



International Drug Abuse Research Society **IDARS NEWS**



Volume 2 Number 1, spring 2020

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Drug Addiction: The Gain in the Brain is in the Pain

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President's Message: Dr. George F. Koob

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I am happy to inform members of IDARS that the state of our society is solid, with continuous international outreach and participation. For the 7th IDARS biennial meeting we expanded our geographic footprint to Morocco in Africa in the city Casablanca with a rich cultural heritage and center of learning and research. The meeting brought together drug abuse scientists and clinicians from across the globe to share and discuss the current state of knowledge, challenges and the future of drug addiction that continues to be a global problem. The opioid epidemic in the United States emphasizes that drug addiction remains a global challenge for IDARS scientists on all continents. IDARS members and participants continue to represent and welcome the whole spectrum of global society regardless of religious, cultural or sexual orientation. We have been and remain a robust international beacon of diversity for research on drug addiction.

We began this IDARS special meeting for the first time in the continent of Africa in Casablanca, Morocco, with a special award ceremony. The award ceremony was not only to the travel awardees (page 3) but also to the exemplary dedication and service to IDARS of our executive director Syed Ali. We greatly appreciate the hard work of Syed and his contribution in running IDARS throughout the year. A life time service award was presented to Eliot Gardner for his contribution that allow IDARS to continue to support exceptional young scientists to attend IDARS meetings. The travel award winners were Sean Farris, received George Koob award, Zoe McElligott received Michael Kuhar award, Michel Engelin received Eliot Gardner award and Gurudutt Pendyala was the recipient of the Institute of NeuroImmune Pharmacology orchestrated by Sulie Chang who is featured in this issue as an IDARS newsmaker (*President's message Continued on page 2*).



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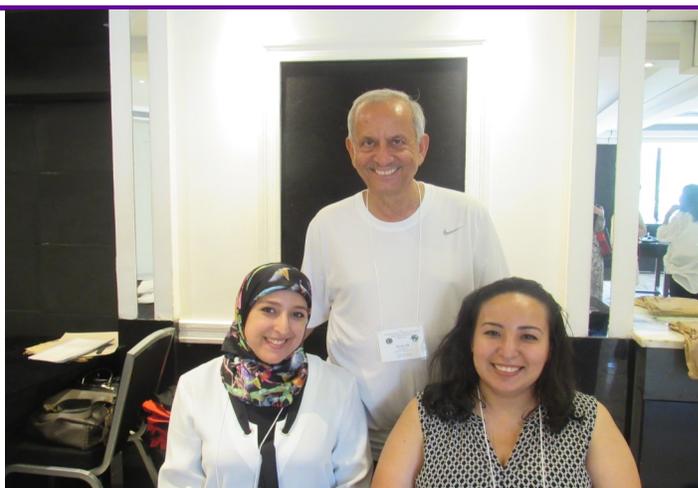
President's Message continue from page 1: Dr. George F. Koob

This conference continues to attract internationally-renowned scientists and this time our scientific presentations included two additional plenary lectures, with a host plenary lecture by Dr. Driss Moussaoui who presented a historical perspective and origins of drugs of abuse in Morocco and a second plenary lecture by Dr. Marisela Morales, the Integrative Neuroscience Research Branch Chief from NIDA-IRP, who presented data illuminating ventral tegmental area neuronal diversity and motivated behavior. This conference has always been an impactful meeting where scientists from different specialties come together to present a broad range of human and animal studies including basic and translational research to identify novel mechanisms and therapeutic strategies for the treatment of addiction and comorbid pain, anxiety and mood disorders. In addition to the regular slide and poster presentations, IDARS has included flash – talks to engage trainees, post-doctoral fellows and graduate students to highlight their contribution as young scientists. This provides ample opportunity for engaging discussions between senior scientists and trainees. This was deemed a huge success in terms of the quality of science and the exemplary precision of their presentations.

IDARS continues to have an exhibition booth at the society for neuroscience (SFN) meetings, along with the annual IDARS social event with Guest speakers. At the IDARS social event during the 2018 SFN meeting in San Diego, the key note speaker was Dr. M. Foster Olive whose presentation was on “Designer stimulants and their continuing evolution in the addiction landscape.” For the IDARS social event at 2019 SFN meeting in Chicago, the keynote speaker was Dr. T. Celeste Napier, the Director of the Center for Compulsive Behavior and Addiction and the presentation is titled, “How Neurobiology of Choice Informs Addiction Stigma.” Happy new year to you all with a clear 2020 vision of IDARS continued leadership as a true International Drug Abuse Research Society.

Dr. George F. Koob, PhD
President of IDARS

Registration and setting up of the conference



Members of the local organizing committee and Syed Ali, set up the registration procedure for attendees of the 7th IDARS biennial meeting in Casablanca Morocco. During the registration members and their guests also signed up for visit to Rabat—the capital of Morocco, and the dinner hosted by the Moroccan head of Government. Photo galleries from Rabat and dinner are on pages 7 and 8.

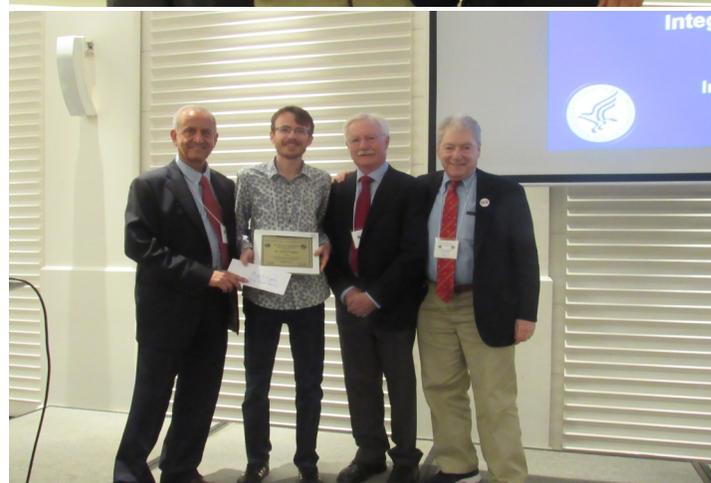


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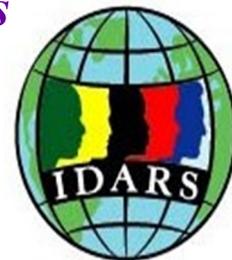
Award Ceremony at IDARS meeting in Casablanca Morocco



Images during the award ceremonies to Syed Ali for exemplary dedication and life time service award to Eliot Gardner, top panel and IDARS travel awards to Gurudutt Pendyala, Michel Engelin, Zoe McElligott and Sean Farris.



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Photo gallery from Symposia in Morocco



Selected images during presentations by key note speakers and symposia presentations.

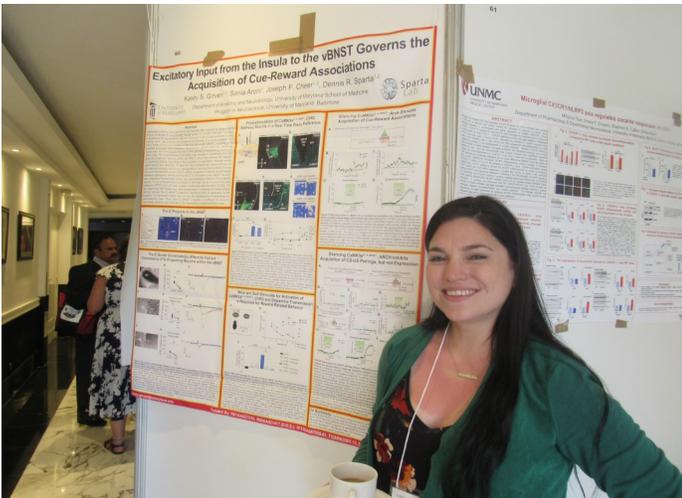
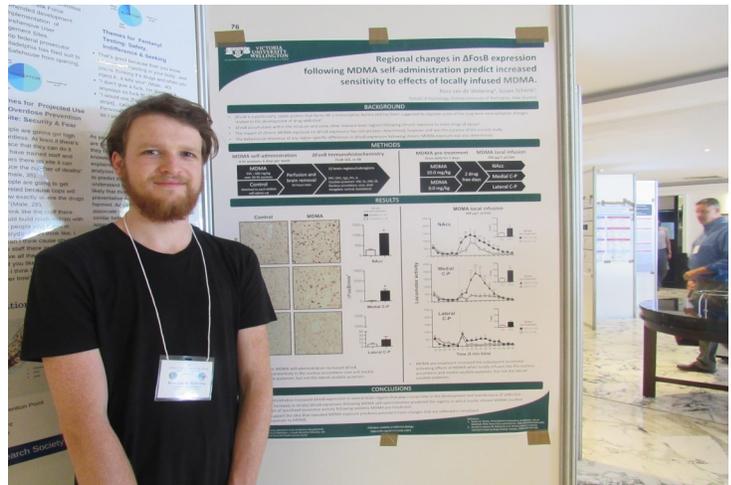
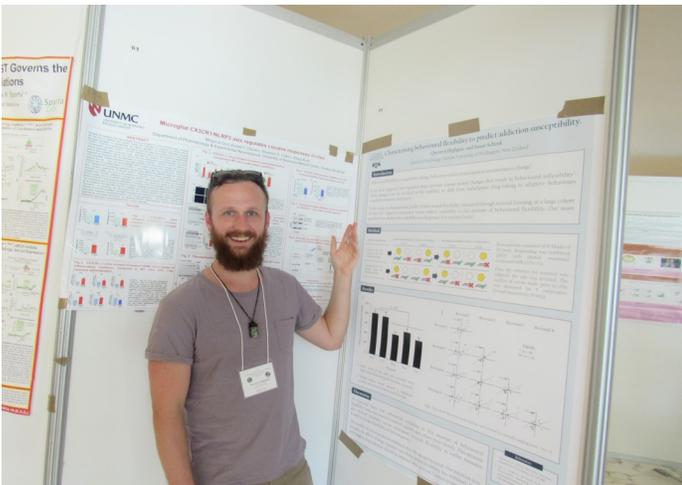
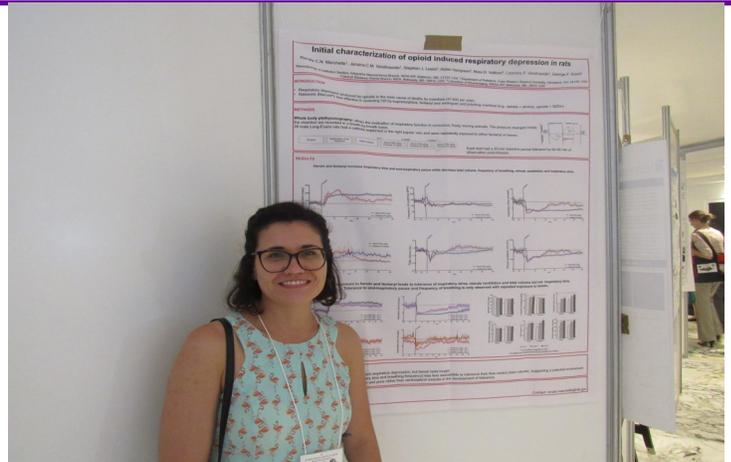
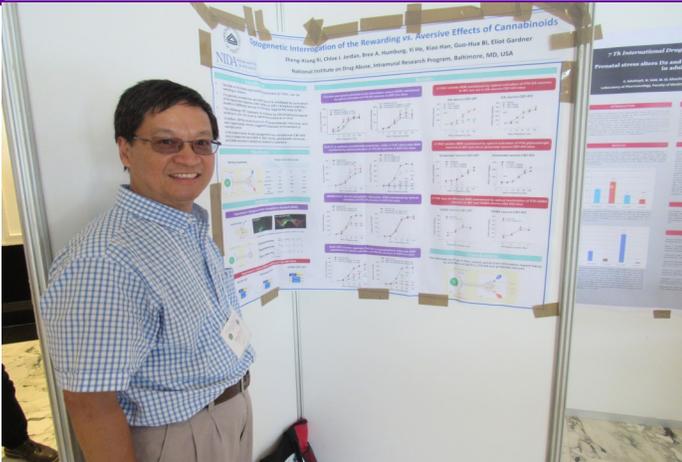


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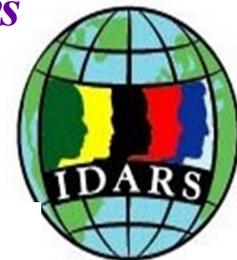
Photo gallery from Poster Session in Morocco



Selected images from the poster presentations.



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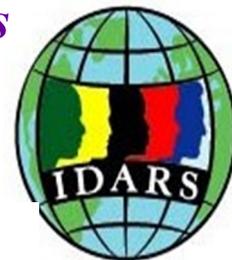
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Photo gallery from Symposia and Panel summary





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Photo gallery from IDARS socials in Morocco

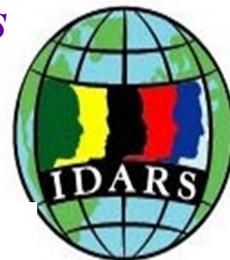


Selected images from lunch and dinner during IDARS 7th biennial meeting.



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Photo gallery from the tour and special dinner in Morocco



IDARS BOOTH & SOCIALS AT SFN IN SAN DIEGO 2018



In continuation of our established tradition of showcasing IDARS with an exhibition booth at the society of Neuroscience meeting (SFN), the selected pictures above are IDARS members introducing IDARS to SFN attendees around the IDARS booth at the 2018 SFN meeting in San Diego.. Lower panel key note speaker and and dinner. Profile of key note speaker Dr. M. Foster Olive (see page 15).

IDARS SOCIALS AT SFN IN SAN DIEGO 2018



Members of IDARS and their guests at the IDARS social event as describe earlier during the society for neuroscience meeting in San Diego in 2018. Bottom left panel is image of Dr. M. Foster Olive with Dr. Ali and Dr. Koob who introduced Dr. Olive the key note speaker (page 15).

IDARS Booth at the 2019 SFN Meeting in Chicago



In continuation of our established tradition of showcasing IDARS with an exhibition booth at the society of Neuroscience meeting (SFN), the selected pictures above are IDARS members introducing IDARS to SFN attendees around the IDARS booth at the 2019 SFN meeting in San Diego.

IDARS SOCIALS AT SFN IN Chicago 2019



Members of IDARS and their guests at the IDARS social event as describe earlier during the society for neuroscience meeting in Chicago in 2019. Bottom right panel, Dr. Antonio Noronha with Guests from Frontiers Publishing.

IDARS NEWSMAKERS**Volume 2 Number 1, spring 2020****IDARS Spotlight on Dr. Sulie L. Chang****Dr. Sulie L. Chang**

Sulie L. Chang, Ph.D. is Founding Director of the Institute of NeuroImmune Pharmacology (INIP) and Professor of Biological Sciences and Neuroscience at Seton Hall University (SHU). She is also an Adjunct Professor of Graduate Program in Endocrinology & Animal Biosciences, Rutgers Graduate School. Prior to her directorship at the INIP in 2007, Chang served as Chairperson of the Department of Biological Sciences as well as Director of Graduate Studies of Biological Sciences at SHU.

Dr. Chang's research has been studying the bi-directional interactions between the nervous and immune systems in health and disease including addiction and neuroAIDS. Her current research topics include contribution of binge drinking to opioid use disorders, correction of HIV-mediated behavioral disorders by excising the virus using CRISPR techniques, repairment of blood-brain barrier damage by HIV and addictive substances, involvement of methylation in binge exposure to ethanol-mediated spleen atrophy of the adolescence, and involvement of alternative splicing of OPRM1 underlying opioid abuse and dependence in the people living with HIV/AIDS on combination anti-retroviral therapy. Chang's research projects have been funded continuously by NIH (NIAAA and NIDA) since 1989. She has published over 130 scientific papers and book chapters with significant impact.

Dr. Chang has participated in more than 170 NIH study sections since 1997. This includes her service as a member of the National Institute on Drug Addiction Career Development Study Section (1998–2002); active (2002–2007), member of the NIH Center for Science Review (CSR) Neuro-AIDS and End-Organ Diseases Study Section; and member (2009–2014) and chair (2012–2014) of the NIH CSR Innate Immunity and Inflammation Study Section, and member of the NIH National Institute on Alcohol Abuse and Alcoholism Biomedical Research Review Subcommittee (2015-2019).

Dr. Chang is the current President of Society on NeuroImmune Pharmacology (SNIP, <https://s-nip.org/>). SNIP has its long history and it is celebrating its 26th anniversary since its inception in 1993. In other words, 2019-2020 is the first year opening the second ¼ century of SNIP history. The mission of SNIP is to promote research and serve as a reliable source of information in the pharmacology, immunology, and neuroscience of the neuroimmune axis; promote exchange of information and ideas on neuroimmune pharmacology by their annual scientific conferences. With their engagement to foster international research collaboration in line with cultural exchange around the world, SNIP hosted its first international meeting in Wuhan, China in 2009 and the second in Krakow, Poland in 2016. Chang and her SNIP Council have decided to hold their third international meeting in 2020 in New Delhi, India. The conference dates are 1-4th April 2020. The meeting venue will be the Lalit New Delhi that is one of the best conference hotels that reflects the cultural heritage in India. The link to the Lalit New Delhi is: <https://www.thelalit.com/the-lalit-delhi/>. New Delhi is capital of India well connected with all international destinations.

The conference theme is to gather the neuroimmune pharmacologists around the world to south/western Asia. The focus of the SNIP New Delhi meeting is for "Research, Mentoring and Community Dissemination". The conference program shall include plenary lectures, memorial lectures, Presidential and other 7-8 topic symposia, poster presentations, mentoring sessions for early career investigators, diversity and inclusion program as well as India exploration events and celebration banquet with cultural performances. The mentioned topic symposia include the IDARS sponsored symposium that has been planned by Dr. Syed Ali. On behalf of the SNIP and herself, Chang sincerely expresses their gratitude to IDARS's support and she would like to extend their warmest invitation to all IDARS members to join the 26th SNIP Annual Conference in New Delhi, India. Chang's best contact is her cell phone 9734322073 and she is available 24/7 to answer any questions you may have about the 2020 SNIP Annual Conference in New Delhi, India.

Proteomic Analysis of Baboon Cerebral Artery Reveals Potential Pathways of Damage by Prenatal Alcohol Exposure by Anna N. Bukiya PhD.

Alcohol consumption by pregnant women often results in an array of fetal developmental abnormalities that include morphometric and cognitive delay. However, molecular mechanisms of fetal damage by prenatal alcohol exposure remain poorly understood. The limited knowledge regarding the molecular targets of alcohol in the developing fetus constitutes one of the major obstacles in developing effective pharmacological interventions that could prevent fetal damage after intended or accidental alcohol consumption by pregnant women. In this regard, the fetal cerebral artery is emerging as an important mediator of fetal brain damage by maternal alcohol drinking. In our new work, we utilized proteomics analysis of cerebral arteries from fetal baboons to demonstrate that three episodes of binge alcohol exposure during the second trimester-equivalent of human pregnancy are sufficient to modify fetal cerebral artery proteome. These modifications are persistent, as they are detected in near-term fetuses. Metabolic activity and cytoskeletal protein groups are among the largest targets of alcohol. Proteomics findings may explain previous observations on decreased microvasculature development and inability to cope with vascular stress following alcohol exposure *in utero*. Future studies will reveal the contribution of cerebral artery proteome modifications into pathophysiology of prenatal alcohol exposure.



Additional reading: Bisen S, Kakhniashvili D, Johnson DL, Bukiya AN. Proteomic Analysis of Baboon Cerebral Artery Reveals Potential Pathways of Damage by Prenatal Alcohol Exposure. *Mol Cell Proteomics*. 2019 Feb;18(2):294-307. doi: 10.1074/mcp.RA118.001047. PMID: PMC6356072.

Physical exercise: A non-pharmacological approach in methamphetamine addiction by Frederico C. Pereira, PhD.

Physical activity has been long known to be able to prevent chronic disease (Febbraio, 2017). For example, quotes attributed to Hippocrates include the following: “Walking is man’s best medicine” and “If there is a deficiency in food and exercise the body will fall sick”. In a recent cross-sectional study, it was shown that exercising was associated with reduced self-reported mental health burden, an effect that was consistent across a range of sociodemographic characteristics including age, race, gender, household income, and education level (Chekroud et al. 2018). “Now thinking about mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?” The authors further argued that the characteristics of exercise (ie, type, duration, and frequency) might play an important part in the association between exercise and mental health burden. Amphetamine-type stimulants (ATS), whose principal members include amphetamine and methamphetamine (METH), are the second most abused group of drugs worldwide (World Drug Report-2016). However, no medication has been approved by the regulatory authorities for the treatment of METH addiction. Therefore, novel approaches to manage METH addiction are an urgent need. Interestingly, physical activity (PE) has been proposed for the management of METH addiction (Rawson et al., 2015). The exercised participants showed less depression symptoms and returned less to METH use post-discharge, compared to health education participants (Rawson et al., 2015b). Clinical positive outcomes were also observed for other substances of abuse, including tobacco, alcohol, cannabis and heroin. These positive effects of physical exercise seem to reflect an intricate combination of different mechanisms, including neurochemicals, oxidative stress, neurogenesis, gliogenesis and BBB (Morais et al. 2018). Further studies are warranted to reinforce these conclusions and to inform policy and health systems efficiently.



Additional reading: Morais APD, Pita IR, Fontes-Ribeiro CA, Pereira FC. The neurobiological mechanisms of physical exercise in methamphetamine addiction. *CNS Neurosci Ther*. 2018;24:85–97.

Below are highlights of IDARS recent key note speakers. At the IDARS biennial meeting in Casablanca Morocco, Dr. Marisela Morales presented a plenary lecture. At the IDARS society for neuroscience (SFN) social event, Dr. M. Foster Olive and Dr. T. Celeste Napier were the key note speakers in SFN 2018 and 2019 respectively.

Dr. M. Foster Olive heads the Addiction Neuroscience Laboratory at Arizona State University. His group is interested in examining how abused drugs affect the brain on a neurobiological level. He received his undergraduate degree in Psychology from University of California at Los Angeles. His Postdoctoral research was performed at Stanford University and the University of California at San Francisco. His research has been published in journals such as Psychopharmacology, Biological Psychiatry, Journal of Neuroscience, and Nature Neuroscience. He currently serves on the Editorial boards for Neuropsychopharmacology, Addiction Biology, Neuropharmacology, and Frontiers in Pharmacology. Professor Olive's research is supported by the National Institute on Alcohol Abuse and Alcoholism, and the National Institute on Drug Abuse. At the IDARS Social event during the 2018 SFN meeting in San Diego, the key note speaker was Dr. M. Foster Olive whose presentation was on "Designers stimulants and their continuing evolution in the addiction landscape." Data on cathinone's derivative MDPV's rewarding, reinforcing, cognition impairing, neurotoxic and neuroinflammatory effects in laboratory rodent was presented.



Dr. Marisela Morales is currently a Section Chief of the Neuronal Networks Section and Branch Chief of the Integrative Neuroscience Research Branch at NIDA Intramural Program. She is also the Director of the Cores at NIDA Intramural Program. she has been implementing a scientific program to address the following questions: what is the brain circuitry through which addictive drugs have their habit-forming actions, and what are the neuroadaptations in this circuitry that accompany the transition from recreational to compulsive drug-taking? She has developed her career as independent scientist in the intramural NIH program. As a neuroscientist, she has produced many peer-reviewed publications. She has received several awards, including: the "Presidential Early Career Award for Scientists and Engineers" (PECASE Award, USA), the "NIDA Director's Award of Merit", and the "NIH Director's award". At the IDARS biennial meeting in

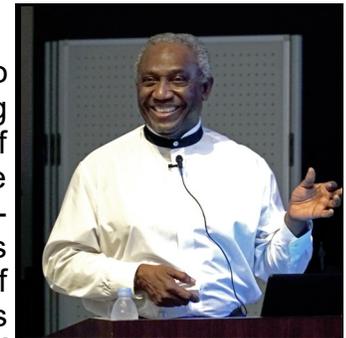
Casablanca Morocco, Dr. Morales presented a plenary lecture on "Ventral tegmental area neuronal diversity and motivated behavior." She presented work testing the hypothesis that different roles ascribed to VTA are mediated by distinct subsets of neurons that through specific circuitry integrate information from specific neurons from different brain areas. Data presented showed that VTA glutamate neurons establish both local and long range connections and play a role in rewarding and/or aversive stimuli. Her laboratory provided evidence for the existence of *glutamate* neurons in the VTA, *glutamate* neurons that project in parallel to some of the same targets as the *dopamine* neurons and begun to determine their role in behavior. By combination of classical and emerging anatomical techniques, they found that VTA *glutamate* neurons establish both local and long-range connections. By optogenetic behavioral studies, they found that VTA *glutamate* neurons throughout selective synapses play roles in reward, aversion or social behavior. Dr. Morales laboratory is currently investigating the extent to which VTA *glutamate* releasing neurons play a role in the neurobiology of drugs of abuse.

Dr. T. Celeste Napier, is Professor in the dept of Psychiatry and Behavioral Sciences and the Director, Center for Compulsive Behavior and Addiction at Rush University Medical Center in Chicago, IL. Dr. Napier received her PhD in Pharmacology at Texas Tech University. Her scientific interests include the neuroscience of motivational behaviors, including those that regulate healthy decision making versus those associated with drug and behavioral addictions. Her work also encompasses addiction co-morbidity with other mental and neurological diseases. Her numerous scientific publications span molecular biology, biochemistry, neurophysiology and behavior, and her research directly translates into medication development for mental health disorders. Dr. Napier has provided expert testimony to US Congress Committee on Science, Space and Technology Subcommittee on Research and Technology hearing titled Methamphetamine Addiction: Using Science to explore Solutions, and to Illinois House of Representatives, Heroin and Youth Task Force Hearing. Her biomedical research is funded by grants from National Institutes of Health, Foundations and Philanthropic Organizations. Dr. Napier was the key note speaker at the IDARS Social event during the 2019 SFN meeting in Chicago. Her presentation was on "How Neurobiology of Choice Informs Addiction Stigma."



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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The International Drug Abuse Research Society (IDARS) is pleased to announce the appointment of Emmanuel Onaivi as Editor-in-Chief of the Journal of Drug and Alcohol Research. The appointment is from January 1, 2020. Dr. Onaivi takes over from Dr. Kuhar the founding Editor in Chief of JDAR while Dr. Ali continues as the managing Editor of JDAR.

IDAR'S journal is Journal of Drug and Alcohol Research (JDAR). Stay tuned for JDAR upcoming announcements.



IDARS MEMBERS NEWS

Dr. Anna N. Bukiya's Edited book: Recent Advances in Cannabinoid Physiology and Pathology. The chapters span topics from the role of endocannabinoid system in embryonic and fetal development to cardiovascular disease, cancer, drug abuse and cutting-edge therapeutic applications. The content is presented at different levels of resolution. First, following an introduction into cannabinoid system components, readers are immersed into cannabinoid chemistry with a systematic overview of structural data that describe cannabinoid complexes with proteins at the atomic resolution. The remaining chapters capitalize on these interactions. They describe the cannabinoid role during embryonic, fetal, and adolescent development, in the cardiovascular system, cancer progression, and development of alcohol use disorders. Next, the topic of illicit marijuana use and abuse is discussed with an emphasis on possible genetic factors that may play a role in dependence. The book concludes with the most integrative level. It covers promising pharmacological leads in medicinal use of cannabimimetics to treat pain, epilepsy, and neurodegenerative disorders.



Advances in Experimental Medicine and Biology 1162

Anna N. Bukiya Editor

Recent Advances
in Cannabinoid
Physiology and
Pathology

Springer

Yerkes Establishes Mike Kuhar Neuroscience Travel Award

In recognition of his long-term service to the Yerkes National Primate Research Center and Emory University, Yerkes is pleased to announce the establishment of the Mike Kuhar Neuroscience Travel Award. This annual award will be given to an Emory neuroscience graduate student or postdoctoral fellow to support travel to present research findings, engage with mentors and/or pursue collaborative opportunities with research colleagues. The first call for applications will be in Spring 2020, and the first award recipient will be for the 2020-21 academic year.

