

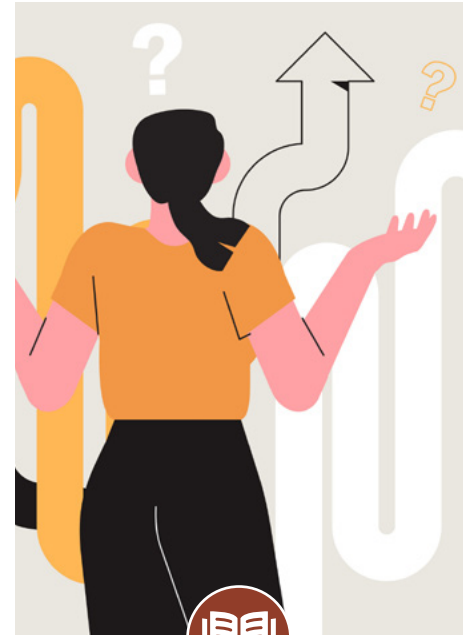
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On the Cover: Difficulty choosing career paths or directions

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Message from the President



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Listen to [ASPET](#) President Namandjé N. Bumpus, PhD as she discusses ASPET 2024, the ADDC/ASPET Colloquium, the newly elected ASPET leadership and more!

Watch the video

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A Note from Dave's Desk



Volunteer and Reap the Rewards

One of the goals we have for ASPET is to serve as the professional home for all of those in pharmacology. One great way for members to “find their home” is through volunteering. Volunteering for ASPET can be a deeply rewarding experience that enriches both the individual volunteer and the broader scientific community. As we approach National Volunteer Week from April 21–27, 2024, themed “Something for Everyone,” we at ASPET strive to provide opportunities for all members to get involved with the Society and make meaningful connections to their peers.

First and foremost, volunteering for ASPET allows individuals to contribute directly to the advancement of pharmacology and experimental therapeutics, fields crucial for improving healthcare outcomes. Through volunteering, members can engage in various activities, such as leading their divisions, organizing conferences, reviewing manuscripts, mentoring students and advocating for scientific research funding. These contributions play a pivotal role in ASPET fulfilling its mission.

Volunteering also offers numerous personal and professional rewards. It provides volunteers with opportunities to expand their networks, develop new skills, and gain valuable experience in leadership and teamwork. Engaging with peers and experts in the field can also inspire personal growth and spark new ideas. Additionally, volunteering provides an avenue for making a meaningful impact on pharmacology.

Furthermore, volunteering for ASPET opens doors to career advancement and recognition within the scientific community. Active involvement demonstrates dedication, commitment and a passion for advancing the field of pharmacology. Volunteers often gain visibility and credibility, which can lead to career opportunities, collaborations, and invitations to speak at conferences or serve on committees.

Beyond personal and professional rewards, volunteering fosters a sense of belonging and camaraderie within the ASPET community. Working alongside like-minded individuals who share a common passion for science creates a supportive and collaborative environment where friendships flourish, ideas thrive and achievements are celebrated.

As we celebrate National Volunteer Week this April, we encourage all members to find ways to get more involved with ASPET. By giving your time, skills and expertise to the Society, you not only contribute to the advancement of pharmacology, but also find opportunities for professional growth and meaningful connections within the scientific community. Get involved today by checking out [ASPET | Get Involved with ASPET](#) or emailing us about your interest at volunteer@aspet.org.



Dave Jackson, MBA, CAE
Executive Officer, ASPET

Share this!

Working in Science

Away from the Bench?





By Tricia McCarter, CDMP, PCM

According to the U.S. Bureau of Labor Statistics, [medical scientists, including pharmacologists, held 119,000 jobs in 2022](#). These jobs range anywhere from designing and conducting studies on diseases and treatment options, to writing scientific research papers for publication in respected journals. Many untold occupations fall both within and outside of this range. For pharmacologists, though the specialties are broad, the specific job areas tend to be categorized less broadly. Traditionally, career opportunities can veer toward academia, industry, government or conducting research as a bench scientist.

In May 2022, the median annual wage for medical scientists in top industries was \$99,930, according to data from the [Occupational Outlook Handbook](#), published by the U.S. Bureau of Labor Statistics. Broken down further, scientists in research and development earned a median salary of \$109,560; those in the pharmaceutical and manufacturing, \$105,210; and those employed at colleges and universities earned \$65,380.

Coupled with the high cost of earning and repaying student loans for a post-graduate degree, for many science graduates who are trying to find their niche, the question becomes: how do I find what interests me that will earn me a comfortable salary?

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thepharmacologist.org

Can Having Various Interests Help or Hurt?

Chloe Kirk recently earned her PhD in biochemistry and molecular biology from the University of Miami. As a child, she always loved experimenting and trying new things, but didn't consider herself interested in science until she was a senior in high school. During this period, she had the opportunity to volunteer in a cancer biology laboratory at the University of Minnesota Twin Cities.

In high school, Kirk learned about the exciting prospect of CRISPR-Cas9, gene editing technology that had been making waves by Dr. Jennifer Doudna. Hearing about all the possibilities gene editing could uncover, from eliminating hereditary diseases to creating a brave new world-esque dystopia, she was fascinated by how such small machinery could affect the entire human body.

Kirk also had the opportunity to shadow graduate students and learn the fundamentals of biomedical research: formulating a hypothesis, testing variables and, perhaps most exciting of all to her, seeing how basic cell biology research translated into medical science.

"Once I fell in love with the world of research in high school, I followed every opportunity to continue working in a lab through[out] undergrad," Kirk said.

But she also had an interest in law. While working on her undergraduate degree at the University of Wisconsin and needing to decide on the next step in her education, Kirk had a decision to make.

Kirk was torn between applying for a biomedical PhD degree or pursuing law.

However, Kirk spent her undergrad years pursuing multiple interests. In her junior year, she interned for five months in Osaka, Japan doing biotechnology research.

"Spending half a year on the other side of the world, in a country I'd never visited before and didn't know the language, doing full-time science research, both solidified my love of bench research and the necessity of pursuing higher education, to open more doors to careers in science," Kirk explained.

She also had an interest in science education, so she volunteered and later worked for the Wisconsin Institute for Science Education and Community Engagement (WISCIENCE), where she participated in their STEM bootcamp. This program invited STEM minorities to meet fellow students to learn how to succeed in their STEM classes and careers. Kirk signed up to become a volunteer leader for the bootcamp and later helped run the program. WISCIENCE provided her with the opportunity to volunteer at the university's library, where she helped STEM students navigate classes, find research opportunities and decide career paths. Kirk said that this WISCIENCE experience helped her discover the power of science outreach and education, which is something she strives to continue to do.

In 2023, Kirk was accepted into the ASPET Washington Fellows program, where she participated in ASPET's Capitol Hill Day. She spoke with congressional staffers on the importance of funding science research and had the opportunity to practice her science communication skills. Kirk met other graduate students from across the country who shared an interest in science and law, which for her was an amazing opportunity to connect with like-minded scientists.

But how can one meld all these different avenues of interest into a fulfilling career?



Different Roads Can Lead to a Science Career

Exploring alternative career paths in pharmacology was the focus of a recent [ASPET webinar](#), where panelists from various pharmacology backgrounds convened for a discussion on their career journeys.

Sophia Kaska, PhD, who works in the non-profit sector in the science policy realm, is former Senior Manager of Science Initiatives and Outreach at Research!America. Kaska explained that although she initially wanted to be a principal investigator, running her own lab and mentoring students, she began exploring different career paths after witnessing assistant professors struggle to attain tenure after dedicating many years to research. She used her postdoctoral years to explore other career paths and job opportunities.

“I learned more and more how much I really loved working on the policy side and it just so happened that with all my years of volunteer work through [ASPET](#), I [realized] ‘Wow I really love the non-profit sector’ and that’s what led me to Research!America,” explained Kaska.

Similarly, Yadira Pérez Páramo, PhD, was an adjunct professor at Gonzaga University, and though she loved teaching and mentoring students, she felt the administrative side of academia was not for her. She began looking for other avenues and settled on Genetech, where she works as a Senior Scientist. Originally from Mexico where she worked as an assistant professor, Páramo had intentions of settling into academia when she came to the U.S.

Continued on page 24

ASPET Salutes its Volunteers

Share this!

in Recognition of National Volunteer Week

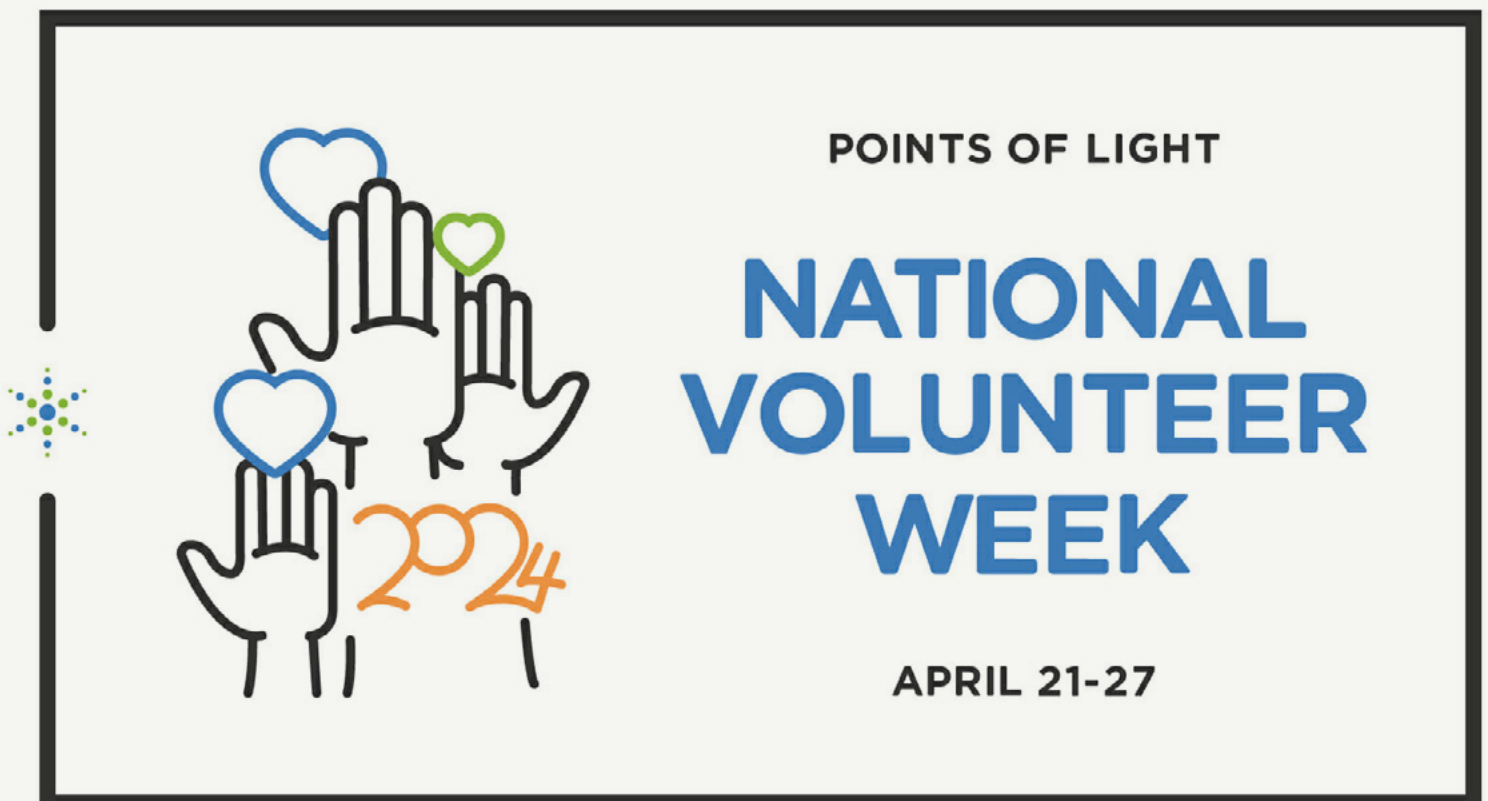
ASPET is celebrating [National Volunteer Week](#) from April 21–27. Each year, the week is set aside to recognize the contributions of volunteers across the globe. National Volunteer Week started 50 years ago and has grown rapidly with thousands of volunteer projects and special events held throughout the week. ASPET thanks and welcomes the hundreds of volunteers that support the Society each year. We value their time, talent, leadership and willingness to help advance ASPET’s mission. *The Pharmacologist* connected with several volunteers to share their personal stories and experiences as an ASPET volunteer.

Meet ASPET Volunteer Misuk Bae, PhD



Dr. Misuk Bae holds a PhD in Biopharmaceutical Sciences from the University of Illinois at Chicago College of Pharmacy. She completed her postdoctoral training in Cardiovascular Pharmacology and Therapeutic Development

from the University of Illinois at Chicago College of Medicine. She is currently Assistant Professor



POINTS OF LIGHT

NATIONAL VOLUNTEER WEEK

APRIL 21-27

The graphic features a stylized illustration of three hands in white, blue, and orange, with hearts above them. The year '2024' is written in orange below the hands. The text 'POINTS OF LIGHT' is at the top, 'NATIONAL VOLUNTEER WEEK' is in large blue letters in the center, and 'APRIL 21-27' is at the bottom. A small starburst icon is on the left side.

of Pharmacology at Duquesne University School of Pharmacy in Pittsburgh, Pa.

With an interest in the health sciences leaning toward becoming a medical doctor or biomedical engineer, Dr. Bae turned toward pharmacy after a conversation with her high school teacher.

“During my professional study, I participated in a rotation at a cancer center as a student pharmacist. I met a pediatric patient who was diagnosed with glioblastoma. Although I genuinely wanted to help this patient, there were no medicines available on the market for this devastating disease at that time. These experiences informed my decision to pursue my career in science, develop therapeutics and contribute to improving patients’ lives,” Dr. Bae remembered.

Volunteer Service

Since 2023, Dr. Bae has been serving on ASPET’s Inclusion, Diversity, Equity and Accessibility (IDEA) committee to advocate for minorities and underrepresented members, particularly in academia. She noted that her service on the IDEA committee has helped her integrate research and public service, while cultivating a deeper understanding and expanded empathy for diverse communities. She has also volunteered to review abstracts for the annual meeting and grant/award applications. In addition, Dr. Bae was recently named a 2024 Editorial Fellow of the *Journal of Pharmacology and Experimental Therapeutics*.

Dr. Bae became more involved within the Society after attending her first ASPET meeting in 2017. She was also impressed by senior investigators’ dedication to supporting trainees when she participated in the ASPET Mentoring Network in 2019.

“This experience made me feel that ASPET was home and inspired me to [give back] the support I received to the Society,” Dr. Bae explained.

Dr. Bae points out that being a volunteer for the IDEA Committee has helped her in other ASPET roles. She attends grant reviewer committee meetings, monthly committee meetings and attends regular Town Hall meetings. “I am grateful for the opportunities given to me. Together, we can do great things!”

Meet ASPET Volunteer David Cabrera



David Cabrera graduated from the College of Charleston, S.C. with a M.S. in Marine Biology and from St. Mary’s College of Maryland. He is currently the Chief of Staff with the Van Andel Institute, an independent biomedical

research institute in Grand Rapids, Mich. Cabrera is also the President Elect for the Association of Independent Research Institutes.

Cabrera admits that it took him a while to figure out where his career path would lead. After he obtained his master’s degree, he began looking at PhD programs, but ultimately he decided he wanted to work in a lab for a few years before deciding if that was the right path for him.

“I obtained a lab manager position in Dr. David Sibley’s lab at NIH and worked there for several years. There, Dave provided mentorship not only in conducting research but also the ins and outs of administration. [Networking] conversations led me to apply to a fellowship in policy and administration at NIH. From there I served in several science policy and administration positions, leading up to the one I hold today,” Cabrera stated.

Volunteer Service

Cabrera serves on the Science Policy Committee (SPC) and is Co-Chair of the Appropriations and Budget Policy Subcommittee.

He notes that, for him, volunteering has facilitated getting to know others in the field. It has also allowed him and others to share challenges and solutions they encounter as individual organizations and as a Society. Cabrera points out that volunteering provides a forum to learn from each other and serve the Society at the same time.

Cabrera believes that volunteering helps one get more comfortable networking with others, and he recognizes that it takes practice. He also stresses that knowing that there is a larger body to share collective challenges and solutions creates a more powerful voice to represent research and pharmacology.

“Meeting and working with other members of the ASPET SPC and ASPET staff has been most rewarding,” Cabrera added.

Meet ASPET Volunteer Kristan Cleveland, PhD



Dr. Kristan Cleveland earned her PhD in Pharmacology and Toxicology from the University of Arizona and published five first author manuscripts. She completed her postdoctoral fellowship at the University of Washington.

Cleveland began her research career in 2015 while pursuing her master’s degree in Pharmaceutical Sciences. During this time, she studied mechanisms of β 2-adrenergic receptor ligand-mediated cancer prevention under Dr. Bradley Andresen. She appreciated his tutelage as well as her other mentors, who inspired her to become more involved with ASPET.

“It was Dr. Andresen’s mentorship and guidance that allowed me to appreciate all aspects of the scientific process and truly instilled my passion for pharmacology. In 2018, I went on to pursue my PhD at the University of Arizona under Dr. Rick G. Schnellmann, a leading expert in the field of acute kidney injury and mitochondrial biogenesis, and an ASPET member since 1984. I currently work under Dr. John D. Scott, a pioneer in the field of A-kinase anchoring protein biology and an ASPET Fellow,” Cleveland noted.

Volunteer Service

Dr. Cleveland has been involved with ASPET since 2016 when she attended her first Experimental Biology meeting. Since beginning her postdoc in 2022, she started volunteering with ASPET as a part of the Molecular Pharmacology Division and Mentoring and Career Development Committees. She hopes that as her scientific career progresses, she can become more involved in the Society.

Dr. Cleveland states that volunteering with ASPET has strengthened her network in the scientific community. Through participation in committees and attending annual meetings, she has met many people who have helped her progress in her career. She points out that volunteering has helped her become better at communication and confidence.

Dr. Cleveland shared that volunteering with ASPET has given her the opportunity to work with people at different stages in their career who have thoughtfully considered her opinion and made her feel like her contributions are valued.

“The most rewarding experiences through volunteering at ASPET have been being able to participate and give back to a Society that has helped me so much through my personal and professional development,” Dr. Cleveland emphasized.



Celebrate Pharmacology Awareness Week with ASPET!

May 13–17, 2024

Celebrate pharmacologists!

Promote the field of pharmacology!

Learn how pharmacologists impact lives!

Learn more about pharmacology at [aspet.org](https://www.aspet.org).

Fifty Years of *Drug Metabolism and Disposition*

Share this!

By Simone Brixius-Anderko, PhD and Hannah Work

In 2023, ASPET's journal *Drug Metabolism and Disposition* (DMD) celebrated its 50th Anniversary! First published in 1973, the journal has been the home for drug metabolism researchers and their exciting findings while also keeping an eye on new, emerging techniques and scientific questions.

To celebrate this milestone, *DMD* published special sections throughout 2023 that showcased past and future research in the drug metabolism and disposition field.

The anniversary issues linked the history and discovery of metabolic enzymes, transporters and receptors to recent progressions in the field regarding emerging techniques and technologies.

In the first of a two-part series, key articles are highlighted from each anniversary issue. *The Pharmacologist* will continue with these highlights in the May 2024 issue and conclude by attempting to predict the future of the drug metabolism field and its connection to the journal.

January Anniversary Issue

The Power of Mentorship and a Look into the Future



The [January issue](#) featured the editorial piece “[Celebrating 50 Years of Excellence in DMD Science](#)” by editor-in-chief Dr. Xinxin Ding, that highlighted *DMD*'s origins. This issue also showcased the contributions of past editors to the growth and success of the journal, in the article “[The Evolution of Drug Metabolism and Disposition: A Perspective From the Editors.](#)”

The article by Dr. James Halpert titled “[Four Decades of Cytochrome P450 2B Research: From Protein Adducts to Protein Structures and Beyond](#)” emphasized the power of mentorship in inspiring successful careers in the drug metabolism and disposition field.

Dr. Fred Guengerich voiced concerns about the future of the drug metabolism and disposition field in his piece “[Drug Metabolism: A Half-Century Plus of Progress, Continued Needs, and New Opportunities.](#)” He described past achievements in the field that underwent an evolution, to the rise of functional and structural studies that accelerated our understanding of drug metabolism.

February

It's Xenobiotic Receptor Appreciation Month!

The [February issue](#) showcased past and current research on xenobiotic receptors including the nuclear receptors pregnane X receptor (PXR) and constitutive androstane receptor (CAR).

Dr. Wen Xie provided an historic overview of the field in his contribution "[Xenobiotic Receptors, a Journey of Rewards](#)." He described the discovery and characterization of PXR in the early 2000s and how he built a successful career pursuing PXR research.

Dr. Hongbing Wang described the unusual interaction of CAR with the anti-epileptic drug phenobarbital in "[Phenobarbital in Nuclear Receptor Activation: An Update](#)."

Dr. Taosheng Chen's article, "[Regulation of Nuclear Receptors PXR and CAR by Small Molecules and Signal Crosstalk: Roles in Drug Metabolism and Beyond](#)" discussed how their biologic activities should be integrated into drug development platforms and how efforts should be made to exploit XRs as drug targets and further elucidate their interactions with agonists and antagonists.

The activation of XRs by microbial metabolites and the subsequent impact on the gastrointestinal immune balance is described in the contribution of Dr. Sridhar Mani's laboratory, "[Microbial Metabolites as Ligands to Xenobiotic Receptors: Chemical Mimicry as Potential Drugs of the Future](#)."

How diet influences receptor activation is discussed in Dr. Jinhan He's review article, "[The Function of Xenobiotic Receptors in Metabolic Diseases](#)," which elaborates on the role of XRs in nutrient metabolism and metabolic disease.



March

On the Interface of Drug Metabolism and Precision Medicine

The [March issue](#) focused on the role of drug metabolism in precision medicine and showcased the achievements of trainees of Dr. Namandjé Bumpus, ASPET President and Principal Deputy Commissioner at the Food and Drug Administration.

The Bumpus Lab highlighted the importance of single cell analyses in drug metabolizing tissue in their article, “[Achieving a Deeper Understanding of Drug Metabolism and Responses Using Single-Cell Technologies.](#)”

A review article from the laboratory of Dr. Elaine To touched on the metabolism and efficacy of anti-viral drugs, in “[Cell and Tissue Specific Metabolism of Nucleoside and Nucleotide Drugs: Case Studies and Implications for Precision Medicine.](#)”

Dr. Herana Kamal Seneviratne examined the fate of the HIV drug Tenofovir and its dephosphorylation in “[Nucleoside Triphosphate Diphosphohydrolase 1 Exhibits Enzymatic Activity toward Tenofovir Diphosphate.](#)”

In “[Multidisciplinary Insights into the Structure-Function Relationship of the CYP2B6 Active Site](#)” Dr. Philip Cox expressed his concern about the gap in understanding about how specific active site residues contribute to the metabolism of specific drugs.

April

An Homage to Dr. F. Peter Guengerich

The [April issue](#) highlighted a review by Dr. Emre Isin titled “[Unusual Biotransformation Reactions of Drugs and Drug Candidates.](#)” Dr. Isin is a former trainee of Dr. Guengerich who received the Brodie



Award in 1992 and is one of the pioneers of drug metabolism. The review highlighted the history of drug metabolism and current methods in trapping and detecting metabolites.

June

Special Section on Perspectives on Drug Metabolism and Disposition, Part I

The [June issue](#) featured Part I of a “[Special Section on Perspectives on Drug Metabolism and Disposition](#)” by current *DMD* associate editors, with themes spanning ADME, Aryl Hydrocarbon Receptor research, epigenetics, recombinant techniques and lipid binding proteins.

A review article by Dr. Scott Obach examined the 60-year history of ADME, in “[Human Absorption, Distribution, Metabolism, and Excretion Studies: Origins, Innovations, and Importance.](#)”

While PXR and CAR are significant protagonists on the drug metabolism and disposition stage, Dr. David Riddick envisions the co-evolution of Aryl Hydrocarbon Receptor research in his article “[Fifty Years of Aryl Hydrocarbon Receptor Research as Reflected in the Pages of Drug Metabolism and Disposition.](#)”

Dr. Xiao-bo Zhong provided a comprehensive review, “[Epigenetic Mechanisms Contribute to Intraindividual Variations of Drug Metabolism Mediated by Cytochrome P450 Enzymes](#)” examining how epigenetic factors affect CYP-mediated drug metabolism and drug-drug interactions.

Aiming Yu and colleagues summarized the advances in recombinant techniques in the review article “[Recombinant Technologies Facilitate Drug Metabolism, Pharmacokinetics, and General Biomedical Research.](#)” The authors also discuss the latest RNA technologies and the use of bioengineered RNA to elucidate ADME gene regulation.

In a review article contributed by Dr. Nina Isoherranen, we learned about intracellular lipid binding proteins in “[Impact of Intracellular Lipid Binding Proteins on Endogenous and Xenobiotic Ligand Metabolism and Disposition.](#)”

Part two of this review of the DMD Anniversary collection will continue in the May 2024 issue of The Pharmacologist.



Simone Brixius-Anderko, PhD

Simone Brixius-Anderko, PhD, is an Assistant Professor at the University of Pittsburgh School of Pharmacy. She currently serves as the Communications Officer for the ASPET Division for *Drug Metabolism and Disposition*.



Hannah Work

Hannah Work is a PhD candidate at the University of Colorado Anschutz Medical Campus, where she is also a graduate student researcher. She currently serves as a Junior Communications Officer for the ASPET Division for *Drug Metabolism and Disposition*.



Leadership Profile

Share this!

A Conversation with ASPET's Council Member Amy Arnold, PhD



Amy Arnold, PhD, is a member of the ASPET Council. She holds a doctorate in Physiology and Pharmacology from Wake Forest University. Dr. Arnold is passionate about the importance of connecting research, teaching, service and

mentoring trainees at the undergraduate, graduate, medical and postdoctoral levels in translational pharmacology-based cardiovascular research. She currently serves as Associate Professor of the Department of Neural and Behavioral Sciences at Pennsylvania State University College of Medicine.

An ASPET member since 2006, Dr. Arnold has participated on numerous ASPET committees and volunteer opportunities. She has been member, secretary-treasurer and chair of the Recruitment Subcommittee for the Division for Cardiovascular Pharmacology Executive Committee; member of the Division for Pharmacology Education Executive Committee; and member of the Nominating Committee. Dr. Arnold offers her insight and guidance for young scientists.

How did you get started in pharmacology?

I joined the PhD program in Physiology and Pharmacology at the Wake Forest University School of Medicine in 2006. During that time, I was exposed to basic principles of pharmacology and performed research investigating how drugs acting within

the central nervous system can modify cardiovascular function in rodent models of hypertension in aging. This experience ignited my passion, and led to my postdoctoral fellowship in the Division of Clinical Pharmacology at Vanderbilt University where I conducted cardiovascular pharmacology research in patient populations.

How did you first get involved with ASPET?

I was encouraged by my graduate mentor, Dr. Debra Diz, to become actively involved in ASPET. She had been involved with the Division for Cardiovascular Pharmacology for several years and encouraged me to seek a position on their executive committee as a trainee representative. This committee service continued throughout my postdoctoral fellowship and early faculty position and helped me to network and actively give back to the Society including promoting trainee benefits and opportunities within the Division.

What do you want the ASPET membership to know about you and your ideas on how to move the organization forward during your term?

In line with the ASPET strategic plan goals, I would like to help ensure the society is seen as the professional home for pharmacology. This includes advocating for continued inclusion of pharmacology in medical and graduate education, and encouraging trainees to become involved, and stay involved, within the Society. I am also passionate about translational research and would like to help expand connections between foundational and clinical pharmacology research in order to bring a unique perspective

to the Society in terms of enhancing outreach, increasing a diverse membership, and promoting exciting and cutting-edge science for our members.

What has been your proudest accomplishment in your career so far?

My proudest accomplishment has been mentoring numerous trainees at the undergraduate, graduate, medical and postdoctoral levels in translational pharmacology-based cardiovascular research. I love watching them explore their passion for research and succeeding in terms of getting grants, publishing papers, giving presentations and ultimately getting the positions they want. This is incredibly fulfilling.

What advice would you give young scientists who are just starting out in their careers?

There are so many things! My biggest advice would be to protect your time and practice effective time management so that you can strike a balance between work and having a fulfilling personal life. There will always be more work and never a “right time” to do things. Make time for yourself to do the things that make you happy and learn to say no to opportunities that don’t feed into your overall goals. Also, be your own advocate. Don’t be afraid to take chances, nominate yourself, seek opportunities for advancement and change paths when needed.

Register for the ADDC/ASPET Colloquium!

Meet your future collaborators in drug discovery. Be a part of the colloquium that bridges today’s research discoveries to tomorrow’s therapies. Learn more and [register](#) by April 18 to receive discounts!



3rd ADDC/ASPET Academic Drug Discovery Colloquium *Introducing the Next Generation of Drug Hunters*

**May 19-20, 2024
Arlington, VA**



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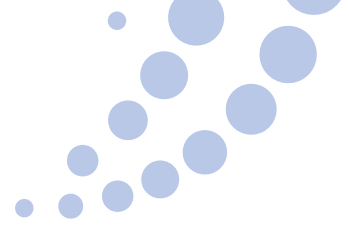
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Member Highlights



In Memoriam

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Image credit: UW Medicine

Dr. William Catterall (1947–2024) was a very distinguished member of ASPET. He joined in 1980 and served as Editor and Editorial Board Member of *Molecular Pharmacology*. Dr. Catterall was also a longstanding member of ASPET's Board of

Publication Trustees, and a founding member of the ASPET Division for Molecular Pharmacology. In recognition of his service and contributions to science, he received the 2016 Robert R. Ruffolo Career Achievement Award in Pharmacology and was inducted into the inaugural class of ASPET Fellows in 2019, among many other honors.

Dr. Catterall was a professor and former chair of the Department of Pharmacology at the University of Washington School of Medicine in Seattle. In 1968 he earned a B.A. degree in chemistry from Brown University and in 1972 earned his PhD in physiological chemistry from Johns Hopkins University.

He was considered a leading researcher in the study of electrical signals in living cells and is credited for discovering the voltage-gated sodium channel and calcium channels. Dr. Catterall studies these channels at the molecular and atomic levels with other leading scientists. His work on ion channels was important in improving the understanding of the way certain drugs acted as therapeutics for high blood pressure, autism, heart rhythm, epilepsy and other conditions related to faulty electrical signaling.



Upcoming Events

ASPET 2024 Annual Meeting

May 16–19, 2024 · Arlington, VA

Join us at the Hyatt Regency Crystal City, just minutes away from Washington, D.C. Register now!

ASPET-ADDC: 3rd Academic Drug Discovery Colloquium

May 19–20, 2024 · Arlington, VA

Introducing the Next Generation of Drug Hunters

European Federation of Pharmacological Societies 2024 Congress

June 23–26, 2024 · Athens, Greece

The Federation of European Pharmacological Societies, 9th European Congress of Pharmacology.

British Pharmacological Society Pharmacology 2024

December 10–12, 2024 · Harrogate, North Yorkshire

Network and hear the latest developments and research in pharmacology from industry experts and emerging investigators.



Ullman Connects Science and Policy

By Lynne Harris, MA, APR



Fifth-year PhD candidate at Emory University and ASPET Washington Fellow Alum, Elijah Zorro Ullman discovered his passion for policy at an early age.

“My father, Jeffrey Ullman, was extremely politically active in the

late 60s and early 70s as an undergraduate student at University of Southern California and UC Berkeley with the anti-Vietnam war movement. My older brother, Drew Ullman, was a community organizer for over a decade and our grandmother was also politically active in the 60s and 70s at the local level in Southern California. So, I’d say political activism is in my blood,” Ullman reflected.

Influenced by his family’s advocacy, Ullman got involved with Students for Sensible Drug Policy (SSDP) at the age of 15, making him one of the only high school students in the nation active in the organization. He ultimately created one of the nation’s first high school chapters at Monarch High School in Louisville, Colo. in 2013. His work and support with SSDP continue today.

“With Students for Sensible Drug Policy, I’ve participated in and led numerous drug policy-related Lobby Days. The day after ASPET’s Washington Fellows lobby day in 2023, fellow ASPET Washington Fellow, Dr. Cate Risener and I trained dozens of undergraduates who made the trip out to D.C. for SSDP’s Lobby Day on how to hold a lobby meeting. I think making time to

train and learn from people embiggens the next generation and makes me a better activist and change maker too,” Ullman elaborated.

Over the years, Ullman’s interest in pharmacology began to grow. He found an old Facebook post around 2012 that points to his start in pharmacology.

“I wrote that I was learning about dopamine and serotonin receptors, and wow... who knew they were so complicated! I’ve been rewarded tremendously from my work as a scientist and policy reformer. The two are absolutely inseparable for me,” Ullman pointed out.

Aligning laws with data is Ullman’s goal. He notes that scientists don’t exist in a vacuum and thus, they should feel compelled to be change makers. Ullman recognizes that the work of scientists has real-world implications. He contributes much of his success to dismissing the commonly held advice that’s often given—‘don’t talk about politics.’

“I can’t help but talk about issues that are important to me, so whenever I go to conferences, I always find other people who are interested in these areas too and grow the network of change makers that way as well. I think for far too long scientists were taught to be apolitical and only talk about data,” Ullman said.

His desire to promote advocacy and policy changes keeps him motivated. Much of his work has been in drug development and collaboration with medicinal chemists.



Elijah Ullman along with ASPET Washington Fellow Alum Cate Risener, PhD, after their ASPET Hill Day

“I feel that it is part of my job to try and make our laws line up with the science on drugs. I get so angry when I hear of folks who go bankrupt trying to afford medicines like insulin or cancer drugs,” Ullman explained. “So, an area that I’d love to work in during my career is medication pricing, ensuring people who need medicines are able to afford them.”

His parents encouraged him to stay involved with policy, constantly telling him how proud they were that he was active. Ullman treasures the street sign that he got when he was 15 standing on street corners for Colorado Amendment 64 above his desk as a reminder to keep pushing for a more sensible future.

“If I can help change laws, anyone can. It’s all about finding an area you’re passionate about, identifying mentors who can help you grow and working to enact the change you see. I want others who are passionate about changing the world to know that no matter how small or insignificant (or significant) they might feel, they can make an impact,” Ullman stated.

Ullman credits his many mentors for helping to keep him focused on his vision to become a pharmacologist and match the outdated and unscientific drug laws with science. As for the future, Ullman is optimistic. “I hope our laws follow the science. I really do believe that change can start with a single person.”

Photos provided by Elijah Z. Ullman

On Their Way...

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Each month, the editors of three of the American Society for Pharmacology and Experimental Therapeutics' (ASPET) journals can choose who they call their Highlighted Trainee Authors. These early-career scientists are recognized for their innovative research published in *The Journal of Pharmacology and Experimental Therapeutics*, *Drug Metabolism and Disposition*, and *Molecular Pharmacology*. This feature showcases selected young scientists, demonstrates what drives them and reveals why pharmacology is important to them.



Letícia Salvador Vieira

Letícia Salvador Vieira, PhD, is a research scientist who recently graduated from the University of Washington. Vieira was greatly influenced by her parents, her

mother, a pharmacist, and her father, an academic professor. Her mother's professional commitment to helping others sparked her curiosity and admiration for the field, while her father's passion for academia inspired her to explore the possibilities of research and graduate education.

"I am eager to transition to a position in industry and I hope to play a role in the development of safer and more effective drugs," Vieira said. "I am deeply interested in pharmacokinetics, drug metabolism and disposition, and I want to keep contributing to research in these areas."

Vieira is especially interested in continuing to explore the impact that drug transporters can have in drug efficacy, toxicity and drug-drug interactions.

Vieira stressed that [being published in *Drug Metabolism and Disposition*](#) is an honor for herself and her co-authors. "ASPET's journals are highly esteemed in our scientific community, and having two original research articles published in the April 2024 issue of the

journal reflects the quality of our work," she said. "Being recognized in *DMD* increases the visibility of our research and makes me feel really proud."



Wenqiu Zhang

Wenqiu Zhang is a PhD candidate in the Department of Pharmaceutics, University of Minnesota Twin Cities. She credits her parents' influence for developing her interest in pharmaceutical sciences.

Her research on the central nervous system (CNS) tumor treatment has been largely inspired by the passion of her supervisor, Dr. William F. Elmquist. Zhang's research project involves the investigation of the CNS delivery of selected histone deacetylase (HDAC) inhibitors and their in vitro metabolism.

"The goal of my current studies is to use the preclinical data to inform rational preclinical and clinical study designs of the selected HDAC inhibitors as anti-CNS tumor drug candidates," said Zhang.

She is honored that [her research is published in *The Journal of Pharmacology and Experimental Therapeutics*](#) and will continue my research in the field of pharmacology and anticipate my work to contribute to the development of efficacious anti-cancer treatment.



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“I was pretty convinced I wanted to be a professor, but I later found out that maybe that wasn’t the path I was the most passionate about and that led me to explore other options in my career,” Páramo said. At Genetech she loves working for a big pharma company where she continues to learn.

Hayley Widden, PhD, works as a medical science liaison (MSL) at Merus N.V. where her job is to be the bridge between the clinical setting and the pharmaceutical company.

“I was doing a lot of networking, and I met an MSL that worked for Merc, and I just fell in love with the idea of being able to travel. It’s a very driven role so a lot of my day-to-day is interacting with doctors making sure they’re updated with current data,” Widden said. She also explained that people with PhD, PharmD and MD backgrounds can transition to this career field.

Harshini Neelakantan, PhD, decided that she wanted to explore her options in industry after realizing that the opportunities in academia were limited. She is the co-inventor of the company Ridgeline Therapeutics, where she also serves as its Executive Director for Research & Development.

“It was a self-exercise that led me to the option of wanting something to do in industry, and I ended up taking a research scientist position in academia, but really something that would turn into a potential startup,” said Neelakantan. This position was her gateway into industry and the opportunity to work on a project that eight years later developed into a company.

Interestingly, Elizabeth Gichana, PhD, still doesn’t know where she wants to be, but thus far she has established herself as a consultant at Boston Consulting Group. Wanting to have a balanced lifestyle and witnessing a professor who was very stressed with running his lab, Gichana expanded her mind.

“I started exploring opportunities to use the things that I really loved about research, such as answering questions and working in teams, and where else can I do this if not in the lab at the bench, and then I stumbled into consulting,” Gichana said.

I learned about so many career paths I didn’t know existed from what other scientists leaving the academia versus industry bubble explored and shared.

Gichana has the opportunity to gain exposure to other aspects of science that she’s never done before. She’s found a way to buy some more time for making a final career decision.

The Necessity of Networking

“The most valuable piece of advice to learn about non-traditional science careers is to talk to people,” said Chloe Kirk. She advises not to be afraid to reach out to people on LinkedIn or to go to a networking event with questions.

“I learned about so many career paths I didn’t know existed from what other scientists leaving the academia versus industry bubble explored and shared.”





ASPET members networking at an evening poster reception

Widden also encouraged early-career scientists to take a step back if you're interested in a career outside of academia and hone those skillsets learned in the lab that are transferable to other working environments, including critical thinking and leadership skills. She stressed the importance of making the effort to learn from others about job roles and industries.

“Go to conferences where you can network with people whose job role interests you, but also virtual networking that a lot of people are open to these days,” Widden explained. She said that reaching out to people on LinkedIn, asking for a 15 or 30-minute informational interview is a great way to network virtually.

Kirk explained that she also conducted informational interviews with scientists who made the jump to science policy, a field of interest that she was contemplating. She had considered a legal career before graduate school, and through speaking with enough people, came to learn about a way to combine her interests in science and law through science policy. She loved learning how to communicate science to enact change on a federal level and began applying for post-PhD fellowships in science policy, which led her to ASPET's Washington Fellows program.

Consider Pursuing a Science-Adjacent Career

Deciding on your career when you may have multiple interests may seem daunting especially if you have not seen examples of it within your circle or elsewhere. For this reason, it's important to explore, network and reach out to people you do stumble upon who can answer your questions. These conversations can help expand your outlook on the possibilities of potential science-related careers that are non-traditional, but very achievable.

Kirk eventually found her calling in a field that allows her to combine her love of science and law.

"In my last year of graduate school, as I started applying for science policy fellowships, I spoke to someone who had moved into patent law. When they described keeping up and being part of cutting-edge science as well as the possibility of attending law school, I realized patent law was ticking every box. I fully immersed myself in talking with scientists in patent law, ultimately landing on that career path."

Kirk currently works as patent law clerk in Washington, D.C. Her general responsibilities are to aid in patent prosecution of U.S. and foreign

applications and portfolios. Her next steps are to take the patent bar exam and attend law school to become a patent attorney.

The job outlook for medical scientists, including pharmacologists, [is projected to grow 10 percent between 2022 and 2032](#). Many of the expert panelists on the ASPET webinar advised utilizing your time to find the right career path that fulfills you.

Widden suggested seeking out niche conferences that provide networking opportunities for a very specific field. It's during these conferences that you will not only meet people, but learn the lingo associated with that field.

As Widden so eloquently quipped, "if you can talk the talk, you can walk the walk!"



Tricia McCarter, CDMP, PCM

Tricia McCarter, CDMP, PCM, is ASPET's Senior Coordinator of Marketing and Communications and the Managing Editor of *The Pharmacologist*. She has more than five years of communications and marketing experience within the non-profit industry. She holds a master's degree in journalism and a double certification as a Certified Digital Marketing Professional through the Digital Marketing Institute and a Professional Certified Marketer in Digital Marketing through the American Marketing Association.

ASPET's 2024

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