Fall Newsletter 2012

Dermal Toxicology Specialty Section

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In this Issue:

The President's Message

Fellow DTSS Members:

This is an exciting time for dermal toxicology as the field moves into the 21st century. There is an ever increasing volume of literature showing new advancements, insights, and surprises that move our field forward. The Dermal Toxicology Specialty Section has brought together a group of scientists with diverse interests within the field of dermal toxicology that I look forward to seeing every year at the annual meeting.

Our specialty section continues to do well as evidenced by the number of members and annual awards. What a great turnout at the 2012 Annual Meeting! Thanks to the members and students and post-docs for attending the DTSS reception in San Francisco this year. Students and post-docs represent the future of dermal toxicology and our specialty section. I would like to take this opportunity to thank Jeff Yourick for his dedicated leadership as DTSS President this past year. Jeff now transitions to Past-President and remains actively involved in the DTSS leadership. Many thanks to the retiring executive committee officers for their time and effort throughout the year; Adrienne Black as Secretary-Treasurer, Lauren Mordasky Markell as Postdoctoral Representative, Gayatri Sankaran as Student Representative, and Linda Mutter as Senior Councilor. Finally, we thank our award sponsors, Informa, Sinclair, Stratacor, and Battelle.

A warm welcome and congratulations to our incoming DTSS officers, Jens Mortensen as Vice-President Elect, Jill Harvilchuck as Secretary-Treasurer, Mike Babin as Junior Councilor, Swetha Inturi and Anand Ravindran as Graduate Student Representatives, and our most recent addition, E. Chepchumba (Chep) Yego as Post-Doctoral Representative.
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At next year's Annual Meeting, there will be a Continuing Education course proposed by Dr. Jens Mortensen, DTSS Vice-President elect. Although other DTSS endorsed proposals were not accepted for 2013, we will work again next year to submit high quality proposals.

Thank you for your continued support of DTSS and I look forward to seeing everyone in San Antonio!

Sincerely,
Carol Sabourin, Ph.D.
President, Dermal Toxicology Specialty Section

Upcoming Conferences & Events

January 25, 2013: Deadline for *Early Bird Registration* for SOT meeting
February 8, 2013: Deadline for *Housing Registration* for SOT meeting
February 15, 2013: Deadline for *Standard Registration* for SOT meeting
February 17, 2013: Deadline for *Cancellations* for SOT Meeting
March 10-14, 2013: SOT 52nd Annual Meeting & ToxExpo™ (San Antonio, TX)

November 28-30, 2012: International Meeting of the International Society for Biophysics & Imaging of the Skin (Copenhagen, Denmark)
March 1-5, 2013: 71st Annual Meeting of the American Academy of Dermatology, Miami Beach, FL
May 1-5, 2013: Wound Healing Society 2013 Annual Meeting, Denver, CO
May 8-11, 2013: International Investigative Dermatology (IID), Edinburgh, Scotland, UK
May 22-26, 2013: 10th EADV Spring Symposium, Cracow, Poland
October 3-6, 2013: 22nd EADV Congress, Istanbul, Turkey
October 10-11, 2013: Skin Forum Second Annual Metabolism Meeting, Valbonne, France

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 Carol Sabourin 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: Carol Sabourin (sabourinc@battelle.org)

Membership and Award Opportunities

We encourage you to join the Dermal Toxicology SS from the SOT website www.toxicology.org (choose the "Members/Scientists" tab, then "Manage your SOT Membership", then "Join a Regional Chapter, Specialty Section, or Special Interest Group").

DTSS members have the opportunity to apply for a number of DTSS sponsored awards: The DTSS Annual Paper of the Year Award is awarded in recognition of an exceptional recent peer-reviewed publication in the field of dermal toxicology and pharmacology. The DTSS Student Abstract Award (sponsored by Sinclair) and the DTSS Postdoctoral Abstract Award (sponsored by Stratacor) recognize outstanding student and postdoctoral candidates for their contribution to dermal toxicology. Two DTSS Battelle Student Research Awards are awarded to graduate students for use in research projects involving dermal toxicology.

The DTSS 2013 award winners will be announced at the 2013 SOT Annual Meeting.

See: www.toxicology.org/ISOT/SS/dtss/awards.asp.

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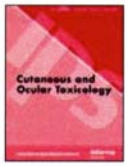

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Please forward this newsletter to your colleagues that might be interested in becoming a member of DTSS!

Graduate Student and Postdoc Report

By Swetha Inturi and Anand Ravindran

The Dermal Toxicology Specialty Section (DTSS) serves to promote knowledge in the field of dermal toxicology with specific focus on developing clinically relevant models to study mechanism and risk assessment for cutaneous exposure to protect against the plethora of environmental toxicants. DTSS provides an ideal platform for scientific interaction and collaboration in the field of Dermal Toxicology as it draws out researchers from fields as diverse as toxicology and oncology to pharmacokinetics and pharmacodynamics. For students, it provides an opportunity to not only meet and interact with the pioneers in the field of dermal toxicology but also to get recognized through a host of DTSS sponsored research awards. The DTSS network includes members from academia, industry and also governmental research organizations. The DTSS strongly encourages and supports students involved in dermal toxicology research to make use of this opportunity to get involved with the proceedings of the DTSS specialty section.
The first specialty section membership is free for students. The DTSS sponsored awards will be given out during the annual DTSS reception in the SOT conference. Students and postdocs with accepted abstracts for presentation at the 2013 Annual Meeting are eligible to apply for the DTSS Student and Postdoctoral best abstract award sponsored by Sinclair and Stratacor, respectively. Two research awards are also available exclusively for students; these awards sponsored by Battelle provide research funds for students to use in their projects focusing on dermal toxicology. Apart from these specific student awards, all DTSS members can apply for the DTSS Annual "Paper of the Year" Award and also the Informa Healthcare Award, which is presented for the best paper in dermal toxicology published in the Journal of Cutaneous and Ocular Toxicology.

For more information on the award descriptions and deadlines for submissions, please visit the DTSS website at http://www.toxicology.org/ISOT/SS/dtss/awards.asp.
To find information on becoming a member or to renew the existing membership of the Dermal Toxicology Specialty Section please visit
http://www.toxicology.org/ISOT/SS/dtss/membership.html.

Graduate Student Representatives:
Swetha Inturi (swetha.inturi@ucdenver.edu)
Anand Ravindran (axr967@psu.edu)

Treasurer's Report:

By Jill Harvilchuck

	2010-2011	2011-2012
Ordinary Income/Expense		
Income		
Contributions	10,078	5,000
Dues	2,310	2,415
Misc. Income	102	-
Registration	1,597	1,295
Interest	701	724
	-	-
Total Income	**14,787**	**9,433**
Expense		
Awards	5,850	5,850
Plaques	394	222
Executive Meetings	-	-
Miscellaneous	-	-
Newsletter	-	-
Reception	2,305	2,879
Spring/Fall Mtg	-	-
Web Development	-	-
	-	-
Total Expense	**8,549**	**8,951**
	-	-
Excess (Deficiency) of Revenue over Expenses	6,238	482
Net Assets Beginning of Year	**8,478**	**14,716**
Transfers from General Fund		
Unrestricted Net Assets at End of Year	**14,716**	**15,198**

The net assets at the end of the fiscal year (June 2012) are $15,198. This amount includes $14,716 carried over from the previous year, income received and $5000 received from Battelle for the 2013 Battelle Research Award. The income included 2012 dues of $2415, 2012 meeting registration specialty section allocation of $1295, and interest of $724. The cost of the DTSS reception at the 2012 Annual Meeting was $2879 and the cost of the awards and plaques was $6072.

Comments to new FDA guideline

By Jeff Yourick, FDA (jeffrey.yourick@fda.hhs.gov)
Safety of Nanomaterials in Cosmetic Products
Guidance for Industry
Draft Guidance
Food and Drug Administration

In April of 2012, the Center for Food Safety and Applied Nutrition at the US FDA issued draft guidance for industry comment on the "Safety of Nanomaterials in Cosmetics Products." There are several points addressed in the draft guidance that relate to the dermal toxicology of nanomaterial testing that might be of interest to our DTSS membership. The entire draft guidance can be found at www.fda.gov/Cosmetics/GuidanceComplianceRegulatoryInformation/GuidanceDocuments. The guidance to industry and others attempts to outline FDA's current thinking related to establishing the safety of nanomaterials in cosmetic products. The guidance intends to assist in developing a framework for identifying possible safety issues related to inclusion of nanomaterials in cosmetic products. The FDA regulatory requirement for cosmetic products states that it is the responsibility of the manufacturer of a cosmetic product to ensure that the product is not misbranded or adulterated. There is no premarket approval required from FDA prior to the marketing of a cosmetic product, but the manufacturers or distributors should have all the information needed to substantiate the safety of the cosmetic before marketing.

For nanomaterials, the toxicity testing should consider the intended use, exposure levels, and hazard for an ingredient or formulation. Traditional toxicity safety testing paradigms may need to be altered by manufacturers to address nanomaterial qualities. New safety tests may need to be developed to consider specific safety concerns. The safety assessment needs to consider both the intended route of exposure to the cosmetic product and the potential nanomaterial bioavailability, uptake, absorption and distribution. The safety test(s) used should also address the nanomaterial's chemical structure, physico-chemical properties, purity/impurities, product formulation, agglomeration, size distribution, stability, relevant exposure conditions, and other pertinent properties that might affect safety.

For skin exposure to cosmetic products containing nanomaterials, dermal studies should include both intact skin and diseased or damaged skin. This should be done to investigate whether there might be an enhanced degree of skin penetration and the potential for increased systemic absorption. This is important since little skin penetration may occur through intact skin, but once the skin barrier layer is changed through disease or damage, there may be increased penetration of nanomaterial ingredients through the skin. This could potentially change the safety profile of a nanomaterial ingredient which has enhanced local delivery to the skin and enhanced systemic bioavailability.

FDA recommends conducting at least acute toxicity, skin irritation, dermal photoirritation, skin sensitization, mutagenicity/genotoxicity, repeated dose (21-28 days) toxicity, subchronic (90 days) toxicity testing and phototoxicity. Additional toxicity testing may be necessary dependent upon initial test results. FDA recommends evaluation of in vitro methods for cosmetic product and ingredient safety testing and applying these in vitro methods to nanomaterial testing when appropriate.
It is recommended that the test methods should address the specific properties and functions of the nanomaterial used in a cosmetic product. The safety testing should evaluate the contribution of the physico-chemical properties to the nanomaterial safety and relevant toxicity endpoints as relates to realistic ingredient exposure level found in the finished product.

For more details and specific recommendations on the safety assessment and testing of nanomaterial cosmetic ingredients, please refer to the draft guidance document that can be found on the FDA website.

DTSS awards given out at the DTSS Reception at the 2012 SOT Annual Meeting in San Francisco:
The DTSS awards ceremony was organized by councilors Linda Mutter and John Harbell.

Wally Hayes presented the Informa Paper of the Year Award for the following paper:
Madsen JT, Vogel S, Johansen JD and Andersen KE. 2011. Encapsulating contact allergens in liposomes, ethosomes, and polycaprolactone may affect their sensitizing properties. Cutan Ocul.Toxicol. 30:116-123.

The DTSS Best Paper of the Year award went to Lauren Markell for this paper:
Markell LM, Masiuk KE, Blazanin N and Glick AB. 2011. Pharmacologic inhibition of ALK5 causes selective induction of terminal differentiation in mouse keratinocytes expressing oncogenic HRAS. Mol. Cancer Res. 9:746-756.

The Sinclair Student award was given to Senthilkumar Prumal Kuppusamy for the work: Telomerase Reactivation with Increased cMYC, hTERT and hTR gene expression reverses telomere shortening in human skin keratinocytes: A potential mechanism of PCB carcinogenesis. (Human Toxicology, University of Iowa, IA).

The Stratacor Post Doctoral award was handed over by Bill Reifenrath to Jamie Bernard for the work: TLR3 is critical for the inflammatory cytokine sunburn response by detecting ultraviolet light damage to a non-coding RNA. (Department of Toxicology, Rutgers University, NJ). An engraved diffusion cell was presented along with the check.

The Battelle Student Research Awards were presented by Carol Sabourin to two students:
Swetha Inturi: Investigating the mechanisms involved in the repair of nitrogen mustard-induced DNA double strand breaks. (Department of Pharmaceutical Sciences, University of Colorado, Aurora, CO)
Vincent Ramirez: Heat Shock Proteins A1A and A6 are transcriptionally regulated by TNIP1 in keratinocytes. (School of Pharmacy, University of Connecticut, Storrs, CT)

DTSS Awards available for 2013:
Please, visit the Dermal Toxicology Specialty Section website for information about available awards for 2013:
- Dermal Toxicology Specialty Section Student and Postdoctoral Awards
- Dermal Toxicology Specialty Section Annual "Paper of the Year" Award
- Dermal Toxicology Specialty Section Battelle Student Research Award
- Dermal Toxicology Specialty Section Informa Healthcare Award

Further information can be obtained from DTSS Councilor John Harbell (John.Harbell@mkcorp.com), to whom the applications should be sent. Deadline for the applications is January 31, 2013.

2013 SOT Annual Meeting: Advanced Continuing Education Course sponsored by DTSS

***(Endorsed by:** In Vitro and Alternative Methods Specialty Section)*

The REACH Regulation and Safety Assessment Approaches for Chemicals that Come in Contact with the Skin

Chairpersons:
Jens Thing Mortensen, CiToxLAB Scantox, Lille Skensved, Denmark,
Jon Heylings, Dermal Technology Laboratory Ltd., Keele University Science Park, UK

REACH (**R**egistration, **E**valuation, **A**uthorisation and Restriction of **Ch**emical substances) is the European Union regulation on chemicals and their safe use, which came into force on June 1, 2007. The aim of REACH is to improve the protection of human health and the environment through better and earlier identification of the intrinsic properties of chemical substances. REACH places greater responsibility on the industry to manage the risks from chemicals and to provide safety information on their substances. The regulation will come gradually into force in the period up to 2018. Under REACH 30-40,000 new and existing chemicals will have to be (re)classified and registered. The regulation requires companies to conduct risk assessment and safety classification with a minimal use of experimental animals and to share information via databases managed by the European Chemicals Agency (ECHA). The skin (together with the respiratory system) is important as a route of chemical exposure, and as a target organ for toxicity induced by chemicals. Since under REACH so many chemicals need to be evaluated, it is important to use and develop testing methods that reliably predict human exposure and safety, while minimizing the use of experimental animals. An overview of the REACH regulation and its practical implications for toxicological safety evaluation of chemicals marketed in Europe will be given. Efforts to develop new methods and validation status of alternative methods that will limit the number of experimental animals to be used will be highlighted. Specifically, state-of-the art investigational methods within dermal toxicology will be discussed since the skin is very important, both as a barrier to exposure, and as a target organ. Practical examples of the use of the collected dermal safety data in the risk assessment of chemicals under REACH will be given.

Introduction.
Jens Thing Mortensen, CiToxLAB Scantox, Lille Skensved, Denmark

The REACH Process and Dermal Safety Testing.
Laura Rossi, European Chemicals Agency (ECHA), Helsinki, Finland.
This session will give an overview of the REACH process, including background, legislation, political, economical and practical implications, and animal welfare issues. The practical risk assessment process will be illustrated, with specific view to the dermal aspects of risk assessment of chemicals under REACH.

Advanced Continuing Education Course sponsored by DTSS (continued from page 8)

Dermal Corrosivity and Irritation Testing Under REACH: Application of Valid Non-Animal Test Methods.

Hans Raabe, Institute for In Vitro Sciences, Gaithersburg, MD.

REACH regulations specifically require that skin irritation testing is performed, but that in the first instance, no animals should be treated without some evidence that the chemical is not corrosive. Before any animal testing is considered, the skin irritation classification of ingredients and chemicals should be assessed by a variety of in silico methods, physical/chemical characteristics, readacross and/or by testing using valid and appropriate in vitro methods. Several in vitro skin corrosivity and skin irritation methods are currently accepted OECD test methods for classification and labeling of chemicals and simple mixtures. The methods and the regulatory status of corrosivity and irritation testing under REACH will be presented.

Skin Sensitization Testing Under REACH.

David J. Esdaile, CiToxLAB Hungary, Veszprem, Hungary.

Under REACH chemicals present in the EU at over one tonne per annum require "Skin sensitization evaluation by local lymph node assay" (LLNA). The protocol used for EU registration usually requires 3 groups of four mice to be exposed to organic solutions of the test material and the proliferation at the pooled local lymph nodes assessed relative to controls as an indicator of skin sensitization. A reduced form of the LLNA has been proposed as a further refinement for use within REACH. The use of chemical structural information, in vitro approaches, the in vivo methods and refinements for testing difficult materials, and the regulatory aspects of the methods will be presented.

Skin Penetration Testing Under REACH: Methods and Use in Risk Assessment.

Jon Heylings, Dermal Technology Laboratory Ltd., Keele University Science Park, UK.

Although skin penetration assessment is not specifically required under REACH, there is a requirement for risk assessments, which includes human exposure aspects. For many chemicals, it is likely that to make a meaningful risk assessment, a key factor could be the rate and extent of systemic exposure by the dermal route, following a typical use scenario for the chemical. Therefore, measurement of skin penetration of the chemical of interest in the exposed population is an important parameter. Another key issue in the design of such studies is that the investigation should involve the actual in-use product under expected occupational exposure conditions. There are obvious reasons for this in terms of the loading concentration of the test chemical and how this affects skin penetration. Furthermore, the adjuvants present in the finished product can themselves affect the permeability properties of the skin in addition to their own thermodynamic effects on the dermal delivery of the chemical. The current status, OECD test guidelines and practical aspects of in vitro models to determine dermal absorption and their applicability to the REACH process will be presented.

Recent DTSS Member Publications

The following is a list of publications self-reported by DTSS members that were published in 2011 or 2012:

Saathoff JG, Inman AO, Xia XR, Riviere JE, Monteiro-Riviere NA. In vitro toxicity assessment of three hydroxylated fullerenes in human skin cells. Toxicology In Vitro 25:2105-2012. PMID: 21864474.

Xia XR, Monteiro-Riviere NA, Mathur S, Xuefeng S, Xiao L, Oldenburg S, Fadeel S, Riviere JE. Mapping the surface adsorption forces of nanomaterials in biological systems. ACS Nano 5: 9074-9081, 2011. PMID: 21999618.

Boehm RD, Miller PR, Hayes SL, Monteiro-Riviere NA, Narayan RJ. Modification of microneedles using inkjet printing. American Institute of Physics Advances 1(2):22139, 2011. PMID: 22125759.

Monteiro-Riviere NA. Commentary on transcutaneous delivery. WIREs Nanomedicine and Nanobiotechnology 3: 439-440, 2011.

Murray AR, Kisin E, Inman AO, Young SH, Burks T, Uheida A, Tkach A, Waltz M, Castranova V, Fadeel B, Kagan VE, Riviere JE, Monteiro-Riviere, NA, Shvedova AA. Oxidative stress and dermal toxicity of iron oxide nanoparticles. Cell Biochemistry and Biophysics (In Press) PMID: 22669739.

Prow TW, Monteiro-Riviere NA, Inman AO. Grice JE, Chen X, Zhao X, Sanchez WH, Gierden A, Kendall MA, Zvyagin AV, Erdmann D, Riviere JE, Roberts MS. Quantum dot penetration into viable human skin. Nanotoxicology 6:173-185, 2012. PMID: 21456897.

Gittard SD, Chen B, Xu H, Ovsianikov A, Chichkov BN, Monteiro-Riviere NA, Narayan RJ. The effects of geometry on skin penetration and failure of polymer microneedles. Journal of Adhesion Science and Technology DOI: 10.1080/01694243.2012.705101, 1-17, 2012.

Monteiro-Riviere NA and Larese Filon F. Effects of Engineered Nanomaterials on Skin. In Adverse Effects of Engineered Nanomaterials (Eds. B Fadeel, A. Pietroiusti, and A Shvedova), Elsevier, NY, Chapter 11, 185- 207, 2012.

Monteiro-Riviere NA, Linder KE, Inman AO, Saathoff JG, Xia XR, Riviere JE. Lack of hydroxylated fullerene toxicity after intravenous administration to female Sprague-Dawley rats. Journal of Toxicology and Environmental Health A. 75(7): 367-3673, 2012. PMID: 22524592.

...continued on page 11.

Recent DTSS Member Publications ...continued from page 10.

Baynes R, Riviere J, Franz T, Monteiro-Riviere N, Lehman P, Peyrou M, Toutain P. Challenges obtaining a biowaiver for topical veterinary dosage forms. J Veterinary Pharmacology and Therapeutics. 35:103-114, 2012. PMID: 22413798.

Boehm RD, Chen B, Gittard SD, Chichkov BN, Monteiro-Riviere NA, Nasir A, Narayan RJ. Two-photon polymerization/micromolding of microscale barbs for medical applications. Journal of Adhesion Science and Technology. DOI: 10.1080/01694243.2012.693828, 1-12, 2012.

Skoog SA, Sumant A, Monteiro-Riviere NA, Narayan RJ. Ultrananocrystalline diamond-coated microporous silicon nitride membranes. JOM 64 (4): 520-525, 2012.

Riviere JE Leavens TL, Brooks JD, Monteiro-Riviere NA. Acute vascular effects of nanoparticle infusion in isolated perfused skin. Nanomedicine: Nanotechnology, Biology and Medicine 8:428-431, 2012. PMID: 22406185.

Leavens TL, Monteiro-Riviere NA, Inman AO, Brooks JB, Oldenburg, Riviere JE. In vitro biodistribution of silver nanoparticles in isolated perfused porcine skin flaps. Journal of Applied Toxicology (In Press). DOI 10.1002/jat.2750. PMID: 22760951.

Karadzovska D, Brooks JD, Monteiro-Riviere NA, Riviere JE. Predicting skin permeability from complex vehicles. Advanced Drug Delivery Reviews (In Press). PMID: 22342772.

DTSS Battelle Student Research Award winner Vincent Ramirez with Carol Sabourin and John Harbell.

DTSS Battelle Student Research Award winner and current DTSS Student Representative Swetha Inturi.

DTSS Best Paper of the Year Award 2012 winner Lauren Markell with DTSS councilor John Harbell.

Stratacor Post Doctoral award winner Jamie Bernard with Bill Reifenrath from Stratacor Inc. and councilor John Harbell.

DTSS Past-President Jeff Yourick with new DTSS president Carol Sabourin.

The Sinclair Student award winner Senthilkumar Prumal Kuppusamy and Jessica Hiemstra from Sinclair Bioresources.

Many DTSS members in a very small room at the DTSS reception at the 2012 SOT Annual Meeting in San Francisco.