



Dermal Toxicology Specialty Section
OF THE SOCIETY OF TOXICOLOGY



PRESIDENT'S MESSAGE

Dear DTSS Community,



As I conclude my term as DTSS President and transition to Past-President/Councilor, I want to express my sincere gratitude for the opportunity to serve this vibrant and dedicated community. It has been a privilege to work alongside our Executive Board and with members who are deeply committed to advancing the field of dermal toxicology. Together, we have focused on strengthening the DTSS foundation while creating more opportunities for member engagement and scientific exchange. I am confident this foundation will continue to flourish under the leadership of the next Executive Committee.

A key priority during my term has been expanding both the amount and diversity of programming available to our members so that DTSS activities remain relevant, timely, and consistent. Over the past year, we increased the number of webinars and strengthened the content delivered through our biannual newsletter, allowing us to share scientific insights more regularly and keep members connected to developments across dermal toxicology. Our webinar series has been especially well received, with each session attracting more than 100 live participants and many more accessing the recordings afterward. One of the most rewarding aspects of expanding this programming has been the opportunity to collaborate with DTSS members across the community. Through planning webinars and events, I had the chance to meet and work with several members I had not previously connected with – an experience that highlights the strength of our section and the value of member engagement.

We also gathered valuable insights through our recent membership survey, which highlighted interest in emerging scientific topics and identified new volunteers eager to contribute to DTSS activities. These perspectives will help shape future programming and strengthen member involvement moving forward. While our approach continues to evolve, we know there is still more work to do. We remain committed to continuous improvement and to building a strong, engaged foundation that will support DTSS programming and member interaction well into the future. I encourage more members to raise their hand and get involved – the success of DTSS depends on the ideas, expertise, and participation of our community.

Looking ahead, 2026 is shaping up to be an exciting year for DTSS. Plans are already underway for additional webinars, events highlighting award winning research, and new initiatives designed to foster collaboration across the section. Later this year, we will also launch a DTSS Photo/Image Contest. Contest details will be available in future messaging.

I would also like to express our sincere appreciation to our DTSS sponsors. Their support allows us to host a successful DTSS reception at the SOT Annual Meeting and provide DTSS Travel Awards, which help students and trainees attend the meeting and share their research with the broader toxicology community. I encourage members to consider contributing to support trainee travel awards or reception activities.

It has truly been an honor to serve as your President, and I remain excited to stay involved in helping DTSS move forward.

Stay connected through the DTSS website and our LinkedIn posts, and don't hesitate to reach out.

A.J. Cuevas, PhD, MPH, DABT, ATS, ERT
2025-2026 DTSS President

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Considering Dermal Toxicology Part 1 & 2

Thank you DTSS Sponsors

2026 SOT Annual Meeting Information

DTSS Happenings at SOT Attend & Support

DTSS Reception – Mon. Mar. 23rd 6-7:30p
Grand Ballroom 13, Marriott Marquis

Symposium Session – In Vitro Testing for
*Skin Sensitization of Mixtures: Where
Science Stands Today.*

Wed. Mar. 25th 8-10:45a Rm. 7B Conv. Ctr.

Dermal Toxicology Poster Session

Mon. Mar. 23rd 9:15-11:45a Exhibit Hall B

Edgewell Travel Awardee Posters:

- **Kevin Ozkuyumcu:** *Sulfur Mustard Disrupts Epidermal and Dermal Structures in Hairless Guinea Pig Skin*
#3245 Mon. Mar. 23rd 9:15-11:45a
- **Sadegh Modaresi:** *Human Evaluation and Comparison of In Vitro Permeation Testing (IVPT), Barrier Function, and Lipid Composition in Alternative Skin Models and Excised Human Skin*
#5193 Wed. Mar. 25th 1:45-4:15p

RIFM Trainee Awardee Poster

Catalina Gaviria: *Human skin equivalents reveal multiple cell death modes in mustard agent-induced dermal injury*
#3262 Mon. Mar. 23rd 9:15-11:45a



2026 DTSS TRAINEE AWARD RECIPIENTS

DTSS recognizes exceptional publications and outstanding contributions to skin-related research by full members, Graduate Students, Postdoctorates



Join us in congratulating this year's award winners!



Edgewell Personal Care Awards

Sadegh Modaresi, PhD, National Center for Toxicological Research US FDA

Title: Human Evaluation and Comparison of In Vitro Permeation Testing (IVPT), Barrier Function, and Lipid Composition in Alternative Skin Models and Excised Human Skin

Poster #5193 - K757 Wed. March 25th 1:45-4:15pm

Background and Purpose: *In vitro* methods are available to evaluate the amount and rate of skin absorption of topical products and contribute to their safety and/or efficacy assessments. Excised human skin (EHS) is the "gold standard" for *in vitro* permeation testing; however, due to high cost and supply shortages, there is a need to find suitable alternatives as skin barrier models. Previously, we evaluated the performance of a subset of skin models for *in vitro* permeation testing (IVPT) over 6 hours. In this study, we expanded our research by employing automated diffusion equipment with flow-through cells to perform IVPT for 24 hours using commercially available skin models, including an artificial membrane, reconstructed human epidermal and full-thickness models, excised minipig skin, and EHS.

Conclusions: Overall, the TEWL and IVPT data suggest that the reconstructed skin models have a weaker barrier than EHS and minipig skin, although the magnitude of differences varies by model and test compound. The lipidomics data, together with the IVPT, TEWL, and histology data, may help guide further optimization of reconstructed human skin to match the barrier properties of EHS. The systematic comparison of alternative skin models and EHS contributes to the evaluation of the potential use of these models as new approach methods (NAMs) to predict dermal absorption of FDA-regulated compounds.



Kevin Ozkuyumcu, PharmD, RPh, Rutgers University

Title: Sulfur Mustard Disrupts Epidermal and Dermal Structures in Hairless Guinea Pig Skin

Poster #3245 - E376 Mon. March 23rd 9:15-11:45am

Background and Purpose: Sulfur mustard (SM; bis(2-chloroethyl) sulfide) is a highly reactive bifunctional alkylating agent and potent vesicant that causes severe damage to the skin. Following dermal exposure, SM induces erythema, inflammation, epidermal erosions, and blistering. In this study, we investigated the temporal progression of SM injury in the hairless guinea pig, a translationally relevant animal model for studying SM-induced cutaneous injury. Hairless guinea pig skin closely resembles human skin, possessing a thick epidermis and a well-developed dermis containing superficial microvessels and secondary appendages. Proteins essential for skin homeostasis were visualized following injury including elastin, a marker of skin elasticity, myeloperoxidase (MPO), a marker of inflammation, and keratin 5 (K5), an epithelial scaffolding protein. The objective of this work was to characterize the pathogenesis of SM-induced skin injury and the subsequent wound-healing responses in the hairless guinea pig.

Conclusions: SM exposure in hairless guinea pig skin produced a well-defined sequence of injury and repair. Early lesions were characterized by extensive epidermal necrosis, dermo-epidermal separation, and an acute neutrophilic infiltrate, accompanied by vascular damage in the dermis. By 20d post-SM, partial re-epithelialization and remodeling of the epidermis were evident, though dermal elastic fibers remained fragmented and collagen organization was altered. At 66d, the skin exhibited structural remodeling marked by dense, compact collagen deposition with a loss of elastic fibers and adnexal structures, indicative of scar formation. The transient expression of MPO and restoration of K5 confirmed a shift from acute inflammation to tissue repair and re-establishment of epidermal integrity. Overall, these findings demonstrate a progressive transition from acute injury to chronic dermal remodeling following SM exposure.



The Research Institutes of Fragrance Materials Travel Award

Catalina Gaviria, Ph.D., Wake Forest Institute for Regenerative Medicine

Title: Human skin equivalents reveal multiple cell death modes in mustard agent-induced dermal injury



Poster #3262 - E394: Mon. March 23rd 9:15-11:45am

Background and Purpose: Chemical warfare agents represent a major global health concern due to their high morbidity and mortality. Particularly, mustard agents pose a particularly serious public health threat, as they can be easily produced, cause severe injury and lack effective medical countermeasures. While apoptosis and necrosis are known mustard-induced cell death pathways, the involvement of other modes of cell death, such as parthanatos, pyroptosis, necroptosis, and ferroptosis, remains largely unexplored. Understanding these diverse cell death modes could reveal new options for therapeutic intervention; however, progress has been limited by the lack of physiologically relevant human skin models. To address this limitation, we developed a three-dimensional human skin equivalent (HSE) that accurately replicates human skin biology and enables the study of vesicant-induced injury and cell death mechanisms.

Conclusions: Our findings support the use of HSEs as robust and physiologically relevant platform for studying skin pathogenesis of vesicant exposure. HSEs exhibited dose-dependent injury responses consistent with human pathology while revealing the involvement of diverse cell death pathways, offering potential targets for therapeutic development. By incorporating multiple cell types, these models provide a more authentic representation of the complex host responses to vesicant agents. Collectively, our results highlight HSEs as an innovative new approach methodology to reduce the use of animals for studying mechanisms of vesicant injury and screening medical countermeasures. It is anticipated that HSEs will make substantial contributions to the fundamental understanding and treatment of toxicological insults in human skin.

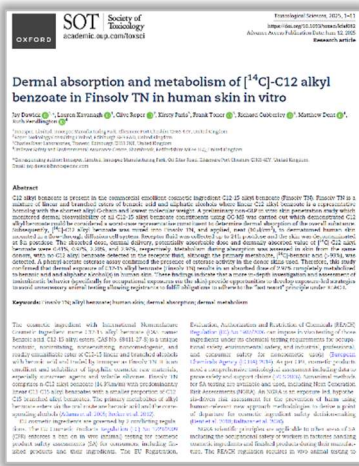


2025 Paper of the Year Awards - Congratulations Authors

By: A.J. Cuevas, PhD, DABT, MPS, ATS, ERT



Dermal Toxicology Specialty Section Paper of the Year



Jay Dawick, MS, et. al.

Dermal absorption and metabolism of [14C]-C12 alkyl benzoate in Finsolv TN in human skin *in vitro*

Innospec, Limited Ellesmere Port Cheshire UK

This important work investigates the dermal absorption and metabolism of C12 alkyl benzoate, a key component of the cosmetic emollient C12-15 alkyl benzoate (Finsolv TN), using an *in vitro* human skin model to better understand exposure and safety. The study found that very little of the compound penetrates human skin, with an estimated dermal absorption of ~3% of the applied dose, while the majority remains on the skin surface and is removed during washing. Importantly, the small fraction that does penetrate the skin is rapidly metabolized by skin enzymes into benzoic acid and fatty alcohols, substances with well-established safety profiles. These findings support the use of human-relevant toxicokinetic data and exposure-led risk assessment approaches to evaluate cosmetic ingredient safety, demonstrating that detailed dermal absorption and metabolism studies can strengthen safety assessments while reducing the need for animal testing under regulatory frameworks such as REACH.

Informa Healthcare Paper of the Year in Dermal Toxicology

Fuqin He, et. al.

Tobacco ethanol extract accelerates wound healing through anti-inflammation and promoting angiogenesis

Institute of Pharmaceutical Innovation, Hubei Province Key Laboratory of Occupational Hazard Identification and Control, School of Medicine, Wuhan University of Science and Technology, Wuhan, China



He *et al.* investigated the potential of tobacco ethanol extract (TEE) to accelerate skin wound healing and found that the extract promotes tissue repair through anti-inflammatory and pro-angiogenic mechanisms. In a mouse model, topical application of 5% TEE showed no significant liver or kidney toxicity and improved wound closure, reaching 95.26% healing by day 12 compared with 89.20% in the control group. Histological and molecular analyses demonstrated that TEE reduced inflammatory markers such as IL-6 and TNF- α , increased collagen deposition, and enhanced angiogenesis indicated by higher CD31 expression, all key processes involved in effective wound regeneration. The extract contains bioactive compounds including chlorogenic acid and nicotine, which may contribute to these combined effects. Overall, the findings suggest tobacco-derived extracts could represent a promising topical treatment for wounds while also providing a potential value-added use for tobacco waste.

Please join us in congratulating these authors on their exceptional achievements and significant contributions to advancing the field of dermal toxicology. Selection for this recognition followed a highly competitive review process, with numerous outstanding submissions evaluated by the committee—making this accomplishment particularly noteworthy. Their work stood out for its scientific rigor, innovation, and clear impact on advancing our understanding of dermal toxicology and safety science. Contributions of this caliber help move the field of toxicology forward and set a high standard for future research.

All award recipients will be highlighted during two upcoming DTSS spring webinars, providing the community an opportunity to hear directly from the honorees about their research and the impact of their work. Please watch for additional details as they become available.

We also encourage members to consider applying for or nominating colleagues for a DTSS award. The submission deadline is January 8th. You can view the available awards and their descriptions here: <https://www.toxicology.org/groups/ss/DTSS/award.asp>.

Additionally, please consider volunteering to help judge award applications—we are always looking for judges!



Microplastics and Skin Disease: What the Gut-Skin Axis Means for Dermal Toxicology

By Alma Avila Oropeza, Department of Environmental Medicine, University of Rochester, School of Medicine & Dentistry

Could tiny plastic particles in our environment be affecting skin health? In their recent paper, Zhang *et al.* (2025) explore this possibility by examining how microplastics may influence skin disease through the gut-skin axis. Their work suggests that ingested microplastics may alter gut microbes, disrupt immune signaling, and indirectly impact skin barrier integrity.

Microplastics and the Gut-Skin Axis: An Emerging Connection: Microplastics (MPs) are increasingly recognized as an emerging environmental contaminant with potential implications for human health. Recent work by Zhang *et al.* (2025) highlights a novel perspective: microplastics may influence skin disease through the gut-skin axis, a bidirectional communication network linking the intestinal microbiome, systemic immunity, and skin barrier function. Ingestion of MPs can disrupt gut and skin epithelial barriers, induce oxidative stress, and activate inflammatory pathways such as TLR-MyD88-NF- κ B, ultimately promoting systemic immune dysregulation that can influence barrier integrity in distant organs, including the skin.

Beyond Dermal Exposure: Microplastics as Systemic Modulators of Skin Health: Ingestion of MPs can alter gut microbiota composition, shifting microbial populations toward opportunistic pathogens while reducing beneficial taxa such as *Lactobacillus*, *Bifidobacterium*, and other short-chain fatty acid (SCFA)-producing bacteria. This microbial dysbiosis leads to reduced production of key metabolites including SCFAs, tryptophan derivatives, and secondary bile acids that normally regulate immune tolerance, epithelial barrier integrity, and inflammatory signaling in the skin. For example, SCFAs help maintain regulatory T-cell balance and suppress inflammatory cytokine production, while microbial tryptophan metabolites act as ligands for the aryl hydrocarbon receptor (AhR), a pathway that regulates keratinocyte differentiation, antimicrobial peptide production, and skin barrier repair. Disruption of these metabolite pathways may therefore contribute to inflammatory skin diseases such as atopic dermatitis and psoriasis.

Why This Matters for Dermal Toxicology Research: Importantly, the authors emphasize that MPs can also act as vectors for environmental contaminants, including heavy metals and persistent organic pollutants, potentially amplifying their toxicological effects. This concept is particularly relevant to emerging research on contaminated microplastics and dermal immune responses, where particle-bound metals may influence immune signaling pathways involved in allergic contact dermatitis.

Overall, this review highlights the need for future studies using environmentally relevant exposure levels and mechanistic approaches that integrate microbiome, immune, and toxicological pathways to better understand how microplastics contribute to inflammatory skin disease.

Key Takeaways

Microplastics may influence skin disease not only through direct dermal contact but also through systemic pathways involving gut dysbiosis, microbial metabolite disruption, and altered immune signaling. Their capacity to carry environmental contaminants adds further complexity and underscores the importance of integrated research approaches to fully understand their dermatological impacts.

Reference : Zhang, X., Zheng, P., Yang, M., Huang, Y., Liu, E., Liu, A., Zhang, H., & Guo, J. (2025). Emerging mechanisms of microplastic-induced skin diseases: A perspective from the gut-skin axis. *Journal of Translational Medicine*, 24, 257.

Upcoming DTSS Webinars Registration — Details will be Distributed Shortly!!

- **April 13 | 9:30 AM** – DTSS and IVAM present “Comprehensive In Vitro Safety Assessment of *Acorus calamus* Rhizome Oil Using OECD-Compliant NAMs.” This 75-minute webinar will explore how in vitro dermal toxicity data—particularly for UVCBs and mixtures—can support risk assessment.
- **Date TBD** – “Use of the SENS-IS Transcriptomic Reconstructed Epidermis Assay in Skin Sensitization Testing of Mixtures.” This webinar will highlight methods that evaluate Key Events (KE) within the Skin Sensitization AOP and approaches to derive potency estimates for quantitative risk assessment.
Speaker: Hervé Groux (Immunosearch Labs SARL)
- **Date TBD** – DTSS Award Winner Research Showcase. Award recipients will present highlights of their award-winning research and discuss emerging advances in dermal toxicology.



Join us to Support DTSS members Presenting at SOT!



First	Last	Session Title	Abstract Title
Satya	Achanta	Chemical Threats and Bioterrorism	Phosgene inhalation in swine: reproducible ARDS phenotype and systems proteomics to guide countermeasure discovery
Rajesh	Agarwal	Chemical Threats and Bioterrorism	Dexamethasone treatment alleviates lewisite-induced delayed proteomic dysregulations, inflammation, and fibrosis in the rabbit cornea <i>in vivo</i>
Alma	Avila Oropeza	Micro- and Nanoplastics	Allergic Contact Dermatitis Model for Assessing Contaminated Microplastics Isolated by Nanomembrane Technology
Mayukh	Banerjee	Metals I	Arsenic disrupts autophagosome-lysosome fusion in a zinc dependent manner
Sara	Farahmand	<i>In Vitro</i> Testing for Skin Sensitization of Mixtures: Where Science Stands Today	<i>In Vitro</i> Testing for Skin Sensitization of Mixtures: Where Science Stands Today
Claire	Hamaji	Risk Assessment II	A risk assessment of dermal exposure to aniline from home use of synthetic indigo dyes
Laurie	Joseph	Chemical Threats and Bioterrorism	Sulfur Mustard Alters Fatty Acid Synthase Expression During Rabbit Meibocyte Differentiation
Alexandra	Nail	Metals II	A New Model for Studying Arsenic-induced Skin Carcinogenesis
Robert	Nocco	AM05: Chemical Emergencies: Emergency Response, Toxicology, and Exposure Considerations	AM05: Chemical Emergencies: Emergency Response, Toxicology, and Exposure Considerations
Kim	Norman	Safety Assessment: Non-pharmaceutical	Modernizing Sunscreen Safety: Comprehensive Review of UV Filter Toxicity and Human Health Risk Assessment
Kevin	Ozkuyumcu	Chemical Threats and Bioterrorism	Sulfur Mustard Disrupts Epidermal and Dermal Structures in Hairless Guinea Pig Skin
Jennifer	Plahovinsak	Educating Future Toxicologists and Communicating with the Public	The New Bilingual: Building AI Fluency in Graduate Education to Prepare the Toxicology Workforce
Gretchen	Ritacco	New Approach methods: <i>In Vitro</i>	New Approach Methodologies for Photoallergy: Results of a Set of Reference Photoallergens in the Photo-DPRA, Photo-Keratinosens, and Photo h-CLAT
Andrew	Roney	Chemical Threats and Bioterrorism	Exploration of Mechanisms Driving Nitrogen Mustard-Induced Injury in Mouse Skin
Clive	Roper	New Approach Methods: <i>In Vitro</i>	Self-assembling Peptide Hydrogels as User-defined Synthetic Matrices for <i>In Vitro</i> Modelling.
Alec	Salminen	Dermal Toxicology	Interpreting <i>In Vitro</i> Permeation Testing Layer-Deposition Data Using a Mechanistic Skin Model in MoBi
Margaret	Whittaker	Risk Assessment II	California Proposition 65 NSRL Derivation for Aflatoxins

DTSS Executive Committee Officers & Election Results

The 2025–2026 Dermal Toxicology Specialty Section (DTSS) Executive Committee continues to build and strengthen *your* DTSS. We are pleased to share that our board is now fully filled, and we recently held a successful election to ensure all leadership roles are supported as we move the section forward.

We would also like to extend our sincere thanks to **Sarah Gilpin, Ying Huang, and Andrew Roney** for their dedicated service and time supporting DTSS. Their contributions have played an important role in shaping the progress and growth of the section. While they are transitioning from their formal roles, we know they will remain actively involved and continue helping to build the DTSS legacy.



Sarah Gilpin
Past President &
Councilor



AJ Cuevas
President



Jamie Coleman
Vice President



Clive Roper
Vice President-Elect



Mayukh Banerjee
Secretary/Treasurer



Ying Huang
Sr. Councilor



Sid Ejaz
Jr. Councilor



Christine Awada
Postdoctoral
Representative



Andrew Roney
Graduate Student
Representative

Incoming 2026-2027 DTSS Executive Committee Officers



Mansi Krishan
Vice President-Elect



Hans Raabe
Jr. Councilor



Alma Avila Oropeza
Graduate Student
Representative

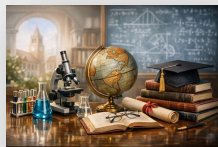
Please join us in welcoming our incoming DTSS officers. Their diverse expertise and perspectives will help support the continued growth and impact of DTSS. We look forward to another productive year as the Executive Committee continues working to advance the mission of the DTSS and serve our membership.

Mansi Krishan, PhD, ERT brings experience across multiple sectors, including consumer electronics, medical devices, and food and nutrition. She currently serves as a Biocompatibility Technical Lead at Reality Labs, Meta Platforms, Inc., where she leads toxicology and biocompatibility efforts for both wearable and non-wearable products. She has received awards for her scientific contributions by SOT, EUROTOX, ACT, and Society of Toxicology India. She has also chaired/co-chaired scientific sessions, CE courses, workshops, and webinars at SOT, ACT, SETAC, AAAS, IAFP, and other professional societies.

Hans Raabe, MS is Sr. VP and Chief Operating Officer at the Institute for In Vitro Sciences (IIVS). He brings more than 35 years of experience in *in vitro* toxicology assays and has served as an expert on several OECD Test Guideline panels. He is actively involved in advancing the IIVS education and outreach mission through participation in international technical training workshops focused on *in vitro* methods.

Alma Avila Oropeza, MS is a PhD candidate at the University of Rochester School of Medicine and Dentistry, where she is pursuing a career in investigative toxicology within drug discovery. She is an active member of the Society of Toxicology (SOT) and holds several leadership and service roles, including involvement in campus initiatives and K–12 STEM outreach programs.

To learn more about volunteer opportunities, connect with the DTSS President, AJ Cuevas (ajcuevas@combe.com).



Considering a Career in Dermal Toxicology?

Part 1: An Intro Guide for Students



Dermal toxicology sits at the intersection of toxicology, exposure science, chemistry, and risk assessment. It focuses on understanding how chemicals interact with the skin and how these interactions influence human health. As technologies such as New Approach Methodologies (NAMs), *in vitro* skin systems, and computational approaches continue to advance, students entering the field have increasing opportunities to contribute to innovative research.

For students interested in dermal toxicology, developing a foundation in skin biology and toxicology is an important starting point. Understanding the skin barrier, dermal absorption, irritation, and sensitization, and many other diseases, helps frame many of the key scientific questions in the field. Experience with exposure science or analytical chemistry can also provide valuable context when studying real world chemical exposures.

Dermal toxicology research increasingly incorporates modern experimental systems such as reconstructed human skin models and data driven approaches that support animal free safety testing. Exposure to emerging methods and experimental tools during training can help students understand how dermal safety questions are investigated in both research and applied settings.

Equally important is becoming engaged with the scientific community. Attending meetings, presenting research, and participating in professional societies help students learn about the broader landscape of dermal toxicology and connect with scientists across academia, government, and industry.

Staying Connected with the Dermal Toxicology Community

The Dermal Toxicology Specialty Section (DTSS) actively supports students and trainees interested in this field. If you are curious about dermal toxicology research, seeking mentorship, or interested in getting involved in DTSS activities, we encourage you to connect with members of the DTSS Executive Board. Our community is always excited to welcome students eager to learn and contribute to the future of dermal toxicology.

Student Tips: Getting Started in Dermal Toxicology

If you are interested in pursuing research in dermal toxicology, here are a few ways to begin building experience and connections in the field:

Learn the fundamentals of skin biology.

Understanding the structure and function of the skin barrier is essential for studying dermal absorption, irritation, and sensitization.

Explore emerging methods.

Familiarize yourself with New Approach Methodologies (NAMs), *in vitro* skin models, and computational approaches that are increasingly used in dermal safety assessments.

Develop complementary skills.

Training in exposure science, analytical chemistry, bioinformatics, or risk assessment can strengthen your ability to address complex dermal exposure questions.

Engage with the scientific community.

Attend conferences, participate in professional societies such as SOT and DTSS, and present your research when possible. Networking can open doors to collaborations and career opportunities.

Seek interdisciplinary experiences.

Dermal toxicology often involves collaboration across fields. Internships, cross-lab projects, and multidisciplinary training can help you understand how research translates into regulatory and public health decisions.



For many graduate students studying toxicology, pharmacology, chemistry, or related disciplines, one common question arises near the end of their training: What does a career path in dermal toxicology look like? The encouraging answer is that dermal toxicology offers opportunities across industry, regulatory science, consulting, and academia. Dermal toxicologists evaluate the safety of chemicals that contact the skin, including cosmetics, personal care products, pharmaceuticals, industrial chemicals, and consumer products. Through this work, scientists in the field play a direct role in protecting human health while supporting the development of safe and effective products.

Building the Right Foundation in Graduate School

Graduate training often provides the first opportunity to translate scientific concepts into practical problem solving. Research involving skin biology, dermal absorption, sensitization, or exposure science can provide a strong technical foundation. Just as important, graduate training develops the ability to interpret complex data, evaluate multiple sources of evidence, and approach safety questions from a mechanistic perspective.

During my own PhD training, one of the most valuable lessons was learning how to move beyond generating data to asking how that information informs decision making. In professional settings, dermal toxicologists are frequently asked to interpret incomplete datasets, weigh different lines of evidence, and provide clear recommendations that support product safety and regulatory compliance.

Graduate training also strengthens the ability to think across toxicological disciplines. Dermal toxicologists often work with information from systemic toxicology, inhalation exposure, pharmacokinetics, or environmental health. The ability to integrate diverse datasets and translate them into meaningful safety conclusions is a skill that becomes increasingly important when transitioning into professional roles.

Transitioning into Industry: Career Paths for Dermal Toxicologists

Many dermal toxicologists pursue careers in industry, where their expertise supports product development and safety evaluation. Companies in sectors such as cosmetics, pharmaceuticals, fragrance, and consumer products rely on dermal toxicologists to evaluate ingredient safety and assess potential risks associated with skin exposure.

Industry scientists often work closely with chemists, product developers, regulatory specialists, and exposure scientists, making collaboration a central part of the role. In addition to interpreting toxicological data, dermal toxicologists frequently contribute to safety dossiers, support regulatory submissions, and help guide formulation decisions during product development.

Other Career Paths in Dermal Toxicology

Although industry is a common destination, dermal toxicologists also pursue careers in a range of other professional settings. Regulatory agencies evaluate safety data and help establish testing guidelines that shape global safety standards. Contract research organizations conduct dermal toxicity testing and develop new experimental methods. Consulting firms provide safety assessments and regulatory strategy for companies developing new products. Academic researchers continue to investigate mechanisms of skin toxicity and develop innovative approaches for evaluating dermal exposure. Each of these roles contributes to a broader ecosystem that supports safe chemical use and advances the science of dermal toxicology.

Expanding Opportunities with Emerging Methods

As safety assessment continues to evolve, dermal toxicologists increasingly work with integrated testing strategies that combine experimental data, computational modeling, and exposure science. These approaches are helping scientists answer safety questions more efficiently while reducing reliance on traditional testing models.

Professionals entering the field today may find themselves working at the interface of experimental science and data driven analysis. Skills in systems toxicology, exposure modeling, regulatory science, and computational methods are becoming increasingly valuable as safety assessment continues to modernize.

Looking Ahead

Dermal toxicology remains a dynamic and growing field as scientific advances and regulatory expectations continue to shape how chemical safety is evaluated. For graduates interested in applying their scientific training to real world safety challenges, the field offers opportunities to contribute to both public health protection and product innovation.

For those exploring this career path, engagement with the professional community can provide valuable perspective. Members of the Dermal Toxicology Specialty Section (DTSS) Executive Board welcome questions from students and trainees interested in learning more about careers in dermal toxicology and encourage continued involvement in the DTSS community.



Help DTSS Congratulate our Member's Great Achievements!

Don't be modest, tell us your achievements/good news so we can celebrate you!
Please email Christina Awada (cawada@combe.com) to be featured in the upcoming newsletter.



DTSS THANKS OUR SPONSORS - WE APPRECIATE YOUR GENEROSITY

*DTSS proudly recognizes the exceptional publications and outstanding contributions of our **members, postdoctoral trainees, and students** in advancing skin-related research.*

Thanks to our sponsors who continue to support this important work through awards and other giving opportunities.



You/your company's logo can be featured here! Consider sponsoring a travel award for a very deserving trainee! If you or your company are interested in sponsoring an award, donating to the DTSS, please email [Mayukh Banerjee](mailto:Mayukh.Banerjee@dtss.org).



Scan to join DTSS
LinkedIn Page

See you in San Diego!

We look forward to seeing you at the 65th Annual SOT Meeting and ToxExpo in San Diego.

Please join us at the DTSS Reception
Monday, March 23, 2026, from 6:00-7:30 PM
Grand Ballroom 13 - Marriott Marquis