Christine Perdan Curran Receives the 2020 SOT Bruce A. Fowler Undergraduate Educator Award

Dr. Curran has been awarded the 2020 SOT Undergraduate Educator Award for her excellence, creativity, and success in undergraduate instruction in toxicology and the sciences.

Dr. Curran received her BSJ from Ohio University. Then, evidence of her devotion to the field, she began instructing undergraduates before receiving her PhD in environmental health from the University of Cincinnati in 2007. In 1992, Dr. Curran began as an Adjunct Instructor and later as an Adjunct Assistant Professor of Biology at the University of Cincinnati. In 2008, she joined Northern Kentucky University as an Assistant Professor of Biological Sciences, where she continues to serve as a Professor of Biological Sciences and director of the neuroscience program.

Dr. Curran has played a key role in the environmental science program at Northern Kentucky University, which has doubled in size and added a Bachelor of Arts program to the original Bachelor of Science program since she began at the university. Specifically, she developed a widely popular course in environmental toxicology that combines problem-based, team-based, and service learning to expose students to toxicology concepts and encourage them to apply such concepts to issues in the community. Further, Dr. Curran has integrated her toxicology training into her anatomy and physiology courses, which more than 200 students take each semester.

The Curran laboratory, which focuses on gene-environment interactions during brain development, is primarily composed of undergraduate students. At 90%, the average retention and graduation rate for Dr. Curran’s students is double that of STEM students throughout the nation. Over the past decade, more than 75 undergraduates have trained under Dr. Curran, and during that time frame, her students have delivered 110 presentations, many of which received awards, during regional and national meetings. She also works toward facilitating success in the STEM fields for women, underrepresented minorities, and underserved populations through her involvement in both the Next-Generation Researchers Initiative working group of the NIH and the
Diversity, Equity, and Inclusion Task Force of the Federation of American Societies for Experimental Biology (FASEB).

Dr. Curran’s exemplary scientific service includes her current role as President of the Society for Birth Defects Research and Prevention (formerly the Teratology Society). She serves on several Editorial Boards, including currently, the Reproductive Toxicology Editorial Board. She is also a FASEB Board Member.

Dr. Curran has been a champion of undergraduate education within SOT as well, including active involvement in the Undergraduate Educator Network (UEN). A SOT member since 2004, she not only has co-chaired K-12 Education Subcommitteee and the Undergraduate Education Subcommittee, but also has been making major contributions to the Ohio Valley Regional Chapter since she was a graduate student. In addition to serving as the chapter’s first K-12 Liaison, Dr. Curran also initiated the undergraduate poster awards and was the 2015-2016 Ohio Valley Regional Chapter President. Further, Dr. Curran is the inaugural Chair of the Faculty United for Undergraduate Recruitment and Education (FUTURE) Committee, formed in 2019 with the purpose of recruiting, retaining, training, and educating undergraduates with an interest in toxicology and preparing future generations for success in the field.

SOT Annual Meeting Information
Annual Meeting Registration Fee Waivers for Undergraduates

Undergraduate students may request an SOT Annual Meeting and ToxExpo registration fee waiver by completing a meeting Registration Form and sending it with a copy of their student ID to the attention of Jim Dailey, Meeting Registrar, via email (sotmeetings@toxicology.org).

Plan your time at the SOT Annual Meeting!
- On-line Planner
- Meeting App

Education-Related Annual Meeting Activities (CC=Convention Center)

Sunday, March 15
- Pfizer SOT Undergraduate Award Welcome (7:30 am–7:45 am; Anaheim Marriott Grand Ballroom D). Open to award recipients and FUTURE Committee members.
- CDI Sunday Undergraduate Program (8:00 am–5:00 pm; Anaheim Marriott Marquis Center). Open for all registered undergraduates, mentors, and organizers.
- SOT Awards Ceremony (5:15 pm–6:30 pm; CC Ballroom A). Start your meeting by attending the “Who’s Who” of SOT, the Oscars of Toxicology!! Come and see the people behind the names in the papers you read and the next leaders from whom to learn.
Monday, March 16

- **Global Gallery Posters** (9:00 am–4:30 pm, representative attended from 2:15 pm–2:45 pm; ToxExpo). Please stop by the Global Gallery to learn about international toxicology activities, including the latest regarding International ToxScholar.

- **In Vitro Lecture and Luncheon: Computational Intelligence: Building “Smart Models” for Toxicology in the Era of Big Data**, Thomas Knudsen (11:30 am–12:45 pm; Anaheim Marriot Marquis Center). Students register on the Annual Meeting registration form; some toxicologists are invited as table hosts to facilitate the discussion that is the event focus.

- **Plenary Session: Precisely Practicing Medicine from 700 Trillion Points of Data**, Atul Butte, University of California San Francisco (1:00 pm–2:00 pm; CC Hall C)

- **Undergraduate Consortium Meeting** (2:00 pm–3:15 pm; CC 203A). Nine undergraduate-focused institutions are part of the SOT Undergraduate Consortium. This meeting is for students and faculty from those schools to meet with the Undergraduate Consortium Task Force to discuss ways to increase interest in toxicology among undergraduates.

- **Pfizer SOT Undergraduate Award Reception** (4:30 pm–6:00 pm). By invitation only; for the award recipients and Pfizer guests.

Tuesday, March 17

- **FUTURE Committee Meeting** (6:45 am–8:15 am; CC 209B). This meeting is open to current and incoming FUTURE committee members only.

- **Undergraduate Educator Network** (8:30 am–9:30 am; CC 209B). All interested in undergraduate education are encouraged to attend this session to meet colleagues and discuss SOT strategic initiatives for faculty and students.

- **FUTURE Opportunities for Toxicology Educators & Students** (10:10 am–10:30 am; ToxExpo Theater). Come to learn how SOT’s FUTURE Committee can help you. Hosted by FUTURE committee chair Chris Curran and co-chair Mindy Reynolds.

- **Education-Career Development Session** (11:00 am–12:20 pm; CC 304C). A CURE for the Common Classroom: Engaging Students and Faculty in Course-Based Undergraduate Research Experiences to Maximize Academic Success and Productivity.

- **Undergraduate Student Meeting** (12:30 pm–1:30 pm; CC 201D). All undergraduate students are invited to this meeting to learn about SOT resources for undergraduates and to network with graduate students.

- **Tox ShowDown** (7:30 pm–9:00 pm; Anaheim Marquis South) Fun quiz game with cash bar.

Wednesday, March 18

- **Education, Ethical, Legal, and Social Issues Poster Session** (9:00–4:30 pm; 9:00 am author attended; ToxExpo). This is the poster session for educators—please come to meet and discuss education activities and innovations with colleagues.

- **Education-Career Development Session** (11:00 am–12:20 pm; CC 303A). Next-Generation Toxicologist Training through Innovative Summer Internships.
Undergraduate Educator Network Meeting

The FUTURE Committee is hosting the Undergraduate Educator Network (UEN) Meeting for all faculty involved in the teaching of toxicology to undergraduates, trainees thinking about teaching, and those interested in including toxicology at the undergraduate level. Hear an update on SOT initiatives for undergraduate faculty and students, provide your input, and discuss shared interests. Continental breakfast will be available.

**Meets: Tuesday, March 17, 8:30–9:30 AM, CC 210B**

In addition to this meeting and this newsletter, the group also shares information via the UEN ToXchange community and welcomes your contributions at any time. Please subscribe through your ToXchange profile if you are not already part of this listserv (see below for instructions).

Undergraduate Student Meeting

Undergraduate students attending the SOT meeting are encouraged to participate in an informal gathering to learn about SOT resources, talk about shared interests related to career paths in toxicology, discuss undergraduate tox-related activities, and provide feedback to the FUTURE Committee. Note that most of the meeting will be devoted to small group interaction with graduate students who can provide perspective and answer questions about toxicology graduate programs, getting started in a toxicology job, and career options available to those with toxicology degrees. Please spread the word to your mentees and other undergraduates you know who are coming to Anaheim.

**Meets: Tuesday, March 17, 12:30 PM–1:30 PM, CC 201D**

Tox ShowDown

This is the ninth year of Tox ShowDown, the toxicological quiz game. Three teams of three contestants each—the Endocrine Disruptors, the Free Radicals, and the Toxic Metabolites—battle each other to answer questions wholly, partially, or remotely related to toxicology. The event features a cash bar and is a great opportunity to see how many questions you can answer correctly, while enjoying a good laugh. There are prizes for quiz team members.

**Meets: Tuesday, March 17, 7:30–9:00 PM, Anaheim Marriott Marquis South**

How to Subscribe to the Undergraduate Educator Network

- Log into ToXchange
- Select “My Options” in the top right corner
- Choose “My Subscriptions” from the menu.
- Click the plus sign on the left
- Select category = “Open Group Topics”
- Choose “Undergraduate Educator Network”
- Set your delivery preference
How’s the Weather? The SOT FUTUREcast Sure Looks Bright!!

Last year, the Society of Toxicology (SOT) established a new committee through the reorganization of what were previously known as SOT’s Education Committee and Undergraduate Education Subcommittee. While these latter entities are gone, but not forgotten, the FUTURE committee is now here and is taking on an important service role within SOT. The acronym itself stands for “Faculty United for Toxicology Undergraduate Recruitment and Education.” It should be noted that the term “Faculty” in FUTURE is inclusive and encompasses anyone, including those outside of academia, who has an interest in mentoring, training, supporting, or interacting with undergraduate students. In particular, the committee is tasked with recruitment, retention, training, and education of undergraduates interested in toxicology. To this end, the FUTURE committee oversees a plethora of opportunities and activities available to faculty who are interested in promoting toxicology to the next generation. Programs managed by FUTURE include those aimed at educators and those geared specifically for students:

**Activities and Opportunities for Educators.** The Undergraduate Educator Network (UEN) is a valuable human resource for toxicology educators and meets each year at the Annual Meeting. The UEN is open to educators with an interest in toxicology (please invite your educator friends to join) and interacts throughout the year through email and webinars. FUTURE also supports education sessions at the Annual Meeting including the education poster session as well as education/career sessions. FUTURE strives to provide undergraduate teaching resources for members of the UEN including resources such as [CourseSource](#) and [LifeSciTRC](#). FUTURE also reviews and administers undergraduate faculty grants and other professional development opportunities. Programs such as Domestic ToxScholar, through which a SOT member applies for support to visit a college or university to feature toxicology, and International ToxScholar, through which a SOT member applies for support to visit an academic institution abroad, specifically in countries with developing or emerging economies, are special opportunities for SOT members to participate in the education of undergraduates interested in toxicology.

**Activities and Opportunities for Students.** FUTURE oversees the Pfizer SOT Undergraduate Travel Award Program, which makes it possible for toxicology undergraduates with extraordinary potential to travel to the Annual Meeting and present their research. FUTURE also administers the SOT Undergraduate Research Internship, which provides matching funds to host universities that provide summer toxicology research opportunities. FUTURE also provides funding for undergraduates to participate in SOT Regional Chapter meetings and initiatives.
As you can see, FUTURE does a lot of things. Many of the initiatives listed above are highlighted in this issue. If you have any questions, or want to know more, or how to get more involved, please just contact one of the members of the FUTUREcast; oops, we mean FUTURE Committee.

Each UEN newsletter will feature one of the FUTURE committee members. This newsletter, our featured member is Dr. David Freier (see page 7). Until next time, “keep your feet in the ground and keep reaching for the stars!” Here’s wishing you many papers, grants, and all that good stuff in 2020!!

SOT FUTURE Committee Members

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Note: The terms for some members of FUTURE end April 30. We gratefully thank those who have provided service to FUTURE and welcome those who will begin service soon.
SOT FUTURE Member Profile: Dr. David Freier

David O. Freier was born in Brooklyn, New York, and raised in Montclair, New Jersey. After completing a Bachelor of Science degree at the University of Richmond, he stayed in Virginia’s capital city and completed his doctoral work in the department of Pharmacology and Toxicology at the Medical College of Virginia, Virginia Commonwealth University in 1993. With a PhD in hand he began a journey of research and teaching that led him to Minneapolis, Minnesota; Philadelphia and Meadville, Pennsylvania; back to Richmond; South Hadley, Massachusetts; and finally to Lynchburg, Virginia, where he is a professor of Biomedical Science and Biology at the University of Lynchburg. He currently serves as chair of the Department of Biomedical Science, served as a founding fellow of the University of Lynchburg Teaching and Learning Center, and received the Thomas C. Allen Award for Excellence in Academic Advising 2011 and the Award for Excellence in Research Mentoring award in 2019. In December of 2019 he completed a Master of Arts in Science Writing from Johns Hopkins University, begun during his 2017 sabbatical leave. From 2016 to 2019 he served as the Virginia Chapter Councilor for the American Society of Microbiology as a member of COMS (Council on Microbial Sciences) and currently serves as a member of FUTURE for the SOT.

His scientific interests involve microbiology and immunology, with parallel pursuits in evolutionary biology, human health, and pathogenesis. Specific research areas include immunomodulatory effects of drugs of abuse and herbal products like Echinacea purpurea, mechanisms of Mycobacterium cell wall components in macrophage activation, standardization of in vitro methods for use of the RAW 264.7 macrophage cell line, and characterization of feline oral microbiomes. He and his wife Judi are passionate baseball fans, having been to Major League and Minor League games in over 100 stadiums. He even finds time to write player profiles during the summers about the local Class A Lynchburg Hillcats for the website Did The Tribe Win Last Night.com. When not teaching, writing, traveling, or at the ballpark, he enjoys spending time at home with his wife and four cats, Hope, Jethro, Isabella, and Mojito.
Your Future, in the PALM (Network) of Your Hand!

The Promoting Active Learning and Mentoring (PALM) network is a National Science Foundation–funded program that employs best practices to foster high-quality, evidence-based, undergraduate science education. You can develop your abilities to teach lecture courses using active learning by working with an experienced active learning instructor. The program welcomes participants from any post-secondary institution, especially those serving minorities. In the last two years the PALM Network has awarded funding to more than a dozen mentor/mentee pairs. Fellows receive up to $2,000 for expenses associated with mentoring. Mentors receive a $500 stipend, and the Fellow and Mentor each receives up to $1,000 in travel costs to present the results of their research. For more information, including eligibility requirements, application details, and to learn about how to be paired with a mentor if you don’t have one in mind, visit www.palmnetwork.org. Apply to be a PALM Fellow today!! The 2020 Application Deadlines are April 30, July 30, Oct 30. The future is in the PALM of your hand.

Apply to be a PALM Fellow

- Establish mentor-Fellow relationship
- Submit PALM proposal
- Fellow submits pre-mentoring teaching video
- Fellow works with, visits, observes mentor
- Fellow records post-mentoring teaching video
- Present to PALM Network

For more information, including eligibility requirements, application details, and to learn about how to be paired with a mentor if you don’t have one in mind, visit palmnetwork.org

SOT Educational Resources

- Recorded Eminent Toxicology Lectures
- In Vitro Toxicology Lectures and Case Studies
- Annual Meeting Session Recordings
- Undergraduate Educator Network Webinars
- And more!

www.toxicology.org
SOT Undergraduate Faculty Grant Applications Due March 27

FUTURE Committee sponsors two grant programs to support professional activities of undergraduate faculty with awards of up to $1500 each. A maximum of five (5) grants are available to support undergraduate toxicology research experiences and a maximum of two (2) awards are available for faculty professional development related to undergraduate education.

Among the 2018 recipients was Dr. Michael Borland of Bloomsburg University and his student Taylor Runkle, a junior in the BS Chemistry-Biochemistry option. Ms. Runkle conducted a comparative study on a selenium-analog of the PPARβ/δ ligand GW501516 in human malignant melanoma. Ms. Runkle will attend SOT 2020 and gain the high-impact experience of presenting at a SOT national meeting. This will be a great experience for her, as well as provides excellent recognition for Bloomsburg University and Dr. Borland for future student recruitment and research. Please review these impactful grant opportunities that support undergraduate educators.

More Information:

- Undergraduate Faculty Research Grant
- Undergraduate Faculty Development Grant

International ToxScholar Emphasizes Careers and New Opportunities in Toxicology During Nepal Visit

International ToxScholar Nitin Verma, PhD, met with undergraduate students, postgraduate students, and faculty of various Institutes in Nepal in December 2019 and January 2020. He visited Vinayak College of Health Sciences, Kathmandu; Central Institute of Sciences and Technology, Kathmandu; and Crimson College of Technology Bhairahawa (Lumbani). He presented talks on general introduction to toxicology, toxicology concepts, and careers in toxicology, as well as interacted with public health undergraduates. Dr. Verma also introduced students to the Tox21 and ToxCast programs and advancements in toxicological screening procedures. More than 500 students and staff attended the sessions. Full blog is here.
The FUTURE-sponsored International ToxScholar program supports toxicologists who make presentations at academic institutions in developing countries. More information is found at the International ToxScholar website. Begin planning now—the next deadline is October 9, 2020.

**Recruiting the Next Generation of Toxicologists: SOT Undergraduate Consortium**

Emphasizing the importance of increasing the awareness of toxicology among undergraduates, SOT Council appointed the Undergraduate Consortium Task Force to conduct a three-year pilot with a small group of undergraduate institutions. The Task Force selected nine institutions across the country, engaged a SOT member to serve as a liaison to each, and established a faculty contact on each campus. These contacts have increased communication with SOT, both electronic and person-to-person, hosted toxicology speakers, and helped recruit student applications for SOT awards and programs. Additionally, the Task Force funded Regional Chapters in the area in which these institutions were located to provide activities specifically for undergraduates in conjunction with their meetings. The consortium supported lodging for two students and an advisor from each of most of the consortium institutions for three days of the 2019 and 2020 SOT Annual Meetings.

The Task Force is now reviewing their findings and will be presenting recommendations to Council, including ways that the Committee on Diversity Initiatives and FUTURE might capitalize upon conclusions drawn by the Task Force.

**Central States SOT Regional Chapter Holds Meeting on Undergraduate Toxicology Education**

“Undergraduate Education in Toxicology” was the theme at the Central States Regional Chapter of the SOT held in September 2019 at Drake University in Iowa. Leveraging $500 from FUTURE, CCSOT invited students to attend the meeting and used matching funding to support other aspects of the program. Two keynote speakers from FUTURE were featured: Joshua Gray from the US Coast Guard Academy discussed “Applying Vision and Change to Your Undergraduate Toxicology Course: Tips for Using the Undergraduate Toxicology Learning Framework” and Chris Curran of Northern Kentucky University presented “Poisoning the Curriculum (With Good Reason!): Novel
Eleven undergraduate attendees participated in all aspects of the two-day conference, including a poster presentation session that resulted in two Best Undergraduate Poster awards.

A two-hour undergraduate breakout session for undergraduates and high school students featured three speakers. Annelise Nguyen of Kansas State University introduced toxicology, discussing careers, opportunities, and basic aspects of toxicology that were drawn from the “Introduction to Toxicology” slide set available at the Undergraduate Educators section of the SOT website. Chris Curran led an exciting active learning exercise “Totally Toxic: The Strange Case of Jennifer Strange” during which students used toxicological principles to identify the Ms. Strange’s cause of death. The final presentation, “Opioids,” was an active learning exercise focused on mechanism of action of opioids and receptor theory provided by Joshua Gray; this exercise is also available at the SOT website. Student participant surveys indicated high levels of interest and satisfaction with the program.

In addition to the program held at Drake, three other regional SOT chapters provided FUTURE-supported undergraduate programs. Watch for funding announcements so your Regional Chapter can apply in future years!

Northeast SOT Regional Chapter Meeting Immerses Undergraduates in Toxicology

On October 25, 2019, forty undergraduate students from six institutions participated in the Northeast Regional Chapter meeting at Novartis in Cambridge, MA. Their participation was funded in part through a grant from FUTURE. In the morning students attended three graduate student talks as well as two talks about alternative models in toxicology by Dr. Matt Wagoner from Takeda Pharmaceuticals and Dr. Kim Boekelheide from Brown University. At lunch, students sat in small groups with at least two toxicological experts to chat about careers in toxicology. Following lunch, the students toured one of three pharmaceutical companies: Takeda, Pfizer, or Novartis. The students reconvened with the meeting to participate in the poster session. Fourteen of the 40 presented posters. Sharon Zeldin from Brown University won the Best Undergraduate Poster award. The undergraduate-only program began after the poster session, opening with an introduction to toxicology by Larissa Williams from Bates College. Dr. Birgit Fugal from Boehringer-Ingelheim then gave a presentation on immunotoxicology, using several case studies from drugs developed at the company. The

Undergraduate Educator Network e-Letter March 2020
program finished with an active learning exercise on opioids developed by Larissa and Joshua Gray two years ago. On a survey administered through SOT, students resoundingly wanted more opportunities for networking and one student noted that a career panel might be helpful. This suggestion will be considered when organizing the undergraduate session for next year.

Undergraduate Educator Network Webinars

Organized by the FUTURE Committee, UEN Webinars disseminate teaching strategies for undergraduate toxicology. All webinar materials are available on the UEN Webinar page, including the winter 2018 UEN webinar which provided three examples of dry labs involving data (statistics, coding, and protein function) for your classroom. Please contact Dr. Christine Curran with any suggestions.

The 2020 spring webinar is slated for March 4, 2020, and is titled “Enhancing the Undergraduate Research Experience for BOTH Mentor and Mentee.” The registration link and more details will be available on the UEN Webinar page.

Toxicology Learning Framework

Designing a new undergraduate toxicology course or revising your current course? Resources are available from SOT to assist. As introduced in Society of Toxicology Develops Learning Framework for Undergraduate Toxicology Courses Following the Vision and Change Core Concepts Model, Toxicological Sciences, Volume 170, Issue 1, July 2019, Pages 20–24, SOT has defined a learning framework and objectives to help you start planning your course, or modifying an existing one, with some of the associated activities.

The toxicology learning objectives echo the NSF AAAS core Vision and Change concepts, which are evolution; pathways and transformations of energy and matter; information flow, exchange, and storage; structure and function; and systems. Toxicology learning objectives will provide guidance for faculty teaching toxicology in a basic undergraduate toxicology course as well as in other courses and include examples and case study references. More information can be found here.