

NATIONAL Sciences
Engineering
ACADEMIES Medicine

Adult Attention-Deficit/ Hyperactivity Disorder

Diagnosis, Treatment, and Implications for Drug Development

Day 1 December 12 • 9:00AM - 5:00PM EST

Day 2 December 13 • 8:30AM - 2:00PM EST



Massachusetts General Hospital & Harvard Medical School

## Workshop Funding and Disclaimers

This workshop is supported by:

- The National Academies Forum on Drug Discovery, Development and Translation
- The National Academies Forum on Neuroscience and Nervous System Disorders
- A grant (PAR-23-072) from the Center for Drug Evaluation and Research at the FDA.

Statements, recommendations, and opinions expressed here today are those of individual presenters and participants and are not necessarily endorsed or verified by the National Academies.

Discussions should not be construed as reflecting any group consensus.



## Sponsors: Forum on Drug Discovery, Development, and Translation

#### Government

Center for Drug Evaluation and Research, FDA National Cancer Institute, NIH

National Center for Advancing Translational Sciences, NIH

National Institute of Allergy and Infectious Diseases, NIH

National Institute of Mental Health, NIH

National Institute of Neurological Disorders and Stroke, NIH

Office of the Director, NIH

#### **Nonprofit Organizations**

Association of American Medical Colleges

Critical Path Institute

FasterCures, Milken Institute

Foundation for the National Institutes of Health

Friends of Cancer Research

New England Journal of Medicine

#### **Private Foundation**

**Burroughs Wellcome Fund** 

#### Industry

Amgen Inc.

AstraZeneca

Biogen

Eli Lilly and Company

Johnson & Johnson

Medable

Merck & Co., Inc.

Sanofi



## Forum on Drug Discovery, Development, and Translation Membership

- Gregory E. Simon, Co-Chair
   Kaiser Permanente Washington Health
   Research Institute and University of
   Washington
- Ann Taylor, Co-Chair, Retired
- Barbara E. Bierer, Harvard Medical School
- Linda S. Brady, National Institute of Mental Health, NIH
- John Buse, University of North Carolina, Chapel Hill School of Medicine
- Luther T. Clark, Merck & Co., Inc.
- Barry S. Coller, The Rockefeller University
- Tammy R.L. Collins, Burroughs Wellcome Fund
- Thomas Curran, Children's Mercy, Kansas City
- Richard T. Davey
   National Institute of Allergy and Infectious Diseases, NIH
- Katherine Dawson, Biogen
- James H. Doroshow, National Cancer Institute, NIH

- Jeffrey M. Drazen, New England Journal of Medicine
- Steven K. Galson, Retired
- Carlos Garner, Eli Lilly and Company
- Sally L. Hodder, West Virginia University
- Tesheia Johnson, Yale School of Medicine
- Lyric A. Jorgenson, Office of Science Policy, NIH
- Esther Krofah, FasterCures, Milken Institute
- Lisa M. LaVange, University of North Carolina Gillings School of Global Public Health
- Aran Maree, Johnson & Johnson
- Cristian Massacesi, AstraZeneca
- Ross McKinney, Jr., Association of American Medical Colleges
- Joseph P. Menetski, Foundation for the National Institutes of Health
- Anaeze C. Offodile II, Memorial Sloan Kettering Cancer Center
- Sally Okun, Clinical Trials Transformation Initiative

- Arti K. Rai, Duke University School of Law
- Klaus Romero, Critical Path Institute
- Joni Rutter, National Center for Advancing Translational Sciences, NIH
- Susan Schaeffer, The Patients' Academy for Research Advocacy
- Anantha Shekhar, University of Pittsburgh School of Medicine
- Ellen V. Sigal, Friends of Cancer Research
- Amir Tamiz, National Institute of Neurological Disorders and Stroke, NIH
- Pamela Tenaerts, Medable
- Jonathan Watanabe, University of California Irvine
- Alastair J. Wood, Vanderbilt University
- · Cris Woolston, Sanofi
- Joseph C. Wu, Stanford University School of Medicine

## Sponsors: Forum on Neuroscience and Nervous System Disorders

#### **Academia**

The George & Anne Ryan Institute for Neuroscience at the

University of Rhode Island

University of Rhode Island

#### Government

California Institute for Regenerative Medicine

Department of Veterans Affairs

Food and Drug Administration

National Center for Complementary and Integrative Health

National Eye Institute

National Institute of Environmental Health Sciences

National Institute of Mental Health

National Institute of Neurological Disorders and Stroke

National Institute on Aging

National Institute on Alcohol Abuse and Alcoholism

National Institute on Drug Abuse

National Institutes of Health BRAIN Initiative

**National Science Foundation** 

#### **Professional Society**

American Neurological Association



#### **Industry**

Acadia Pharmaceuticals

Boehringer Ingelheim

Cerevel Therapeutics

Eisai

Harmony Biosciences

Janssen Research & Development, LLC

Karuna Therapeutics

Lundbeck Research USA, Inc

Takeda

#### **Non-Profit Organizations**

Alzheimer's Association

**American Brain Coalition** 

BrightFocus Foundation

Cohen Veterans Bioscience

Foundation for the National Institutes of Health

Michael J. Fox Foundation for Parkinson's Research

National Multiple Sclerosis Society

One Mind

Paul G. Allen Frontiers Group

#### **Private Foundation**

Gatsby Charitable Foundation

Wellcome Trust

# Forum on Neuroscience and Nervous System Disorders Membership

- Frances Jensen, MD, Co-Chair University of Pennsylvania
- John Krystal, MD, Co-chair Yale University
- Rita Balice-Gordon, PhD Muna Therapeutics
- Deanna Barch, PhD
   Washington University in St. Louis
- Diane Bovenkamp, PhD BrightFocus Foundation
- Katja Brose, PhD
   Chan Zuckerberg Initiative
- Teresa Buracchio, MD
   Food and Drug Administration
- Sarah Caddick, PhD
   Gatsby Charitable Foundation
- Rosa Canet-Avilés, PhD
   California Institute for Regenerative Medicine (CIRM)
- Maria Carrillo, PhD Alzheimer's Association
- Michael Chiang, MD National Eye Institute
- Tim Coetzee, PhD National Multiple Sclerosis Society
- Beverly Davidson, PhD Children's Hospital of Philadelphia
- Nita Farahany, JD, PhD Duke University

- Eva Feldman, MD, PhD University of Michigan
- Brian Fiske, PhD
   The Michael J. Fox Foundation for Parkinson's Research
- Joshua Gordon, MD, PhD
   National Institute of Mental Health
- Morten Grunnet, PhD Lundbeck
- Magali Haas, MD, PhD, MSE Cohen Veterans Bioscience
- Richard Hodes, MD
   National Institute on Aging
- Stuart Hoffman, PhD
   Department of Veterans Affairs
- Yasmin Hurd, PhD Icahn School of Medicine at Mount Sinai
- Steven Hyman, MD
   Broad Institute of MIT and Harvard
- Michael Irizarry, MD Eisai
- George Koob, PhD
   National Institute on Alcohol Abuse and Alcoholism
- Walter Koroshetz, MD
   National Institute of Neurological
   Disorders and Stroke

- Robert Malenka, MD, PhD Stanford University
- Husseini Manji, MD, FRCPC
   Oxford University; Duke University;
   UK Government Mental Health
   Mission
- Hugh Marston, PhD Boehringer Ingelheim
- Bill Martin, PhD
   Janssen Research & Development
- John Ngai, PhD
  National Institute of Health's Brain
  Research through Advancing
  Innovative Neurotechnologies
  (BRAIN®) Initiative
- Gentry Patrick, PhD
   University of California San Diego
- Steve Paul, MD Karuna Therapeutics
- Kathryn Richmond, MBA, PhD Allen Institute
- M. Elizabeth Ross, MD, PhD, FANA American Neurological Association
- Marsie Ross, PharmD Harmony Biosciences
- Katie Sale, BA American Brain Coalition
- Raymond Sanchez, MD Cerevel Therapeutics

- Terrence Sejnowski, PhD Salk Institute for Biological Studies
- Sarah Sheikh, MSc, BMBCh Takeda
- Sarah Shnider, PhD, MSc One Mind
- David Shurtleff, PhD
   National Center for Complementary
   and Integrative Health
- John Spiro, PhD Simons Foundation
- Alessio Travaglia, PhD
   Foundation for the National Institutes
   of Health
- Nora Volkow, MD
   National Institute on Drug Abuse
- Doug Williamson, MBChB, MRCPsych Acadia Pharmaceuticals, Inc
- Richard Woychik, PhD
   National Institute of Environmental
   Health Sciences
- Stevin Zorn, PhD
   MindImmune Therapeutics

## Workshop Planning Committee

Carlos Blanco (co-chair)

National Institute on Drug Abuse (NIDA)

**Craig B.H. Surman (co-chair)** 

Massachusetts General Hospital; Harvard University

**Amy F.T. Arnsten** 

Yale University

Andrea M. Chronis-Tuscano

University of Maryland

Taleed El-Sabawi

Florida International University

**Tamara Rosier** 

ADHD Center of West Michigan, ADHD Coaches Organization

**Evelyn Polk Green** 

Attention Deficit Disorder Association (ADDA), Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD)

Steve S. Lee

University of California, Los Angeles (UCLA)

James (Jimmy) Leonard

Maryland Poison Center; University of Maryland

**Matthew Rudorfer** 

National Institute of Mental Health (NIMH)

Almut G. Winterstein

University of Florida

Stevin H. Zorn

MindImmune Therapeutics Inc.



# Adult ADHD: Diagnosis, Treatment, & Implications for Drug Development – A Workshop (December 12-13, 2023)

### Statement of Task

The workshop will feature invited presentations and discussions addressing:

- Discuss the criteria for diagnosis and treatment of adults with ADHD, taking into consideration health disparities and perspectives of people with lived experience.
- Consider what is known and unknown about the risks and benefits of ADHD medication use in adult populations.
- Share perspectives on the causes, perceptions, consequences, and health equity implications of non-medical use of prescription stimulants, including misuse potential, overdosage, and toxicity.
- Explore challenges and opportunities for the development of new and improved therapeutics for the treatment of ADHD.
- Consider potential strategies for assessing the risks and benefits of ADHD medication treatment in adult populations, including the intersection with opioid use, that support the public health goal of safely and effectively treating adults with ADHD.



## Agenda: Day 1 (December 12)

**Opening Remarks** 

Understanding ADHD In Adults &

Regulatory Overview

Session 3

Implications For Drug Development

Session 1

Diagnosis Of Adults With ADHD

Session 4

Day 1 Synthesis And Discussion

Session 2

Medication Options For Adults With ADHD: Risks And Benefits

Audience Q&A

End of Day 1

Reception in Keck Atrium

# Agenda: Day 2 (December 13)

**Opening Remarks** 

Session 7

Fireside Chat

Day 1 Synthesis and Discussion

Session 5

Audience Q&A

Enabling Access to Resources and Shared Decision Making For Adults With ADHD And Their Providers

Session 6

Adjourn Workshop

Public Health Considerations and Harm Reduction Strategies For ADHD Medication Use

## Bullying and Harassment Policy

The National Academies provides a neutral venue where conflicting viewpoints can discuss issues of importance with respect. All forms of discrimination, harassment, and bullying are prohibited in any National Academies activity. This includes unwelcome and/or aggressive behavior involving the use of influence, threat, intimidation, or coercion to dominate others in the professional environment. We look to you to be a partner in this commitment by helping us to maintain a cordial environment.

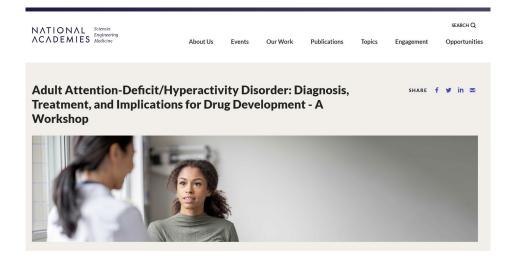
## After the Workshop

 Forum on Drug Discovery, Development, and Translation



nationalacademies.org/DrugForum

 Event Page - Adult ADHD: Diagnosis, Treatment, and Implications for Drug Development



nationalacademies.org/adhd

