2018 INTERNATIONAL MENTAL HEALTH RESEARCH SYMPOSIUM

Friday, October 26, 2018
9:00am–4:30pm

Kaufman Music Center
New York, NY

BRAIN & BEHAVIOR
RESEARCH FOUNDATION
Awarding **NARSAD** Grants

Welcome

Welcome to our International Mental Health Research Symposium. Today we will hear from the Foundation's 2018 Outstanding Achievement Prizewinners and two exceptional Young Investigator Grantees, on topics that will include anxiety, autism, bipolar disorder, psychosis, and schizophrenia.

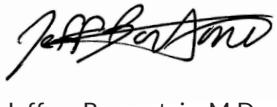
The Outstanding Achievement Prizewinners are selected by special committees of the Foundation's Scientific Council, a volunteer group of 181 pre-eminent mental health scientists across disciplines in brain and behavior research, who also select each year's Young Investigator, Independent Investigator and Distinguished Investigator Grantees. Since 1987, the Foundation has awarded more than $394 million to fund more than 5,700 grants to more than 4,700 scientists around the world. These awards are made specifically to fund innovative research that may be not be supported elsewhere, but is vital for advancement in the fields of neuroscience and psychiatry.

We are pleased this year to have Judge Steven Leifman, an associate administrative judge in Miami-Dade County, as our Keynote Speaker. Judge Leifman is the recipient of the 2018 Pardes Humanitarian Prize in Mental Health. He is a national leader in solving the complex and costly problem of people with untreated mental illnesses involved in the criminal justice system. His pioneering initiative, the Eleventh Judicial Circuit Criminal Mental Health Project, steers people with mental illnesses, who do not pose significant threats to public safety, away from the criminal justice system and into community-based treatment.

Our featured speaker, Altha Stewart, M.D., President of the American Psychiatric Association and Associate Professor, Chief of Social and Community Psychiatry and Director of the Center for Health in Justice-Involved Youth at the University of Tennessee Health Science Center, will discuss using mental health research to achieve health equity.

We hope today's conference will inspire you. Thank you for joining us in our commitment to dramatically improve the lives of those with mental illness and ultimately enable more people to live full, happy, and productive lives.

Sincerely,



Jeffrey Borenstein, M.D.
President & CEO
Brain & Behavior Research Foundation

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MODERATOR

Robert M.A. Hirschfeld, M.D.

BBRF Founding Scientific Council Member

2002 Distinguished Investigator
2003 Falcone Prizewinner for Outstanding Achievement in Mood Disorders Research

Dr. Robert Hirschfeld is a Professor of Psychiatry and the DeWitt Wallace Senior Scholar in the Department of Psychiatry at Weill Cornell Medical College. Prior to joining the Weill Cornell Department of Psychiatry in April, 2015, he served for nearly 25 years as Professor and Chair of the Department of Psychiatry at the University of Texas Medical Branch in Galveston where he conducted research, treated patients, and provided educational programs for medical students and residents. Before coming to Texas, Dr. Hirschfeld spent 18 years at the National Institute of Mental Health, where he was Chief of the Mood, Anxiety, Personality Disorders Research Branch.

Dr. Hirschfeld is renowned internationally for his research on the diagnosis and treatment of bipolar disorder and depression. He developed the Mood Disorder Questionnaire (MDQ), the most widely used screening instrument for bipolar disorder in the world.

Dr. Hirschfeld has authored nearly 300 scientific papers and abstracts in leading scientific and medical journals, and has contributed chapters on mood and anxiety disorders in four major psychiatric textbooks, as well as in nearly two dozen other books on psychiatry. He served as Chair of the original American Psychiatric Association Guidelines for Treatment of Patients with Bipolar Disorders as well as the revision of the document.

Dr. Hirschfeld received his Bachelor of Science degree from the Massachusetts Institute of Technology in 1964, and his M.D. degree from the University of Michigan in 1968. He completed his residency in Psychiatry at Stanford University Medical Center in 1972 and received a Master of Science in Operations Research from Stanford University in the same year. He was certified in Psychiatry by the American Board of Psychiatry and Neurology in 1975.

Dr. Hirschfeld is the recipient of numerous honors, including the 2010 Award for Research in Mood Disorders from the American College of Psychiatrists, the Edward A. Strecker, M.D. Award from the University of Pennsylvania, the Gerald L. Klerman Lifetime Research Award from the National Depressive and Manic Depressive Association, the Jan Fawcett Humanitarian Award from the National Depressive and Manic Depressive Association, the Special Presidential Commendation from the American Psychiatric Association, and the Gerald L. Klerman Award for Panic Disorder from the World Psychiatric Association. Dr. Hirschfeld serves on Board of the American Foundation for Suicide Prevention. He also is a member of the Scientific Advisory Board of the Depression and Bipolar Support Alliance and the Scientific Advisory Board of the ADAA.

COMMENTATOR

Ned H. Kalin, M.D.

BBRF Scientific Council Member

Dr. Ned H. Kalin is the Hedberg Professor and Chairman of the Department of Psychiatry at the University of Wisconsin School of Medicine and Public Health. He is the Director of the HealthEmotions Research Institute and the Lane Neuroimaging Laboratory, a Professor in the Department of Psychology and an affiliate scientist at the Wisconsin Regional Primate Center and the Harlow Primate Laboratory. He serves as the principal investigator for several ongoing NIH funded research projects and has published over 200 peer-reviewed journal articles related to the adaptive and maladaptive expression of emotion and anxiety.

Dr. Kalin's research focuses on uncovering basic mechanisms that relate stress to the development of psychopathology and to understanding the mechanisms that cause some children to be vulnerable for the development of anxiety and depression. In addition to his research activities, he treats patients who suffer from anxiety and depression who are refractory to standard treatment.

Dr. Kalin earned his medical degree from Jefferson Medical School in Philadelphia, Pennsylvania, did his residency in the Department of Psychiatry at the University of Wisconsin, and a fellowship in Neuropsychopharmacology at the National Institute of Mental Health. Dr. Kalin is board certified by the American Board of Psychiatry and Neurology. He is a fellow of the American College of Neuropsychopharmacology and the American College of Psychiatry. He has been recognized for numerous awards including the 1985 A.E. Bennett Award for basic science research in biological psychiatry, the 2005 Edward A. Strecker Award, the 2007 American College of Psychiatrists Award for research in mood disorders, the 2007 Gerald L. Klerman Senior Investigator Award, and the 2015 Anna-Monika Prize of the European College of Neuropsychopharmacology.

In 2013 he was inducted as a Fellow in the American Association for the Advancement of Science, and in 2015 he was elected as a member of the National Academy of Medicine. In 2017, Dr. Kalin was inducted as a Distinguished Life Fellow of the American Psychiatric Association, and was appointed to the Editorial Board of the *Journal of Psychiatric Research*. He has served as President of the International Society of Psychoneuroendocrinology, and is a member of the National Advisory Mental Health Council. He is Co-Editor for the international journal, *Psychoneuroendocrinology*. He will become editor-in-chief of the *American Journal of Psychiatry* on January 1, 2019.

MORNING SESSION

9:00am–12:10pm

Outstanding Achievement Prizewinners

Repercussions of Abnormal Dopamine on Brain and Behavior in Schizophrenia
Anissa Abi-Dargham, M.D.
Stony Brook University

Bridging Brain, Mind, and Experience to Understand Psychosis
Guillermo Horga, M.D., Ph.D.
New York State Psychiatric Institute, Columbia University

Schizophrenia and the Brain's Folded Genome
Schahram Akbarian, M.D., Ph.D.
Icahn School of Medicine at Mount Sinai

Evaluating Schizophrenia Risk Genes in Human Neurons
Kristen Brennand, Ph.D.
Icahn School of Medicine at Mount Sinai

Heart Matters: Bipolar Disorder as a Vascular Disease
Benjamin I. Goldstein, M.D., Ph.D., F.R.C.P.C.
University of Toronto & Sunnybrook Health Sciences Centre

Advancing Translational Research and Clinical Care in Bipolar Disorder
Lakshmi N. Yatham, M.B.B.S., F.R.C.P.C., M.R.C.Psych (UK)., MBA (Exec)
University of British Columbia

Imaging the Developing Brain in Autism
Joseph Piven, M.D.
University of North Carolina, Chapel Hill

AFTERNOON SESSION

1:10pm–4:30pm

Featured Speaker

Altha Stewart, M.D.
Using Mental Health Research to Achieve Health Equity

Keynote Speaker

Judge Steven Leifman
Ending the Criminalization of Mental Illness

Outstanding Achievement Prizewinners

Imagining a Better World for Children with Autism
Ami Klin, Ph.D.
Marcus Autism Center, Emory University School of Medicine and Children's Healthcare of Atlanta

Acetylcholine Receptors and Higher Brain Functions
Jean Pierre Changeux, Ph.D.
College de France and Institut Pasteur, France

The Computational CEO of the Brain
Xiao-Jing Wang, Ph.D.
Center for Neural Science, New York University

Young Investigators

Virtual Reality Exposure Therapy for Socially Anxious Youth
Michelle Pelcovitz, Ph.D.
Weill Cornell Medical College

Emerging Wearable Biomarker Sensors for Mental Health Monitoring
Sam Emaminejad, Ph.D.
University of California, Los Angeles

ENDING THE CRIMINALIZATION OF MENTAL ILLNESS

Judge Steven Leifman

Associate Administrative Judge
Miami-Dade County Court – Criminal Division

It is estimated that more than two million arrests in the United States each year involve people with Serious Mental Illnesses (SMI)–half of whom are homeless at the time of their arrest. Jails have become places where a disproportionate number of people with SMI spend significant amounts of time: their ties to the community severed, their treatment needs unmet, and their illnesses made worse.

Judge Leifman will discuss his journey into the mental health system, the legal and medical history that led to America's mental health crisis, and the essential elements necessary to create an effective system of care that ultimately will transform the mental health and criminal justice systems and make jail the last option for people with serious mental illnesses, not the first.

Judge Leifman is a national leader in solving the complex and costly problem of people with untreated mental illnesses involved in the criminal justice system. In 2000, he launched a pioneering initiative in Miami-Dade County called the Eleventh Judicial Circuit Criminal Mental Health Project, which steers people with mental illnesses, who do not pose significant threats to public safety, away from the criminal justice system and into community-based treatment. He also started a Crisis Intervention Team program in Miami-Dade which teaches law enforcement officials to recognize the signs and symptoms of mental illness, how to de-escalate potentially dangerous situations, and where to take individuals in crisis rather than arrest them.

Judge Leifman bridges the gaps between the legal system, healthcare, public administration and politics.

USING MENTAL HEALTH RESEARCH TO ACHIEVE HEALTH EQUITY

Altha Stewart, M.D.

Associate Professor, Chief of Social and Community Psychiatry and Director of the Center for Health in Justice-Involved Youth
University of Tennessee Health Science Center, Memphis

President
American Psychiatric Association

Health inequality and inequity are often confused but are two different, although interrelated concepts. The World Health Organization (WHO) defines a health inequality as "any difference in the distribution of health status or health determinants between different population groups." Health inequity has been defined by WHO as "a difference in the distribution of health status or health determinants between different population groups which are unnecessary, avoidable, unjust and unfair."

Health inequalities can be attributed to free choice, biological variations, physical environment, and factors beyond the control of the individuals concerned. The causes of health inequities relate to social and environmental factors including income, social status, gender, education, as well as physical environment, including housing and community conditions. Inequity is an ethical concept which reflects principles of social justice and result in an outcome that is unnecessary and avoidable, as well as unjust and unfair.

Dr. Stewart will discuss challenges facing researchers in the health inequity field related to identifying adequate measures. She will include recommendations that include developing better target interventions based on the identification of inequity, and judgment regarding the social justice of the effect of an inequality in the context of the community.

Dr. Stewart spent a large part of her career serving as a CEO and Executive Director of large public mental health systems in Pennsylvania, New York, and Michigan, where she oversaw the management and development of programs for persons with mental illness and substance-use disorders.

2018 LIEBER PRIZE FOR OUTSTANDING ACHIEVEMENT IN SCHIZOPHRENIA RESEARCH

REPERCUSSIONS OF ABNORMAL DOPAMINE ON BRAIN AND BEHAVIOR IN SCHIZOPHRENIA

Anissa Abi-Dargham, M.D.

The Lourie Endowed Chair in Psychiatry,
Professor of Psychiatry & Radiology;
Director, Multi-Modal Translational Imaging Lab;
Vice Chair for Research,
Department of Psychiatry and
Associate Dean for Clinical & Translational Science
Stony Brook University, School of Medicine

BBRF Scientific Council Member

1993, 1997 Young Investigator
2000 Independent Investigator
2002 Klerman Award Honorable Mention
2008 Distinguished Investigator

Dr. Anissa Abi-Dargham is an internationally recognized leader in use of molecular imaging of the human brain to study schizophrenia and its comorbidity with addiction. In a series of elegant and rigorous studies, she and her team have demonstrated an excess of the neurotransmitter dopamine in schizophrenia in a central structure of the brain called the striatum. The striatum serves as a major hub of circuits linking the cortex to subcortical structures called the cortico-basal ganglia circuits.

Dr. Abi-Dargham's research reveals that patients release greater amounts of dopamine after taking stimulants and have more dopamine at baseline in the vicinity of synapses, or points of connection between neurons, in the striatum. She showed that the observed excess of striatal dopamine correlates with psychotic symptoms, and with the degree to which these symptoms respond to antipsychotic medications. Her research has also demonstrated that excess dopamine affects the connectivity and flow of information between the striatum and the rest of the brain. In related work, she has shown that in addition to releasing excess amounts of dopamine, the D2 dopamine receptors in the striatum have abnormal sensitivity to stimulation by dopamine.

Dr. Abi-Dargham's most recent work has demonstrated that, in contrast to the striatum, the cortex in patients with schizophrenia has a deficit of dopamine (it is "hypodopaminergic") and that this deficit extends to other parts of the brain. This suggests that the striatal excess is a regionally isolated finding, while most of the brain in schizophrenia is characterized by low dopamine tone.

Dr. Abi-Dargham collaborates with preclinical investigators to study the mechanisms and consequences of clinical imaging findings in preclinical animal models, creating a translational program that moves from humans to mice and back.

Dr. Abi-Dargham is Professor of Psychiatry and Radiology, a recipient of The Lourie Endowed Chair in Psychiatry, Vice Chair for Research, and Associate Dean for Clinical and Translational Science at Stony Brook University School of Medicine. She is also a member of the National Academy of Medicine and a Special Lecturer at Columbia University in New York, where she spent 22 years prior to her move to Stony Brook University in 2016. She directs the Multi-Modal Translational Imaging Lab, where she has assembled a multidisciplinary team with expertise in multiple neuroimaging modalities used in tandem to address important questions about the brain mechanisms of schizophrenia.

2018 MALTZ PRIZE FOR INNOVATIVE &
PROMISING SCHIZOPHRENIA RESEARCH

BRIDGING BRAIN, MIND, AND EXPERIENCE TO UNDERSTAND PSYCHOSIS

Guillermo Horga, M.D., Ph.D.

Assistant Professor of Clinical Psychiatry
New York State Psychiatric Institute,
Columbia University Medical Center

Dr. Guillermo Horga is an Assistant Professor of Clinical Psychiatry at the New York State Psychiatric Institute, Columbia University Medical Center. He received his M.D. degree from Miguel Hernandez University, Spain, and his Ph.D. in experimental neuroscience from University of Barcelona, Spain.

Dr. Horga's work focuses on the neurobiological and computational mechanisms of psychotic symptoms in schizophrenia and of related cognitive functions in health, including sensory and reward-based learning and decision-making. To understand these neural mechanisms, he uses behavioral paradigms and computational tools in combination with a variety of functional, structural and molecular in vivo neuroimaging techniques–mainly functional Magnetic Resonance Imaging [fMRI] and Positron Emission Tomography [PET]– in healthy humans and patients with psychotic disorders.

His early research showed that voice-sensitive regions of the auditory cortex have increased activity while patients experience auditory hallucinations. This increase in neural activity was further associated with abnormal learning signals, suggesting that a learning dysfunction could lead to faulty sensory attenuation and hallucinatory percepts. Dr. Horga's research has also uncovered that abnormal functional connectivity between the striatum and associative cortical regions, including parts of the auditory cortex, relate to psychosis and to dopamine receptor density.

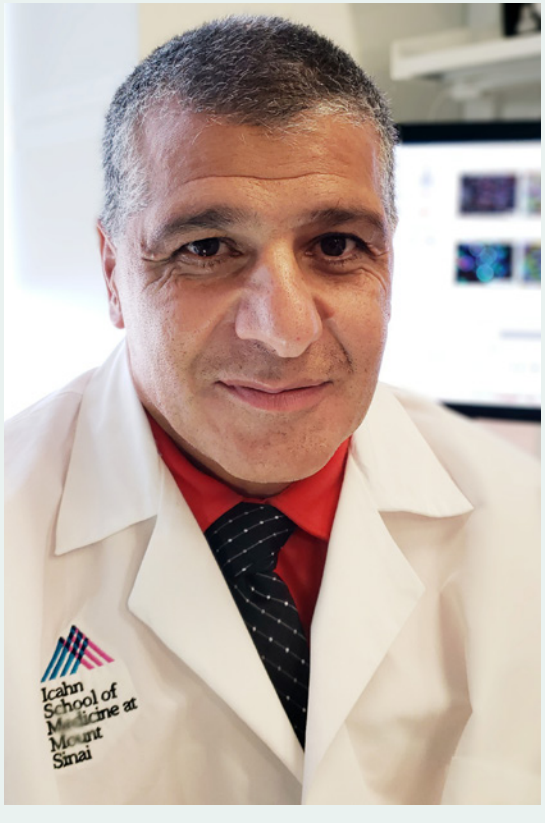
His current projects aim at describing the relationships between dopamine abnormalities and downstream cortical dysfunctions associated with specific symptoms of psychosis, and to formalize these mechanisms in a computational model of psychosis.

Another line of work in the Horga Laboratory focuses on developing neuroimaging biomarkers that can be used to predict clinically relevant outcomes and guide clinical decision-making. Among other promising neuroimaging biomarkers, he is studying neuromelanin-sensitive MRI as a potential candidate to predict conversion to overt illness in at-risk populations for schizophrenia and Parkinson's disease.

Dr. Horga and colleagues have also studied mechanisms related to other cognitive functions in healthy individuals, including cognitive control, reinforcement learning, and working memory, both in terms of the neural computations that are relevant to adaptive behaviors and the network dynamics that may support them.

2018 LIEBER PRIZE FOR OUTSTANDING
ACHIEVEMENT IN SCHIZOPHRENIA RESEARCH

SCHIZOPHRENIA AND THE BRAIN'S FOLDED GENOME



Schahram Akbarian, M.D., Ph.D.

Professor of Psychiatry & Neuroscience
Icahn School of Medicine at Mount Sinai

BBRF Scientific Council Member

1993, 2000 Young Investigator
1997 Klerman Award Winner
2012 Distinguished Investigator

Dr. Schahram Akbarian is Professor of Psychiatry and Neuroscience at the Icahn School of Medicine at Mount Sinai, New York, where he is Chief of the Division of Psychiatric Epigenomics. He studies genome organization and genome function, including gene expression, in brain cells. The goal of his research is to gain a deeper understanding of the molecular and cellular mechanisms associated with schizophrenia and related psychiatric disease.

Dr. Akbarian's early work, published in 1995, showed that the cerebral cortex of some individuals diagnosed with schizophrenia is affected by a deficit in the expression of certain genes in inhibitory cells called GABAergic interneurons, a type of nerve cell important for the balance of neuronal excitation and inhibition in the cortex. This observation has led to broader recognition of molecular and cellular dysfunction of cortical GABAergic interneurons as core features of disease models for schizophrenia.

In subsequent work, Dr. Akbarian has studied chemical modifications of histones, small proteins that form spool-like structures around which the billions of DNA nucleotides of the genome are wrapped. Modifications of histones have an impact on gene expression.

In 2007 his team published the first evidence linking histone methylation (a type of epigenetic modification of DNA) and other epigenomic modifications to dysregulated gene expression in diseased brain tissue. The histone marks thus identified have since been identified in prominent biological pathways in genome-wide association studies (GWAS) of bipolar disorder and schizophrenia.

By joining the PsychENCODE consortium sponsored by the National Institute of Mental Health, his team is now mapping on a genome-wide scale the epigenetic profiles of prefrontal cortex neurons in brain specimens from several hundred subjects diagnosed with schizophrenia. Dr. Akbarian hopes this work will provide deep insights into the regulatory role of DNA sequences associated with genetic risk for common psychiatric illnesses.

Dr. Akbarian earned his M.D. and Ph.D. degrees at Freie Universitaet Berlin, Germany. He focused on prefrontal cortex function in schizophrenia as a postdoctoral investigator at UC Irvine, and subsequently did his Internship in General Medicine at Beth-Israel Medical Center and his residency in Psychiatry at Massachusetts General Hospital. He also trained at the Whitehead Institute for Biomedical Research in Cambridge. He joined the faculty of the University of Massachusetts Medical School in 2002, and in 2009 was named director of the Brudnick Neuropsychiatric Research Institute. He joined the faculty at Mount Sinai in 2012.

2018 MALTZ PRIZE FOR INNOVATIVE AND PROMISING SCHIZOPHRENIA RESEARCH

EVALUATING SCHIZOPHRENIA RISK GENES IN HUMAN NEURONS

Kristen Brennand, Ph.D.

Associate Professor
Departments of Genetics and Genomics, Neuroscience & Psychiatry
Icahn School of Medicine at Mount Sinai

2012 Young Investigator
2016 Independent Investigator

Dr. Kristen Brennand is a biologist who has pioneered stem cell studies in the field of schizophrenia research. Using skin cell-derived pluripotent stem cells from patients and controls, and differentiating them in the cell culture dish to brain cells, Dr. Brennand in a seminal 2011 paper described deficits in neuronal connectivity and signaling. These deficits are considered to be at the core of the disease but are very difficult to study in postmortem brain and other tissues from patients.

Since then, she has continued, as Professor of Psychiatry and Neuroscience at the Icahn School of Medicine at Mount Sinai in New York and Co-Director of the Pamela Sklar Division of Psychiatric Genomics, to contribute to the field, exploring neuronal and glial cells in the context of genetic risk variants for schizophrenia. Dr. Brennand's work is thus critically deepening our mechanistic insights into how specific types of DNA mutations or sequence variants contribute to the neurobiology of schizophrenia. The long-term potential of such work is great, given that schizophrenia is in genetic terms extremely heterogeneous and complex, while at the same time access to the diseased organ, the brain, is limited.

Dr. Brennand and colleagues have demonstrated that mature, fully differentiated mouse and human cells can be reprogrammed to become induced pluripotent stem cells, i.e., cells capable of developing into neural cells and neural progenitors. These cells bear the same genomic DNA as all cells of the patients from which they were derived, thus affording researchers an unprecedented opportunity to observe them as they develop and connect with one another in cell culture dishes.

She and colleagues established proof-of-concept models of schizophrenia, bipolar disorder, and autism spectrum disorder using induced pluripotent stem cell (hiPSC) technology to generate neurons and astrocytes based on patient samples. They were the first to establish hiPSC-based models of predisposition to psychiatric disease. Consistent with findings from human postmortem, fMRI and animal model studies, stem cell-derived neurons have been observed to exhibit perturbed synaptic maturation and altered neuronal activity.

Dr. Brennand received her bachelor's degree from the University of Calgary, her Ph.D. from Harvard University, and performed postdoctoral research at the Salk Institute for Biological Studies before joining the faculty at Mount Sinai in 2012.

2018 COLVIN PRIZE FOR OUTSTANDING
ACHIEVEMENT IN MOOD DISORDERS RESEARCH

HEART MATTERS: BIPOLAR DISORDER AS A VASCULAR DISEASE

Benjamin I. Goldstein, M.D., Ph.D., F.R.C.P.C.

Director, Centre for
Youth Bipolar Disorder
Sunnybrook Health Sciences Centre

Professor of Psychiatry & Pharmacology
University of Toronto Faculty of Medicine

2007 Young Investigator
2014 Independent Investigator

Dr. Benjamin I. Goldstein is Professor of Psychiatry and Pharmacology at the University of Toronto Faculty of Medicine, Adjunct Professor of Psychiatry at the University of Pittsburgh, and Director of the Centre for Youth Bipolar Disorder at Sunnybrook Health Sciences Centre in Toronto. He completed his undergraduate studies at the University of Pennsylvania, medical school at the University of Calgary, and his Ph.D. and psychiatric training at the University of Toronto. He currently serves as Chair of the Pediatric Task Force and Chair of the Vascular Task Force of the International Society for Bipolar Disorders. Dr. Goldstein has authored over 150 scientific articles and has received international awards for his research.

Over the past decade, Dr. Goldstein has become an international leader in two areas: child-adolescent bipolar disorder, and the link between bipolar disorder and cardiovascular disease. The overarching thesis of his research is that the heart-bipolar link can help improve our understanding of bipolar disorder, identify novel treatment approaches, and reduce stigma.

Dr. Goldstein was among the first researchers to examine blood-based biological markers among youth with bipolar disorder. He demonstrated that adolescents with bipolar disorder have increased levels of inflammatory markers, and that these markers are associated with mood symptoms and blood vessel function and structure. He has shown that cardiovascular risk factors such as obesity and cholesterol are associated with reduced brain structure and cognitive function as well as increased suicide attempts, even among adolescents early in the course of bipolar disorder. His group has identified elevations in cerebral blood flow among adolescents with bipolar disorder, and found that vigorous aerobic exercise temporarily normalizes these differences.

Dr. Goldstein's devotion to improving the lives of young patients with bipolar disorder has fueled his desire to find answers for the underlying biological mechanisms that drive the illness and to find new and better clinical treatments. His innovative multi-disciplinary research team is unique in studying bipolar disorder by cohesively bringing to bear several methodologies, including neuroimaging, vascular imaging, and retinal photography, in order to generate insights regarding the vascular-bipolar link.

2018 COLVIN PRIZE FOR OUTSTANDING
ACHIEVEMENT IN MOOD DISORDERS RESEARCH

ADVANCING TRANSLATIONAL RESEARCH AND CLINICAL CARE IN BIPOLAR DISORDER

Lakshmi N. Yatham, M.B.B.S., F.R.C.P.C., M.R.C.Psych (UK), MBA (Exec)

Professor of Psychiatry
Director, Institute of Mental Health
University of British Columbia

Regional Head,
Department of Psychiatry
Regional Program Medical Director,
Mental Health & Addictions
Vancouver Coastal Health

1996 Young Investigator
1999, 2003 Independent Investigator

Dr. Lakshmi N. Yatham's major areas of research include neurobiology and treatment of bipolar disorder (BD). His research has contributed to identification of novel targets for treatment development. He has been a major contributor to international clinical trials that have led to the approval of several new treatments for BD over the last two decades. His study demonstrating that continuation of atypical antipsychotic adjunctive therapy is beneficial in reducing relapse rates for 6 months after remission of mania but not beyond has helped reduce the adverse event burden for patients and saved healthcare dollars.

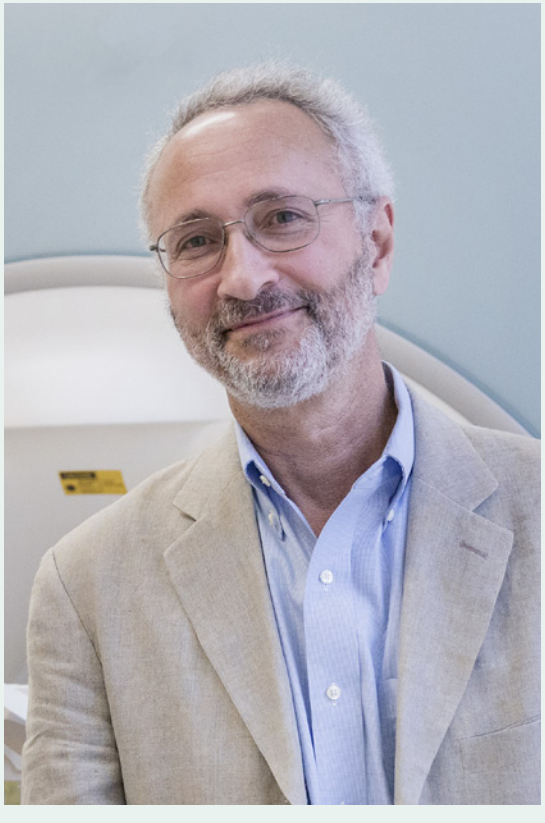
Dr. Yatham has been a leader in neurocognition research in BD, spearheading the development of an International Society for Bipolar Disorders (ISBD) Neurocognitive Battery for assessing cognitive function in BD and developing innovative clinical trial methodology to test the efficacy of treatments for improving cognition. In a proof-of-concept trial, he has provided evidence for the efficacy of the psychotropic agent lurasidone in improving cognition in euthymic bipolar patients with pre-existing cognitive deficits. He is now leading a large international double-blind trial to confirm this finding.

Dr. Yatham's research targeting first-episode mania has demonstrated the benefits of early intervention in improving clinical and cognitive outcomes and halting the progression of brain changes in BD, especially in those who remain episode-free. Further, his research has highlighted the deleterious effects of weight gain on brain structural volumes and clinical outcomes, thus reminding treating clinicians about the importance of minimizing weight gain with treatment in order to improve clinical outcomes. His research on first-episode patients thus has provided compelling arguments for early intervention to improve clinical outcomes.

Dr. Yatham is a professor in the Department of Psychiatry and Director of the Institute of Mental Health at the University of British Columbia in Vancouver. He also serves as the Regional Head of Psychiatry and Regional Program Medical Director for Mental Health and Addictions at Vancouver Coastal Health and Providence Healthcare. Dr. Yatham has held leadership positions in national and international professional organizations, serving as president of the International Society for Bipolar Disorders and secretary and currently president-elect of the World Federation of Societies of Biological Psychiatry (WFSBP). He co-led the development of Canadian guidelines for treatment of bipolar disorder in 1997, which regularly have been revised and republished. He has chaired the bipolar group of the Canadian Network for Mood and Anxiety Treatments (CANMAT).

2018 RUANE PRIZE FOR OUTSTANDING ACHIEVEMENT
IN CHILD & ADOLESCENT PSYCHIATRIC RESEARCH

IMAGING THE DEVELOPING BRAIN IN AUTISM



Joseph Piven, M.D.

Thomas E. Castelloe Distinguished
Professor of Psychiatry & Pediatrics
University of North Carolina, Chapel Hill

Director
Carolina Institute for
Developmental Disabilities

Dr. Joseph Piven is the Thomas E. Castelloe Distinguished Professor of Psychiatry and Pediatrics at the University of North Carolina at Chapel Hill and Director of the Carolina Institute for Developmental Disabilities, a comprehensive institute for services, research, and training in neurodevelopmental disorders. He directs the federally funded UNC Intellectual and Developmental Disabilities Research Center and North Carolina University Center of Excellence in Developmental Disabilities, a National Institute of Health (NIH)-funded postdoctoral research training program in neurodevelopmental disorders. He is also the Principal Investigator of an NIH-funded Autism Center of Excellence Network study of brain development in infants at risk for autism. He is the founding Editor-in-Chief of the *Journal of Neurodevelopmental Disorders*.

Dr. Piven received his bachelor's and medical degrees from the University of Maryland. He completed a residency in general psychiatry at Johns Hopkins, and fellowship in child and adolescent psychiatry at both the Institute of Psychiatry in London and Johns Hopkins. During the first part of his career Dr. Piven was on the faculty of the Department of Psychiatry at the University of Iowa. He has been on the faculty at the University of North Carolina since 1999.

Throughout his career Dr. Piven has studied various aspects of the pathogenesis of autism and related neurodevelopmental disorders, conducting family behavioral, molecular-genetic, and neuroimaging studies, as well as more recently conducting research on the late-life manifestations of autism.

Over the past 12 years, together with colleagues across North America and as part of the Infant Brain Imaging Study (IBIS), he has examined the brain and behavior manifestations of autism in the first two years of life—a period prior to the consolidation of the defining features of the disorder. This research has led to an appreciation of the cascade of brain-behavior changes leading to the emergence of autism in the second and third years of life and has demonstrated the ability of brain imaging to provide pre-symptomatic, predictive markers of autism in infancy that have the potential to enable pre-symptomatic preventative interventions for those at highest risk for the disorder.

In research published in *Nature* last year, Dr. Piven and colleagues demonstrated that selected MRI brain measurements at 6 and 12 months of age could be used to accurately identify those infants who would later meet the criteria for autism spectrum disorder at 24 months of age. The data suggested that very early post-natal hyperexpansion of cortical surface areas may have an important role in the development of autism.

2018 RUANE PRIZE FOR OUTSTANDING ACHIEVEMENT
IN CHILD & ADOLESCENT PSYCHIATRIC RESEARCH

IMAGINING A BETTER WORLD FOR CHILDREN WITH AUTISM

Ami Klin, Ph.D.

Director
Marcus Autism Center at Children's Healthcare of Atlanta

Georgia Research Alliance Eminent Scholar Professor & Chief, Division of Autism & Related Disabilities, Department of Pediatrics
Emory University School of Medicine & Emory Center for Translational Social Neuroscience

Dr. Ami Klin studies mechanisms of socialization and their disruptions in infants, toddlers, children, and adolescents with autism spectrum disorders. His laboratory has developed technologies and methods for the detection of autism during the first year of life.

Dr. Klin is Director of the Marcus Autism Center at Children's Healthcare of Atlanta, and is the Georgia Research Alliance Eminent Scholar Professor & Chief, Division of Autism & Related Disabilities, Department of Pediatrics, Emory University School of Medicine & Emory Center for Translational Social Neuroscience.

Born in Brazil to Holocaust survivors, he attended Hebrew University in Jerusalem and received a Ph.D. in Psychology at the University of London in 1988. He completed clinical and research postdoctoral fellowships at the Yale Child Study Center at the Yale University School of Medicine, where he went on to direct the Autism Program as Harris Professor of Child Psychology & Psychiatry. He has authored over 180 publications, including a number of books on the subject of autism.

The Marcus Autism Center is a not-for-profit organization and subsidiary of Children's Healthcare of Atlanta that annually treats more than 5,500 children with autism and related disorders. As one of the largest autism centers in the U.S. and one of the National Institutes of Health (NIH) Autism Centers of Excellence, the Center offers families access to the latest research, comprehensive evaluations, and intensive behavior treatments.

Dr. Klin's team is pursuing a research strategy with two main areas of focus—early detection and early intervention. This will be accomplished, in part, by Dr. Klin's eye-tracking software, which can detect changes in children's visual patterns as early as 6 months old. Dr. Klin's primary research activities focus on the early development of social mind and social brain in infants and toddlers, and impairments in children with autism and related neurodevelopmental disorders. His group's work includes quantitated growth charts of social visual engagement, speech-language and brain connectivity, and tractography in densely sampled cohorts of human babies and analogous studies in infant rhesus macaques.

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ACETYLCHOLINE RECEPTORS AND HIGHER BRAIN FUNCTIONS

Jean-Pierre Changeux, Ph.D.

Professor

Collège de France & Institut Pasteur, France

Widely acknowledged as one of the fathers of modern neurobiology and neuroscience, **Dr. Jean-Pierre Changeux**, has combined biochemical, physiological and behavioral experimentation together with theoretical modeling to discover the mode of action of nicotine in the brain. He has identified nicotine's pharmacological receptors and the molecular mechanism of its therapeutic action as a cognitive enhancer and its addictive properties as a drug of misuse.

Dr. Changeux's discovery of the acetylcholine receptor was ground-breaking, revealing one of the central regulatory mechanisms in biology that provides insight into the chemistry of the brain and ultimately the brain-mind relationship.

Dr. Changeux pursued his doctoral studies at the Pasteur Institute under the direction of two giants in the history of molecular biology, Jacques Monod and Francois Jacob. He pursued postdoctoral studies at UC Berkeley and Columbia University. He went on to professorships at the Pasteur Institute and the Collège de France. He is the author of 685 scientific publications and numerous books. Professor Changeux has received many scientific prizes and international awards.

His first breakthrough led to the theory of allosteric transitions in proteins. This postulated that regulatory ligands control the activity of the active sites of enzymes when they bind to topologically distinct sites. Soon after, he proposed a similar concept to explain the behavior of synaptic receptors for neurotransmitters. During the ensuing years he discovered the acetylcholine receptor, the first receptor for a neurotransmitter ever to be identified. Further studies have shown that human diseases are associated with mutations that change the conformation of allosteric proteins, including growth-factor receptors. Many of the drugs developed to modulate receptors coupled to G proteins are in fact allosteric modulators. Currently, many pharmaceutical and biotechnology companies are developing allosteric modulators of receptors or other key proteins in human cells for use in neurological disorders and a host of other illnesses.

From the mid-1990s, Dr. Changeux developed computational modeling methods to investigate the neuronal bases of cognitive functions. His deep thought on the mechanism of neural networks has narrowed the gap between molecular biology and the cognitive sciences. The publication of his book *Neuronal Man: The Biology of The Mind* in 1985 brought Dr. Changeux celebrity status among the wider public. Throughout his career, he has been concerned by the ethical consequences of new advances in neuroscience. He currently co-chairs the Ethics and Society division of the European Human Brain Program.

THE COMPUTATIONAL CEO OF THE BRAIN

Xiao-Jing Wang, Ph.D.

Distinguished Global
Professor of Neural Science
Director
Center for Neural Science,
New York University

A long-standing goal of the research of **Dr. Xiao-Jing Wang**, is to understand the neural circuit mechanisms involved in cognitive functions of the brain such as decision-making and working memory. He is especially interested in operations of the primate prefrontal cortex, exploring these operations by using theory and computational modeling.

Because this same brain system is critically implicated in mental illness, Dr. Wang also carries out research in the nascent field of Computational Psychiatry. His lab is well recognized for its work on the brain mechanisms of working memory—memory that keeps information literally "in mind" over short periods of time to guide decisions and behavior.

A paper published by Dr. Wang and colleagues in 1999 revealed a crucial role of NMDA receptors in generating persistent activity during working memory, a theoretical prediction that was later confirmed by experiments in monkeys. In 2004 his team proposed a disinhibition circuit motif involving three subtypes of inhibitory neurons, which has gained ample experimental support in recent years. They have used this model to investigate dopamine modulation of working memory. Dr. Wang has found that this model circuit is suitable for decision-making computations, leading to the concept of cognitive-type cortical microcircuits with the prefrontal cortex as a quintessential example.

The Wang Lab has also developed a large-scale circuit model of the primate cortex, which provides a computational platform for investigations of distributed working memory processes across many interacting brain regions and their deficits in schizophrenia. Taken together, this body of work has yielded a general neural circuit model for understanding prefrontal functions and their impairments associated with mental disorders.

Dr. Wang is Global Professor of Neural Science, Director of the Swartz Center for Theoretical Neuroscience, and Adjunct Professor of Physics and Mathematics at New York University. Between 2012 and 2017, he served as the founding Provost and Vice President for Research at NYU Shanghai. Prior to joining NYU in the fall of 2012, Dr. Wang was Professor of Neurobiology and Director of the Swartz Center for Theoretical Neuroscience at Yale University. He obtained his Ph.D. in Theoretical Physics from the Free University of Brussels switching to Computational Neuroscience in 1987.

VIRTUAL REALITY EXPOSURE THERAPY FOR SOCIALLY ANXIOUS YOUTH

Michelle Pelcovitz, Ph.D.

Assistant Professor of Psychology
in Clinical Psychiatry
Weill Cornell Medicine &
NewYork-Presbyterian Hospital

2017 Young Investigator

Cognitive behavioral therapy (CBT) with exposure therapy has been identified as the frontline treatment for anxiety disorders in youth. However, even with gold-standard treatment, a substantial number of patients do not get better or experience relapse, a fact which motivates the research of **Dr. Michelle Pelcovitz**.

Exposure therapy is based on the principles of fear extinction learning—when cues associated with threat are presented in a safe and controlled way until they are experienced as safe and fear responses are reduced. Studies in mice and non-anxious humans have demonstrated cue-based fear extinction learning to be less robust in adolescence than it is in childhood or adulthood. However, mouse models suggest that context-based extinction learning, or learning in the same or similar environments to where the fear is experienced in nature, closes the gap between age groups.

Yet there are many barriers to providing contextual exposure therapy, particularly for social anxiety, including difficulty generating or accessing realistic social situations for convincing exposures. Virtual Reality (VR) offers a promising avenue for contextual exposures, by increasing the availability of certain contexts that cannot be readily mimicked in therapy. There has been extensive research on the use of VR in facilitating exposure in a variety of populations but its effectiveness has not been demonstrated in adolescents with social phobia.

Dr. Pelcovitz's current research focuses on investigating whether VR technology is feasible, acceptable, and will enhance exposure-based therapy for socially anxious youth. She is additionally studying the physiological response to fear and extinction learning in anxious youth.

Dr. Pelcovitz received a B.A. in Psychology from Barnard College at Columbia University and earned a Ph.D. in Clinical Psychology at St. John's University, where she received research and clinical training in evidence-based interventions for children, adolescents, and adults. She completed her clinical internship training at the NYU Child Study Center and Bellevue Hospital Center and has trained in multiple clinical settings, including inpatient units, emergency rooms, partial hospitalization, day treatment, and outpatient psychotherapy.

EMERGING WEARABLE BIOMARKER SENSORS FOR MENTAL HEALTH MONITORING

Sam Emaminejad, Ph.D.

Assistant Professor, Electrical and Computer Engineering
University of California, Los Angeles

2017 Young Investigator

Dr. Sam Emaminejad is an assistant professor in the Electrical and Computer Engineering department at UCLA, and is the founder and director of the Interconnected & Integrated Bioelectronics Lab (I^2BL). This innovative lab focuses on the development of an ecosystem of integrated wearable, mobile, and invivo physiological and environmental monitoring platforms to enable personalized and precision medicine.

Current methods used to assess depression and anxiety disorders are heavily dependent on subjectively reported symptoms, which can limit timely intervention and insight into the complex emotional and mental states that patients experience. Dr. Emaminejad observes that there is a tremendous need for objective markers of disease course and treatment response, as well as methods for longitudinal assessments and characterization of the diverse trajectories that are critical to our understanding of these disorders.

Dr. Emaminejad believes that wearable sensing technologies are poised to transform behavioral health. Currently, commercialized wearable technologies are only capable of tracking physical activities and vital signs, and fail to unobtrusively access molecular-level information related to the body's dynamic chemistry. To this end, sweat-based wearable biomonitoring is a promising candidate to merge this gap. Dr. Emaminejad will discuss a class of fully integrated and wireless wearable platforms that painlessly extract sweat on-demand, and accurately measure and calibrate a panel of substances found in sweat simultaneously, insitu. He will also discuss his lab's efforts to address scientific and technological bottlenecks that need to be resolved to tailor the team's wearable technology to mental health monitoring.

Dr. Emaminejad received his BASc and M.S., and Ph.D. degrees in Electrical Engineering from the University of Waterloo and Stanford University, respectively. Prior to joining UCLA, he was a joint-postdoctoral scholar at UC Berkeley and Stanford School of Medicine. In his doctoral research at the Stanford Genome Technology Center, he developed low-cost and portable biosensing and bioelectronics platforms. As a joint postdoctoral scholar at UC Berkeley and Stanford School of Medicine, he exploited flexible electronics technology to create non-invasive wearable sensors and systems for physiological monitoring and diagnostic applications.

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