Society of Toxicology
NEWSLETTER

November/December 1991

Airfare Discounts For SOT Members to Seattle

Special airfare discounts have been arranged for all Society of Toxicology members travelling to the 1992 Annual Meeting in Seattle. These discounts represent substantial savings on the regular airfare rates to Seattle. The discounts are even greater for members who plan to spend a Saturday night in Seattle.

By using SOT reference numbers with Northwest, United and American Airlines, as suggested in the preliminary program, 1992 Annual Meeting attendees will automatically qualify for a sweepstakes drawing for two free round trip airline tickets to anywhere in the Continental United States.

For further details on the 1992 Annual Meeting in Seattle, see page three of this newsletter. ●

Discounted Airfares to Seattle

February, 1992

	Sun. - Fri. Regular/Travel Express	Sat. - Fri. Regular/Travel Express
Washington,DC	$1352/743	$408/387
Indianapolis	$1200/660	$398/378
Raleigh/Durham	$1376/756	$408/387
Kansas City	$1072/589	$343/325
Birmingham	$1334/733	$408/387
Newark	$1284/706	$408/387
La Guardia	$1284/706	$408/387
Los Angeles	$944/519	$288/$273

Based on approximate lowest published non-refundable fares as of 11/14/91

Fundamentals of Toxicology Slides Available

The Society of Toxicology is pleased to offer a comprehensive set of slides designed for introducing the science of toxicology to the general public. The cost of the slides is $150.00 (pre-paid) to include 80 slides for use in standard slide projectors.

If you would like to place an order, please complete and return the form enclosed with this newsletter.

These slides were prepared by the SOT Committee on Public Communications and approved by SOT Council. ●

SOT Resource Guide Available

The Society of Toxicology *Resource Guide to Careers in Toxicology, 2nd Edition*, detailing opportunities in toxicology for undergraduate science students, has been printed and mailed to participating universities and colleges. Members interested in receiving their own copy of the Resource Guide should contact SOT Headquarters. ●

Inside

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Deadline for next issues:

December 10, 1991
April 10, 1992
June 10, 1992

1992 SOT Annual Meeting
February 23–27
Seattle Convention Center
Seattle, Washington

President's Message

Now that the abstract deadline for the 1992 Annual Meeting has passed, it is time to consider some of the details of the meeting. Of course, we all know that our 1992 Annual Meeting is being held at the Seattle Convention Center with the nearby Sheraton Hotel and Towers as the Headquarters hotel. A very important change for the Seattle Meeting is that the events all have been shifted by one day so your arrival can qualify for an over-Saturday-night airfare! The Continuing Education courses are being given on Sunday, February 23. Scientific sessions will start on Monday and are being programmed for four full days including all day on Thursday, February 27. It is fortunate that the Program Committee, **John Emmerson**, Chairperson, decided on four full days because we have over 300 more abstract submissions than last year, nearly a 25 percent increase!

The Continuing Education Committee, **Kendall Wallace**, Chairperson, will offer nine courses at the Seattle meeting at a modest cost to the members. They have selected instructors to ensure excellence in every aspect of the courses. Equally exciting are the outstanding symposia that are being finalized by the Program Committee to give the attendees a choice of symposia each morning and afternoon for all four days.

Educational activities are still the highest priority for the Society, which is reflected in the numerous events planned for the Seattle Meeting. The expanded minority programs will be a highlight of the meeting along with the workshops, to hone the skills of each member, ranging from grant writing to effective scientific presentations.

Help us make the Seattle meeting a time to honor Members who have distinguished themselves on behalf of Toxicology. Every effort is being made to make the Awards Banquet a memorable evening for both the honorees and those who come to share in their accolades.

Those of us fortunate enough to live in the Pacific Northwest take pride in the quality of life that we enjoy–even in February. So let us show you one of our most popular cities, Seattle, with its many restaurants, coffee bars decorated with art and fine glass sculptures, museums, and the fine ski trip for those registrants willing to mix pleasure with business. Although some of you may have concern about the 600 room limit in the Headquarters hotel (the limit last year was 1300), all of the hotels are within easy walking distance of the Seattle Convention Center and they are of very high quality.

Since we are now half way through the 1991-92 SOT year that started on May 1, I would like to say a few words about finances. During the past few years, SOT activities and their costs have increased at a greater rate than income. With the outstanding contributions of the many members of committees, it is easy to understand how that could happen. The splendid achievements of these committees are well worth the money spent. However, the imbalance of income to expenditure must be corrected. Thus, during this time an enormous effort has been made by members of Council, SOT staff, and others to change the policies and practices of operations and management for SOT.

For the first time, we have placed caps on levels of expenditure and, to insure that expenditure limits are not exceeded, we have examined, in detail, how our activities are implemented on a day-to-day basis. In this manner, we have cut the cost of many of our activities. For example, we have instituted teleconferences rather than travel to Headquarters for various meetings that are short, some less than one-half day.

Preparation of materials for meetings, including the Annual Meeting, is expensive. We have achieved significant reductions in Headquarters staff time to complete many of these tasks. All aspects of printing and artwork, including weight of paper, bear substantial cost, but we have made some savings in these and other production areas. Your officers, especially **Jim Bus** and **Mike McClain**, along with everyone else, have worked hard to provide more effective management of the Society. I personally urge each of you to help wherever you can in our efforts to ensure the financial soundness of our Society.

I look forward to seeing each of you at the Seattle Meeting and, from all indications thus far, it will be a very productive meeting for everyone.

Sincerely,

Donald J. Reed

Don Reed

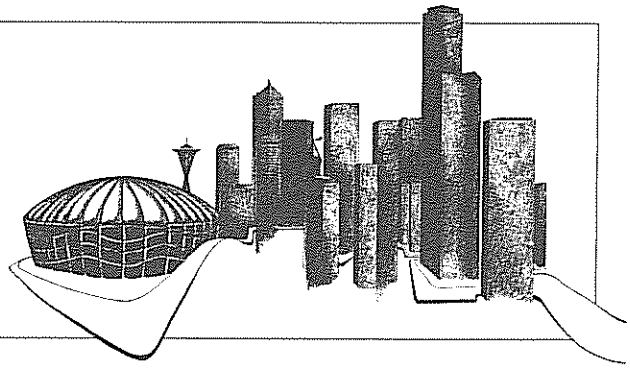
Society of Toxicology SEATTLE

31st Annual Meeting

February 23-27, 1992

Seattle Convention Center

Seattle, Washington



Educational Program for Minority Students

The SOT Education Committee will sponsor a program primarily directed toward the goal of introducing the discipline of toxicology to minority undergraduates, their advisors and other interested individuals at the Annual Meeting in Seattle. This program will be held on Sunday, February 23. Topics for discussion include training of toxicologists and opportunities for employment of toxicologists.

SOT members, graduate students, and others interested in toxicology education and early recruitment of minorities are invited and encouraged to attend this program and share their experiences, as students and toxicologists, with the minority undergraduates.

Wanted: "Host/Mentors" for Minority Student Programs at Annual Meeting

As recipients of an NIH-sponsored grant, the SOT Education Committee will be making a strong effort to introduce toxicology to minority undergraduate science majors and their advisors at the 1992 meeting in Seattle. For this effort, the Education Committee is requesting assistance from SOT members, postdoctoral students and others willing to serve as "host/mentors" for these students between their arrival on Sunday (when they will attend the educational Program for Minority Students) and the student luncheon on Monday. Host/mentors will help students find the rooms in which their special sessions will be held on Sunday and Monday and generally make these students feel welcome at SOT. This program received high marks from the students and their advisors who attended the 1991 SOT Annual Meeting in Dallas.

About 15-30 volunteers with responsibility for 1 or 2 students each are needed. Anyone willing to volunteer for this important responsibility should contact Trish Small at SOT Headquarters by January 15, 1992. Earlier identification of "host/mentors," however, would be very helpful for the planning efforts of the Education Committee and SOT Headquarters.

Effective Presentations Workshop

A complimentary one hour session, taught by **Dr. Joe L. Mauderly**, Director, Inhalation Toxicology Research Institute, will cover basic principles of effective oral presentation including organization, effective use of visual aids, and presentation. The workshop is designed for graduate students, but all are welcome. The workshop will be held on Tuesday, February 25, at the Seattle Convention Center.

Airfare Sweepstakes

The SOT's designated travel agency, Travel Express, is sponsoring a sweepstakes for two free round-trip airline tickets to anywhere in the Continental U.S. Members may qualify for the sweepstakes simply by making their 1992 Annual Meeting travel arrangements using the SOT reference numbers when making their airline reservations on Northwest, United, or American Airlines as outlined in the preliminary program. Not only will they qualify for the airline ticket giveaway, but members making travel arrangements through Travel Express will receive exceptional airfare discounts and earn credits for SOT in the process. See your Preliminary Program for details. Remember - **Jim Lamb** was the lucky winner of the 1991 tickets. In 1992, it could be you!

Reserving Space for Ancillary Meetings

Annual Meeting attendees who wish to hold an ancillary meeting should contact Clarissa Russell at SOT Headquarters, (202) 371-1393, as soon as possible. Space is available on a first-come, first-served basis, after SOT scientific and social programs have been accommodated.

Hospitality Program

The Hospitality Center, staffed Monday 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.

Guests must be registered for the Annual Meeting to have access to the Hospitality Center and be eligible for the discounted tour rates. Guests can register for the Hospitality Program by using the Annual Meeting registration form in the Preliminary Program.

Regional Chapters and Specialty Sections to Meet

The Pacific Northwest Regional Chapter will meet on Tuesday, February 25, from 6:00 p.m. - 7:30 p.m. Other Regional Chapters wishing to do so will meet Wednesday, February 26 from 5:30 p.m. - 7:00 p.m, immediately before the SOT Banquet and Awards Presentation.

The Mechanisms and Risk Assessment Specialty Sections will meet on Monday, February 24, from 5:00 p.m. - 6:30 p.m. Other Specialty Sections will meet on Tuesday, February 25 from 5:00 p.m. - 6:30 p.m.

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Placement Service Seminar

The Placement Service will again sponsor a seminar on Career Planning in Toxicology at the SOT Annual Meeting. The Seminar will be held Sunday, February 23, from 5:30 - 6:30 p.m. Previous seminars have focused on specific areas of employment such as industry, government, and academia. The Placement Committee is seeking volunteers to present their views on present and future career opportunities in a particular sector, as well as the necessary requirements. The Seminar concentrates on what employers look for in candidate interviews, job performance expectations, and the potential financial renumerations. A professional career planner is usually included in the panel of speakers to address strategies and approaches and some of the mechanics of pursuing the position for which a candidate is best suited.

If you are interested in making a presentation on potential careers in toxicology, please contact **Dr. Rudy Von Burg** at (415) 865-1888.

Annual Meeting Banquet and Awards Presentation

The Annual SOT Banquet and Awards Presentation will be held this year on Wednesday, February 26, from 7:00 - 10:00 p.m. Individual tickets are $38, however, all meeting registrants may sponsor and prepay for tables of 10 at the Annual Meeting Banquet and Awards Presentation. Registrants who purchase tables may choose their seating arrangements prior to the Banquet by contacting Trish Small at SOT Headquarters or stopping by the SOT office at the Sheraton Hotel. Requests will be honored on a first-come, first-served basis.

Medline Demonstration

Through the National Library of Medicine (NLM), professionals in toxicology and related areas can have access to more than 40 databases that comprise the most comprehensive collection of biomedical information resources in the world today. The overview/hands-on sessions will highlight the GRATEFUL MED software used to search the toxicology-related databases that are developed and maintained by NLM's Toxicology Information Program (TIP). The Program's on-line factual and bibliographic files contain comprehensive and quality information including chemical identification, the toxicological effects of drugs and other chemicals, and the handling of hazardous wastes and emergency responses. Data on estimated releases of toxic chemicals to the environment, teratology and developmental toxicology, EPA's carcinogenic and noncarcinogenic health risk and regulatory information are also available.

Each morning and afternoon (Monday through Wednesday), half-hour overviews will be presented on how to use the GRATEFUL MED software to access and search the Toxicology Information Program files of the National Library of Medicine. The remainder of the time of each of session will be used for the attendees to practice hands-on on-line searching. Microcomputer-based tutorials used to teach professionals how to effectively search some of the NLM/TIP files will also be available for examination during the hands-on times.

Forum for New Investigators

Chairperson: ***Robert A. Roth****, SOT Education Committee*

The SOT Education Committee sponsors the Forum for New Investigators, a forum for new investigators seeking funds for research and training. This year's program, on Wednesday, February 26, from 2:00 -4:00 p.m., will include a brief summary of the NIH individual grants program, but will emphasize programs from other federal agencies. In addition, hints on preparing a proposal will be presented. The panel will include representatives from the U.S. Department of Agriculture, Air Force, Army, and the NIH toxicology study section. Each will make a short presentation about funding opportunities, review mechanisms and/or grantsmanship before initiation of a question and answer session between the audience and panel members.

Presenters and panel members: Jean V. Smith, U.S. Army; Rosemary R. Grady, U.S. Department of Agriculture; William Berry, U.S. Air Force; **William D. Atchison**, Michigan State University and member of the Toxicology Study Section.

SOT 1992 Annual Meeting Symposia

Participants at the 1992 Society of Toxicology Annual Meeting will want to reserve adequate time to attend Annual Meeting symposia. This year's symposia address critical issues in the field of toxicology including subjects generating significant new interest. Once again, members from SOT's full professional spectrum have contributed their time and talents to produce a slate of superior symposia. 1992 Annual Meeting symposia begin on Monday, February 24 and run through Thursday, February 27.

Advances in Biologically-Based Models for Respiratory Tract Uptake of Inhaled Vapors

Chairperson: Michele A. Medinsky, CIIT, Research Triangle Park, NC

Physiologically-based pharmacokinetic models for volatile organic chemicals typically describe the respiratory tract as a single compartment in which chemical in the alveolar air space and the arterial blood are in instantaneous equilibrium. These models also assume that distribution of chemical in the airstream throughout the respiratory tract is uniform and that uptake is only significant in the alveolar region. A functional role for the upper respiratory tract in the uptake of volatile chemicals has been largely ignored. While these models have worked well for chemicals with low aqueous solubility in biological fluids, systemic uptake of highly soluble volatiles is overestimated. Thus, there is a significant effort to describe the critical determinants for uptake of soluble chemicals and to formulate more biologically relevant descriptions of the respiratory tract. Investigators have addressed this problem from several viewpoints. Airflow patterns in the respiratory tract, regional metabolism, diffusion-dependent uptake, and the cyclic nature of respiration are now being incorporated into the current models. Use of dosimetric models which incorporate relevant biology for inhaled chemicals will ultimately result in more rational risk assessments.

Introduction and Overview, Michele Medinsky, CIIT, Research Triangle Park, NC

Models of Airflow and Regional Gas Uptake in the Respiratory Tract, Julia S. Kimbell, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Nasal First-Pass Metabolism and Absorption of Organic Vapors, John B. Morris, Toxicology Program, University of Connecticut, Storrs, CT

Respiratory Tract Uptake of Inhaled Vapors During Cyclic Breathing, Per Gerde, National Institute of Occupational Health, Solna, Sweden

The Influence of the Respiratory Tract on the Uptake of Inhaled Compounds and on Their Delivery to Systemic Blood, John H. Overton, U.S. EPA, Research Triangle Park, NC

Chemical Allergy: Molecular Mechanisms and Practical Applications

Chairperson: Ian Kimber, ICI Central Toxicology Laboratory, Cheshire, UK

A wide variety of chemicals may cause contact allergy; some of these, in addition induce respiratory sensitization. Contact and respiratory chemical allergens provoke divergent immune responses in mice characteristic of differential stimulation of functional subpopulations of T helper (T_H) cells. Respiratory allergens appear to activate preferentially T_H2 cells resulting in interleukin 4 (IL-4) production and promotion of IgE responses. In contrast, contact allergens, which lack the potential for respiratory sensitization, stimulate T_H1 cell activation and the production of interferon γ (IFN-γ). Available evidence indicates that the form allergic reactions to chemicals will take is critically dependent uponthe relative availability of cytokines that promote delayed-type hypersensitivity and exert reciprocal antagonistic effects on the initiation and maintenance of I_gE responses and mast cell function. Preliminary data suggest that the diversity of responses to chemical allergens may be effected at the level of dentritic cell function and antigen presentation.

Introduction, Ian Kimber, ICI Central Toxicology Laboratory, Cheshire, UK

The Induction and Regulation of Immune Responses to Chemical Allergens, Ian Kimber, ICI Central Toxicology Laboratory, Cheshire, UK

Processing and Presentation of Chemical Allergens, G. Frank Gerberick, Procter & Gamble, Miami Valley Laboratories, Cincinnati, OH

A Role for Cellular Immunity in the Induction of Airway Hyperreactivity by Small Molecular Weight Compounds, Henk van Loveren, National Institute of Public Health and Environmental Protection, Bilthoven, Netherlands

Cytokines in Response to Chemical Allergens, Robert V. House, ITT Research Institute, Chicago, IL

Current Controversies in Cancer Causation

Chairperson: Herbert S. Rosenkranz, University of Pittsburgh, Pittsburgh, PA

The rodent cancer bioassay protocol developed under the aegis of the U.S. National Toxicology Program (NTP) has generated uniform data which have led to new insights regarding mechanisms of cancer causation (e.g. "genotoxic" vs. "non-genotoxic"). The NTP protocol includes testing of chemicals at or near the maximum tolerated dose (MTD). This, in turn, has led to the recognition that some chemicals are cancer causing only at or near the MTD.

The findings impact upon the mechanism of cancer causation and have led to the hypothesis that bioassays performed at or near the MTD may induce mitogenesis, which in turn could be pivotal to the carcinogenic process.

The speakers will present views on the role of mitogenesis in the multi-stage carcinogenic process and how this impacts upon risk assessment.

Introduction, Bernard D. Goldstein, Robert Wood Johnson Medical School, Piscataway, NJ

Animal Cancer Tests and Causes of Cancer, Bruce N. Ames, University of California, Berkeley, CA

Multi-Stage Carcinogenesis: Mutagenesis, Cell Replication and the Rodent Bioassay, I.B. Weinstein, Columbia University, NY

Animal Assays for Carcinogens: What do They Tell Us? R.A. Griesemer, National Institute of Environmental Health Sciences, Research Triangle Park, NC

The MTD, Mitogenesis, and Human Risk of Cancer, Bernard D. Goldstein, Robert Wood Johnson Medical School, Piscataway, NJ

Ecogenetics: Genetic Susceptibility to Environmental Agents

Chairpersons: Elaine M. Faustman and Lucio G. Costa, University of Washington, Seattle, WA

Ecogenetics, the study of genetic susceptibility to environmental agents has an important role in toxicological evaluation. Critical to our formulation of a cumulative dose-response relationship for the human population is individual susceptibility. Thus, this represents a major parameter in our characterization of such risks and has significant scientific regulatory and policy implications. Dramatic examples of the role that such genetic differences has played in defining toxicity can be seen with glucose-6-phosphate dehydrogenase deficiency and sensitivity to primaquine, acetylation differences and susceptibility to isoniazid; and arene oxide defects and diphenylhydantoin induced developmental toxicity. The purpose of this symposium is to focus our attention as toxicologists in this research direction and to provide an introduction to the genetic, biochemical and toxicologic systems under study in this active, interdisciplinary area of research. This symposium will emphasize the application of molecular biological approaches to identify these polymorphisms. It would serve to stimulate cross-disciplinary interests for toxicologists, epidemiologists and geneticists.

Introduction, Gilbert S. Omenn, School of Public Health and Community Medicine, University of Washington, Seattle, WA

N-Acetyltransferase in Man, Urs A. Meyer, Department of Pharmacology, Biocenter of the University of Basel, Basel, Switzerland

Molecular Toxicology of Human Microsomal Epoxide Hydrolase: Implications for Genetic Epidemiology, Curtis J. Omiecinski, University of Washington, Seattle, WA

Human CYP1A1 and CYP1A2 Genes: Differences in Expression Associated with Risk of Toxicity and Cancer, Daniel W. Nebert, Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH

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Symposia

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Paraoxonase Polymorphisms: Role in Defining Human Susceptibility to Organophosphates, Bert LaDu, Department of Pharmacology, University of Michigan, Ann Arbor, MI

Fluoride Toxicology and Risk Assessment

Cochairpersons: Frank Smith, University of Rochester, Rochester, NY and Arthur Gregory,TECHTO Enterprises, Inc., Sterling, VA

The wide use of fluoride as a water additive makes its risk assessment extremely important. The purpose of this symposium is to define the current state of fluoride risk assessment. Each of the four speakers will address a disinctly different aspect of that assessment. First, the results of the mutagenicity and carcinogenicity assays will be presented to address the potential for risk that is indicated by animal experiments. Second, the risk of osteofluorosis associated with fluoride exposure will be considered in light of epidemiologic findings among aluminum smelters. Third, the potential risk of various types of malignancies that could be associated with fluoridation of water will be addressed on the basis of multiple epidemiology studies carried out by NCI. And lastly, a descriptive review of the steps required in the regulation of fluoride level in drinking water that address both the carcinogenic and noncarcinogenic effects of fluoride will be conducted.

Introduction, Arthur R. Gregory, TECHTO Enterprises, Inc., Sterling, VA

Occupational Exposure to Fluoride and Risk of Osteofluoris in Aluminum Smelting, Bertram D. Dinman, University of Pittsburgh, Graduate School of Public Health, Pittsburgh, PA

Human Epidemiological Aspects of Fluoride and Cancer, Robert Hoover, National Cancer Institute, Bethesda, MD

Risk Assessment Basis for Drinking Water Regulations for Fluoride, Edward V. Ohanian, Office of Water (WH-550D), U.S. Environmental Protection Agency, Washington, DC

Fluoride: Evaluation of Available Human and Experimental Data for Population Risk Estimations, James Huff, National Institute of Environmental Health Sciences, Research Triangle Park, NC

Free Radicals in Toxicology

Chairperson: Steven D. Aust, Utah State University, Logan, UT

Free radicals are highly reactive chemical species (organic or inorganic) that have an unpaired electron. Free radicals have been implicated in such diverse pathological processes as lipid peroxidation, CCl4 initiated liver necrosis, chemical photosensitization and paraquat-induced lung damage. The most versatile technique for the detection of free radicals *in vivo* or *in vitro* is electron spin (paramagnetic) resonance (ESR). While some free radicals are stable enough to be detected by ESR, most are too reactive to be observed directly. Reactive free radicals can often be detected by means of spin trapping, a technique in which a diamagnetic organic molecule (spin trap) (T) reacts with a radical (R*) to form a more stable radical

$$T + R^* \rightarrow SA^*$$

or spin adduct (SA*). The structure of the parent radical is then deduced from the ESR spectrum of SA*. With the aid of this technique free radicals have been implicated in the photosensitization caused by sulfonamides, chlorpromazine, benoxaprofen, anthralin, Disperse Blue 35 and benzanthrone.

Introduction, C.F. Chignell, NIEHS, Laboratory of Molecular Biophysics, Research Triangle Park, NC

The Metabolic Basis of 3-Methylindole-Induced Pneumotoxicity, T.M. Bray, University of Guelph, Guelph, ON, Canada

Synergistic Interaction between the Probucol Phenoxyl Radical and Ascorbic Acid in Inhibiting the Oxidation of Low Density Lipoprotein, B. Kalyanaraman, Medical College of Wisconsin, Milwaukee, WI

***In Vivo* Detection of Free Radical Metabolites of Toxic Chemicals and Drugs in Bile,** Ronald P. Mason, NIEHS, Laboratory of Molecular Biophysics, Research Triangle Park, NC

Release of Iron From Ferritin by Free Radical Metabolites, S.D. Aust, Utah State University, Logan, UT

Free Radicals in Toxicology, Colin F. Chignell, NIEHS, Laboratory of Molecular Biophysics, Research Triangle Park, NC

Gonadal Control, Growth Factors and Tumorigenesis and Their Implications in Risk Assessment

Chairpersons: J.C. Lamb, Schwartz, Connolly & Freshman, Washington, DC, R.E. Chapin' NIEHS, Research Triangle Park, NC, and D.V. Singh, USEPA, Washington, DC

Gonadal tumors are a manifestation of reproductive toxicity and are common in long-term toxicity studies. The unexplained appearance of a tumor in animal studies requires a great deal of resources to address the relevance of the finding to humans, and thus, the safety of the chemical being tested. Regulatory agencies are looking closely at assessing risks for endocrine-derived tumors (e.g., EPA and thyroid tumors) differently from other tumors. Gonadal tumors are only beginning to receive experimental attention. Previous efforts to explain gonadal tumors have focused largely on the gonadotropins and have been moderately successful in explaining the appearance of these unique tumors. As our knowledge about intragonadal growth regulators increases, it becomes more plausible to investigate the involvement of these paracrine mediators in the tumorigenic process. The talks in this symposium will review the state of our knowledge about cell control and growth factor actions in both the ovary and the testis. The symposium will link the knowledge of gonadal control to what is currently known about mechanisms of testicular and ovarian tumorigenesis and their relevance to humans.

Introduction, R.E. Chapin, NIEHS, Research Triangle Park, NC,

Paracrine Control of Testicular Function, Jerrold J. Heindel, Development and Reproductive Toxicology Group, NTP, NIEHS, Research Triangle Park, NC

Rat Leydig Cell Tumors Induced by Xenobiotics: Etiology and Possible Mechanisms, Paul M. Foster, ICI Central Toxicology Laboratory, Macclesfield, UK

Growth Factors and Ovarian Function, David W. Schomberg, Departments of Obstetrics and Gynecology and Cell Biology, Duke University Medical Center, Durham, NC

Endocrine Mechanisms of Ovarian Tumorigenesis, W. G. Beamer, Jackson Laboratory, Bar Harbor, ME

Endocrine Tumorigenesis and the Implications in Risk Assessment, James C. Lamb, Jellinek, Schwartz, Connolly & Freshman, Washington, DC

Improvements in Quantitative Noncancer Risk Assessment

Chairpersons: Barbara D. Beck, Gradient Corp., Cambridge, MA and and Michael L. Dourson USEPA, Cincinnati, OH.

The present approach towards quantitative risk assessment of noncancer effects as reflected in the Acceptable Daily Intake (ADI) or Reference Dose (RfD) - often makes inadequate use of information on toxic mechanisms, on intra- or inter- species variability, and dose-response relationships. As a result, the quality of individual risk assessments varies among chemicals. The level of protectiveness is likely to be highly variable among different ADIs/RfDs and it is also difficult to quantify the significance of excess exposures. The purpose of this symposium is to describe efforts to improve the traditional process of noncancer risk assessment - basically the application of 10-fold Uncertainty Factors to a No Observed Adverse Effect Level.

The first two presentations describe improvements to the standard approach for developing the ADI/RfD. The appropriateness of the typically used 10-fold uncertainty factor, in terms of pharmacokinetic differences, interspecies variability, intraspecies variability, and other factors will be reviewed. Next the use of the benchmark dose as an alternative to the NOAEL to allow for the use of multiple data sets and to allow comparability among ADIs/RfDs will be discussed. The next two presentations will provide alternative approaches to the basic ADI/RfD approach. A ranking scheme that addresses severity of effect along with variability in both exposure level and exposure duration will be presented. Finally, a biologically based model for chloroform hepatotoxicity that incorporates information on pharmacokinetics and cytotoxicity in the mouse to derive risk estimates for humans will be described.

It is expected that this symposium will be of interest to both regulatory toxicologists–who must develop protective levels–and experimental toxicologists–who need to design studies that are of use for quantitative risk assessment.

Introduction, Barbara D. Beck, Gradient Corporation, Cambridge, MA

Reducing Uncertainty with Adjustment Factors, Dale Hattis, Clark University, Worchester, MA

Exposure-Response Analysis: Modeling Severity as the Dependent Variable Against Concentration and Duration, Daniel Guth, Environmental Criteria and Assessment Office, U.S. EPA, Cincinnati, OH

Alternatives to the NOAEL/UF Approach for Quantitative Noncancer Risk Assessment, Carole A. Kimmel, U.S. EPA, Office of Health and Environmental Assessment, Washington, DC

Biologically-Based Human Risk Assessment for Chloroform Hepatotoxicity, Rory B. Conolly, CIIT, Research Triangle Park, NC

Molecular and Cellular Mechanisms of Chronic Lung Disease

Chairpersons: Kevin E. Driscoll, The Procter & Gamble Company, Cincinnati, OH and Debra L. Laskin, Rutgers University, Piscataway, NJ

Exposure of humans or experimental animals to a variety of toxic agents can result in damage to the lungs and can also exacerbate existing lung abnormalities such as asthma or bronchitis. The ultimate response of the lungs to toxicants is dependent on a number of factors including the activity of cells that act as effectors of lung injury, inflammation and repair. These cells which include macrophages, epithelial cells and fibroblasts respond to environmental challenge by becoming "activated" and releasing soluble mediators that augment tissue injury and modify the functioning of other cells within the lungs. Thus, lung injury results from a complex network of interactions between the various cellular components of the lungs and their mediators. This symposium will focus on the contribution of macrophages, fibroblasts and epithelial cells to toxicant induced lung injury, inflammation and disease. The role of potential mediators of toxicity including: eicosinoids, cytokines, growth factors and reactive oxygen intermediates, will be discussed. Selective aspects of the response of the lungs to these mediators at the molecular level will also be discussed, as will recent studies illustrating key cell:cell interactions and the associated mediator networks. Finally, the various presentations will show how molecular and cellular interactions in the lung may be significant in the pathogenesis of chronic lung disease.

Role of Epithelial Cell Activation in Chronic Lung Disease, George D. Leikauf, University of Cincinnati, Cincinnati, OH

Role of Alveolar Macrophage-Derived Cytokines in Pulmonary Inflammation and Fibrosis, Kevin E. Driscoll, Procter & Gamble Company, Cincinnati, OH

Alveolar Epithelial Derived Growth Factors and Cytokines in Lung Repair and Fibrosis, J.N. Finkelstein, University of Rochester School of Medicine, Rochester, NY

Contribution of Fibroblasts to the Regulation of Inflammatory Response, Jack Gouldie, McMaster University, Hamilton, ON, Canada

Molecular Mechanisms Underlying Chemical Alterations of Gene Expression

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

Exposure to toxic chemicals alters gene expression. Recently, molecular biology approaches have allowed toxicologists to probe this process. Classically, change in gene expression caused by hormones is viewed as a signal, e.g. hormone receptor binding, being transduced to a change in gene expression via second messenger cascades. Ultimately, gene expression is altered by the action of DNA binding proteins on 5'-flanking regions of responsive genes. Recent evidence suggests that alterations in gene expression by toxic chemicals fits this signal transduction model.

The purpose of this symposium is to present a summary of current mechanisms of regulation for gene expression by chemicals. The focus will be the mechanisms through which the signals caused by the interaction of chemicals with cells are transduced into changes in gene expression. To illustrate the role of signal transduction in toxin responsiveness, new data on molecular responses to dioxins, chemical stress, deregulation of cellular Ca 2+, DNA damage, enzyme induction and peroxisomal proliferators will be covered. Interactions between DNA binding proteins and control elements in DNA, cloning strategies for toxin responsive genes and the role of cytosolic factors in regulating expression will be covered. Understanding these fundamental signalling pathways should lead to a better understanding of the mechanisms of chemical toxicity.

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

Coupling Biochemical Mechanisms of Toxicity to Changes in Gene Expression, James L. Stevens, W. Alton Jones Cell Science Center, Lake Placid, NY

The Molecular Response to DNA Damage: Activation of GADD153 Gene Expression, Nikki J. Holbrook, National Institute on Aging, Baltimore, MD

Regulation of Glutathione S-Transferase and Quinone Reductase Gene Expression, Cecil B. Pickett, Merck Frosst Centre for Therapeutic Research, Pointe Claire-Dorval Quebec, Canada

Isolation and Characterization of Human Target Genes for 2,3,7,8-Tetrachlorodibenzo-P-Dioxin (TCDD), William F. Greenlee, Purdue University, West Lafayette, IN

Receptor-Mediated Peroxisome Proliferator Action, Johnathan Tugwood, ICI Central Toxicology Laboratory, Alderly Park, Macclesfield, Cheshire, UK

Molecular Responses to Environmental Modification of Critical Genes

Chairperson: George E. Milo, The Ohio State University Comprehensive Cancer Center and Department of Medical Biochemistry, Columbus, OH

The mammalian and human cell is a diverse factory that is dynamically carrying on functions that contribute to the pleiotypic responses of daily insults. In so far as these cells exhibit specific recognized responses to these daily insults, such as DNA-adduction, protein-adduction, DNA repair, altered gene function, growth arrest, cell killing, transformation and mutagenesis, the underlying mechanisms of response to these insults and the cascades that occur that lead to an altered biological response, will be discussed. An attempt to deal with specific underlying molecular genetic mechanisms and the consequences of the alteration of critical genes will be discussed. An attempt will be made to correlate early changes in DNA- or protein-adduction with late changes in gene function.

Introduction, George E. Milo, The Ohio State University Comprehensive Cancer Center and Department of Medical Biochemistry, Columbus, OH

Responses of the [Ah] Gene Battery to Environmental Adversity: Polycyclic Aromatic Compounds and Oxidative Stress, H.G. Shertzer, Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, OH

Activation of Proto-Oncogenes in Mouse Lung Tumors, Gary D. Stoner, Medical College of Ohio, Toledo, OH

Biochemical Processing of DNA Adducts of the Anticancer Drug Cisplatin, John M. Essignmann, Whitaker College of Health Sciences and Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA

Role of Chromatin Conformation in Modification of Specific Critical Genes, George E. Milo, The Ohio State University Comprehensive Cancer Center and Department of Medical Biochemistry, Columbus, OH

Neuronal-Glial Interactions: Relevance to Neurotoxic Mechanisms

Chairpersons: Michael Aschner, Albany Medical College, Albany, NY, and Richard M. LoPachin, SUNY Stony Brook Medical School, Stony Brook, NY.

Definitions of nervous tissue function and dysfunction are generally based on a single cell type–the neuron. Consistent with this neuron-centric theme, glial cells have been traditionally relegated to a passive role in structural support. However, research over the past two decades suggests that these cells form complex, interdependent relationships with neurons, which influences structure, function and metabolism of each cell type. Thus glial cells might play a significant role in the expression of neurotoxicity, perhaps acting in a compensatory fashion or as a primary site of effect with secondary consequences for the neuron. To address the potential involvement of glial cells in neurotoxicity, this symposium will: 1) provide an overview of neuroglial morphology, physiology, and pharmacology, 2) discuss reciprocal interactions of nerve and glial cell, 3) indicate how neurotoxic and traumatic state might affect neuronal-glial interactions, 4) identify the consequences of disrupted neuronal-glial interactions, and 5) suggest future research directions. Assessing the participation of neuroglia in responses of nerve cells to chemical and mechanical injury could identify non-traditional sites of action, delineating complex neurotoxic mechanisms.

Introduction, Richard M. LoPachin, SUNY at Stony Brook, Medical School, Stony Brook, NY

Neuroglia: Physiology and Pathology, Michael D. Norenberg, University of Miami School of Medicine, Miami, FL

The Glial-Neuron Interface as a Functional Unit, Richard M. LoPachin, SUNY at Stony Brook Medical School, Stony Brook, NY

Axon-Schwann Cell Interactions in Toxic and Traumatic States, Peter S. Spencer, Oregon Health Sciences University, Portland, OR

The Role of Astrocytes in Chemically-Induced CNS Injury, Michael Aschner, Albany Medical College, Albany, NY

Nucleic Acid Based Technology for Gene Specific Analysis of Toxicology

Chairperson: P. Iverson, Department of Pharmacology, UNMC, Omaha, NE

The overall objectives of this symposium are to: 1) provide information regarding a very fast moving field of study, 2) initiate discussion regarding the use of nucleic acid based technology for gene specific analysis of toxicology, and 3) introduce a relatively simple molecular biology technique to a broad group of toxicologists. Hence, this subject is of considerable interest to individuals in the areas of drug development, molecular biology, and drug safety evaluation. The intention of this symposium is to provide a broad understanding of the use and potential of synthetic oligonucleotides. The pharmacologic and toxicologic issues that must be considered in preclinical development of antisense oligonucleotides will be discussed as will the *in vitro* toxicology of antisense oligonucleotides. Studies related to the sequence selective recognition of DNA by equilibrium and covalent binding agents will be presented. Finally, *in vivo* pharmacokinetics will be discussed and the bioavailability will be correlated with *in vivo* efficacy of synthetic phosphorothioate oligonucleotides.

Introduction, Patrick Iverson, Department of Pharmacology, UNMC, Omaha, NE

Antisense Oligonucleotide Therapeutics: Concept, to Discovery, to Drugs, Christopher K. Mirabelli, ISIS Pharmaceuticals, Carlsbad, CA

***In Vitro* Toxicology of Antisense Oligonucleotides**, Rosanne M. Crooke, ISIS Pharmaceuticals, Carlsbad, CA

DNA Sequence Selective Binding and Bonding, Barry Gold, Eppley Institute for Research in Cancer, Omaha, NE

Nucleic Acid Based Technology for Gene Specific Analysis of Toxicology *In Vivo*, Patrick Iversen, Department of Pharmacology, UNMC, Omaha, NE

Peroxidases and Peroxyl Radicals in Toxicity

Chairperson: Lawrence J. Marnett, Vanderbilt University, Nashville, TN

The purpose of this symposium is to review the latest concepts in the chemistry and biology of xenobiotic oxidation by peroxidases and peroxyl free radicals. It will begin with an update of the chemistry of oxidation by peroxidases and peroxyl radicals. Recent experiments on the mechanism of activation of aromatic amines to mutagens by the peroxidase of prostaglandin endoperoxide synthase and horseradish peroxidase will be presented. The identity of the oxidizing agents responsible for aromatic amine oxidation by prostaglandin endoperoxide synthase and other peroxidases will be discussed. Recent experiments demonstrating the generation of peroxyl free radicals in mouse skin following administration of phorbol ester tumor promoters will be described. The oxidation of xenobiotics by myeloperoxidase and its involvement in adverse drug reactions will also be described. This symposium will highlight the most recent findings in the chemistry of peroxidase oxidation and demonstrate its importance in experimental animal models and human disease.

Introduction, Lawrance J. Marnett, Vanderbilt University, Nashville, TN

Peroxidation of Xenobiotics by Prostaglandin H Synthase, Gregory A. Reed, University of Kansas Medical Center, Kansas City, KS

Oxidation of Aromatic Amines to Mutagens Catalyzed by Prostaglandin H Synthase, Thomas E. Eling, Laboratory of Biophysics, National Institute of Environmental Health Science, Research Triangle Park, NC

Peroxidases and Peroxyl Radicals in the Oxidation of Aromatic Amines and Polycyclic Hydrocarbon Dihydrodiols, Lawerence J. Marnett, AB Hancock, Jr. Memorial Laboratory for Cancer Research, Department of Biochemistry, Center in Molecular Toxicology, Vanderbilt University School of Medicine, Nashville, TN

Metabolism of Drugs by Myeloperoxidase, Jack Uetrecht, University of Toronto, Toronto, Canada

Risk Assessment of Chemical Mixtures: Biologic and Toxicologic Issues

Chairpersons: Moiz Mumtaz, USEPA, Cincinnati, OH, and Ray S.H. Yang, Dept. of Environmental Health, Colorado State University, Fort Collins, CO

Health risk assessment of exposure to chemical mixtures is presently based on limited available data. It is not surprising, then, that methodologies and risk estimates are variable and may be easily criticized. This symposium is an overview of mixtures research that captures the current issues of interactive toxicity and points out its impacts on the risk assessment of chemical mixtures through a progression of conceptual, experimental and real life situations. An understanding of the definitions, the terms in vogue, and the issues pertinent to chemical mixtures research is prudent. Progress towards defining the mechanisms of interactions and dose-response relationships is being achieved through several well designed recent studies with some utilizing short term and *in vitro* methods. Detailed data thus obtained have made possible, limited but significant, PB-PK modeling efforts to predict interactions. Toxicity information available on specific examples of simple, complex and synthetic chemical mixtures demonstrates how whole mixtures cause injury. Current risk assessment guidance promotes consistency and reproductibility; however several data gaps need to be filled to increase the accuracy of risk assessments.

Introduction, M. Moiz Mumtaz, USEPA, Office of Research and Development, Cincinnati, OH

Mechanisms of Toxicant Interactions, I. Glenn Sipes, Department of Pharmacology, University of Arizona, Tucson, AZ

Identification and Characterization of Toxicant Interactions *In Vitro*, Joel G. Pounds, Institute of Chemical Toxicology, Wayne State University, Detroit, MI

Physiologically-Based Pharmacokinetic (PB-PK) Modeling of Mixtures, Harvey J. Clewell, Toxic Hazards Division, Wright-Patterson AFB, OH

Toxicology of Chemical Mixtures, Raymond S.H. Yang, Department of Environmental Health, Colorado State University, Ft. Collins, CO

The U.S. EPA Guidelines and Current Issues of the Health Risk Assessment of Chemical Mixtures, Moiz Mumtaz, Office of Research and Development, Environmental Criteria and Assessment Office, U.S. Environmental Protection Agency, Cincinnati, OH

Specific Protein Changes as Indicators of Toxicologic Mechanism

Chairperson: N. Leigh Anderson, Large Scale Biology Corp., Rockville, MD

Proteins are molecular machines that constitute a vast majority of the working parts of living cells. Changes in protein abundance or structural integrity thus play central roles in the initiation and unfolding of most pathological processes. While current practice in toxicology recognizes the usefulness of numerous specific protein measurements (e.g., cytochromes P-450 or the peroxisomal bifunctional enzyme), it is becoming apparent that a range of more sophisticated protein-based techniques can contribute significantly to an understanding of the nature and mechanism of toxic effects. As a result of the intensifying requirement to understand the significance of results obtained in standard rodent-based safety assessment protocols, mechanistic information can have significant practical value.

In this symposium, four approaches will be described that combine protein chemistry, cell biology and toxicology in an effort to discover and interpret mechanism-related protein alterations. Methods for the detection and characterization of protein-bound drug metabolites will be discussed first, followed by a presentation describing the use of a specific class of proteins (the mammalian "stress"-induced proteins) as early markers of target organ toxicity. The final presentations describe the application of a general techni-

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Symposia

continued from previous page

que for detection of protein changes (two-dimensional electrophoresis) to the analysis of genetic and protein level toxicities, respectively. The symposium should provide a useful overview of protein methods applicable to current toxicology problems, as well as an indication of major directions for future research.

Introduction, N. Leigh Anderson, Large Scale Biology Corporation, Rockville, MD

Identification and Characterization of Targets of Toxic Reactive Metabolites with the Use of Specific Antibodies, Lance R. Pohl, Laboratory of Chemical Pharmacology, NHLBI, NIH, Bethesda, MD

Stress Protein Induction by Metals Precedes Target Organ Toxicity: Application to Biomarkers of Exposure and/or Toxicity, Peter L. Goering, Center for Devices and Radiological Health, Food and Drug Administration, Rockville, MD

Heritable Protein Changes as Indicators of Genotoxicity, Carol S. Giometti, Argonne National Laboratory, Argonne, IL

Two-Dimensional Protein Mapping Applied to Mechanistic Analysis of Drug Effects in Liver, N. Leigh Anderson, Large Scale Biology Corporation, Rockville, MD

Toxicity Assessment of Mercury Vapor from Dental Amalgams

Chairpersons: Don Galloway and Peter L. Goering, Center for Devices and Radiological Health, FDA, Rockville, MD

In terms of the number of exposed individuals, the most prevalent source of deliberate mercury (Hg) exposure is almost certainly dental amalgam. Dental amalgam releases mercury (Hg) vapor, which is absorbed by the lung and distributed systemically, concentrating in brain, kidney and fetal tissue. Implications of this Hg exposure are unclear, since no scientific studies have definitively linked amalgam Hg to human disease states. However claims have appeared in the popular press linking the presence of dental amalgam to a host of adverse health effects. This symposium will present recent research assessing the toxicity of very low level, chronic Hg vapor exposure, with special emphasis on Hg exposure from dental amalgam. Since inhalation exposure to Hg vapor from any source can be expected to produce identical effects, we will broaden our consideration of this issue to consider both laboratory animal and epidemiologic studies of chronic, low-level Hg vapor exposure. The speakers will provide background information on Hg vapor toxicity, toxicokinetics, and critical target organs; present recent animal and human studies on amalgam Hg distribution and associated cell injury; report recent animal studies examining the developmental effects of prenatal exposures to Hg vapor; and present epidemiological evidence of reproductive toxicity among dental assistants occupationally exposed to amalgam Hg.

Introduction, Don Galloway, Center for Devices and Radiological Health, FDA, Rockville, MD

Overview of Mercury Vapor Toxicity, Toxicokinetics and Critical Target Organs, Thomas W. Clarkson, University of Rochester School of Medicine, Rochester, NY

Mercury From Amalgam Tooth Fillings: Its Tissue Distribution and Effects on Cell Function, Fritz L. Lorscheider, University of Calgary, Faculty of Medicine, Alberta, Canada

Prenatal Exposure to Mercury Vapor: Effects on Brain Devlopment, Maths Berlin, University of Lund, Institute of Environmental Medicine, Lund, Sweden

Reduced Fertility Among Dental Assistants with Occupational Exposure to Mercury, Andrew S. Rowland, NIEHS, Research Triangle Park, NC

Continuing Education Courses for 1992 SOT Annual Meeting

The Continuing Education Committee — **Janice E. Chambers, Jon C. Cook, William F. Greenlee, Andrew Parkinson, Michael A. Trush,** and **Kendall B. Wallace** *(Chairperson)* is pleased to offer nine courses at the upcoming SOT Annual Meeting. Note: the Continuing Education Committee courses at the 1992 Annual Meeting in Seattle will be held on **Sunday, February 23, 1992.** This is a change from the previous year's scheduling.

Implementing Physiologically-Based Pharmacokinetic Models - Interactive Computer Session

Chairperson: Michele A. Medinsky, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Writing and Running a PBPK Model for Volatile Organic Chemicals on the Computer, Rory B. Conolly, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Incorporating an Oral Exposure Route into a PBPK Model for Inhalation, Richard H. Reitz, The Dow Chemical Company, Midland, MI

Determining *In Vivo* Metabolic Parameters Using PBPK Models, Michael L. Gargas, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Setting Up Models for Evaluating Dose-Response Relationships, Harvey Clewell, III, ASD/SEH, Wright Patterson AFB, OH

Accounting for Chemical-Protein Binding and Induction of Protein Synthesis in PBPK Models for Dioxin, Melvin E. Andersen, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Case Studies in Risk Assessment: Emphasis on Exposure

Chairpersons: Donald H. Hughes, Procter & Gamble Company, Cincinnati, OH, and Carol J. Henry, Risk Science Institute, International Life Sciences Institute, Washington, DC

Principles of Exposure Assessment: Consumer Use of Solvents, Michael Callahan, USEPA, Washington, DC

Physiologically-Based Pharmacokinetic Modeling for Ethyl Acrylate and Its Implications for Route-to-Route Extrapolation of Risk, Clay B. Frederick, Rohm & Haas Company, Spring House, PA

Methyl Mercury in California Lakes - Assessing the Health Risk from Contaminated Sport Fish, James W. Stratton, California Department of Health Services, Sacramento, CA,

Use of Mechanistic Data in the Risk Assessment of Formaldehyde, Thomas Starr, Environ Corporation, Arlington, VA

Risk Assessment of d-Limonene, Representing Chemicals that Induce Alpha-2u-Globulin Nephropathy and Renal Tumors in Male Rats, Gordon Hard, American Health Found., Valhalla, NY

Development and Safety Evaluation of Recombinant Products for Pharmaceutical and Agricultural Use

Chairperson: William F. Greenlee, Purdue University, West Lafayette, IN

Pharmaceutical Toxicology, James D. Green, Genentech, Inc., South San Francisco, CA

The Role of Pharmacokinetics in the Design of Toxicology Studies, Joyce Mordenti, Genentech, Inc., South San Francisco, CA

Regulatory Issues Associated with Preclinical Safety Evaluation of Biotechnology Products, Joy Cavagnaro, Center for Biologics Evaluation and Research, FDA, Bethesda, MD

Evolving Regulatory Structures for Biotechnology in Plant Agriculture, Alan Gould, DowElanco, Midland, MI

Developmental Toxicity: Cellular and Molecular Approaches

Chairperson: George P. Daston, Procter & Gamble, Cincinnati, OH

Molecular Approaches in Abnormal Development, Philip E. Mirkes, University of Washington, Seattle, WA

Homeotic Gene Expression and Teratogenesis, Joseph F. Grippo, Hoffmann-La Roche, Nutley, NJ

Cellular Techniques in Developmental Toxicology, John M. Rogers, USEPA, Research Triangle Park, NC

The Role of Metabolism in Chemical Teratogenesis, Peter G. Wells, University of Toronto, Toronto, Ontario

Molecular Control of Cell Proliferation

Chairperson: David J. Doolittle, RJR-Nabisco, Winston-Salem, NC

Overview of Cellular Signal Transduction, David Doolittle, RJR-Nabisco, Winston-Salem, NC

Role of Ionized Cytosolic Calcium in Cell Proliferation and Differentiation, Benjamin Trump, Univ. of Maryland, Baltimore, MD

Role of Growth Factors and Growth Factor Receptors in the Control of Cell Proliferation, David Bombick, RJR-Nabisco, Winston-Salem, NC

The Biology of Oncogenes and Tumor Suppressor Genes, Cheryl Walker, CIIT, Research Triangle Park, NC

The Importance of Cell Proliferation in Carcinogenesis, Bruce Ames, University of California-Berkeley, Berkeley, CA

Renal Toxicology

Chairperson: Lois Lehman-McKeeman, Procter & Gamble Co., Cincinnati, OH

Renal Anatomy, Physiology and Functional Assessment, William O. Berndt, University of Nebraska Medical Center, Omaha, NE

Therapeutic Nephrotoxicants, Robin S. Goldstein, SmithKline Beecham Pharmaceuticals, King of Prussia, PA

Environmental Nephrotoxicants, Gary O. Rankin, Marshall University School of Medicine, Huntington, WV

Species Differences in Nephrotoxicity, Edward A. Lock, ICI Corporation, Macclesfield, Cheshire, UK

Liver Toxicology

Chairperson: Harihara M. Mehendale, University of Mississippi Medical Center, Jackson, MS

Structure, Physiology and Liver Function, Mary Treinen Moslen, University of Texas Medical Branch, Galveston, TX

Role of Cytochromes P-450 in Bioactivation and Detoxication, James R. Halpert, University of Arizona, Tucson, AZ

Nonparenchymal Cells and Hepatotoxicity, Deborah L. Laskin, Rutgers University, Piscataway, NJ

Hepatotoxic Mechanisms, Harihara M. Mehendale, University of Mississippi Medical Center, Jackson, MS

Basic and Applied Hematotoxicity

Chairperson: Dan Wierda, Eli Lilly & Company, Greenfield, IN

The Biology of Hemopoietic Stem Cells and Progenitor Cells, Richard D. Irons, University of Colorado Health Sciences Center, Denver, CO

Regulation of Myelopoiesis and Lymphopoiesis by Bone Marrow Stromal Cells, Kenneth Dorshkind, University of California, Riverside, CA

The Role of Xenobiotic Metabolism in Bone Marrow Toxicity, Michael Trush, The Johns Hopkins University, Baltimore, MD

***In Vitro* Methods for Evaluating the Hematotoxicity of Pharmaceutical Agents**, Dan Wierda, Eli Lilly & Company, Greenfield, IN

Toxicity of Halogenated Hydrocarbons

Chairperson: Philip G. Guzelian, Medical College of Virginia, Richmond, VA

Halogenated Hydrocarbon Toxicity: An Overview, Gabriel Plaa, University of Montreal, Montreal, Quebec, Canada

Bioactivation of Halogenated Hydrocarbons by Cytochrome P450 Enzymes, Judy Raucy, University of New Mexico, Albuquerque, NM

Biochemical Mechanisms and Cellular Interactions, M. W. Anders, University of Rochester, Rochester, NY

Immunochemical Techniques for Determination of Tissue Targets of Reactive Metabolites of Halogenated Hydrocarbons, Lance Pohl, National Heart, Lung and Blood Institute, Bethesda, MD

SOT 1992 Annual Meeting At-A-Glance

SUNDAY February 23	MONDAY February 24	TUESDAY February 25	WEDNESDAY February 26	THURSDAY February 27
8:00 a.m. - 12:00 noon Continuing Education Courses	8:30 a.m. - 4:30 p.m. Exhibits Open	8:30 a.m. - 4:30 p.m. Exhibits Open	8:30 a.m. - 4:30 p.m. Exhibits Open	6:00 a.m. - 6:45 a.m. "Jogging with Joan"
10:00 a.m. - 4:00 p.m. Placement Service Registration	8:30 a.m. - 11:30 a.m. Scientific Sessions	8:30 a.m. - 11:30 a.m. Scientific Sessions	8:30 a.m. - 11:30 a.m. Scientific Sessions	8:30 a.m. - 11:30 a.m. Scientific Sessions
1:30 p.m. - 5:30 p.m. Continuing Education Courses	9:00 a.m. - 4:00 p.m. Guest Hospitality	9:00 a.m. - 3:30 p.m. Placement Service	9:00 a.m. - 3:30 p.m. Placement Service	9:00 a.m. - 12:00 noon Guest Hospitality
2:00 p.m. - 5:30 p.m. Education Program for Minority Students	9:00 a.m. - 3:30 p.m. Placement Service	9:00 a.m. - 4:00 p.m. Guest Hospitality	9:00 a.m. - 4:00 p.m. Guest Hospitality	12:00 noon - 1:00 p.m. SOT Issues Session
5:30 p.m. - 6:30 pm. Placement Service Seminar	9:30 a.m. - 11:30 noon Poster Session for Minority Students	12:00 noon - 1:00 p.m. Burroughs Wellcome Lecture #1	12:00 noon - 1:00 p.m. Burroughs Wellcome Lecture #2	1:30 p.m. - 4:30 p.m. Scientific Sessions
6:30 p.m. - 8:00 p.m. SOT Welcoming Reception	12:00 noon - Graduate Student Luncheon	1:30 p.m. - 4:30 p.m. Scientific Sessions	1:30 p.m. - 4:30 p.m. Scientific Sessions	6:00 p.m. Departure for Post-Meeting Ski Trip
	1:00 p.m. - 4:00 p.m. Scientific Sessions	4:30 p.m. - 5:30 p.m. Effective Presentations Workshop	2:00 p.m. - 4:00 p.m. Forum for New Investigators	
	4:00 p.m. - 5:00 p.m. Annual Business Meeting	5:00 p.m. - 6:30 p.m. Other Specialty Section Meetings	5:30 p.m. - 7:00 p.m. Other Chapter Meetings	
	5:00 p.m. - 6:30 p.m. Mechanisms and Risk Assessment Specialty Section Meetings	6:00 p.m. -7:30 p.m. Pacific Northwest Regional Chapter Meeting	7:00 p.m. - 10:00 p.m. SOT Banquet and Awards Presentation	
	6:30 p.m. - 8:30 p.m. SOT Social Evening at the Seattle Museum of Art			

1992 Annual Meeting Attendees are Encouraged to Register on Saturday, February 22.

Graduate/Postdoctoral Student Awards

Molecular Biology Specialty Section

The Molecular Biology Specialty Section will present awards for the best platform and/or poster presentations by either graduate students or postdoctoral fellows in the area of molecular biology at the 1992 Annual Meeting. Candidates for these awards are requested to send a copy of the abstracts submitted to **Dr. Elaine M. Faustman,** Department of Environmental Health, SC-34, University of Washington, Seattle, WA 98195; telephone (206) 685-2269, fax (206) 543-8123, by **December 15.** A detailed outline of the talk and a copy of the poster also should be included.

The abstracts and posters should desribe original research utilizing molecular biological techniques to address questions of toxicology. All submitted documents will be treated as privileged information. The successful candidates will be announced at the Annual Meeting of the Specialty Section.

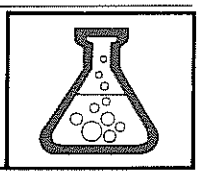
Reproductive and Developmental Toxicology Specialty Section

The Reproductive and Developmental Toxicology Specialty Section will give awards or recognition for the best platform and/or poster presentations by either graduate students or postdoctoral fellows in the areas of reproductive and developmental toxicology at the 1992 Annual Meeting. General areas of research include male and female reproductive toxicology, reproductive endocrinology, teratology/developmental toxicology, and postnatal functional assessment. Candidates for these awards are requested to send a copy of the abstracts submitted to the person and address listed below by **December 15.** A detailed outline of the talk or a copy of the poster also should be included.

The abstracts and posters should describe original research which may include applied studies, investigations of mechanisms involved in toxic response, or studies on basic biochemical, physiological, or genetic mechanisms of action. Interested individuals may request Society information and abstract forms from the address given below. All submitted documents will be treated as privileged information. The successful candidates will be announced at the Annual Meeting of the Specialty Section.

For further information, contact: **Dr. Elaine Faustman,** Department of Environmental Health, SC-34, University of Washington, Seattle, WA 98195; telephone (206) 685-2269, fax (206) 543-8123.

Placement Services



Extension Specialist-Food Safety

University of Arizona, Ph.D. in Food Safety, Food Microbiology, Nutritional Toxicology or related, with three to five years experience and good communication skills. Demonstrated ability to work effectively with industry, consumer groups, faculty, staff, students and the public. Have the experience and ability to develop and maintain strong and innovative extension and research programs. Send a complete curriculum vitae, publication list, patents, grant support and the names of three to five individuals who may be contacted for letters of reference to: Dr. Charles W. Weber, Chairperson, Search Committee, Department of Nutrition & Food Science, Shantz Bldg. 309, University of Arizona, Tucson, AZ 85721. Application evaluation will begin on January 7, 1992. An Equal Opportunity/Affirmative Action/Title IX/Section 504 Employer.●

Pharmacokinetics/Metabolism

Toxicology Department of world leader in silicone technology has immediate opening for Ph.D. scientist in relevant field with 2+ years experience in pharmacokinetics and metabolism to lead expansion of laboratory effort in this area. Competitive salary and comprehensive benefits package. Equal opportunity employer. Qualified candidates should submit resume to: Dow Corning Corporation, Employment Center-C01108, 2200 W. Salzburg Road, Midland, MI 48686-0994.●

Research Toxicologist

The Upjohn Company, a recognized leader in research, production and marketing of quality pharmaceuticals, invites applications for the position of Research Toxicologist in our Drug Safety Research Group.

As a member of a multi-disciplinary team, this Research Scientist will support and enhance the drug development process in our human and animal health businesses. This scientist will be responsible for the study, design, implementation, supervision of study conduct, and the interpretation and reporting of drug safety studies required to characterize the toxicity of drug candidates in multiple laboratory animal species. These studies will support human safety and human food safety with a world-wide emphasis. This person will have excellent planning and organizational skills to conduct long-term (3 to 24 months) animal studies in accordance with GLP guidelines. Excellent written and oral skills are required for preparation of technical reports and numerous personnel interactions. A Ph.D. or D.V.M. with Ph.D. in Toxicology or related discipline is necessary, as well as strong interest, knowledge and relevant experience in general animal toxicology. ABT certification or eligibility is a plus.

Upjohn offers a competitive compensation and benefits package in addition to a stimulating, multi-disciplinary research environment at our modern laboratories in Kalamazoo, MI. You are invited to send your curriculum vitae to: The Upjohn Company, Corporate Recruiting, 7000 Portage Road, Kalamazoo, MI 49001-0199. Refer to Position Number 910782-086 in your cover letter. An Equal Opportunity Employer M/F. Our Commitment To Scientific Excellence Continues.●

Toxicologists

Battelle, a world leader in providing safety, efficacy and registration services for pharmaceutical, chemical and government clients, is expanding in the area of routine and specialty mammalian toxicology. Multiple positions are available as described below:

These positions involve designing and directing general toxicity and non-clinical safety studies, project/program management, client interaction, protocol design, technical interpretation, and report writing. A relevant Ph.D. and a minimum of 5 years of experience, including a detailed familiarity with FDA and EPA regulatory processes and GLP, is required. Professional certification is desirable.

These positions provide growth opportunities for a career in mammalian toxicology. A recent Ph.D. in a relevant discipline and/or a post doctoral assignment are the expected credentials for these entry-level positions. Regulatory agency and GLP experience is preferred.

Battelle offers competitive salaries, comprehensive benefits and career development opportunities. Qualified candidates are encouraged to send their resumes to: Mr. Richard Shaw, Battelle, 505 King Avenue, Dept. 115, Columbus, OH 43201-2693. An Equal Employment/Affirmative Action Employer, M/F/H/V.●

Toxicologist

PRC Environmental Management, Inc., a leader in hazardous waste consulting services, has an opportunity for a Toxicologist/Public Health Specialist. This position requires a M.S. or Ph.D. in toxicology or public health with 4-5 years of experience. Prefer risk assessment or environmental contamination evaluation experience. Interested applicants should send a resume to: PRC Environmental Management, Inc., Personnel, Re: TOX, 1099 18th Street, Suite 1960, Denver, CO 80202. No phone calls or agencies, please.●

Toxicologist

Entry level and senior position in the conduct of short and long term pre-clinical toxicology studies involving rodents, mini-swine, dogs, and primates. Senior position requires supervisory experience and ABT preferred. Both positions require excellent writing and organization skills. Study evaluation, reporting, and interaction with clients and consulting with other areas of responsibilities are associated with these positions. Send letter of interest to: Mr. Ralph J. Wheeler, President, T.P.S., Inc., 10424 Middle Mt. Vernon Road, Mt. Vernon, IN 47620.●

Toxicology Faculty Position

Within a department of Chemistry: Assistant/Associate Professor rank, tenure-track, beginning fall 1992. Minimum Master's degree plus 18 hours in appropriate area of specialization for Assistant Professor rank, however, Ph.D. strongly preferred. PH.D. required for Associate Professor rank. Evidence of excellence in both teaching and research necessary. Responsibilities include teaching chemistry courses at introductory level as well as undergraduate/graduate courses (MS level) in area of specialization, and research program involving undergraduate and graduate students.

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Placement Services

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Send resume, undergraduate and graduate transcripts, statement of teaching and research interests, and three letters of recommendation by January 15 to Position # F9247, Academic Affairs Box T, 204 King Hall, Eastern Michigan University, Ypsilanti, MI 48197. Women and members of minority groups encouraged to apply and to identify themselves. EMU is an affirmative action/equal opportunity employer.●

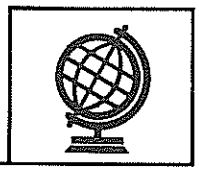
Faculty Position, MolecularToxicology/ Pharmacology, Purdue University

The Department of Pharmacology and Toxicology at Purdue University invites applications for a tenure-track faculty position at the ASSISTANT PROFESSOR level. We are seeking applicants with training and expertise in cell and molecular biology to develop a research program focused on the mechanisms of action of xenobiotics on the regulation of growth and/or development. Desired areas of interest include receptors for growth regulatory molecules, regulation of gene expression, signal transduction, and transgenic cell and animal models. This program would complement current research activities in molecular neurotoxicology, biochemical toxicology, receptor biology and eukaryotic gene regulation. The department is expanding its molecular biology facility and has established a mammalian cell culture laboratory. Candidates should have a Ph.D. or M.D. degree, or equivalent, and at least two years of post-doctoral experience. The successful candidate will be expected to develop an independent externally-funded research program and will have teaching and training responsibilities in our graduate and professional programs. Applicants should submit a curriculum vitae, a description of research goals (not to exceed two pages) and the names of three references to Dr. William F. Greenlee, Head, Department of Pharmacology and Toxicology, School of Pharmacy and Pharmacal Sciences, Purdue University, 1334-Robert E. Heine Pharmacy Building, West Lafayette, IN 47907-1334. Review of applications will commence November 1 and continue until the position is filled. Purdue University is an Equal Opportunity/Affirmative Action Employer.●

Assistant Professor - Toxicology/Pathology

Michigan State University invites applications for a tenure-track Assistant Professor position. Applicants must have the Ph.D. degree and two years of post-doctoral experience that includes training as an experimental toxicologist with expertise in pathology. Applicants with research experience and productivity in any area of mechanistic toxicology/pathology will be considered, although preference will be given to those with research interests in effects of chemicals on liver, lung, phagocytic cells and/or blood vessels. The individual selected will be appointed in the Department of Pharmacology and Toxicology with a joint appointment in Pathology and will associate with the Institute for Environmental Toxicology. He/she will be expected to establish an independent research program, will have the opportunity for collaborative research, and will contribute to teaching of toxicology to graduate students and human and veterinary medical students. Send a curriculum vitae, a short description of research interests and experience, and names and addresses of three references to: Dr. Robert A. Roth, Chairperson, Search Committee, Department of Pharmacology and Toxicology, B440 Life Sciences Bldg., Michigan State University, E. Lansing, MI 48824. Michigan State University is an Affirmative Action/Equal Opportunity Institution.●

Upcoming Conferences



Society of Toxicology of Canada Twenty Fourth Annual Symposium: Toxicology in the 90s, December 5-6, 1991, Holiday Inn Crowne Plaza, Montreal, Quebec. Contact: STC, P.O. Box 517, Beaconsfield, Quebec, Canada, H9W 5V1.

Implementation Strategies for Research Animal Well-being: Institutional Compliance with Regulations, December 5-6, 1991, The Peabody Hotel, Baltimore, MD. Contact: Scientists Center for The Animal Welfare, 4805 St. Elmo Avenue, Bethesda, MD 20814.

Toxicology Forum, February 17-19, 1992, L'enfant Plaza Hotel, Washington, DC. Contact: The Toxicology Forum, Suite 800, 1575 Eye Street, NW, Washington, DC 20005; (202) 659-0030.

Society of Toxicology 1992 Annual Meeting, February 23-27, 1992, Seattle Convention Center, Seattle, WA. Contact: SOT Headquarters, (202) 371-1393.

Envirotech Vienna 1992, April 22-24, 1992, University of Economics, Vienna, Austria. Contact: International Society for Environmental Protection, E. Kolm, W. Pillmann, S. Burgstaller, A - 1030 Vienna, Marxergasse 3/20, Tel: +43/1/715 28 29, 714 28 28, fax: +43/1/75 28 29.

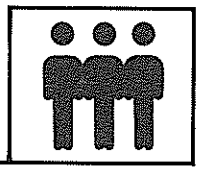
Mid-America Toxicology Course, April 26-May 1, 1992, Kansas City, MO. Contact: Curtis D. Klaassen, Ph.D., Professor of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS 66103; (913) 588-7714.

NordTox-92 Congress, May 6-10, 1992 Mariehamm Aland Islands, Finland. Contact: NordTox-92, Ms. Raija Marttala, Institute of Occupational Health, Topeliuksenkatu 41 aA, SF-00250, Helsinki, Finland; Tel: +358-0-47471, fax: +358-0-4747208 or-413691.

ICI VI, June 28-July 3, 1992, Hotel Cavalieri Hilton, Rome, Italy. Contact: Secretariat, ICI-VI, Studio EGA, Viale Tiziano, 19, 00196, Rome, Italy; (06) 3221806, fax (06) 3222006.

Mechanisms in Nutrition and Cancer, European School of Oncology Course/Seminar, October 12-14, 1992, Venice, Italy. Contact: Dr. John Weisburger, (914) 592-6317, fax: (914) 789-7141.●

Member News



Michael D. Kastello, DVM, Ph.D., was appointed chairman of the Council on Accreditation of the American Association for Accreditation of Laboratory Animal Care (AAALAC).●

1990-91 Annual Reports Available

Due to significant printing and mailing costs, the 1990-91 Annual Report will not be mailed to the entire SOT membership. It will be available upon request from the SOT Headquarters office. Please contact Trish Small in the Headquarters office for a copy.●

Society of Toxicology Obituaries

Charles Henri Hine, M.D., Ph.D.

Charles Henri Hine, M.D., Ph.D., passed away at his Piedmont home on February 26, 1991.

He was Clinical Professor of Medicine at the University of California San Francisco since 1947, teaching Occupational Medicine and Toxicology, where he established the first residency program in Occupational Medicine approved by the American Medical Association in the Western United States. In 1978 he created the Intensive Residency Program in Occupational Medicine at UCSF to train American physicians in the field of Occupational Medicine.

Long considered the foremost authority on industrial toxicology and hazards and injuries in the workplace, he was also active in the establishment of legal limits of intoxication for the impaired driver in the State of California. Dr. Hine pioneered techniques for the quantitative analysis of alcohol and drug levels in the human body. Dr. Hine was Toxicologist to the City and County of San Francisco for 32 years.

Dr. Hine advised Federal, State and local authorities for occupational medical programs and the safe handling of chemical substances. He served as an Overseer of the Fogarty Center in Washington, DC, which selects foreign physicians for their research and training in this country. He was a consultant to the World Health Organization in Geneva.

Dr. Hine is survived by his wife, Betty, a daughter, Holly Hine Suich of San Francisco, CA, a son Charles Henri Hine III of Piedmont, CA, and three grandchildren, Charles Henri Hine IV, Grace Hine and Alexandra Suich.●

Herbert L. Borison, Ph.D.

Herbert L. Borison, Ph.D., professor of pharmacology at Dartmouth Medical School since 1962 and a leading authority on the reflex center in the brain that stimulates vomiting, died in Hanover on December 6, 1990. Dr. Borison's research career was devoted to brainstem neurophysiology. His discoveries relating to brain chemoreceptors that stimulate vomiting are cited as the authoritative work in that field.

Dr. Borison first came to prominence in 1948 when, with S.C. Wang, a professor at the College of Physicians and Surgeons at Columbia University, he identified the chemoreceptor trigger zone for vomiting, a previously unknown functional entity of the brainstem. He continued to refine his discovery, working with K.R. Brizzee at the University of Utah, and in 1953, the American Society for Pharmacology and Experimental Therapeutics awarded him the John Jacob Abel Prize for outstanding research by a young investigator.

Additional awards later took Dr. Borison around the world. He was a Guggenheim Foundation Fellow at the National Institute for Medical Research in London in 1957; a Rockefeller Foundation Visiting Professor at the University del Valle in Cali, Colombia, in 1967; a Macy Foundation Faculty Scholar at the University of Otago in Dunedin, N.Z., in 1974 and again in 1981 at the University of Bristol in Bristol, England.

Dr. Borison's extensive laboratory researches in pharmacology and toxicology dealt with the central emetic, respiratory and cardiovascular actions of classic and exotic drugs and illnesses. In addition to studying the mechanisms of motion and radiation sicknesses, he also examined the causes of the so-called "Red Tide" illnesses associated with seafood. His recent work was devoted to examining the respiratory effects of angiotensin related to cerebral ischemia and the toxic actions of food-grain mycotoxins and of interleukin-2.

His wife, Rosaline Lackowitz Borison, whom he married in 1944 and who died in 1984, was his research associate for many years. He is survived by a son, Adam, of San Carlos, CA, a daughter, Ellen, of Pittsburgh, PA, a brother, Phillip, of Woodhaven, NY and a sister, Hanna Horowitz, of FL.●

prepared by Roger P. Smith and Robert E. Gosselin

Bohdan R. Nechay

Bohdan R. Nechay, Professor at The University of Texas Medical Branch, died on Christmas Day, 1990. A creative scientist, gifted teacher, dedicated patriot, and lover of nature, Dan was admired and widely respected by members of our Society.

Dan was born in Prague, Czechoslovakia, and received his doctoral degree in Veterinary Medicine from the University of Minnesota School of Veterinary Medicine in 1953. His post-doctoral education included NIH and American Heart Association fellowships at the University of Florida, Gainesville, 1959-61. Professional affiliations included memberships in the American Society for Pharmacology and Experimental Therapeutics, American Society of Nephrology, Southwestern Association of Toxicologists, Society of Toxicology, and Sigma Xi, as well as the Southern Salt, Water and Kidney Association and the Lions Club.

Dan's academic career began in 1956 when one of us (T.H.M.) received a letter from him, out of the blue sky of Minnesota. He had started a small practice in veterinary medicine, but his heart lay in research. He became one of the first faculty members at the new University of Florida College of Medicine. He was a fine teacher and rapidly established warm relations with students, particularly in the teaching laboratories where his skill with whole animals was greatly admired and appreciated.

Among other accomplishments, he helped to demonstrate the quantitative relationship between inhibition of carbonic anhydrase and renal excretion of bicarbonate, the quantitative electrolyte effect of aminophylline, and the electrolyte pattern and effects of drugs on the nasal gland excretion of seagulls. His subsequent work with sodium-potassium ATPase clearly defined the enzyme's role in renal sodium reabsorption by the mammalian kidney.

As a naturalist, Dan was always concerned about plants, animals and the environment, and his curriculum vitae attests to a long-term interest and continuing contribution to heavy metal toxicology research. As a mentor, Dan stressed the thrill of learning for its own sake and encouraged the student to use information rather than simply commit it to memory. He emphasized that techniques are simply a means to solve problems of nature and that asking key questions is more important than acquiring techniques.

Dan is survived by his wife, Dr. Karyl Norcross Nechay; his sons, Peter S.E. Nechay of Galveston and Amarillo, TX and Nicholas Nechay of Redwood City, CA. The Department of Pharmacology and Toxicology, University of Texas Medical Branch, has established a Memorial Fund in Dr. Nechay's name to which contributions may be sent.●

Prepared by his student Arly Nelson and his mentor, Thomas Maren, with assistance from members of the Departments of Pharmacology, University of Texas Medical Branch, Galveston, and the University of Florida, Gainesville.

edited from *The Pharmacologist*, 1991, Vol. 33, No. 1.

Watching Washington

Oregon Joins Ranks of States Protecting Research Facilities

HB 2934 makes Oregon the 23rd state to approve legislation protecting research facilities. Effective September, 29, 1991, the new law covers all facilities "engaged in legal scientific or agricultural research or teaching involving the use of animals." Illegal acts specified under the bill are classified as Class C felonies and guilty parties are liable to the facility owner for damages to real and personal property as well as costs of restoring animals to prior health conditions and repeating an experiment.●

Animal Research Facility Bill Passes in Senate

The Animal Research Facility Protection Act S. 544, otherwise known as the Heflin Bill after its sponsor Howell Heflin (D-AL), was approved by unanimous consent in the Senate in October, 1991. S.544 makes it a federal crime to steal, destroy, or make unauthorized use of research animals, equipment or data. The bill includes language that specifically prohibits: aiding, abeting, counseling, commanding, inducing, or procuring the commission of "aforementioned prohibited acts," and receiving, comforting, or assisting anyone who has committed a prohibited act in order to prevent their apprehension, trial or punishment.●

1991 ICI Travelling Lectureship Award

Dr. Sam Kacew (center) pictured with Dr. Eric Wheeldon (left) and **Dr. Iain Purchase** (right) during his visit to the ICI Central Toxicology laboratory in England, as the recipient of the 1991 ICI Travelling Lectureship Award. The Award, presented by the Society of Toxicology, is designed to promote greater collaboration between European and North American toxicologists, and enables a North American toxiologist to undertake a three to four week lecture tour of Europe. Dr. Kacew, who is Professor of Pharmacology at the University of Ottawa, spent three weeks in Europe, visiting eight institutions in Belgium, Switzerland and England.●

Publications of Interest

Chirality: The Pharmacological, Biological and Chemical Consequences of Molecular Asymmetry, (vol. 3), $190.00, Wiley-Liss, c/o John Wiley & Sons, Inc., Periodicals, P.O. Box 7247-8491, Philadelphia, PA 19170-8941.

Environmental Health Science and Protection Professionals: Problems, Challenges and Recommendations, U.S. Department of Health and Human Services, Bureau of Health Professions, Room 8C-09, 5600 Fishers Lane, Rockville, MD 20857.

Environmental and Molecular Mutagenesis (vols. 17-18), $224.00, Wiley-Liss, 41 East 11th Street, New York, NY 10003.

Handbook of Toxicologic Pathology, W.M. Haschek, C.G. Rousseaux (eds.), $199.00, Academic Press, Inc., 1250 Sixth Ave., San Diego, CA 92101.

Hazardous Waste Education and Training, U.S. Department of Health and Human Services, Bureau of Health Professions, Room 8C-09, 5600 Fishers Lane, Rockville, MD 20857.

Natural Toxins, $98.00, Wiley-Liss, 605 Third Avenue, New York, NY 10158-0012.

Pesticide Reregistration Progress Report, USEPA, (H-7580W), Washington, DC 20460.●

SOT Ballot Process

The Society of Toxicology ballot process for the election of officers, councilors and members of the Education and Membership Committees ensures confidentiality of member votes and accurate tallying of results.

Members receive a photograph and biographical sketch of each candidate, mailed to all voting members by January 1, 1992, as provided in the SOT By-Laws. Two return envelopes are provided with the mailing: an outer envelope, which is addressed to SOT, and an inner envelope, which ensures the privacy of each member's vote.

When the completed ballots are received in the SOT office, the member's name and signature are verified against the list of voting members. On the closing day for receipt of ballots, **February 1, 1992**, the sealed envelopes containing the ballots are sent to an independent accounting firm. The accounting firm then provides the results to the President and Executive Secretary, who notify all candidates of the results.

Please remember in completing your ballot to vote for the correct number of candidates for each category of candidates and to print and sign your name on the outer envelope. Envelopes that are not so marked will not be forwarded for tabulation.●