DEVELOPMENTAL NEUROSCIENCES

Do We Know Enough to Prevent or Reverse Major Behavioral Disorders?

Scientific Program of the NAM Annual Meeting
October 16, 2017
Washington, DC

NATIONAL ACADEMY OF MEDICINE

Annual Meeting Program Planning Committee

Gilbert S. Omenn, MD, PhD (Chair), Professor of Computational Medicine and Bioinformatics, Internal Medicine, Human Genetics, and Public Health, Center for Computational Medicine and Bioinformatics, University of Michigan

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Carla J. Shatz, PhD, Director, BioX and Professor of Biology and Neurobiology, James H. Clark Center, Stanford University

Agenda

6:45–8:00 am
Breakfast

Tent

8:00–8:40 am
President's Report to the NAM Membership

Victor J. Dzau, MD, President, National Academy of Medicine

8:40–9:05 am
Presentation of Member and Staff Awards

Jane E. Henney, MD, Home Secretary, National Academy of Medicine
J. Michael McGinnis, MD, Leonard D. Schaeffer Executive Officer, National Academy of Medicine

Developmental Neurosciences: Do We Know Enough to Prevent or Reverse Major Behavioral Disorders?

9:05–9:15 am
Welcome and Introduction by the Program Chair

Gilbert S. Omenn, MD, PhD, Professor of Computational Medicine and Bioinformatics, Internal Medicine, Human Genetics, and Public Health, Center for Computational Medicine and Bioinformatics, University of Michigan

9:15–9:45 am
Keynote Address: Genes, Brains, and Flexible Behaviors—Themes and Variations from Simple Animals and Humans

Cori Bargmann, PhD, Torsten N. Wiesel Professor, The Rockefeller University, and President of Science, Chan Zuckerberg Initiative

9:45–10:15 am
Break

10:15–11:30 am
Brain Plasticity and Its Disorders: Autism Spectrum and Schizophrenias

Moderator:

Joshua A. Gordon, MD, PhD, Director, National Institute of Mental Health, National Institutes of Health

Genetic Basis of Autism

Matthew W. State, MD, PhD, Oberndorf Family Distinguished Professor in Psychiatry; Chair, Department of Psychiatry; and Director, Langley Porter Psychiatric Institute, University of California, San Francisco

Effects of Early Psychosocial Neglect on Typical and Atypical Brain and Behavioral Development

Charles A. Nelson III, PhD, Professor of Pediatrics and Neuroscience, Harvard Medical School; Professor of Education, Harvard University; and Richard David Scott Chair in Pediatric Developmental Medicine Research, Boston Children's Hospital

Genetic Basis of Schizophrenia, Including the Role of Synaptic Pruning During Development and Disease

Beth Stevens, PhD, Associate Professor of Neurology, F.M. Kirby Neurobiology Program, Boston Children's Hospital and Harvard Medical School

Early Motor, Cognitive, and Neural Predictors of Schizophrenia Spectrum Disorders (SSDs)

Deanna M. Barch, PhD, Professor of Psychological and Brain Sciences and Couch Professor of Psychiatry, Washington University in St. Louis

11:30 am–12:00 pm
Introductions and Announcements

Class of 2016 NAM Members
2017–2018 Robert Wood Johnson Foundation Health Policy Fellows
2017 NAM/AAN/ANA/ANF Distinguished Nurse Scholar-in-Residence
2017–2018 FDA Tobacco Regulatory Science Fellows
2017–2019 NAM Fellows

Victor J. Dzau, MD, President, National Academy of Medicine

Presentation of the Rhoda and Bernard Sarnat International Prize in Mental Health

Huda Akil, PhD, Gardner Quarton Distinguished University Professor of Neuroscience and Psychiatry and Co-Director, The Molecular & Behavioral Neuroscience Institute, University of Michigan

Presentation of the Gustav O. Lienhard Award for Advancement of Health Care

Regina M. Benjamin, MD, MBA, NOLA.com/Times Picayune Endowed Chair in Public Health Sciences, Xavier University of Louisiana

12:00–1:30 pm
General Luncheon

Tent

Building Leadership Across Generations for Health and Health Policy Luncheon
West Court (by invitation)
This luncheon will showcase several NAM activities that engage the rising health and health policy leaders, with a particular focus on our Fellowship programs and the DC Public Health Case Challenge. Attendees will have the opportunity to hear about and discuss NAM's expanding contributions in this area as well as to network and exchange ideas with other participants.

Committee on Human Rights (CHR) Luncheon
Lecture Room
Dr. Vincent Iacopino, Senior Medical Advisor for Physicians for Human Rights, will discuss his involvement in the investigation of the health consequences of human rights abuses worldwide. Dr. Iacopino will also discuss his work as the principal organizer of an international effort to develop UN guidelines on effective documentation of torture and ill treatment (the Istanbul Protocol). NAM members will be provided with an update on the previous day's meeting of the NAM Interest Group on Human Rights, Professional Ethics, and the Values of Medicine.

Estate/Financial Planning Luncheon
Board Room
Join us for a lunch seminar to learn about timely tax and financial planning opportunities to Provide and Protect your wealth for the people and the causes that you care about.

1:30–2:45 pm
Vulnerability and Resilience: Mood and Anxiety Disorders

Moderator:

Huda Akil, PhD, Gardner Quarton Distinguished University Professor of Neuroscience and Psychiatry and Co-Director, The Molecular & Behavioral Neuroscience Institute, University of Michigan

From Pathophysiology to Treatment

John H. Krystal, MD, Robert L. McNeil, Jr. Professor of Translational Research and Chair, Department of Psychiatry, Yale University School of Medicine

Adolescent Brain Development: Risk and Resilience

Beatriz Luna, PhD, Staunton Professor of Psychiatry and Pediatrics and Professor of Psychology, Laboratory of Neurocognitive Development, Western Psychiatric Institute and Clinic, University of Pittsburgh Medical Center

The Neurocircuitry of Vulnerability and Resilience

Kafui Dzirasa, MD, PhD, Assistant Professor, Laboratory for Psychiatric Neuroengineering and Principal Investigator, Department of Psychiatry and Behavioral Sciences, Center for Neuroengineering, Duke University Medical Center

The Genetics of Bipolar Disorder

Thomas Lehner, PhD, MPH, Director, Office of Genomics Research Coordination, National Institutes of Health

2:45–4:00 pm

Reward Mechanisms, Risk-Taking Behavior, and Drivers of Addiction

Moderator:

Margaret A. Hamburg, MD, Foreign Secretary, National Academy of Medicine

Epidemiological Overview of the U.S. Opioid Epidemic and Past Drug Crises

Christopher M. Jones, PharmD, MPH, Acting Associate Deputy Assistant Secretary (Science and Data Policy), Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health & Human Services

The Biology of Addiction and Reward Circuitry

Nora D. Volkow, MD, Director, National Institute on Drug Abuse, National Institutes of Health

How Brain and Behavioral Development from Childhood to Adolescence Influence Risky Decision-Making and Susceptibility to Addiction

Valerie F. Reyna PhD, Director, Human Neuroscience Institute and Co-Director, Center for Behavioral Economics and Decision Research, Cornell Magnetic Resonance Imaging Facility, Cornell University

The Opioid Epidemic: How What We Already Know Can Help Us

Howard B. Gutstein, MD, Professor, Department of Anesthesiology, University of Pittsburgh

4:00–4:15 pm
Concluding Remarks by the Program Chair

Gilbert S. Omenn, MD, PhD, Professor of Computational Medicine and Bioinformatics, Internal Medicine, Human Genetics, and Public Health, Center for Computational Medicine and Bioinformatics, University of Michigan

4:15–5:45 pm
The President's Forum: The U.S. Opioid Epidemic

Victor J. Dzau, MD, President, National Academy of Medicine

VADM Jerome M. Adams, MD, MPH, U.S. Surgeon General, U.S. Department of Health & Human Services
The Honorable Charles D. Baker, Governor of Massachusetts
The Honorable Scott Gottlieb, MD, Commissioner, U.S. Food and Drug Administration
The Honorable Judge Steve Leifman, JD, Associate Administrative Judge, Miami-Dade County Court
The Honorable Kathleen Sebelius, MPA, Co-Chair, Aspen Health Strategy Group and President and CEO, Sebelius Resources Inc.

5:45–5:50 pm
Closing Remarks

Victor J. Dzau, MD, President, National Academy of Medicine

5:50 pm
Adjourn and Reception

Great Hall

Speakers' Biosketches

VADM Jerome Adams, MD, MPH, the 20th Surgeon General of the United States, was sworn into office by Vice President Mike Pence on September 5, 2017. Dr. Adams, a board-certified anesthesiologist, served as Indiana State Health Commissioner from 2014 to 2017. Dr. Adams, a Maryland native, has bachelor's degrees in both biochemistry and psychology from the University of Maryland, Baltimore County, a master of public health degree from the University of California at Berkeley, and a medical degree from Indiana University School of Medicine. Dr. Adams was also an associate professor of clinical anesthesia at Indiana University School of Medicine and a staff anesthesiologist at Eskenazi Health, where he was Chair of the Pharmacy and Therapeutics Committee. He has served in leadership positions at a number of professional organizations, including the American Medical Association, the Indiana State Medical Association and the Indiana Society of Anesthesiologists. He is the immediate past Chair of the Professional Diversity Committee for the American Society of Anesthesiologists. As Health Commissioner, Dr. Adams presided over Indiana's efforts to deal with the state's unprecedented HIV outbreak. In this capacity, he worked directly with the Centers for Disease Control and Prevention, as well as with state and local health officials and community leaders, and brought the widest range of resources, policies and care available to stem the epidemic affecting that community. He also helped with the successful launch of Indiana's state-based, consumer-driven alternative to Medicaid expansion and worked with the state legislature to secure more than $10 million to combat infant mortality in high-risk areas of the state. Dr. Adams' motto as Surgeon General is "better health through better partnerships." As Surgeon General, Dr. Adams is committed to maintaining strong relationships with the public health community and forging new partnerships with non-traditional partners, including business and law enforcement. He has pledged to lead with science, facilitate locally led solutions to the nation's most difficult health problems, and deliver higher quality healthcare at lower cost through patient and community engagement and better prevention. As Surgeon General, Dr. Adams oversees the operations of the U.S. Public Health Service Commissioned Corps, which has approximately 6,700 uniformed health officers who serve in nearly 800 locations around the world to promote, protect and advance the health and safety of our nation and our world.

Huda Akil, PhD, is the Gardner Quarton Distinguished Professor of Neuroscience in the Department of Psychiatry at the University of Michigan and is Co-Director and Senior Research Professor of the Molecular and Behavioral Neuroscience Institute. She is a member of the National Academy of Sciences (NAS), the National Academy of Medicine (NAM), and the National Academy of Arts and Sciences. She is Past-President of both the Society for Neuroscience and the American College of Neuropsychopharmacology. Dr. Akil has served in the past as the Director of the Neuroscience Graduate Program at the University of Michigan and as the principal investigator for several training grants. Her seminal research is focused on the neurobiology of emotions, motivation and moods and their role in psychiatric and addictive disorders. She has received continuous federal funding for her research for several decades. Dr. Akil is also part of two multi-university consortia investigating the neurobiology of psychiatric disorders.

The Honorable Charles D. Baker was inaugurated as the 72nd Governor of Massachusetts on January 8, 2015. Since taking office, he has been making Massachusetts a great place to live and work and raises a family while delivering a customer-service oriented state government that is as hard-working as the people of the Commonwealth. Confronted with a devastating opioid and heroin epidemic, Governor Baker's administration implemented a plan focused on prevention, intervention, treatment, and recovery support, including partnering with the legislature on passage of landmark legislation. Governor Baker previously served as Chief Executive Officer of Harvard Pilgrim Health Care from 1999–2009, where he turned a company on the brink of bankruptcy into the nation's highest-ranked health care provider for member satisfaction and clinical effectiveness for 6 straight years. Prior to that, he served 8 years in state government in multiple roles, including Secretary of Administration and Finance and Secretary of Health and Human Services.

Deanna M. Barch, PhD, Professor of Psychological and Brain Sciences and Couch Professor of Psychiatry, Washington University in St. Louis, received her undergraduate degree from Northwestern University, completed her PhD at the University of Illinois in Champaign-Urbana, and completed a postdoctoral fellowship at Western Psychiatric Institute and Clinic. Dr. Barch is Deputy Editor at *Biological Psychiatry* and is on the Editorial Boards of *Schizophrenia Bulletin, Journal of Abnormal Psychology,* and *Clinical Psychological Science*. She is on the Scientific Board of the Brain and Behavior Research Foundation and the Stanley Foundation. Her research has been funded by the National Institutes of Mental Health (NIMH), NARSAD, National Science Foundation, and the McDonnell Center for Systems Neuroscience. Dr. Barch is a Fellow of the Association for Psychological Science and a member of the American College of Neuropsychopharmacology. Her research program is focused on understanding normative patterns of functional brain connectivity across development, as well as the mechanisms that give rise to the challenges in behavior and cognition found in illnesses such as schizophrenia and depression, utilizing behavioral, neuroimaging, and computational approaches.

Cori Bargmann, PhD, received a BS in biochemistry from the University of Georgia and a PhD from the Massachusetts Institute of Technology (MIT), where she studied the neu/HER2 oncogene with Robert A. Weinberg. She began to study the neurobiology and genetics of behavior during a postdoctoral fellowship with H. Robert Horvitz at MIT, and continued as a faculty member at the University of California, San Francisco, beginning in 1991. In 2004 she joined Rockefeller University as the Torsten N. Wiesel Professor and Associate Director of the Shelby White and Leon Levy Center for Mind, Brain and Behavior. In 2013–2014, she co-chaired the National Institutes of Health (NIH) working group to the Advisory Committee to the NIH Director for President Obama's Brain Initiative. She was a Howard Hughes Medical Institute Investigator from 1995–2016. In 2016 she joined the Chan Zuckerberg Initiative as its first President of Science.

Victor J. Dzau, MD, is the President of the National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM). In addition, he serves as Chair of the Health and Medicine Division Committee of the National Academies of Sciences, Engineering, and Medicine. He is Chancellor Emeritus and James B. Duke Professor of Medicine at Duke University and the past President and CEO of the Duke University Health System. Previously, Dr. Dzau was the Hersey Professor of Theory and Practice of Medicine and Chairman of Medicine at Harvard Medical School's Brigham and Women's Hospital, as well as Chairman of the Department of Medicine at Stanford University.

Kafui Dzirasa, MD, PhD, Assistant Professor, Laboratory for Psychiatric Neuroengineering and Principal Investigator, Department of Psychiatry and Behavioral Sciences, Center for Neuroengineering, Duke University Medical, is the first African American to complete a PhD in Neurobiology at Duke University. His research interests focus on using neurotechnology to understand how changes in the brain produce neurological and mental illness. In 2009, Dr. Kafui obtained an MD from the Duke University School of Medicine. He was subsequently appointed as an assistant professor. He 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. Kafui 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, he has participated in numerous programs geared toward exposing youth to science and technology and providing health education for underserved communities. He was awarded the One Mind Institute Rising Star Award, and his laboratory was featured on CBS's *60 Minutes* in 2011. In 2016, he was awarded the Presidential Early Career Award for Scientists and Engineers. Dr. Kafui'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.

Joshua A. Gordon, MD, PhD, Director, National Institute of Mental Health, National Institutes of Health, conducts research on the analysis of neural activity in mice carrying mutations of relevance to psychiatric disease. His lab studies genetic models of these diseases from an integrative neuroscience perspective, focused on understanding how a given disease mutation leads to a behavioral phenotype across multiple levels of analysis. To this end, he employs a range of systems neuroscience techniques, including in vivo anesthetized, and awake behaving recordings and optogenetics, which is the use of light to control neural activity. His work has direct relevance to schizophrenia, anxiety disorders, and depression. Dr. Gordon's work has been recognized by several prestigious awards, including The Brain and Behavior Research Foundation – NARSAD Young Investigator Award, the Rising Star Award from the International Mental Health Research Organization, the A.E. Bennett Research Award from the Society of Biological Psychiatry, and the Daniel H. Efron Research Award from the American College of Neuropsychopharmacology.

The Honorable Scott Gottlieb, MD, was sworn in as the 23rd Commissioner of Food and Drugs on May 10, 2017. Dr. Gottlieb is a physician, medical policy expert, and public health advocate who previously served as the Food and Drug Administration's (FDA's) Deputy Commissioner for Medical and Scientific Affairs and, before that, as a senior advisor to the FDA Commissioner. He also worked on implementation of the Medicare drug benefit as a Senior Adviser to the Administrator of the Centers for Medicare and Medicaid Services, where he supported policy work on quality improvement and the agency's coverage process, particularly as it related to new medical technologies. In 2013, Dr. Gottlieb was appointed by the Senate to serve on the Federal Health Information Technology Policy Committee, which advises the Department of Health & Human Services on health care information technology. He was previously a Resident Fellow at the American Enterprise Institute, and a Clinical Assistant Professor at the New York University School of Medicine in Manhattan, where he also practiced medicine as a hospitalist physician. He completed a residency in internal medicine at the Mount Sinai Medical Center in New York, New York, and is a graduate of the Mount Sinai School of Medicine and of Wesleyan University, in Middletown, Connecticut, where he studied economics.

Howard B. Gutstein, MD, is Professor of Anesthesiology at the University of Pittsburgh. His primary focus of research has been the molecular mechanisms underlying the development of opioid tolerance and dependence and the interactions between pain and analgesic signaling. He discovered that the mechanisms underlying the development of tolerance to narcotics can be completely separated from those causing pain relief. They have shown that growth factor receptor inhibitors, many of which have been approved for clinical use to treat cancer, can completely reverse established narcotic tolerance and also prevent it from occurring in animals. Dr. Gutstein has also discovered why opioids are often ineffective against pain caused by nerve injuries. Clinical studies in these areas are beginning shortly. An undergraduate at Washington University, he received his MD degree from Johns Hopkins University. He served an internship in general surgery at the University of California, San Francisco (UCSF) and a residency, first in general surgery and then in anesthesiology, both at UCSF. Dr. Gutstein was a fellow in pediatric anesthesiology at UCSF and he completed a postdoctoral fellowship in neuroscience at the University of Michigan.

Margaret A. Hamburg, MD, Foreign Secretary, National Academy of Medicine, is an internationally recognized authority in medicine and public health. She is also President-Elect of the American Association for the Advancement of Science. Prior to this, she was Commissioner of the Food and Drug Administration, where she was known for advancing regulatory science, medical product innovation and globalization of the agency, while also overseeing the implementation of groundbreaking laws to curb tobacco use and enhance food safety. Previously, Dr. Hamburg was vice president/senior scientist at the Nuclear Threat Initiative, a foundation dedicated to reducing nuclear, chemical, and biological threats. She also served as New York City Health Commissioner, where she undertook major initiatives to address HIV/AIDS, curtail the resurgence and spread of tuberculosis, and launched the nation's first public health bioterrorism preparedness program. President Clinton later named her Assistant Secretary for Planning and Evaluation, Department of Health & Human Services. Dr. Hamburg currently serves on a number of not-for-profit/philanthropic boards and several advisory councils. She is a graduate of Harvard College and Harvard Medical School.

Jane Henney, MD, is Home Secretary for the National Academy of Medicine. In this capacity, she assists the NAM President and Council in strengthening and supporting membership activities and participation. Dr. Henney has held senior leadership positions in both the academic and federal sectors. Among these, she was the Commissioner of the U.S. Food and Drug Administration from 1998 until January 2001; Deputy Director of the National Cancer Institute from 1980-1985; Senior Vice President and Provost for Health Affairs at the University of Cincinnati 2003-2008; Vice President for Health Sciences at the University of New Mexico 1994-1998; Vice Chancellor for Health Programs and Policy at the University of Kansas Medical Center 1988-1992 and Interim Dean of the College of Medicine 1987-1989. Dr. Henney was elected to the National Academy of Medicine in 2000. She is a fellow of the American College of Health Care Executives and was elected to membership of both the Society of Medical Administrators and the Medical Administrators Conference. She has received numerous citations and awards for her work. Dr. Henney currently serves on the boards of directors of several not-for-profit organizations and publicly traded companies.

Christopher M. Jones, PharmD, MPH, is the Acting Associate Deputy Assistant Secretary (Science and Data Policy), Office of the Assistant Secretary for Planning and Evaluation (ASPE), U.S. Department of Health

& Human Services (HHS). The Office of Science and Data Policy is the HHS' focal point for policy research, analysis, evaluation, and coordination of public health science policy and data policy activities. The Office provides authoritative advice and analytical support to HHS leadership on public health, science, and data policy issues and initiatives. Prior to joining ASPE, Dr. Jones served as senior advisor in the Office of the Commissioner at Food and Drug Administration. He also previously led the Centers for Disease Control and Prevention's (CDC) drug abuse and overdose activities where he focused on strategic policy development and implementation, engaging national and state partners, and conducting research to improve policy and clinical practice. During his career, Dr. Jones has served as Senior Public Health Advisor to the White House Office of National Drug Control Policy, led the Food and Drug Administration's Drug Safety and Risk Communication team, and served on the Science Team in the CDC's Strategic National Stockpile. He is a nationally recognized expert on opioid misuse and overdose and has authored more than 50 peer-reviewed publications on the topic.

John H. Krystal, MD, Robert L. McNeil, Jr. Professor of Translational Research and Chair, Department of Psychiatry, Yale University School of Medicine, is a graduate of the University of Chicago, Yale University School of Medicine, and the Yale Psychiatry Residency Training Program. He has published extensively on the neurobiology and treatment of schizophrenia, alcoholism, post-traumatic stress disorder (PTSD), and depression. Notably, he led the discovery of the rapid antidepressant effects of ketamine in humans. He is the Director of the National Institute on Alcohol Abuse and Alcoholism Center for the Translational Neuroscience of Alcoholism and the Clinical Neuroscience Division of the Veterans Administrations National Center for PTSD. Dr. Krystal is a member of the National Academy of Medicine. Currently, he is president of the International College of Neuropsychopharmacology (CINP), a member of the National Institute of Mental Health's National Mental Health Advisory Council, and editor of Biological Psychiatry.

Thomas Lehner, PhD, MPH, is Director of the Office for Genomics Research Coordination and the Senior Genomics Advisor for the Intramural Research Program at National Institute of Mental Health, National Institutes of Health. He oversees and coordinates all efforts associated with genomics research for the NIMH and is the principal advisor to the NIMH Director and the NIMH Scientific Director for issues related to genetics and genomics. A native of Vienna, Austria, he received a PhD in genetics from the University of Vienna and an MPH in epidemiology from Columbia University. Since joining NIMH in 2004, Dr. Lehner has been instrumental in developing and promoting the team science approach, forging international collaborative efforts and consortia to find answers for the hard problems in psychiatric genomics. He has been a leader in the development of comprehensive genomic resources for the research community by developing NIH policies and resources, such as dbGaP, and the NIMH Repository and Genomics Resource.

The Honorable Judge Steve Leifman, JD, Associate Administrative Judge, Miami-Dade County Court, served as Special Advisor on Criminal Justice and Mental Health for the Supreme Court of Florida (2007–2010). He currently chairs the Florida Supreme Court's Task Force on Substance Abuse and Mental Health Issues in the Court and the Mental Health Committee for the Eleventh Judicial Circuit of Florida. Judge Leifman received the 2015 William H. Rehnquist Award for Judicial Excellence. One of the nation's highest judicial honors presented by Chief Justice John G. Roberts Jr., the Rehnquist Award is presented annually to a state court judge who exemplifies judicial

excellence, integrity, fairness, and professional ethics. Judge Leifman is also the first recipient to receive the Florida Supreme Court Chief Justice Award for Judicial Excellence (2015). More recently, he was named a 2016 *Governing* magazine Public Official of the Year. One of eight honorees, the award recognizes governmental leaders who exemplify the ideals of public service. Judge Leifman has also been featured in many national and local television programs, radio programs, and articles regarding mental health and the criminal justice system, including the *New England Journal of Medicine*, the *Atlantic* magazine, CBS News, *USA Today*, CNN: *Anderson Cooper Special Report,* CNN: *Special Investigations Unit: The Criminally Insane,* NBC *Nightly News,* PBS: *Minds on the Edge, Facing Mental Illness,* NPR: *All Things Considered, New York Times, Washington Post, Wall Street Journal, Governing* magazine, the *Samantha Bee Show* on TBS, CBS4: *The Forgotten Floor,* WPLG-TV10: *This Week in South Florida,* WPBT2 South Florida PBS, *Miami Herald,* and *Miami Today*. He has also authored and published numerous articles and book chapters on mental illnesses and the criminal justice system.

Beatriz Luna, PhD, Staunton Professor of Psychiatry and Pediatrics and Professor of Psychology, Laboratory of Neurocognitive Development, Western Psychiatric Institute and Clinic, University of Pittsburgh Medical, investigates the brain mechanisms supporting the transition from adolescence to adult-level cognition and motivation underlying normative and abnormal development. She uses multiple difference neuroimaging methods, including Functional Magnetic Resonance Imaging, Diffusion Tensor Imaging, Magnetoencephalography, and Positron Emission Tomography. Her findings have led to an influential model of adolescent development indicating that brain systems supporting executive processes are available by adolescence but driven by neural processes supporting motivation. Her model emphasizes that the adolescent period is a crucial period of development, essential for the emergence of adult-level decision making. Dr. Luna has published more than 100 articles and chapters describing her findings. She is a recipient of the Presidential Early Career Award in Science and Engineering. Her research is supported by the National Institutes of Health. Her work has informed U.S. Supreme Court briefs regarding extended sentencing in the juvenile justice system. Dr. Luna's extensive media history includes a cover story in *National Geographic* and a PBS special with Alan Alda—*Brains on Trial*.

J. Michael McGinnis, MD, MA, MPP, is a physician and epidemiologist and has been an active front-line participant for more than four decades in national and international health policy and programs. He is now a Senior Scholar at the National Academy of Medicine (NAM), NAM Leonard D. Schaeffer Executive Officer, and Executive Director of the NAM Leadership Consortium for a Value & Science-Driven Health System. He is also an elected member of the NAM.

Charles A. Nelson III, PhD, is Professor of Pediatrics and Neuroscience and Professor of Psychology in the Department of Psychiatry at Harvard Medical School. He also holds faculty appointments at Harvard's School of Public Health and Graduate School of Education. At Boston Children's Hospital, he is the Richard David Scott Chair in Pediatric Developmental Medicine Research and Director of Research in the Division of Developmental Medicine. Dr. Nelson's research interests center on a variety of problems in developmental cognitive neuroscience, including developmental trajectories to autism and the effects of early adversity (both psychosocial and biological) on brain and behavioral development. He chaired the John D. and Catherine T. MacArthur Foundation Research Network on Early Experience and Brain Development, and served on the National Academy of Sciences panel that wrote *From*

Neurons to Neighborhoods, and more recently, *New Directions in Child Abuse and Neglect Research*. Among his many honors, Dr. Nelson has received the Leon Eisenberg award from Harvard Medical School, an honorary Doctorate from Bucharest University (Romania), was a resident fellow at the Rockefeller Foundation Bellagio Center (Italy), and has been elected to the American Academy of Arts and Sciences.

Gilbert S. Omenn, MD, PhD, is Professor of Computational Medicine and Bioinformatics, Internal Medicine, Human Genetics, and is the Director of the Public Health Center for Computational Medicine and Bioinformatics at the University of Michigan. He was the youngest person elected when inducted into the National Academy of Medicine (then Institute of Medicine) in 1979. In 2008, he received the Walsh McDermott Award. He chaired study reports *Leadership by Example, Measuring the Efficiency of R&D Programs* and *Evolution of Translational Omics: Lessons Learned and Path Forward*. Dr. Omenn has served on committees on science, evolution, and creationism and revitalizing the NIH. He has and currently serves on the NAM's governing Council (1983–86; 2014–present). He has represented NAM and chaired the Committee on Science, Engineering, and Public Policy (1983–1988), was inaugural chair of the Academies Board on Environmental Studies and Toxicology, and served 9 years on the Academies Report Review Committee. Dr. Omenn was the first individual member to endow an Anniversary Fellowship at the NAM. In other roles, he was president of the AAAS, chaired the Presidential/ Congressional Commission on Risk Assessment & Risk Management. He currently chairs the global Human Proteome Project and pursues research on differential expression of splice variants in key cancer pathways. In 2013, Dr. Omenn received the David E. Rogers Award from the AAMC for "contributions to health and healthcare in America."

Valerie F. Reyna, PhD, is the Lois and Melvin Tukman Professor and Director, Human Neuroscience Institute, and Co-Director, Center for Behavioral Economics and Decision Research, Cornell Magnetic Resonance Imaging Facility, Cornell University. She has been elected to the National Academy of Medicine and Society of Experimental Psychologists and is President of the Society for Judgment and Decision Making. Her research integrates brain and behavioral approaches to understand and improve judgment, decision making, and memory across the lifespan. Dr. Reyna's recent work has focused on the neuroscience of risky decision-making and its implications for health and well-being, especially in adolescents; applications of artificial intelligence to understanding cancer genetics; and medical and legal decision making (e.g., jury awards, medication decisions, and adolescent crime).

The Honorable Kathleen Sebelius, MPA, Co-Chair, Aspen Health Strategy Group and President and CEO, Sebelius Resources Inc., is one of America's foremost experts on national and global health issues, human services, and executive leadership. As CEO of Sebelius Resources LLC, she provides strategic advice to companies, investors, and non-profit organizations. Ms. Sebelius serves on the boards of directors of Dermira, Devoted Health, Grand Rounds, Humacyte, the Kaiser Family Foundation, and Myovant Sciences. She co-chairs the Aspen Institute Health Strategy Group and serves on advisory boards for the Dole Institute of Politics, Solera Health, Out Leadership, and the Estée Lauder Foundation. From April 2009 through June 2014, she served in President Barack Obama's Cabinet as the 21st Secretary of the Department of Health & Human Services, where she worked to pass and implement the Affordable Care Act. Ms. Sebelius served as Governor of Kansas from 2003 to 2009. Previous elected offices include two terms as the Kansas insurance commissioner and four terms in the Kansas Legislature.

Matthew W. State, MD, PhD, Oberndorf Family Distinguished Professor in Psychiatry; Chair, Department of Psychiatry; and Director, Langley Porter Psychiatric Institute, UCSF, is a child and adolescent psychiatrist and human geneticist who is currently a member of the Weill Institute for Neurosciences at UCSF. He received his MD from Stanford University, completed a residency in psychiatry and fellowship in child psychiatry at the University of California, Los Angeles, and earned a PhD in genetics from Yale University, where he joined the faculty in 2001 and served until moving to UCSF in 2013. Over the past 15 years, his laboratory has played a leading role in elaborating the contribution of rare mutations to the etiology of autism spectrum and Tourette disorders. He has been the recipient of numerous awards, including the Tarjan Award from American Academy of Child and Adolescent Psychiatry, the Ruane Prize from the Brain and Behavior Research Foundation, and was elected to membership in the National Academy of Medicine in 2013.

Beth Stevens, PhD, Associate Professor of Neurology, F.M. Kirby Neurobiology Program, Boston Children's Hospital and Harvard Medical School, is a member of the Broad Institute. Her research seeks to understand the mechanisms that regulate the development and elimination of synapses by focusing on how microglia and immune-related molecules mediate this process. Dr. Stevens received her PhD in neuroscience in 2003 at the University of Maryland, College Park. She performed her dissertation research at the NIH's National Institute of Child Health and Human Development in the area of neuron-glia interactions. In her postdoctoral work with Ben Barres at Stanford University, she discovered that the classical complement cascade, part of the innate immune system, helps to mediate developmental central nervous system synapse elimination. Their findings have raised many questions about how the complement cascade normally works to eliminate synapses and especially whether it becomes abnormally reactivated in brain diseases such as Alzheimer's Disease (AD) that impair synaptic connectivity. In 2008, Dr. Stevens established her independent laboratory in the F.M. Kirby Neurobiology Center at Children's Hospital where she is currently using a combination of molecular, physiological, and high-resolution imaging techniques to dissect the mechanisms by which microglial cells and immune-related molecules (i.e., complement, cytokines) regulate synapse function during health and disease. She is investigating the mechanisms that drive synapse loss and dysfunction in Alzheimer's and Huntington's disease, as well as neurodevelopmental disorders such as autism and schizophrenia. She is a recipient of several young investigator awards, including the Ellison Medical Foundation New Scholar in Aging, John Merck Scholar (2011), Presidential Early Career Award for Scientists and Engineers, and a 2015 MacArthur Fellow Award.

Nora D. Volkow, MD, Director of the National Institute on Drug Abuse, National Institutes of Health, pioneered the use of brain imaging to investigate the effects of drugs in the human brain and has demonstrated that drug addiction is a brain disease. She has published more than 600 scientific articles and edited three books. She has received multiple awards, including membership in the National Academy of Medicine. She was named one of *Time* magazine's "Top 100 People Who Shape our World," included as "One of the 20 People to Watch" by *Newsweek* magazine, and named "Innovator of the Year" by *U.S. News & World Report*.

General Information

Attendees must wear badges at all times. Badges are available at the registration desk in the East Court.

Annual Meeting registration fee: There is a $150 registration fee to attend the NAM Annual Meeting. The registration fee includes lunch and the Annual Reception for Health Leaders. Attendance at the President's Forum only (not including preceding panels, lunch, or reception) is available for a special rate of $15. See the cashier at the registration desk to register.

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