

[Dermal Toxicology Specialty Section]

ANNUAL REPORT: 2021-2022
May 1, 2021 to April 30, 2022

I. Officers/Committees:

<u>Officers</u>	<u>2021-2022</u>	<u>2022-2023</u>
President:	Sara Farahmand	Sara Farahmand
Vice President:	Sam Tadepalli (half year)	Kimberly Norman
Vice President-elect:	Vacant	Sarah Gilpin
Secretary:	Yoke-Chen Chang	Jamie Coleman
Treasurer:	Yoke-Chen Chang	Jamie Coleman
Past President	Neera Tewari-Singh	N/A
Councilors:	Neera Tewari-Singh Michael D. Southall Gabriel Knudsen	Michael D. Southall Prajakta Shimpi
PDA Representative:	N/A	N/A
Postdoctoral Representative-Elect:	Satyendra Singh	Vacant
Grad Student Representative:	Valeria Cota	Valeria Cota

II. 2021 Membership total: 132

III. Key Outcomes in 2021-2022:

Activities:

A. 2021 SOT Annual Meeting Activities (e.g., courses, scientific sessions, or virtual receptions):

DTSS Reception Slides and Poster

The reception slides and poster are posted on the DTSS website.

Dermal SS sponsored one workshop:

Building the Toolbox: Three-Dimensional Tissue Constructs as Problem-Solvers

Tuesday March 29th (8:00 AM – 10:45 AM)

Chair(s): Erin Hill, IIVS; and Kristie Sullivan, PCRM

B. 2022 Awards Information:

Informa Healthcare Award:

(S)-(-)-N-[2-(3-Hydroxy-2-oxo-2,3-dihydro-1H-indol-3-yl)-ethyl]-acetamide inhibits melanoma cell growth through inducing apoptosis and autophagy. Dawei Wang, Qing Li, Yue Wang, Yuanchun Jiang. *Cutaneous and Ocular Toxicology*, 2021 Dec; 40(4):293–299.

Annual Paper of the Year Award:

Anneliese Striz, PhD

Cytotoxic, genotoxic, and toxicogenomic effects of dihydroxyacetone in human primary keratinocyte

Postdoctoral Award sponsored by Stratacor:

Alexandra Nail, PhD

Chronic Arsenic Exposure Reduces DNA Damage Response Activation in Human Keratinocytes

DTSS Postdoctoral Fellow Award sponsored by Edgewell Personal Care:

Neha Mishra, PhD

Network of miRNAs regulating inflammatory and fibrotic responses in sulfur mustard-induced skin injuries in mice

DTSS Student Award sponsored by Edgewell Personal Care:

Gisselle Rodriguez

Toxic Effects of Cosmetic Products through Epigenetic Reprogramming of Dermal Stem Cells

C. Other Educational Activities Conducted (e.g., webinars, in person meetings, etc.):

Title:2022 Dermal Toxicology Specialty Section Webinar: International Advances in Alternatives and a Next Generation Risk Assessment Case Study for Skin Allergy.

Date and Time: April 19, 2022

Abstract:

Coordinated global efforts over the last several decades have resulted in the development and adoption of alternatives to traditional animal tests for dermal hypersensitivity assessment. Following the adverse outcome pathway (AOP) framework, several new approach methodologies (NAMs) mapped to key molecular and cellular events in the AOP have been validated and combined to yield “defined approaches”, which were shown to provide superior performance to the existing animal tests when compared to human data for hazard and potency categorization. However, regulatory and industry needs extend beyond classification to deriving points of departure that will facilitate quantitative risk assessment. Next Generation Risk Assessment (NGRA) is an exposure-led, hypothesis-driven approach which integrates NAMs. This hypothetical skin allergy risk assessment case study of two consumer product exposures—0.1% coumarin in a face cream and 1% coumarin in a deodorant—demonstrates the application of a skin allergy NGRA framework which incorporates the Skin Allergy Risk Assessment (SARA) Model. The SARA Model is a Bayesian approach which allows prediction of a human relevant point of departure (PoD) (the HRIPT dose with a 1% chance of sensitisation or ED01 [$\mu\text{g cm}^{-2}$]) based upon any combination of HRIPT, LLNA, DPRA,

KeratinoSens, h-CLAT or U-SENS data. Through incorporation of benchmark exposure information, the SARA Model can be used to calculate a risk metric for a consumer relevant exposure. This case study demonstrates how integrating a computational model and NAM data in a weight of evidence can build confidence in robust decision making.

Title: Dermal Absorption and Toxicology *In Vitro*; What are the Tests, How Can We Use Them and Where are the Innovations?

Date and Time: Tuesday, February 1, 2022 at 12:00 PM ET

Speaker: Clive Roper, PhD,
Director Roper Toxicology Consulting Limited

An overview of the state of the science *in vitro* approaches for dermal absorption and dermal toxicology assessment will be provided by a thought leader in the field.

Abstract:

Dermal absorption and toxicology *in vitro*; what are the tests, how can we use them and where are the innovations? Some of the earliest toxicology tests were developed to identify topical hazards (e.g., the Dermal Draize test and the Guinea Pig Maximisation test). There have been many years of development of new assays to create more human relevant data. For example, skin absorption has been evaluated in the human skin since the 1960s using the Franz diffusion cell resulting in regulatory acceptance by FDA, EPA, and the European Agencies, particularly after the creation of the OECD 428 in 2004. There has been a plethora of dermal toxicology tests developed to identify acute toxicity outcomes such as using the EpiDerm 3D model for skin irritation (OECD 439) and corrosion (OECD 431) to replace the Draize irritation tests or the 3T3-NRU (OECD 432) to screen and often replace phototoxicity testing. The road to replacement of the skin sensitization animal tests (including the LLNA) has been slower due to the complexity of this disease to model. However, in 2021, a defined approach for skin sensitization was published (OCED 497) and this identifies the different testing required including the DPRA, KeratinoSens™, h-CLAT assays. This seems to have resolved the acute testing needs, but where can there be further innovation? The skin irritation test (OECD 439) is only suitable for chemicals and not formulations and mixtures and is of particular interest for resolution by US EPA. What about more chronic questions? The skin absorption test (OECD 428) has been extensively used for 24 h, but the rat *in vivo* test is used up to 168 h, can this *in vitro* test system be used for longer time periods in regulatory toxicology? How can further innovations take place against the concerns about the lack of human relevance of the current animal tests?

D. Communication Activities:

Newsletter publication frequency: DTSS Fall 2021 Newsletter

Website highlights: Events section including past webinar slide deck and recording, DTSS 2021 Reception Slides and Poster

E. Mentoring activities:

N/A

IV. Feedback and Ideas:

A. How might SOT better support your group's activities (perhaps something the Society should be doing that we currently do not do, or do not do effectively, that would be of importance/benefit to the members of your component group?):

Note: If funding is listed, please provide detail on the membership need that the funding would support.

- *Expediting the approval process of webinar requests, also allowing non-SOT member speakers would help us increase the number of webinars and educational opportunities*