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The President's Message



Hello to our DTSS membership. It is truly an honor for me to serve as your President over this year. This is an important time as we begin to prepare for a new year of DTSS plans, programs and awards. Your DTSS Officers have already been hard at work getting ready for the

upcoming annual meeting in San Francisco. This will be an exciting location for the annual meeting, but it will be hard to top last year's 50th anniversary special events and publications. I hope everybody enjoyed the numerous special programs and celebrations that occurred as SOT turned 50. We did contribute a time capsule entry that I believe truly represented our dermal toxicology expertise and heritage. Many thanks to Bill Reifenrath for all his efforts to get the time capsule submitted containing the skin diffusion cells. It was truly a bit of dermal toxicology history.

Our newly elected DTSS Officers for this year are John Graham as Vice-President and John Harbell as Councilor. We welcome them to our service. Carol Sabourin will continue her leadership as her role for this year transforms to the all important function of coordinating our program submissions for the 2013 annual meeting. Adrienne Black continues as our Secretary-Treasurer this year and her efforts keep us all on track. My thanks to Adrienne for the wonderful annual report she prepared, meeting minutes and budget analysis throughout this year. Linda Mutter continues as Councilor and will be instrumental, along with John Harbell, as the coordinating force for our awards. Lauren Mordasky Markell and Gayatri Sankaran serve as our as Post-Doctoral and Graduate Student Representatives, respectively. Both Lauren and Gayatri play an important role for DTSS as we strive to integrate our student membership interested in dermal toxicology to hopefully one day become fully engaged in the area of dermal toxicology as careers.

I would also like to thank Bill Reifenrath for serving as our President last year. He now transitions to Past-President and is still greatly involved in our DTSS efforts. (continued page 2)

(continued from page 1) Please thank Bill for his dedication to DTSS, his friendship and sincere efforts to move our specialty section forward into the next 50 years. Thanks – Bill!

DTSS is sponsoring and coordinating an advanced continuing education course in San Francisco. The course is “Cutaneous Toxicity: *In Vitro* Methods for Toxicity and Safety Evaluation.” The course coordinators are Bill Reifenrath and Cindy Ryan. We congratulate them both for putting together a successful course and facilitating the effort to get this done. Please consider getting to San Francisco early to take this course on Sunday morning, March 11th. Details are included in this newsletter.

As time progresses towards our next annual meeting, if you have any questions, concerns, requests or ideas, please feel free to contact me or any one of your other DTSS Officers. We are here to serve your needs as a specialty section and want to entertain any ideas you may have on improving our efforts as a whole. Also, please start thinking about potential ideas for the 2013 program proposals. This is one of our most important functions as a specialty section and we cannot do it without you.

Best Regards,
Jeffrey J. Yourick
DTSS President

Upcoming Conferences & Events

January 27, 2011: Deadline for *Early Bird Registration* for SOT meeting

February 3, 2012: Deadline for *Housing Registration* for SOT meeting

February 16-20, 2012: Annual Meeting of the American Association for the Advancement of Science (Vancouver, Canada)*

February 17, 2012: Deadline for *Standard Registration* for SOT meeting

February 17, 2012: Deadline for *Cancellations* for SOT Meeting

March 11-15, 2012: SOT 51st Annual Meeting & ToxExpo™ (San Francisco, CA)

April 11-14, 2012: Perspectives in Percutaneous Penetration, 13th International Conference (La Grande Motte, France)

April 19-22, 2012: 22nd Annual Meeting of the Wound Healing Society and the Symposium on Advanced Wound Care (Atlanta, GA)

May 9-12, 2012: Annual Meeting of the Society for Investigative Dermatology & 75th Anniversary Celebration (Raleigh, NC)

October 20-23, 2012: 27th Annual Clinical Symposium on Advances in Skin & Wound Care: The Conference for Prevention and Healing (Las Vegas, NV)

November 28-30, 2012: International Meeting of the International Society for Biophysics & Imaging of the Skin (Copenhagen, Denmark)

*This conference will include a symposium entitled, “*Stem Cell and Cell Therapy Approaches to Understanding Cell Injury and Wound Healing*.” This invited symposium will be based on the symposium session sponsored by DTSS at the 50th SOT Meeting entitled, “*Stem Cell Biology and Cell Therapy Approaches to Understanding Cellular Injury and Wound Healing in Dermal, Ocular, and Pulmonary Injury*.” Organized by Drs. Yourick and Graham at the request of AAAS organizers as a result of the successful symposium presented at SOT, speakers will include Jeffrey D. Laskin, University of Medicine and Dentistry of New Jersey (UMDNJ)-Robert Wood Johnson Medical School; John S. Graham, U.S. Army Medical Research Institute of Chemical Defense (USMRICD); and Marcia Simon, Stony Brook University Medical Center.

The Mission of DTSS

The objectives of the Dermal Toxicology Specialty Section (DTSS) are to provide a forum for the interaction of individuals involved in risk assessment, pharmacokinetics, dermal penetration/absorption, hypersensitivity and dermal toxicity, regulatory issues, basic skin biology and other professionals working in the field of dermal research. Members who wish to receive more information on the specialty section should contact Jeff Yourick or any of the other Officers by e-mail.

DTSS Members – Would you like to become more active in DTSS?

If you have any suggestions or recommendation on how to make our specialty section better or better able to serve your needs, please email your suggestions to:

Jeffrey Yourick
President, DTSS
jeffrey.yourick@fda.hhs.gov

Communications Committee:

The communications committee puts together this newsletter and keeps the DTSS website up to date.

Check it out at:

<http://www.toxicology.org/ISOT/SS/dtss/index.html>. We are always looking for information to share with members, such as meetings, announcements, job openings, postdoctoral positions, etc. that can be posted on the website or included in the newsletter. We are hoping to include updates on hot topics in dermal toxicology and other updates and information of interest to our members. If you have information or new ideas/suggestions for inclusion in the newsletter contact:

John Graham (john.s.graham1@us.army.mil).

Thank you to our 2011
sponsors:

Battelle
The Business of Innovation



Treasurer's Report:

The net assets at the end of the fiscal year (June 2011) are \$14,716. This amount includes \$8478 carried over from the previous year, income received and \$5000 received from Battelle for the 2012 Battelle Research Award. The income included 2011 dues of \$2310, 2011 meeting registration specialty section allocation of \$1597, interest of \$701 and miscellaneous income of \$102. The cost of the DTSS reception at the 2011 Annual Meeting was \$2305 and the cost of the awards and plaques was \$6244.

Please forward this newsletter to your colleagues that might be interested in becoming a member of DTSS!

Graduate Student/Post-Doc Report:

There are a number of events that will be held at the 2012 Annual Meeting for Graduate Students and Postdocs.

The Graduate Student Leadership Committee (GSLC) will be hosting the **Graduate Student/Postdoctoral Mixer** on Sunday March 11, 2012 from 7:30 - 9:00 PM at the Marriott Marquis. Please visit with our DTSS Student Representatives at their poster to further discuss your potential involvement in DTSS. In addition, GSLC is hosting **Tox ShowDown**, an engaging quiz game patterned off the popular long-running show *It's Academic*. This event will be held Tuesday March 13, 2012 from 7:30-9:00 PM at the Marriott Marquis. This event is sure to be both informative and entertaining and a perfect way to celebrate the halfway point of the SOT Annual Meeting. All meeting attendees are invited and no ticket is required.

"Chat with an Expert (CWAE)," also provides student participants with a great opportunity to network and gain insights from seasoned toxicologists. In 2011, this program was expanded to include "Chat (Lunch) with a Postdoc" and "Chat (Lunch) with a Graduate Student," to provide more networking opportunities for both graduate and undergraduate students. Postdoctoral scholars can sign up to meet with a more senior toxicologist and/or select to serve as a host for a group of graduate students or undergraduates. The sign-up bulletin board will be located in the registration area. More information about this opportunity can be found at: <https://www.toxicology.org/ai/spd/chatexpert.asp>

The annual **Post-doctoral Assembly Luncheon**, organized by the Postdoctoral Assembly (PDA), will be held Tuesday March 12, 2012 from 12:00 - 1:15 PM (location TBD). Postdocs can purchase a ticket for \$5 when registering for the Annual Meeting. The recipients of the Best Postdoctoral Publication Awards will be announced and postdocs who received awards this year from Specialty Sections and Regional Chapters will be acknowledged. The PDA Board members will present an overview of accomplishments and future directions for the PDA and will introduce the new board members for 2012-2013. There will be a drawing for door prizes.

If you have any questions, please feel free to contact us!

Graduate Student Representative: Gayatri Sankaran- gsankoo1@ucr.edu

Post-doctoral Representative: Lauren Markell- Lauren.K.Markell@usa.dupont.com

Student / Postdoc Opportunities

As always, we encourage you to join DTSS by paying Specialty Section dues and registering at this website: <http://www.toxicology.org/ISOT/SS/dtss/membership.html>. DTSS members have the opportunity to apply for a number of DTSS sponsored awards. The Best Paper Award is awarded in recognition of an exceptional recent peer-reviewed publication in the field of dermal toxicology and pharmacology. The Sinclair Student Abstract Award and the Stratacor-Port Royal Postdoctoral Abstract Award recognize outstanding student and postdoctoral candidates for their contribution to dermal toxicology. Two Battelle Student Research Awards are awarded to graduate students for use in research projects involving dermal toxicology. The DTSS 2012 award winners will be announced at the 2012 SOT Annual Meeting.

We are also looking for student and post doc representative positions starting May 1, 2012, for a possible 2-year tenure period. If you are interested in being a representative, please feel free to contact us! Some perks of being a representative include meeting with leaders in dermal toxicology, opportunity to interact with peers, gaining experience in working with SOT and travel grant money paid in part by SOT.

DTSS Mentoring Opportunity

With the amount of expertise, experience and career wisdom that exists within DTSS, it only seems natural to want to share this to the future leadership of SOT and DTSS. Therefore, we are looking for DTSS members who are willing to speak with students and post-docs in a career development-mentoring role. We would like to generate a list of people and contact information to be included on our website as a reference for graduate students and post-docs who are thinking about their next career move.

Do you think that this is something that you would be interested in? If so, please contact Lauren Markell at Lauren.K.Markell@usa.dupont.com for more details.



**SOT | Annual Meeting
& ToxExpo™**

March 11-15, 2012
Moscone Convention Center

SOT
2012
San Francisco
California

Program Planning for the 2013 SOT Meeting

Hello DTSS Members,

It is not too early to start planning programs for the 2013 SOT meeting in San Antonio. Proposal submissions will begin in March 2012. The list below describes the 2013 SOT meeting themes. The highest priority for accepting sessions will be given to proposals that align with these themes. However, other relevant toxicology-related topics will be considered by the scientific program committee.

Applications of Systems Biology to Toxicology
Biomarkers for Exposure Assessment, Safety Evaluation and Translational Medicine
Effects of Nanomaterials on Biological Systems
Molecular Basis of Genetic Variability and Susceptibility to Toxicants
Regulatory Science: Advancing New Approaches for Hazard Identification and Risk Assessment

If you are considering a program session and need assistance, please contact me, Carol Sabourin at sabourinc@battelle.org, or see me at the March 2012 SOT meeting. A summary of the various session types that are included in the program to help spark your thinking is as follows:

Session Types

Continuing Education

These proposals should emphasize quality presentations of generally accepted, state-of-the-art knowledge in toxicology. Courses are scheduled into a one-hour sunrise slot or a four-hour slot, either morning or afternoon. The four-hour courses have a chairperson and 3-4 speakers. Course levels are either basic, for a broad overview, or advanced, for individuals with previous knowledge of the subject.

Scientific Sessions

Symposia—Proposals for symposia should feature “cutting-edge” science: new areas, concepts, or data in the forefront of toxicology. A symposia session is 165-minutes or less, with two chairpersons and 4-5 speakers.

Workshops—Proposals for workshops will be informal, interactive presentations that highlight state-of-the-art knowledge in toxicology with an emphasis on discussion. A workshop session is 165-minutes, with two chairpersons and 4-5 speakers.

Innovations in Applied Toxicology and Toxicological Sciences—A limited number of symposia and/or workshops are designated Innovations in Toxicological Sciences (ITS) or Innovations in Applied Toxicology (IAT). ITS will introduce new technologies or scientific disciplines to the membership, and IAT will introduce innovative approaches in applied research.

Roundtables—Controversial topics are the basis of roundtable proposals. Each roundtable lasts about 80-minutes. These are moderated discussions, with 2-4 speakers providing a 3-5 minute statement and the balance of the time for questions and answers.

Informational Sessions—Sessions are not based on the outcome of scientific research, should present the latest science in toxicology, or other learning opportunities that address the professional interests and needs of toxicologists, and can include the areas of general information or planned scientific activities.

DTSS is looking forward to any and all program proposals that you may be working on for the 2013 SOT meeting. Please let us know if you need assistance in developing a program concept.

Thanks,
Carol Sabourin
President-Elect
Program Coordinator

Cutaneous Toxicity - In Vitro Methods for Toxicity and Safety Evaluation

Co-Chairs: William G. Reifenrath, Ph.D.
Stratacor, Inc.
wgr@stratacor-inc.com

Cynthia A. Ryan, BS
The Procter & Gamble Company
ryan.ca@pg.com

Course Abstract

Skin is the largest and most external organ and serves as a living, dynamic protective envelop surrounding the body. As such, it is constantly exposed to environmental hazards, including hazardous compounds; these exposures account for a major portion of all reported industrial illnesses. Skin exposures may also occur from pharmaceuticals or consumer products that are intentionally applied. In vitro methods are important as a first step to estimate skin permeation, and the potential of skin irritation and sensitization for compounds or mixtures of compounds that are directly toxic to the skin or systemically toxic. This course will provide presentations of the current status of in vitro models for cutaneous toxicity safety evaluations and the regulatory requirements for establishing the nonclinical safety of dermal drug products. This is an advanced course of interest to toxicologists involved in safety evaluations and risk assessments for chemicals that contact the skin.

Presenter: Thomas J. Franz, M.D. (SOT Member)

Title: "Use of the Excised Human Skin Model for Percutaneous Risk Assessment"

The excised human skin model has been widely used over the past half-century to evaluate the movement of drugs, cosmetic agents, and toxicants through the skin.

Collation of data from both pharmacokinetic and pharmacodynamic studies has documented the validity of the model as a stand-alone surrogate for quantifying the absorption of various organic compounds in living man. Essential to obtaining accurate in vitro data is proper duplication of all in vivo conditions that critically affect the absorption process.

Thomas J. Franz, MD
Cetero Research
franzcell@frontier.com

Presenter: Jeff Yourick, Ph.D. (SOT Member)

Title: "Direct Comparison of In Vitro and In Vivo Dermal Absorption of Several Chemicals" The intent of this presentation will be to provide an overview of approaches and methodologies for measuring the in vivo skin absorption of chemicals. Specific examples will be discussed to directly compare the measured in vitro and in vivo skin absorption of a variety of chemicals. Different parameters, such as the skin reservoir, lipophilicity, and potential metabolism, affecting in vitro skin absorption will be presented and discussed for their ability to predict in vivo skin absorption. Jeffrey J. Yourick, Ph.D., DABTFDA
jeffrey.yourick@fda.hhs.gov

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Presenter: William G. Reifenrath, Ph.D. (SOT Member)

Title: "Specialized procedures for lipophilic and semi-volatile compounds and their influence on comparative in vitro – in vivo skin absorption"

Chemicals that come in contact with the skin span a wide range of physical properties (e.g. lipophilicity and vapor pressure) and can present themselves as solids (soils, dusts or aerosols), semi-solids, liquids, or gases. As a result, specialized techniques are necessary for measuring skin absorption and current guidelines do not address the level of detail sufficiently for the complete design of study protocols. Specific laboratory procedures will be discussed, with special reference to their influence on mass balance and comparative in vitro-in vivo skin absorption.

William G. Reifenrath, Ph.D.

Stratacor, Inc.

wgr@stratacor-inc.com

Presenter: Cynthia A. Ryan, BS, MTASCP (SOT Member)

Title: "Skin Sensitization: Underlying mechanisms, hazard identification and a quantitative risk assessment approach"

The need to protect workers and consumers from adverse skin effects associated with exposure to products and/or the ingredients that they contain makes the evaluation of skin sensitization potential a key step in the overall safety assessment process. Based on our chemical, cellular and molecular understanding of allergic contact dermatitis, it is possible to carry out a quantitative risk assessment. This presentation will provide an overview of the biology of skin sensitization, a review of the currently accepted in vivo methods for hazard identification, a discussion of the various in vitro methods under consideration and will demonstrate how the general principles of risk assessment can be applied to the induction of contact allergy.

Cynthia A. Ryan, BS

The Procter & Gamble Company

ryan.ca@pg.com

Presenter: John Harbel, DPhil (SOT Member)

Title: "Skin Irritation: In Vitro Models"

Considerable progress has been made in the in vitro prediction of skin irritation potential of chemicals under the Globally Harmonized System. Human skin constructs are the test system to which the chemical is applied topically to the stratum corneum. Resulting relative tissue viability is used to predict the degree of irritation potential. These methods are now part of a draft OECD guideline and are incorporated in the EU Annex V test guidelines.

John W. Harbell, DPhil

Mary Kay Inc.

john.harbell@mkcorp.com

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Presenter: Marian W. Glynn, Ph.D. (SOT Member)

Title: "U.S. regulatory requirements for establishing the Nonclinical safety of dermal drug products"

Dermal drug products require unique toxicology programs to establish sufficient safety for marketing in the U.S. The toxicity potential of the drug product is assessed via the clinical (topical) route of administration, and the toxicity of the active ingredient is assessed following a systemic route of administration. Nonclinical toxicology programs supporting chronic use indications often define the critical path timeline for NDA-filings. The 505(b)(2) NDA pathway is a common route to marketing, since the majority of dermatology drug products are reformulation of active ingredients approved for other disease indications. Toxicology programs supporting recent NDA approvals of dermal drug products with a new chemical entity, established active pharmaceutical ingredients, and/or a combination of actives will be examined as case studies of dermal drug development for the U.S. market. Strategies for efficient development will be discussed.

Marian W. Glynn, Ph.D.
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2011 DTSS Member Publications

The following is a list of publications self-reported by DTSS members that were published in 2011:

"Topical and Transdermal Drug Delivery: Principles and Practice" (eds. Heather A E Benson & Adam C Watkinson, Wiley, Dec 2011, ISBN 978-0-470-45029-1).

"The Minipig in Biomedical Research" (eds. Peter A. McAnulty, Anthony D. Dayan, Niels-Christian Ganderup & Kenneth L. Hastings, CRC Press, Dec 2011, ISBN-10: 1439811180 | ISBN-13: 978-1439811184).

Ming M, Feng L, Shea CR, Soltani K, Zhao B, Han WN, Smart RC, Trempus CS, and He YY, 2011. PTEN positively regulates UVB-induced DNA damage repair. *Cancer Res* 71: 5287-5295.

Okuda, M., D.A. Donahue, L.E. Kaufman, J. Avalos, F.A. Simion, D.C. Story, H. Sakaguchi, R. Fautz, and A. Fuchs, 2011. Negligible penetration of incidental amounts of alpha-hydroxy acid from rinse-off personal care products in human skin using an in vitro static diffusion cell model. *Toxicology In Vitro* 25: 2041-2047

Price JA, Rogers JV, Wendling MQ, Plahovinsak JL, Perry MR, Reid FM, Kiser RC, and Graham JS, 2011. *Cutan Ocul Toxicol* 30(3):187-97.

Rogers JV, Price JA, Wendling MQ, Perry MR, Reid FM, Kiser RC, and Graham JS, 2011. An assessment of transcriptional changes in porcine skin exposed to bromine vapor. *J Biochem Mol Toxicol* 25(4):252-62.

Old Lab Pig Tales by John Graham

Being quite intrigued by Bill Reifenrath's article entitled "Old Lab Rat Tales" from the Spring 2011 newsletter, I decided a follow-up using a species higher up the phylogenetic chain was in order. I'll also stick with his military theme, as I have worked at a U.S. Army lab for over 30 years. While I was in graduate school in the 1990s and for a decade thereafter (before going over to the dark side of administration), I was conducting research on wound healing of cutaneous sulfur mustard injuries. Sulfur mustard (SM) is a potent incapacitating chemical warfare agent that remains a threat to war fighters and civilians worldwide. Cutaneous, ocular, and respiratory SM lesions may require weeks or months to heal, depending upon their severity. Indeed, persistent problems have been reported from examinations of survivors of the Iran-Iraq war of the 1980s who were exposed to this chemical. My quest was to discover a treatment regimen that could return damaged skin to optimal appearance and normal function in the shortest time. My animal model of choice was the pig, due to the many similarities between human and porcine skin. As wound healing studies tend to be somewhat lengthy, I needed to find noninvasive methods to quantify changes in the wounds over time. So rather than collecting punch biopsies serially from test subjects to study the progress of wound healing via histopathology (as was the gold standard in prior decades), we moved onto more sophisticated and humane methods. For this, I looked toward noninvasive bioengineering methods designed specifically for dermal applications. To measure areas of ulceration, wound size and shape, and wound contraction, we performed image analysis on digitized images taken of the lesions throughout the healing period. For skin color, we utilized reflectance colorimetry. To evaluate barrier function, we measured transepidermal water loss (TEWL) using evaporimetry. Cutaneous blood flow was studied with laser Doppler perfusion imaging (LDPI). To evaluate edema and thickness of scars, 2-D and 3-D high frequency ultrasound was used. Ballistometry was utilized to measure skin hardness and elasticity. My mentor in this area was Dr. Ernie Braue. I worked for him for about a decade before flying solo as a principal investigator. In a twist of events, I am now one of his Deputy Commanders. But I digress. I found this panel of tools to be quite useful in determining the efficacy of candidate treatment regimens. They are in much more common use today in dermatological research. Here are a few pictures of those tools in use.

