Congratulations to the 1998 SOT Award Winners

Award
Achievement .................................................. Rick G. Schnellmann
Education ..................................................... David J. Holbrook, Jr.
Merit ............................................................... John A. Thomas
Arnold J. Lehman ............................................ Helmut A. Greim
Zeneca Traveling Award
Lectureships .................................................... Syed Ali
.................................................... Curtis J. Omiecinski

Board of Publications Best Paper Awards In:
Fundamental and Applied Toxicology: Activation of CGS 12094 (Pirimiphene Methylate) to 1,4-Benzquinone by Myeloperoxidase: Implications for Human Idiosyncratic Agromembranosis.
........................................................................ D. D. Parrish
........................................................................ M. J. Schlosser
........................................................................ J. C. Kapeghian
........................................................................ V. M. Traina
Toxicology and Applied Pharmacology: Identification of a 34-kDa Mitochondrial Actinamine-Binding Protein as Alddehy Deferragenase.
........................................................................ J. S. Landin
........................................................................ S. D. Cohen
........................................................................ E. A. Khairallah

The Awards Ceremony will be held on Thursday, March 5 at 5:00 p.m.
immediately preceding the Final Night Reception at 6:00 p.m.

SOT to Offer Congressional Fellowship

The Society of Toxicology is seeking individuals to apply for an SOT Congressional Fellowship. The recipient will serve as a Congressional Fellow on a U.S. Senate or House of Representatives Committee that has a significant degree of responsibility in an area of interest to SOT. The scientist will be responsible for providing expert advice and opinion on current science issues, especially those related to health and environmental toxicology and science policy. The candidate selected for this one-year appointment should be an expert in health and/or environmental toxicology. He/she should also be an excellent

Continued to page 16

Toxicological Sciences Launched!

With a gestation period of well over a year, the newly formatted SOT journal, Toxicological Sciences, published its first issue in January 1998. ToxSci features premier manuscripts, reviews and editorials in all areas of toxicology.

The journal boasts a prestigious Editorial team: Curtis Klaassen, Editor; Paul Foster, Jay Goodman, Wanda Haschek-Hock, Meryl Karol, James Klaunig, Lois Lehman-McKeeman, Curtis Omiecinski, Dennis Faustenbach, and Stephen Safe, Associate Editors; and James Brady, Managing Editor.

Throughout the year, ToxSci will be incorporating suggestions of the readers to produce a journal that appeals to the wide and varied interests. Plan on submitting your best manuscripts. For more information, contact Shawn Lamb at the SOT Headquarters office.
President's Message

Success of 1997 Carries SOT Solidly into 1998

Nineteen hundred and ninety-seven was a progressive year for the Society of Toxicology, and a year for which we can each be pleased. In reviewing our initiatives for the year, new programs, workshops and publications top the list of accomplishments that are pulling SOT toward fulfilling the requirements of our Long-Range Plan.

In order to more effectively achieve our goals, we have made a significant change in the nature of our Headquarters staff which, until recently, has been primarily administrative. Council approved the addition of two full-time professional staff, the first of which is Deborah Hyman, our Public Affairs Director, to handle public communications, public relations and media interaction. The second is for an experienced educator to help support our activities in public education especially in the K-12 area.

In the Summer 1997 issue of Communiqué, I reviewed several SOT priorities from the Long-Range Plan. It is with great pleasure that I can now discuss how your hard work and dedication has formed some of those ideas into realities.

Support and Advance Basic and Applied Research in Toxicology. We’ve worked steadily to improve our contacts with members of Congress to communicate the importance of toxicology, from presenting testimony to the House Appropriations Committee for the overall funding for NIH and, specifically, support of NIEHS, to writing letters to Congress to express our views on toxicology-related issues.

Recently, we took an even bigger step by setting up a mechanism for placing a Congressional Fellow on a U.S. Senate or House of Representatives Committee for an entire year. The Fellow will provide expert advice and opinion on current science issues. The Regulatory Affairs and Legislative Assistance (RALA) Committee (Chair: Marion Ehrich) and Council have worked to make this idea a reality. The first Fellow will be on board by January 1999. We are particularly excited about this new venture, not only because of the possibility for national implications and immediate benefits, but also because it is an investment toward incorporating good science into legislation and regulation.

In addition, SOT continues to monitor legislation and regulation and provides members with information needed to personally contact their congresspersons and to express their views. Regional Communicators are being organized by the RALA committee to track and address issues that affect each of us closer to home.

Better Public Understanding of Toxicology. Several committees have performed tremendous work in this area, including RALA, the Committee on Public Communications (CPC) (Chair: Fred Johansen), the Education Committee (Chair: Jim Klaunig), and the Toxicology Education Foundation (President: John Doull).

The CPC has nurtured the Media Resource Specialists from its original 16 to 40. Methods will soon be in place to increase their visibility as toxicological experts who can provide journalists with factual information on issues of public concern. A public affairs director was hired to lead SOT’s efforts to establish media and public relationships. For the first time, a public lecture has been coordinated and will occur during the Annual Meeting in Seattle. Breathless in Seattle? Air Pollution and Your Health: How Toxicology Can Help at the University of Washington seeks to foster discussion on toxicology and particulate matter regulations.

Our alliance with the Foundation on American Communications continues to grow as they will provide two media-training workshops at the Annual Meeting. The newest workshop, In Your Face, will involve more specific and tactical applications of being a media source and communicating complex issues just what SOT needs as we continue as sources to the media.

In addition to reaching the public through mass media, another important method is directed at K-12 education, especially targeting K-12 teachers. Joining the High School Teachers workshop is a new workshop for K-12 teachers which enables
children to learn about toxicology and its importance. A new staff person with a science education background will be hired soon to help the K-12 Education Subcommittee (Chair: Charlene McQueen) with their goal to propose projects with outside groups, for SOT involvement in material development, distribution, and teacher training.

In addition the TEF is embarking on a fund raising campaign to enable it to fund national distribution of K-12 materials.

**Changing Employment and Demographics and Training Needs.** The Placement Committee (Director: Jacqueline Smith; Co-Director: Lorren Buckley) continues to develop resources to connect candidates and jobs. The new on-line placement service allows for year-round convenience. And for the first time, SOT now offers health, life and disability insurance plans, as well as discounted liability insurance to members.

**Changing Computing and Communications Technologies.** Our Web site continues to develop as a important source of information, and with the establishment of on-line placement service, you can even get a job! The World Wide Web Task Force (Chair: Mary Davis) has also established important links with other organizations of interest to our members.

**Need to Establish a Stable and Broad Financial Platform.** The need for additional revenue sources was recognized and our Specialty Sections, Regional Chapters, and our membership at-large responded. Two special interest meetings have been coordinated: *Mechanisms of Susceptibility to Mouse Liver Carcinogenesis*, which was held September 8-10, 1997, in Chapel Hill, NC, and *Role of Diet and Caloric Intake in Aging, Obesity, and Cancer*, to be held October 26-28, 1998, Reston, VA.

Our reformed journal, *Toxicological Sciences*, was launched in January 1998. Positioning *ToxSci* as the premier journal in toxicology will be a challenge and we can only achieve this goal with your support by submitting your best manuscripts.

Our Annual Meeting remains the mainstay of the Society and Seattle will set new records for abstract submissions and attendance. I hope that all of you will be able to attend and plan to stay through the Awards Ceremony and Final Night Reception on Thursday.

I know I haven’t mentioned everything that has occurred over the year because of space, but please know that all of your efforts are appreciated. It’s been a great year and the momentum has carried over into 1998. Let’s continue on this path to success. Thank you for allowing me to serve as your President.

It is hard to believe that the year has gone by so quickly, but this is the last of my President’s Messages. I feel especially privileged to have had the opportunity to serve as SOT President and it is certainly the highlight of my career. Our progress this year is the result of numerous contributions from members of Council, our Committees, the Specialty Sections and our Regional Chapters. In addition to this, the very capable management of our Society by ADG has not only made my term easier, but has enabled Council to devote most of our attention to the Societies’ programs. For this I am most appreciative of our ADG Staff including Nancy, Dell, Clarissa, Deborah, Trish, Dawn, Annette, and especially Shawn Lamb, our Executive Director. In closing, please accept my sincere thanks for all your support and efforts and for allowing me to serve as your President.

I look forward to seeing each of you at the Annual Meeting in Seattle!
Watch Your Mail for 1998 Registration Materials!

Registration confirmation packets, including your Annual Meeting name badge and tickets, were mailed to registrants in early February. If you are registered and have not received your packet, please contact Annette Flannery at SOT Headquarters. Meeting attendees must bring these materials to the Annual Meeting.

Assuring Animal Welfare Through Accreditation

Thursday, March 5, 1:30 PM - 4:30 PM

Presenters will introduce and discuss the role of AAALAC International (the Association for Assessment and Accreditation of Laboratory Animal Care) in assuring institutional officials, customers, research partners and others (staff, public, Congress and funding sources) that animals are appropriately cared for and used. AAALAC's accreditation program takes a peer-review approach to evaluations, maintains strict confidentiality, and is entirely voluntary. The value of accreditation and the process of preparing for the assessment visit and maintaining accreditation will be discussed in detail.

Write Your Congressperson at the SOT Annual Meeting

Based on the overwhelming success of the last three years, the Regulatory Affairs and Legislative Assistance Committee (RALA) has planned a "Write Your Congressperson Booth" at the 1998 SOT Annual Meeting.

RALA Committee members will staff the booth and will have sample letters, as well as copies of SOT position statements, to help attendees draft letters. Computer terminals — complete with Congressional directories — will be available for attendees to address, write, and mail their letters to Congress.

Make certain you schedule time at the Annual Meeting to write to your congressperson. Letter writers will receive a small gift from SOT.

Program Disk on the Internet!

The SOT 1998 Annual Meeting program will be available on the SOT Web site (www.toxicology.org) at no charge. This program will be in the familiar IBM format. The Meeting Diskette Search Program provides the ability to search the abstract titles of papers and posters programmed for presentation at the Annual Meeting. The user can search the meeting program by key words and phrases, author names, and sessions. By printing your selections, you can create your own personal itinerary for the meeting. Please confirm your itinerary with the final printed Program as the time or location of some presentations may have been changed.

Lookout for "Late-Breaking Research in Toxicological Sciences"

Sometimes critical or key research findings do not become available until after the October 1 abstract deadline. To provide an opportunity for such findings to be presented at the Annual Meeting, the Program Committee has created a special session entitled, "Late-Breaking Research in Toxicological Sciences". This Platform session, for those papers selected by the Committee to reflect significant and novel, late-breaking research, is scheduled for Thursday, March 5 from 1:30 p.m. - 4:30 p.m. Plan to attend this session to hear the latest exciting new research! Flyers and signs will be available in the on-site registration area to inform you of the location and content of this session.

Speakers:

Combined Deletion of CYPIA2 and CYP2E1 in Mice Significantly Diminishes Acetaminophen Activation and Prevents Covalent Binding and Toxicity, M. K. Bruno, University of Connecticut, Storrs, CT.

Intravascularly Administered Fumonisin B1 is Cardiotoxic to Swine, G. W. Smith, University of Illinois, Urbana, IL.

YVAD-emk, an Inhibitor of Ice-Like Caspases, Alters Toxicant-Induced Murine Testicular Germ Cell Apoptosis, J. Lee, Brown University, Providence, RI.

Inhibition of Sertoli Cell Proliferation by Low Levels of Mono-(2-Ethylhexyl) Phthalate in Sertoli Cell-Gonocyte Co-Cultures, L-H Li, Temple University School of Medicine, Philadelphia, PA.

Dissociation of Apoptosis and Calcium- and Protein Kinase C-Dependent C-Jun N-Terminal Kinase Activation Induced by Butylated Hydroxyanisole (BHA), R. Yu, University of Illinois at Chicago, Chicago, IL.

Hypermethylation of P16 in an X-Ray Transformed Human Epithelial Cell Line, J. E. Dodge, University of Arizona, Tucson, AZ.
Satellite Meeting: Developing Occupational Exposure Values from Toxicology and Epidemiology Studies

A special one-day international symposium will immediately follow the 1998 Society of Toxicology Annual Meeting. This satellite meeting is scheduled on Friday, March 6, 1998, from 8:30 a.m. - 5:00 p.m.

Experts from around the world will address carbon black, diesel exhaust, and asphalt fume and the global need for a unified and more structured battery of occupational exposure values for protection of workers' health. This symposium will provide a forum for domestic and international cooperation and will lead to establishment criteria for occupational exposure values. This need persists and is long overdue. The program includes SOT members John Doull, Kevin Driscoll, Helmut Greim, Joe Mauderly and Gunter Oberdoerster.

Participants include the Australian Environmental Health Services, the Deutsche Forschungsgemeinschaft Maximale Arbeitsplatz-Konzentration (MAK) Commission, the Norwegian National Institute of Occupational Health, the U.S. National Institute for Occupational Safety and Health (NIOSH), and the ACGIH Threshold Limit Values (TLV) Committee.

While human cancer associated with occupational exposure to asphalt fume and diesel exhaust has been reported, no such observation has been associated with carbon black (or other inert particulates like talc). Rats, however, develop lung cancer with carbon black and other particulates which appears secondary to pulmonary inflammation. Speakers on asphalt fume include Paolo Boffetta (IARC), Tor Norseth (Norwegian National Institute of Occupational Health), and Eva Hansen (University of Copenhagen, Denmark). Diesel exhaust risk assessment will be addressed by David Dankovic (NIOSH) and "Diesel Particulate Research in Australia" by Brian Davies and Alan Rogers. Kevin Gardiner (University of Birmingham, UK) will speak on the epidemiology of carbon black workers, and Kevin Driscoll will deliver the keynote address: "Mechanistic Information in Carbon Black and Diesel Exhaust Carcinogenesis," to explain the conflicting picture from the rodent and human data.

For toxicologists and human health risk assessors, the fundamental issues for these materials are: Does rat lung cancer predict human cancer risk? Does asphalt fume cause cancer in humans? Does diesel exhaust cause cancer in humans and if so, what level of exposure is acceptable?

The meeting fee for ACGIH, MAK, and SOT Members is $175; Nonmembers: $225; Students/Postdoctoral Fellows: $100. If you would like further information, contact: ACGIH Conference Services, (513) 742-2020.

Sponsors Needed for Annual Meeting

The Society appreciates the generous support received from its Annual Meeting sponsors. Such sponsorship of activities contributes to SOT's ability to bring outstanding science quality to scientists at an economical price.

As an Annual Meeting sponsor, your company will be recognized with a special sponsor ribbon and signage at the sponsored event and the President's Reception, as well as in the Exhibitor's Directory, the SOT Communique and the Annual Meeting Program.

If your organization would like to be a sponsor, please contact Clarissa Russell Wilson at SOT Headquarters.

SOT Animals in Research Booth at the Annual Meeting

The Animals in Research Committee deals with issues relating to the use of animals in toxicological research and communicates the ethical and practical issues concerning animal use to both members of the SOT and the community-at-large. The toxicological community is committed to the most humane and ethical treatment of animals, as well as to using the fewest animals possible. We are also committed to developing and utilizing alternative models. In recent years, the lay public, as well as the scientific community, has been intensively exposed to the perspective of animal rights groups with regard to animal research. It is imperative that the issues be conveyed in a balanced and rational way to everyone.

Just how do we do this?

The Animals in Research Committee will have a booth at the 1998 Annual Meeting in Seattle. At this booth, we will have educational materials, including videotapes, brochures, and sources of information on the importance and ethics of animal research, use of alternative models, as well as information on how to communicate these issues to the community-at-large, including elementary and secondary school students and science teachers. Plan to stop by and meet your committee members.

Retired Members Register at a Reduced Rate for Annual Meeting

It is well known that the SOT retired members lend history and continuity to the Society. To encourage retired members to come and share their knowledge at the SOT Annual Meeting, the required registration fee is $115 on site. If you are retired, please consider joining your colleagues in Seattle.
Introduction

The Society of Toxicology encourages members to organize scientific sessions, on timely topics, for its 1999 Annual Meeting. Proposals may be submitted by any member, committee, Specialty Section or Chapter of SOT. Proposals intended for presentation at the 1999 Annual Meeting must be submitted by the session chairperson by April 15, 1998. Proposals must be communicated in writing to the Chairman of the Program Committee or the Vice President of the Society. All proposals with Specialty Section sponsorship must include a letter to this effect from the Specialty Section President. Proposals may not be submitted without the proper documentation forms.

Proposals

Proposals should present reasons the session is desirable and provide some details. The following points should be addressed:

1) Justification of need for a session in the particular field. The number of sessions approved will be limited and the justification will be important in the Committee's evaluation. The justification should include the timeliness of the topic and whether a similar session has been presented at a scientific meeting in the recent past. Consultation with the appropriate SOT Specialty Section is required.

2) Proposed title.

3) Chairperson(s) (must be SOT member).

4) Names of proposed speakers, their professional affiliations, SOT membership status, titles of their presentations, and a one or two sentence synopsis of their topic (a maximum of two speakers per institution is recommended).

5) The intended year of presentation of the session.

6) Financial requirements, if any. (SOT will provide financial assistance to non-SOT member speakers, on a case-by-case basis.)

7) Specialty Section endorsement and/or Specialty Section financial sponsorship.

8) Publication plans, if any.

Types of Sessions

Symposia -

Subject Matter:
- "Cutting-edge" science, new areas for toxicologists; new concepts or approaches, new data.

Total Presentation Time:
- Three hours or less.

Speakers and Presentations:
- Chairperson and 4-5 speakers.
- Approximately 30-35 minutes per speaker.
- Summary of symposium by last speaker.

Comments:
Format designed for presentation of new information. Short period for questions and discussion suggested following each presentation. Symposium should be concluded with a brief summary and short period for general discussion.

Workshops -

Subject Matter:
- Topic requiring intensive study and discussion.

Total Presentation Time:
- Three hours or less.

Speakers and Presentations:
- One to five speakers.
- Informal, interactive presentations.
- Emphasis on discussion.

Comments:
Format design for conveying detailed "how-to" information.

Roundtables -

Subject Matter:
- Controversial subjects.

Total Presentation Time:
- Approximately 1 hour.

Speakers and Presentation:
- Moderator and 2-4 speakers.
- Moderator presents overview.
- Each speaker makes a 3-5 minute statement (Moderator coordinates the comment).
- Balance of time for questions and discussion.

Comments:
Format design for discussion of controversial information between speakers, with audience participation encouraged.

Approval of Sessions

After receipt of a proposal, it will be presented to the Program Committee in May. The results of committee action will be transmitted promptly to the proposed chairperson(s) by the chair of the Program Committee. If the session is approved, the chair of the Program Committee will then provide further instructions concerning follow-up correspondence with speakers, completion of the session overview and speaker abstracts, finalization of the program, date of the session, and publication procedures if it is to be published. Final information will be due at SOT Headquarters during the month of July.

Publication

All SOT-sponsored sessions come under the general guidelines for publication of SOT-related activities, (i.e., the editors of the official journals, Toxicological Sciences and TAP, have first right of refusal regarding publications from the SOT sessions).
Introduction

The Society of Toxicology is committed to presenting Continuing Education Courses at its Annual Meeting. The emphasis is on quality presentations of generally accepted, state-of-the-art knowledge in toxicology. These courses meet the requirements of the membership for information on new developments in toxicology and related disciplines, as well as provide education applicable to the requirements of many certifying and licensing boards.

Courses run for three and one-half hours, and a detailed syllabus of course content is provided. Each course is classified as basic or advanced. A brief overview (10–15 minutes) by the course’s chairperson precedes presentations by the instructors (usually four). The emphasis is on teaching excellence. Clarity of presentation, attention to detail, and organization are priorities.

Typically, seven courses are offered in the morning and another six in the afternoon. The Continuing Education Committee is responsible for screening courses proposed by the membership and identifying additional priority areas of instruction. In the latter instances, the Committee solicits assistance from qualified professionals who contact potential instructors. The Committee recommends a slate of courses to Council for consideration.

Organizing Continuing Education Courses

Courses may be proposed by any member, Committee, Specialty Section or Chapter of SOT. Proposals intended for consideration for the following year’s meeting must be submitted to the Continuing Education Committee by April 15. A cover letter should state why the proposed course is a priority and summarize major aspects of course content. The proposal should contain the following items:

1. Proposed title. Note whether this should be a basic or advanced course.
2. Chairperson(s) (must be SOT member). A $100 consideration is provided to each course chair to offset administrative costs associated with the course.
3. Names, affiliations, SOT membership status, presentation titles and presentation summaries (two to four sentences) for proposed instructors. Please remember that the emphasis is on selecting excellent teachers.
4. Specify the year the course is to be offered. Please be aware that rigid time-lines are imposed for presentation of the course syllabus. Drafts for each presentation are due in early November and final copy is required in early December. Take this into account when planning a proposal and contacting potential instructors.
5. Financial requirements, if any. SOT will provide travel assistance for up to one non-SOT member per course (in certain instances, funding may be provided to more than one speaker, if justified and approved by the Committee); all SOT members are responsible for their own travel expenses. A $500 consideration is provided to each instructor to offset the cost of slides and other materials.

Approval of a Continuing Education Course

The chairperson of the Continuing Education Committee presents proposals to committee members for consideration in May. Both the proposal’s quality and the need for balance in course offerings are major considerations in the evaluation process. A matrix of past course offerings and the responses of attendees to these courses is used. There is a concerted effort to provide courses in each year’s offerings that update fundamentals, integrate advanced technologies, and provide new perspectives. Meeting the needs of a diverse audience with evolving careers is paramount. The committee forwards a slate of proposed courses to Council in May. The recommendation of the Committee and the decision of Council are forwarded to initiators of proposals soon thereafter.

Course Organizers

A member of the Continuing Education Committee serves as a liaison for each course. She/he is the immediate link between SOT and the chairperson for each course. While the chairperson selects and organizes instructors, review and revision of the course syllabus is a coordinated activity of the chairperson and course liaison. The course liaison will assist in communications between SOT and the chairperson and assure logistical support for the course by SOT staff before and during presentations at the Annual Meeting.

Code of Ethics Reminder

The Society of Toxicology is dedicated to developing knowledge for the improvement of the health and safety of living beings and the protection of their environment. In attaining this objective, each member is expected to maintain high ethical standards, and to this purpose, the SOT Code of Ethics, which requires a personal commitment from members, is printed annually in the SOT Membership Directory.
1998 Annual Meeting
Sponsors
(as of January 30, 1998)

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

Ani Lytics, Inc. **
E.I. du Pont de Nemours & Company *
Eastman Kodak Company *
Eli Lilly and Company *
Experimental Pathology Laboratories, Inc. (EPL) **
The Gillette Company *
Harlan **
Hoffmann-La Roche *
Merck & Co., Inc. *
Monsanto / Searle *
National Institutes of Health
Pfizer Central Research *
Pharmacia & Upjohn, Inc. *
The Procter & Gamble Company *
Quintiles **
R.O.W. Sciences, Inc. **
Rhône-Poulenc AG Company *
Rhône-Poulenc Rorer *
RJ Reynolds *
RW Johnson Pharmaceutical Company *
Sanofi Pharmaceuticals, Inc. *
SeAG Software **

Corporate Member *
Exhibiting Company **
**SOT to Offer Matching Funds to TEF**

Over the past several years, the Society has recognized the importance of educating the general public along two general themes: *The Dose Makes the Poison* and Toxicology Literacy for the 21st Century. Once we enter the realm of more general public education, however, it is clear that this is considerably more difficult and much more expensive than our more traditional educational activities. In light of this, the Toxicology Education Foundation has chosen to focus its support on programs in the K-12 and lay public health and science areas, with particular emphasis on middle school programs.

In support of the Foundation's mission, the Society has committed to match your contribution 1:1 (up to a total SOT contribution of $100,000). Your contribution will help to support these important programs.

In addition to member contributions, the Foundation is also seeking public and private grants available for K-12 education through government agencies and private foundations. For corporate funding, the TEF will identify a program under the umbrella of health, with *The Dose Makes the Poison* as a possible message. One program targeted for corporate support is the distribution of the Connecticut United for Research Excellence (CURE) BioRAP series including the SOT-sponsored issue on Risk Assessment.

There are several other programs directed at K-12 environmental health education the Foundation could provide support for, such as the distribution of materials and teacher training. One of our own successes is the TEF-supported program for high school science teachers at our Annual Meeting: *Paracelsus Goes to High School.*

All the successes of our Society are dependent upon the support of membership, in this case not only in the form of contributions, but in helping to define and implement our programs in public communication and education in toxicology. Public awareness of our key messages is important for informed decisions for research funding and other issues important to our discipline and quality K-12 science education is essential for our future. Please contribute to the Toxicology Education Foundation. For additional information and forms, call SOT Headquarters.

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**SOT's Principles for Research Priorities in Toxicology**

Support and advancement of basic and applied research in toxicology, and incorporation of sound science into risk assessment, are the first two items addressed in our Long-Range Plan, updated and adopted in June 1997.

Accordingly, Council has approved the following statement concerning principles for research priorities in toxicology in order to highlight the Society of Toxicology's commitment to research in the context of our concern for human health and the environment.

Classic toxicity testing, involving the use of animal models, has served us well and will continue to do so in the future. However, we affirm the need to continue to strive for improvement in accord with the following principles.

1. A focus on basic research aimed at discerning the mechanism/mode of action of the chemical or physical agent of interest is of fundamental importance. Toxicology is a basic biomedical science because the study of mechanisms of toxicity leads to enhanced insight regarding our understanding of essential aspects of biology.

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**Regional Issues to be Tracked by SOT Communicators**

Toxicology legislation and regulation is being developed daily around the country. The Regulatory Affairs and Legislative Assistance (RALA) Committee needs support in providing timely information about developing legislation and regulation to SOT members.

By serving as a Regional Communicator, members would share expertise on issues with policy makers seeking to protect and enhance the public's health in areas that affect toxicology and toxicologists; remain informed about Federal issues and share information with fellow members within the region; and identify regional legislation and regulatory initiatives.

Regional government issues would be placed on the Internet to expand the current Federal government page on the SOT Web site, "Watching Washington."

Regional Communicators have the potential to increase the participation of toxicologists who can provide appropriate scientific input as decisions are made that affect them both as scientists and citizens. RALA will provide the communicators with background information to help facilitate their participation.

If interested, contact SOT Public Affairs Director, Deborah Hyman, by Telephone (703) 438-3115, ext. 327, or E-mail: deborahh@toxicology.org. Sign-up sheets will also be available at the "Write to Congress Booth" at the Annual Meeting.
Toxicologist Supply and Expertise Survey: Past, Present and Future

Submitted by Albert L. Kraus, Placement Committee

This report provides an update on the recently completed 1997 Society of Toxicology (SOT) toxicology training survey. For a copy of the complete report, please contact Nell Dillard at SOT Headquarters. Efforts to compare the results of this survey with the 1996 Job Market Survey are underway. Through these activities, the Placement Committee aims to provide SOT membership with valuable information on any emerging discrepancies between training and employer needs.

Summary

A 1997 survey of toxicologist training suggests that the number of toxicologists emerging from degree programs will peak in 1999. Compared with 1984-1989, from 1990-1995 there was a more than 50% increase in the number of toxicologists who received degrees from responding programs. Response rate to the survey was greater than 25% with 31 of 117 programs responding. These 31 programs graduated over 1300 toxicologists of all degree types from 1984-1995. The survey found that while numerically more toxicologists are entering formal post-doctoral positions, that a smaller proportion of graduates are entering post-doctoral positions (vs. 1984-1989). Of those entering post-doctoral positions, there is a trend toward longer time as a post-doc, as nearly twice as many post-docs accepted multiple post-doctoral opportunities in 1990-1995 (vs. 1984-1989).

The survey found that the majority of toxicology graduates entered industrial positions (53% Ph.D., 73% M.S., 58% B.S.) with lower proportions entering academic and government positions. No significant changes in the career direction of new toxicology graduates are anticipated for 1996-2001 (vs. 1990-1995), save a somewhat greater tendency for B.S. graduates to enter into industrial positions.

Information on specialized training of past and future graduates were identified and a heavy focus on biochemistry, molecular biology, in vitro toxicology, and pharmacology was reported. The survey also found continued emphasis on whole animal toxicology, rodent toxicology, and physiology. Interestingly, the survey uncovered only a moderate emphasis on risk assessment training, despite the fact that risk assessment has been identified as the top specialized expertise area needed for future toxicologists. Further, knowledge of risk assessment in recent toxicologists has been reported to be poorer than other specialized areas (“1996 SOT Survey on the Toxicology Job Market: Past, Present, and Future”).

Survey and Respondents

The survey was developed by a subcommittee with input from the SOT Placement Committee, SOT Officers and Council. The survey was distributed in November 1996, and again to non-responsive programs in January 1997, to the chairpersons of 117 toxicology programs. The distribution list was compiled mainly from the listing of toxicology programs in the Resource Guide to Careers in Toxicology publication, and supplemented by committee member knowledge and other SOT resources. Questions and timeframes in this toxicologist training survey were targeted to match with the 1996 job market survey for comparative purposes.

Response to this survey was slightly greater than 25%, with 31 of 117 programs responding. Of the respondents, 29 programs granted Ph.D. degrees, 24 programs granted M.S. degrees, and four programs granted B.S. degrees in toxicology. Many (45%) of responders indicated that the size of their programs have increased from the mid-80’s to the mid-90’s, while 39% and 16% indicated that their programs had stayed the same in size or decreased, respectively. It is unknown whether these survey observations are representative of all programs.

Numbers of Graduates and Sizes of Programs

As shown in Figure 1, the number of toxicology graduates from programs responding to the survey generally increased from 1984-1995. The majority of graduates over this period of time earned a Ph.D. (55%, 752 total), with the remainder of the graduates being approximately evenly split between B.S. (23%, 312 total) and M.S. (22%, 300 total) degrees. Most of the toxicology programs surveyed graduated three or fewer Ph.D. or M.S. students per year (79% of the Ph.D. programs and 92% of the
M.S. programs). For the B.S. programs two of four respondents graduated four to six students per year, one graduated three or fewer, and one graduated 10 or more students per year.

![Figure 1: Toxicology Graduates, 1984 - 1995](image)

As shown in Figure 2, the number of students earning a toxicology degree is expected to decrease from 1999 through 2001 (relative to the peak 1994-1997 years). However, the number of toxicology graduates is still expected to be greater during these years than the number of graduates in the late 1980s and early 1990s. Most graduates are expected to receive Ph.D. degrees (64%), followed by M.S. and then B.S. degrees. There are significant uncertainties in the data presented in Figure 2, as the data consist of respondents' future projections and thus carry greater uncertainty at later time points.

![Figure 2: Toxicology Graduates, 1996 - 2001](image)

Training of Past and Future Graduates

Respondents identified specific areas of toxicology training for Ph.D. graduates in the recent past and future. The top areas of training for past graduates are biochemistry, whole animal studies, in vitro toxicology, pharmacology, rodent toxicology, and molecular biology. These six training areas are also a significant focus for future graduates, although the priority shifts slightly. The top areas of experience for B.S. and M.S. graduates were similar to the Ph.D. profile. Importantly, these training areas correspond well with the main areas identified in the “1996 SOT Job Market Survey” as types of training which employers desire in toxicologists.

The “1996 SOT Job Market Survey” identified risk assessment, biochemical toxicology, mechanisms, and toxicokinetics/disposition as the top areas where specialized training is needed for toxicology positions in the future. The need for specialized training in risk assessment may not be adequately fulfilled since it was identified as the top, specialized training area desired by employers, but ranked only about 10th as a specialized training area for future toxicology graduates from responding programs.

Continued to page 24
The Society of Toxicology is honoring its 25 year members with a special membership lapel pin. Members will receive the pin from Michael McClain, SOT President, in the mail prior to the Annual Meeting. They will also receive special recognition at the Annual Business Meeting in Seattle. Following are the 25 year members—when you see them wearing their pin at the Annual Meeting, stop and congratulate them.

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Special Issue 1998
The following article was written as an outgrowth of work on the Strategic Plan developed by the SOT Task Force to Improve the Scientific Basis of Risk Assessment. The Task Force Strategic Plan was developed to address one of the major goals in the SOT Long-Range Plan (Horizon 2000) to promote the use of sound science in risk assessment. Contact Carole Kinneel or Barbara Beck, Co-Chairs, for more information on the activities of the Task Force.

Stimulating Research to Improve the Scientific Basis of Risk Assessment

Submitted by Rory Conolly, Jay Goodman, and Barbara Beck

Risk assessment is frequently criticized for its lack of scientific rigor. For example, the common assumption that the dose-response curve for carcinogens is linear at low doses is certainly wrong in many cases. For non-carcinogens, a safe dose is often estimated by dividing the no-observed-effect-level by uncertainty factors that are largely arbitrary. These approaches to risk assessment have been and continue to be justified by the need to protect the public health in the face of inadequate scientific information about the true shape of the dose-response curve. This need requires that the assumptions used, such as low dose linearity for carcinogens, be conservative, leading to a probable overestimation of the actual but unknown risk. This approach ignores the maxim that "the dose makes the poison." Thus, while current practice in risk assessment probably is generally protective of the public health, it may lead to standards for acceptable levels of exposure which are more stringent than necessary and which consequently have unnecessary adverse economic and other societal impacts, e.g., portrays a negative image of science. The degree to which chemicals are over regulated is not well understood, reflecting the uncertainty associated with risk assessment that is often based more on policy than science. The National Academy of Sciences succinctly addressed this issue in 1983:

The dominant analytic difficulty (in risk assessment) is pervasive uncertainty—there is often great uncertainty in the estimates of the types, probability, and magnitude of health effects associated with a chemical agent (and) of the economic effects of a proposed regulatory action . . . (Risk Assessment in the Federal Government: Managing the Process, National Academy Press, Washington, D.C., 1983, p. 11).

In the following, we consider from an historical perspective the degree to which toxicology as a discipline may share some of the responsibility for this situation. Specifically, we consider why some toxicological research has not been well suited for use in risk assessment. Guidelines are suggested that toxicologists can use to help ensure the applicability of their research to risk assessment.

The tools available to toxicologists have changed dramatically over the last twenty or so years. Analytical methods are greatly improved, enabling the detection of chemicals at much lower concentrations than was heretofore possible. The explosion of new knowledge in cellular and molecular biology has led to a variety of new methods for examining mechanisms of action at the molecular level. Simultaneously, the advent of cheap and powerful computers has largely removed the technical constraints on quantitative modeling of biological systems. The now widespread use of physiologically based pharmacokinetic (PBPK) models is an example of this development, though other types of biologically based models, including models of cancer, are also being developed. Toxicology is thus evolving from a largely qualitative discipline, examining relatively crude endpoints, towards a quantitative future where mechanisms of toxic action are described at the molecular level.

Our understanding of the relationship between exposure in air, water, or food and toxic effect is evolving in parallel with the advancements in methodology. Previously, the laboratory animal was for the most part a black box and the pharmacokinetic and pharmacodynamic determinants of the exposure-response relationship were largely unknown. Today, the black box is becoming increasingly illuminated. PBPK and other types of biologically based dosimetry models provide a quantitative, mechanistic understanding of pharmacokinetics. Illumination of the portion of the black box attributable to pharmacodynamics is not as well developed as it is for pharmacokinetics, but the new molecular-level methodologies have set the stage for rapid advances in this area. Together, these improved technologies provide a basis for qualitative and quantitative characterization of intra-individual variation in response. This is essential if we are to use toxicological knowledge to support risk assessment appropriate for heterogeneous populations rather than for idealized individuals.

Considered as a whole, these advances suggest that our ability to describe the shape of the exposure-response curve and to use this information for risk assessment has never been greater. This is in fact true, but overall, toxicology as a discipline still fails to exploit fully its ability to characterize the shape of the dose-response curve and to provide other related information needed for risk assessment. Studies using single dose levels are of no value for dose-response assessment. Toxicological research intended to be useful for risk assessment should build in dose-response studies from the initial planning stages of experimental design.

Much toxicological research is characterized by the use of high doses relative to expected human exposures and routes of exposure that are unlikely to occur in nature. High doses have historically been justified on the basis of the need to detect effects in relatively small numbers of animals and in time frames that are short enough to be experimentally convenient. The improved analytical sensitivity and knowledge of mechanisms at the molecular level discussed above suggest that this justification may no longer be adequate. Convenience has also been used to justify unrealistic routes of exposure such as corn oil gavage and nasal installation. Both of these methods of exposure have the potential to deliver chemicals to a target site at a rate that far exceeds anything that would occur in the real world. These conveniences for the toxicologist have had, unfortunately, serious adverse consequences for the reputation of toxicology in
RISK ASSESSMENT

the eyes of those who would apply toxicological research to the protection of the public health. Experiments using doses that are many multiples of conceivable human exposures and unrealistic routes of exposure raise serious questions of relevance. Mechanisms of action may be elicited that do not occur with relevant routes and exposure levels. To the extent that such data are used for risk assessment, as has clearly happened in a number of cases, the predicted risks have little or no relationship to risk in the real world. It is time for more widespread acknowledgment of the fact that dose influences mechanism and it is expected that mechanism will change with changing dose. Thus, effects observed at high doses do not necessarily have to occur following exposure to low doses.

Given that a major, and possibly the major application of toxicological data is protection of the public health via its application to risk assessment, use of routes of exposure and high dose levels primarily for purposes of experimental convenience should be avoided. Toxicologists need to become more sensitive to the fact that toxicological data will often be used for risk assessment whether or not the investigator ever intended it to be so. This fact carries with it a responsibility. Either design the study so that relevance for risk assessment purposes is built in, or make it clear in grant proposals, when the work is reported at scientific meetings, and in peer-reviewed publications, that the work was designed for a purpose other than risk assessment.

The preceding discussion has addressed the issue of stimulating research to improve the scientific basis of risk assessment. The theme of this commentary has not been that toxicologists should undertake a sea change in their research programs. We are not suggesting that toxicological research should move off in some wholly new direction in order to improve its relevance for risk assessment. Rather, we are suggesting increasing the relevance of on-going and new toxicological studies by emphasizing the importance of, for example, dose-response and dose-route issues. There is, however, another significant issue surrounding the use of science in risk assessment. New experimental tools are rapidly becoming available to biomedical researchers, including toxicologists, e.g., transgenic animals and quantitative measures of the expression of multiple genes simultaneously. With these tools come new kinds of data which may in turn be presented to regulatory agencies in support of risk assessments for specific chemicals. It is appropriate for regulatory agencies to be conservative in the rate at which they embrace this new science. The risk assessment implications of data produced with new experimental techniques and models may not be immediately obvious. Time is required for building of scientific consensus and this should be part of the process by which new approaches and new data become part of case-specific risk assessments. (Of course, this conservatism should not be used as a mechanism for simply avoiding the use of new science in risk assessment.)

In summary, we have attempted to show in the above that toxicology is a dynamic discipline where change is being driven by both technological and conceptual advances. Treatment of the experimental animal as a black box and use of high doses,

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The Department of Health and Human Service's Report on Carcinogens, 8th Edition

Expected to be Released in Early Spring 1998

The Department of Health and Human Service's Report on Carcinogens, 8th Edition is being prepared by the National Toxicology Program, and is expected to be released in early spring 1998. The report lists 198 chemicals, with 169 listed in the "reasonably anticipated to be a carcinogen" category and 29 listed in the "known to be a human carcinogen" category. New to this report are 14 substances listed on the basis of revised criteria, as well as chemical structures of the new listings, and the complete updated nomination and review procedures.

The report is mandated by Congress under the Public Health Service Act, and is prepared by the NTP with the assistance of federal health research and regulatory agencies, and with the review and input of the broader scientific and public communities. The listing of a substance in the report is descriptive and qualitative in nature, and represents an initial step in hazard identification, which is generally considered the first step in the process of risk assessment.

Online Access to the Report on Carcinogens, 8th Edition

All major NTP data and published reports are now available as part of the Environmental Health Information Service (EHIS), an extensive online service of the National Institute of Environmental Health Sciences, providing access to up-to-date information from around the world on toxicology and environmental health. The EHIS is located on the Internet at http://ehis.niehs.nih.gov. The Report on Carcinogens, 8th Edition (summary and full report) will be available online and in printed copy through subscriptions to the EHIS. Free online access to the report will continue to be provided through federal depository libraries.

For an annual subscription fee, the EHIS provides online, searchable access and printed copies of NTP Technical Reports, NTP Toxicology Reports, the Report on Carcinogens, NTP databases, Environmental Health Perspectives and Supplements, and more. Online access to the Report on Carcinogens, 8th Edition will be available immediately upon release of the report. Printed copies of the report will be made available at a later date.

For your online subscription to the EHIS, call 919-541-3841, Fax 919-541-0273, E-mail his@niehs.nih.gov, or subscribe online at http://ehis.niehs.nih.gov. Mention code SOT198 and receive a special SOT membership discount.

SOT Congressional Fellowship

Continued from page 1

A communicator who can communicate scientific issues to policy makers and legislators.

This program provides an excellent opportunity to interact with national policymakers and provide input on scientific issues pertaining to management of substances in the national and international arenas. The position requires a broad base of knowledge and the ability to interpret data, identify sources of data, and to consult with and seek the advice of other experts in toxicology.

The Fellow will be expected to organize and implement educational opportunities for Congress and members of their staff. In addition, the Fellow will be expected to prepare a quarterly report to SOT through the Regulatory Affairs and Legislative Assistance Committee (RALA). This report should detail activities, significant contributions, concerns or problems and the basis for such opinions, and expected accomplishments for the next quarter. Summaries of these reports may be published in the Communiqué and on the Web site.

To apply for this position, the candidate, who must be an American citizen and a member of SOT, should submit a recent curriculum vitae that details the applicant's strength in the following areas: 1) expertise in health and/or environmental toxicology; 2) ability to communicate scientific issues to policy makers and legislators orally and in writing; 3) ability to interpret data, identify sources of data and consult with and seek advice of other experts in toxicology; and 4) research and/or publication record.

The curriculum vitae should be accompanied by a letter of application which details why the applicant wishes to be a Congressional Fellow and any unique contributions he/she can bring to the position. The letter should also include the candidates approach to implementing educational opportunities, such as brown bag sessions on toxicology issues, for Congress and members of their staff.

Letters of recommendation from an academician, a government toxicologist and from the applicant's supervisor will complete the application. At least one letter should be from an SOT member.

The fellowship is awarded with the understanding that the home organization will continue to contribute to the Fellow's salary. A stipend will be provided to assist the incumbent in relocating to Washington, D.C., as well as housing, travel and incidental expenses.

Applications are due May 1, 1998, with preliminary selection by July 15, 1998. Interviews with Congressional offices will be arranged in Fall 1998. The position will be available on or about January 1, 1999, and will be in Washington, D.C. Applications should be sent to: Dr. Marion Ehrich, Chairperson, Regulatory Affairs and Legislative Assistance Committee, Society of Toxicology, 1767 Business Center Drive, Suite 302, Reston, VA 20190. For more information contact Shawn Lamb at SOT Headquarters.
SOT's Principles for Research Priorities in Toxicology

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2. Knowledge of mechanisms underlying the toxicity of the agent of interest is required in order to facilitate the incorporation of sound science into risk assessment. This is a critical aspect of our Society's strategic plan. The overall goal is to enhance our ability to make reasonable estimates as to whether or not harm might occur to people, or the environment, under realistic conditions of exposure. This entails hypothesis-driven research and it is consistent with the notion that it is the dose which makes the poison.

3. The scientific basis of risk assessment can be enhanced by the development of new and improved test systems (not simply adding to the number of existing "tests") and improved means for interpretation of results. Key aspects of any risk assessment include an emphasis on: 1) dose selection; 2) dose-response relationships, including extrapolation from high to low doses; 3) species to species extrapolation issues; and 4) exposure assessment.

4. Research should be judged on the basis of scientific merit, without regard for funding source or where the studies are conducted (e.g., academia, government or industry).

Stimulating Research to Improve the Scientific Basis of Risk Assessment

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practices which might have made sense twenty or more years ago, are no longer the state-of-the-art. As risk assessment can only be a good as the data on which it is based, a high level of uncertainty inevitably characterized the risk assessment of twenty years ago. Toxicology of the 90's, and certainly that of the coming millennium, will have to do better. New experimental approaches enabled by technical advances, a better understanding of molecular mechanisms of toxic action, and quantitative, biologically based models all must be brought to bear on the task of illuminating the black box. Regulatory agencies need to find the right balance between waiting for the new science to be sufficiently mature and getting on with the job of using the best science for case-specific risk assessment. To the extent that toxicologists, risk assessors, and the regulatory agencies meet these challenges, risk assessment and the protection of human health will benefit accordingly. Regulatory acceptance of new approaches will serve as a stimulus for new research relevant to risk assessment. In this context it is important to note that basic research leading to an enhanced understanding of the mechanism of action of the agent of interest provides the basis upon which to build more rational approaches to risk assessment.

Summer Student Internships at Searle Benefits Both Students and Sponsor

This letter was prepared by Julio Davila, Donald Kirkpatrick and Peter Smith.

For the past several years, Monsanto/Searle (Pharma sector) has been committed to introduce toxicology to students interested in biomedical sciences. Our goal has been to provide training opportunities for both undergraduate and graduate students in the field of toxicology and to provide the opportunity to participate in basic research using the most advanced techniques in molecular biology, chemistry and biomedical sciences. Searle endeavors to provide equal opportunities to all individuals interested in toxicology and to recruit a diversity of qualified scientists from all ethnic backgrounds through the SOT student internship programs.

Our experience with this program is that the SOT student internships benefit both students and sponsors. Students have the opportunity to be involved in basic and applied problem-solving research, to set up experiments following a mentor direction and carefully record the results of the experiments and help to analyze the results. The students get some idea of the difficulty in drug discovery and of the issues encountered by toxicologists in the process linking the discovery of a new potential drug and its introduction into the market place. They recognize that the toxicologist plays a key role in developing new knowledge for the improvement of human health and the protection of the environment. At the end of the internship they have developed new skills and qualifications and have a good idea of what toxicology means in the pharmaceutical industry. This experience provides an excellent environment to meet the right people who could be extremely helpful and resourceful contacts in the future.

This unique experience was true for Donald Kirkpatrick, a senior undergraduate science major from the University of Oklahoma. Don received a 1997 Society of Toxicology's minority travel award to attend the SOT Annual Meeting in Cincinnati. Don, as many as other undergraduate students, was seeking to get an honest opinion from the SOT and its members about the benefits of applying for graduate school in research sciences, specifically in the area of toxicology. He wanted to understand what toxicologists do, where they work, why he should consider a career in toxicology, and what kinds of employment opportunities exist in the field. During the SOT meeting, Don was able to participate in different focus group discussions and to meet scientists from different institutions, including government, academia and private sectors. Don met with Dr. Pete Smith, Searle's Product Safety assessment senior director, and discussed the possibility to visit Searle Pharmaceuticals and to consider a summer internship in our department. Don decided to visit us and be part of the In Vitro Toxicology Team under Dr. Julio C. Davila's supervision. During the internship, Don learned state-of-the-art, cutting-edge techniques and high throughput assays for screening

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PLACEMENT SERVICES

Toxicology and Drug Disposition at Eli Lilly and Company

The Toxicology facility of The Lilly Research Laboratories is one of the largest of its kind in the world. Located on a 1,200-acre research and development complex at Greenfield, Indiana, this facility covers nearly six acres and is equipped with state-of-the-art research technology. The Drug Disposition laboratories are part of the Lilly Research Laboratories complex in Indianapolis, Indiana. Toxicology and Drug Disposition scientists work in close association with scientists in Drug Discovery, Clinical Studies and Product Development and Commercialization.

The greatest asset of the Toxicology and Drug Disposition division is its people, conscientious and world renowned scientists whose ideas find a fertile climate for development at Lilly. Personal growth and encouragement to achieve individual goals are fundamental aspects of career development at Lilly. Our goal is to provide the highest degree of competence and integrity and to create an environment which enables world class science and achievement. If your compassion and ambition are as strong as your technical knowledge and research acumen, you’ll find the chance to develop all of your skills at Lilly’s Toxicology and Drug Disposition Division. Join us today.

Drug Metabolism and Disposition Scientists - BS, MS, Ph.D.
Scientists to establish a laboratory program utilizing basic and applies approached to study the metabolism and disposition of new chemical entities. Experience in developing methods to study absorption, distribution, metabolism, and excretion of drugs in animal models and humans is desired.

Bioanalytical Chemist - LC/MS - BS, MS
Scientists to perform LC/MS analysis in support of pharmaceutical discoveries. Background desired in quadruple-based LC/MS instrumentation and fundamental understanding of organic chemistry with experience in assay development.

Research Associate/Drug Disposition - QWBA - BS, MS
BS or MS degree in chemistry with minimum 1-2 years experience in quantitative whole-body autoradiography. Previous experience or willingness to work with animals is required. Familiarity with animal anatomy/physiology, computer skills, and radioisotope handling is advantageous. Self-motivation and strong interpersonal, organizational and communication skills are imperative.

Toxicology Project Leader - Ph.D.
The Toxicology Research Laboratories has a position available for an individual trained and experienced in toxicology, pharmacology, or related sciences. A Ph.D. degree and at least 3-5 years of drug development experience in either an industrial or academic environment are required for this position. The successful applicant will provide key scientific leadership of preclinical toxicology planning processes, will serve as Study Director, and will represent toxicology in discussions with regulatory agencies.

Toxicology Project Associate - BS, MS
The Toxicology Research Laboratory has two Toxicology Project Associate positions available for individuals trained and experienced in toxicology, pharmacology or related sciences. A BS or MS degree with 3-5 years postgraduate experience in either an industrial or academic environment are required for this position.

The successful applicant will directly support activities related to the timely development and execution of preclinical studies that support clinical trials and registration of pharmaceutical products. Desirable candidates will possess a working knowledge of general Toxicology study and Good Laboratory Practice procedures. Candidates must demonstrate a high level of initiative and commitment as well as excellent organizational, interpersonal, and communication skills.

Toxicologist, Developmental Toxicology and Teratology - BS, MS
The principle responsibility of the Toxicologist is to coordinate and supervise teratology, reproduction, and/or behavioral studies in rodent and non-rodent species to support the registration of pharmaceutical products. This responsibility includes supervising and evaluating the performance of a team of technicians; ensuring compliance of studies and reports with GLPs and established guidelines; and analyzing, interpreting, documenting, and reporting study results.

The position requires developmental toxicology, toxicology, pharmacology, experimental psychology, chemistry, biology, or related background. Supervisory and lab animal experience would be valuable. A minimum of a BS/BA degree in a science-related discipline.

Toxicologist, Genetic Toxicology - BS, MS
The Genetic and Molecular Toxicology group is seeking a Genetic Toxicology Associate. The primary responsibility of the individual will be the independent conduct of the chromosome aberration assay in accordance with GLPs and regulatory guidelines. There will also be the potential for involvement in the micronucleus test, participation in developing or assessing new technologies and conducting research to enhance risk assessment capabilities.

Experience in other genetic toxicology assays is a plus as well as experience with other screens such as the comet assay. A BS or MS in a biological science with experience in cytogenetics in a genetic toxicology laboratory is preferred.

Molecular Toxicologist - Ph.D.
The Genetic and Molecular Toxicology groups is also seeking a research scientist to develop new technologies in the field of molecular toxicology. This individual will investigate cellular mechanisms of genotoxicity as well as coordinate efforts to develop high throughput screens to aid in the process of compound lead optimization. The individual will be expected to be
Resourceful in applying new technologies in molecular biology to answer questions relevant to compound development. Working knowledge of routine toxicology studies would be an advantage accompanied by the ability to apply one's expertise to resolve issues surrounding these types of endpoints. Studies in gene expression, identification of molecular markers of toxicity, and development of cell culture systems as toxicity models are all potential areas of investigation.

Candidate should have the ability to work independently in a laboratory setting and possess the ability to present results to multidisciplinary teams. This individual will have the opportunity to staff a new laboratory with state-of-the-art equipment and will be expected to interact with cohorts in Investigative Toxicology. Applicants should have a Ph.D. in toxicology, pharmacology, cell biology or a related field with up to 4 years of relevant postdoctoral training or experience. Excellent verbal and written communication skills and a publication record are a must.

**Toxicologist, CNS/Behavioral Toxicology - BS, MS**

The CNS/Behavioral Laboratory in the Toxicology Division is seeking a CNS/Behavioral Associate. The primary responsibility will be the conduct of behavioral evaluations in mice or rats in accordance with GLPs and regulatory guidelines. Current evaluations include a wide range of CNS test procedures. There is the potential for involvement in report writing, primate experiments, problem solving, and the development of new laboratory methodologies.

Previous experience in a behavioral laboratory and/or pharmaceutical GLP experience would be an asset in the position. A BS or MS degree in biological science or neuroscience with related laboratory experience is preferred.

**Toxicologist, MSDS/Risk Assessment - MS**

We currently have a position available for an individual trained and experienced in toxicology, pharmacy, pharmacology, or related fields. An MS degree is required. The successful candidate will review, interpret, and summarize toxicological data for the development and revision of Material Safety Data Sheets and Labels. The scientist will also write risk assessments for chemicals that are used in industrial setting or that may enter the environment. Considerable interaction will be required with others involved in assuring safety information in the workplace.

**Chemist, MSDS/Risk Assessment - MS**

We have a position available for an individual trained and experienced in chemistry, pharmacology, or related fields. An MS degree is required. The successful candidate will identify and write the chemical identity and physical parameter sections of the Material Safety Data Sheets and Labels. A good working knowledge of chemical nomenclature is required. The scientist will also participate in researching the chemical information required to write risk assessments for chemicals that are used in industrial settings or that may enter the environment. Considerable interaction will be required with chemists and others involved in assuring safety information for the workplace.

**Toxicologist, Inhalation Toxicology - BS, MS**

A major responsibility will be to organize, supervise and report on inhalation toxicology studies of inhaled pharmaceuticals and other chemical agents in large and small laboratory animals. In depth knowledge of pulmonary physiology and biology is required as these studies frequently include measurements of pulmonary function, bronchoalveolar lavage and other specialized endpoints. Experience with aerosol generation and characterization methods is an asset, as is experience in a GLP environment. Familiarity with molecular and/or cellular biology methods to study the pharmacological or toxicological effects of inhaled materials in the lung is highly desirable. An MS in Biological Science is preferred.

Eli Lilly and Company offers excellent salaries and competitive benefits. Please send resume with cover letter, indicating specific title for the position of interest to: Human Resources at: Eli Lilly and Company, Greenfield Laboratories, P.O. Box 708, Greenfield, IN 46140.

We are an Equal Opportunity Employer dedicated to diversity and the strength it brings to the workplace.

To learn more about Eli Lilly and Company, please visit our Web site at: www.lilly.com.

**Consultant/Project Manager**

Fast-paced environmental science consulting company has the following opening available at our Cambridge, Massachusetts location:

Excellent opportunity to serve as consultant/project manager on environmental projects in specific areas of human health risk assessment. Will provide technical support in areas of technical proposal support, project scoping and execution and management. 5-10 years environmental consulting experience requiring detailed technical analyses of complex project issues. Must have solid project management experience. MS/Ph.D. preferred.

We apply the latest scientific developments to help solve complex environmental problems for our clients throughout the U.S. High energy, entrepreneurial atmosphere. Equal Opportunity Employer.

Qualified candidates may send resumes to: Gradient Corporation, 44 Brattle Street, Cambridge, MA 02138, Attn: Laura Gordon, fax: (617)-864-8469, E-mail: lgordon@gradcorp.com.

**Toxicologist**

If you're looking to find your element, then come to the Additives Division of Ciba Specialty Chemicals. Our innovative products enhance the look, performance and durability of plastics, coatings, fibers, fabrics and a host of other products. We have an exceptional opportunity for a highly-qualified

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Toxicologist to join our regulatory affairs function, and be responsible for monitoring all phases of mammalian acute and chronic testing required for U.S. and European registration/notification of new and existing chemicals. You will also develop product risk assessments, communicate with the EPA and FDA on technical matters related to product testing, assist with the development of MSDS and similar product safety literature and contribute to new product development efforts. To qualify, you must have an MS in Toxicology (or a closely related discipline) and 10+ years of related experience (or a PhD with 4+ years experience). Experience with EPA and FDA regulatory issues is essential, as are strong communication skills. The ability to function effectively in a team-driven environment and availability for 20% travel is a must. Please send resume and salary history to: Human Resources-Tox, Ciba Specialty Chemicals, Additives, 540 White Plains Road, PO Box 2005, Tarrytown, NY 10591; Fax (914) 785-4167. An Equal Opportunity Employer M/F/D/V.

Opportunities for Employment at Monsanto

We’re redefining the way the world looks at life sciences. We’re the new life sciences company at Monsanto. And we’re even more focused on the future. That’s why our entire organization, from agricultural biotechnology to pharmaceuticals to food ingredients, is dedicated to life sciences. Now, we can answer the questions, needs and demands of our ever-changing planet. After all, the world’s resources are finite, but our vision for the future is limitless. Our pharmaceutical sector, Searle, has the following opportunities available in suburban Chicago:

Diagnostic Lab Technician
As a member of the Quality Assurance and Diagnostic Laboratory, you will be assisting in technical operations, including bench-level microbiological and parasitological screens, data management, and animal handling. We require an Associate’s degree in animal health; a Bachelor’s degree in Microbiology is preferred. Hands-on experience as a lab technician and good animal handling skills are essential. (Job Code: DS-DLT)

Research Toxicology Biologist
You will perform technical and non-technical activities necessary for conducting preclinical safety studies and ensure compliance with departmental standards and governmental regulations. We require an Associate’s degree in animal health or a Bachelor’s degree in Biology, Chemistry, Math or Statistics. Experience handling lab animals is a must. AALAS certification is preferred. (Job Code: DS-RTB)

Clinical Pathology Medical Technician
While assuring compliance with policies and regulations, you’ll perform routine procedures in hematology, clinical chemistry and coagulation on a variety of species, review data for accuracy, and prepare file submissions. We require an MT, MLT (ASCP), or B.S. in a related scientific field. Hematology and immunossays skills are essential; phlebotomy skills are preferred. (Job Code: DS-CPMT)

Research Biologist Technician
You will perform laboratory analyses in a specific area of scientific expertise, including flow cytometry, molecular toxicology, in vitro toxicology, microbiology, genetic toxicology, or molecular pathology. We require a B.S. in Biology with a minimum of 2 years of laboratory experience. Computer skills are also essential. (Job Code: DS-RBT)

Research Histotechnologist
You will participate in all aspects of routine slide production, special stains, or more complex staining methods. The qualified individual may oversee or develop non-routine procedures and more complex staining methods, such as immunohistochemistry and in situ hybridization as well as participate in necropsy of laboratory animals. We require a B.S. in Biology with HTL (ASCP) and 2 years experience in animal research in an anatomic pathology laboratory. (Job Code: DS-RH)

We offer market salaries and excellent benefits including relocation assistance, tuition reimbursement, matching 401(k) programs, and incentives based on company performance and success sharing programs! For consideration, please forward your resume to: Monsanto Life Sciences Company, c/o Searle, Job Code: ___ (select from above), 4901 Searle Parkway, Skokie, IL 60077. Fax: 847-982-4577. EEO/AA Employer M/F/D/V. Visit our Web site at www.monsanto.com.

Opportunities for Employment at Allergan

Allergan, a technology driven company, is a global leader in specialty pharmaceutical products and surgical devices. We currently have opportunities in our Southern California corporate office within our Safety Evaluation department for the following individuals:

Director of Toxicology
Will provide technical leadership in toxicology, ensure/implement optimal toxicology development plan for new chemicals in support of corporate strategy for rapid drug development and guarantee high quality interpretation, integration and risk assessment of all related data to draw valid conclusions in support of product safety/dose selection for initiating clinical investigations in humans or regulatory submissions. Additionally, you will supervise the compilation of pharmacology, toxicology and pharmacokinetic sections in INDs, NDAs and PLAs for worldwide regulatory submissions, report preparation, safety updates and technical responses to regulatory questions.

Requires a D.V.M./Ph.D. or M.D./Ph.D. in a related specialty and 10 years experience in drug development in a pharmaceutical company. Must have comprehensive understanding and competency in ocular, dermal and systemic toxicology, toxicokinetic, pathology, teratology, mutagenesis,
pharmacokinetics, various laboratory animal model systems and FDA, GLP and USDA animal welfare regulations. Strong administrative background in supervising senior scientists and managing a large variety of projects is a necessity. Strong administrative background in supervising senior scientists and managing a large variety of projects is a necessity. Strong verbal/written communication skills are essential.

Manager of Toxicology

Will act as Study Director, establish optimal toxicological testing requirements, implement the study, provide interpretation and author the research reports in compliance with GLP regulations to support new pharmaceutical agents. Additionally, you will evaluate published/unpublished data, provide risk evaluation on new ingredients for regulatory submissions, initiate clinical trials in humans, participate in project team meetings and interface with scientists from other disciplines.

Requires a D.V.M. or Ph.D. in Toxicology/Pharmacology, six years related background and comprehensive understanding/hands-on experience in conducting different studies in all laboratory animal species. Must have strong verbal/written

communication skills, a full understanding of GLP and the ability to lead a group of scientists.

We reward our employees with competitive salary, an excellent benefits package and a great working environment. Please send resume with salary history (E-mail preferred) to: resume@allergan.com. If unable to E-mail, mail your resume to: Allergan, Attn: DQ, T2-1H, 2525 DuPont Drive, Irvine, CA 92612. We are an Equal Opportunity Employer. Visit our Web site at: www.allergan.com.

Toxicologist

We've introduced some of the most impressive innovations in health care, and continue to provide quality health care products far into the future. With 51,000 employees worldwide and more than $1 billion in annual sales, our achievements are known globally and are the result of talented professionals like you. Join a company with a long history of innovation—Abbott Laboratories. Due to a recent expansion, our Pharmaceutical Products Division has an opportunity available for a highly motivated individual who will be able to thrive in a fast-paced and dynamic environment.

The professional we seek will be responsible for the preparation of toxicology study protocols and study reports as well as the supervision of studies, acting as study director on in-house studies, and monitoring contact lab studies. Additional responsibilities will include writing literature reviews and IND and NDA overviews as well as representing toxicology at project team meetings. The qualified individual must possess a Ph.D. in Pharmacology or Toxicology along with 3+ years of toxicology experience.

We are located in the suburban Chicagoland area. In return for your expertise, we offer a competitive compensation package, including full benefits. For consideration, please send you resume, with salary history to: Code: 97-WKB-3358, Dept.

0583, Bldg. AP9A, Abbott Laboratories, 100 Abbott Park Road, Abbott Park, IL 60064. An EOE, we are as committed to employee diversity as we are to our broad range of products and services. Web site: www.abbott.com.

Principal Scientist - Department of Toxicology

CHIRON CORPORATION, a global biotechnology leader, is seeking qualified candidates for a Principal Scientist position in our Department of Toxicology, located in Emeryville on the beautiful San Francisco Bay. Key responsibilities will include developing toxicology programs for drugs and biologics, conducting contract research, representing toxicology on development teams, writing and reviewing regulatory submissions, and conducting investigative studies. Candidates should have a PhD in toxicology or related field and a minimum of 5 years of experience. Background should include 3+ years experience in the pharmaceutical industry designing, conducting and evaluating preclinical toxicology studies. Must be team-oriented and possess strong communication skills.

Join us as we structure our operations to better meet the challenges ahead. To learn more, send your CV/resume, referencing Job Code 2620 to: Chiron Corporation, Human Resources, 4560 Horton Street, Emeryville, CA 94608. Or see our Web site at www.chiron.com. We are an Equal Opportunity Employer.

Assistant, Associate or Full Professor

The Division of Toxicology, Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences, is recruiting a full time, tenure-track faculty member at the ASSISTANT, ASSOCIATE or FULL PROFESSOR level. Investigators with research excellence in either molecular aspects of oxidative stress, mechanisms of cell injury and death, carcinogenesis, molecular toxicology, or neurotoxicology are encouraged to apply. Excellent applicants working in other areas of toxicology using innovative approaches in basic toxicology mechanisms will also be considered. Candidates should have a Ph.D. or equivalent degree, postdoctoral training, evidence of research productivity, and a commitment to quality teaching of graduate and medical students. Applicants at the level of Associate or Full Professor must have extramural research funding.

Excellent opportunities are available for collaborative research with other faculty, and with adjunct faculty at the nearby National Center for Toxicological Research. A competitive start-up package and laboratory space in our new Biomedical Research Building will be available for the successful candidate. Our Internet Web site is http://www.UAMS.edu/pharmpox/pharmpox.htm. Candidates should send curriculum vitae, a brief prospectus, and the names of three references to: Jack A. Hinson, Ph.D., Division of Toxicology, Slot 638, University of Arkansas for Medical Sciences, 4301 W. Markham Street, Little Rock, AR 72205. Applications should be received before March 15, 1998. UAMS is an Equal Opportunity Employer.
Summer Student Internships at Searle

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compounds at early stages of drug development. He gathered enough data to submit an abstract to the 1998 SOT Annual Meeting in Seattle, and most importantly, he received adequate preparation for entry into a graduate program in toxicology.

To date, Don is currently applying to several graduate toxicology programs and has been nominated by the Biochemistry Department at Oklahoma University for a Self Fellowship at the University of Kansas. The fellowship is worth about $100,000 for graduate study and leadership development.

At the end of the internship, we asked Don to give us his impression about the SOT student internships and his experience at Searle.

Don's comments are described below:

"My impression of the program (minority student program at the SOT Annual Meeting in 1997) was formed very early in the first night. The enthusiastic attitudes of the mentors and the curiosity of the other undergrads made the opening night festivities seem like a campus activity. From the beginning, it was apparent that everyone in the room had something that they were waiting to share with us. The best of these tidbits were the simple, but impressive speeches from past program participants. These people, no older than myself, were already busy building their toxicology futures. One man in particular made a point that sticks with me to this day. The first year graduate student stood at the podium and confidently proclaimed that many of us would be back to stand in his footsteps very soon. It was evident that in the recent past he too had been introduced to the field of toxicology and had decided to start building a career. With the confidence of his statement, he assured me that he had made the right decision.

Not knowing a soul in the city of Cincinnati or in the Society of Toxicology turned out to be a huge advantage. Refusing to go home unfulfilled, I began to ask my seemingly insignificant questions to every stranger that I came upon. From the responses, I first came to see a diversity in the field, that I had never realized. Toxicologists work in fields ranging from pollution control to pharmaceutical development, creating solutions in the world microorganisms all the way up the scale to global environmental systems. This breadth of field provided a huge variety of choices for all of us that spent time in Cincinnati.

Secondly, I met a community of generous people that were willing to lash out answers as fast as I could articulate questions. Luckily for me, my persistence didn't deter the toxicology professionals that I encountered, but rather enlivened their fervor for their field. It was one of these toxicologists, Dr. Peter Smith, that one month later put me in contact with my mentor Dr. Julio C. Davila, the in vivo toxicologist at Searle Pharmaceuticals.

The opportunity to work alongside industry professionals allowed me to cultivate the interest that had spawned from the SOT meeting. During my 3 weeks at Searle, I was able to initially familiarize myself with research, the terminology, lab protocols and the inner workings of the pharmaceutical machinery. When that learning curve slowed, my mentor

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Lost Mail

SOT mail addressed to the following members has been returned undelivered. If you know where any of the following individuals may be found, please notify Annette Flannery at the SOT Headquarters office in writing by E-mail: annette@toxicology.org, Fax (703) 438-3113; Mail 1767 Business Center Drive, Suite 302, Reston, VA 20190-5332.

Thomas Baker, MS; Farid Balaa, PhD; Garth Bissette, PhD; Michael H. Buonarati, PhD; Sarah E. Caldwell; Jayanta Chaudhuri; Elizabeth Ann Conner; Mary Lynn Cook; Barbara J. Davis, PhD; Clifford Lanier Deal, III; Robert T. Drew, PhD; William M. FitzPatrick; James E. Fitzgerald, DVM, PhD; Aurea Maria Flores; Jack Freund, MD; Debra Michelle Cles; Ronald Griff; Jack E. Gray, DVM; Steven Halladay, PhD, MS; Casey L. Head; Katsuji Hoshii, PhD; Susan R. Howe; George T. Hung, Jr.; Renta M. Hatabarot, PhD; Marthlyn Jones, MD, MPH; William J. Kernan, PhD; Joseph Scott Klingensmith, PhD; Hugo M. Krueger, PhD; J.C. Yves LeBlanc; Chien Kee Lee, PhD; Candace M. Lippoli, PhD; Matthew John Mahon; Heather Marks-Hull; Brendan Mason Matthew; Nirmal K. Mishra, PhD, DVM; Susan K. Overman; Angela D. Page; Yeong-Chul Park; Virginia Ruth Pinney; Christina M. Rabergh; Herbert Remmer; William E. Ribelin, DVM, PhD; Amaniya I. Rivera-Serrano; Sandra G. Rousseau; Robert Saatman; Prakash Shilwal; Dr. Sujatha Mary Thampi; Anthony A. Thomas, MD; Paul Urazo, PhD; Luis G. Valerio, Jr.; Hongbing Wei; Joseph Yang, PhD; Kenneth M. Yates, PhD; Zhongrong R. Yu.
Society of Toxicology 37th Annual Meeting, March 1-5, 1998, Seattle, WA. Contact: SOT Headquarters, Ph: 703-436-3115, Fax: 703-438-3113, E-mail: sotinfo@toxicology.org.

Toxicology Screening: Rapid Development of Novel Compounds, March 19, 1998, London, UK. Contact: Vanessa Wheldon, +44 (0) 171-404 3040, Fax: +44 (0) 171-404 2081 or E-mail: vanessa@henrystewart.demon.co.uk.


Mid-America Toxicology Course, April 19-24, 1998, Contact: Curtis D. Klaassen, Ph.D., Professor of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS 66160-7107, Ph: 913-588-7714, Fax: 913-588-7501 or E-mail: klaassen@kumc.edu.


Conference on Issues and Applications in Toxicology and Risk Assessment, April 27-30, 1998, Hope Hotel and Conference Center, Wright-Patterson AFB, OH. Contact: Linda Danskar, MASTech Environmental Technology Inc., PO Box 31008, Dayton, OH 45437-0009, Ph: 937-295-5150, ext. 3140, Fax: 937-295-2191, E-mail: doncaster@facdon.com, E-mail: wpaabf@wpaabf.com.

Developing Occupational Exposure Limits from Toxicology and Epidemiology Studies, March 6, 1998, Seattle, WA. Contact: ACGIH, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634, Ph: 513-742-2020, Fax: 513-742-3355, E-mail: mail@acgih.org, Web site: www.acgih.org.

Health Effects Institute Annual Conference XIV, "Air Pollution: Science and Regulation," April 7-9, 1998, Harborside Hyatt, Boston, MA. Contact: Geoffrey Suruliepe or Maria Costantini, HEI, Ph: 617-876-6700, Fax: 617-876-6709, E-mail: gsuruliepe@healtheffects.org.

British Toxicology Society Annual Conference, University of Surrey, UK, April 20-23, 1998, Contact: Dr. TJF Gray, Meetings Secretary, Serotonin Research, Willowburn Avenue, Alnwick, Northumberland NE66 2JH, England, Ph: 44-1665607302, Fax: 44-1665607510.

Occupational Asthma: In and Out of the Workplace, April 30-May 2, 1998, National Institute for Occupational Safety and Health, Morgantown, WV. Contact: WVU School of Medicine Office of Continuing Medical Education, 1250 Health Sciences South, P.O. Box 9080, Morgantown, WV 26505, Ph: 304-293-3957, Fax: 304-293-8653, or E-mail: cme@wvu.edu.

The Third International Symposium on Cosmetic Efficacy Strategies for the 21st Century, May 10-12, 1998, Cologne, Germany. Contact: Dora Rose-Wilson, Dept. of Dermatology, Columbia University, 1st Fl., Washington Avenue, AP-14-1418, New York, NY, Ph: 212-305-2714, Fax: 212-305-4571, E-mail: wilson@cppm3.columbia.edu.


10th International Workshop on In Vitro Toxicology, September 14-18, 1998, The Wessex Conference Centre, Sparsholt, Winchester, UK. Contact: Caroline Summer, IVTIXOX 98 Secretariat, Management, The Chestnuts, 1st Floor, 18 East Street, Farnham, Surrey GU9 7SD, UK, Ph: 44-1252-770066, Fax: 44-1252-771303, E-mail: perry.r@maestoms- mutating.net.


British Toxicology Society Autumn Meeting, September 20-22, 1998, University of York, UK. Contact: Dr. TJF Gray, Meetings Secretary, Sanofi Research, Willowburn Avenue, Alnwick, Northumberland NE66 2JH, England, Ph: 44-1665-607302, Fax: 44-1665-607510.

5th International ISXIX Meeting, October 25-29, 1998, Cairns Convention Centre, Queensland, Australia. Contact: Conference Secretary, P.O. Box 153, Nairne, South Australia 5253, Ph: 61-8-8388-6164.

The Role of Diet and Caloric Intake in Aging, Obesity, and Cancer, October 26-28, 1998, Hyatt Regency, Reston, VA. Contact: SOT Headquarters, Ph: 703-438-3115, Fax: 703-438-3113, E-mail: sotinfo@toxicology.org.

Publications of Interest


Advances in Molecular and Cell Biology, Volume 20, Edited by Chipman, J.K. School of Biobehavioral, University of Birmingham, UK, Series Editor: Bittor, E. Edward, Physiology Department, University of Wisconsin, Madison, WI. To order: JAI Press, Ltd., 98 Tavistock Street, London WC2E 7JR, UK, Ph: 44-171-379-8834, Fax: 44-171-379-8855 or E-mail: jaic@clix.com, 1998.


Toxicology Desk Reference: The Toxic Exposure and Medical Monitoring Index (TDRI), Fourth Edition, edited by P. Ryan and Claude E. Terry. Contact: Elizabeth Cohen, Ph: 215-783-8000, ext. 31 or E-mail: ecohon@taffelpa.com. Cost: $450 (paperback or CD-ROM); $350 (paperback and CD-ROM).

The Treatment and Prevention of Asbestos Diseases, Volume 15, Edited by George A. Peters, J.D., C.S.P., P.E., and Barbara J. Peters, J.D. To order, call 800-562-1197 or Fax 800-643-1280.

SciWire. To subscribe, E-mail a message to: rjohnson@newswork.com and mention SciWire in your message or visit http://www.newswork.com/menu9.htm.

Draft Research plans to guide research on important topics available via the internet at http://www.epa.gov/ORDER/resplans/resplans.html for the following topics: Endocrine Disruption, Arsenic in Drinking Water, Global Change, Microbial Pathogens and Disinfection Byproducts in Drinking Water, Waste, Pollution Prevention, Particulate Matter, and Ecological Research.

The latest on information on grants to non-profit institutions is available through the Internet at http://www.epa.gov/neepra.
Medical Research Budget Update

by Capitol Associates, Inc.

FY 1999 Appropriations

At the time of this writing, the President has not yet released his budget for FY 1999. Sources indicate, however, that the President will lay out an agenda for medical research which includes an endorsement of a doubling of the National Institutes of Health budget and at least a 7% increase for FY 1999.

The Executive Committee of the Ad Hoc Group for Medical Research, a coalition of more than 200 professional and patient advocacy organizations, met the week of January 12 and issued their recommendation for medical research funding for FY 1999. They recommend a 15% increase in NIH funding for FY 1999 as a downpayment on the doubling of the budget over the next five years. In addition, the Ad Hoc Groups’ recommendation includes suggestions for advancing the debate about how NIH will set its research priorities and maximize the research opportunities that will be available with such a significant increase in funding.

The House Appropriations Subcommittee on Labor, Health and Human Services, and Education began public witness hearings early this year.

Hearings were scheduled January 28 through February 5. The Institute Directors will go before the Committee beginning the week of March 10.

It is likely that the Subcommittee will move quickly in marking up their bill for FY 1999 after these hearings are completed.

Tobacco Settlement

Congress is now considering legislation to implement the global tobacco settlement reached last summer between the Attorneys General of 40 states, the plaintiffs attorneys, and the tobacco companies. A number of the proposals link medical research to the implementation of the settlement in order to significantly increase funding for the nation’s biomedical research infrastructure. Although the revenue directed to biomedical research will most likely benefit studies on diseases which are directly attributable to tobacco use, the provision of additional funds outside of the regular appropriations process will broaden the base of support for all medical research. In fact, several Congressional proposals introduced at the end of the year would provide an additional $4 to $10 billion every year over the next 25 years for biomedical research.

Summer Student Internships at Searle Pharmaceuticals

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organized a short research project to examine the expression of liver cytochrome P450 isozymes and Phase II conjugating enzymes in rat hepatocytes cultured in different extracellular matrix systems, including Matrigel, collagen and gelatin. In a matter of three short months, Searle took me from green behind the ears, to making and analyzing data from a cutting-edge experiment.

There’s an incredible amount of information available to all SOT conference attendees and undergraduate interns. The opportunity to meet representatives from the entire toxicology spectrum stands as the greatest asset, but not the only one. The scientific seminars, although extremely advanced to an undergraduate, can be a great introduction to new and exciting fields.

The chance to dabble in a potential field taught me lessons far beyond those of the lecture hall. Finally, SOT provided us all the opportunity to initiate lifelong career connections with our peers that are also entering the field. If it was possible to pinpoint the key to my good fortune so far in toxicology, it would have to be the mindset that I carried with me to Cincinnati… "I don’t understand… but I want to."

Searle encourages undergraduate and graduate level science majors, of diverse ethnic background interested in the field of toxicology, to contact the SOT Headquarters office for applications.

Toxicologist Supply and Expertise Survey

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Post-doctoral Positions

The survey found that the total number of Ph.D.’s in post-doctoral positions increased during the 1990-1995 period (190 positions), as compared to the 1984-1989 period (149 positions). However, there were also more Ph.D. toxicologists graduating during these later years (460 versus 292 Ph.D. graduates). Between 1984 and 1989, 43% of Ph.D. students held at least one post-doctoral position, while only 30% held at least one post-doctoral position between 1990 and 1995.

Of those Ph.D. graduates who pursued postdoctoral positions, many toxicologists have held multiple post-doctoral positions in recent years. Specifically, 16% held two or more post-doctoral positions between 1984 and 1989, while 28% held two or more post-doctoral positions between 1990 and 1995.

Career Direction

During the period between 1990 and 1995, the majority of all degree toxicology graduates went into industry. For Ph.D. graduates, approximately 53% pursued positions in industry, 34% went into academia, and 12% pursued positions in government. Likewise, the survey results indicate that the majority of all degree toxicology graduates between 1990-1995 are predicted to pursue careers in industry. Twenty-eight percent of Ph.D. graduates are expected to go into academia, 17% into government, and 3% are unspecified.