NORTHERN CALIFORNIA REGIONAL CHAPTER

ANNUAL REPORT: 2017-2018

May 1, 2017 to April 30, 2018

I. Officers/Committees:

Officers	2016-2017	2017-2018
President:	Toufan Parman	Doris Zane
Vice President:	Doris Zane	Kathryn Page
Vice President-Elect:	Kathryn Page	Julie Rider
Secretary:	Howard Stock	Andrea Kim
Treasurer:	Julie Rider	Cleo Leung
Past President	Eric Harstad	Toufan Parman
Councilors:	Lolita Boyd	Rodney Prell
	Rodney Prell	Christopher Frantz
PDA Representative:	Alicia Taylor	Alexandra Colon-Rodriguez
GSLC Representative:	Samantha Faber	Rosemarie de la Rosa

Committees:	
K-12 Committee	Toufan Parman and Doris Zane
Preclinical Safety Committee	Jeff Tepper

II. Activities:

2018 SOT Annual Meeting Reception

The NorCal SOT Reception at the 57th SOT Annual Meeting was held at the Zinc Bistro and Wine Bar in San Antonio, TX on Tuesday, March 13, 2018. Our postdoctoral and student representatives (Rosemarie and Alex) planned this fun event. Over 200 of our members and Sponsors showed up to support our chapter! At this reception, we announced our student awards (spearheaded by our Councilors, Rod and Chris) and announced two new board members (Dinah Misner-VP Elect and Will Proctor-Councilor).

NorCal Undergraduate and Graduate Student and Postdoctoral Awards

Each year the NorCal SOT recognizes a graduate student and postdoctoral researcher for their contribution to toxicology. To be considered for the awards, applicants submit an abstract of a poster they are presenting at the SOT Annual Meeting and a letter of recommendation from their advisor. Judging is based on scientific merit, relevance to the field of toxicology, and quality of the abstract. The recipients are then invited to present their award winning work at the NorCal SOT Spring Symposium. In addition, NorCal SOT provides an undergraduate student travel award that recognizes a student who demonstrates a strong interest in toxicology and is attending the SOT Annual Meeting.

This year, in the spirit of encouraging the next generation of toxicologists, NorCal SOT awarded an undergraduate travel award, three graduate student and one postdoctoral awards. There were a large number of very well qualified applicants this year making the selection process difficult. We want to thank all the applicants. After careful consideration, the following applicants were chosen for the NorCal SOT achievement and travel awards:

Undergraduate Student Travel Award
Jeffry Shu (University of California, Berkeley). Abstract: "Computational Association of Polychlorinated Biphenyl bioaccumulation in Great Lakes regions and potential risk of Inflammatory Bowel Disease".

Graduate Student Achievement Awards
First Place: Sunjay Sethi (UC Davis) Abstract: "Influence of Genetic Background on Polychlorinated Biphenyl (PCB) Developmental Neurotoxicity". *Runners up*: Michelle Guignet (UC Davis) and Amin Sobh (UC Berkeley).

Postdoctoral Achievement Award
Martin Schmuck (UC Davis). Abstract: "Automated analyses of dendritic morphology in primary mouse neuronal cell cultures".

Newsletters
Two newsletters were published, one in September 2017 prior to the Fall Symposium and one in April 2018 prior to the Spring Symposium. The newsletter links were sent to all members via email and archived on the Northern California Regional Chapter SOT website. The newsletters captured summaries of past events and included information on upcoming NorCal SOT events, short scientific articles, national meeting announcements and local job postings.

Other Regional Chapter 2017-2018 Activities:
In 2017-2018, NorCal SOT hosted or sponsored a variety of events, including 2 symposia, student outreach and K-12 events. A brief description of these is provided below:

1. On September 28, 2017, NorCal SOT hosted the 2017 Fall Symposium at South San Francisco Conference Center in South San Francisco, CA. The title of the symposium was "The 3R's". The NorCal SOT President, Dr. Doris Zane, along with the Board of Directors greeted 128 registered attendees from regional business, government, and academia. Our featured speakers and their topics were as follows:

- **Integrated toxicology (3Rs in action) and how in vitro toxicology is critical for success for a dermal IND:** Clive Roper, Charles River
- **Adopting a culture of care by implementing the 3Rs in animal use:** Lisa Wong, Genentech
- **Modernizing the "six-pack" testing strategy: influx of modern in vitro techniques:** Gertrude-Emilia Costin, Institute for In Vitro Sciences
- **To each their own: molecular mechanisms of inter-individual variability in toxic exposure effects:** Shaun McCullouogh, US Environmental Protection Agency
- **In silico toxicology protocols:** Glenn Myatt, Leadscope

- **Microphysiological organ systems (organs on chips) for drug discovery, disease modeling, and precision medicine:** Devin Healy, University of California Berkeley

The meeting was a great success, with high attendance and excellent comments post meeting.

2. On April 27, 2018, NorCal SOT hosted the **2018 Spring Symposium** at the South San Francisco Conference Center titled "Immuno-oncology: Opportunities, Therapeutic Approaches, and Safety Considerations". This symposium was held in collaboration with Pharmaceutical and Biosciences Society (PBSS). Similar to the fall symposium, this event included leaders who brought impactful topics to our forum from diverse perspectives including industry, academia, and government. Importantly, our graduate student award winners kindly presented his research. We welcomed over 200 registered attendees from regional business, government and academia. Our featured speakers and their topics are listed below:

- **A Brief History of Immunotherapy**
  Keith Bahjat, PhD, Director, Bristol-Myers Squibb
- **Immuno-Oncology: Nonclinical Challenges**
  Haleh Saber, PhD, Deputy Director, Division of Hematology Oncology Toxicology, FDA
- **NorCal Student Award presentation: Influence of Genetic Background on Polychlorinated Biphenyl (PCB) Developmental Neurotoxicity**
  Sunjay Sethi, Graduate Student, University of California Davis
- **Are You Choosing the Right Model? A Guide to Selecting Your Next Immuno-Oncology Model**
  Henry QX Li, PhD, Senior Vice President, Global Scientific Research and Innovation Division, Crown Bioscience
- **Preclinical development – animal models for selecting/optimizing drug candidates**
  Greg Bannish, PhD, Vice President, Biopharmaceutical Development, Envigo
- **Nonclinical Safety Challenges for Cancer Immunotherapeutics**
  Rodney Prell, PhD, DABT, Principal Scientist/Toxicologist, Genentech
- **Nonclinical Safety Assessment of CARTs: A Multipronged Approach**
  Herve Lebrec, PhD, DABT, Scientific Director, Amgen Inc.
- **Presentation 7: Microbiome Research as an Innovative Platform for Biomarker and Drug Discovery**
  Allyson Byrd, PhD, Genentech

The presentations in both symposia were all excellent examples of cutting edge science across many areas of our toxicology discipline that provided updates on various scientific related issues. Each was well received based on lively Q&A and subsequent speaker engagement. Over the lunch hour, we had a strong turnout of mentors and mentees for our popular "Lunch with an Expert" event with conversations continuing after the meeting.

3. Student outreach

- NorCal SOT has been responding to requests from undergraduate, graduate and postdoctoral trainees for more information on toxicology careers in academia, industry, consulting, and government. In addition, NorCal SOT continues to support younger students with K-12 outreach activities. To address this need, NorCal continued our

tradition of hosting university career mentoring events and focused outreach to K-8 and high school students geared towards emerging scientists in the Bay Area. Details are listed below:

The NorCal SOT has been supporting the Biotechnology Institute (BTI) at Carlmont High School in Belmont, CA; through active participation in its steering committee and attendance at its biannual symposiums. Built on a 17-year history of offering biotech classes to all students, this three-year cross-curricular, science based program excels in teaching students unsurpassed laboratory skills, strong reading, writing, and critical thinking skills and well developed business communication skills. What stands out most about the BTI program is the way professional integration shows students the myriad of options available to them within the biotech sector and SOT is a key partner in that effort. Specifically, SOT is contributing to the vision for expansion and to the value proposition statements geared to creating public awareness and support.

- On June 29, 2017, NorCal SOT hosted a career mentoring event at Veterinary Medicine 3B on the UC Davis campus. The event was organized to help graduate students and postdocs in toxicology identify career pathways outside of academia, specifically the focus was on the transition phase and landing that first industry/government position. Participants enjoyed good food and drinks while mentors offered perspectives on successful approaches to job hunting and key decision they made that brought them to where they are now. Mentors represented companies such as Genentech, Charles River, Chevron, ChemRisk as well as CalEPA- OEHHA/DPR. We would like to thank everyone who came out to Davis, especially the mentors, as it is they who are instrumental in making NorCal SOT career events such as this a great success.

- **Jon Mirsalis Goes to Ralston Middle School: What the Heck is Toxicology?!**
  NorCal SOT Member Jon Mirsalis was invited to make a presentation on February 15, 2018 to Ralston Middle School students about careers in toxicology, titled, "I'm a Toxicologist. What the Heck is That?" Jon talked about what toxicologists do; Paracelcus and the importance of dose; how long you have to go to school to become a toxicologist; taking the ABT exam; jobs in pharmaceuticals, government, forensic labs and public health; and he gave some examples of projects he has worked on at SRI International over the years, including working out the toxicity of Ecteinascidin 743 (now marketed as cancer drug Yondelis®) and studying cardiac biomarkers to predict drugs that might injure the heart. His presentation was followed by dozens of thoughtful questions that ranged from career development ("How did you decide to study toxicology?") to work related ("What is the most fun project you ever worked on?") to risk assessment ("Is vaping safer than smoking cigarettes?") to animal rights ("Why do you experiment on animals?") to clinical ("Do you ever experiment on people?") to the strange ("What is it in Tide Pods that kill people?"). Over 100 students, teachers, the Principal and two School Board members attended this ongoing series on people working in the sciences.

- **Carol Green Judged the Sectional FFA Impromptu Public Speaking Career Development Event**

Carol Green recently judged the sectional FFA (Future Farmers of America) Impromptu Public Speaking Career Development Event in Turlock, CA. The purpose of this contest is to foster and develop the speaking abilities of FFA members as well as develop their self-confidence and contribute to their advancement in interpersonal skills and leadership. Topics for the speeches are not known by students in advance. During the contest each student has 30 seconds to select one of three topics for their presentation. They are then allowed 1 minute to plan the speech and 2 minutes to present. The topics included short phrases, e.g. animal research, and quotes, such as "Our lives begin to end the day we become silent about things that matter." (Martin Luther King, Jr). The students were very impressive in their ability to do this impromptu speaking!

- **Cal State East Bay Science Festival**
  On October, 28, 2017, NorCal SOT supported the Cal State East Bay Science Festival. Along with Dr. Andrew Campbell, Drs. Doris Zane, Toufan Parman, Andrea Kim and Rosario Mollo volunteered at a hugely successful education outreach event. Over 600 students (and even more parents) came by to our NorCal SOT room to conduct toxicology experiments. Other activities at the Science Festival included a Chemistry Magic Show, Life of a Criminalist, Fossil Casting, Robots in Action, Sea Slugs, Bugs & Other Creatures!

- **Carlmont High School's Biotechnology Institute**
  Here is more news about the science education taking place at Carlmont High School's Biotechnology Institute (BTI). On October 17th, approximately 50 BTI students participated in a symposium led by industry professionals. SOT contributed to the event by participating in two round table sessions: one which focused on career paths in biotechnology and the other on hot topics in biotechnology.

  The BTI students showed much interest while learning about career options in pharmaceutical development. One particular career highlighted was the role of a pharmacist.

  One of the hot topic sessions focused on biotransformation, a type of drug substance manufacturing technology regarded as "green chemistry." The kids learned about the concept of biotransformation facilitated by bacteria, and how these microorganisms may be employed in certain types of drug substance production. For instance, a starting material may be transformed through bacterial metabolism which will introduce chiral changes and result in new drug substances. This type of green chemistry is possible in considerably milder conditions and more environmentally friendly manufacturing processes than full synthetic routes.

- **NorCal SOT Science Project Award at the 2018 Sacramento Regional STEM Fair**
  On March 10th, 2018, The Northern California Regional Chapter of the Society of Toxicology (NorCal SOT) awarded the NorCal SOT Science Project Award to students competing in the Sacramento Regional STEM Fair (SacSTEM) held at American River College in Sacramento. The SacSTEM fair is primarily sponsored by the Professional

Engineers in California Government (PECG), the California Association of Profession Scientists (CAPS), Intel, and SMUD. Approximately 200 students competed in Junior (6th-8th grade) and Senior (9th-12th grade) divisions for awards and prizes. Fair participants are drawn from schools in Sacramento, El Dorado, Placer, San Joaquin, Yolo, Yuba, Sutter, Solano, and Amador counties. NorCal SOT Science Project Awards were given to the best project in the Senior division ($150 + certificate) and in the Junior division ($100 + certificate) that illustrate applications of the principles of Toxicology.

In addition, projects which included toxicological principles in their study received honorable mention certificates. The winners in the Senior Division was Sabrina Yarzada from the Sacramento School of Engineering and Sciences for her project "*Henna as an Antifungal*". The winners in the Junior Division were Ashlyn Roice and Alicia Roice from Altamont Elementary School in Mountain House for their project "Radical Terminators". The judging panel included Dr. Jimmy Spearow, a Staff Toxicologist at the Department of Toxics Substances Control, and Emma Karey and Maria Paz Prada, Pharmacology and Toxicology graduate students from UC Davis. Additional details regarding this year's award winners and the honorable mention winners are as follows.

Nor Cal SOT Science Project Award Winners

Division – "Henna as an Antifungal" Sabrina Yarzada Sacramento School of Engineering and Sciences.

For her project Sabrina tested Lawsone, a natural product from the plant *Lawsonia inermis* and commonly known as henna which is used for temporary body art, for its toxicity in yeast preparations. Yeast preparations were used as surrogate for Candida Albicans, an opportunistic pathogen that can cause human infection especially in immunocompromised patients. For her study, she tested multiple doses (0.17-6.25%) of Lawsone prepared in a variety of solvents (ethanol, mineral oil, and water) as well as clotrimazole for a positive control and observed changes with overall sizes, mass, odor, color and consistency of the yeast cultures. Her results demonstrated a dose dependent ability of Lawsone for the reduction of growth of the yeast surrogate in all solvent preparations. For her project Sabrina received a certificate and $150 award for her project.

Junior Division – "Radical Terminators" **Ashlyn Roice & Alicia Roice**
Altamont Elementary School (Mountain House)
For their project, Ashlyn and Alicia compared the antioxidant content of different food sample and used a Raspberry Pi to automate the data capture. Antioxidant activity was measured using the Briggs-Rauscher oscillating chemical reaction in which the interval between sequences of color changes is used to determine antioxidant potential. Extracts from a variety of food samples such as pomegranate and cactus, were tested in their system along with ascorbic acid as a positive control. A Rasberry Pi with a light sensor was then used to record the changes of the light intensity passing through the reaction mixture and the data was analyzed to compute the interval between the different blue phases of the reaction. Of their samples tested, Ivy gourd (*Coccina grandis*) had the lowest amount of

antioxidant activity while Billberries (*Vaccinium mytillus*) had the highest amount. Ashlyn and Alicia received certificates and a $100 award for their project.

Honorable Mention Winners		
Project	**Name**	**School**
The truth about toothbrushes	Elena Moreno Karla Leal	River City High School (West Sacramento)
How much time of exposure to ultraviolet rays will kill E. coli	Jamison Celio	E.V. Cain Charter Middle School
Teeth whitening without discomfort	Corrie Wilson	Bradshaw Christian High School (Sacramento)
Cheaper Cancer Detection: Using the Alpha Fetoprotein and the CA-125 Protein to create a cheap, accurate and effective test for cancer	Pavithra Sundaravaradian	Mira Loma High School (Sacramento)
Is your water clean?	Mason Strawn and John Van Parys	Our Lady of the Assumption Middle School (Sacramento)
Bio.fiber.plastic: The Effect of Lignocellulosic Fiber in Enhancing the Formation and Tensile Strength of Rice Bioplastic	Jacqueline Priawira	Altamont Elementary School (Mountain House)
How do fertilizers affect microorganisms that live in water?	Will Myatt	W.E. Mitchell Middle School (Rancho Cordova)

Honorable mention winners from both Junior and Senior divisions were given certificates for their awards.

- On April 9th, 2018, NorCal SOT hosted a speed mentoring event at 150 University Hall on the UC Berkeley campus. The event was organized to help graduate students and postdocs network with professionals in the field of toxicology in a series of 15-minute session. Participants enjoyed dinner while engaging in conversation about possible career options with mentors. The mentors represented companies such as Genentech, Gilead Sciences, Cardino ChemRisk, Theravance Biopharma, Portola Pharmaceuticals, as well as the EPA, CalEPA-OEHHA, and UC Berkeley. We received positive feedback from student and postdoc participants. Thank you again to all the NorCal SOT members that volunteered as mentors for this event.

4. SOT NorCal Chapter Annual Financial Report (2017-2018) as of 31 May 2018

The Chapter's net assets at the beginning of 2016-2017 fiscal year were $49,504. As of 31 May 2018, the net assets were $38,302, a deficiency of $11,202 from the beginning of the year. Please note the SOT HQ June 2018 financial documents that cover the final month of the fiscal year are not yet available.

Key income and expenses for the first eleven months of the 2017-2018 year are listed in Table 1.

Table 1 NorCal Chapter Financials for First 11 Months of Fiscal Year (as of 31 May 2018)

Income	
Donations	43,800
Dues	5,450
Registration (Spring)	3,250
Registration (Fall)	3,690
Total Income	**56,190**
Expenses	
Meeting (Spring)	28,577
Meeting (Fall)	16,769
Meeting (Reception)	19,454
Student Outreach (K-12)	294
Student Outreach (Undergraduate)	2,000
Other (Meeting)	290
Other (Miscellaneous)	9
Total Expense	**67,392**
Excess (Deficiency) of Revenue over Expenses	**(11,202)**
Net Assets Beginning of Year	**49,504**
Net Assets End of Year (as of 31 May)	**38,302**