

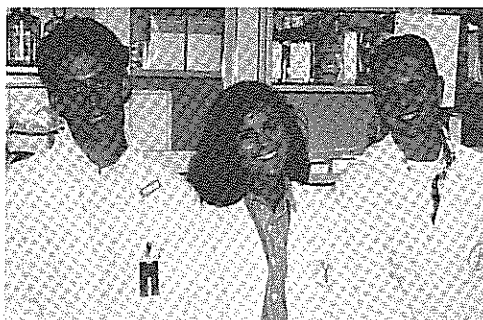
Society of Toxicology NEWSLETTER

SEPTEMBER/OCTOBER 1992

SOT Student Internships: Focus On The Future

SOT Student Internships provide an outstanding learning experience for young scientists seeking hands-on experience in toxicology. In 1992, 18 interns were selected from the almost 200 student respondents to the flyers and applications distributed through science departments and undergraduate advisors at colleges and universities across the United States and Canada. SOT wishes to thank the following companies that made this valuable program possible: Albany Medical College; CIIT; Eli Lilly & Company; Michigan State University, The Procter & Gamble Company, S.C. Johnson & Son, Inc.; State University of New York; and Sterling-Winthrop, Inc.

*Sterling-Winthrop student interns
Milo Vassalo,
Kathryn Dalmus
and Michael Emery*

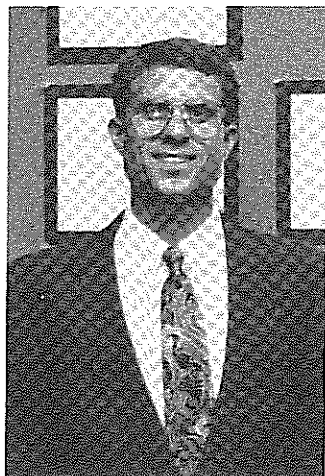


The Society of Toxicology and the *ad hoc* Tox 90s Educational Issues Task Force encourage members to invest in the future of toxicology by participating in the Summer Internship Program.

SOT members interested in supporting one or more interns in 1993 should complete the internship form enclosed in this newsletter. Responses must be received at SOT Headquarters by **January 1**. Student applicants will respond directly to participating programs by February 1. ●



Lilly interns Kim Worzalla...



and Michael Karellas

The Toxicology Education Foundation

Expanding the Horizon of Toxicology for the Future

The Toxicology Education Foundation, established by the Society of Toxicology in 1990, has taken great strides toward its mission: to encourage and facilitate the education and training of individuals in the science of toxicology and to assist the public to be more scientifically knowledgeable about toxicological issues.

The Foundation fund balance is now over \$81,000, remarkable in only two years. Of that amount, almost \$24,000 was contributed by over 300 members (a list of those members is enclosed). The **Robert L. Dixon** Fund of \$32,008 was transferred from the SOT general fund and the Foundation was the beneficiary of the residual funds from the Toxicology Laboratory Accreditation Board, which disbanded. I am proud to report that the Foundation has a 100% contribution record with the members of SOT Council since its inception and some of the members who received SOT awards at the 1992 Annual Meeting designated the Foundation the recipient of all or part of their award stipend.

I wish to bring to your attention the Foundation's policy with regard to designated funds. The Foundation has established as a minimum for such funds that they achieve \$20,000 in donations within five years of the establishment of the fund. In addition to the Robert L. Dixon Fund, which was established in memory of a past president of the Society, a fund is under development in recognition of the contributions of **Dr. Carl Smith**.

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Society of Toxicology
 1101 14th Street, NW
 Suite 1100
 Washington, DC 20005-5601
 (202) 371-1393
 Fax: (202) 371-1090

Deadline for next issues:
 October 10, 1992
 December 10, 1992
 April 10, 1993

1993 Annual Meeting:
 March 14-18
 New Orleans, LA

President's Message

For each of the SOT Council meetings there is an agenda that touches on every element of the activities of the Society. Because of a low level of activity since the last Council meeting, some items are passed over quickly; for others, the discussion can be quite lengthy. My thought in this issue of the Newsletter is to review three current topics that have been given recent Council attention and, in so doing, give you some insight into the concerns and deliberations of your Council.

Board of Publications

Our journals have both undergone significant changes in format. We have a newly appointed editor of *Toxicology and Applied Pharmacology*, **Ed Bresnick**, who is beginning to take over that function from **Glenn Sipes**. There are other on-going activities, however, that are not so visible to our membership.

Long-range efforts are underway to attempt to increase our institutional subscription rates for *Fundamental and Applied Toxicology* to a level competitive with other journals and to increase institutional subscriptions, especially outside the United States. The broader base of distribution would add to the standing of the journal and would put the publication on a sound financial footing. We have a long-standing and very complicated contract with Academic Press which expires at the end of 1993 and must be renegotiated. **Fred Guengerich**, **Mike McClain**, and **Jim Bus** are representing the Society in this effort. We plan to review proposals and options at the September Council meeting in preparation for early discussions with the publisher.

Following the recommendation of the Animals in Research Committee, the Board of Publications has approved the use of the Society's official statement on Guiding Principles in the Use of Animals in Toxicology in the editorial review of manuscripts. This will be published in the January issue of each of our journals. The Instructions to Authors section in each issue will then reference this statement specifying that experiments requiring the use of animals must be conducted in accordance with these principles.

Annual Meeting Site Selection

Seventy-five percent of our net operating revenues come from the Annual Meeting. This is an item that merits and secures significant Council attention. In the front of your new membership directory, you will note that 4 of the next 5 meeting sites use convention centers, the exception being the 1994 meeting in Dallas. There are no other hotel facilities in which our meeting can be self-contained. Note as well that we have booked sites through 1998; Headquarters is negotiating for sites through 2001. We need to look this far ahead to compete successfully for the best site and secure the best rates. In 1998, we will return to Seattle for the Annual Meeting. These future dates are scheduled for the second week in March with the meeting (Continuing Education Courses) beginning on Sunday. In an attempt to slate a warm-weather city, a March time gives us significantly more latitude in site consideration.

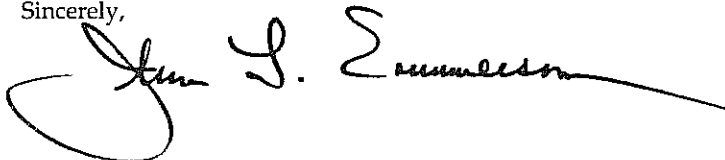
An ideal site would provide excellent meeting facilities, an adequate number of affordable hotel rooms, meeting facilities in close proximity to hotels, the prospect of agreeable weather, and convenient and reasonably priced transportation in and out of the city. In practice, every site requires some compromise. As we enlarge our base of experience, it is seen as logical to try to pick 4 or 5 of the best sites and use these in rotation.

Finance Committee

Efforts are well along toward our goal of bringing each financial line item into harmony insofar as the SOT budget, the Headquarters cost accounting, and the yearly independent audit. To have all of these financial statements constructed in parallel will permit us to track and monitor exact costs for each function or product produced. Council continues to be faced with options for the expenditure of Society funds. We have good estimates now and we are very close to being able to assign costs (overhead, clerical, supplies, etc.) to each expenditure: a mailing to the membership; or the formatting, printing and mailing of the Toxicologist, for example. With the knowledge of the estimated costs, Council will have important information to help decide among many worthy Society activities as to how the available funds are best allocated and to offer specific items up for bid to ensure that we are getting the best value for our money.

The 1992-93 SOT year is now into its fifth month and the abstract deadline is just around the corner (Friday, October 2). Samuel Johnson once said, "When a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully." Every year our members prove that this principle has general application: approximately 80% of the SOT abstracts arrive by FedEx on the last day. Science advances; human nature is immutable.

Sincerely,



John Emmerson

Wanted: "Host/Mentors" for Visiting 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 SOT 1993 Annual Meeting in New Orleans. 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 Saturday and departure on Monday. An Introductory Session will be held Saturday evening, March 13. All mentors would need to be available at that time. Other sessions include an educational program for visiting students on Sunday, 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 1992 SOT Annual Meeting in Seattle.

About 15-30 volunteers with responsibility for one or two students each are needed. Anyone willing to volunteer for this important responsibility should contact Trish Small at the SOT Headquarters office, (202) 371-1393. ●

ICT VII Satellite Meeting Proposals

The VII International Congress of Toxicology (ICT VII) Scientific Program Committee seeks proposals for satellite meetings to be held in conjunction with the ICT VII meeting in Seattle, Washington, July 2-6, 1995. Previous ICT meetings have included very successful satellite meetings to provide the attendees with the opportunity to participate in additional scientific gatherings either before or after the Congress.



The theme of ICT VII is "Horizons in Toxicology: Preparing for the 21st Century;" proposals for satellite meetings can be from a wide range of topics of interest to toxicologists from around the world.

Satellite proposals should be sent to **Dr. Donald J. Reed**, Chairperson, ICT VII Program Committee, c/o Biochemistry & Biophysics Dept., Oregon State University, Corvallis, OR 97331, Telephone: (503) 737-4438 and Fax: (503) 737-0481. Proposals should be received by November 1, 1992. ●

Metals Specialty Section Awards

In recognition and support of excellence in graduate student research, the Metals Specialty Section invites graduate students to apply for two awards and postdoctoral students for one award to be presented at the upcoming Society of Toxicology Annual Meeting and will include a cash stipend of \$400. Abstracts will be evaluated with the authors'/sponsor's names removed and will be judged on the basis of quality of study design and interest and importance of the results, with additional consideration of the quality and clarity of the written presentation.

Each student applicant must be first author of the abstract, which must describe research performed while a student. Qualified applicants should send their name, address, abstract, and a letter of support from a full member of the Society of Toxicology to the address listed below. The letter of support should state that the work was done while a student, should clearly designate either graduate or postdoctoral student category, and should indicate that this is the only specialty section award sought with this work. The abstract may be submitted between October 2, 1992 and the deadline, which is **January 15, 1993**. An awards committee will then select the winners, and awards will be presented at the 1993 Specialty Section Meeting In New Orleans.

Please send abstracts to: **Dr. Maryka Bhattacharyya**, Secretary/Treasurer Metals Specialty Section, Biological and Medical Research Division, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439-4833. ●

Society of Toxicology NEW ORLEANS

SOT 1993 Annual Meeting: March 14-18, New Orleans

While planning continues at Headquarters and among various committees for the 1993 Annual Meeting in New Orleans, SOT members should begin thinking about their own plans for the meeting. The Preliminary Program, which includes a reservation form, hotel and travel registration forms will be sent to members in December. Continuing Education course descriptions are included in this newsletter; Symposia and Special Session descriptions will be published in the November/December Newsletter. The Final Program and Toxicologist will be mailed to members in February.

Reserving Space for Ancillary Meetings

Committees, Specialty Sections, Chapters, alumni organizations, and others who wish to hold a meeting or social function during the week of the meeting should complete the Ancillary Meeting Form included with this newsletter and return it to Clarissa Russell at SOT Headquarters no later than **November 19, 1992**. Space will be assigned on a first-come, first-served basis, after SOT scientific and social programs have been accommodated.

Placement Services

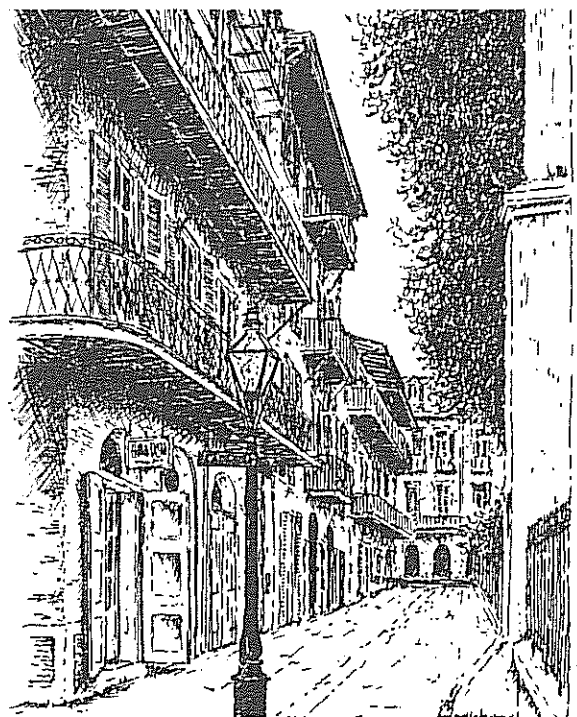
The Society of Toxicology Placement Service provides employers and candidates seeking jobs with an opportunity to establish contacts relating to their specific needs and areas of interest.

Pre-Meeting

Both employers and job candidates must register with the SOT Placement Service and pay a nominal fee. Employers complete job description forms and candidates complete narrative resumes and computer forms. Information provided on the computer forms is used to help "match" candidates with positions described by employers. Employers registering before **January 11, 1993** receive packets with resumes of registered candidates and "matches" for specific positions prior to the Annual Meeting. Placement forms are included with this newsletter.

On-Site

The SOT Placement Service will be open on Sunday, March 14 from 10:00 a.m. to 3:30 p.m. for registration of employers and

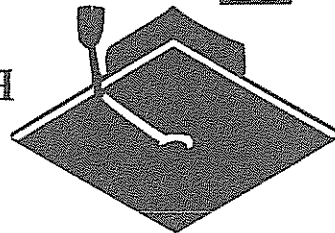


candidates, and Monday-Wednesday for full Placement Services. Although pre-registration is encouraged, registration for the Placement Service will be accepted at the Annual Meeting at somewhat higher fees. During the Annual Meeting, employers scan the complete packets of resumes at the Placement Service Suite. Candidates look over up-to-date job listings in a room adjacent to the Placement Service Suite. Contacts are made via a message board. The Placement Service does not arrange interviews but will coordinate reservations of interview space. Neither employers nor candidates need be present; however, both are urged to use this opportunity for personal contact.

All job placement will be carried out via the Placement Service. No employer will be allowed to advertise positions elsewhere at the Annual Meeting.

Post Meeting

All candidates will receive a mailing about one month after the meeting that contains a list of all jobs posted at the Annual Meeting. Employers will receive a complete packet of candidates' resumes. The Placement Service should be notified promptly after positions are filled. ●



1993 Continuing Education Courses

The Continuing Education Committee: Jon C. Cook, William F. Greenlee, Michael A. Trush, Lawrence R. Curtis; Lois Lehman-McKeehan; and Kendall B. Wallace (chairperson), is pleased to offer nine courses on Sunday, March 14, on both basic and advanced levels. The basic courses include topics such as chemical hypersensitivity, biomarker toxicology, carcinogenesis and pesticides. Advanced courses will cover neurotoxicity, cell death mechanisms, gene alteration, and toxicology technologies. Risk assessment will be studied on both basic and advanced levels.

As in past years, the selection of courses was based on suggestions from the membership, including those from previous years' questionnaires.

Advanced Behavioral and Neurophysiological Testing for Neurotoxicity

Chairpersons: W. Kent Anger, Oregon Health Sciences Center, Portland, OR and Deborah Cory-Slechta, University of Rochester, Rochester, NY

- Human Behavioral Tests and Standardized Test Batteries Used Internationally, W. Kent Anger, Oregon Health Sciences Center, Portland, OR
- Reflex Methods to Assess Sensory and Cognitive Deficits in Animals and Humans, Jim Ison, University of Rochester, Rochester, NY
- Operant Techniques for Testing Complex Behaviors in Animals and Humans, Deborah Cory-Slechta, University of Rochester, Rochester, NY and Merle Paulie, National Center for Toxicological Research, Jefferson, AR
- Neurophysiological Methods Used to Assess Complex Nervous System Processes in Animals and Humans, William Boyes, US EPA, Research Triangle Park, NC

There is a growing sophistication in the technology for evaluating the impact of potential or proven neurotoxic agents on complex or cognitive performance. The purpose of this training course is to describe advanced test paradigms used with animals and humans to assess neurotoxic effects. The tests and test approaches to be described and demonstrated will include sufficient technical detail that the attendee will be able to identify appropriate tests in this complex field. The course will feature presentations by experienced scientists who routinely evaluate nervous system deficits in a variety of species using behavioral, neurophysiological, and neurologic tests of subtle, cognitive or complex performance. Presentations will provide in-depth information about established tests, techniques, availability of standardized test batteries, variables which affect performance on tests, and interpretation of results. A limited number of test batteries (e.g., human behavioral tests) will be available for hands-on experience during structured interim time, and film or video tape presentations will demonstrate advanced

Mechanisms of Cell Death

behavioral tests in both humans and animals of operant behavior and reflex methodologies.

Chairperson: Rick G. Schnellmann, Univ. of Georgia, Athens, GA

The objective of this advanced course is to provide an update on the mechanisms by which xenobiotics produce cell injury and death in various organ systems. Emphasis will be placed on the breakdown of normal cellular physiology and on the relative sequence of events that ultimately result in cell death. The first lecture will illustrate the mechanisms by which chemicals cause apoptosis, or programmed cell death, using thymocytes as an example. The second lecture will focus on the role of degradative enzymes and mitochondrial dysfunction in chemically-induced necrotic cell death in renal proximal tubule cells. The third talk will show the utility of digitized video microscopy for relating physiological and morphological alterations to chemically-induced cell death in hepatocytes. The fourth lecture will focus on excitatory neurotoxicity and its possible relationship with environmental factors.

Immunology of Chemical Hypersensitivity

Chairpersons: G.F. Gerberick, Procter & Gamble, Cincinnati, OH and I. Kimber, ICI Central Toxicology Labs, Macclesfield, Cheshire, England

- Principles of the Adaptive Immune Response, Ian Kimber, ICI Central Toxicology Labs, Macclesfield, Cheshire, England
- Contact Hypersensitivity, G. Frank Gerberick, Procter & Gamble, Cincinnati, OH
- Respiratory Hypersensitivity, Kathy Sarfo, Procter & Gamble, Cincinnati, OH
- Drug-induced Systemic Hypersensitivity and Autoimmune Disorders, Michael E. Kammerlter, Sandoz Pharma Ltd., Basle, Switzerland

The objective of this basic course is to provide an overview to mechanisms underlying chemical-induced hypersensitivity responses and to review the methods employed for human risk assessment in this area. The first lecture will discuss the basic principles of the adaptive immune response, as well as review the basic biology of hypersensitivity responses. Recent advances in hypersensitivity risk assessment, along with an overview of newer approaches, will also be discussed. The second lecture will review a number of existing animal and human test methods used for contact hypersensitivity risk assessment, and discuss newer methods which are currently in different stages of

- X2U-Globulin Mediated Male Rat Kidney Carcinogens, James A. Steenbergs, University of North Carolina, Chapel Hill, NC
- Secondary Thyroid Carcinogens, Charles C. Capen, Ohio State University, Columbus, OH
- Peroxisome Proliferator Carcinogens, James A. Popp, CIIT, Research Triangle Park, NC

Nongenotoxic carcinogens present special problems for the toxicologist because they act through a variety of different modes of action, some of which are poorly understood. Further, predictive assays and appropriate risk assessments are less well characterized than for the DNA reactive genotoxic carcinogens. Mitogens induce cell proliferation directly, and upon chronic administration, often stimulate an increase in the size of the target organ. Cytotoxicants produce cell death followed by regenerative cell proliferation. For the mitogens and cytotoxicants, differential growth advantage to spontaneous or chemically-induced precancerous or cancerous cells. Mutagens are more effective carcinogens at doses that also induce cell proliferation, and mutational activity may occur secondary to increased cell turnover. This basic course will focus on the mode of action, detection, and risk assessment for several key classes of the nongenotoxic carcinogens.

Insecticides: Mechanisms of Action, Metabolism and Toxicology in Vertebrates

- *Overview: Janice E. Chambers, Mississippi State University, Mississippi State, MS*
- *Anticholinesterase Insecticides: Organophosphates and Carbamates, Lester G. Sultatos, LMDNJ-New Jersey Medical School, Newark, NJ*
- *Organochlorine, Pyrethroid and Neveer Insecticides, Jeffrey R. Bloomquist, Virginia Polytechnic Institute and State University, Blacksburg, VA*
- *Chronic Effects and Environmental Effects, Michael J. Hooper, Clemson University, Pendleton, SC*

Because insecticides are designed to kill and are applied deliberately to the environment, they constitute a recognizable hazard to humans and other non-target species. The overview will describe insecticides' history, chemical classes, overall mechanisms of action and symptomatology, human intoxications, and regulatory concerns. The chemistry and physicochemical characteristics, mechanisms of acute neurotoxicity, signs of poisoning, metabolism, and delayed toxicity of the anticholinesterases (organophosphates and carbamates) will be described. The importance of these same chemical, physical, and toxicological characteristics for the neurotoxic organochlorine, pyrethroid, and avermectin insecticides will be explained. Lastly, chronic effects induced by insecticides, such as behavioral or reproductive effects of carcinogenicity, and some of the critical environmental issues, such as bioaccumulation and aquatic and wildlife toxicity, will be pointed out. This is a basic course intended to increase awareness of what hazards are associated with insecticides.

The third lecture will discuss available methods used for assessing the respiratory allergy potential of large and small molecular weight materials. Proteases and anhydrides will be used as examples to illustrate approaches used for respiratory allergy assessment of chemicals. The final lecture will provide an overview of drug-induced systemic hypersensitivity and autoimmune disorders. The understanding of reactions to a variety of drugs will be used as examples to illustrate the immunological basis of these phenomena.

Molecular Biomarkers in Toxicology

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

The objective of this basic course is to describe the application of recent advances in laboratory methodologies to the identification, development and validation of intermediate biological markers for use in toxicological studies. Biomarkers, defined as molecular, biochemical or cellular alterations that are measurable in biological matrices, such as human fluids, cells or tissues, can be used to identify specific exogenous agents and/or host factors that play a role in human diseases. The first lecture will provide an overview of the application of biomarkers to both experimental and epidemiologic studies in toxicology. Characteristics of ideal biomarkers and strategies for validating biomarkers will be presented. The second lecture will focus on the use of biomarkers as internal indicators of exposure and the biologically effective dose of xenobiotics. The third lecture will highlight the use of biomarkers as indices of early, subclinical adverse health effects of toxicants. The fourth lecture will discuss strategies for defining the innate susceptibility of the human host to extrinsic agents and the genetic basis for inter-individual variability in toxicity outcomes. Overall, the course will highlight the potential of biomarkers to improve the understanding of exposure to disease relationships and their utility in preventive interventions.

Coping with Nongenotoxic Carcinogens: Mode of Action, Detection and Risk Assessment

- *INTRODUCTION: Byron E. Butterworth, CIIT, Research Triangle Park, NC*
- *Cytotoxic Liver Carcinogenesis, Douglas C. Wolf, CIIT, Research Triangle Park, NC*

ticide usage and what toxicological issues have been critical elements in their history of use.

Experimental Approaches to Assess Chemically-Induced Alterations in Gene Expression

Chairperson: Jay I. Goodman, Michigan State University, East Lansing, MI

□ *Introduction: Jay I. Goodman, Michigan State University, East Lansing, MI*

□ *Analysis of Point Mutations Using the Polymerase Chain Reaction (PCR) and DNA Sequencing: The Har-*

ris Oncogene as an Example, Katherine K. Richardson, Lilly Research Laboratories, Greenfield, IN

□ *Hypomethylation of DNA: A Cell Proliferation-Linked Mechanism that Can Facilitate Aberrant Gene Expression, Jay I. Goodman, Michigan State University, East Lansing, MI*

□ *Cytoplasmic Receptor-Mediated Regulation of Gene Expression: The Dioxin Receptor as an Example, Michael S. Denison, Michigan State University, East Lansing, MI*

□ *Methods for Detection of Allelic-Specific Gene Expression, David G. Beer, University of Michigan, Ann Arbor, MI*

□ *The objective of this advanced course is to provide an understanding of some experimental approaches that can be employed to discern mechanisms by which chemicals can alter gene expression. Specific examples will be presented in order to illustrate the type of data that might be obtained, and the potential pitfalls one might encounter when conducting and interpreting these experiments. The initial discussion will focus upon discerning point mutations. This will involve the use of the polymerase chain reaction (PCR) and DNA sequencing techniques. The next two presentations will address experimental approaches which can shed light on two of the mechanisms involved in regulation of gene expression: a) alterations in the methylation status of DNA (i.e., changes in the 5-methylcytosine content of DNA), and b) the manner by which cytoplasmic receptor-mediated events can enhance gene expression. Thus, we shall focus on one mechanism involving cis-acting DNA elements and one mechanism involving trans-acting factors implicated in the control of transcription. The course will conclude with a discussion of experimental approaches that can be employed to discern allelic-specific gene expression.*

Application of Advanced Technologies to Problems in Toxicology

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

□ *Application of Mass Spectrometry in Toxicology, Deanne Dulik, SmithKline Beecham Pharmaceuticals, King of Prussia, PA*

□ *Application of Electron Spin Resonance in Toxicology, Ronald F. Mason, NIEHS, Research Triangle Park, NC*

□ *Application of Nuclear Magnetic Resonance Spectroscopy in Toxicology, Susan Sumner, CIIIT, Research Triangle Park, NC*

□ *Application of Fluorescent Imaging in Toxicology, Martin Poenie, University of Texas, Austin, TX*

The objective of the course is to familiarize the attendees with advances in technologies which are applicable to contemporary problems in Toxicology. The first goal is to provide the basics on how the technologies work. The second goal is to show the investigator how these techniques can be applied to "cutting edge" problems in Toxicology. Each speaker will describe specific examples where the technique can be applied to a toxicological research problem. At the completion of the course, each attendee should have a better knowledge of how nuclear magnetic resonance spectroscopy, mass spectrometry, electron spin resonance spectroscopy and fluorescence imaging techniques can be used to solve experimental problems of interest to toxicologists.

Basics of Risk Assessment

Chairpersons: Michael Dowson, US EPA, Cincinnati, OH, Richard Cothran, US EPA, Washington, DC

□ *A Risk Assessment Paradigm, Richard Thomas, National Academy of Sciences, Washington, DC*

□ *How Toxicity Data Are Used in the Process of Hazard Identification and Dose-Response Assessment, Michael Dowson, US EPA, Cincinnati, OH and Barbara Beck, Gradient Corporation, Cambridge, MA*

□ *Designing Studies for Maximum Impact on the Risk Assessment Process, Frederick Johansson, Monsanto Co., St. Louis, MO*

□ *How Exposure Assessments Temper the Use of Toxicity Data in Risk Characterization, Dennis Paus-tenbach, McLaren/Hart Environmental Engineering, Alameda, CA*

The goal of this course is to provide an overview of the newly emerging field of risk assessment. It is intended for graduate students and professionals with limited experience in the area. The objectives of the course are: to discuss structure and analytical processes for qualitative and quantitative risk assessment; to show how they relate to evaluations and management of environmental and occupational contaminants; to identify and describe the components of risk analysis (e.g., hazard identification, dose-response relationships, exposure assessment) and the integration of these aspects. The audience will gain understanding of the general paradigm, function of components, problems and need in date integration and other emerging challenges in this widely applied area of toxicology.

Advanced Topics in Risk Assessment

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

□ *Benchmark Dose: Concept and Use with Developmental Toxicity, Elaine Faustman, University of Washington, Seattle, WA*

Associate Members of the Society of Toxicology Encouraged To Consider Full Member Status

The Membership Committee and SOT Council encourage long-standing Associate Members to consider applying for Full Member status in SOT. Full membership brings many advantages—greater recognition of your professional standing, the right to vote for SOT Council and elected committees, and the opportunity to serve on Council and elected committees.

Recognizing the diverse opportunities for professional accomplishments in the discipline of toxicology, SOT provides two mechanisms by which Full Membership status can be obtained.

If you are currently an Associate Member, have been engaged in the full-time practice of toxicology for more than three years, and have at least two senior-authored toxicology-related publications that are in peer-reviewed journals and that are NOT derived from your graduate research experience, you are eligible for Full Member status.

Alternatively, if your professional experience in toxicology is such that publication of original work is not an option, you can gain Full Member status through the "Generally Recognized as Expert" category.

The GRE designation requires that: a) an applicant must be sufficiently experienced in some phase(s) of toxicology to be acknowledged by reputable practitioners as an expert in the acquisition, evaluation, and application of experimental data; b) an applicant must have spent at least five years prior to application in positions of responsibility for directing, managing, or otherwise participating in a decision-making capacity in toxicology activities; c) proof of continuing professional interest must be supported by letters written by no less than five FULL (non-Council, non-Membership Committee members). At least 3 of the 5 letters must originate from outside the applicant's organization.

We're certain that many of our current Associate Members fulfill these requirements, but have not thought to re-evaluate their current membership status. If you are an Associate Member and believe you meet the above requirements, we encourage you to apply now for Full Member status.

The normal \$50 SOT Membership application fee is waived for those updating their applications from Associate to Full Member, so this is not an excuse!

If you have any questions about this process, feel free to call me at (206) 685-785. You can receive NEW membership application forms and instructions directly from SOT Headquarters. Please do not use old application forms, and read and follow the directions carefully!

Dr. Dave Eaton

Chairperson, Membership Committee

- Inhalation Reference Concentration (RfC): Dose-metric Adjustments to Effective Concentrations Across Species for Response Analysis of Inhaled Air Toxics, Annie M. Jarnbek, US EPA, Research Triangle Park, NC
- Risks Based on Receptor Modeling Using Dioxin as a Case Study, Michael A. Gallo, UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ
- Modifying Uncertainty Factors for Noncancer Endpoints, Michael L. Douvan, US EPA, Cincinnati, OH

This advanced course will present recent developments in quantitative risk assessment that are being used or considered for use by regulatory agencies. The first lecture will describe benchmark dose methodology, a suggested replacement for the NOAEL approach to risk assessment. It will highlight the application of benchmark doses to developmental toxicity data and illustrate modeling techniques to identify the appropriate benchmark dose. The second lecture will describe the EPA's inhalation RfC methodology, which makes dosimetric adjustments to concentrations associated with effects in laboratory animals or human occupational exposures to derive human equivalent concentrations for ambient exposures. The third lecture will describe a risk assessment for dioxin based on quantitative receptor binding characteristics, a potential model for other receptor-mediated toxicity. The fourth lecture will discuss the data that can be used to modify or replace default uncertainty factors in risk assessment. Specific examples will be given in each lecture.

Member News

Dr. Charles L. Winek, Professor of Toxicology at Duquesne University, was re-elected President of the Academy of Toxicological Sciences, a professional standards organization that certifies toxicologists who have distinguished themselves in the field of toxicology. Dr. Winek's term as president runs until July 1, 1993.

Past SOT President Frederick Coulston has established the Eileen T. and Frederick Coulston Fund for Excellence in Scholarship and Research at New Mexico State University in Las Cruces, NM. This fund will support the establishment of two chaired professorships at NMSU—the Eileen T. Coulston Chair in Molecular Biology and the Frederick Coulston Chair in Toxicology.

Discount Subscription Offer

The Society of Toxicology, in cooperation with the publisher of *The Scientist*, has arranged to provide all members of the Society with a reduced rate for subscribing to *The Scientist*. SOT Members will pay \$29.00 (the regular subscription cost is \$58.00). If you are already a subscriber, this offer will apply to your renewal. *The Scientist*, published 24 times per year, will provide members with current information on pivotal scientific developments, noteworthy research, and new tools and technologies important to scientists. If you would like to subscribe to *The Scientist*, call 1-800-593-2193 or write to: *The Scientist*, Attention: Circulation Department, 5616 W. Cermak Road, Cicero, IL 60850-9955. Identify yourself as a member of the Society of Toxicology, reference code SOTN92.

Graduate Programs Recruiting

Materials

The Education Committee will provide space during the Visiting Student Program and the Visiting Student Poster Session at the New Orleans Annual Meeting for literature about individual graduate programs. This year, the Visiting Student Program, a program for minority students and their advisors, will be held on Sunday afternoon, March 14, 1993. The session will include information about graduate training in toxicology and will provide tables for colleges and universities to display literature describing their graduate programs in toxicology.

Representatives of the programs are welcome to attend the session and answer questions about graduate opportunities during an informal gathering after the program. Additionally, there will be tables available during the Visiting Student Poster Session on Monday morning and we invite you to attend this interesting session and be available for questions. These are two outstanding opportunities to recruit minority students to your programs! ●

Publications of Interest

Dolphins and the Tuna Industry, National Academy Press, 2101 Constitution Avenue, NW, P.O. Box 285, Washington, DC 20055.

Biological Markers in Immunotoxicology, National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20418, 202/334-3180.

Environmental Liability Laws, American Insurance Association, 1130 Connecticut Avenue, Suite 100, Washington, DC 20036, 202/828-7100.

Environmental Neurotoxicology, National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20418, 1-800-624-6242.

Free Radical Mechanisms of Tissue Injury, Mary Treinen Moslen, Ph.D. and Charles V. Smith, Ph.D., CRC Press, 2000 Corporate Boulevard, Boca Raton, FL 33431.

Ophthalmic Toxicology, George C.Y. Chiu, Raven Press, 1185 Avenue of the Americas, New York, NY 10036, 212/930-9500.

Implementation Strategies for Research Animal Well-Being, Lee Krulisch, Scientists Center for Animal Welfare, 4805 St. Elmo Avenue, Bethesda, MD 20814, 301/654-6390.

Lipoxigenases And Their Products, Stanley T. Crooke, Angela Wong, National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20055.

Multiple Chemical Sensitivities, National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20418, 202/334-3180.

Poisonous Plants, Proceedings of the Third International Symposium, L.F. James, R.F. Keeler, E.M. Bailey, Jr., P.R. Cheeke, M.P. Hegarty, Iowa State University Press, 2121 S. State Avenue, Ames, Iowa 50010, 515/292-0155.

Status of Pesticides in Registration and Special Review: The Rainbow Report, Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, 703/308-8000.

Ph.D., M.D., Little, Brown and Company, Theoharis C. Theoharides, *Pharmacology: Essentials of Basic Science*, Theoharis C. Theoharides, Ph.D., M.D., Little, Brown and Company, Boston, MA 02108. ●

Obituaries

Shahanara Zaman Saroya and Razia Zaman

Razia Zaman was born on February 24, 1955 and Shahanara Zaman Saroya was born on April 12, 1957. They were the beloved daughters of Dr. Masood Zaman and Ms. Rabia Zaman. Razia obtained her Ph.D. in Clinical Pharmacology at the University of Birmingham and completed a postdoctoral program at the University of Georgia before taking a Senior Research position with Hazleton Laboratories in Madison, Wisconsin. Shahanara obtained her Ph.D. in Toxicology at The University of Michigan and was carrying out postdoctoral studies in Environmental Toxicology at the University of Wisconsin. Shahanara was an Associate Member of SOT.

Razia and Shahanara died tragically in an automobile accident on July 11 of this year. Both Razia and Shahanara were loved and respected by all those who were fortunate enough to meet them, know them, and work with them. They were taken from us at the prime of their lives and words cannot express their terrible loss. They grew up together, played and worked together. Now they lie in peace, together. Razia and Shahanara are survived by their parents and their sister Samina, and Shahanara by her husband Naem.

—Many friends at Hazleton Laboratories, Parke-Davis Co., University of Georgia, University of Michigan and University of Wisconsin.

Orville E. Paynter, Ph.D., DABT

For over thirty nine years, Orville Paynter, who recently passed away, was involved in the field of toxicology and worked in leadership roles for the United States government as well as in private industry. He was an active member in many organizations including SOT, where he was a charter member, The Editorial Board of Drug & Chemical Toxicology, Regulatory Toxicology & Pharmacology, and American Board of Toxicology. Dr. Paynter was also recognized by his peers as making significant contributions as part of numerous committees including, the SOT Membership, Continuing Education, Technical and Program Committees. He also served as SOT Historian and on the subcommittee on Certification of Professionals in Toxicology.

Dr. Paynter retired recently from the U.S. Environmental Protection Agency where he worked as a senior scientist. Before his retirement, he was significantly involved in the promulgation of Standard Evaluation Procedures for the Federal Insecticide, Fungicide & Rodenticide Act. His keen sense of humor, commitment to excellence and fairness will surely be missed.

Dr. Paynter is survived by his wife Ruth, seven children and thirteen grandchildren.

—Van M. Seebough and John Doherty

Assistant Professor level. Academic experience and successful, extramurally funded research program required for appointment at Associate Professor level.

Salary and academic rank will be commensurate with training and experience. Please send letters of nomination or applications including curriculum vitae, the names and addresses of three professional references, and a statement of career goals to Dr. Janice E. Chambers, Veterinary Medical Research, College of Veterinary Medicine, Drawer V, Mississippi State, MS 39762. Applications will be accepted until September 1, 1992, or until a suitable candidate is found. ●

TOXICOLOGIST

HRP, Inc., a world leader in the supply of research products to the biomedical community, is seeking a Toxicologist to secure, conduct, and report all phases of animal health research projects under contract at Kalamazoo, Michigan. In addition, you will maintain research sales budget; market, schedule, and supervise studies; prepare reports and final billing; train and supervise staff; and ensure compliance. DVM, or Ph.D. in Toxicology, and five years toxicology experience are required. Submit resume, references, and salary history to Human Resources, HRP, Inc., P.O. Box 7200, Denver, PA 17517, (800) 345-4114. EOE. ●

PH.D. TOXICOLOGISTS

Procter & Gamble has several entry-level staff toxicology openings to be filled at our Cincinnati, Ohio; Hunt Valley, Maryland; and Norwich, New York technical centers. These positions require a Ph.D. degree, preferably in toxicology; however, degrees in pharmacology, physiology, nutritional toxicology, or other life sciences are acceptable if the training or experience meets the needs of the openings.

These positions are in applied toxicology and involve the design, implementation, and interpretation of a breadth of studies and applying the results to the development of risk assessments for new products, chemicals, and product ingredients. These toxicologists will work with multidisciplinary teams, manage contract studies, and may interact with scientists outside the company and with regulatory agencies at both state and federal levels.

Procter & Gamble is a world leader in the research, development, manufacture and marketing of a wide variety of consumer products in the health and beauty care, food and beverage, laundry and cleaning, and paper products areas. Annual sales exceed \$30 billion, and the R&D budget is over \$800 million.

Candidates must be presently authorized to work in the U.S. on a full-time basis. Resumes, with a list of publications and references, should be sent to:

Dr. N.G. Howell, Dept. T6A, The Procter & Gamble Company, P.O. Box 398707, Cincinnati, Ohio 45239-8707

No agency referrals, please. An Equal Opportunity Employer. Allow 6-8 weeks for response. ●



Placement Services

RESEARCH SCIENTISTS: TOXICOLOGY & METABOLISM

Midwest Research Institute (MRI), a leading contract research organization with major research activities in the health sciences, has positions available in the Life Sciences Department.

Senior Product/Drug Development Scientist Responsible for the conduct of pharmacokinetics and metabolism studies to support product/drug registration.

Senior Toxicologist—Responsible for the conduct of animal toxicity studies. DABT or board eligible.

Successful candidates should possess a Ph.D. in pharmacology, toxicology, biochemistry, or other related disciplines or a DVM with minimum of 4 years' experience in related field. Experience as study director/principal investigator is required and experience with submission to government regulatory agencies is desired.

Staff Scientist—Participate in pharmacokinetics, toxicology of metabolism studies. Requires BS or MS in relevant scientific discipline with minimum of 3 years' experience in related field.

MRI offers competitive compensation, a comprehensive benefits package, paid relocation and a unique environment to meet personal challenges and enhance career growth. If you are interested in joining a talented team, please fax or send resumes to Jill M. Skaggs, Dept. DWA at: MIDWEST RESEARCH INSTITUTE "Serving Science and Society" 425 Volker Boulevard, Kansas City, MO 64110, (816) 753-7600, Fax (816) 753-7420. EEO/AA, M/F/D/VA Drug Screening Employer. ●

ENVIRONMENTAL TOXICOLOGIST

The College of Veterinary Medicine at Mississippi State University is seeking nominations and applications for a 12-month tenure track faculty position in environmental toxicology. Duties involve conduct of a mechanistically-based research program on the toxicology in vertebrates of environmentally-relevant chemicals, and participation in teaching upper-level and graduate courses in toxicology. The environmental toxicology research and teaching program is coordinated through the interdisciplinary Center for Environmental Studies, which is relatively new. The candidate is expected to bring or develop an extramurally-funded research program. The candidate is expected to interact effectively with Mississippi State University's current strengths, which are biochemical toxicology, neurotoxicology, and immunotoxicology, with emphasis on the effects of agrochemicals in mammals and fish. Candidates should have an earned Ph.D. Graduate degree in toxicology or related discipline. Post-doctoral experience preferred for appointment at

SOT Education Committee Continues Highly Successful Visiting Student Programs

The Visiting Student Programs of the Education Committee were again highly attended and well received by minority students, advisors and SOT host/mentors at the SOT meeting in Seattle. A total of 45 students and 9 advisors were supported by a grant from NIH through the MARC program, and by the R.W. Johnson Pharmaceutical Research Institute. Eleven toxicologists kindly served as host/mentors for the students and advisors and airport greeters were provided by the Pacific Northwest Regional Chapter of SOT. Programs at Seattle included: 1) a bus tour of Seattle sponsored by Exxon Biomedical Services; 2) an Educational Program for Visiting Students on Sunday afternoon that was attended by 120 people, with pizza provided by Procter & Gamble; and 3) a Poster Session for Visiting Students on Monday morning, attended by over 100 people, with refreshments provided by Eli Lilly. The students, advisors and hosts also attended the Graduate Student Luncheon on Monday.

The success of the programs can be illustrated by some of the comments received by SOT from students and advisors: "The program was a great program overall," "I felt that having visiting graduate students offer their personal experiences was very effective," "Overall the program as a whole was a huge success. I thank SOT for giving me the opportunity to broaden my view of toxicology. I am seriously considering the field of toxicology as a career." "This is an outstanding opportunity for these students to discover what toxicology is."

The Education Committee will continue these programs at New Orleans with the help of the sponsors. In addition, we need the help of SOT members! In this edition of the newsletter, we have included a call for host/mentor volunteers for the meeting in New Orleans. Please contact the SOT office if you would be willing to serve in this capacity. ●

Upcoming Conferences

Alternate Methods in Dermal and Ocular Toxicology, October 14, 1992, Holiday Inn, Somerset, NJ. Contact: Theresa Kitley, Ph.D., Hoffmann-La Roche Inc., Dept. of Toxicology & Pathology, 340 Kingsland Street, Building 100-2, Nutley, NJ 07110.

Approaches to SAR in Carcinogenesis and Mutagenesis: A Comparative Study, November 4, 1992, Pittsburgh, PA. Contact: Herbert S. Rosenkranz, Ph.D., Professor and Chairman, Department of Environmental and Occupational Health, University of Pittsburgh, Pittsburgh, PA 15261, 412/624-3038.

Chemical Mechanisms in Toxicology, November 16-17, 1992, Clearwater, FL. Contact: Ms. Pamela McAnally, American Chemical Society, Continuing Education Division, 1155 16th St., NW, Washington, DC 20036, 202/872-4507.

Toxicology For Chemists, November 18-20, 1992, Clearwater, FL. Contact: Ms. Pamela McAnally, American Chemical Society, Continuing Education Division, 1155 16th St., NW, Washington, DC 20036, 202/872-4507.

Current Concepts in Inhalation Toxicology, October 26-29, 1992, Albuquerque, NM. Contact: Mildred Morgan, Inhalation Toxicology Research Institute, P.O. Box 5890, Albuquerque, NM 87185, 505/845-1124.

Fourth North American International Society for the Study of Xenobiotics (ISSX) Meeting, November 2-6, 1992, Bal Harbour, FL. Contact: Ms. Nancy Holahan, ISSX, P.O. Box 3, Cabin John, MD 20818, 301/983-2434.

Husbandry and Use of Agricultural Animals in Research, November 5, 1992, Anaheim Convention Center, Anaheim, CA. Contact: Scientists Center for Animal Welfare, 4805 St. Elmo Avenue, Bethesda, MD 20814, 301/654-6390.

Environmental Biotechnology Course, November 10-13, 1992, Luzern, Switzerland. Contact: European Environmental Research Organisation, P.O. Box 182, 6700 AD Wageningen, The Netherlands, 31/8370-84924.

International Symposium on Spectral Sensing Research, November 15-20, 1992, Kanai, Hawaii. Contact: Science and Technology Corporation Meetings Division, Attn.: ISSSR, 101 Research Drive, Hampton, VA 23666, 804/865-7604.

Society of Toxicology of Canada 25th Annual Symposium, December 3-4, 1992, Holiday Inn Crowne Plaza, Montreal, Quebec. Contact: Gordon Krip, STC Executive Director, C.P./P.O. Box 517, Beaconsfield, Quebec H9W 5V1 Canada.

Environmental Chemistry of Organic Pollutants: Risk Assessment of Chemicals, December 6-9, 1992, Siena, Italy. Contact: European Environmental Research Organisation, P.O. Box 182, 6700 AD Wageningen, The Netherlands, 31/8370-84924.

Society For Risk Analysis 1992 Annual Meeting, December 6-9, 1992, Hotel del Coronado, San Diego, CA. Contact: SRA Secretariat, 8000 Westpark Drive, Suite 130, McLean, VA 22102. 703/790-1745.

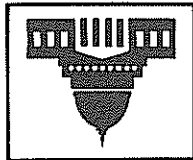
Arkansas Toxicology Symposium, Honoring the research and contributions of Drs. Elizabeth C. Miller and James A. Miller, December 10-11, 1992, Little Rock, AR. Contact: Dr. J.A. Hinson, Division of Toxicology, UAMS, Slot 638, 4301 W. Markham, Little Rock, AR 72205, 501/686-5521.

Introduction of Genetically Modified Organisms into the Environment: Biosafety Aspects, December 10-18, 1992, Wageningen, The Netherlands. Contact: European Environmental Research Organisation, P.O. Box 182, 6700 AD Wageningen, The Netherlands, 31/8370-84924.

International Conference on the Health and Disease Effects of Essential and Toxic Trace Elements, February 8-12, 1993, New Delhi, India. Contact: Mohammad Athar, Conventer, International Congress, Fax: 011 6474514.

National Academy of Engineering Environmental Regulations Symposium, February 11-12, 1993, National Academy of Sciences Auditorium, Washington, DC. Contact: Myron Uman, NAE, 2101 Constitution Avenue, NW, Washington, DC 20418, 202/334-2154. ●

Environmental Regulation: Accommodating Changes in Scientific Technical and Economic Understanding, February 11-12, 1993, Washington, DC. Contact: Ms. Terrie Noble, 2101 Constitution Avenue, NW, Washington, DC 20418, 202/334-2154. ●



Animal Enterprise Protection Act Passed

President Bush has signed the Animal Enterprise Act into law. The act stiffens criminal penalties for anyone convicted of tampering with or threatening research facility workers or animals in their care. The act also sets criminal penalties for anyone convicted of destroying research or trespassing on a research site.

Animal Research Legislation

During the 1992 state legislative sessions, 54 bills and three resolutions that would affect the use of animals in research, education and testing have been introduced in 19 state legislatures.

Thus far, 15 bills providing for the protection of research facilities have been introduced. Seven states—Colorado, Missouri, Nebraska, South Carolina, South Dakota, Tennessee and Virginia—have already enacted their bills into law. Thirty states now have laws protecting research facilities, employees and animals. Five state legislatures—Arizona, Illinois, Massachusetts, New York and Vermont—have introduced legislative measures that would limit the types of testing that could be used to determine the safety of a substance.

EC Action On Animal Testing

The European Commission and Parliament have agreed on a compromise directive that will ban the use of animals in testing cosmetic products after January 1, 1998. Ingredients tested on animals for purposes other than cosmetic products will be permitted.

In the interim, the Commission is required to report to the Parliament annually on progress made by member states in developing, validating, and approving alternatives to animal tests. Presumably, the timing of the ban could be altered based on the future availability or absence of alternatives to animal tests. The compromise directive still has to be approved by the Council of Europe. ●

Molecular Biology Specialty Section Awards

The Molecular Biology Specialty Section will present awards for the best platform and/or poster presentation by either graduate students or postdoctoral fellows in the area of molecular biology at the 1993 Annual Meeting in New Orleans, March 14-18. Candidates for these awards are requested to send a copy of the submitted abstract to Dr. Ronald Hines, Department of Pharmacology, Wayne State University School of Medicine, 540 East Canfield Ave., Detroit, MI 48201-1998, Telephone (313) 577-8601, Fax: (313) 577-6739 by December 15. A detailed outline of the talk or a copy of the poster should be included.

The abstract and posters should describe original research utilizing a molecular biological approach 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 Molecular Biology Specialty Section in New Orleans. ●

**Curtis D. Klaassen, Ph.D.,
President, Board of Trustees
Toxicology Education Foundation**

It is important that those of us who have benefited from the field of toxicology, give back to enable the future leaders to follow. The Toxicology Education Foundation was established for this purpose. Please contribute as much as you can.

The SOT office will assist members who need legal or financial assistance in order to leave a bequest to the Toxicology Education Foundation. You can designate the Foundation the beneficiary of all or a portion of an insurance policy or make other provisions in your will. A few members have done so already.

An opportunity to contribute to the Foundation is provided on the annual SOT dues renewal form, although contributions are accepted throughout the year. Contributions can take any form: royalties from publications can be assigned to the Foundation, it can receive gifts of stock or securities, even a simple check.

As a first step in the disbursement of funds for education, the Foundation administered the 1992 Robert L. Dixon Award of \$3,000 to Daland R. Juberger, which was presented at the 1992 SOT Annual Meeting in Seattle.

But more remains to be done to achieve the objectives of the Foundation, which are to: promote the development of education in toxicology; educate the public about the role of toxicology in modern society; aid in the recruitment of promising young people to toxicology; enable the participation of young toxicologists in scientific meetings in the field of toxicology; and provide aid for the education of individuals in toxicology.

and to SOT.

John Doull's outstanding contributions to the field of toxicology and to SOT. A significant donation was also made to the Foundation in recognition of Dr. The Procter & Gamble Company, a long-time advocate of the founder and past president of SOT, and Dr. Robert D'Amato of Society's educational programs who died in 1991. Funds have been donated in memory of Dr. Harold C. Hodge, a financing for the Mechanisms Section's graduate student awards. cont'd from page 1 - Dr. Smith has directed and raised the