From Molecular Insights to Patient Stratification for Neurological and Psychiatric Disorders—A Virtual Workshop
October 5-6, 2021

Workshop Speaker Biographical Sketches

Steven Hyman, M.D. (Workshop Co-Chair), *please see planning committee biographical sketches.*

Dimitri Krainc, M.D., Ph.D. (Workshop Co-Chair), *please see planning committee biographical sketches.*

Eline Appelmans, M.D., M.P.H., BMedSci, *please see planning committee biographical sketches.*

Paola Arlotta, Ph.D., *please see planning committee biographical sketches.*

Linda Brady, Ph.D., *please see planning committee biographical sketches.*

Bradford Casey, Ph.D., *please see planning committee biographical sketches.*

Kafui Dzirasa, M.D., Ph.D., is the K. Ranga Rama Krishnan endowed Associate Professor at Duke University with appointments in the Departments of Psychiatry and Behavioral Sciences, Neurobiology, Biomedical Engineering, and Neurosurgery. He is the first African American to complete a Ph.D. in Neurobiology at Duke University. He went on to obtain his M.D. from the Duke University School of Medicine and completed residency training in General Psychiatry. Dr. Dzirasa was recently named a Howard Hughes Medical Institute (HHMI) Investigator. His research interests focus on using neurotechnology to understand how changes in the brain produce neurological and mental illness, and his graduate work has led to several distinctions including: the Somjen Award for Most Outstanding Dissertation Thesis, the Ruth K. Broad Biomedical Research Fellowship, the UNCF·Merck Graduate Science Research Fellowship, and the Wakeman Fellowship.

Dr. Dzirasa is a product of the nationally renowned Meyerhoff Scholarship program at the University of Maryland, Baltimore County, where he was conference champion in the long jump, an academic All-American, and student body president. Dr. Dzirasa has served on the Board of Directors of the Student National Medical Association: a national organization dedicated to the eradication of health care disparities. Through his service, Dr. Dzirasa participated in numerous programs geared towards exposing youth to science and technology and providing health education for underserved communities. Dr. Dzirasa's ultimate goal is to combine his research, medical training and community experience to improve outcomes for diverse communities suffering from neurological and psychiatric illness.

Dr. Dzirasa received the Charles Johnson Leadership Award in 2007, and he was recognized as one of Ebony magazine's 30 Young Leaders of the Future in February 2008. He has also been awarded the International Mental Health Research Organization Rising Star Award, the Sydney Baer Prize for Schizophrenia Research, and his laboratory was featured on CBS 60 Minutes in 2011. In 2016, he was awarded the inaugural Duke Medical Alumni Emerging Leader Award and the Presidential Early Career Award for Scientists and

Engineers: The Nation's highest award for scientists and engineers in the early stages of their independent research careers. In 2017, he was recognized as 40 under 40 in Health by the National Minority Quality Forum, and the Engineering Alumni of the Year from UMBC. He was induced into the American Society for Clinical Investigation in 2019. Dr. Dzirasa has served as an Associate Scientific Advisor for the journal *Science Translational Medicine*, a member of the Congressional-mandated Next Generation Research Initiative, the Editorial Advisory Board for TEDMED, and on the NIH Director's guiding committee for the BRAIN Initiative. He currently serves on the NIH Director's NExTRAC Advisory committee and Brain Initiative Multi-council working group.

Hilary Finucane, Ph.D., is an associated scientist in the Program in Medical and Population Genetics at the Broad Institute of MIT and Harvard and an associate member of the Genetics Program at the Stanley Center for Psychiatric Research. Her research group develops and applies new statistical and computational methods for analyzing biological data. The group's main focus is on integrating genetic data about disease with molecular data about cell types and biological processes to learn about the causes of disease. Dr. Finucane earned her Ph.D. in applied math from the Department of Mathematics at Massachusetts Institute of Technology, supported by a Hertz Foundation Fellowship. Her research was in statistical genetics, advised by Alkes Price at the Harvard School of Public Health. Dr. Finucane also holds a M.Sc. in theoretical computer science from the Weizmann Institute of Science and a B.A. in math from Harvard. She is a recipient of the National Institutes of Health Director's Early Independence Award.

Ernest Fraenkel, Ph.D., is a Professor in the Department of Biological Engineering at MIT. He seeks to understand diseases from the perspective of systems biology. Dr. Fraenkel received an AB in Chemistry and Physics summa cum laude from Harvard College and his PhD in Biology from MIT, where his graduate work focused on structural biology. As the data-rich field of systems biology developed, he established a research lab focused on innovative approaches to find therapeutic strategies by integrating molecular, clinical and behavioral data. He teaches courses in Machine Learning and Molecular Engineering, and founded ReviveMed, a start-up focusing on AI-driven discovery using metabolomics.

Daniel Geschwind, M.D., Ph.D., is the Gordon and Virginia MacDonald Distinguished Professor of Human Genetics, Neurology and Psychiatry at UCLA. Dr. Geschwind is a pioneer in the transcriptomic and functional genomic analyses of the nervous system. His laboratory showed that gene co-expression has a reproducible network structure that can be used to understand neurobiological mechanisms in health and disease. He led the first studies to define the molecular pathology of autism and several other major psychiatric disorders, and has made major contributions to defining the genetic basis of autism. The arching goal of Dr. Geschwind's work is to develop a more mechanistic understanding of neurodevelopmental and neurodegenerative diseases by integrative analyses that connect human genetic variation to genes and neurobiological pathways. The hope is that by understanding disease mechanisms we can develop more rationale and effective therapeutics for brain disorders. Dr. Geschwind has also been an early and persistent advocate for data sharing, having developed several resources housing patient genetic and phenotype data, including the Autism Genetic Resource Exchange (AGRE) and currently is the chair of the PsychENCODE consortium. He received the Derek Denny-Brown Neurological Scholar Award from the American Neurological Association in 2004, an NIH MERIT Award (NIMH), the Scientific Service Award from Autism Speaks in 2007, the Ruane Prize for Child and Adolescent Psychiatric Research from the Brain and Behavior foundation in 2012, the Amgen early innovators award in 2018 and the Gold Medal from the Society of Biological Society in 2021. He is

an elected member of the American Academy of Physicians, and the National Academy of Medicine, USA.

Danielle Graham, Ph.D., is the Head of Fluid Biomarkers at Biogen. Dr. Graham received her Ph.D. in Neuroscience from Baylor University in 2002. She completed her postdoctoral research in the laboratory of Dr. David Self at the University of Texas Southwestern Medical Center in Dallas, TX. Dr. Graham moved to Boston MA in 2007 to join the Neurobiology department at Merck Research Labs (MRL). Dr. Graham has worked as a research biologist at MRL contributing to the early stage drug discovery pipeline through the development of novel pharmacodynamic and efficacy models of CNS Disease. In 2009, Dr. Graham moved to EMD Serono Research Institute, where as a group leader she was responsible for leading a team of scientists in the identification and characterization of novel therapeutics for CNS Disease. In 2014, Dr. Graham moved to Biogen in Cambridge MA and is currently a Director of Neurodegenerative Disease Biomarker Research. A key goal 8 of her current research is to better understand the relationship between synaptic dysfunction and neurological disease, enabling the development of biomarkers and novel CNS therapeutics. Dr. Graham is the recipient of a 2007 ACNP Young Investigator Award and multiple corporate awards related to leadership, innovation, and excellence.

Jens Hjerling-Leffler, Ph.D., is a Senior Researcher in the Departments of Medical Biochemistry and Biophysics at Karolinska Institutet. He is a PI of an interdisciplinary team that aims to increase our understanding of the brain and complex diseases from a cell-type perspective.

Carole Ho, M.D., *please see planning committee biographical sketches.*

Henne Holstege, Ph.D., majored in biochemistry at the University of Leiden, The Netherlands. During her studies, she spent a year at Harvard University in Boston, where she investigated the molecular mechanisms of satiety. She did her PhD at the Netherlands Cancer Institute where she studied the somatic genetic aberrations associated with the development of breast cancer. After her PhD she applied her knowledge of molecular genetics to study the genetic factors underlying the increased risk of cognitive decline, but also those that increase the chance to maintain high levels of cognitive function while achieving extreme ages. Currently, Dr. Holstege is an assistant professor at the department of Human Genetics of the Amsterdam University Medical Center where she runs an independent research section: Genomics of Neurodegenerative Diseases and Aging. She is a staff-member of the Amsterdam Alzheimer Center and she is affiliated with the Delft Bioinformatics Lab of Technical University Delft.

Pamela Horn, M.D., is a clinical team leader in the Division of Psychiatry in the Office of New Drugs at the US Food and Drug Administration. She has 11 years of regulatory science experience and has evaluated and provided advice for biomarker proposals in the context of drug development programs in multiple therapeutic areas. She has authored the clinical review and recommendations for dozens of new drug applications and her awards include the Dr. Frances O. Kelsey Drug Safety Excellence Award. Her areas of interest include women's mental health and she has presented at public meetings and co-authored guidelines and publications on medication-assisted treatment, opioid use in pregnancy, and neonatal opioid withdrawal syndrome. While at FDA, she has concurrently provided psychiatric care in community health settings on a volunteer basis. She completed her residency training in psychiatry and holds a board certification from the American Board of Psychiatry and Neurology and a certificate in pharmacoepidemiology.

Frances Jensen, M.D., *please see planning committee biographical sketches.*

Martin Kampmann, Ph.D., is an Associate Professor at the UCSF Institute for Neurodegenerative Diseases and the Department of Biochemistry and Biophysics, and an Investigator at the Chan Zuckerberg Biohub. He received his BA in Biochemistry from Cambridge University and his PhD in Biophysics/Cell Biology from Rockefeller University. The goal of Dr. Kampmann's research is to elucidate cellular mechanisms of brain disease and to develop new therapeutic strategies. He co-developed the CRISPRi and CRISPRa screening technologies, and his lab has pioneered CRISPR-based functional genomics in cell types derived from induced pluripotent stem cells (iPSCs). A major focus is the investigation of neurodegenerative diseases in human iPSC-derived neurons, astrocytes, and microglia, and 3D assembloids/organoids. Dr. Kampmann was named an NIH Director's New Innovator, an Allen Distinguished Investigator, a Chan Zuckerberg Biohub Investigator, and he received the CZI Ben Barres Early Career Acceleration Award.

Daphne Koller, Ph.D., is CEO and Founder of insitro, a machine-learning enabled drug discovery company. Daphne is also co-founder of Engageli, was the Rajeev Motwani Professor of Computer Science at Stanford University, where she served on the faculty for 18 years, the co-CEO and President of Coursera, and the Chief Computing Officer of Calico, an Alphabet company in the healthcare space. She is the author of over 200 refereed publications appearing in venues such as Science, Cell, and Nature Genetics. Daphne was recognized as one of TIME Magazine's 100 most influential people in 2012. She received the MacArthur Foundation Fellowship in 2004 and the ACM Prize in Computing in 2008. She was inducted into the National Academy of Engineering in 2011 and elected a fellow of the American Association for Artificial Intelligence in 2004, the American Academy of Arts and Sciences in 2014, and the International Society of Computational Biology in 2017.

Nikos Koutsouleris, M.D., is the Coordinator of the EU-FP7 funded project PRONIA ("Per-sonalised Prognostic Tools for Early Psychosis Management"; www.pronia.eu). He holds a dual affiliation as the new Chair in Precision Psychiatry at King's College London and Professor of Neurodiagnostic Applications in Psychiatry at the Department of Psychiatry, Ludwig-Maximilian-University, Munich (LMU). Prof Koutsouleris studied medicine at LMU between 1996 and 2003 as scholar of the German National Academic Foundation. Since 2008, Prof Koutsouleris has advanced the use of multivariate pattern recognition methods for the identification and validation of diagnostic and prognostic prediction models in at-risk and early stages of affective and non-affective psychoses. His work was awarded with several national and international prizes and has so far produced 132 peer-reviewed publications. In addition, he strived to make robust machine-learning methods available to researchers in the clinical neurosciences in or-der to improve the methodological rigour of this research based on the proper use of validation and model sharing approaches. These efforts have the lead to the publication of the open-source NeuroMiner machine learning platform available at www.proniapredictors.eu

Fenna Krienen, Ph.D., is a postdoctoral fellow at Harvard Medical School and The Broad Institute. She received her B.A. from the University California, Berkeley and completed her doctoral studies at Harvard University with Randy Buckner. She joined Steve McCarroll's lab for postdoctoral training in genetics at Harvard Medical School and at the Broad Institute's Stanley Center for Neuropsychiatric Disease. Fenna uses single-cell sequencing to uncover cellular and molecular innovations in primate and rodent brain cell types. She is also developing new molecular tools and strategies to enable cell-type-specific access and functional interrogation of mammalian brains.

Alicia Martin, Ph.D., is an Instructor in Investigation at the Analytic & Translational Genetics Unit at Massachusetts General Hospital, an Instructor in Medicine at Harvard Medical School, and an Associated Scientist at the Broad Institute affiliated with the Stanley Center for Psychiatric Research and the Medical and Population Genetics Program. As a population and statistical geneticist, Dr. Martin's research examines the role of human history in shaping global genetic and phenotypic diversity. Given vast Eurocentric study biases, she investigates the generalizability of knowledge gained from large-scale genetic studies across globally diverse populations. Dr. Martin is particularly focused on ensuring that the translation of genetic technologies via polygenic risk does not exacerbate health disparities induced by these study biases. Towards this end, she is also developing statistical methods and resources for multi-ethnic studies and underrepresented populations. She earned her PhD in genetics and MS in biomedical informatics from Stanford University (mentored by Dr. Carlos Bustamante), and received postdoctoral training (mentored by Dr. Mark Daly) at MGH and the Broad Institute.

Bill Martin, Ph.D., *please see planning committee biographical sketches.*

John Ngai, Ph.D., *please see planning committee biographical sketches.*

Danielle Posthuma, Ph.D., is a statistical geneticist at the Vrije Universiteit (VU) Amsterdam and Amsterdam University Medical Center, Neuroscience Campus Amsterdam. She completed three MSc's in clinical and biological psychology and medical anthropology, and graduated cum laude for her PhD in 2002 at the VU University Amsterdam. She became a member of the Young Academy of the Royal Dutch Academy of Sciences in 2005 and was elected for lifelong membership in 2019. She received numerous prizes including the Scott Fuller Memorial Award from the International Behavior Genetics Association (2005), for early career outstanding scientific achievements, the Richard Todd award for outstanding contributions to child psychiatry, from the International Society for Psychiatric Genetics (2017), and the Lodewijk Sandkuijl award for contributions to statistical genetics from the Dutch Society of Human Genetics (2019). In 2008, 2009 and 2010 she was elected as one of the 400 most successful women under the age of 38 in the Netherlands. In 2014 she received a 1.5M€ personal 'VICI' grant from the Netherlands Organization for Scientific Research for her research into the genetic causes of psychiatric disorders. In 2019 she was awarded a 2.5M€ ERC Advanced grant from the European Research Council. She is a co-founder of the iPScenter Netherlands, which aims to detect biological mechanisms of brain diseases using pluripotent cells. She is also the director of the Genetic Cluster Computer hosted by SurfSARA since 2007, which serves as a central storage and data center of a large number of national and international genetic studies. She leads the Dutch BRAINSCAPES consortium which aims to bridge genetics and neuroscience and which was awarded 19.6M€ Euro in 2019 by the Dutch government. As head of the Department of Complex Trait Genetics at the VU University Amsterdam and Amsterdam University Medical Centre she leads a group of 30 researchers from diverse fields, including statistics, stem cell biology, and bioinformatics. Her work focuses on developing novel methods that aid in detecting genes for brain diseases, interpreting these findings in biological context and generating mechanistic hypotheses that can be tested in functional experiments. She has recently led several large scale genome-wide association studies for Alzheimer's Disease, intelligence, insomnia and neuroticism, and is the lead author on innovative tools such as MAGMA (for gene-set analyses) and FUMA (for postGWAS annotation). She has authored > 250 papers in scientific journals including Science, Nature, Nature Neuroscience and Nature Genetics.

Ekemini Riley, Ph.D., is the President of the Coalition for Aligning Science, a boutique scientific advisory group operating at the intersection of biomedical research, philanthropy, and social impact. Dr. Riley

also serves as the Managing Director of Aligning Science Across Parkinson's (ASAP), a research funding initiative that coordinates targeted basic research and resources to uncover the roots of Parkinson's disease. Previously, Dr. Riley was a Director at the Milken Institute Center for Strategic Philanthropy where she helped to shape and co-direct the center's medical research practice. She designed and facilitated several multi-sector think tank sessions to inform the strategic deployment of philanthropic capital, crafted research programs, and seeded multi-funder collaboration. She led the development and launch of ASAP, the Gilbert Family Foundation's Gene Therapy and Vision Restoration Initiatives, and more. Dr. Riley is a molecular biologist by training. She earned her BA in Natural Sciences from Johns Hopkins University and PhD in Molecular Medicine from the University of Maryland School of Medicine.

Lea Starita, Ph.D., is an Assistant Professor of Genome Sciences at the University of Washington and co-director of the Advanced Technology Lab at the Brotman Baty Institute for Precision Medicine. She develops massively parallel methods to measure the effects of genetic variation on protein function. Using this approach, she hopes to help solve the problem of variants of uncertain significance by scoring the pathogenic potential of genetic variants before they are found in the clinic.

Amir Tamiz, Ph.D., *please see planning committee biographical sketches.*

Charlotte Teunissen, Ph.D., drives to improve the care of patients with neurological diseases by developing body fluid biomarkers for diagnosis, stratification, prognosis and monitoring treatment responses. Studies of her research group span the entire spectrum of biomarker development, starting with biomarker identification, often by –omics methods, followed by biomarker assay development and analytical validation, and lastly, extensive clinical validation and implementation of novel biomarkers in clinical practice. She has extensive expertise with assay development on state of the art technologies, such as mass spectrometry and antibody-based arrays for biomarker discovery, ultrasensitive immunoassays, and in in implementation of vitro diagnostic technologies for clinical routine lab analysis. She is responsible for the large well-characterised biobank of the Amsterdam Dementia cohort, containing >5200 paired CSF and serum samples of individuals visiting the memory clinical of the Alzheimer Center Amsterdam (a.o. controls, patients with Alzheimer, Frontotemporal, Lewy Bodies).To ensure the quality of the biosamples, the group studies pre-analytical effects, which are key to implementation. Dr. Teunissen is leading several collaborative international biomarker networks, such as the Society for Neurochemistry and routine CSF analysis and the Alzheimer Association-Global Biomarker Standardization and Blood Based Biomarkers consortia. She is the coordinator of the Marie Curie MIRIADE project, aiming to train 15 novel researchers into innovative strategies to develop dementia biomarkers (10 academic centers + 10 non-academic centers), and the JPND bPRIDE project, that aims to develop targeted blood based biomarker panels for early differential diagnoses of specific dementias and is a collaborative project between 7 European and 1 Australian centers.

Sarah Tishkoff, Ph.D., *please see planning committee biographical sketches.*

Li-San Wang, Ph.D., is Professor of Pathology and Laboratory Medicine and founding Co-Director of the Penn Neurodegeneration Genomics Center (PNGC) at the University of Pennsylvania. Dr. Wang's research integrates bioinformatics, genomics, and genetics to study neurodegeneration. He is PI of National Institute on Aging Genetics of Alzheimer's Disease Data Storage Site (NIAGADS) and Co-Director of the Genome Center for Alzheimer's Disease (GCAD), both national initiatives in the United States to coordinate Alzheimer's genetics research, including Alzheimer's Disease Sequencing Project

(ADSP) that will analyze genomic sequences of up to 80,000 individuals to find novel genetic variants linked to the disease. He is founding PI of the Asian Cohort for Alzheimer's Disease (ACAD), an international study on genetics of dementia in Asian Americans and Canadians.

Stacie Weninger, Ph.D., *please see planning committee biographical sketches.*

Helen Willsey, Ph.D., is a developmental neuroscientist working to understand the molecular mechanisms underlying autism spectrum disorders as a postdoctoral fellow in the laboratory of Matthew State, MD, PhD, at the UCSF Weill Institute for Neurosciences. Dr. Willsey received a BS degree in biology and the Edward C. Horn Memorial prize from Duke University in 2009. She received a PhD in genetics and the Carolyn Slayman Prize from Yale University in 2015. During her postdoctoral work, Dr. Willsey has developed a Xenopus frog model system to understand how autism risk genes function during brain development, and a method to find small molecules that counter these effects. This novel approach provides a path forward for understanding disorders like autism and identifying potential therapeutics in a high-throughput manner.

Alice Zhang, *please see planning committee biographical sketches.*