



CANNABIS CHEMISTRY SUBDIVISION

SPRING 2020 NEWSLETTER



CANN

CANNABIS CHEMISTRY SUBDIVISION OF THE DIVISION OF CHEMICAL HEALTH AND SAFETY AT THE ACS

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- VOLUNTEER OPPORTUNITIES



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Cannabis Meets Chemistry

The Cannabis Chemistry Subdivision of the American Chemical Society



WORDS FROM THE CHAIR

Julia Bramante
Chair, ACS Cannabis Chemistry Subdivision

Dear CANN Members,

I would like to take a moment to acknowledge the historically challenging times we are currently facing on a global scale. In addition to the COVID-19 pandemic that has made an impact on each and every one of us, we are in the midst of a massive movement to confront and overcome racial and social injustices.

Acts of police brutality, racial injustice, and discrimination directly conflict with our core values as an organization. I would like to take this opportunity to acknowledge that we can also continuously better our commitment to take accountability and promote positive change. CANN strives to not just express support, but to actively improve the diversity and inclusion of our Cannabis Chemistry Subdivision. This is not something that changes overnight, but it is something we will collectively work toward with thoughtful intention and persistence. As our esteemed members, we invite you to take part in this conversation. If you have any suggestions or would like to contribute to our diversity and inclusion initiatives, please reach out to me directly at chair@cann-acs.org.

With all that is happening, many people are struggling emotionally, physically, mentally, and financially, and it is important now more than ever that we stand to support one another. We hope that the following newsletter provides a sense of community, resources, and inspiration as we all navigate these trying times together.

Sincerely,
Julia Bramante





American Chemical Society

American Chemical Society statement on the death of George Floyd

The tragic killing of George Floyd, the latest in a string of similar acts of violence, has elicited raw emotions, ranging from sadness to extreme anger, across the U.S. and around the globe.

“Diversity, Inclusion and Respect” is a core value of the American Chemical Society (ACS). As a global organization representing a diverse scientific community, we recognize that when we honor one another’s differences and talents, we strengthen humanity’s ability to advance solutions to our greatest global challenges. As collaboration is essential to scientific advancement, so it is also for human progress.

Injustice, discrimination and harassment are at odds with our core value, and ACS joins with many of its partner scientific organizations in condemning these acts and the recent violence that has erupted over the last few days. While anger and outrage are understandable, peaceful protests are the most powerful tools to bring about needed change.

ACS urges its members to take stock of this tragic incident, and resolve to use their science and talents in peaceful and tolerant collaborations with others.

We are in this together. We are all responsible for accountability to lead to positive change.

Issued June 1, 2020



A Special Note for Members:

During this COVID-19 crisis, we are offering renewing members a one-year waiver on your unpaid national dues if you've suffered hardships due to the pandemic. If you have become unemployed, furloughed, have your hours or wages reduced, or are facing illness or family care responsibilities, please contact Member Services at service@acs.org or via phone at 1-800-333-9511 (1-614-447-3776 for members outside the United States).

Do You Qualify for Additional Discounts?

Are you a student or have a disability? We are here to help.

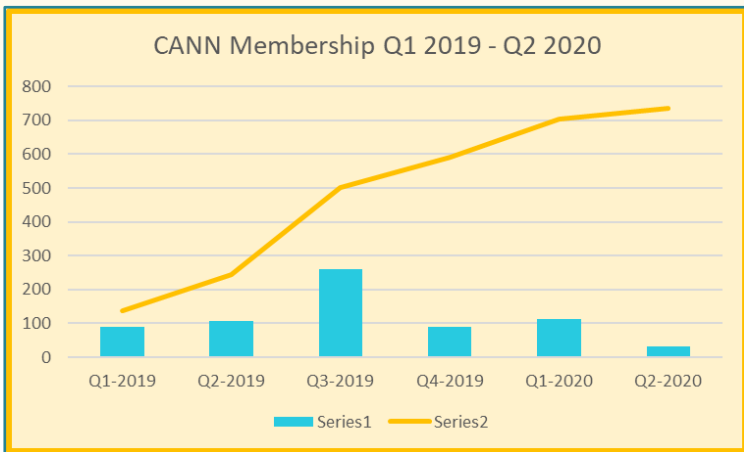




MEMBERSHIP REPORT

Brandon Canfield, Ph.D. & Nick Mulder
Membership Committee Co-Chairs

Our membership roster continues to grow, even in the face of the increasingly-normalized inability to meet each other face-to-face. Thanks to quick work by some of the CANN EC, the pivot to virtual meetings helped to increase our ranks by 32 members, to a total of 746.



CHINESE SECTION NEWS

Hang Ma, Ph.D.
Chinese Section Chair

Exciting news has arrived from the Chair of our Chinese Section, Hang Ma, of the Bioactive Botanical Research Laboratory at the University of Rhode Island – they have just announced the launch of the university's new Cannabis Program! Check out an article about the program [here](#),

Hang's lab will be the coordinator for the new online program, which kicks off this upcoming Fall 2020 semester. Hang & Co. are in search of guest speakers and lecturers, so please reach out if you are interested!

Please reach out to hang_ma@uri.edu to express interest or find out more about the opportunity.





SCHOLARSHIP COMMITTEE REPORT

Kyle Boyar

CANN Vice Chair & Scholarship Committee Chair

Due to the evolving COVID-19 circumstances, the Spring 2020 ACS National Meeting scheduled to take place in Philadelphia, PA was cancelled and hence the 2020 ElSohly Award Symposium with it. However, thanks to the fast-acting team at CANN and Cannabis Science & Technology (CST), we were able to host all of CANN's programming online virtually via CST's webcast platform. The announcement was made on April 20th on the CST website.

As a complement to the webinar, CST also conducted interviews with each of the 2020 ElSohly Award winners to discuss their research and how they came to where they are today in the cannabis space. You can read each of the interviews here.

The rescheduled 2020 ElSohly Award Symposium Webcast, which took place on May 6th, was very well attended with over 600 registrants and nearly 400 attendees. CANN is grateful to have been able to still hold the ceremony in spite of the extenuating circumstances.

JOIN US AS WE SHINE A LIGHT ON THE 2020 ElSohly Award Winners

Dr. Jacqueline Von Salm	p. 9
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Dr. Markus Roggen	p. 12
Dr. Sang-Hyuck Park	p. 13

The Cannabis Chemistry Subdivision is proud to introduce our 2020 EISohly Award Recipient

Dr. Justin Fishedick

Doctorate in Natural Products Chemistry—Masters in Biology from Leiden University
Senior Scientist at Integrated Analytical Solutions in Berkeley, California

PRESENTING

“Terpenoids of Cannabis sativa L., Analysis and Applications”

Justin Fishedick holds a Bachelor's of Science from the State University New York College of Environmental Science and Forestry in Syracuse, New York, a Master of Science in Biology and a Doctoral Degree from Leiden University, Leiden, The Netherlands. Dr. Fishedick's research interests are in the areas of biotechnology, natural products chemistry, pharmacognosy, and analytical chemistry.

The results of his research have been published in several peer-reviewed scientific journals and publications. He has presented his research at national and International scientific conferences. Dr. Fishedick was involved in several research projects investigating the chemical composition and quality control of medicinal cannabis and other medicinal plants during his graduate studies at Leiden University. After completing his Ph.D., postdoctoral research at the Institute of Biological Chemistry at Washington State University focused on analytical methods and biosynthesis of medicinally valuable compounds from plants.



From 2014 to 2018 Dr. Fishedick was lead scientist at a cannabis testing laboratory, Excelsior Analytical Laboratory in Union City, California. Most recently since 2019 he is employed as senior scientist at Integrated Analytical Solutions, a GxP compliant contract research organization based in Berkeley California focused in areas of bioanalysis, drug metabolism, and analytical chemistry.

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HOSTED by CANN, the Cannabis Chemistry Subdivision of the American Chemical Society

The Cannabis Chemistry Subdivision is proud to introduce our **2020 EISohly Award Recipient**

Mr. Jires Meehan-Atrash

Bachelor of Science in Chemistry from State University of New York (SUNY) New Paltz
PhD candidate in Chemistry at Portland State University

PRESENTING

“Thermal Degradation of Cannabis Extract Constituents: What are the risks?”

Jires Meehan-Atrash graduated from State University of New York at New Paltz with a Bachelor of Science in Chemistry and is now in his 4th year of a doctoral degree in chemistry in the laboratory of Dr. Robert M. Strongin at the Portland State University. Jires' research focuses on e-cigarette aerosol science with a focus on cannabis vaporizers.



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The Cannabis Chemistry Subdivision is proud to introduce our 2020 EISohly Award Recipient

Dr. Sang-Hyuck Park

Senior Scientist and Research Liaison at the Institute of Cannabis Research at Colorado State University at Pueblo—Ph.D. in Plant, Soil and Microbial Sciences from Michigan State University

PRESENTING

“Inhibitory Effects of Cannabidiol (CBD) on the Growth and Development of Tobacco Hornworm *Manduca sexta*”

Dr. Park completed his Ph.D in Plant, Soil and Microbial Sciences at Michigan State University. As a postdoctoral fellow, he joined the Department of Plant Sciences at the University of Arizona. Before joining the Cannabis research team, he worked for 2 years at the Genomics and Bioinformatics Research Unit, United States Department of Agriculture (USDA)-Agriculture Research Service (ARS) as a molecular biologist. Since April, 2018, Dr. Park has served as a senior scientist/research liaison in the Institute of Cannabis Research (ICR).

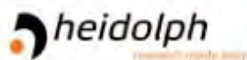
Dr. Park has been leading multi-tiered research project with the assistant of multiple student researchers, seek insights into fundamental cannabis biology and cannabinoid chemistry to address the intrinsic questions of why cannabis plants produce secondary metabolites such as cannabinoids and terpenoids, how they exploit the chemicals for their survival, and what evolutionary benefits they may have. To address these research questions, he has been collaborating with numerous academic



institutes to better understand Cannabis plants through investigating the genetic regulations underlying cannabinoid biosynthesis. The research employs a wide range of molecular-level approaches from next generation sequencing technology to proteomics.

Additionally, he conducts a variety of research projects to explore new therapeutic uses of cannabidiol (CBD). Recently, his discovery of CBD as an ethanol detoxifying agent was submitted to Nature - Scientific Reports. More therapeutic explorations of individual cannabinoids and in the mixture with other minor cannabinoids are planned utilizing different human cell lines and mice model system.

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The Cannabis Chemistry Subdivision is proud to introduce our 2020 EISohly Award Recipient

Dr. Markus Roggen

Founder and CEO of Complex Biotech Discovery Ventures

PRESENTING

“Collaborative Research for Fundamental Insight into Cannabis Production”

Dr. Markus Roggen's latest project, Complex Biotech Discovery Ventures, is a fundamental research laboratory and CRO for the cannabis and hemp industries. His research interests lie in the metabolite composition and behavior throughout the production cycle, extraction optimization, and development of innovative therapeutic formulations.

Dr. Roggen received his M/Sci degree from Imperial College, London, UK in 2008. He then pursued his graduate degree in organic chemistry at the Federal Institute of Technology in Zürich (ETHZ), where he received his PhD in 2012. Dr. Roggen was awarded an DAAD postdoctoral fellowship to pursue further training in physical organic chemistry at The Scripps Research Institute in La Jolla from 2013-2014. He then entered the cannabis industry, at first as laboratory director for Davinci Laboratories of California, an analytical laboratory from 2014 to 2016.



In 2016, he moved into an executive position overseeing production, R&D and process optimization for OutCo, a vertically integrated cannabis company. Dr. Roggen is also a trusted advisor and mentor to multiple startups, startup accelerators and organizations. Positions include advisory positions at MediPharm Labs, a Canadian LP, Bloom Automation, a cannabis robotics company, and former co-chair of the NCIA Scientific Advisory Committee.

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The Cannabis Chemistry Subdivision is proud to introduce our 2020 EISohly Award Recipient

Dr. Jacqueline Von Salm

PhD in chemistry from University of South Florida—Director of Research and Development
Director of Laboratory at Alternative Medical Enterprises in Apollo Beach, Florida

PRESENTING

“Unique Terpene Metabolites as Descriptors of Cannabis Phenotypes”

I got my start in natural products chemistry focusing on chemical ecology, drug discovery, and research SCUBA diving. We studied everything from plant endophytes to marine organisms, and my specialty was Antarctic marine terpenes. This led to our discovery of the novel diterpenoid darwinolide and me being recognized as the most read author of the American Chemical Society in San Francisco in 2017. Since our focus was on discovering new compounds from unique environments, it was largely sample collection, extractions, purification, bioassay testing, and NMR/MS structure elucidation.

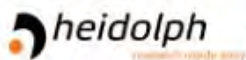
After my PhD, I went to do a post-doc in Vancouver, British Columbia on metabolomics, chemical compound libraries, and antibiotic drug discovery. When I moved back home to Florida, I was poached by Dr. Chris Witowski, the CEO of AltMed, to help start our facility from the ground up, create new product formulations, and perform GC-MS metabolomics on our different plant phenotypes. Since then, I continue to publish on chemical ecology and drug discovery of organisms from my time



in academia, as well as doing as much science communication as I can for the medical cannabis industry. I also consult for nutraceutical and dietary supplement organizations and third-party testing labs starting up in Florida.

Most of my publications in cannabis have been patent applications (of which I have 3), magazines, and media, like Terpenes and Testing Magazine. I was the recipient of the Cosmic Sister Emerging Voices Award for the MAPS Sleeping Octopus Assembly on Psychedelics in Pittsburgh this past fall, and I will be featured in Gram Magazine in March for our research in cannabis.

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CANNABIS CHEMISTRY SUBDIVISION
IS PROUD TO PRESENT THE

ELSOHLY AWARD

The Cannabis Chemistry Subdivision of the American Chemical Society has established the first ever cannabis chemistry award known as the ElSohly Award, sponsored by Heidolph North America. The ElSohly Award provides researchers, students, and industry professionals with the resources to present their work at the annual Spring National Meeting of the American Chemical Society.

To apply, please submit your application at <http://tiny.cc/ElSohlyAward> before July 1, 2020 to be considered. (4)



Dr. Markus Roggen



Dr. Justin Fishedick



Dr. Sang-Hyuck Park



Jirles Meehan-Atrash



Dr. Jacqueline von Salm



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UPCOMING PROGRAMMING

Amber Wise, Ph.D.
Programming Committee Chair

We've been quite busy with both past and future meeting and session planning! Even though the ACS National Meeting in Philadelphia was cancelled, we were fortunate to partner with Cannabis Science and Technology to include many of our great presentations in an electronic format. In case you missed these excellent talks - including our ElSohly Scholarship Award Symposium - you can stream them here.

Looking ahead, we are very excited to be offering our largest number of presentations ever this coming August at the Fall 2020 Virtual ACS National Meeting! We have 44 submissions in six sessions from some of the leading researchers in the cannabis realm. One of our sessions will be co-sponsored with the ACS Multidisciplinary Program Planning Group (MPPG) - the group who decides the overall meeting theme and promotes on-theme programming. Since the Fall 2020 meeting theme is "Chemistry from Bench to Market", we created a cannabis version of this entitled "Soil to Oil; How *Cannabis sativa* L. Products go from the Benchtop to Marketplace", which will highlight various points along the growing, production, and product formulation chain. We hope this will create more exposure to ACS members for our subdivision and the high quality of chemistry involved in this growing industry.

The following sessions will be held at the San Francisco Meeting :

- Advancements in Analytical Testing Compliance, Environmental Concerns & Consumer Safety
- Dual Perspectives: Cannabinoid Dosing & Pharmacokinetics
- Cannabis, Soil to Oil: How *Cannabis sativa* L. Products go from the Benchtop to the Marketplace
- Mind the Gap: Specialized cannabis formulations
Advances in Cannabis Extraction & Purification
- Cannabis & the FDA: Preserving Public Trust & Demanding Accountability

We're also already in the planning stages for next year's meeting in March 2021 in San Antonio! Abstract submissions for this will be open later this fall. Stay tuned for more information.

CANN ELECTION RESULTS

The CANN 2020 Officer Election results are in! The terms for each elected official begin on January 01, 2021. We received 42 votes total per position, and the elected officers are:

Chair (2021-2023) - Julia Bramante

Chair Elect (2021-2023) - Kyle Boyar

Secretary (2021-2023) - Melissa Wilcox

Treasurer (2021-2023) - Mary Beth Koza

MESSAGE FROM THE DEVELOPMENT CHAIR

Ezra Pryor

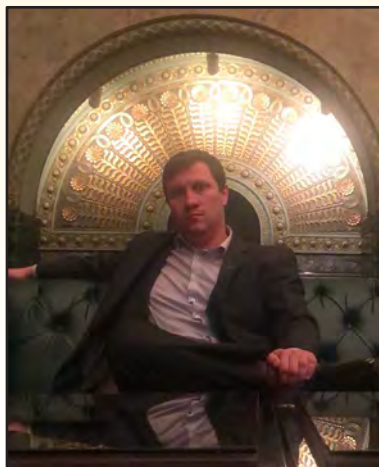
Development Committee Chair

As the Chair of the Development Committee it is my distinct pleasure to report that even with a global pandemic rearing its UGLY UGLY head, 2020 has been our best fundraising year yet. With our new tiered sponsorship system in place and four corporate sponsors, CANN has raised a substantial portion of its annual fundraising goal.

Sponsorships are still available and include such benefits as social media highlights, journal club ads, newsletter ads, networking event sponsorships, and

ACS symposium sponsorships. Networking events and symposium sponsorships are subject to possible delays due to cancelation of public gatherings.

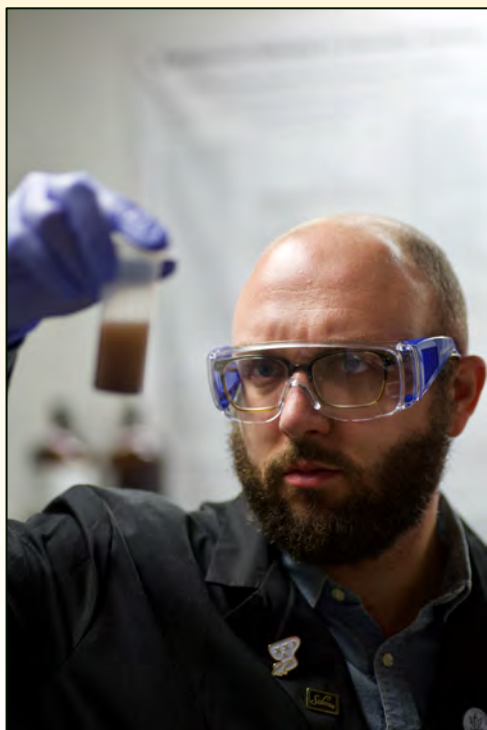
On a more personal note, some of us have been hit hard recently. For those of us that are not in a position to pay membership dues in the near future, I would like to make you aware that ACS will waive the cost of dues for those between jobs (see p.4). This is a more important time than ever for us to support each other.





CANN FEATURED MEMBER, SPRING 2020

Each quarter we offer a CANN member the opportunity to share some information about themselves and a topic of their choosing. This quarter, join us in welcoming our **ACS CANN Spring 2020 Featured Member** :



David Dawson, Ph.D.

Research Principal
CW Analytical

I was nervous. Angst-ridden. Filled with feelings that I had no direction and was aimlessly heading towards a career path in which I had no interest. The final two years of my organic chemistry Ph.D. program at the University of California Irvine had left me feeling unmoored, not wanting to stay in the world of academia and unenthusiastic about a potential job in pharma. It seemed like the vast majority of job offerings and industry connections available to organic chemistry Ph.D.

candidates were in those two areas, with very few graduates pivoting away from the age-old Industry / Academia dichotomy.

It was with this headspace that I packed up my suit, research poster, and newly printed business cards for a trip to the Spring 2017 ACS Meeting in San Francisco. I was set to present my research on nickel catalyzed cross-coupling methodology, and hopefully make some new connections to help me stand out on the job hunt. The response to my research was muted, but it's hard to stand out in a convention room full of other graduate researchers all vying for their chance.



CANN FEATURED MEMBER, SPRING 2020

Tucked away in a hotel conference room, I was one of only a handful of attendees at the final CANN event of the convention. The talks were varied in subject matter, focusing on regulation, extraction, testing, and staffing, all in their relation to the field of chemistry.

Despite the wide range of topics covered, each and every talk hit on a common theme: we need more scientists. In light of the rapid expansion of cannabis legalization measures, including California's recent approval of Prop 64, the speakers emphasized that the only way the grand experiment of cannabis legalization will succeed was with an influx of talented scientists. Chemists, biologists, genealogists, regulators; all are needed to fill the countless jobs that a legal, scientifically grounded cannabis industry creates.

I was struck by the range of new opportunities alluded to by the speakers, and thankfully I was able to ask questions of them and during the session breaks. These in person queries and meet the organizers of CANN subsequent email chains, particularly with Dr. Markus Roggen, led me to realize that cannabis may be the career choice for me. The cannabis industry is a great fit for an organic chemist such as myself, as a knowledge of small molecule reactivities and years of laboratory benchwork is directly applicable to projects relating to cannabinoids, while also serving as a fresh alternative to a life in Big Pharma.

I was sold; I would pursue a job in the cannabis industry. After defending my doctoral thesis, I was fortunate enough to land a job at CW Analytical, a well-established third-party cannabis testing lab in Oakland, CA. In my role as Research Principal, I was able to use my knowledge of organic chemistry daily as I interfaced with clients about product formulation and testing questions, developed new testing methods for complex product types, and conducted independent research.

My research, which began as chasing down a possible variation between different potency preps for infused chocolates, gained international attention after I presented the preliminary findings at the Fall 2019 ACS Meeting in San Diego. A mere two and a half years after sitting in a . . .



CANN FEATURED MEMBER, SPRING 2020

half-empty conference room wondering if cannabis was right for me, I was presenting my independent research on chocolate matrix effects to a packed room as part of CANN's seminar on the complexities of analytical testing. A testament, not only to the great career opportunities that await budding cannabis scientists, but also the rapid growth of the CANN subdivision from the scientific fringe to the hot new research area.

After the completion of my first foray into chocolate research, and subsequent publication by the Journal of Agricultural and Food Chemistry, I feel the need to look back and reflect on how fortunate I've been during my time in the cannabis industry. Without the seminars organized by CANN, I might not have thought to pivot into cannabis. Without the support of the team at CW Analytical, I might not have been able to deep dive on chocolate matrix interference. Without the platform that CANN provided me, I might not have gotten the international recognition of my work, which in turn, led to its publication. All of this is to say, if it weren't for scientists flocking to the cannabis industry, none of this would be possible.

What was true in 2017 is as true today as it will be in the future: the cannabis industry needs more scientists. If you're on the fence about cannabis, or looking for an alternative to the same old post-grad school career options, or simply looking to make your mark, stop by the next CANN meeting, why don't you? It just might change your life.

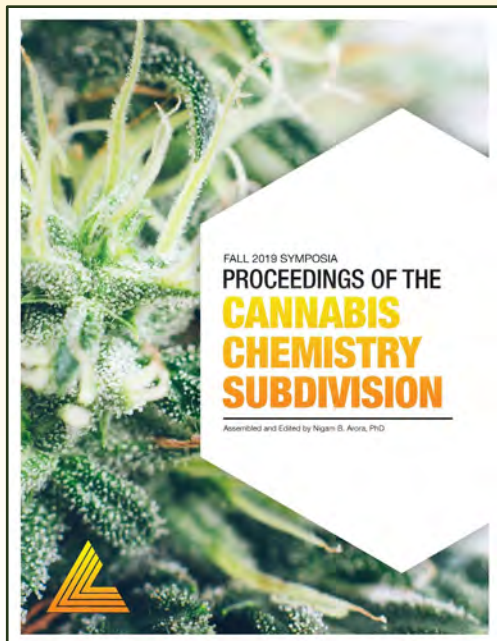
NOMINATE THE NEXT FEATURED MEMBER

For the next two months we are accepting nominations for the **Fall 2020 CANN Featured Member**. Nominations should be submitted to membership@cann-acs.org. Self-submissions are happily accepted (and encouraged).



PUBLICATION COMMITTEE

Nigam B. Arora, Ph.D.
Publication Committee Chair



CANN PROCEEDINGS

The Fall 2019 Proceedings of the Cannabis Chemistry Subdivision were released in April in partnership with Analytical Chemistry. This edition covers 14 presentations that were given at the ACS National Meeting in San Diego. The full PDF version is available to download for free from Analytical Cannabis.

JOURNAL CLUB

CANN Journal Club has held sessions monthly throughout the Spring. On the following pages, check out the Journal Club flyers

from the past three months as well as one for the upcoming session with Rod Kight, J.D. titled "Cannabis and Cars: A Discussion of the Scientific and Legal Issues Raised by Driving and Cannabis." Register for the session here. Stay tuned to CANN social media for updates on upcoming Journal Club sessions.

March	Susan Audino, Ph.D.	p.20
April	Linda Klumpers, Ph.D.	p.21
May	Monica Taing, Pharm.D.	p.22
June	Rod Kight, JD	p.23

CANN's Journal Club

LIVE WEBINAR March 30th, 2020 @10am PST

Followed by Q&A Session

Bringing Clarity to Under-Appreciated Numbers

This session will detangle the constructs of analytical method validation and method verification, provide a simple mindset for determining method uncertainty, and demonstrate risks of assuming that $R^2 > 0.99$ represents a "good" calibration curve.

—Moderated by Jahan Marcu, PhD—



Susan Audino *Speaker*

PhD

Dr. Susan Audino is a chemist/chemometrician and independent consultant to chemical and biological laboratories. On behalf of Accreditation Bodies, she assesses laboratories to and is an instructor for multiple ISO/IEC standards including ISO 17025. She also serves as scientific advisor to several cannabis testing laboratories as well as private and non-profit cannabis organizations. A past chair of the AOAC International cannabis working groups and advisory panel, she is currently serving as Science Advisor for the AOAC International Cannabis Analytical Science Program.

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Cannabis Antagonists: Disgraceful Downfall, Promising Prospects

'Wonder Pills' against obesity and substance abuse abruptly disappeared from the market over a decade ago, researchers now try to revive them for new applications.

CANN's Journal Club

LIVE WEBINAR April 28th, 2020 @ 11am PST

Moderated by Jahan Marcu, PhD Followed by Q&A Session



Linda Klumpers, PhD
Speaker

Dr. Linda Klumpers grew up in the Netherlands and completed a PhD in Clinical Pharmacology at Leiden University Medical Center. Her research focused on Clinical Pharmacology of Cannabinoids. Dr. Klumpers has been studying cannabinoids in humans since 2006 and has authored various peer-reviewed cannabinoid publications including primary literature and book chapters. Her work received five honors and awards, including the BJCP Prize, handed out by the British Journal of Clinical Pharmacology. In 2016 Dr. Klumpers founded Cannify to help patients and clinicians with product and science matching via an online tool as well as customized cannabis education. In 2018, Dr. Klumpers formed Verdient Science in partnership with Clinical Pharmacologist Dr. Michael Tagen.



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CANN's Journal Club

LIVE WEBINAR June 30th, 2020 @11am PST

Moderated by Nigam B. Arora, PhD Followed by Q&A Session

Cannabis and Cars

A Discussion of the Scientific and Legal Issues
Raised by Driving and Cannabis



Rod Kight, JD

Speaker

Rod is a cannabis business law attorney who represents legal cannabis businesses throughout the world. He is a prolific author serving as editor and chief writer of the Kight on Cannabis law blog, contributing legal perspective to the American Journal of Endocannabinoid Medicine, and publishing the book "Cannabis Business Law-What You Need to Know", in 2015. He is frequently interviewed on cannabis matters by major media outlets including the Wall Street Journal, Time, Business Insider, and Business Insurance. Rod is an attorney advocate for NORML. He is also a member of the International Cannabis Bar Association, the National Cannabis Industry Association, Women Grow, the Hemp Industries Association, and the North Carolina Industrial Hemp Association. Rod has been a presenter on cannabis legal issues at seminars across the country. He has also drafted and presented cannabis legislation to a foreign head of state.



—Be at the Cutting Edge of Cannabis Science—

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Balancing Cannabis with Complementary & Alternative Medicine (CAM) Considerations During COVID-19

This session will review the basics of cannabis pharmacology & types of CAM, outline important safety points for optimizing immune system function & mental health, and will detail harm reduction strategies for dosing considerations.

Hosted by CANN Cannabis Chemistry Subdivision of the American Chemical Society

CANN's Journal Club

LIVE WEBINAR May 28th, 2020 @11am PST

Moderated by Jahan Marcu, PhD Followed by Q&A Session



Monica Taing, PharmD *Speaker*

Monica Taing, PharmD, RPh graduated from Northeastern University where she gained academic experience in Endocannabinoid Receptor System research. Dr. Taing is a clinical cannabis consultant for licensed dispensaries, hospital systems, and academic medical institutions in multiple states. She is a spokesperson, and the first pharmacist, appointed to the Board of Directors of Doctors for Cannabis Regulation (DFCR), the National Director of Research & Clinical Education for Minorities for Medical Marijuana (M4MM), a clinical consultant specialist for Columbia University's Northeast/Caribbean AIDS Education Training Center (NEC-AETC), and sits on the Editorial Board of the American Journal of Endocannabinoid Medicine (AJEM). Dr. Taing is passionate about clinical research, patient counseling, public health education, multidisciplinary clinical outreach, and harm reduction advocacy for underserved patient populations.

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PRESENTATIONS & PUBLICATIONS

A major focus of the work at CANN is to share and inspire research in cannabis chemistry, safety, and related areas. Each of the following is a recent research article or presentation by our very own CANN members. Reach out to us at membership@cann-acs.org if you would like to share your work in our next issue.

1. “ Inhibitory Effect of Cannabidiol on the Activation of NLRP3 Inflammasome Is Associated with Its Modulation of the P2X7 Receptor in Human Monocytes.” Chang Liu, Hang Ma, Angela L. Slitt, and Navindra P. Seeram. *Journal of Natural Products*. May 2020. <https://pubs.acs.org/doi/10.1021/acs.jnatprod.0c00138>.
2. “ Investigation of Chocolate Matrix Interference on Cannabinoid Analytes.” David D. Dawson and Robert W. Martin. *Journal of Agricultural and Food Chemistry*. May 2020. <https://pubs.acs.org/doi/10.1021/acs.jafc.0c01161>.
3. “ Cannabis Inflorescence for Medical Purposes: USP Considerations for Quality.” Nandakumara D. Sarma, *et al.* *Journal of Natural Products*. April 2020. <https://pubs.acs.org/doi/10.1021/acs.jnatprod.9b01200>.



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