

## Applying Neurobiological Insights on Stress to Foster Resilience Across the Lifespan: A Workshop

Monday, March 24, 2025: 2:00 pm – 5:00 pm ET

Tuesday, March 25, 2025: 9:30 am – 4:00 pm ET

National Academy of Sciences Building | 2101 Constitution Avenue, NW, Washington, D.C., 20418

### Objectives

- Review scientific evidence on the global rise of stress, disparities among populations, and the relationship between stress and development of systemic disorders (e.g., psychiatric, neurological, metabolic, cardiovascular, autoimmune), highlighting specific examples.
- Examine recent discoveries illuminating the neurobiological mechanisms of stress susceptibility, distinct mechanisms of resilience, and individual differences in responses to stress and building resilience.
- Consider the role of childhood neurodevelopment and neuroplasticity across the lifespan in building early-life and lifelong resilience (as opposed to stress susceptibility) and discuss effective approaches for optimizing resilience during critical and sensitive periods of neurodevelopment.
- Explore how these findings could inform public health programs and education to promote resilience to stress.
- Discuss research gaps and opportunities for studying resilience across research, clinical, and public settings.

### Program At-A-Glance

- **Day 1**
  - Welcome & Introductory Remarks
  - Workshop Overview
  - Keynote Presentation: State of the Science on Stress and Resilience
  - A Lived Experience Perspective on Resilience
  - **Session 1:** Neurobiological Mechanisms of Stress Susceptibility and Resilience
  - Concluding Remarks
- **Day 2**
  - Welcome & Day 1 Recap
  - A Lived Experience Perspective on Resilience
  - **Session 2:** Periods of Opportunity for Resilience and Adaptive Neuroplasticity Across the Lifespan
  - **Session 3:** Systemic Manifestations and Outcomes of Stress Susceptibility and Resilience
  - **Session 4:** Clinical and Public Health Interventions
  - **Session 5:** Synthesis and Opportunities for Promoting Resilience
  - Concluding Remarks

MONDAY, MARCH 24, 2025

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**2:00pm**      **Introductory Remarks**

Frances Jensen, University of Pennsylvania, *Forum on Neuroscience and Nervous System Disorders Co-chair, Planning Committee Member*

Deanna Barch, Washington University in St. Louis, *Forum on Neuroscience and Nervous System Disorders Co-chair, Planning Committee Member*

Margarita Alegría, Massachusetts General Hospital & Harvard Medical School, *Forum on Mental Health and Substance Use Disorders Co-chair*

**2:05pm**      **Workshop Overview**

Huda Akil, University of Michigan, *Workshop Co-chair*

**2:10pm**      **Keynote Presentation: State of Science on Stress and Resilience**

Huda Akil, University of Michigan, *Workshop Co-chair*

**2:30pm**      **A Lived Experience Perspective on Resilience**

Jon Nelson, *Pulverize the Stigma*

**2:40pm**      **Session 1: Neurobiological Mechanisms of Stress Susceptibility and Resilience**

*Objectives:*

- Examine recent discoveries illuminating the neurobiological mechanisms of stress susceptibility and resilience at the genetic, molecular, cellular, circuit, and behavioral levels.
- Highlight common mechanisms that are conserved between and across animal models and humans.
- Examine the intergenerational effects of stress susceptibility.
- Discuss the gaps in knowledge of resilience to stress.

**2:40pm**      **Session Overview**

Aleksandra Vicentic, National Institute of Mental Health, *Planning Committee Member (virtual)*

Michael Milham, Child Mind Institute, *Planning Committee Member*

**2:45pm**      **Speaker Presentations**

Scott Russo, Icahn School of Medicine at Mount Sinai

Mazen Kheirbek, University of California, San Francisco

Michael Baratta, University of Colorado

3:20pm

**BREAK**

3:35pm

**Speaker Presentations**

Judy Cameron, University of Pittsburgh

Kerry Ressler, McClean Hospital & Harvard Medical School

4:00pm

**Moderated Panel and Audience Q&A**

4:45pm

**Day 1 Concluding Remarks**

Huda Akil, University of Michigan, *Workshop Co-chair*

Eric Nestler, Icahn School of Medicine at Mount Sinai, *Workshop Co-chair*

5:00pm

**Adjourn Day 1**

## TUESDAY, MARCH 25, 2025

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### 9:30am Review of Day 1 and Preview of Day 2

Huda Akil, University of Michigan, *Workshop Co-chair*

Eric Nestler, Icahn School of Medicine at Mount Sinai, *Workshop Co-chair*

### 9:40am A Lived Experience Perspective on Resilience

Indida Birto, Here's to Life

### 9:50am Session 2: Periods of Opportunity for Resilience and Adaptive Neuroplasticity Across the Lifespan

*Objectives:*

- Examine the specific developmental periods that are critical and sensitive for resilience and stress susceptibility.
- Review environmental and lifestyle contributors during these critical and sensitive periods that control stress, susceptibility, and resilience.
- Explore the range of protective mechanisms across the lifespan that operate in the brain, periphery, and behavior to promote stress resilience.

### 9:50am Session Overview

Brian Dias, University of Southern California, *Planning Committee Member*

Frances Jensen, University of Pennsylvania, *Planning Committee Member*

### 9:55am Speaker Presentations

Catherine Jensen Peña, Princeton University, *Planning Committee Member*

Michael Meaney, McGill University

Cynthia Rogers, Washington University in St. Louis

Luke Hyde, University of Michigan (*virtual*)

Darby Saxbe, University of Southern California (*virtual*)

### 10:55am Moderated Panel and Audience Q&A

### 11:30am BREAK

**11:45am Session 3: Systemic Manifestations and Outcomes of Stress Susceptibility and Resilience**

*Objectives:*

- Explore the systemic manifestations (e.g., psychiatric, neurological, cardiovascular, endocrine, immune, and metabolic) of stress susceptibility and resilience.
- Review mechanisms that mediate the biological communication between the brain and peripheral systems in the context of stress and resilience.
- Examine the mechanisms that peripheral systems use to control resilience to stress.
- Discuss potential biomarkers that could be utilized to assess the biological impact of stress that predict susceptibility versus resilience.

**11:45am Session Overview**

Deanna Barch, Washington University in St. Louis, *Forum on Neuroscience and Nervous System Disorders Co-chair, Planning Committee Member*

John Krystal, Yale University, *Planning Committee Member*

**11:50am Speaker Presentations**

Janitza Montalvo-Ortiz, Yale University

Tamar Gur, Ohio State University

J. Douglas Bremner, Emory University

**12:25pm Moderated Panel and Audience Q&A**

**1:00pm LUNCH BREAK**

**1:45pm Session 4: Clinical and Public Health Interventions**

*Objectives:*

- Explore opportunities to leverage the biological and clinical mechanisms of stress and resilience into early detection and intervention strategies.
- Discuss clinical interventions and non-clinical strategies, such as public programs, that can promote resilience.
- Explore how communication tools such as social media and edutainment might be utilized to educate the public across the lifespan on stress and resilience.

**1:45pm Session Overview**

Andrew Fuligni, University of California, Los Angeles, *Planning Committee Member*

Husseini Manji, Oxford University; Yale University, *Planning Committee Member*

**1:50pm Speaker Presentations**

Nadine Burke Harris, ACE Resource Network, *Planning Committee Member*

Velma McBride Murry, Vanderbilt University

Helen Minnis, University of Glasgow (*virtual*)

**2:25pm Moderated Panel and Audience Q&A**

**3:00pm BREAK**

**3:15pm Session 5: Synthesis and Opportunities for Promoting Resilience**

*Objectives:*

- Examine the core themes that have been highlighted during the workshop.
- Discuss how understanding the biological mechanisms of resilience can combat the misconception that resilience is simply being “unaffected”.
- Discuss research gaps and opportunities for studying stress and resilience across research, clinical, and public settings.

**3:15pm Session Overview**

Eric Nestler, Icahn School of Medicine at Mount Sinai, *Workshop Co-chair*

**3:20pm Themes & Future Opportunities Discussion**

Frances Jensen, University of Pennsylvania, *Forum on Neuroscience and Nervous System Disorders Co-chair, Planning Committee Member*

John Krystal, Yale University, *Planning Committee Member*

Husseini Manji, Oxford University; Yale University, *Planning Committee Member*

Jon Nelson, Pulverize the Stigma

Aleksandra Vicentic, National Institute of Mental Health, *Planning Committee Member (virtual)*

3:55pm

**Concluding Remarks**

Huda Akil, University of Michigan, *Workshop Co-chair*

Eric Nestler, Icahn School of Medicine at Mount Sinai, *Workshop Co-chair*

4:00pm

**Adjourn Day 2**