

Ricardo S. Tieghi

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Durham, NC

EDUCATIONAL BACKGROUND

University of North Carolina at Chapel Hill – Chapel Hill, NC

Aug. 2021 - May 2025

- **Bachelor of Science in Biology**, Minors in Chemistry and Medical Anthropology
- GPA: 3.9 | Dean's List | Carolina Research Scholar | Highest Distinction | Chancellor Award

RESEARCH & PROFESSIONAL EXPERIENCE

National Institutes of Health – Bethesda, MD

Jun. 2025 - Present

Program Analyst in the Office of the NIH Director

- Authored publication with the FDA Commissioner, the FDA CDER Director, and the NIH Deputy Director on the alternatives to animal testing in preclinical testing in the New England Journal of Medicine AI.
- Co-led development of the \$5M AI and Biomedical Foundation Model Challenge.
- Led portfolio analysis for the Bio Genesis Mission, a \$1.2B initiative from NIH's Chief AI Office.
- Co-authored and supported development of the NIH AI Strategic Plan (2026-2029).
- Developed a multi-agent dashboard for the multimodal-AI award program, using LLMs and MCP servers, reducing time spent for award management by ~50% in 6 months.
- Deployed a prototype portfolio analysis agent that currently serves 6 different NIH Institutes and Centers. The agent was used to perform 15+ portfolio analyses for NIH Leadership.
- Delivered three portfolio analyses under compressed deadlines for congressional House Appropriations, analyzing 1900+ grants with custom agentic AI pipelines.

Human Chemical Company – Chapel Hill, NC

Dec. 2025 – Jul. 2026

AI Solutions Strategy Consultant

- Developed tools to assess pharmacokinetic properties of chemicals for an agentic AI startup.

National Institute of Environmental Health Sciences – Morrisville, NC

Jun. 2024 – May 2025

Intern in the Division of Translational Toxicology, NICEATM group.

- Supervisor: Dr. Nicole Kleinstreuer (Director of NICEATM, current NIH DPCPSI Deputy Director).
- Presented on computational modeling of skin sensitization, developmental toxicity, acute and chronic toxicity research at 7 conferences, received 14 research awards, and won a best paper of the year award at the Society of Toxicology Annual Meeting.
- Published 10 projects aimed at refining and replacing the use of animals during toxicity testing with machine learning.
- Collaborated with industry partners to model complex mixtures and review best practices for deep learning in medicinal chemistry.

UNC Molecular Modeling Lab – Chapel Hill, NC

May 2023 – May 2025

Machine Learning Intern

- Supervisor: Dr. Alexander Tropsha
- Led AI and machine-learning implementation for 5 toxicology projects on developmental toxicity, skin sensitization, and liver toxicity.
- Awarded over \$1.8M in funding for projects on species-specific toxicity concordance analysis and mechanism-based modeling for skin sensitization and neurodevelopmental toxicity.
- Developed projects using QSAR modeling best practices, data curation, performance benchmarking, model context of use, model validation, and 2D similarity for 8 different endpoints.

SKILLS

- Computational Toxicology, Machine Learning, Large Language Models, Agentic AI, Data Modeling.
- Python, HTML, CSS, PyTorch, RDKit, Scikit-Learn, Optuna, Plotly, Matplotlib, Microsoft Azure.

LEADERSHIP & SERVICE

ACS Chemical Research in Toxicology and JCIM

Aug. 2022 - 2024

Peer Reviewer

- Reviewed 10+ publications on computational toxicology and machine learning applications in toxicology.

AWARDS

Research Awards

- **Prize Winner:** NIH Replication Prize ~\$55,000
- **Prize Winner:** NIH Complement-ARIE Challenge ~\$50,000
- **Winner:** Best Paper of the Year Award (SOT In Vitro and Alternatives Section)
- 2x Best Intramural Paper of the Month (NIEHS)
- **Winner:** Summer Undergraduate Research Fellowship (SURF) ~\$4,000

Presentation & Institutional Awards

- **Winner:** SOT Undergraduate Research Award ~\$1500
- Best Oral Presentation Early Career (sponsored by AIVT) - 13th World Congress ~\$500
- **Winner:** Travel Award - 13th World Congress - ~\$1000
- **2nd Prize:** BDRP Innovator Award Finalist ~\$300
- **1st Prize:** RDTSS Poster Competition (Sponsored by Pfizer and Elsevier) ~\$400
- **Winner:** Society for Birth Defects Research Travel Award ~\$500
- **Winner:** SOT Diversity Initiatives Career Development Award ~\$1000
- **1st Prize:** NCSOT Undergraduate Student Poster Competition ~\$300
- **Winner:** ASCCT Suzanne Fitzpatrick Student Travel Award ~\$1000
- **1st Prize:** NIEHS Scholar's Connect Elevator Pitch Competition
- **Winner:** UNC Office of Undergraduate Research Travel Award ~\$300
- SOT 63rd Annual Meeting Biological Modeling Specialty Section Abstract Award Finalist

PUBLICATIONS

1. **R. S. Tieghi**, T. B. Høeg, M. Makary, N. Kleinstreuer, *The Promise of Animal Testing Alternatives at the U.S. Food and Drug Administration and the National Institutes of Health.* <https://ai.nejm.org/doi/full/10.1056/Aipc2500587>. New England Journal of Medicine AI (2025).
2. [Editor's Choice; 2025 SOT IVAMSS Paper of the Year; NIEHS Paper of the Month] **R. S. Tieghi** et al. *A Novel Machine Learning Model and a Web Portal for Predicting the Human Skin Sensitization Effects of Chemical Agents.* <https://doi.org/10.3390/toxics12110803> – MDPI Toxics (2024).
3. **R. S. Tieghi**, et al. *DeTox: an In Silico Alternative to Animal Testing for Predicting Developmental Toxicity Potential.* <https://doi.org/10.1021/EHP.6c01149> – ACS Environmental Health Perspectives (2026).
4. JT. Moreira-Filho, **R. S. Tieghi**, et al. *Automating Data Extraction from Scientific Literature and General PDF Files Using Large Language Models and KNIME: an Application in Toxicology.* <https://doi.org/10.1002/wcms.70047>. Wiley Computational Molecular Science (2025).
5. M. Mahale[#], **R. S. Tieghi**[#], et al. *The medicinal chemist's map to deep learning: Concepts, applications, and case studies.* <https://doi.org/10.1016/B978-0-443-29808-0.00066-2> – Elsevier Reference Module in Chemistry, Molecular Sciences and Chemical Engineering.
6. **R. S. Tieghi**, et al. *External Validation of STopTox as in Silico Alternative to Animal Toxicity Testing.* <https://pubmed.ncbi.nlm.nih.gov/40393008/> - Environmental Health Perspectives (2025). IF: 10.1

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7. A. Stem, **R. S. Tieghi**, N. Kleinstreuer, V. Vasilou. *Synergistic Toxicity in Alcohol-Associated Liver Disease and PFAS Exposure*. <https://doi.org/10.1093/toxsci/kfaf110> – Tox. Sci. (2025). IF: 4.1
 8. K. Mansouri, JT. Moreira-Filho, **R. S. Tieghi**, N. Kleinstreuer *Democratizing Artificial Intelligence in Toxicology: Real-World Applications and Automated Computational Workflows*. <https://doi.org/10.1021/acs.chemrestox.6c00093>. ACS Chemical Research in Toxicology
#Co-first authors

Under Review

9. C. Melo-Filho[#], **R. S. Tieghi**[#] *Importance and Challenges of Computational Modeling of Pesticides and Chemical Mixtures in Environmental Health: A Review*. ACS Chemical Reviews

In preparation

10. S. Seal. DL. Huynh, **R. S. Tieghi**, et al. AI Agents as Collaborators in Drug Discovery and Development. *Nature*.
11. **R. S. Tieghi**, et al. *CAMERA: A Centralized Public Resource for Validated Alternative Methods to Support Regulatory Decision-Making*
12. **R. S. Tieghi**, et al. *Elucidation of Adverse Outcome Pathways for Compound-induced Developmental Neurotoxicity using Knowledge Graphs*.

Pre-prints

13. JM. Beasley[#], D. Dorjsuren[#], [...] **R. S. Tieghi**, E. Muratov. *Breaking the Phalanx: Overcoming Bacterial Drug Resistance with Quorum Sensing Inhibitors that Enhance Therapeutic Activity of Antibiotics* <https://doi.org/10.1101/2025.01.17.633658>.

INVITED TALKS

- [Upcoming] CE Course Speaker & Co-Chair: SOT 66th Annual Meeting. San Antonio, Texas. March 2027.
- [Upcoming] CE Course Speaker & Co-Chair: ACT Annual Meeting. San Antonio, Texas. November 2026.
- Dynanet Corporation Brown Paper Bag. Virtual. December 2025.
- George Washington Law School: AI, Animals, and the Law, Washington, D.C., US. November 2025. - [Link](#)
- CE Course Speaker & Co-Chair: Comprehensive Toxicity Assessment with Agentic AI Workshop - ASCCT 13th Annual Meeting, Durham, North Carolina, US. October. 2025.
- **[Early Career Best Oral Presentation]** 2x Presenter at Rio 13th World Congress on Alternatives and Animal Use in the Life Sciences, Rio de Janeiro, Brazil. August 2025.
- **[BDRP Innovator Award Finalist]** Society for Birth Defects Research & Prevention Annual Meeting, Denver, Colorado, US. June 2025.
- Division of Translational Toxicology Science Forum, NIEHS, Virtual. May 2025.
- NIEHS Scholars Connect Program Annual Symposium, Durham, North Carolina, US. April 2025.
- Symposium Speaker & Co-chair - SOT 64th Annual Meeting. Orlando, Florida, US. March. 2025.
- ASCCT-ESTIV Award Winners Webinar, Virtual. February. 2025. - [Link](#)
- **[1st Prize]** 3 Minute-Thesis Competition – NIEHS Fall Connection Presentation, Durham, North Carolina, US. November. 2024
- **[Suzanne Fitzpatrick Award]** Flash Talk - ASCCT 13th Annual Meeting, Durham, North Carolina, US. October 2024.

CONFERENCE POSTERS

- **[SOT Award]** SOT 64th Annual Meeting, March 2025, Orlando, Florida, US: *A Novel Machine Learning Model and a Web Portal for Predicting the Human Skin Sensitization Effects of Chemical Agents*

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- **[ASCCT Travel Award]** ASCCT 13th Annual Meeting, October 2024, Durham, NC, US: *HuSSPred: an in-silico HPPT-based tool for Human Skin Sensitization Prediction & DeTox Project.*
 - **[1st Prize]** NCSOT Annual Meeting, September 2024, Durham, NC, US: *HuSSPred: an in-silico HPPT-based tool for Human Skin Sensitization Prediction*
 - **[SURF Award]** UNC Celebration of Undergraduate Research, May 2024, Chapel Hill, NC, US: *Endothelial Nuclear Proteins SUN1 & SUN2 regulate Microtubule Organization in Endothelial Cells*
 - **[BMSS Award]** SOT 63rd Annual Meeting, March 2024, Salt Lake City, Utah, US: *PregPred: A Novel Web-Accessible Computational Tool for Predicting Developmental Toxicity*

NEWS ARTICLES

- NIH Common Fund: Replication Prize Challenge [Winners](#). March 2026.
- Medium: Low Code for Data Science – [Grouping Chemicals Automatically with KNIME](#). September 2025
- 2025 Annual Meeting [Report](#): NAMs Hit the Bullseye in DART Assessments. May 2025
- NIEHS Environmental Factor – [From Avid reader to toxicity tool developer](#) and [SOT meeting Summary](#). April 2025
- Society of Toxicology: ToXchange – [Outstanding undergraduates recognized by SOT](#). March 2025.
- European Society of Toxicology In Vitro (ESTIV) – [ASCCT Award Winners](#). February 2025.
- NIEHS Environmental Factor – [Intramural Papers of the Month](#). January 2025.
- NIEHS Environmental Factor - [Undergrads test science communication skills at fall event](#). September 2024.
- NIEHS Environmental Factor - [Microplastics and trainee development headline toxicology meeting](#). November 2024
- NIH Common Fund - [Complement-ARIE Challenge Prize Winner Summaries](#)
- UNC McAllister Heart Institute – [Undergraduate student receives National Institute of Standards 2023 Summer Research Fellowship](#). April 2023