



Mechanistic and Translational Breakthroughs in Drug Addiction Research

July 16 - 21, 2017

Chairs

Eric J. Nestler and Yan Dong

Vice Chairs

Yavin Shaham and Marina E. Wolf

The Hong Kong University of Science and Technology

Clear Water Bay, Kowloon

Hong Kong, CN

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Conference Description

This is the inaugural GRC on the Neurobiology of Drug Addiction, which will include investigators from a wide range of countries to discuss the latest developments in addiction research in an open and interactive format. The talks, discussions, and posters will provide ample opportunities to introduce new findings about brain mechanisms underlying compulsive drug use and relapse, as well as the application of advanced technologies for studying and manipulating brain circuitry with optogenetics, *in vivo* imaging, molecular approaches, and new biosensors to study addiction-related questions in humans and animal models. The program will start with two keynote talks focused on recent findings in the field as well as previews of what the future holds for addiction research. The regular presentations and discussions are categorized into eight scientific disciplines: (1) Genetic, epigenetic, and subcellular mechanisms that regulate motivated behaviors related to drug addiction. (2) Memory-oriented alterations and manipulations that are involved in the development and treatment of drug addiction, such as learning, memory consolidation and reconsolidation, forgetting, and extinction learning. (3) Synaptic adaptations and manipulations in drug craving and drug seeking. (4) Brain circuits that are involved in the development and maintenance of drug-induced behaviors. (5) Novel animal



models that are being crafted in addiction research. (6) Biomarkers that can be used to detect and monitor the addictive state. (7) New hypotheses of addiction that have been promoted by recent findings. (8) New techniques that promise still further advances in drug addiction research. Overall, this new GRC is designed to provide the field of drug addiction research a regular, international rendezvous to meet old and new friends, to nurture young investigators, to drive a diverse work force in the field, and to promote advances in the field toward new and definitive treatments of drug addiction.

Conference Program

Sunday	
2:00 pm - 8:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	Keynote Session: The Future of Addiction Research Discussion Leader: Eric Nestler (Icahn School of Medicine at Mount Sinai, USA)
7:40 pm - 8:25 pm	George Koob (National Institute on Alcohol Abuse and Alcoholism, NIH, USA) "The Future of Addiction Research and Treatment"
8:25 pm - 8:35 pm	Discussion
8:35 pm - 9:20 pm	Pier Vincenzo Piazza (Neurocentre Magendie, INSERM U1215, France) "From Basic Preclinical Discoveries to New Addiction Treatments"
9:20 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Epigenetic and Cellular Mechanisms of Drug Addiction Discussion Leader: Chris Pierce (University of Pennsylvania, USA)



9:00 am - 9:30 am	Paul Kenny (Icahn School of Medicine at Mount Sinai, USA) "Epigenetic and Cellular Mechanisms of Cocaine Dependence"
9:30 am - 9:40 am	Discussion
9:40 am - 10:10 am	Courtney Miller (Scripps Research Institute, USA) "Epigenetic and Synaptic Mechanisms in Methamphetamine Dependence"
10:10 am - 10:20 am	Discussion
10:20 am - 10:50 am	Group Photo / Coffee Break
10:50 am - 11:20 am	Dorit Ron (University of California, San Francisco, USA) "Molecular Mechanisms Underlying Alcohol Abuse Disorders"
11:20 am - 11:30 am	Discussion
11:30 am - 12:00 pm	Yasmin Hurd (Icahn School of Medicine at Mount Sinai, USA) "Epigenetic Effects of Cannabis Exposure"
12:00 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Selected from Poster Abstracts: John Neumaier (University of Washington, USA) "5-HT ₆ Receptors: Location, Location, Location"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
3:00 pm - 4:00 pm	Power Hour <i>The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.</i> Organizers: Marina Wolf (Rosalind Franklin University of Medicine and Science, USA) and Yan Dong (University of Pittsburgh, USA)
4:00 pm - 6:00 pm	Poster Session



6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Learning Mechanisms of Drug Addiction Discussion Leader: Julie Kauer (Brown University, USA)
7:30 pm - 8:00 pm	Karen Ersche (University of Cambridge, United Kingdom) "From Habits to Addiction: A Slippery Slope?"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:40 pm	Shannon Gourley (Emory University School of Medicine, USA) "Induction and Blockade of Cocaine-Induced Habits"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Joseph Cheer (University of Maryland School of Medicine, USA) "Probing the Role of Endocannabinoids in Dopaminergic Encoding of Reinforcement Learning"
9:20 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Synaptic Mechanisms of Drug Addiction Discussion Leader: Jian-Guo Chen (Huazhong University of Science and Technology, China)
9:00 am - 9:30 am	Yanhua Huang (University of Pittsburgh, USA) "Silent Synapses and Cocaine Addiction"
9:30 am - 9:40 am	Discussion
9:40 am - 10:10 am	Elena Bagley (University of Sydney, Australia) "Synaptic Mechanism of Opiate Addiction"
10:10 am - 10:20 am	Discussion
10:20 am - 10:50 am	Coffee Break
10:50 am - 11:20 am	Christian Luscher (University of Geneva, Switzerland) "Corticostriatal Circuits, Synaptic Plasticity, and Drug Addiction"



11:20 am - 11:30 am	Discussion
11:30 am - 11:45 am	Selected from Poster Abstracts: William Wright (University of Pittsburgh, USA) "Silent Synapses Underlie Drug-Associated Memory Reconsolidation"
11:45 am - 11:50 am	Discussion
11:50 am - 12:05 pm	Selected from Poster Abstracts: Ming-Hu Han (Icahn School of Medicine at Mount Sinai, USA) "Midbrain Circuit Regulation of Individual Alcohol Drinking Behaviors"
12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Selected from Poster Abstracts: J. Julius Zhu (University of Virginia, USA) "Genetically-Encoded Acetylcholine and Monoamine Indicators"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
2:00 pm - 4:00 pm	Poster Session
4:00 pm - 6:00 pm	Circuitry of Drug Addiction Discussion Leader: Marina Picciotto (Yale University, USA)
4:00 pm - 4:25 pm	Gavan McNally (University of New South Wales, Australia) "Ventral Striatal and Pallidal Output Pathways Promoting Versus Preventing Relapse"
4:25 pm - 4:30 pm	Discussion
4:30 pm - 4:55 pm	Peter Kalivas (University of South Carolina School of Medicine, USA) "Tetrapartite Synapses and Accumbens Microcircuitry in Relapse"
4:55 pm - 5:00 pm	Discussion



5:00 pm - 5:25 pm	Veronica Alvarez (National Institute on Alcohol Abuse and Alcoholism, NIH, USA) "Striatal Circuits and Mechanisms Mediating Behavioral Responses to Addictive Drugs"
5:25 pm - 5:30 pm	Discussion
5:30 pm - 5:55 pm	Marisela Morales (National Institute on Drug Abuse, NIH, USA) "Role of VTA Glutamate Neurons in Drug Reward and Aversion"
5:55 pm - 6:00 pm	Discussion
6:00 pm - 7:00 pm	Dinner
Wednesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Novel Animal Models of Drug Addiction and Relapse Discussion Leader: Aldo Badiani (University of Sussex, United Kingdom)
9:00 am - 9:30 am	Lin Lu (Peking University Sixth Hospital, China) "Novel UCS-Based Retrieval-Reconsolidation Procedures for Relapse Prevention"
9:30 am - 9:35 am	Discussion
9:35 am - 10:05 am	Serge Ahmed (CNRS, France) "Animal Models of Drug Choice: Role of OFC"
10:05 am - 10:10 am	Discussion
10:10 am - 10:40 am	Véronique Deroche-Gamonet (Neurocentre Magendie, INSERM U1215, France) "The 3 Criteria Addiction Model: From Behavior to Cellular Mechanisms"
10:40 am - 10:45 am	Discussion
10:45 am - 11:10 am	Coffee Break



11:10 am - 11:25 am	Selected from Poster Abstracts: Elizabeth Heller (University of Pennsylvania, USA) "Chromatin Directed Alternative Splicing in Addiction"
11:25 am - 11:30 am	Discussion
11:30 am - 11:45 am	Selected from Poster Abstracts: Xuan Li (National Institute on Drug Abuse, NIH, USA) "Role of Thalamostriatal Projections in Incubation of Methamphetamine Craving"
11:45 am - 11:50 am	Discussion
11:50 am - 12:05 pm	Selected from Poster Abstracts: Jie Shi (National Institute on Drug Dependence, Peking University, China) "Inhibition of Lactate Transport Erases Drug Memory and Prevents Drug Relapse"
12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Selected from Poster Abstracts: Heh-In Im (Korea Institute of Science and Technology, South Korea) "Inverse Regulation of Striatal and Circulating miR-137 by Chronic Methamphetamine Exposure"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	Business Meeting <i>Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair</i>
7:30 pm - 9:30 pm	Biomarkers for Translational Research in Drug Addiction Discussion Leader: Lan Ma (Fudan University, China)



7:30 pm - 8:00 pm	Rita Goldstein (Icahn School of Medicine at Mount Sinai, USA) "Cortical Mechanisms of Drug Addiction in Humans"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:40 pm	Rajita Sinha (Yale University School of Medicine, USA) "Stress and Relapse in Humans: Genetics, Pharmacology, and Brain Imaging"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Markus Heilig (Linköping University, Sweden) "What Does Personalized Medicine Mean in Alcohol Addiction?"
9:20 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Advances in Addiction Theory Discussion Leader: Harriet de Wit (University of Chicago, USA)
9:00 am - 9:30 am	George Koob (National Institute on Alcohol Abuse and Alcoholism, NIH, USA) "Negative Reinforcement Based Addiction Models: Past, Present, and Future"
9:30 am - 9:40 am	Discussion
9:40 am - 10:10 am	Terry Robinson (University of Michigan, USA) "Incentive-Sensitization and Addiction: Recent Preclinical Studies"
10:10 am - 10:20 am	Discussion
10:20 am - 10:50 am	Coffee Break
10:50 am - 11:20 am	David Belin (University of Cambridge, United Kingdom) "The Psychological and Neural Basis of Incentive Habits: Relevance for Our Understanding of Addiction"
11:20 am - 11:30 am	Discussion



11:30 am - 11:45 am	Selected from Poster Abstracts: Christopher Cowan (Medical University of South Carolina, USA) "Novel Roles for HDAC5 and NPAS4 in Cocaine Addiction Behaviors"
11:45 am - 11:50 am	Discussion
11:50 am - 12:05 pm	Selected from Poster Abstracts: Da-Ting Lin (National Institute on Drug Abuse Intramural Research Program, NIH, USA) "Unraveling Neural Encoding Mechanisms Using <i>In Vivo</i> Deep Brain Calcium Imaging in Freely Moving Mice"
12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Selected from Poster Abstracts: Amy Arguello (Michigan State University, USA) "Potential Neurogenic Role in Drug Memory Reconsolidation"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Cutting-Edge Basic and Clinical Addiction Research Discussion Leader: Marina Wolf (Rosalind Franklin University of Medicine and Science, USA)
4:00 pm - 4:30 pm	Bruce Hope (National Institute on Drug Abuse, NIH, USA) "Role of Corticostriatal Neuronal Ensembles in Conditioned Drug Effects and Drug Relapse"
4:30 pm - 4:40 pm	Discussion
4:40 pm - 5:10 pm	Robert Malenka (Stanford University School of Medicine, USA) "Rabies Virus-Based Screening of Circuit Changes Following Drug Administration"
5:10 pm - 5:20 pm	Discussion
5:20 pm - 5:50 pm	Abraham Zangen (Ben-Gurion University of the Negev, Israel) "H-Coil TMS: A Novel Treatment of Drug Addiction"



5:50 pm - 6:00 pm	Discussion
6:00 pm - 7:00 pm	Dinner
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

 Gordon Research Conferences	 Carl Storm Underrepresented Minority Fellowship	 Carl Storm International Diversity Fellowship
 Croucher Foundation 或棧基金會	 創新科技署 Innovation and Technology Commission	 NIH National Institute on Drug Abuse Advancing Addiction Science
	 Janssen PHARMACEUTICAL COMPANIES of Johnson & Johnson	 Genentech A Member of the Roche Group
		

