CHAPTER MISSION STATEMENT

The National Capital Area Chapter of the Society of Toxicology (NCAC-SOT) was established to provide a regional focus for scientists of all disciplines interested in toxicology. The Chapter acts to:

- Sponsor and co-sponsor symposia on current issues in toxicology
- Provide annual awards to an outstanding student and postdoc in toxicology to assist in attending the SOT Annual Meeting
- Maintain communication with the National SOT regarding current toxicology and regulatory concerns
- Sponsor Regional Chapter events at the SOT Annual Meetings

MESSAGES FROM THE NCAC-SOT EXECUTIVE BOARD MEMBERS

Outgoing President’s Message

Dear NCAC-SOT Fellow Members,

While ending my term as NCAC-SOT President, I would like to summarize our accomplishments for the 2015-2016 Board Activities:

- Fall 2015: Pedro Del Valle led the efforts for a webinar on “Looking forward after 19 years of the Endocrine Disruptor Screening Program” that was well attended with nearly 300 callers at the peak.
- NCAC-SOT-SRA Collaboration: Nancy Beck led the efforts for a Roundtable Discussion on TSCA Reform at the Annual Meeting of the Society of Risk Analysis in December 2015.
- SOT Annual Meeting in New Orleans: Joint efforts NCAC and NC for a well-attended reception; the NCAC-SOT presented 3 Bern Schwetz Student Travel Awards to Postdocs.

K-12 Outreach Program

- Volunteers attended booths at the AAAS Family Science Days in February and the USA Science & Engineering Festival in April. More than 200 families engaged in toxicology educational activities at the booths.
- Volunteers judged 8 Regional Science Fairs: Montgomery County, Prince George’s County, Howard County, and Baltimore in Maryland; Loudoun County, Prince Williams County and Fairfax County in Virginia; and Washington DC. Special Awards in Toxicology were presented to 2 Middle School students and 6 High School students who also presented their posters at the Spring Symposium in April, 2016.

Other Activities

- The President attended the Regional Chapter Communication and Collaboration Group (RC4) monthly meetings. The Vice President attended the F2F meeting at the SOT Annual Meeting in New Orleans.
- Searched for nominees and presented for election to open Board positions, VP/President-Elect, and 2 Councilors.
- Membership kept steady during this year and it is currently at 199 members.
Many thanks to:

- Mark Miller, our Outgoing Past President for all his contributions, time and dedication with the NCAC. We will continue working towards the Fall Meeting to celebrate NIEHS 50 years.
- Susan Laessig and David Szabo, Outgoing Councilors for their contributions, time and dedication as Councilors.
- Gladys Erives and Gopala Krishna for their contributions, time and efforts for the K-12 Outreach Program.
- All of you Board Members for your support, contributions, time and dedication during my presidential term. Hope to continue collaborating with the NCAC-SOT as Councilor/Past President and lead the Outreach efforts.

I would like to welcome our new elected Board Members:

- Tracy Chen, VP/President-Elect
- Elena K. Braithwaite, Councilor Student Liaison
- Lorraine Evelyn Twerdok, Councilor Website Coordinator
- Kristin Noell, Student Vice Representative

Warm Regards,

Pedro L. Del Valle
NCAC-SOT Outgoing President

- // -

**President’s Message**

As school starts back up all over the National Capital Area Chapter, there is an anticipation regarding the year to come and the changes they will bring. Election years always heighten that anticipation of change and this always casts a large shadow over the work we do in this Regional Chapter.

In my several years as an officer in NCAC, I have always strived to establish program content that lies at the interface of science and law and I hope to continue to address topics important to regulatory toxicology throughout the year. There are many public concerns regarding safety of air, water, food and consumer goods, and finding the most protective yet practical solutions can be complex. As a chapter, we have a wealth of issues we can inform as a Society through our educational initiatives: how to implement the newly reformed Toxic Substances Control Act (TSCA), how to use the new FDA Generally Recognized Safe (GRAS) standard & how to establish safety profiles for drugs, cosmetics, pesticides, and industrial chemicals that are "green" and "sustainable" are but a few. Understanding emerging risks (such as the use of electronic cigarettes to consume both nicotine- and cannabis-formulations) and expanding use of the modern toxicological toolbox (such as establishing Adverse Outcome Pathways and microphysiological systems) are other important areas that the NCAC can provide expert advice on.

More recently, our chapter (under the expert direction of now Past President Pedro Del Valle) also has grown its outreach to foster and support young scientists and we will continue this activity as well, in addition to expanding our network of collaboration with other local chapters of scientific societies. Our student poster session at the Spring Symposium was a huge success and offered many middle and high school students the opportunity to defend their work in front of industry and government toxicologists! Continuing to develop this "pipeline" of future researchers is an important priority of the NCAC.

We look forward to a fruitful year of education, advocacy and outreach with you. I’m excited that this year's annual meeting is not only in our region but where I think of as home (Baltimore, Maryland). As an alum of both
University of Maryland and the Johns Hopkins University, I fondly remember my formative years in Maryland as a young scientist and I very much look forward to seeing all of you in Charm City next spring!

Thanks to all our members for your continued support of the Society of Toxicology. Enjoy the back-to-school and "sweater weather" and GO ORIOLES.

Erik Janus  
NCAC-SOT President

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Student Liaison’s Message

Please consider applying for the National Capital RC Bern Schwetz Student Travel Award

Thank you for being an NCAC member! If you are a full-time graduate student or a postdoctoral scholar and your abstract to the 56th Annual Society of Toxicology Meeting in Baltimore, MD has been accepted, you are eligible to apply for the National Capital RC Bern Schwetz Student Travel Award. This is a cash award to support students presenting at the Annual Society of Toxicology Meeting.

The deadline to apply for the NCAC-SOT Bern Schwetz Student Travel Award is December 31, 2016. If you are interested in submitting an application, please consult the NCAC-SOT website for application criteria and a list of past award recipients (http://www.toxicology.org/groups/rc/ncac/awards.asp). If you have additional questions, please contact Dr. Elena Braithwaite.

The abstract application deadline for the SOT Annual Meeting is October 7, 2016 and abstracts can be submitted through the following web site http://www.toxicology.org/events/abstract/submit.asp. Other pertinent deadlines for the 2017 56th Annual SOT Meeting are listed in the table below:

<table>
<thead>
<tr>
<th>Timeline of Events for SOT’s 56th Annual Meeting in Baltimore, MD</th>
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<tbody>
<tr>
<td>Early bird registration</td>
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<tr>
<td>Now – January 13, 2017</td>
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<tr>
<td>Abstract submission</td>
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<td><a href="http://www.toxicology.org/events/abstract/submit.asp">http://www.toxicology.org/events/abstract/submit.asp</a></td>
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<td>Now – October 7, 2016</td>
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<tr>
<td>Deadline for the National Capital RC Bern Schwetz Student Travel Award</td>
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<tr>
<td><a href="http://www.toxicology.org/groups/rc/ncac/awards.asp">http://www.toxicology.org/groups/rc/ncac/awards.asp</a></td>
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<tr>
<td>December 31, 2016</td>
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<tr>
<td>Standard registration</td>
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<tr>
<td>January 14, 2017 – February 10, 2017</td>
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<td>Registration and Housing Deadline</td>
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<td>February 8, 2017</td>
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<tr>
<td>Final registration begins</td>
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<tr>
<td>After February 10, 2017</td>
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<tr>
<td>2017 SOT 56th Annual Meeting, Baltimore, MD</td>
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<td>March 12-16, 2017</td>
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</table>

Elena Braithwaite  
NCAC-SOT Student Liaison

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Graduate Student Representatives’ Message

Greeting fellow National Capital Area Chapter Student Members,

We hope everyone had a productive and wonderful summer! With such a breathtaking representation at the Olympics, now it is our turn to represent our region in Toxicology. Your Student Representatives for the 2016-2017 term are: Graduate Student Representative, Georgina Harris, a 4th year doctoral candidate in Toxicology at Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland and Graduate Student Vice Representative, Kristin Noell, a 5th year doctoral candidate in Toxicology at The University of Maryland Eastern Shore, which is located in the small but quaint Princess Anne, Maryland.

We hope to provide you with up to date information and guidance in the next year leading up to the 56th SOT Annual Meeting in Baltimore, Maryland from March 12-16th. We will need all hands on deck, so please reach out if you are interested in volunteering to help host this meeting! Abstract submission for the 56th SOT Annual Meeting and ToxExpo will be open until October 7th and information for travel awards and award deadlines can be found at http://www.toxicology.org/awards/sot/awards.asp. Deadlines for some awards can be as early as October, so be sure to check which ones you are eligible to apply for. Do not hesitate to send us any questions on eligibility or additional information.

We would also like to make you aware of ToXchange, this self-service portal for SOT has been extensively improved for easier navigation. Visit http://www.toxicology.org/groups/ to log in. This platform allows you to search for members, contact information, updates on articles, and search for specialty section/special interest groups. Under member search click communities to visit Special Interest Groups and Student resources. We advise you try to join at least one Special Interest Group as this can increase your opportunities to apply for funding.

If you have any concerns or ideas that you would like to see implemented, please do not hesitate to contact us at gharri27@jhu.edu and kmnoell@umes.edu. We are looking forward to an engaging and exciting year for the National Capital Area Student Members.

Best regards,

Georgina Harris and Kristin Noell

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Postdoctoral Representative’s Message

Dear NCAC SOT Postdoctoral Scholars,

I hope you enjoyed your summer and are looking forward to the upcoming SOT events!

Abstract submission and registration is open for SOT’s 56th Annual Meeting and ToxExpo in Baltimore, MD on March 12-16, 2017. The abstract deadline is October 7, so please submit an abstract to be able to share your work at the meeting. During registration, please remember to sign up for the postdoc-specific activities, including the Student/Postdoctoral Mixer (No registration fee), the In Vitro Lecture and Luncheon ($10 registration fee), and the Postdoctoral Luncheon ($10 registration fee). Other events and activities at the SOT Annual Meeting for postdoctoral scholars include the Poster Tours for Trainees and the Chat with an Expert program which allow postdocs to participate in informal mentoring experiences. There are also a number of awards available to postdoctoral fellows, so please consider applying.
Applications for the **Best Postdoctoral Publication Award** (BPPA) is due on October 1. The award information and application may be found here: [http://www.toxicology.org/application/af/awards_details.aspx?id=96](http://www.toxicology.org/application/af/awards_details.aspx?id=96).

The **National Postdoctoral Appreciation Week** (NPAW) will be September 19-23, 2016. As part of the 2016 National Postdoc Appreciation Week, the SOT PDA will be hosting a fall Webinar entitled, “The Dos and Don’ts of Landing your First Job,” on Wednesday September 21st at 12:00 PM EDT. Here is the link for registration [https://aim-hq.webex.com/aim-hq/onstage/g.php?MTID=e3e5cd9ad069cd4634ef0ffa2aac9688a](https://aim-hq.webex.com/aim-hq/onstage/g.php?MTID=e3e5cd9ad069cd4634ef0ffa2aac9688a).

Please visit the following website for information on more NPAW events in the area as they are posted: [http://www.nationalpostdoc.org/?2016NPAW](http://www.nationalpostdoc.org/?2016NPAW).

For more information and resources for postdoctoral scholars, please look out for the Fall 2016 Post-y PDA Newsletter which will be available in the upcoming weeks. If you have any questions or comments, please feel free to contact me ([Shelby.Skoog@fda.hhs.gov](mailto:Shelby.Skoog@fda.hhs.gov)).

Sincerely,
Shelby Skoog
**NCAC-SOT Postdoctoral Representative**

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**Newsletter Editor’s Message**

Dear NCAC-SOT Members,

Having been a member of several scientific societies throughout my career and a Board member of three in recent years, I came to appreciate the advantages the membership and an executive position within a society bring. The possibility to be up to speed with the advances in one’s respective field is the first advantage that comes to mind. Having to learn from others, consult with them and receive feed-back and suggestions during annual meetings is not otherwise easily achieved by any other means of interaction besides a direct discussion near a poster or after a lecture. As amazing as the current communication possibilities are, they cannot replace the human interaction and the amazing brainstorming that occurs when scientists get together and talk. Careers are tailored, turned and improved during these meetings and the discussion partners equally gain in experience, mentorship and contribution to the field.

Some societies are extremely supportive of young scientists and SOT is certainly one example to follow by others in this respect. With the help of travel and other types of awards, mentorship possibilities and job banks, scientists from different generations interact, grow and transfer from their knowledge. If you happen to be at the beginning of your career as a toxicologist, take advantage of what SOT and the Chapters offer. If your career will take you on other scientific roads, you may find out that not all societies have the possibility to offer such support.

As our careers progress (and yes, we gain experience and get older…), we feel the need to contribute to our respective Societies or Chapters through other means, such as being part of the Executive Boards. Without any doubt, this is a rewarding experience for me; learning from my colleagues who currently hold or in the past served as officers within SOT is a unique opportunity I would not have been otherwise exposed to. I came to understand the tremendous amount of work put into organizing a webinar or a meeting, the processes to evaluate submitted abstracts for posters or sessions and the joy in participating to educational outreach activities. Being the NCAC-SOT Newsletter Editor gave me the opportunity to reach out to many of you in the field and invite you to write a column or share your publications, to hear your suggestions and wonderful ideas for our newsletter and to connect toxicologists whose paths may have not crossed if not through the means of our newsletter.
In whatever capacity you have joined our Chapter, I kindly ask you to introduce it and the SOT to your coworkers and especially scientists who now enter the field and encourage them to join for the many advantages the membership brings (see the other columns published by our Executive Board members in this number of the newsletter). If you recommend one of your colleagues to run in the annual elections, talk to them about the exposure a Board position brings if you’ve held one. Certainly, being a board member entails a lot of work organizing meetings, webinars and presentations, editing the newsletter or being a liaison with students and post-docs, depending on the position you may be in. Regardless of your role as Councilor or Officer, it is very rewarding knowing that you contribute to the advancement of the Chapter, you are the voice of the membership heard within SOT and you learn many things that are useful in your career.

As you attend meetings, interact with others, take a minute to introduce our Chapter and encourage them to join. The more diverse backgrounds our members have, the better positioned our Chapter will be.

Thank you,

Gertrude-Emilia Costin
NCAC-SOT Newsletter Editor
**TREASURER’S REPORT**

**NCAC-SOT Treasurer’s Report – Aug 21, 2016**

By Nancy Beck, Treasurer

### Account activity since last report

(Spring 2015 Newsletter)

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<td>3/12/16 Student Awards (4)</td>
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<td>3/19/16 Student Award (DC)</td>
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<td>4/1/16 Student Award (Baltimore)</td>
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<td>4/6/16 NCAC Travel Award</td>
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<td>4/18/16 Student Award (Howard County)</td>
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<td>4/28/16 GSLC Travel Award</td>
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<td><strong>Total Debits</strong></td>
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| **Credits**                |           |
| 2/4/16 SOT Reimbursement, Student & Speaker Travel | $3,000.00 |
| 2/9/16                      | $1830.00  |
| 2/29/16 Dues (Renewals and New Members) | $920.00 |
| 4/13/16 Dues (Renewals and New Members) | $470.00 |
| 4/26/16                      | $125.00   |
| 6/17/16                      | $210.00   |
| 6/24/16                      | $10.00    |
| 7/27/16                      | $50.00    |
| 4/26/16 Spring Symposium Registration | $90.00 |
| 6/17/16                      | $50.00    |
| 6/30/16 SOT T-shirt reimbursement | $1021.32 |
| **Total Credits**           | **$7786.32** |

**Balance**

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<th>July 31, 2016* (Closing balance)</th>
<th>$10594.30</th>
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*Most recent bank statement in our possession.

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**NCAC-SOT MEMBERSHIP**

**Details**

Did you remember to renew both your SOT and NCAC memberships this year? Annual membership fees for NCAC-SOT remain unchanged this year and are only $25 for regular memberships and $10 for full-time students. These negligible fees are used to fund our symposium each year and to support a myriad of student activities, including student awards, travel supplements, and K-12 outreach.

If you have not yet renewed your regional chapter membership, please do so today! You can do that online at [http://www.toxicology.org/membership.asp?page=dues](http://www.toxicology.org/membership.asp?page=dues), or just fill out and mail in the membership application form on the next page.
Membership Application

Membership Application

Name: ________________________________________________________

Affiliation: ____________________________________________________

Address ________________________________________________________

City: ____________________________

State: _____ Zip Code: ____________

Area Code: ______ Phone: ____________ FAX: _______________________

E-mail: __________________________________________________________________

Membership Type _____ Full Member ($25) _____ Student ($10)

Please check the most appropriate responses:

SOT Member _____ Yes _____ No

Highest Degree Attained

A.S. _____ M.P.H. _____ Academia

B.A. _____ M.S. _____ Consulting

B.S. _____ M.A. _____ Contract Lab

D.V.M. _____ Ph.D. _____ Government

D.V.M./Ph.D. _____ Sc.D. Industry- Chemical/Petroleum

M.D. _____ V.M.D. Industry- Pharmaceutical

M.D./Ph.D. _____ V.M.D./Ph.D. Industry- Other

Type of Affiliation _____ Other- _______________

Please complete the information above and send with a check, money order or credit card (payable to National Capital Area Chapter SOT, no POs) to the address below. The NCAC SOT will review your application, and you will be notified within 30 days. Those not accepted will receive a full refund. Current RC members: please do not use this form since your renewal dues are billed annually through SOT.

Payment Type: Money Order______ Check ______ Credit Card ______

Credit Card # __________________________ Exp date ________

Name on Card ________________________________________________

Signature ____________________________________________________

Please send form as a pdf to:
Nancy Beck, Treasurer
Nancy_Beck@americanchemistry.com

If paying by check, please send to:
Society of Toxicology, ATTN: Ashley Pomper
1821 Michael Faraday Drive, Suite 300,
Reston, VA 20190
Dear NCAC-SOT members,

The NCAC-SOT Executive Board considers useful to publish the membership roster in each newsletter. As of September 2016, the Chapter has 199 members listed below:

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NCAC-SOT ACTIVITIES UPDATE

Reports – 2016 Meetings

Society of Toxicology (SOT) Annual Meeting

The 2016 SOT Annual Meeting Reception was held in conjunction with the North Carolina Chapter at Mulate’s Restaurant in New Orleans, LA on March 14. Approximately 170 people were in attendance.

NCAC and NC SOT Chapters members enjoying the reception

The President’s address - Dr. Pedro Del Valle
The NCAC-SOT President, Dr. Pedro Del Valle, presented the President Service Award to Dr. Mark Miller for his service and leadership as President-Elect, President, and Past President of the National Capital Area Society of Toxicology 2014-2016.

NCAC-SOT was delighted to present three Bern Schwetz Student Travel Awards to three postdoctoral students who presented their research results at the 2016 SOT Annual Meeting as follows:

1st Place: Shelby Skoog, FDA and NCAC-SOT Postdoctoral Representative here with VP Erik Janus at the Global Gallery presentation 2016 SOT Annual Meeting
In April 2016, the National Capital Area Chapter of the Society of Toxicology (NCAC-SOT) hosted a unique event in the history of the Society, entitled “Medical Cannabis and the Endocannabinoid System: A Review of the Evidence and the Barriers.” The goals of this first Society conference on the endocannabinoid system (ECS) were to provide an overview of the endocannabinoid system and review some of the toxicological evidence supporting the use of cannabinoid-based medical treatments as well as the barriers that restrict these policies to state-based programs.

Although SOT does not traditionally cover the pharmacology of medicinal herbs such as Cannabis sativa, the leadership of NCAC-SOT (which serves the Society members in the District of Columbia, Maryland, and Virginia) felt compelled to host a conference in this area given the sizable and somewhat rapid liberalization of cannabis laws in the United States. Locally, the District of Columbia, Maryland, Pennsylvania, and Delaware now all have regulatory programs allowing patients access to medical cannabis (in the case of Delaware, now
actively distributing); however, several other nearby states may join in the coming years (Virginia, West Virginia). All will soon be actively dispensing medicinal cannabis well in advance of detailed mechanistic knowledge of how the mélange of over 400 phytocannabinoids and terpenes found in Cannabis operate to provide benefits and whether only certain compounds are efficacious. All are also operating under independent state-based regulatory programs without the “protection” of the federal government, as federal law still considers possession and use of the plant illegal and it is classified as a Schedule I substance under the 1970 Controlled Substance Act (CSA). As of the writing of this summary, the federal Drug Enforcement Agency has just denied the most recent petition to “reschedule” Cannabis into a lower tier of CSA. Given the continued Schedule I status of the plant, this somewhat restricts the throughput of research through federal funding channels – although NIH did have over $100 million in its FY15 cannabinoid research budget with just under 20% devoted to studying therapeutic benefits.

To achieve the goals, a multidisciplinary panel of speakers was assembled to address both the mechanistic evidence as well as the regulatory barriers. These speakers have provided manuscripts in support of the presentations delivered to attendees during the April 2016 conference, to be published in a forthcoming issue of the new journal, Cannabis and Cannabinoid Research. The conference tried to reflect and highlight the active research in this area from laboratories in the NCAC-SOT jurisdiction and, as such, attracted speakers from Virginia Commonwealth University and University of Maryland.

Dr. Allyn Howlett (Wake Forest School of Medicine) delivered the day’s keynote address, drawing upon her decades of mechanistic work in elucidating the actions of G-proteins and G-protein-coupled receptors. Legislators and the public are still largely unaware of the pharmacology of cannabinoids and how drugs are designed, developed and regulated. As a result, policies governing the use of these compounds of medicines are often not well-informed by the available evidence. Dr. Howlett gave an overview of the initial characterization of key cannabinoids in the 1960s and the pharmaceutical industry efforts to develop cannabinoid drugs that followed, starting in the 1980s. The role of THC as a partial agonist within the ECS was discussed at length with a focus on her work with the regulatory mechanisms of proteins associated with the CB1 receptor, such as Cannabinoid Receptor Interacting Proteins (CRIPs), and the development of therapeutic molecules that show selective response at CB1.

Dr. Jahan Marcu (Americans For Safe Access) discussed his organization’s patient-focused approach to establishing quality assurance standards for medical cannabis. The standards found in the ASA “Patient Focused Certification” (PFC) are rooted in the work of its allies, the American Herbal Products Association (AHPA) and the American Herbal Pharmacopeia (AHP), the latter of which has issued a monograph on “Standards of Identity, Analysis, and Quality Control” for Cannabis. The quality standards in the PFC are peer-reviewed “seed to consumption” measures that are certified by a non-profit 3rd party and are accompanied by outreach and education initiatives for both doctor and patient in addition to actual ASA certification in a number of areas. In addition, PFC includes recommendations for regulators to ensure safe and consistent practices in cultivation, processing, manufacturing, packaging & labeling and analytical laboratory practices. A facility auditing system then examines individual businesses against the PFC standards and the resulting “seal of approval” is considered compliant with applicable state and federal laws in addition to the detailed and evidence-based standards found in the AHP and AHPA documents.

Dr. Aron Lichtman (Virginia Commonwealth University Medical Center) discussed the role of catabolic enzymes in the ECS and the use of enzyme inhibitors as therapeutic agents to control both acute and neuropathic pain. He reviewed his previous work with knock-out mouse models - mice deficient in either fatty acid amide hydrolase (FAAH) or monoacylglycerol lipase (MAGL) - to understand the mechanism of ECS inhibition to reduce nocioception and to inform whether potential therapeutic candidates have undesirable cannabimimetic effects.
Dr. Joseph Cheer (University of Maryland School of Medicine) presented his ongoing work in how endogenous cannabinoids modulate the encoding of motivated behavior (such as addiction) and whether there are potential therapeutic targets for certain pathological states. The work of this laboratory is showing how dopamine neurons are modulated to mediate reward encoding and trying to understand the pathogenesis of disorders of motivated behavior by employing modern electrophysiological and electrochemical real-time microsensor measurements in mice following cerebral microinjections and systemic drug administration.

Dr. John Hudak, senior fellow in Governance Studies at the Brookings Institution where he studies state and federal cannabis policy, gave an overview of the regulatory and political barriers facing existing state-based cannabis regulatory programs as well as potential future federal programs. An overview and history of how “rescheduling” is accomplished under the Controlled Substances Act was presented as well as the unintended consequences posed by this less-than-simple act. In addition, he reviewed the current federal funding system for cannabinoid research as well as solutions for expanding the pipeline of research to be able to address the information needs of the public and legislators. Debate over this very important issue carried over into the speaker panel discussion that followed Dr. Hudak’s presentation.

The symposium also included a poster session featuring the Middle School and High School Project winners from Regional Science Fairs, and concluded with panel discussion from all participants.

In all, it was a successful meeting that provided a wealth of information on the mechanistic toxicology of the endogenous cannabinoid system and which therapeutic targets and drugs show the most promise for treating disease, yet highlighted some critical political and regulatory issues that restrict the ability of states to implement true evidence-based regulatory programs for medical cannabis.

High School Poster Presentations at the 2016 NCAC Spring Symposium
RSF High School Students winners from Prince William County Navya Annapareddy Isabella Posey and Chathurya Anuga presenting their poster during the 2016 NCAC Spring Symposium

RSF High School Student winner from Baltimore Drew Schleicher - left - presenting his poster to Dr. Shelby Skoog during the 2016 NCAC Spring Symposium
RSF High School Student winner from Howard County Liza Goldberg - left - presenting her poster during the 2016 NCAC Spring Symposium

RSF High School Student winner from Loudoun County Rhoni Awashi - right - presenting her poster to Dr. Deepa Rao during the 2016 NCAC Spring Symposium
RSF High School Student winner from Prince Georges County Armond Dorsey - right - presenting his poster to Dr. Anurag Mishra during the 2016 NCAC Spring Symposium

RSF High School Student winner from Washington DC Jonah Docter Loeb - right - presenting his poster to Dr. Minerva Mercado during the 2016 NCAC Spring Symposium
Meetings of Interest

Upcoming Meetings for the NCAC-SOT

We have been exploring multiple topics for future meetings and are currently trying to organize the chapter to be a little more efficient at selecting program content and assembling educational webinars, meetings, symposia and conferences. The leadership of NCAC SOT will be establishing a more permanent "Conference Committee" in the coming weeks to determine our offerings for the Fall of 2016 and Spring/Summer of 2017.

In addition, I hope to collect some polling data from the chapter members to help guide our decision-making in terms of program content (what themes should we explore?) and format (webinars vs. evening lectures vs. symposia). Please look for that in September 2016.

One idea I would like to explore in the next year is perhaps a longer conference in 2017, where we can bring in vendors and sponsors, student and postdoc posters and presentations and presentations culled from our members. Please send your ideas for program content and format to us!

We look forward to developing educational programs that are of the greatest interest and use to our members.

Onward!

Erik Janus
NCAC-SOT President
NIH Event: 25 Years of Endocrine Disruption Research at NIEHS

25 Years of Endocrine Disruption Research Meetings

- Sep 18-20: Past Lessons and Future Directions – Agenda
- Sep 21-22: NIEHS Obesity Grantee Meeting – Agenda

Masur Auditorium, National Institutes of Health, Bethesda, Maryland

Advance registration is required. The meeting is limited to 450 participants.

The meeting will be held on the Main NIH Campus in Bethesda Maryland. An official photo identification must be shown to enter the campus gates.

A welcome reception will be held on September 18th from 6-9 PM - location To Be Announced.

Individuals with disabilities who need accommodation to participate in this event should contact Thad Schug at (919) 541-9469 or schugt@mail.nih.gov. TTY users should contact the Federal TTY Relay Service at (600) 877-8339. Requests should be made at least 5 business days in advance of the event.

Contact

Dr. Thaddeus T. Schug
Health Scientist Administrator
Tel (919) 541-9469  P.O. Box 12233  K3-15
schugt@niehs.nih.gov  Research Triangle Park, North Carolina 27709


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5th Annual Meeting of the American Society for Cellular and Computational Toxicology (ASCCT)  
September 29-30, 2016 in Research Triangle Park, NC

ASCCT, a Scientific Society dedicated to the promotion of toxicology testing and research that reduces and replaces the use of animals, is organizing its 5th Annual Meeting aimed to explore two major areas: Read Across and Pluripotent Stem Cells. In addition to the major themes, oral and poster presentations will be selected from submitted abstracts. Visit the following website for more information on the upcoming meeting: http://events.r20.constantcontact.com/register/event?oeidk=a07ecjnaga618044392&llr=pbddrdab

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SOT CCT on Use of Cardiomyocytes for the Assessment of Proarrhythmic Risk

The Society of Toxicology Contemporary Concepts in Toxicology (SOT CCT) conference on The Use of Cardiomyocytes for the Assessment of Proarrhythmic Risk will be held October 25-26, 2016, in Arlington, Virginia. Human stem cell-derived cardiomyocytes (hiPSC-CMs) are increasingly used in drug discovery, toxicity assessment, and cell-based disease treatment. In vitro screening assays also are used to make decisions about which drug candidates to progress into development. From the public health perspective, assessing the cardiovascular toxicity potential of any new drug product or environmental toxicant is important. Comprehensive in vitro proarrhythmia (CiPA) assay is a new risk assessment paradigm proposed to replace the current thorough QT study that is currently needed for each new drug application. In light of the potential utility of this emergent technology, this workshop will engage experts in presenting and discussing various aspects of the phenotype of these cells (functional, proteins, biochemical) and comparing them to adult ventricular CMs, as a basis for assessing their potential uses in drug and chemical safety testing. Topics covered include description of cell phenotypes from different sources, in vitro culture conditions and quality assessment, assay methods and validation, in vitro/in vivo correlation, current experience and challenges, and outlining and prioritizing the further work needed. This workshop will include domestic and international scientists from government agencies, pharmaceutical industry, and academia to discuss the current state of the art and the path forward.

For more information, to submit an abstract, and to register, please visit:

Outreach Activities

Update from the Chairs

Dear NCAC-SOT members,

The 2015-2016 NCAC-SOT K-12 Outreach Committee was Chaired by Dr. Gladys Erives, with Dr. Gopala Krishna serving as Co-Chair. SRC, Inc., a not-for-profit research and development company, supported NCAC and SOT to conduct outreach activities especially STEM (Science, Technology, Engineering, and Math)-related activities as further outlined in the newsletter.

Chair, Gladys Erives, PhD
Email: Gladys.erives@fda.hhs.gov

Co-Chair, Gopala Krishna, PhD, MBA, DABT, FATS
Email: gkrishna@supernus.com

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2016 USA Science and Engineering Festival

NCAC-SOT members hosted Booth C21 at the US Science & Engineering Festival Grand Finale Expo on April 16-17, 2016 at the Walter E. Washington Convention Center. This is the largest STEM education event of its kind in the United States that marked the culmination of school programs, contests, and events held nationwide during 2016. The primary goal of the meeting, which is held every other year, is to interest K-12 students in pursuing careers in specific disciplines of science before they enter college. An estimated 400,000 people attended the two-day expo festival events involving over 1,000 leading STEM organizations that presented hands-on science and engineering activities.

The volunteers who hosted the NCAC-SOT booth were: Sainath Babu, Elena Braithwaite, Deborah Burgin, Tracy Chen, Erdem Coskun, Gertrude-Emilia Costin, Pedro Del Valle, Gladys Erives, Lindsay Krawiec, Minerva Mercado, Jorge Muniz Ortiz and Jessica Wignall. Our booth received a steady flow of interested students and their families over the 2 days of the meeting. Volunteers conducted hands-on toxicology activities such as the popular tic-tac game, what is in the label, recognition of molecular structures presented in micrographs, and handling of literature appropriate for all ages. Students at this stage of education have usually taken courses in biology, chemistry and perhaps physics but not inter-disciplinary sciences like toxicology. Yet, many of the students were well aware of the need to evaluate chemicals and pharmaceuticals for safety and hence a high degree of interest both in terms of public health but also future job prospects. NCAC-SOT members provided answers and passed out information that would assist the students in obtaining more detailed information from the SOT website.

Overall, the meeting was an outstanding success and it is strongly recommended that SOT make a more robust effort to raise the visibility of our discipline among students and the public at large. These students are the future toxicology - and how important is that?

Pedro L. Del Valle
NCAC-SOT Booth at the US Science and Engineering Festival 2016

Dr. Minerva Mercado and future toxicologist Sofia Mercado explaining what is in the label of medical products
NCAC-SOT Members and Volunteers Involved in Educational Activities

Back row, left to right: Gopala Krishna; Ilona Bebenek, Georgina Harris, Gladys Erives, Pedro Del Valle and Tracy Chen

Front row, left to right, future generation of toxicologists: Pedro Andres Del Valle, Mayur Krishna and Maggie Chen

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2016 Regional Science Fairs

The weekends before, during and after SOT, NCAC representatives covered 8 Regional Science Fairs. Here is the list of volunteers who served as judges at 8 RSF in the Capital area.

<table>
<thead>
<tr>
<th>MONTGOMERY</th>
<th>PRINCE WILLIAMS</th>
<th>FAIRFAX</th>
<th>LOUDOUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emilia Costin - Coordinator</td>
<td>Erik Janus - Coordinator</td>
<td>Minerva Mercado - Coordinator</td>
<td>Saryu Goel - Coordinator</td>
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<tr>
<td>Carmine Leggett</td>
<td>Richard Troast</td>
<td>Wafa Harrouk</td>
<td>Shamsul Hoque</td>
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<tr>
<td>Shelby Skoog</td>
<td>Sainath Babu</td>
<td>Aisar H Atrakchi</td>
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<tr>
<th>PRINCE GEORGES</th>
<th>BALTIMORE</th>
<th>WASHINGTON DC</th>
<th>HOWARD</th>
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<tbody>
<tr>
<td>Gladys Erives - Coordinator</td>
<td>Teresa Palacios - Coordinator</td>
<td>Pedro L Del Valle - Coordinator</td>
<td>Gopala Krishna - Coordinator</td>
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<td>Jennifer Rayner</td>
<td>Gopala Krishna</td>
<td>Ilona Bebenek</td>
<td>Deepa Rao</td>
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<tr>
<td>Kevin Cassin</td>
<td>Sainath Babu</td>
<td>Aisar H Atrakchi</td>
<td>Pedro L Del Valle</td>
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<td>Elena Ramon-Hernandez</td>
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<td>Ariane Motter</td>
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<td>René Viñas</td>
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NCAC-SOT volunteers awarded NCAC-SOT Special Awards in Toxicology ($100) at each of the Regional Science Fair. This is the list of students who received the NCAC-SOT Special Award in Toxicology and accepted presenting their toxicology-related projects at the Spring Symposium on April 20, 2016 (except for Ethan Chen):

<table>
<thead>
<tr>
<th>Student Name</th>
<th>RSF</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armond Dorsey</td>
<td>Prince Georges County</td>
<td>Timosaponin A-111: Cancer's Matchmaker</td>
</tr>
<tr>
<td>Liza Goldberg</td>
<td>Howard County</td>
<td>The Impact of Open Top Field Chamber Induced Warming on the Carbon Dioxide Flux of Acer Rubrum Saplings</td>
</tr>
<tr>
<td>Drew Schleicher</td>
<td>Baltimore Science Fair</td>
<td>Evaluation of Novel KAT II Inhibitors and their Potential Application in the Treatment of Cognitive Deficits Associated with Schizophrenia and Similar Psychiatric Disorders</td>
</tr>
<tr>
<td>Rohni Awashi Rachael Cheung</td>
<td>Loudoun County</td>
<td>The Effects of Nicotine and Cigarette Smoke Condensate on the Neural Development of Zebrafish</td>
</tr>
<tr>
<td>Claire Dozier</td>
<td>Fairfax County</td>
<td>The Excitotoxicity Effects of Neotame and Aspartame on the Heart Rate of Daphnia Magna</td>
</tr>
<tr>
<td>Jonah Docter Loeb</td>
<td>Washington DC</td>
<td>Cigarette Butts and Aquatic Plants</td>
</tr>
<tr>
<td>Navya Annapareddy, Chathurya Anuga, Isabella Posey</td>
<td>Prince William County</td>
<td>A Comparative Homology Based Residue Analysis of Optimizations of Binding Interactions Between Anti-KIM-1 and KIM-1</td>
</tr>
<tr>
<td>Ethan Chen</td>
<td>Montgomery County</td>
<td>Mechanical Manipulation of 3D Extracellular Matrix Stiffness Influences Cell Behavior</td>
</tr>
</tbody>
</table>

It is rewarding to learn that most of these projects received one or more awards including claiming first place in their categories. A couple of letters of recognition were sent to students whose projects were outstanding but were not selected to receive the NCAC-SOT Special Award in Toxicology. We were delighted with the high quality of the projects, student knowledge and the presentation skills displayed by participants at these 8 RSFs around the Capital Area.

On behalf of the Society of Toxicology and the NCAC-SOT, I would like to THANK YOU for your efforts and dedication on this outreach program. I also would like to THANK the NCAC-SOT Executive Committee and our Sponsor for these events, SRC, for their continue support for the 2015-2016 K-12 Outreach Program at our Capital Area Chapter.

With all my best wishes and appreciation for your support,

Pedro Del Valle
NCAC Members who served as Judges at the Howard County RSF 2016 from left to right: back row - Jon Inglefield and Scott Thurmond; front row - Deepa Rao, Pedro Del Valle and Gopala Krishna

NCAC Members who served as Judges at the Washington DC RSF 2016 from left to right: Ariane Motter, Pedro Del Valle, Sainath Babu, Jessica Wignall, Aisat Atrakchi and Rene Vinas
NCAC Members who served as Judges at the Baltimore RSF 2016 from left to right: Kevin Cassin, Teresa Palacios and Gopala Krishna

Drew Schleicher from Centennial High School - recipient of the NCAC Toxicology Award at the Baltimore Regional Science Fair 2016
Jonah Docter Loeb from Alice Deal Middle School - recipient of the NCAC Toxicology Award at the Washington DC Regional Science Fair 2016

Liza Goldberg from Clarksville Middle School - recipient of the NCAC Toxicology Award at the Howard County Regional Science Fair 2016
At NCAC-SOT we like to acknowledge the accomplishments of our members. The Newsletter Editor will send an email to the members asking to share their publications, presentations and other accomplishments from the last number of the newsletter to date to be included in the next number. We are happy to spread the word of your successes, so please take advantage of this opportunity to share them with your colleagues.

**Publications and Presentations**

*Presented in alphabetical order based on the author who is member of the NCAC-SOT (underlined)*

**Book chapters**


**Manuscripts**


Posters
Shide E., Amable L. Evaluation of the ovarian cancer cell metallome using ICP-MS. NIH PostBac Poster Day, April 20, 2016, Bethesda, Maryland, USA.

Abstracts

Lectures
Amable L. Quantification of metal content in individual cells using single cell ICP-MS. C&EN Webinar. March 22, 2016, online.
Amable L. Metallomics - rethinking the role of metals. Invited speaker for NCI Lab of Cancer Biology & Genetics Invited Speaker Seminar Series, April 14, 2016, Bethesda, MD, USA.
Amable L. Single cell quantitation of metals and nanoparticles by ICP-MS. Invited oral presentation at the 2016 Nanolytica Symposium at the University of California Berkeley, May 20, 2016, Berkeley, CA, USA.
Amable L. Metals and Health: Opportunities to understand the role of metals in Hispanic communities. Invited speaker for Trans-NIH Hispanic Health Special Interest Group, June 23, 2016, Bethesda, MD, USA.

Whitepapers
Saghir S.A. Possible effects of repeat exposure and age on toxic outcome of chemicals in long-term animal studies. Written from Smithers Avanza, Gaithersburg, MD (2016).