancers. The final presentation describes the similarities and differences as well as relevance of fiber-induced pulmonary pathologic responses when comparing animals to humans.

Contemporary Issues in Fiber Toxicology: Introduction, D.B. Warheit, DuPont Haskell Lab, Newark, NJ

Introduction and Biophysical Factors Affecting Fiber Toxicity, D.B. Warheit, DuPont Haskell Lab, Newark, DE

Cytokine Networks in Particle-Induced Pulmonary Inflammation, K.E. Driscoll, The Procter and Gamble Company, Cincinnati, OH

Comparisons of Fiber-Induced Pathological Responses in the Respiratory Tract of Humans and Animals, M. Kuschner, SUNY at Stony Brook School of Medicine, Stony Brook, NY

Overload Considerations in Assessing the Toxicity of Inhaled Fibers, G. Oberdorster, University of Rochester, Rochester, NY

Molecular Approaches to Understanding Mechanisms of Mesothelioma Development, C. Walker, UT MD Anderson Cancer Center, Smithville, TX

Environmental Tobacco Smoke: Experimental Facts and Societal Issues

Chairperson: H. P. Witschi, University of California, Davis, CA

Sponsored by the Inhalation Specialty Section

Involuntary exposure to environmental tobacco smoke (ETS) in public or in working places is considered to be a serious risk to human health. The present symposium will address some issues of toxicological interest that are associated with exposure to ETS. Epidemiologic evidence obtained in several human studies suggests that exposure to ETS increases the risk of developing lung cancer in non smokers and favors the development of respiratory tract infections in children. Comparatively few data are available from animal studies that provide experimental support of the observations. Exposure of pregnant rats to cigarette sidestream smoke (SS) produces a slight intrauterine growth retardation and, in the neonate, affects developmental patterns of drug metabolizing enzymes that may persist up to 90 days. In young cockerels, SS inhalation beginning early on favors the enhanced development of arteriosclerotic plaques in the aorta. On the other hand, exposure of adult rats to SS for up to 90 days has been found to induce transient signs of lung damage and this only at extremely high concentrations of SS. The experimental observations made in animal models and some of the conclusions drawn from epidemiological studies must be reconciliated with ETS levels and corresponding exposures that can be expected to occur in the human environment.

Environmental Tobacco Smoke: Experimental Facts and Societal Issues: Introduction, H. P. Witschi, University of California, Davis, CAETS:

Cancer and Other Health Effects in Humans, A.H. Wu, RCHAS-OEHHA, Berkeley, CA

ETS Effects on Perinatal Lung Development in Rats, K.E. Pinkerton, University of California, Davis, CA

Expanded Toxicological Evaluations of Aged and Diluted Sidestream Smoke from a Different Cigarette, C. Coggins, R.J. Reynolds Tobacco, Winston-Salem, NC

Environmental Tobacco Smoke and Acceleration of Arteriosclerotic Plaque Development, A. Penn, NYU Medical Center, Tuxedo, NY

Science and Policy Conflicts in ETS Risk Assessment, G.B. Gori, The Health Policy Center, Bethesda, MD

Excitotoxins, Aging, and Environmental Neurotoxins: Implications for Understanding Human Neurodegenerative Diseases

Chairpersons: R. Dawson, University of Florida, Gainesville, FL, and D. Di Monte, California Parkinson's Foundation, San Jose, CA

Sponsored by the Neurotoxicology Specialty Section

We are an aging society and current demographic trends point to a likely increase in age-related neurodegenerative diseases. The aged population may have a number of unique risk factors that result in a predisposition to neuronal damage from neurotoxic agents and metabolic conditions that result in the excessive release of endogenous excitatory amino acids (glutamate, aspartate, etc.). This symposium will address the involvement of exitatory amino acids as final common mediators of neuronal death associated with neurotoxic insults. The interrelationship between the aging process, neurodegenerative diseases and environmental neurotoxins will be explored. The mechanism of action of excitotoxins will be discussed in light of the enhanced susceptibility and potential vulnerability of the aged nervous system to neurotoxins that perturb cellular metabolism and homeostatic processes. The speakers will address these issues from a number of perspectives. The presentations will serve to focus attention on the role of excitatory amino acids in mediating neurotoxicity in the aged central nervous system and the inherent implications

for understanding human neurodegenerative disease processes.

Excitotoxins, Aging, and Environmental Neurotoxins: Implications for Understanding Human Neurodegenerative Diseases: Introduction, R. Dawson, University of Florida, Gainesville, FL

Excitotoxicity in Huntington's Disease, M.F. Beal, Massachussetts General Hospital, Boston, MA

Cyanide-Induced Excitotoxicity and Neurodegeneration, G.E. Isom, Purdue University, West Lafayette, IN

Mitochondrial Damage and Excitatory Amino Acids in Human Parkinsonism, D.A. DiMonte, The Parkinson's Institute, Sunnyvale, CA

The Relation Between Excitoxicity and Oxidative Stress, S.C. Bondy, University of California, Irvine, CA

Health Risks Associated With Prenatal Metal Exposure

Chairpersons: J.T. Zelikoff, New York University Medical Center, New York, NY, and J. Rogers, US EPA, Research Triangle Park, NC

Sponsored by the Metals and Reproductive and Developmental Toxicology Specialty Sections

For many toxic agents, including metals, the neonate and fetus are particularly sensitive to immunomodulation, carcinogenesis, and other forms of chemical injury. Results from epidemiological and/or laboratory studies have shown that exposure to a variety of occupationally-associated metals may affect the health of both the perinate and the mother. A great deal of interest has recently emerged concerning the health risks associated with exposure of pregnant women to metals in the workplace. This interest has been prompted by the recent Supreme Court Case (UAW vs. Johnson Controls) regarding the legal rights of women workers in occupational settings. In this symposium, the applicability of this decision will be explored in determining issues related to women in their reproductive years; specific examples (individual case studies) concerning occupational exposures to lead, mercury, and cadmium will be discussed. The legal ramifications concerning the rights and obligations of pregnant women exposed in the workplace, the rights of manufacturers, and the question of potential tort liability for occupational reproductive harm to both female and male workers will be addressed. Subsequent speakers will focus on the epidemiological and toxicological evidence that demonstrates the health effects and underlying mechanisms associated with exposure to lead, arsenic, and methyl mercury on the mother and developing offspring.

Health Risks Associated With Prenatal Metal Exposure: Introduction, J.T. Zelikoff, New York University Medical Center, New York, NY

Health Risks Associated With Prenatal Metal Exposure: Pregnancy Discrimination, Women's Health Issues and The Law, J.E. Bertin, Columbia University School of Public Health, New York, NY

Environmental/Occupational Exposure in Women: Issues Post Johnson Controls, R.K. Miller, University of Rochester, Rochester, NY

Pathogenetic Role of Lipid Peroxidation in Prenatal Toxicity of Arsenic, S.A. Tabacova, National Center of Hygiene and Medical Ecology, Sofia, Bulgaria

Exposure to Lead During Reproduction and Menopause: Implications for Toxicity of the Mother and Child, E.K. Silbergeld, University of Maryland School of Medicine, Baltimore, MD

Methylmercury Developmental Neurotoxicity, T.M. Burbacher, University of Washington, Seattle, WA

Immunotoxicity: Bridging the Gap Between Animal Research and Human Health Effects

Chairpersons: M.J. Selgrade, USEPA, Research Triangle Park, NC and M. Luster, NIEHS, Research Triangle Park, NC

Sponsored by the Immunotoxicology and Risk Assessment Specialty Sections

There is ample evidence that a number of xenobiotics suppress various components of the immune system and enhance susceptibility to disease when tested in laboratory animals. There is much less data on effects of xenobiotics on human immune responses. The challenge is to interpret animal data in terms of human health effects. Speakers will present human data on immunosuppressive effects caused by exposure to O3, UV radiation, and therapeutic drugs, e.g. cyclosportin A, and will discuss the relationship between human and animal responses to these agents (for which controlled human exposures are possible) as well as implications for enhanced susceptibility to infectious and neoplastic disease. Additional presentations will discuss an alternate approach to bridging the animal/human gap in cases where controlled human exposures are not possible, and studies designed to assess the effects of occupational exposures on the immune response and difficulties associated with such studies. For immunotoxicity the questions in risk assessment still seem to be: What's the Hazard? and What's the evidence that humans are at risk? This symposium will address those issues. This abstract does not reflect EPA policy.

Immunotoxicity: Bridging the Gap Between Animal Research and Human Health Effects: Introduction, M.J. Selgrade, USEPA, Research Triangle Park, NC and M. Luster, NIEHS, Research Triangle Park, NC

Immunotoxic Effects of Exposure to UV: Studies in Human Subjects and Animal Models, K.D. Cooper, University of Michigan, Ann Arbor, MI

Immunotoxicity of Ozone: A Comparison of Effects in Animal Models and Human Subjects, R.B. Devlin, USEPA, Research Triangle Park, NC

The Scid Mouse as a Tool to Bridge the Gap Between Human and Animal Responses, H. Van Loveren, R.I.V.M., Bilthoven, The Netherlands

Problems Associated with Assessing Immunotoxic Effects in Human Populations Exposed Occupationally, R.E. Biagini, CDC/NIOSH, Cincinnati, OH

Immunosuppressive Drugs: Parallel Responses in Humans and Animals, M.J. Murray, Sandoz Research Institute, East Hanover, NJ

Impact of Nutrients on Cellular Lipid Peroxidation and Antioxidant Defense System

Chairpersons: D. P. Jones, Emory University, Atlanta, GA, and S. T. Omaye, University of Nevada, Reno, NV

Sponsored by the Food Safety Specialty Section

Oxidative stress (OS) is implicated in a variety of toxic reactions. Any agent that is capable of abstracting a hydrogen atom from a membrane lipid and initiate lipid peroxidation (LP) would have the potential to produce serious cellular disfunction. OS is the situation where O_2 and its intermediates may react with cellular components with resultant degradation or inactivation of vital biologic substances. The susceptibility of a given tissue to OS depends on various nutrients that serve as antioxidants (AO). In some situations, oxidative damage may be attributed to the consequences of insufficient AO potential. Although the relationship of dietary factors and the pathogenesis of various nutrient deficiency diseases has been recognized, we are only learning how these factors are interrelated, i.e., AO or pro-oxidants. The speakers of this symposium will address the current concepts of the role of selected nutrient interactions with other dietary components. It is our intent that through better understanding of cellular mechanisms that lead to oxidative injury and of the intrinsic cellular defense systems, we will be better able to unravel the ethology of certain toxicant-induced damage.

Impact of Nutrients on Cellular Lipid Peroxidation and Antioxidant Defense System: Introduction, S. T. Omaye, University of Nevada, Reno, NV

Antioxidant Reserve of the Cell: Attack by Phenoxyl Radicals, V.E. Kagan, Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA

Iron and other Metals and Lipid Peroxidation, S.D. Aust, Utah State University, Logan, UT

Approaches to Improve GSH-Dependent Detoxication and Antioxidant Status *In Vivo*, D.P. Jones, Emory University, Atlanta, GA

Dietary Sulfur, Glutathione and Lipid Peroxidation, D.J. Reed, Oregon State University, Corvallis, OR

Integration of Molecular Endpoints into Routine Toxicology Studies

Chairperson: J.T. MacGregor, SRI International, Menlo Park, CA

Sponsored by the Carcinogenesis Specialty Section

New molecular techniques have made available many markers of cellular damage that can be evaluated in multiple tissues *in vivo* at low cost without compromising the normal conduct of *in vivo* toxicity evaluations, and without the substitution of new species or strains of animals. These include 1) the use of fluorescent chromosome-specific DNA probes that allow evaluation of stable chromosomal rearrangements, chromosomal breaks, and aneuploidy; 2) the activation of "stress genes" that respond to general classes of toxic agents and cellular damage at doses below those that cause frank toxicity; 3) endogenous and exogenous (transgenic) reporter genes for the evaluation of *in vivo* gene mutation; and 4) electrophoretic methods for the detection of DNA strand breakage that results from DNA degradation due to cell death or to genotoxic damage. Additionally, powerful new analytical techniques, such as accelerator mass spectrometry, make possible ultrasensitive measurement of metabolite binding to specific macromolecular targets and permit pharmacokinetics studies at very low doses. Such *in vivo* assays greatly enhance our ability to extrapolate laboratory data to human health risk. Often identical or analogous endpoints can be measured in cellular models, in laboratory animals, and in man, allowing *in vitro* screening for product development, *in vivo* hazard identification and early risk assessments in animal models, and direct risk assessment in man.

Integration of Molecular Endpoints into Routine Toxicology Studies: Introduction, J.T. MacGregor, SRI International, Menlo Park, CA

Molecular Markers of Stress Gene Activation and Organelle-Specific Damage, S.B. Farr, Xenometrix, Inc., Boulder, CO

Hybridization Probes for the Detection of Chromosomal Damage and Aneuploidy, J.D. Tucker, Lawrence Livermore National Laboratory, Livermore, CA

Single Cell Gel (Comet) Electrophoresis Assay for Apoptosis and Cellular Damage, R.R. Tice, Integrated Laboratory Systems, Research Triangle Park, NC

Evaluation of Gene Mutation in Endogenous and Transgenic Reporter Genes *In Vivo*, J.A. Heddle, York University, Toronto, Ontario, Canada

Applications of Accelerator Mass Spectrometry in Toxicology: New Technology for Defining the Effects of Chemicals at Human-Equivalent Exposure Levels, K.W.

Turteltaub, Lawrence Livermore National Laboratory, Livermore, CA

Modulation of Carcinogenesis by Chemopreventive Agents

Chairperson: G. Stoner, The Ohio State University, Columbus, OH

Sponsored by the Carcinogenesis Specialty Section

Cancer chemoprevention involves the use of dietary or synthetic factors to inhibit the occurrence of carcinogen-induced cancer. There are three types of inhibitors (chemopreventive agents): (a) Agents that prevent the formation of carcinogens; (b) "Blocking" agents that prevent carcinogens from binding to critical cellular targets; and (c) "Suppressing" agents that prevent the development of tumors from carcinogen-initiated cells. In this symposium, examples of all three types of chemopreventive agents strategies for their identification and development will be discussed. Isothiocyanates, naturally occurring inhibitors of phase I enzymes involved in the metabolic activation of N-nitrosamine carcinogens, will be discussed. Oltipraz, a synthetic dithiothione compound that stimulates the activities of phase II enzymes involved in the metabolic detoxification of aflatoxin, will be discussed, as will the mechanisms by which various retinoids suppress cancer development in numerous organs, and the role of retinoid receptors in this process; and the potential application of chemopreventive agents for inhibiting chemical toxicity.

Modulation of Carcinogenesis by Chemopreventitive Agents: Introduction, G. Stoner, The Ohio State University, Columbus, OH

Strategies for the Development of Cancer Chemopreventive Agents, V.E. Steele, National Cancer Institute, Bethesda, MD

Isothiocyanates as Inhibitors of Nitrosamine Carcinogenesis, G.D. Stoner, Ohio State University, Columbus, OH

Protection Against Aflatoxin Carcinogenesis by Oltipraz: Mechanisms and Markers, T.W. Kensler, Johns Hopkins School of Hygiene and Public Health, Baltimore, MD

Retinoids as Chemopreventive Agents, R. Lotan, University of Texas M.D. Anderson Cancer Center, Houston, TX

Molecular and Cellular Aspects of Neuroregeneration

Chairperson, R. LoPachin, SUNY at Stony Brook, Stony Brook, NY

Sponsored by the Neurotoxicology and Risk Assessment Specialty Sections

Nerve regeneration is a critically important issue to neurotoxicologists for several reasons: 1) the capacity to initiate regeneration could mean the difference between irreversible and reversible nerve injury; 2) the regenerative program could be a site of neurotoxicant action; 3) induction of regeneration might be a significant factor in determining the magnitude and expression of toxic injury; and 4) regeneration research provides information concerning neurogenesis, axonal dynamics, plasticity and other basic nerve cell functions. Unfortunately, we understand very little about how regenerative and repair processes interact with neurotoxic mechanisms. Therefore, the purpose of this symposium is to examine neuroregeneration and its relevance to neurotoxicity. Accordingly, an overview of general principles and morphological characteristics of regeneration and repair will be provided. Since neurite sprouting is the foundation of regeneration, the cellular and molecular dynamics of this process will be discussed. The roles of various neurotrophic factors and adhesion molecules in regeneration will be described and putative pharmacotherapeutic strategies will be identified and critically evaluated. Finally, the nurturing role of Schwann cells in mediating neruite outgrowth and guidance will be compared and contrasted to the inhibitory influence of CNS neuroglia. Methods of circumventing negative neuroglia effects will be delineated.

Molecular and Cellular Aspects of Neuroregeneration: Introduction, R. LoPachin, SUNY at Stony Brook, Stony Brook, NY

Neuroregeneration: General Principles and Morphological Characteristics, B.S. Jortner, Virginia Tech, Blacksburg, VA

Axonal Dynamics and Regeneration, S.T. Brady, University of Texas Southwestern Medical Center, Dallas, TX

Schwann Cell and Neuroglial Involvement in Neural Regeneration, R.P. Bunge, University of Miami Medical School, Miami, FL

Therapeutic Potential of Neurotrophic Factors in Neurodegenerative Diseases, R.M. Lindsay, Regeneron, Tarrytown, NY

Molecular Biology of the Ah-Receptor

Chairperson: A. Bradfield, Northwestern University Medical School, Chicago, IL

Sponsored by the Molecular Biology Specialty Section

2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD or "dioxin") has long been studied as a prototype for a number of ubiquitous and highly toxic compounds of the planar halogenated aromatic class (e.g. halogenated-dibenzo-p-dioxins-dibenzofurans and -biphenyls). Initially, murine genetics and structure-activity studies indicated that a soluble protein, known as the AH-receptor (AHR) played

a central role in mediating the biological effects of these compounds. More recently a number of other proteins have been shown to play equally important roles in transducing the signals of compounds like TCDD. For example, somatic cell genetics has revealed the identity of a second protein, know as the AH-receptor nuclear translocator (ARNT). ARNT has been shown to be the AHR's dimeric partner and thus appears to be required for DNA recognition and gene activation. A third protein, known as the 90 kDa heat shock protein (Hsp90) has been shown to associate with the AHR and apparently holds the receptor in a latent form unable to bind DNA. This symposia will focus on recent observations relevant to the molecular biology of each of these signalling molecules. Efforts will be made to critique and compare the most popular models that describe this signal transduction system.

Molecular Biology of the Ah-Receptor: Introduction, C. A. Bradfield, Northwestern University Medical School, Chicago, IL

Genetic Analysis of Ah Receptor Action, O. Hankinson, University of California, Los Angeles, CA

Molecular Characterization of the Ah-Receptor, C.A. Bradfield, Northwestern University, Chicago, IL

Biochemical Properties of the Ah-Receptor, G.H. Perdew, Purdue University, West Lafayette, IN

Interaction of Transformed Ah Receptor Complex With Dioxin-Responsive Element and Modulation of Gene Expression, M.S. Denison, University of California, Davis, CA

Dioxin-Responsive Genes: Insights into the Function and Specificity of the Activated Ah Receptor, T.R. Sutter, Johns Hopkins University, Baltimore, MD

New Advances in the Mechanisms of Lethal Cell Injury

Chairpersons: R.G. Schnellmann, University of Georgia, Athens, GA and J.J. Lemasters, University of North Carolina, Chapel Hill, NC

Exposure of humans and animals to a variety of chemicals can result in organ-specific toxicities. Chemically-induced organ failure results when a significant number of the cells suffer lethal injury. While chemically-induced cell death has been studied for some time, several advancements in the past few years have significantly increased our insights into the mechanisms and the temporal sequence of events involved in lethal cell injury. This symposium will focus on four of these advances with respect to the liver, kidney, lung and central nervous system. In particular, the role of the mitochondrial permeability transition in oxidant-induced liver cell injury, the activation of phospholipase A in ischemic- and toxicant-induced renal, lung, and neuronal cell injury, the mechanism by which glycine and strychnine exert their extensive cytoprotective effects following diverse insults in multiple cell types, and the interplay between inflammatory cells, cytokines, and nitric oxide synthase in chemically-induced liver injury will be discussed.

New Advances in the Mechanisms of Lethal Cell Injury: Introduction, R.G. Schnellmann, University of Georgia, Athens, GA

Role of the Mitochondrial Permeability Transition (MPT) in Oxidant-Induced Cell Injury, J.J. Lemasters, Department of Cell Biology and Anatomy and Curriculum in Toxicology, University of North Carolina, Chapel Hill, NC

Phospholipase A_2 Activation in Cell Injury and Death, J.V. Bonventre, Harvard Medical School, Charleston, MA

The Cytoprotective Mechanisms of Glycine and Strychnine in Diverse Chemical Insults, R.G. Schnellmann, Department of Physiology and Pharmacology, University of Georgia, Athens, GA

Chemically-Induced Hepatic Injury: The Interplay Between Inflammatory Cells, Cytokines, and Inducible Nitric Oxide Synthase, T.R. Billiar, Department of Surgery, University of Pittsburgh, Pittsburgh, PA

Stress Proteins and Toxicity

Chairpersons: S.M. Roberts, University of Florida, Gainesville, FL and J.L. Stevens, W. Alton Jones Cell Science Center, Lake Placid, NY

Sponsored by the Mechanisms and Molecular Biology Specialty Sections

Stress proteins, including the heat-shock (hsp) and glucose-regulated (grp) families of proteins, are produced by cells in response to a variety of adverse stimuli, including those of physical, chemical, and biological origin. Stress protein synthesis in response to stressors is a remarkably consistent characteristic from bacterial to human cells. Stress proteins have been implicated in molecular chaperoning, folding and assembly of proteins, and in targeting proteins for degradation. While their role in the response to toxic insult is far from clear, it appears that their rapid synthesis may be important in repairing - and perhaps preventing - cell damage, particularly to proteins. Stress protein induction may also be a sensitive biomarker for toxicity. Initial presentations will describe current understanding of the functions of these proteins in stressed and unstressed cells and the processes that regulate their expression. Subsequent presentations will discuss stress proteins in the cellular response to reactive metabolites and emerging evidence for cross-tolerance and cytoprotection mediated by stress proteins.

Stress Proteins and Toxicity: Introduction, S.M. Roberts, University of Florida, Gainesville, FL and J.L. Stevens, W. Alton Jones Cell Science Center, Lake Placid, NY

Functions of the Heat Shock or Stress Proteins in Molecular Chaperoning and Proteotoxic Responses, L.E. Hightower, University of Connecticut, Storrs, CT

Regulation of the Expression of Stress Proteins, R.W. Voellmy, University of Miami School of Medicine, Miami, FL

Thermal and Chemical Cross-Tolerance of Physiological Function, J.L. Renfro, University of Connecticut, Storrs, CT

Stress Proteins as Targets for Reactive Electrophilic Metabolites, A. Bruschi, W. Alton Jones Cell Science Center, Lake Placid, NY

The Toxicology of Electromagnetic Fields: Issues and Uncertainties

Chairpersons: S. Baker, EA Engineering Science and Technology, Inc., Silver Spring, MD and D. V. Singh, USEPA, Washington, DC

Sponsored by the Carcinogenesis and Risk Assessment Specialty Sections

Scientific methods used to assess the toxicology of electromagnetic fields (e.g., 60 cycle) are remarkably different from methods used to assess the toxicology of chemicals. The objectives of this symposium are to (1) demonstrate that EMF has been reported to cause chemical changes and biological responses in exposed organisms; (2) heighten awareness and foster understanding in the scientific issues; (3) stimulate exchange of ideas and consensus building on the theories of mode of EMF action, the relative importance of EMF modes of action, and possible methods for exploring these theories; and (4) provide an update on existing global research activities and policy actions so that interested scientists know how to channel their views and interests in helping to resolve the outstanding scientific issues and uncertainties. The focus of this symposium will be on issues and uncertainties related to (1) the biological effects of extremely low (e.g., 60 Hz electrical power) and very low (e.g. video display terminals) electric and magnetic frequencies; (2) key health effects of scientific interest and their potential biological mechanisms of action; (3) specialized exposure assessment techniques required for EMF; (4) global activities underway to resolve issues and uncertainties; and (5) problems of public perception and education.

The Toxicology of Electromagnetic Fields: Issues and Uncertainties: Introduction. E.A. McKenna, EA Engineering, Science and Technology, Inc., Hunt Valley, MD

Understanding EMF and the Basic Issues of Controversy. S. Baker, EA Engineering Science and Technology, Inc., Silver Spring, MD and D. V. Singh, USEPA, Washington, DC.

EMF Effects on Cell Physiology Provoke A Reexamination of Concepts in Toxicology, A.R. Sheppard, Consultant in Environmental Sciences, Redlands, CA

Biochemical Changes in the Pineal Gland as a Consequence of Experimental Electromagnetic Field Exposure, R.J. Reiter, University of Texas Health Center, San Antonio, TX

Exposure Assessment for Power-Frequency Electric and Magnetic Fields, W.T. Kaune, EM Factors, Richland, WA

Communicating a Public-Health Perspective on EMF Health Risks, P.A. Valberg, Gradient Corporation, Cambridge, MA

Use of Human Cells and Tissues in Toxicology and Carcinogenesis Research

Chairperson: D. G. Kaufman, University of North Carolina, Chapel Hill, NC

Sponsored by the Carcinogenesis Specialty Section

This symposium will consider progress that has been made in studies of human cells and tissues that may ultimately be useful to estimate carcinogenicity of substances in humans. The problems associated with obtaining human cells and tissues for research will be considered. Attention will be given to the opportunities and problems associated with use of human cells and tissues to evaluate metabolism of chemicals. Also considered will be biochemical and molecular markers and indicators that may be used as surrogates to carcinogenicity. Application of molecular genetics techniques to studies of the role of hereditary and acquired genetic lesions in human cancer will be described. These will include application of these techniques to epidemiologic studies. Identifying differences in types and locations of lesions in DNA might be used to deduce responsible exposures to DNA damaging agents. Also discussed will be homeostatic interactions between cells in human tissues, alterations of stromal-epithelial interactions in cancers, and modeling normal and pathologic cell interactions in culture. The ultimate value of studies with human cells and tissues is that they consider the unique properties of humans. The use of human cells eventually might complement or replace comparable studies with animals or animal cells. This could benefit risk estimation by eliminating the need for extrapolation between species to gauge risks in humans.

Use of Human Cells and Tissues in Toxicology and Carcinogenesis Research: Introduction, D. G. Kaufman, University of North Carolina, Chapel Hill, NC

Organization, Operation and Applications of a Human Tissue Resource for Toxicological Research, J. Resau, ABL-BRP, NCI-FCRDC, Frederick, MD

Human Tissue Culture System for Studies of Carcinogen Metabolism and Macromolecular Interactions, G.D. Stoner, Ohio State University, Columbus, OH

Biochemical and Molecular Epidemiology: Application of Methods for Human Cancer Risk Assessment, A. Weston, Mount Sinai School of Medicine, New York, NY

Studies with Human Endometrial Cell Cultures as a Paradigm for the Use of Human Cells and Tissues in Toxicology and Carcinogenesis, D.G. Kaufman, University of North Carolina, Chapel Hill, NC●

1994 Continuing Education Courses Sunday, March 13

Molecular Mechanisms Controlling Gene Expression

Chairperson: Ronald N. Hines, Wayne State University School of Medicine, Detroit, MI

- **Transcription and Assembly of Active Transcription Complexes**, R. N. Hines, Wayne State University School of Medicine, Detroit, MI
- **Translational Control and Efficiency**, T. A. Kocarek, Wayne State University, Detroit, MI
- **RNA Processing and Splicing**, H. W. Schaup, Oregon State University, Corvallis, OR
- **Signalling Pathways Transmitting Information Affecting Transcriptional and/or Translational Machinery**, J. J. Reiners, Wayne State University, Detroit, MI

Toxicokinetics: Study Design and Data Analysis

Chairpersons: Glenn F. Rush, Lilly Research Laboratories, Indianapolis, IN and John Newton, Sterling-Winthrop Corporation, Rensselaer, NY

- **Theoretical and Practical Considerations in Analysis of Pharmacokinetic Data**, G. Lockwood, Sterling-Winthrop Corporation, Rensselaer, NY
- **Interpretation of Pharmacokinetic Data Derived from Toxicology Studies**, J. F. Newton, Sterling-Winthrop Corporation, Rensselaer, NY
- **Methodologies for Toxicokinetic Analysis**, S. Allerheiligen, Lilly Research Clinic, Indianapolis, IN
- **Pharmacokinetics Can Be Limited in the Absence of Pharmacodynamics**, A. M. Monro, Pfizer Central Research, Groton, CT

Molecular Biomarkers in Toxicology

Chairperson: Thomas W. Kensler, Johns Hopkins University, Baltimore, MD

- **Development, Validation and Application of Biomarkers: An Overview**, T. W. Kensler, Johns Hopkins University, Baltimore, MD
- **Molecular Dosimetry of Toxic Agents**, J. D. Groopman, Johns Hopkins University, Baltimore, MD
- **Molecular Markers of Adverse Effects**, G. N. Wogan, Massachusetts Institute of Technology, Cambridge, MA
- **Markers of Individual Susceptibility**, F. F. Kadlubar, National Center for Toxicological Research, Jefferson, AR

International Harmonization: Update on Scientific and Regulatory Issues

Part I: Foods, Drugs, Cosmetics, and Devices.

Chairperson: Frances A. Mielach, US FDA, Rockville, MD

- **Introduction**, F. A. Mielach, US FDA, Rockville, MD
- **Scientific and Political Aspects of International Harmonization of Drug Safety**, R. E. Stoll, Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, CT
- **Perspectives for Expanded Toxicological Testing Applied to Direct Food and Color Additives with Emphasis on Immunotoxicology**, D. M. Hinton, US FDA, Laurel, MD
- **Medical Devices: Standardization Process and Players**, S. J. Northup, Baxter Healthcare, Inc., Round Lake, IL
- **International Harmonization: Cosmetics, Fragrances and Flavors**, K. R. Schrankel, International Flavors and Fragrances, Inc., Union Beach, NJ

International Harmonization: Update on Scientific and Regulatory Issues

Part II: Toxic Substances and Environmental Issues.

Chairperson: Frances A. Mielach, US FDA, Rockville, MD

- **Introduction**, F. A. Mielach, US FDA, Rockville, MD
- **International Harmonization of Chemical Toxicity Testing: Recent Advances**, F. R. Johannsen, Monsanto Services International, Brussels, Belguim
- **The International Harmonization of Pesticide Regulation**, A. Lindsay, US EPA, Washington, DC
- **Prospects for International Harmonization of Risk Assessment Methodologies for Human Health**, P. Fenner-Crisp, US EPA, Washington, DC
- **International Harmonization of Guidelines for Evaluating Ecotoxicology and Exposure of Pesticides**, A. Rispin, US EPA, Washington, DC

In Vitro Neurotoxicology: Principles, Practice and Paradigms

Chairperson: M. Anthony Verity, Department of Neuropathology, Brain Research Institute, UCLA School of Medicine, Los Angeles, CA

- **Schwann Cells In Vitro: Studies on Schwann Cell-Axonal Interaction**, G. H. DeVries, Department of Biochemistry, Medical College of Virginia, Richmond, VA

- **Cerebral Endothelial Cell: Endothelial-Glial Interaction as a Blood-Brain Barrier Paradigm,** G. Goldstein, Kennedy Institute, Baltimore, MD
- **The Astrocyte,** M. Aschner, Department of Pharmacology and Toxicology, Albany Medical College, Albany, NY
- **The Neuron,** M. A. Verity, Department Neuropathology, Brain Research Institute, UCLA, CA

Target Organ Toxicology: Respiratory Tract Dosimetry and Response to Inhaled Toxicants

Chairpersons: Kevin E. Driscoll, The Procter and Gamble Company, Cincinnati, OH and Richard B. Schlesinger, New York University Medical Center, Tuxedo, NY

- **Structure of the Respiratory Tract,** K. Pinkerton, University of California-ITEH, Davis, CA
- **Particle Dosimetry,** R. Schlesinger, New York University Medical Center, Tuxedo, NY
- **Gas Dosimetry,** J. B. Morris, University of Connecticut, Storrs, CT
- **Types of Responses to Toxicants,** J. Harkema, Inhalation Toxicological Research Institute, Albuquerque, NM
- **Extrapolation Modeling: Basis for Risk Assessment,** G. Oberdoerster, University of Rochester, Rochester, NY

Strategies for Cloning Toxicant-Inducible Genes

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

- **Protein-Chemical Approaches to Obtaining Sequence for Oligonucleotide Construction,** J. Crabb, W. Alton Jones Cell Science Center, Lake Placid, NY
- **Genetics and Complementation Approaches to Cloning Genes,** V. Culotta, Johns Hopkins University, Baltimore, MD
- **Interaction and Expression Cloning,** J. Van den Heuvel, Purdue University, West Lafayette, IN
- **Differential Hybridization Approaches to Isolate cDNA Clones Representing Genes Responsive to Chemical and Physical Agents,** T. W. Sutter, Johns Hopkins University, Baltimore, MD

Sensory System Toxicology

Chairperson: Laurence D. Fechter, University of Oklahoma Health Sciences Center, Oklahoma City, OK

- **Auditory System,** L. D. Fechter, University of Oklahoma Health Sciences Center, Oklahoma City, OK
- **Visual System,** W. K. Boyes, US EPA, Research Triangle Park, NC
- **Olfactory System,** K. T. Morgan, CIIT, Research Triangle Park, NC
- **Somatosensory System,** J. Arezzo, Albert Einstein College of Medicine of Yeshiva University, Bronx, NY

Genetic Toxicology: Current Regulatory Guidelines and New Technologies

Chairpersons: Frederick B. Oleson, Jr., Biogen, Inc., Cambridge, MA and Gregory S. Probst, Lilly Research Laboratories, Greenfield, IN

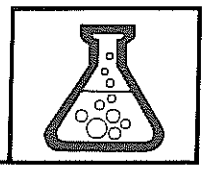
- **Introduction,** F. B. Oleson, Jr., Biogen, Inc., Cambridge, MA
- **Objectives of Genetic Toxicology Testing,** M. D. Shelby, NIEHS, Research Triangle Park, NC
- **International Guidelines (Batteries/Design),** G. S. Probst, Lilly Research Laboratories, Greenfield, IN
- **Strategies for Follow-up Testing of Positive Findings,** S. M. Galloway, Merck Research Laboratories, West Point, PA
- **New Technologies/Testing Design,** J. T. MacGregor, SRI International, Menlo Park, CA

Pulmonary Immune Responses

Chairperson: Judith T. Zelikoff, New York University Medical Center, Tuxedo, NY

- **Introduction and Overview,** J. T. Zelikoff, New York University Medical Center, Tuxedo, NY
- **Antigen Presenting Cells of the Lung,** M. Lipscomb, University of Texas Southwestern Medical Center, Dallas, TX
- **Cell Adhesion Molecules in the Lung,** C. Wegner, Boehringer Ingelheim Pharm., Inc., Ridgefield, CT
- **T Cell-Mediated Immunity and Receptors,** S. Becker, TRC Environmental Corporation, Chapel Hill, NC
- **Cytokines and Pulmonary Defense,** B. Devlin, US EPA, Research Triangle Park, NC ●

Placement Services



CHEMISTRY FACULTY

For toxicologist with strong chemistry or biochemistry background. Tenure-track assistant/associate professor rank beginning fall 1994. PhD and evidence of promise of excellence in both teaching and research required. Responsibilities include teaching chemistry courses at introductory level as well as undergraduate/graduate (MS level) courses in toxicology and biochemistry, and developing research program. Submit letter of application with names of three references, resume, undergraduate and graduate transcripts (copies acceptable), statements of teaching philosophy, research interests, equipment requirements, preferably by December 10. Have three letters of recommendation and above materials sent to Position F9409, 204 King Mall, Eastern, Michigan University, Ypsilanti, MI 48197. Women and members of minority groups are encouraged to

apply. EMU is an affirmative action/equal opportunity employer.

CHIEF OF TOXICOLOGY

The Animal Disease Diagnostic Laboratory and the Department of Pathology of the School of Veterinary Medicine at Purdue University are seeking a Veterinary Toxicologist for a joint appointment tenure track position. Applications are invited from individuals with advanced training and experience in veterinary toxicology. DVM and PhD degrees with ABVT certification and demonstrated interest/aptitude in diagnostic food animal toxicology, as well as interest/aptitude in applied or basic toxicologic research, are preferred. Primary responsibility of the position is directorship of the toxicology section of the diagnostic laboratory which includes 2-3 technicians and a PhD degree chemist. Consultations with veterinarians, owners and State/Federal regulatory agencies are expected. Opportunities exist for collaborative research in a variety of areas, such as environmental toxicology, immunotoxicology, hematotoxicology, neurotoxicology, and biochemical toxicology. Research programs are supported by mammalian cell and molecular biology core facilities on campus. The successful candidate will also have an opportunity to be involved in the emerging toxicologic pathology graduate training program that is being jointly developed in the Schools of Veterinary Medicine and Pharmacy. Salary and rank date for applications is December 31, 1993, or until the position is filled. Applicants should submit a curriculum vitae and names of 5 references with a letter expressing their professional interests and goals to:

H. Thacker, DVM, PhD, Chairman, Toxicologist Search, Animal Disease Diagnostic Laboratory, 1175 ADDL, Purdue University, West Lafayette, IN 47907-1175. Purdue University is an Affirmative Action/Equal Opportunity Employer/Educator.

SENIOR RESEARCH TOXICOLOGIST

Southwest Research Institute's Biosciences and Bioengineering Department has a current opening for a Senior Research Toxicologist. The successful candidate will perform pre-clinical research for the biotechnology industry, and development of medical devices, and assist the current staff in the areas of behavioral sciences, inhalation toxicology, pharmacokinetics, physiology, primatology, neurotoxicology, and veterinary medicine. The position requires being able to function as a knowledgeable, independent scientist capable of establishing and maintaining recognized competence among peers both within the Institute and the industry. Position also will involve both implementing a research specialty of their own and serving as a Study Director for GLP toxicology projects. In addition to establishing a laboratory and training staff, successful performance will require both writing of proposals, protocols, price estimating, project management, and reports, as well as verbal communication with clients. A doctoral degree in an area such as toxicology, pharmacology, or physiology is required. Minimum of three year's of post-graduate activity preferably in an industrial or contract laboratory environment providing experience in GLP testing and or/applied R&D, is required. The specific area of expertise is not restricted, but experience in more than one of the following areas is highly desirable: biochemistry, cell culture, dermato/ocular toxicology, general toxicology, genotoxicology, hematotoxicology, immunotoxicology, *in vitro* toxicology, or reproductive toxicology. Certification by the American Board of Toxicology is recommended. Skills in the operation of a clinical chemistry laboratory is a definite "plus" including candidates with a DVM degree and pathology experience.

Southwest Research Institute is a non-profit research and development organization offering the kind of competitive salary and comprehensive benefits package that you would expect from a leader in the research industry. Resumes should be addressed to: Barbara James, Personnel Specialist, Southwest Research Institute, Personnel Department, 717 P.O. Box Drawer 28510, San Antonio, Texas 78228-0510.

SENIOR SCIENTIST

Conduct studies, maintain records and communicate results of *in vitro* toxicology studies, 10-20% travel. Require Masters Degree in biological science and 3 + years experience in *in vitro* toxicology. Send resume to: Estee Lauder, Inc. Professional Recruitment-K.M., 350 S. Service Rd., Melville, NY 11747.

TOXICOLOGIST/RISK ASSESSORS

We are currently expanding our toxicology and risk assessment group and are seeking individuals trained in toxicology, pharmacology, public health or related sciences. Positions are available at all levels from entry through senior management. We provide toxicology and risk assessment support to Jacobs Engineering and affiliated companies across the nation from our Kansas City, Missouri location. Current activities are focused in providing risk assessments and risk related technical support for EPA and a variety of federal departments (e.g., Navy, Army Department Energy). Future activities are anticipated to include risk assessment related support to the pharmaceutical industry. Successful candidates will be good communicators both orally and in writing; will be enthusiastic members of interdisciplinary technical teams; and, will be able to relocate to the Kansas City, Missouri area. If interested please forward your resume to Jan E. Storm, PhD, DABT, Manager, Risk Assessment and Toxicology, Jacobs Engineering Group, Inc., 10901 West 84th Terrace, Suite 210, Lenexa, Kansas 66214 or telephone us at 913/492-9218 for more information.

ENVIRONMENTAL TOXICOLOGIST

Duke University's School of the Environment seeks applicants for a tenure track or tenured faculty position in environmental toxicology. Preference will be given to applicants at the Junior level, but applications from outstanding individuals with established research programs are also encouraged. The successful applicant is expected to develop a nationally recognized externally funded research program, and to teach and advise graduate-level research and professional students. Training and/or experience in the application of molecular biological techniques to the effects of contaminants in aquatic, marine or terrestrial ecosystems are especially desirable. Suitable areas of research include, but are not limited to, molecular aspects of xenobiotic metabolism and mechanisms of action in ecologically-relevant organisms, molecular/cellular adaptions of free-living organisms to environmental stressors, and molecular-based approaches for assessing exposures to and effects of contaminants in ecosystems.

The School of the Environment at Duke University offers a combination of multidisciplinary graduate and professional programs in environmental toxicology, chemistry and risk assessment; water and air resources; resource ecology; resource economics and policy; forest resource management; coastal environmental management; and ocean sciences. The School houses the ecotoxicology track of the University's Integrated Toxicology Program and several interdisciplinary research centers including the Marine Biomedical Center, The Wetlands Center, The Center for Topical Conservation, and the Center for Resource and Environmental Policy Research. This position in environmental toxicology will be located in the Levine Science Research Center, a state-of-the-art facility scheduled for completion in Spring, 1994 that will be the new home for the Durham component of the School of the Environment.

Applicants should send a curriculum vitae, statement of research and teaching interests, and three letters of reference. All materials and requests for information should be directed to: Dr. Richard T. Di Guillo, Chair, Environmental Toxicology Search Committee, School of the Applications will be accepted through December 31, 1993 or until a suitable candidate is identified.●

Publications of Interest

Intellectual Property Rights in Industry-Sponsored University Research: A Guide to Alternatives for Research Agreements, Government-University Industry Research Roundtable, National Academy Press, 2101 Constitution Ave., NW, Washington, DC 20418, Telephone: 202/334-3486.

Issues and Reviews in Teratology, Volume 6, Harold Kalter, Plenum Press, 233 Spring Street, New York, NY 10013.

Pesticides in the Diets of Infants and Children, National Research Council, National Academy Press, 2101 Constitution Ave., NW, Washington, DC 20418, Telephone: 202/334-3486.

Pharmaceuticals Particulate Carriers: Therapeutic Applications, Alain Rolland, Marcel Dekker, Inc., 270 Madison Ave., New York, NY 10016, Telephone: 212/696-9000.

Mitochondrial Dysfunction, Lawrence H. Lash, Dean P. Jones, Academic Press, 525 B Street, Suite 1900, San Diego, CA 92101-4495

Risk, Edward J. Burger, University of Michigan Press, 839 Greene Street, P.O. Box 1104, Ann Arbor, MI 48106-1104, Telephone: 313/764-4388.

Toxic Risks: Science, Regulation, and Perception, Ronald E. Gots, National Medical Advisory Service, Inc., 7910 Woodmont Ave., Suite 700, Bethesda, MD 20814-3015, Telephone: 301/913-0014.

Toxicology of the Immune System: A Human Approach, Robert Burrell, Dennis K. Flaherty, Leonard J. Sauers, Van Nostrand Reinhold, 115 Fifth Ave., New York, NY 10003.●

RASS V — Fifth Risk Assessment Summer School

The Executive Committee of IUTOX is pleased to announce the Fifth Risk Assessment Summer School (RASS V) to be held August 27- September 4, 1994, at the Manor of Groves (30 miles from Cambridge), England.

Previous RASS conferences were held in 1985 in Denmark, in 1987 in the USA, in 1990 in Capri, Italy and 1992 in Bermuda. The objectives are to offer young toxicologists unique opportunities to broaden their knowledge and experience in the field of chemical risk assessment and to achieve a better understanding of the data evaluation process.

The school will be an exclusive training conference with few formal lectures and ample time for discussion of study cases, prepared by the students in advance, and other topics of interest between teachers and students in order to facilitate the exchange of knowledge and experiences.

The faculty will consist of highly qualified scientists- **Wallace Hayes** and **Paul Slovic** USA, **Bo Lambert** and **Torbjorn Malmfors** - Sweden, Paul Peters - The Netherlands, and Iain Purchase and John Newman - UK, who will share their background and experience with students during the whole course.

Selected students must be scientifically qualified in toxicology at the doctoral level, have some practical experience, be less than 35 years of age, and have a working command of conversational English. Twenty to thirty students will be selected by IUTOX based upon merit, geographical distribution, affiliation, and areas of interest. The application form should be submitted no later than January 15, 1994. For further information and application form, please contact the RASS Secretariat:

Malmfors Consulting AB, Vastmannagatan 48, S-113 25 Stockholm/Sweden, Telephone: +46 8 31 19 90, Fax: +46 8 30 11 33.●

Upcoming Conferences

Risk Assessment in Environmental Carcinogenesis, January 17-22, 1994, Whistler Conference Center, British Columbia, Canada. Contact: Special Conference Information, American Association for Cancer Research, Public Ledger Building, 620 Chester Street, Suite 816, Philadelphia, PA 19106. Telephone: 215/440-9300, Fax: 215/440-9313.

NATO Advanced Study Institute on Modulation of Cellular Responses in Toxicity, January 24 - February 3, 1994, Ponte di Legno, Italy. Contact: Daniela Galli, Nutrition Foundation of Italy, Via G. Balzaretti 9, I-20133 Milan, Italy. Telephone: (02) 29404672, Fax: (02) 29404961.

Pharmaceutical Industry Environmental Assessment Workshop on Biological Effects and Fate, January 26-28, 1994, Jupiter Beach, Florida. Contact: Toxikon Corporation, 225 Wildwood Avenue, Woburn, MA 01801, Telephone: (800) 458-4141.

Roundtable of Toxicology Consultants Symposium, February 4-5, 1994, University of Scranton, Scranton, PA. Contact: Patricia Lang, Roundtable of Toxicology Consultants, P.O. Box 17597, Fountain Hills, AZ 85268. Telephone: (602) 837-0147, Fax: (602) 837-0147.

Workshop on Asthma as an Air Toxics End Point, February 4, 1994, Houston, TX. Contact: Andrij Holian, Ph.D., Director of Research, Mickey Leland National Urban Air Toxics Research Center, P.O. Box 20286, Houston, TX 7725-0286, Telephone: (713) 792-7459, Fax: (713) 792-4407.

American Association for the Advancement of Science 1994 Annual Meeting, February 18-23, 1994, San Francisco, CA. Contact: AAAS Meeting Office, 1333 H St., NW, Washington, DC 20005, Telephone: (202) 326-6450, Fax: (202) 289-4021.

Infusion Technology in Preclinical Research, March 12, 1994 (3:00 p.m. - 5:30 p.m.), Loews Anatole Hotel, Dallas, TX. Contact: Jill Guimont, Pharmacia Deltec, 1265 Grey Fox Rd., St. Paul, MN 55112, Telephone: (612) 628-7090, Fax: (612) 638-0364.

Society of Toxicology 1994 Annual Meeting, March 13-17, 1994, Loews Anatole Hotel, Dallas, TX. Contact: Dawn Caruso, Society of Toxicology, 1767 Business Center Drive, Suite 302, Reston, VA 22090-5332. Telephone: 703/438-3115, Fax: 703/438-3113.

Second International Symposium on Irritant Contact Dermatitis, April 14-16, 1994, Zurich, Switzerland. Contact: PD Dr. P. Elser, Department of Dermatology, University Hospital, Gloriatrasse 31, CH 8091 Zurich, Switzerland. Telephone: +44-1-255 3305, Fax: +41-1-255 4412.

Research Animal Anesthesia, Analgesia and Surgery, May 12-13, 1994, Atlanta, Georgia. Contact: SCAW, 4805 St. Elmo Avenue, Bethesda, MD 20814. Telephone: 301/654-6390, Fax: 301/907-3993.●

Section Award Announcements

Carcinogenesis

The Carcinogenicity Specialty Section of the Society of Toxicology will offer 3 awards for the best student abstracts presented at the March 13-17, 1994 meeting of the SOT, in Dallas, Texas. Cash Awards: first ($500), second ($300), and third ($200) ranked abstracts will be presented with a framed certificate at the meeting of the Carcinogenesis Specialty Section in Dallas. It is expected that the recipients will be present to receive their award.

Application Procedure

The abstract to the National meeting of the SOT and a covering letter both in triplicate will constitute application for a student award. It is expected that the student will be the primary author of the abstract. An abstract can be only be submitted to one Specialty Section. The cover letter from the sponsoring member of the SOT should indicate the student's role in the project and may expand upon the importance of the work in the context of carcinogenesis.

Interested candidates should submit in triplicate both their abstract and covering letter by January 10, 1994 to:

Dr. B.D. Roebuck, Department of Pharmacology, Dartmouth Medical School, 7650 Remsen, Hanover, NH 03755-3835, Telephone: 603/650-1676, Fax: 603/650-1129.

Molecular Biology

We are pleased to announce that the Molecular Biology Specialty Section of the Society of Toxicology will again offer awards for the best graduate student platform and poster presentations at the 1994 annual meeting, to be held in Dallas, TX, March 13-17. Candidates for these awards are requested to apply no later than **February 1** by submitting a copy of their abstract together with a detailed outline of their presentation to: **Dr. Curt Omiecinski**, Department of Environmental Health, SC-34, University of Washington, Seattle, WA 98195, Telephone (206) 543-1700, Fax (206) 685-4696.

To qualify, the presentations should describe original research using molecular biological approaches aimed at the study of fundamental toxicological questions. All submitted materials will be treated confidentially and will be reviewed by the Section's Awards Committee. Winners will be announced during the Molecular Biology Specialty Section meeting in Dallas.●

Regulatory And Safety Evaluation Guidelines

The Regulatory and Safety Evaluation Specialty Section was formed in November, 1992, following approval by SOT Council. This new Section already has 92 members and is growing rapidly. The Section will serve to complement the work of other Specialty Sections by providing a forum in which the latest scientific work from other Sections can be discussed in the context of scientific and regulatory policy. The Section will not only sponsor its own programs, but will make every effort to coordinate its activities with those of other Specialty Sections.

The Regulatory and Safety Evaluation Specialty Section has two main objectives. The first objective is to sponsor scientific and educational programs including symposia, poster and platform sessions, workshops, and continuing education courses, on current scientific information and scientific policy issues in the area of regulatory toxicology. Such activities will serve to highlight these scientific issues and encourage dialog between toxicologists having various scientific and regulatory perspectives on such issues.

The second objective of the Section is to encourage pro-active communication and interaction among the toxicologists in government regulatory agencies, regulated industry, and academia regarding current issues in regulatory toxicology. The Section's activities will provide a forum for interaction among scientists who might not usually have a chance to meet and discuss issues. Specific areas of interest would include drugs and biologics, medical devices, foods, veterinary products, and commercial chemicals including pesticides, and chemicals and products in the environment.

The Regulatory and Safety Evaluation Specialty Section will work to promote career opportunities in regulatory toxicology and product safety evaluation. Members of the Section will be available to visit college campuses to discuss various career paths. The Section will strive to make summer internships and post-doctoral positions in government, academic, and industry settings available. In addition, the Section will sponsor student travel awards for outstanding poster or podium presentations at the Society of Toxicology Annual Meetings.

The activities of the Regulatory Safety and Evaluation Specialty Section will be designed to address issues common to several areas in toxicology and allow for comparisons and contrasts of issues from different toxicological as well as national regulatory perspectives. For example, at the 1994 Annual Meeting, the Section will sponsor a two-part Continuing Education Course entitled International Harmonization: Update on Scientific and Regulatory Issues." This timely course will provide toxicologists with an update of the latest information from the harmonization meetings that will impact upon their present and future work. Part 1 will address issues related to Food, Drug, Cosmetics, and Devices. Part 2 will address Toxic Substances and Environmental Issues and will provide the necessary background material for the SOT Roundtable Discussion entitled "Toxicologic Approaches to International Harmonization in Risk Assessment." This Roundtable Discussion will be sponsored jointly by the Risk Assessment Specialty Section and the Regulatory and Safety Evaluation Specialty Section. Additionally, the section will be a joint sponsor, along with the Carcinogenesis and Risk Assessment Specialty Sections, for a Symposium entitled "Improvements in Default Methods for Quantitative Cancer Risk Assessment."

The Regulatory and Safety Evaluation Section was proposed and organized by Frances A. Mielach, Ph.D., R.Ph., the founding President. Anyone interested in joining the Specialty Section, offering ideas or assistance, or obtaining additional information should contact her at 301-443-9317 (fax: 301-443-9292).●

Member News

The University of Oklahoma Health Sciences Center has named **Laurence D. Fechter**, Ph.D., to the Henry D. and Ida Mosier Centennial Chair in Toxicology. The endowed chair is designed to foster the development of a multidisciplinary research and doctoral training program in Toxicology at the Health Sciences Center in Oklahoma City. Dr. Fechter will be the first recipient of this Chair. He is a neurotoxicologist specializing in the areas of environmental toxicology and mechanisms of auditory system toxicology.

George J. Levinskas and his wife, Ruth, of Creve Coeur, Missouri, have returned from Delhi, India, where Dr. Levinskas served as a volunteer with the International Executive Service Corps (IESC). IESC is a non-profit organization that provides managerial and technical assistance to private enterprises in developing countries.

Dr. Levinskas, retired Senior Toxicology Consultant, Monsanto Chemical Company, was recruited to IESC to assist the Shiriam Institute for Industrial Research (SRI), a self-supporting, non-profit, research institute offering a variety of contract research, analytical, environmental, toxicological, irradiation and information services. He evaluated and interpreted their long-term toxicological studies for the globalization of their services. This included a variety of studies, recommendations, and contacts with external sources.●

1994 Annual Meeting Schedule-At-A-Glance

SATURDAY
March 12

4:00 p.m. - 8:00 p.m.
Registration

2:00 p.m. - 5:00 p.m.
Media Training Workshop

SUNDAY
March 13

8:30 a.m. - 12:00 noon
Continuing Education Courses

9:00 a.m. - 3:30 p.m.
Guest Hospitality

10:00 a.m. - 4:00 p.m.
Placement Service Registration

1:30 p.m. - 5:00 p.m.
Continuing Education Courses

2:00 p.m - 5:30 p.m.
Education Program for Minority Students

5:00 p.m. - 6:00 p.m.
Placement Service Seminar

6:00 p.m. - 7:30 p.m.
SOT Welcoming Reception

MONDAY
March 14

8:30 a.m. - 4:30 p.m.
Exhibits Open

8:30 a.m. - 11:30 a.m.
Scientific Sessions

9:00 a.m. - 4:00 p.m.
Guest Hospitality

9:00 a.m. - 3:30 p.m.
Placement Service

9:30 a.m. - 11:30 a.m.
Poster Session for Visiting Students

12:00 noon - 1:30 p.m.
Graduate Student Luncheon

1:30 p.m. - 4:30 p.m.
Educators' Forum

1:30 p.m. - 4:30 p.m.
Scientific Sessions

5:00 p.m. - 6:30 p.m.
Specialty Section Meetings I

6:30 p.m. - 8:00 p.m.
Specialty Section Meetings II

TUESDAY
March 15

8:30 a.m. - 4:30 p.m.
Exhibits Open

8:30 a.m. - 11:30 a.m.
Scientific Sessions

9:00 a.m. - 3:30 p.m.
Placement Service

9:00 a.m. - 4:00 p.m.
Guest Hospitality

12:00 noon - 1:30 p.m.
SOT/EUROTOX Debate

1:30 p.m. - 4:30 p.m.
Scientific Sessions

4:30 p.m. - 6:00 p.m.
SOT Annual Business Meeting

6:30 p.m. - 8:00 p.m.
Specialty Section Meetings III

WEDNESDAY
March 16

8:30 a.m. - 4:30 p.m.
Exhibits Open

8:30 a.m. - 9:30 a.m.
Plenary Lecture: by Jon Franklin

9:30 a.m. - 11:30 a.m.
Scientific Sessions

9:00 a.m. - 3:30 p.m.
Placement Service

9:00 a.m. - 4:00 p.m.
Guest Hospitality

12:00 noon - 1:00 p.m.
Burroughs Wellcome Lecture by Stephen H. Safe

1:30 p.m. - 4:30 p.m.
Scientific Sessions

1:00 p.m. - 3:00 p.m.
Forum on Grantsmanship and Sources for Research Support

5:30 p.m. - 7:00 p.m.
Chapter Meetings

7:00 p.m. - 10:00 p.m.
SOT Banquet and Awards Presentation

THURSDAY
March 17

8:30 a.m. - 11:30 a.m.
Scientific Sessions

9:00 a.m. - 12:00 noon
Guest Hospitality

9:00 a.m. - 3:30 p.m.
Placement Message Center Open

12:00 noon - 1:30 p.m.
SOT Issues Session: K-12 Animals in Research Education

1:30 p.m. - 4:30 p.m.
Scientific Sessions

NOTE:

Attendees are encouraged to register on Saturday, March 12.

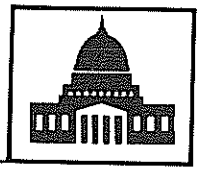
New Corporate Associate Members

The Society of Toxicology is pleased to announce the addition of two new Corporate Associate members: Unilever Research U.S., Inc. and Dow Corning Corporation.●

1992-1993 Annual Reports Available

The Society of Toxicology 1992-93 Annual Report is available upon request. Please contact Trish Strong at the SOT Headquarters office if you would like a copy.●

Watching Washington



New Report to Congress Warns of Extremist Acts — Animal rights extremists have become more militant in recent years and some have begun targeting individual biomedical researchers, according to a recent report to Congress made by the U.S. Departments of Justice and Agriculture. *Report to Congress on the Extent and Effects of Domestic and International Terrorism on Animal Enterprise,* copies of which are available from SOT Headquarters, indicates that, of the 23 extremist groups thought to be involved in illegal activity, the Animal Liberation Front is by far the most active. The report also concludes that U.S.-based animal rights extremists may be influenced by their counterparts in the U.K., where there have been as many as 250 research-related mail and car bombings per year.●