Examining Glucagon-Like Peptide-1 Receptor (GLP-1R) Agonists for Central Nervous System Disorders: A Workshop

Committee

Brian Fiske

Co-Chair

Brian Fiske, Ph.D., is Co-Chief Scientific Officer for The Michael J. Fox Foundation for Parkinson's Research (MJFF), shaping and stewarding the Foundation's strategic research agenda for enabling development of improved therapies for people with Parkinson's disease. In his role, Brian supports MJFF programs that seek to translate Parkinson's biology understanding into potentially promising therapeutic approaches and accelerate testing of those approaches through critical preclinical and early clinical testing. Brian received his PhD in neuroscience from the University of Virginia and completed postdoctoral research at Columbia University before joining MJFF in 2004. He has represented MJFF at many National Academies workshops and Forum activities.

Matthew Hayes

Co-Chair

Matthew R. Hayes, Ph.D. is the Albert J. Stunkard Professor in Psychiatry, Vice Chair of Basic and Translational Neuroscience and Director of the Molecular and Neural Basis of Psychiatric Disease Section in the Department of Psychiatry at the Perelman School of Medicine at the University of Pennsylvania. As an educator, Dr. Hayes holds a secondary appointment in the School of Nursing where he teaches core courses for the Nutrition Major at Penn. Dr. Hayes earned his Ph.D. in Nutritional Sciences from The Pennsylvania State University and conducted his postdoctoral fellowship in psychology and neuroscience at The University of Pennsylvania under the mentorship of Dr. Harvey Grill. Dr. Hayes is considered a leading expert on the neuroendocrine systems that regulate energy balance. In particular, the Hayes laboratory focusses their research efforts extensively on understanding the neural, behavioral, cellular, molecular, and physiological mechanisms by which hormones, such as GLP-1, amylin, GIP, PYY, and leptin regulate food intake and body weight through action in the caudal brainstem and mesolimbic reward system. These basic science research efforts are conducted with the intention that they will translate into improved pharmacological / behavioral treatments for obesity, diabetes, and co-morbid diseases. Dr. Hayes has been PI / MPI on multiple NIDDK R01 awards, as well as Investigator Initiated Sponsored Proposals from pharmaceutical partners. These and other awards have supported his research into neuroendocrine controls of energy balance and obesity, with a track record of ~140 publications in this area. He has and continues to provide service as program chair and as an executive board member and scientific advisor for multiple international scientific societies, industry partners, and non-profit organizations dedicated towards neuroscience, nutrition, diabetes and obesity research / clinical care. Dr. Hayes also continues to provide service to the NIH. He is currently serving as a member on the Behavioral Neuroendocrinology, Neuroimmunology, Rhythms, and Sleep Study Section (BNRS) Study has served as an ad hoc member on numerous other study sections that review NIH research proposals.

Disclosure: Dr. Hayes receives funding (provided through his university, not directly) from Novo Nordisk, Boehringer Ingelheim, Pfizer, Gila Therapeutics and Eli Lilly & Co for his research.

Lawrence Charnas

Member

Lawrence Charnas, M.D., Ph.D., has been Head, CRC COE at Pfizer since 2023. He previously held positions as Executive Director & Head, Rare Disease Neurology at Pfizer and Global Program Clinical Head at Novartis in Neuroscience. His expertise is in translational, early clinical trials developing evidence for proof of mechanism and clinical evidence for both novel new molecular entities or therapeutics as part of life cycle management. He is trained in Adult and Child Neurology and Medical Genetics to use his MD & PhD degrees.

Matthew Coghlan

Member

Matthew Coghlan, Ph.D., received his doctorate in Biochemistry from the University of Cambridge and was a Royal Society NATO Post-Doctoral Fellow at Harvard Medical School. Subsequently, Matthew has gained 25 years of experience in Pharmaceutical R&D in Metabolic Disease across several global Pharma companies in Europe and the US. Since joining Eli Lilly and Company in 2018 Matthew has provided strategic leadership of the Incretin Portfolio that includes peptide and small molecule programs from early Research through the end of Phase 2. Further, Matthew has overseen an extensive program of pre-clinical research in support of the Lilly Incretin R&D Portfolio. This highly collaborative research continues to yield new insights into the mechanisms of action of tirzepatide, retatrutide and orforglipron.

Jon Davis

Member

Jon Davis, Ph.D., is currently a principal scientist at Novo Nordisk and previously held a faculty position at Washington State University. His primary research interests include detailing the gastrointestinal-central nervous system signalling mechanisms that control appetite. In this capacity he currently oversees the appetite regulation biology group at Novo Nordisk. He is a member and fellow of the obesity society (TOS) as well as the society for study of ingestive behavior (SSIB). In 2014 he received the distinguished chairman's choice award from Biological Psychiatry. He received a BA in biology from Maryville College and a PhD from the University of Cincinnati.

Eva L. Feldman

Member

Eva L. Feldman, M.D., Ph.D., received her MD, PhD from the University of Michigan, completed neurology training at Johns Hopkins, and returned to the University of Michigan where she is now the James W. Albers Distinguished University Professor and Russell N. DeJong Professor of Neurology. Feldman is a renowned clinician scientist who has devoted her career towards understanding and treating neurological disorders. She is Director of the ALS Center of Excellence, the NeuroNetwork for Emerging Therapies and is annually listed in Best Doctors in America, a tribute to her active clinical practice. A Past President of the American Neurological Association, and member and current councilor of the National Academy of Medicine, her research is internationally recognized, with >500 published articles and >55,000 citations and an H index of 122. The inaugural Director of the A. Alfred Taubman Medical Research Institute when Taubman gave $100 million to support translational research, she has been continuously funded by NIH funded since 1989. Her team of 25 scientists conduct pioneering studies on the pathogenesis of dementia in metabolic diseases and the effect of the exposome on ALS, leveraging in vitro and in vivo models, clinical specimens, multiple omics-based approaches, and clinical trials. Her research identified dyslipidemia during diabetes as a key driver of nervous system damage, contributing to new patient care guidelines. With a strong track record of directly translating basic research into advances in clinical treatment for neurological disorders, she has mentored over 100 fellows and 10 graduate students, and currently oversees >10 federal grants.

Edwin George

Member

Edwin (Ted) George, M.D., Ph.D., currently works for the FDA's Center for Drug Evaluation and Research as a Clinical Reviewer in the Office of New Drugs. He retired from the faculty of Wayne State University in 2022 where he was Director of the Wayne State University Movement Disorders Center and Associate Professor of Neurology. He is a member and previous chairman of the Board of Directors and the Professional Advisory Board of the Michigan Parkinson's Foundation. His research interests include Parkinson's disease and movement disorders, and he has been active in clinical trials for Parkinson's disease and dystonia, as well as laboratory research focused on neuronal reaction to injury and neural regeneration. He has lectured and written extensively on movement disorders and has served as a consultant to pharmaceutical firms. Dr. George is a Fellow of the American Academy of Neurology and a member of the International Parkinson and Movement Disorders Society, and Sigma Xi. He received a B.A. in Economics and a B.A. summa cum laude in Biophysics in 1980 from Amherst College in Massachusetts, a Ph.D. in Pharmacology in 1985 and an M.D. in 1987 from Case Western Reserve University in Cleveland, OH. He was a Grass Summer Fellow in Neurophysiology in 1986 at the Marine Biological Laboratory, Woods Hole, Massachusetts, and did a Neurology Residency and Peripheral Nerve Fellowship at The Johns Hopkins Hospital in Baltimore, Maryland. He is Board Certified in Neurology and has received the Added Qualification in Clinical Neurophysiology.

Serena Jingchuan Guo

Member

Serena Jingchuan Guo, M.D., Ph.D., is an Assistant Professor in the Department of Pharmaceutical Outcomes and Policy at the University of Florida (UF) College of Pharmacy. She specializes in pharmacoepidemiology and pharmacoinformatics, with a focus on cardiometabolic diseases and neurodegenerative conditions, aiming to advance precision treatment and health equity. Utilizing extensive real-world data, such as electronic health records and insurance claims, alongside advanced analytics, including AI/machine learning and causal-principled modeling, her research assesses the comparative effectiveness and safety of treatments and interventions (e.g., repurposing GLP1 receptor agonists) and identifies heterogeneous treatment effects (HTEs). Additionally, she develops personalized and intelligent social risk management tools for clinical integration. Dr. Guo has authored over 90 peer-reviewed manuscripts, with publications in top-tier journals like Diabetes Care, Lancet, and BMJ, and her work has been highlighted by major media outlets including the Washington Post, NPR, and CNN. Her research and collaborations are funded by the NIH, Veterans Affairs, CDC, FDA, and the PhRMA Foundation. She received the Assistant Professor Award of Excellence at UF and the JMCP Award for Excellence from the Academy of Managed Care Pharmacy. Dr. Guo earned her MD from Peking University in China and her PhD in Epidemiology from the University of Pittsburgh.

Elisabet Jerlhag Holm

Member

Elisabet Jerlhag Holm, Ph.D., is currently a professor in pharmacology at the University of Gothenburg. Her work has substantially contributed to our understanding of the role of the gut-brain axis, specifically GLP-1, in reward-regulation and addiction. Professor Jerlhag was first to show that GLP-1 reduces alcohol intake and suppresses alcohol-related responses in rodents. Further, pioneering work by Prof. Jerlhag established that activation of GLP-1 receptors reduces artificial (amphetamine, cocaine, nicotine) and natural rewards (sex, foraging, aggression). As a result, she has identified novel targets for treatment of alcohol use disorder (AUD). Her work has been cited over 6000 times, providing her an H-index of 40. In recognition of her outstanding quality of research, in 2017, Prof. Jerlhag was awarded the Swedish Fernström Award at Sahlgrenska Academy. Moreover, she has obtained additional awards including the ESBRA Nordmann award for being the most promising young European addiction researcher (2012) and the Transitional Researcher Award from the Swedish Medical Society (2014). Professor Jerlhag got her PhD in medicine in 2007 at the University of Gothenburg. She then combined a short postdoctoral visit at Gallo Institute at UCSF, USA, with research at the University of Gothenburg. Subsequently, she established her own research group at the Department of Pharmacology at the University of Gothenburg. She became an associate professor in 2011, and received a full professorship in 2020.

Lorenzo Leggio

Member

Lorenzo Leggio, M.D., Ph.D., is a physician-scientist, whose clinical work and clinical research have been primarily focused on the treatment of alcohol and substance use disorders and on the medical consequences of alcohol use disorder, especially alcohol-associated liver and cardiovascular diseases. Dr. Leggio, together with his team of trainees, staff, colleagues, and collaborators, have conducted research on medication development, on the role of the microbiome-gut-liver-brain axis, on the role of neuroendocrine pathways in addiction, via human laboratory studies and clinical trials as well as via translational and reverse translational experimental medicine approaches in animal models. Dr. Leggio received his M.D. and Ph.D. from the Catholic University of Rome and Agostino Gemelli Hospital, where he also completed residency and received Board Certification in Internal Medicine. He was a postdoctoral research associate in Psychiatry and Human Behavior at Brown University, Providence, RI, where he joined the core faculty of the Center for Alcohol and Addiction Studies as Assistant Professor in 2010. As PI at Brown University, he received extramural research funding from NIAAA and NIDA, as well as from several foundations. Dr. Leggio was recruited as a Tenure-Track Clinical Investigator (joint NIAAA/NIDA) at the NIH IRP, where he also serves as a NIH Senior Attending Medical Staff. In 2018, Dr. Leggio was awarded NIH tenure through the Central Tenure Committee and promoted to Senior Investigator (Clinical). Dr. Leggio currently serves as the NIDA Clinical Director and Deputy Scientific Director. He was the founder in 2012 and current Chief of the Clinical Psychoneuroendocrinology and Neuropsychopharmacology Section, a joint NIDA and NIAAA laboratory. He was the founder in 2020 and current Chief of the NIDA IRP Translational Addiction Medicine Branch. Dr. Leggio was also the founder and serves as the Director of the NIDA IRP Translational Analytical Core. He further serves as Senior Medical Advisor to the NIAAA Director. He is also Adjunct Professor of Behavioral and Social Sciences at Brown University, Adjunct Professor of Addiction Medicine at Johns Hopkins University and Adjunct Professor of Neuroscience at Georgetown University. He previously served on other NIH IRP roles, including Associate Director for Clinical Research for the NIDA IRP Medication Development Program, NIDA Acting Clinical Director, Chair of the joint NIAAA/NIDA Scientific Review Committee, and Vice-Chair of the joint NIDA/NIAAA Addictions Institutional Review Board. In 2022, Dr. Leggio was elected Fellow of the American College on Neuropsychopharmacology. Among other honors, Dr. Leggio received the 2008 Nordmann Award from the European Society for Biomedical Research on Alcoholism, a 2010 Young Investigator Award from the Brain and Behavior Research Foundation, the 2016 Early Career Investigator Award from the Research Society on Alcohol, the 2018 Eva King Killam Award from the American College on Neuropsychopharmacology, the 2020 Jacob P. Waletzky Award from the Society for Neuroscience, the 2023 Ward & Ryan Donovan Lectureship Award from the American College of Medical Toxicology, and the 2024 Max Glatt Memorial Lectureship Award from the U.K. Medical Council on Alcohol. Dr. Leggio was also presented as one of the twelve 2023 recipients of the 2023 Arthur S. Flemming Award (Social Science, Clinical Trials, and Translational Research category) for his groundbreaking research in addiction science.

Ivàn Montoya

Member

Ivàn Montoya, M.D., M.P.H., is the Director of the Division of Therapeutics and Medical Consequences at the National Institute on Drug Abuse. He has more than 25 years of research experience in the development of safe and effective treatments for Substance Use Disorders (SUD). He has been the recipient multiple times of the NIH Director's Award of Merit for his scientific contributions to improve the treatment of SUDs. He is a psychiatrist and epidemiologist from University of Antioquia and Johns Hopkins University, respectively.

Kimberlei Richardson

Member

Kimberlei Richardson, Ph.D., is an Associate Professor in the Department of Pharmacology at Howard University College of Medicine. Her laboratory utilizes neurochemical, pharmacological, and behavioral strategies to study the role of neuropeptide regulation on substance use disorders (i.e., drugs of abuse and food). Her work has contributed to the understanding of the role of the orexin system in drug reward. Specifically, the interaction between orexin projections and the ventral tegmental area during protracted abstinence from chronic morphine. More recently, her work has focused on the influence of neuropeptide regulation and gut microbiota on foraging and food choice. Dr. Richardson has received numerous honors including the Grass Foundation Fellowship, the American Psychological Association Neuroscience Fellowship, and been awarded grants from the National Science Foundation, National Institutes of Health, the National Science Foundation, and the Charles and Mary Latham Foundation. Dr. Richardson has been a member of several scientific societies and organizations including the Society for Neuroscience and the American Society for Pharmacology and Experimental Therapeutics. She earned her undergraduate (B.S., Chemistry) and doctoral degree (Ph.D., Pharmacology) from Howard University and conducted postdoctoral trainings at Johns Hopkins Hospital and the Medical University of South Carolina.

Linda Rinaman

Member

Linda Rinaman, Ph.D., is a Distinguished Research Professor in the Department of Psychology and the R. Bruce Masterton Professor of Neuroscience at Florida State University. She previously was Professor of Neuroscience and Assistant Dean of Graduate Studies at the University of Pittsburgh. Dr. Rinaman's research program has been continuously funded by the NIH for more than 25 years. Her laboratory uses rodent models to investigate the central neural controls of motivated behavior and stress responses, and how early life nutrition and other experiences shape the development and function of these neural systems. Dr. Rinaman earned her doctorate degree in Neuroscience at the University of Pennsylvania, followed by postdoctoral training in Developmental Neurobiology with Dr. Pat Levitt, and training in Neuroanatomy and Endocrinology with Dr. Joseph Verbalis and Dr. Gloria Hoffman.