



International Drug & Alcohol Research Society **IDARS NEWS**



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Inside this Issue:

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**Advances in Drug and
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President's Message

Hello every one and welcome to 2025 IDARS news, with pictures from the 2024 SFN meeting in Chicago. We had a successful IDARS meeting in Rio de Janeiro in Brazil and below is picture of attendees at the conference.

The presentation of Advances in Drug and Alcohol Research (ADAR), the official journal of IDARS and the International Narcotic Research Conference (INRC) meetings this year reported that ADAR is now fully indexed in PubMed Central and PubMed.

With an ongoing opioid epidemic, curbing addiction and the potential of the weight-loss drugs is attracting attention for understanding their mechanism of action and long term effects.



Dr. George F. Koob



IDARS 2024 Meeting in Rio de Janeiro



International Drug & Alcohol Research Society *IDARS Meeting Report*

Volume 2 Number 4, spring 2025



Pictures from 2024 Symposia in Rio de Janeiro



Selected images from presentations.



International Drug & Alcohol Research Society
IDARS Meeting Report

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Pictures from 2024 Symposia in Rio de Janeiro



Selected images from symposium presentations and trip.



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Pictures from 2024 Symposia in Rio de Janeiro



Selected images from symposium presentations



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Pictures from 2024 Symposia in Rio de Janeiro



At the 2024 IDARS Rio de Janeiro meeting, “Flash Talks” by students and Post-Docs of 10 mins each were presented by attendees pictured above. This turned out to be successful summation of the research done by the presenters instead of the traditional poster presentation format. The moderator for the flash talks was Barbara Juarez, and spotlighted in this issue on page 8.



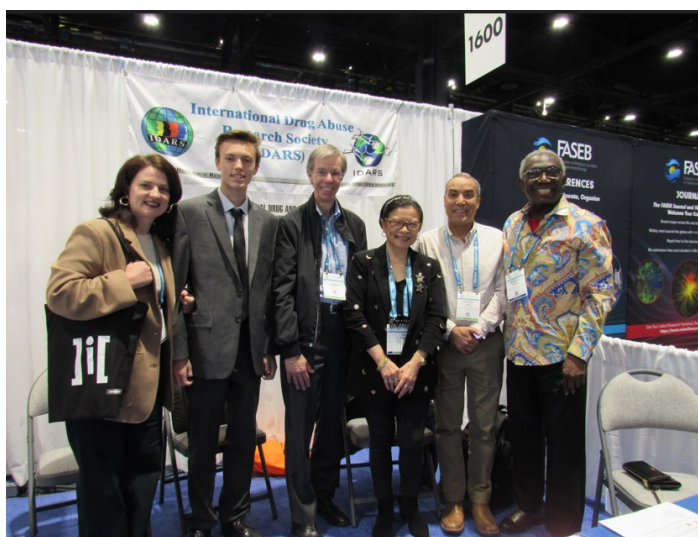
Selected images from symposium presentations and attendee registration and information processing for the IDARS conference.

IDARS BOOTH AT SFN IN CHICAGO 2024



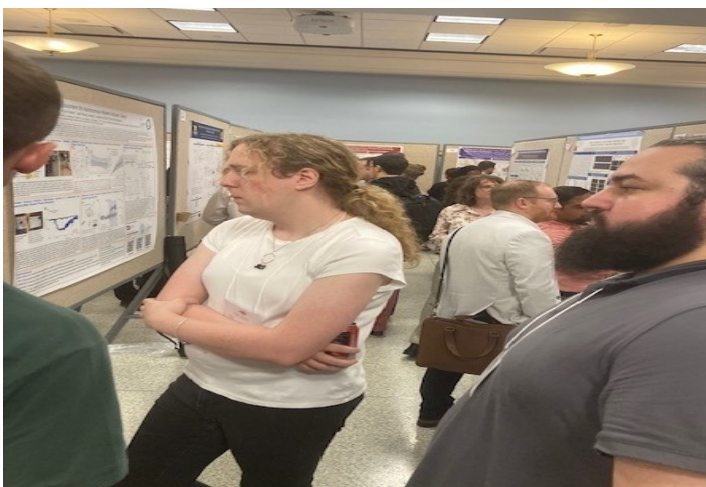
In continuation of our established tradition of showcasing IDARS with an exhibition booth at the society for Neuroscience meeting (SFN), the selected pictures above are IDARS members introducing IDARS to SFN attendees around the IDARS booth at the 2024 SFN meeting in Chicago. Lower left panel Emmanuel with Susie Ingram President of INRC and Nicolas Massaly, the Communication officer of INRC.

IDARS BOOTH AT SFN IN CHICAGO 2024

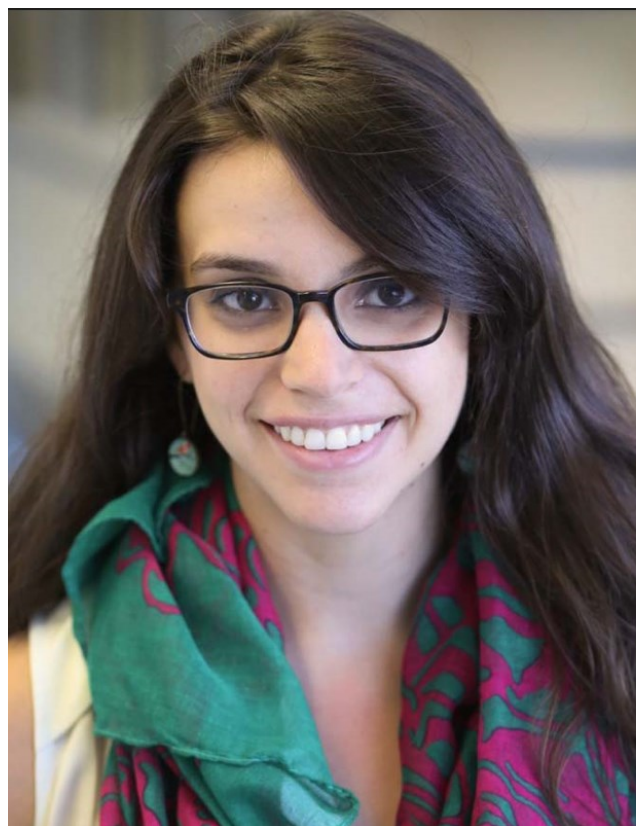


In continuation of our established tradition of showcasing IDARS with an exhibition booth at the society for Neuroscience meeting (SFN), the selected pictures above are IDARS members introducing IDARS to SFN attendees around the IDARS booth at the 2024 SFN meeting in Chicago. Top right panel Antonio Noronha and wife at IDARS booth..

Pictures from 2024 INRC in Ann Arbor, MI USA



Selected pictures from 2024 INRC in Ann Arbor MI, USA, Top picture on the left was the registration desk with Dr. Emily Jutkiew (insert picture), Chair of the organizing committee, who passed shortly after the meeting. Picture in the middle and left row shows Dr. Brian Cox and Dr. Lawrence Toll, authors of the history of INRC over the past 50 years, published in the inaugural issue of ADAR in 2023. Other selected pictures include Hot Topic speakers, and during the poster presentations.

*Spotlight on Dr. Barbara Juarez***Dr. Barbara Juarez**

Dr. Barbara Juarez is an Assistant Professor in the Department of Neurobiology at the University of Maryland, School of Medicine. Her research program is focused on understanding the circuit and molecular mechanisms that underlie individual resilience or susceptibility to substance use disorders and affective disorders. Her lab is especially interested in deciphering how intrinsic regulators of cellular excitability contribute to healthy and disordered behaviors.

Dr. Juarez began her scientific training as an undergraduate at Florida International University in the Minority Biomedical Research Support- Research Initiative for Scientific Enhancement (MBRS-RISE) program and as a Summer Undergraduate Research Program (SURP) fellow at Boston University. In these programs, she contributed to investigations that sought to determine how circulating hormones in female mice contributed to differences in learning, memory and mating behaviors. She started a post-baccalaureate fellowship in Icahn School of Medicine at Mount Sinai's Post-Baccalaureate Research Education Program (PREP) in August 2010 where she joined Dr. Ming-Hu Han's laboratory. In 2012, she matriculated into Icahn School of Medicine at Mount Sinai's Neuroscience Graduate program and be-

gan investigations into the regulatory processes of low and high alcohol drinking behaviors in mice. In 2014, she received an NIAAA funded F31 NRSA-Diversity fellowship, which focused on determining how dopamine neurons mediate individual differences in alcohol drinking behaviors in mice. Dr. Juarez completed her Ph.D training in 2016 and joined the laboratories of Drs. Larry Zweifel and Charles Chavkin at University of Washington. There, she elucidated how potassium channel subunits contribute to the regulation of cellular physiology and learning. She received a MOSAIC K99/R00 from NIDA in September 2021, which is focused on determining whether dopamine subpopulations uniformly or distinctly regulate opioid reward.

Currently, the Juarez lab uses CRISPR-Cas9 gene editing technology, circuit dissecting electrophysiology, and in vivo optogenetic and photometric methods to determine the neural circuit basis of aberrant drug seeking behaviors. She has also received a Brain and Behavior Research Fund Young Investigator Award and a Cure Addiction Now Young Investigator award. Throughout her research tenure, Dr. Juarez has been committed to the promotion and support of underrepresented individuals in science and to the mentoring of the next generation of scientists. She has established multiple equity, diversity and inclusivity initiatives in academic environments. She has been on the conference organizing committee of IDARS since 2022.

IDARS 2024 Meeting in Rio de Janeiro Plenary Lecture II, by Dr. David Lovinger, Intramural Scientific Director, NIH/NIAAA

Associative and Sensorimotor Basal Ganglia Circuit Roles in Substance Use and Misuse

The associative and sensorimotor cortical-thalamo-basal ganglia circuits have crucial roles in



action learning and performance. Misused substances including alcohol alter the relative roles of the two circuits, promoting behavioral control by the sensorimotor circuit. The presentation began with a review of the cortical, thalamic and basal ganglia circuit components, highlighting that the associative circuit includes the prefrontal cortex, orbitofrontal cortex and striatal caudate region, while the sensorimotor circuit includes sensory and motor cortices and the striatal putamen region. The acute and chronic effects of alcohol that favor sensorimotor circuit control were then reviewed, with an emphasis on altered GABAergic and glutamatergic synaptic transmission and plasticity that “disinhibits” sensorimotor striatal projection neurons. Alcohol effects on other basal ganglia circuits were also discussed. Enhancement of

sensorimotor striatonigral GABAergic synapses following chronic alcohol produces stronger synaptic inhibition in the lateral substantia nigra pars reticulata. Behavioral experiments indicated that chronic alcohol exposure enhances the role of the sensorimotor striatonigral pathway in instrumental behavior. The role of endocannabinoids in drug-induced enhancement of sensorimotor circuit control was then reviewed. Data from the Tonini laboratory showing that chronic exposure to delta-9-tetrahydrocannabinol, the primary psychoactive ingredient in cannabis drugs, alters endocannabinoid-dependent synaptic plasticity in the sensorimotor striatum and this synaptic change contributes to stronger stimulus-response/habitual instrumental behavior. New evidence that alcohol inhibits production/release of the endocannabinoid 2-arachidonoyl glycerol (2-AG), measured in sensorimotor striatum with a newly-developed genetically-encoded endocannabinoid sensor, was presented. This inhibition primarily alters 2-AG derived from striatonigral “direct pathway” neurons. Experiments indicating that loss of 2-AG production in direct pathway neurons reduces alcohol sedation and alcohol preference (in male mice) was also presented. The final portion of the presentation featured data showing that early-life alcohol exposure alters skill learning and performance through altered function of the striatal neuromodulators acetylcholine (ACh) and dopamine. Exposure to alcohol during postnatal days 0-10 (which mimics 3rd trimester exposure in humans) decreases performance of female mice in the rotarod motor skill learning task when they are tested as adults. This impairment is accompanied by decreased cholinergic neuron excitability and decreased duration of ACh release in sensorimotor striatum. Treatments aimed at enhancing the activity of cholinergic interneurons and altering the function of nicotinic ACh receptors restored normal rotarod function in the female mice. Overall, the presentation highlighted evidence that the sensorimotor striatum has important roles in controlling action learning and production after adult drug exposure, and contributes to impairments produced by early life alcohol exposure.

Welcome to our IDARS Newsletter*

Emmanuel Onaivi, Ph.D., Newsletter Editor of IDARS is delighted to publish our electronic newsletter, with information about the society, seeking ideas about our journal, and opportunities for our members. The intention of this newsletter is not only to communicate to you, but also, for you to be able to respond with suggestions for how IDARS may increase its role in your research. We are interested in the latest advances in drug addiction vaccines that could help people stop smoking, or stop compulsive use of drugs of abuse. But whether vaccines can prevent smoking or drug addiction remains an open question. Please send us feedback, and get involved! As editor of this newsletter, I invite you to contact me with ideas for articles in future editions, or to volunteer to write an article yourself.



Newsletter Editor*

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Advances in Drug and Alcohol Research (ADAR) is the official journal of IDARS and the International Narcotic Research Council (INRC) and published by Frontier's Publishing Partnership Platform. ADAR was presented at the IDARS meeting in Rio de Janeiro in Brazil in May 2024 and at the INRC meeting in Ann Arbor MI, USA in July. ADAR was presented at the IDARS booth during the October 2024 SFN meeting in Chicago.

IDARS is now indexed in PubMed central and this milestone was possible by the contributions from members of IDARS and INRC and others from the global community of scientists conducting drug and alcohol research. More work remains to put ADAR as the go to journal in drug and alcohol research including:

- ⇒ Joint attendance and membership of INRC and IDARS.
- ⇒ **The next IDARS meeting is been deliberated because of current UNCERTAINTIES.**
- ⇒ **The next INRC meeting will be in Bologna in Italy, July 8-11, 2025.**
- ⇒ ADAR welcomes submissions from presentations at INRC, IDARS and SFN meetings.

There is growing interest on how obesity drugs like GLP1 and GIP receptor agonists are showing promises in treating many disorders including drug and alcohol addiction as outlined in the recent Nature feature article by Mariana Lenharo, Vol 633, 2024. The opioid crisis claiming more than 100,000 lives in USA, and alcohol use disorder afflicting more than 29 million individuals and causing more than 140,000 deaths annually, in USA needs new research strategies and targets in treating drug and alcohol addiction. To address unmet needs new frontiers in AI beyond CHATGPT with large quantitative AI, and combination with advance sensing may be useful to make new drugs for treating drug and alcohol use disorders. With treatment gaps and challenges on how SUDs are linked to dysbiosis, and the implication of gut-brain axis requires more understanding for comprehensive development of effective medications. As inflammation and neuroinflammation is now consistently linked and implicated in many disorders including drug and alcohol use disorders, taming inflammation by GLP1 and GIP medications is showing promise.

IDARS Members and ADAR Associate Editors NEWS

Dr. Anna N. Bukiya

Dr. Anna Bukiya is a Full Professor with tenure at the Department of Pharmacology, Addiction Science and Toxicology, College of Medicine, and the University of Tennessee Health Science Center. Dr. Bukiya's research interest focuses on the developmental aspects of cerebral vasculature, and the sensitivity of developing cerebral arteries to drugs of misuse. Dr. Bukiya has established Cerebrovascular Development and Drugs of Abuse Research (CEDAR) Laboratory. Drugs of interest under study in Dr. Bukiya's lab include alcohol, and more recently, ultra-potent synthetic opioids. Dr.



Bukiya's group documented critical role of fetal cerebral artery endocannabinoid system in the prenatal effects of alcohol exposure on cerebral artery diameter. Role of distinct proteins within fetal cerebral artery respiratory chain in sensitivity to drugs of misuse is currently under intensive investigation. At her home institution, Dr. Bukiya co-directs Pharmacology track within the PhD program in Biomedical Sciences, and participates in Faculty Senate Research Committee. Dr. Bukiya is also an immediate past chair of the Animal Research and Ethics Committee by Research Society on Alcohol. At the IDARS, Dr. Bukiya serves as an Associate Editor of the Advances in Drug and Alcohol Research journal. In collaboration with Dr. Declan Ali, Dr. Bukiya edited a Special Issue on substance abuse and early development. She is also a corresponding Editor on an upcoming book titled "Molecular Mechanisms and Lifelong Consequences of Prenatal Exposure to Psychoactive Substances". In addition to scholastic duties, Dr. Bukiya is actively involved into mentoring and attracting young scientists into the research field of substance misuse. Dr. Bukiya delivered numerous motivational speeches that highlight advantages of career path in science and related fields. Outside the lab, Dr. Bukiya advocates for healthy lifestyle by donating countless hours to community as a certified USA swimming official at local swim competitions.

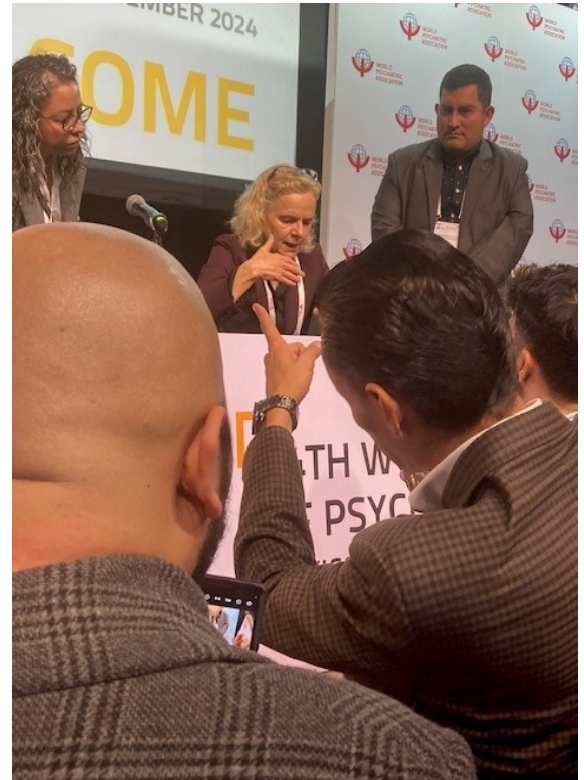
Dr. Francis Scott Hall: Professor in the department of Pharmacology and Experimental Therapeutics and Associate Vice President for Research at the University of Toledo in Ohio, USA. His current research examines the genetic basis of drug addiction and related conditions using transgenic mouse models in which specific genes have been manipulated or deleted. In recent years, in a series of papers, his group has described the role of a number of genes in the rewarding and aversive effects of drugs of abuse, such as cocaine, and how these genes may contribute to the genetic basis of drug addiction. Many of these studies have examined gene-gene interactions in ways that have not been previously addressed by direct experimental manipulation. In addition to the implications of this research for the genetic basis of addiction, it also has implications for the genetic basis of psychiatric disorders including depression, anxiety and attention deficit disorder.



Dr. Mike Kuhar: Past President of IDARS and retired Professor from Emory University. A neuroscientist, Eminent scholar and senior fellow in the center for ethics at Emory University. His latest book is titled "Essays for living", deals with how people think about, and cope with challenges. The book provides many examples, with examples of Dr. Kuhar's experiences in the more than 50 years he spent as an academic scientist. Life can be complex, and the topics addressed vary widely. The book can be obtained from Amazon.

Highlights from the 24th World Psychiatric Association conference in Mexico City, 14-17 November 2024

Dr. Nora Volkow, shown here after presenting a distinguished lecture and answered questions at the 24th World Psychiatric Association conference in Mexico City. Dr. Volkow pioneered the use of brain imaging to the toxic and addictive effects of abusable drugs. The abstract of Dr. Volkow presentation from the conference is shown below.



Summary of Dr. Nora Volkow presentations on the evolving needs and challenges of addictive effects of abusable drugs with seminal contributions on neuroimaging for mental health disorders associated with addictions.

Addiction, a complex disorder linking genes, development and the social environment has, for decades, been helping to illuminate our understanding of the human brain and is leading the way toward promising strategies for its effective treatment. Studies employing neuroimaging technology paired with behavioral measurements, and more recently genetics, have led to remarkable progress in elucidating neurochemical and functional changes that occur in the brains of addicted subjects and the neurocircuits that modulate risk for substance use disorders. Although large and rapid increases in dopamine have been linked with the rewarding properties of drugs, the addicted state, in striking contrast, is marked by significant decreases in brain dopamine D2 receptor mediated signaling and the downstream dysfunction of circuits that it modulates through striato cortical and limbic projections. Among the most prominently affected is the prefrontal cortex (PFC), including ventral PFC implicated in salience attribution and motivation (orbitofrontal cortex, and anteroventral cingulate gyrus), and dorsal PFC including dorsolateral and medial PFC implicated in executive function and internal awareness. These PFC disruptions underlie the enhanced value given to drugs and drug-related stimuli at the expense of other reinforcers and the impulsive and inflexible behaviors that lead to compulsive drug consumption. In parallel, dysfunction of limbic projections are believed to underlie the enhanced stress reactivity and negative emotional states that emerge during drug withdrawal.

Advances in Drug and Alcohol Research.

ADAR



The official journal of International Drug Abuse Research Society and the International Narcotics Research Conference was launched in April 2021.



Frontiers' is a global transformative, open access publisher with open science platform.

Frontiers' transparent peer-review approach allows authors to interact with reviewers and editors to improve the articles for publication.



Presentation of ADAR at the 2024 INRC meeting in Ann Arbor, MI. From left to right are Lee-Yuan Liu-Chen, Treasurer of INRC and Deputy-Editor-in-Chief of ADAR, Nicolas Massaly, Communication Officer of INRC, Susie Ingram, President of INRC, Surya Nedunchezhiyan, previous Manager of ADAR, Brian Cox, coauthor with Larry Toll on “Contributions of INRC to opioid research over the past 50 years in ADAR”, Emmanuel Onaivi, Editor-in-Chief of ADAR.