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James S. McDonnell Foundation Announces 2016 Grants for The 21st Century Science Initiative Awards

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\$17.4 Million in Grants Continue the Commitment to Founder's Vision

(St. Louis, MO) The Officers and Directors of the James S. McDonnell Foundation today announced more than \$17.4 million in grants in their ongoing program, the **21st Century Science Initiative**.

Founded in 1950 by the late aerospace pioneer and founder of what would become the McDonnell Douglas Corporation, James S. McDonnell believed that science and technology gives mankind the power to shape knowledge for the future while improving our lives. "Mr. Mac's" vision continues to be realized through the research these grants are supporting. Since the inception of the program in 2000, more than \$280 million in funding has been awarded.

In 2016, the 21st Century Science Initiative funded new research in two programs areas. Scholar Awards in the program area *Understanding Human Cognition* were provided to researchers identified by their peers as likely to continue to make important theoretical or conceptual contributions advancing our understanding of how neurological function enables cognition and behavior. *Studying Complex Systems* supports scholarship and research directed toward the development of theoretical and mathematical tools that can be applied to the study of complex, adaptive, nonlinear systems. The JSMF Postdoctoral Fellowship Awards in *Studying Complex Systems* provides students completing doctoral training an opportunity to broaden their research experience and acquire additional skills in this multi-disciplinary field.

"Support of research and applications of research findings to important problems remains a pivotal role for private philanthropy and for the McDonnell Foundation. The foundation is committed to the ideal that having a diversity of private and public funders helps ensure that the most creative work will obtain needed support," said McDonnell Foundation President, Dr. Susan Fitzpatrick.

The McDonnell Foundation's 2016 21st Century Science Initiative Awards are:

Scholar Awards: Understanding Human Cognition

Harvard Medical School, Cambridge, Massachusetts

Principal Investigator: Jan Drugowitsch, \$600,000 over 8 years.

The approximate computations underlying decisions based on perceptual evidence

Massachusetts General Hospital, Boston, Massachusetts

Principal Investigator: Brian Edlow, \$600,000 over 8 years.

Brainstem modulation of human consciousness

Princeton University, Princeton, New Jersey

Principal Investigator: Kanaka Rajan, \$600,000 over 8 years.

Integrative theory of memory and cognitive processes

Stanford University, Stanford, California

Principal Investigator: Lisa Giocomo, \$600,000 over 8 years.

Components and computations for building adaptive cognitive maps of space

Stanford University, Stanford, California

Principal Investigator: Daniel Yamins, \$600,000 over 8 years.

Building richer computational models of visual cognition

The Hebrew University of Jerusalem, Jerusalem, Israel

Principal Investigator: Ayelet Landau, \$600,000 over 8 years.

Rhythmic sampling: A domain-general principle in the architecture of attention

The University of Texas at Dallas, Dallas, Texas

Principal Investigator: Gagan Wig, \$600,000 over 8 years.

A complex networks approach for understanding age-related cognitive decline

University of Texas Southwestern Medical Center at Dallas, Dallas, Texas

Principal Investigator: Genevieve Konopka, \$600,000 over 8 years.

Elucidating the molecular evolution of human cognition

Collaborative Activity Awards: Understanding Human Cognition

Boston University

Project Manager: Stefan Hofmann, \$1,374,417 over 3 years.

From Defensive Responses to Clinical Interventions: Understanding the Mechanisms of Anxiety

Emory University

Principal Investigator: Paul García, \$1,407,908 over 3 years.

Probing the overlap between sleep and anesthesia to enhance human cognition (Phase 2)

Iowa State University

Project Manager: Shana Carpenter, \$4,635,718 over 5 years.

Implementing Principles from the Science of Learning within Educational Practice

Scholar Awards: Studying Complex Systems

Arizona State University, Tempe, Arizona

Principal Investigator: Yun Kang, \$450,000 over 4 years

Complex adaptive systems of social insect colonies: Emergence of scaling, social dynamics and evolution cooperation

Massachusetts Institute of Technology, Cambridge, Massachusetts

Principal Investigator: Jörn Dunkel, \$450,000 over 6 years

Evolution of topological features in complex biological systems

Massachusetts Institute of Technology, Cambridge, Massachusetts

Principal Investigator: Jeremy England, \$450,000 over 6 years

Self-organization in driven many-body assemblies: Predictive principles from non-equilibrium statistical thermodynamics

National University of Singapore, Singapore

Principal Investigator: Ryan Chisholm, \$450,000 over 5 years

Modeling complex ecological communities: From small islands to tropical forests

The Hebrew University of Jerusalem, Jerusalem, Israel

Principal Investigator: Nadav Kashtan, \$450,000 over 6 years

Life on leaves: Complex microbial cities on plant leaf surfaces

University of Nebraska – Lincoln, Lincoln, Nebraska

Principal Investigator: John DeLong, \$450,000 over 6 years

Understanding the consequences of body size evolution in ecological communities

University of Wisconsin – Madison, Madison, Wisconsin

Principal Investigator: Sushmita Roy, \$450,000 over 6 years

Using an evolutionary framework to study robustness and predictive power of data-driven molecular regulatory networks

Postdoctoral Fellowship Awards: Studying Complex Systems

Sergey Belan, *Doctoral Institution: Moscow Institute of Physics and Technology*

Karna Gowda, *Doctoral Institution: Northwestern University*

Helen McCreery, *Doctoral Institution: University of Colorado Boulder*

Jasmine Nirody, *Doctoral Institution: University of California, Berkeley*

Mor Nitzan, *Doctoral Institution: The Hebrew University of Jerusalem*

Grant Rotskoff, *Doctoral Institution: University of California, Berkeley*

Lauren Shoemaker, *Doctoral Institution: University of Colorado Boulder*

Talia Tamarin, *Doctoral Institution: Weizmann Institute of Science*

David Zeevi, *Doctoral Institution: Weizmann Institute of Science*

Xianyuan Zhan, *Doctoral Institution: Purdue University*

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