Dermal Toxicology Specialty Section

Executive Council

The *Dermal Toxicology Specialty Section* newsletter is published 3 times/year (May, August, November) in printed and electronic formats. If you would like to share a book review, meeting report, web site, or any other item of general interest to the specialty section, please send it to the editors by the beginning of the month prior to the listed publication dates. We also welcome any comments or suggestions pertaining to overall content or format.

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President's Message

I am deeply honored to serve as the first President of the Dermal Toxicology Specialty Section. I would like to thank the membership and to present to you my thoughts as to how we as toxicologists can interact with other scientists to address some of the pressing issues in research related to the skin. I am not trying to prescribe the areas of concern but only to suggest topics for your attention.

As we all know, the primary function of the skin is to serve as a protective barrier against the environment. Loss of the integrity of large portions of the skin as a result of injury or illness may lead to major disability or even death. Every year in the United States more than 1.25 million people have burns and 6.5 million have chronic skin ulcers caused by environmental and occupational insults, physical stress (e.g., pressure), and endogenous factors (e.g., vascular status), or systemic disease (e.g., diabetes mellitus).

Mechanistic studies in skin toxicology and pharmacology will help provide information to ascertain the risk posed by materials that access the body through the skin. This also helps to lessen the gap between *in vitro/in vivo* and predictive skin and other organ- toxicity studies. There has been a recent surge in activity in areas related to skin metabolism and oxidative tissue damage. Skin, being the interface between the environment and the body, bears the brunt of oxidative stress. The constitutive redox status and enzymatic and non-enzymic antioxidant defense systems in the skin help to reduce this burden to some extent. When the balance between the reactive oxygen species and antioxidant constituents is perturbed, one sees a constellation of adverse effects not only in the skin but also in distant organs like the liver, heart and many others. Such perturbation may also affect the immune system and lead to contact dermatitis or other related immune dysfunctions. This research area needs more attention and further development.

The skin forms the continuous external surface of the body and is useful to explore biologic questions that are germane not only to the skin but to other organs. Elucidation of how the structure and function of the skin are maintained under homeostatic conditions is essential to understanding various physiological or toxicological processes. The adult epidermis and dermis provide clear support and nourishment for the skin. The hair and glands derived from epidermis and deeply embedded in the dermis

represent a highly visible and accessible interface with the environment that may be an important route of entry for variety of environmental and occupational substances.

Hair, a component of the skin has a psychosocial importance worldwide. Large sums of money are spent on therapies that help to grow or remove hair from parts of the body. No additional hair follicles are formed after birth, although the androgenic hormones can change the size of the constituent hair follicle. We need detailed understanding of the hair follicle biology, and all types of alopecias. We need to understand phenomena like transient shedding of hair as may result from occupational exposures, chemotherapeutic agents and other medications, fever, parturition, malnutrition, scarring and androgenic baldness involving genes that confer a predisposition to alopecia.

In a healthy state, skin lesions, and in particular wounds, heal very quickly. However, some lesions, such as ulcers, burns and others, take an inordinate amount of time to heal if they heal at all. The end-product in these situations is neither functionally nor aesthetically pleasing, much less perfect. Recent advances in cellular and molecular biology have greatly expanded our understanding of basic skin biology. Examples include monospecific antisera for immunocytochemistry, cloned DNA probes for in-situ hybridization, micro-arrays, genomics, cellomics, proteomics, and functional biological assays. Using these powerful tools, it should prove possible to discover the temporal and spatial relationships of different molecular mediators, reactive oxygen species, lipid and chemokine modulators and the role they play in irritant, contact sensitization, skin injury and healing. Such information will provide and define rationales for preventive measures in the occupational and environmental settings, and therapeutic approaches to intervention to defend skin and improve health.

Many investigators continue to study problems of impaired healing in young and rapidly growing animals where manipulating the course of a robust healing process is much more difficult. A fine network of the skin sensory nervous system innervates multiple cell types and releases neuropeptides (neurotransmitters) that play important roles in inflammatory responses. These biologic responses are attenuated by skin neutral endopeptidases and their regulatory mechanisms are quite important to be elucidated. We need to continue to contribute information to the existing knowledge of the "start" and "stop" signals that come from the skin and the redundancy and cross talk that determine the process of skin reactivity and healing.

One of the most formidable questions facing the toxicology research community today is how to translate basic fundamental research into a product that meets the needs of its stakeholders - the medical community, regulatory agencies and ultimately the citizens of our nation. It is imperative that researchers in general, and the Dermal Toxicology Specialty Section members in particular, be as inclusive as possible of other scientific disciplines in their research endeavors. I trust that this shall be our guiding principle.

Anna A. Shvedova
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Committee Updates

Program Committee

Submitted by Frank Gerberick

The Program Committee is off to a great start. At the upcoming SOT meeting in San Francisco the DTSS will be sponsoring a symposium entitled "Toxic Catalytic and Protective Mechanisms of Phenoxyl Radical Intermediates." The symposium will be chaired by Drs. Valerian E. Kagan (University of Pittsburgh) and Ronald P. Mason (NIEHS). Congratulations to our President, Dr. Anna A. Shvedova, for her efforts in getting this symposium on SOT 2000 Program.

The goal of the Program Committee is to develop and promote state-of-the-art symposia, workshops and round table discussions for annual and satellite SOT meetings. It will be critical for the early success of DTSS that we submit strong proposals for next year's SOT 2002 meeting in Nashville as well as future meetings. Currently, Anna A. Shvedova is chair and I am the co-chair of the Program Committee along with Jim Riviera, Ian Kimber and Howard Maibach as committee members. If anyone else is interested in joining our important committee let Anna or me know as soon as possible.

Whether you join the Program Committee or not, we welcome openly any ideas you have for symposia, workshops or round table discussions that would be submitted for consideration at the 2002 SOT meeting. Please send your proposals to Anna or me and make sure you include the following information.

1. The proposal's title and specified forum (e.g., workshop)
2. A brief description of the proposal
3. Proposed speakers with synopsis of each talk (emphasis on including SOT/DTSS members should be considered)
4. Proposed chairperson(s)
5. List Specialty Sections that could co-sponsor the event with DTSS (e.g., Risk Assessment Specialty Section)

For additional guidance on preparing a proposal, please refer to David Eaton and William Greenlee's excellent article entitled ***Accepted by the Program Committee*** that appeared in the Summer 2000 edition of SOT's Communiqué. Please send your proposals to Anna or me by March 1, 2001. This will give the Program Committee ample time to review the proposals before meeting in person at the upcoming 2001 SOT meeting in San Francisco. Hope to hear from you soon!

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Membership Committee
Submitted by Guilin Qiao

On behalf of the DTSS Executive committee, I am asking you to show your strong support to our Specialty Section. If you believe that the new DTSS is important to your professional activities as well as to the future of dermal toxicology research, I would like to ask you to pay your SOT membership dues before December 31, 2000. Timely payment of dues on your part has an enormous monetary impact on our Specialty Section. For all Specialty Section dues paid in a given fiscal year, we receive $13 of that $15 to support our Specialty Section. For students, we receive $13 for every student who checks that box, regardless of the fact that a student can join for free. These monies go toward awards and the reception. In closing and on behalf of the Dermal Toxicology Specialty Section, I would like to thank you for your support, Guilin Qiao, DVM, Ph.D.,
Chairman, DTSS membership committee, GAQ1@CDC.gov

Continuing Education Committee
Submitted by
Nancy Monteiro-Riviere

The Continuing Education Committee of the Dermal Toxicology Specialty Section would like to gather ideas for Continuing Education courses. DTSS did not sponsor any such courses in its inaugural year. As a newly formed section we must do our part since one of the most important functions of the specialty section is to provide programs for the up coming 2002 SOT Annual meeting. Therefore, we need members to suggest ideas or topics that would value to the SOT Continuing Education Courses. Your proposal should be emailed to me or Diane Heck and should include the following:

1. A proposed title and forum (continuing education courses)
2. A brief description of the proposed content (a short paragraph will do).
3. Proposed speakers (3 - 5).
4. Proposed chairperson, if you can think of one (you can also volunteer yourself).

Anything within the realm of dermal toxicology is fair game, and you are welcome to be creative and think of topics that our specialty section could jointly sponsor with another SOT specialty section. Look at past Continuing Education Courses, Symposia, or Workshops that you think would be appropriate to update and repeat.

Please send your suggestions back to Chairpersons:
Nancy Monteiro-Riviere (Nancy_Monteiro@ncsu.edu)
Or Diane Heck (dheck@eohsi.rutgers.edu).

We need to have your ideas quickly and would like to have completed proposals sent in before the March 15, 2001. This will give us an idea on how many proposals have been submitted by our March meeting and determine if we should solicit additional proposals.

Communications Committee
Submitted by Michael K. Robinson

The goal of the Communications Committee of the DTSS is to coordinate the collection and dissemination of information relevant to the needs of dermal toxicologists within the specialty section, as well as assisting the Council in outreach to the general toxicology community. We will do so through the use of this newsletter and the creation and maintenance of an SOT linked web site.

At this early stage of our formation as a specialty section, we welcome your ideas for both the content and format of our print and electronic communications. These will be continually updated and improved based on feedback received. Please send your comments and ideas to:

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We are also looking for specialty section scientists that would be interested in becoming members of the Communications Committee. Please send us your name, address, phone number, fax number and email address or sign up at the specialty section meeting to be held at the annual SOT meeting next March.

Regulatory/Policy Committee
Submitted by James N. McDougal and Robert W. Lange

Goals: Promote awareness of issues, changes or initiatives that affect dermal toxicology in the areas of occupational, environmental and pharmaceutical regulations in the US, Europe and other regions.

How to achieve goals:

1. Identify individuals within our specialty section who are familiar with regulations and policies for each of the regulatory agencies such as FDA, USEPA, OSHA etc.
2. Invite them to participate in the committee.
3. If there are gaps in coverage, invite appropriate SOT members who are not members of the specialty section to join and participate in the committee.
4. Identify policies or issues, which would have impact on dermal specialty section members and include information in newsletter, web site etc.

Suggest workshops or roundtables at annual meetings that would assist in education/ harmonization of dermal regulations.
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Awards Committee

Submitted by Eugenia Harnagea-Theophilus

A broad goal of the Awards Committee of the DTSS is to attract undergraduate and graduate students to dermal research, get them involved more by rewarding their work. In addition, this committee will try to orient students in early stages of their career path by facilitating professional networking and job finding after graduation.

Goal 1
Identify, encourage, and reward excellence in student dermal research.
How to achieve it:
1. Determine how to institute Dermal Specialty Section Student Award.
2. Define criteria for submission eligibility.
3. Set deadlines for abstract or poster copy submission.
4. Help advertise establishment of new award via SOT communication (web, Communiqué, and letter/flyer distribution).
5. Establish simple scoring system.
6. Identify 3-4 volunteers willing to judge submissions and set deadlines for review results.
7. Collect and distribute submissions to reviewers.
8. Collect results and report to the President.
9. Create award certificate and ribbon to attach at the conference on winning poster(s).
10. Announce winner(s) and advertise via SOT.
11. Place ribbons on winning poster(s) at SOT.
12. Distribute check and award certificate(s) at SOT DTSS Meeting.

Goal 2
Recruit student participants. Create a student database with students involved in dermal research. How to achieve it:At the meeting, visit posters that involve dermal research subjects, meet students, get their contact information and/or CVs and create a student information database, then distribute it to members.

Goal 3
Create a document to support students. The document could contain tips on how to get jobs, types of jobs available, what employers want, dermal journals, dermal websites, etc.

How to achieve it:
1. Create draft.
2. Identify volunteer(s) to review it.
3. Distribute document for review. Make corrections.
4. Determine final distribution means.

Please send suggestions and comments to:
eugenia.theophilus@avon.com

Methods Committee

Submitted by Robert L. Bronaugh

Goal: To promote the development, standardization and validation of assays useful in the detection of dermal adverse effects following exposure to environmental and occupational chemicals, additives, cosmetic and medicinal agents. The Committee promotes the sharing of technical expertise among members/ nonmembers of the Society and Specialty Section.

How to achieve it:

1. Conduct a survey of the members of the Dermal Toxicology Specialty Section to determine their interests and experience in the development and validation of methods for dermal toxicity assessment. The results of the survey should provide us with information about the interests and expertise of the members.

2. Explore the possibility of creating a DTSS/ Methods Committee website to post information on dermal toxicology methods. Thoughts on type of information to be posted are listed below.

- References to articles or other sources of information on dermal toxicology methods
- Listing of approved/validated alternatives methods for dermal toxicology assessment
- Listing of persons in DTSS with expertise in specific methods

Identify methods that have unresolved problems and possibly try to develop solutions to these problems.

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Student Representative Report
Submitted by Charlotte A. Smith

The Dermal Toxicology Specialty Section will initiate a new program in the coming year to increase the involvement of numerous undergraduate and graduate institutions in educating and making the next generation of scientists aware of the broad opportunities in the diverse areas of dermal toxicology.

Encouraging student membership, providing research incentives in toxicology, and enhancing curricula in basic skin research and dermal toxicology, are priorities of the Student's Liaison Committee are among the goals of our Award Committee.
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DTSS Meeting Information

The annual Dermal Toxicology Specialty Section meeting will be held in conjunction with the annual SOT meeting (March 25-29, 2001; San Francisco, CA). The exact date and time for the DTSS meeting is Tuesday March 27, 2001 from 6:00 – 7:30 P.M. Further details (such as hotel and room location) will be listed in the SOT annual meeting program and will be posted (when available) on the DTSS web site.

Member Comments/Views

We encourage your enthusiastic involvement and suggestions! Take a moment and send us your comments.

Member News

This section of the newsletter will be devoted to listing of significant news items affecting individual specialty section members. Examples will include events such as changes in professional affiliations, promotions, awards or honors, etc. We ask that members send this information to the editors via phone, fax, or email for posting in the subsequent newsletter. Thank you - eds.

Member Publications

Each newsletter will feature a listing of specialty section member publications (journal articles, book chapters, books) that have appeared in print since the last edition While the editors will do their best to survey the indexing services relative to the current membership roster, it is likely that some mistakes and omissions will occur. If we have inadvertently omitted a recent publication or listed something incorrectly, please advise us by email and we will see that this is corrected in the following newsletter. Also, we welcome your help in this endeavor. Please send us your citations for any recently published articles and books. That will aid us in our literature searching. Due to time constraints, this first newsletter includes only MEDLINE listed publications from the current calendar year. Thank you - eds.

Recent Publications (DTSS authors in bold):

Shvedova AA, **Kommineni C**, Jeffries BA, **Castranova V**, Tyurina YY, Tyurin VA, **Serbinova EA**, Fabisiak JP, **Kagan VE**. Redox cycling of phenol induces oxidative stress in human epidermal keratinocytes. *J Invest Dermatol* 114:354-364, 2000

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