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## McDonnell Foundation Announces 2010 Grants for The 21<sup>st</sup> Century Science Initiative Awards

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### **\$24 Million in Grants Continue the Commitment to Founder's Vision**

(St. Louis, MO) The Officers of the James S. McDonnell Foundation today announced more than \$24 million in grants in their ongoing program, the **21<sup>st</sup> 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 \$172 million in funding has been awarded.

The 21<sup>st</sup> Century Science Initiative funded research in three program areas and Cognitive Rehabilitation. Scholar Awards in the program area *Understanding Human Cognition* were provided to a select group of researchers identified by their peers as likely to continue to make important contributions to the ongoing effort to better understand the neural underpinnings and behavioral ramifications of human cognition. Two other program areas supported research primarily through a competitive research awards process. *Brain Cancer Research* supports research leading to new knowledge that will eventually lead to increased rates of survival and improve functional recovery for individuals with brain cancer. *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.

“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 Vice President, Dr. Susan Fitzpatrick.

The McDonnell Foundation's 2010 21<sup>st</sup> Century Science Initiative Awards are:

**Scholar Awards: Understanding Human Cognition**

**University of California-Davis**

Principal Investigator: Simona Ghetti, \$600,000 over six years.

Building blocks of episodic memory: Insight from typical and atypical development

**Stanford University, Stanford, California**

Principal Investigator: Lera Boroditsky, \$600,000 over six years.

Mental representations of abstract domains

**The New School for Social Research, New York, New York**

Principal Investigator: Daniel Casasanto, \$600,000 over six years.

How experience shapes the mind: Roles of language, culture, and body

**University College London, London, United Kingdom**

Principal Investigator: Marko Nardini, \$600,000 over six years.

Development of human spatial cognition

**Stanford University, Stanford, California**

Principal Investigator: Noah D. Goodman, \$600,000 over six years.

Compositionality in probabilistic models of cognition

**University of Illinois at Urbana-Champaign, Champaign, Illinois**

Principal Investigator: Kara D. Federmeier, \$600,000 over six years.

Cognitive and neural mechanisms of meaning comprehension

**Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil**

Principal Investigator: Suzana Herculano-Houzel, \$600,000 over six years.

The human brain in numbers: Comparative quantitative studies of the cellular composition of the nervous system of humans and other mammals to investigate the morphological bases of our cognitive advantage

**Princeton University, Princeton, New Jersey**

Vocal communication emerges and evolves through coupled oscillations

Principal Investigator: Asif A. Ghazanfar, \$600,000 over six years.

**Karolinska Institute, Stockholm, Sweden**

Principal Investigator: H. Henrik Ehrsson, \$600,000 over six years.

Multisensory mechanism of body ownership and the projection of ownership onto artificial bodies

**Trinity College Dublin, Dublin, Ireland**

How is sensory information encoded in spike trains?

Principal Investigator: Conor J. Houghton, \$600,000 over six years.

**INSERM (Institut National de la Santé et de la Recherche Médicale), Bron, France**

Spatial awareness: Normality, pathology and rehabilitation

Principal Investigator: Alessandro Farnè, \$600,000 over six years.

**Yale University, New Haven, Connecticut**

To err is human?: Exploring the evolutionary origins of cognitive biases

Principal Investigator: Laurie R. Santos, \$600,000 over six years.

Collaborative Activity Awards: Understanding Human Cognition

**Rotman Research Institute of Baycrest Centre Hospital, Toronto, Canada**

Brain Network Recovery Group (Brain NRG) Phase II

Principal Investigator: A. Randall McIntosh, \$6,106,569 over three years.

**Washington University in St. Louis, St. Louis, Missouri**

Communities and criticality in brain networks across development and in ADHD

Principal Investigator: Steven E. Petersen, \$1,170,403 over three years.

Research Awards: Studying Complex Systems

**Beth Israel Deaconess Medical Center, Boston, Massachusetts**

Principal Investigator: Madalena D. Costa, \$235,310 over three years.

Exploring the multiscale world of biological dynamics: From concepts to computational tools

**Harvard University, Cambridge, Massachusetts**

Principal Investigator: Michael M. Desai, \$449,113 over five years.

The evolutionary dynamics and population genetics of selection in asexual populations

**The Hebrew University of Jerusalem, Jerusalem, Israel**

Principal Investigator: Jay Fineberg, \$450,000 over five years.

The physics of rupture: From the laboratory scale to the scale of our planet

**Northwestern University, Evanston, Illinois**

Principal Investigator: Daniel M. Abrams, \$278,860 over three years.

Modeling social dynamics in competitive systems

**The University of Albany, Albany, New York**

Principal Investigator: Sanjay Goel, \$378,375 over five years.

Understanding the implications of a self-organized traffic grid

**University of Arizona, Tucson, Arizona**

Principal Investigator: Pierre A. Deymier, \$437,060 over three years.

Theoretical and experimental investigations of architecture-dependent signaling in multicellular networks

**University of British Columbia, Vancouver, British Columbia, Canada**

Principal Investigator: Leticia Avilés, \$345,664 over four years.

Evolution to the edge of chaos: Multilevel selection and life history evolution in metapopulations

**University of Chicago, Chicago, Illinois**

Principal Investigator: Stefano Allesina, \$449,817 over four years.

Bacteria test theories of biodiversity

**University of Michigan-Ann Arbor, Ann Arbor, Michigan**

Principal Investigator: Santiago Schnell, \$413,487 over three years.

Identification of bistable network topologies associated with toxic aggregation thresholds found in conformational diseases

**Universitat Rovira i Virgili-ICREA, Tarragona, Spain**

Co-Principal Investigators: Roger Guimera and Marta Sales, \$445,663 over five years.

Discovery, decomposition and dynamics of complex networks

**Yale University, New Haven, Connecticut**

Principal Investigator: Thierry Emonet, \$448,317 over four years.  
Shaping individual diversity for collective success

## Research Awards: Researching Brain Cancer

### **Baylor College of Medicine, Houston, Texas**

Principal Investigator: Mostafa W. Gaber, \$450,000 over three years.  
Identifying preclinical imaging markers of radiation side effects: An animal brain tumor model to correlate radiation-induced imaging changes, neurogenesis and cognitive impairment

### **Massachusetts General Hospital, Boston Massachusetts**

Principal Investigator: Khalid Shah, \$450,000 over four years.  
Evaluating novel stem cell based therapies for brain tumors

### **Memorial Sloan-Kettering Cancer Center, New York, New York**

Principal Investigator: Anna Marie Kenney, \$450,000 over three years.  
Hedgehog and hippo signaling as drivers of medulloblastoma and cell division-associated metabolic choices

### **University of California-San Francisco, San Francisco, California**

Principal Investigator: C. David James, \$450,000 over three years.  
BRAF-driven pediatric malignant astrocytoma: Etiology & treatment

### **University of Pittsburgh, Pittsburgh, Pennsylvania**

Principal Investigator: Bo Hu, \$450,000 over five years.  
Mechanisms and inhibition of anti-angiogenic therapy-induced glioma invasion

### **University of Texas M.D. Anderson Cancer Center, Houston, Texas**

Principal Investigator: Daniel P. Cahill, \$100,000 over one year.  
Molecular predictors of the mechanism of chemotherapy failure in malignant gliomas

### **Virginia Commonwealth University, Richmond, Virginia**

Principal Investigator: Devanand Sarkar, \$450,000 over five years.  
Analyzing the role of Astrocyte Elevated Gene-1 (AEG-1) in malignant glioma

### **Vanderbilt University Medical Center, Nashville, Tennessee**

Principal Investigator: H. Alex Brown, \$150,000 over one year.  
Novel lipid targets in the treatment of human glioblastomas

### **St. Jude Children's Research Hospital, Memphis, Tennessee**

Principal Investigator: Martine F. Roussel, \$150,000 over one year.  
Small molecule BMP agonists as therapeutic agents for brain tumors

## Collaborative Award: Cognitive Rehabilitation

### **Johns Hopkins University School of Medicine, Baltimore, Maryland**

Project Manager/Principal Investigator: John W. Krakauer      Co-Principal Investigator and Director  
of the Outpatient Neuro-rehabilitation Program: Pablo Celnick, \$2,424,202 over three years.  
Tracking and altering the time course of spontaneous biological recovery after stroke