

## Discovery Grant Awards 1999-Present

<u>Name of Researcher(s)</u>	<u>Title of Project</u>	<u>Department</u>	<u>Award year</u>
Randolph Blake	"Brain Activity Correlated with Visual Perception"	Psychology	1999
David Pickens	"Shared Resources for fMRI/MRI Research"	Radiology	1999
Arthur Demarest	"Cancuen Archaeological Project: Exploring a Gateway to the Ancient Maya World"	Anthropology	1999
Timothy Fisher	"Sub-micron Thermal Modeling of ULSI Transistors"	Mechanical Engineering	1999
Joey Barnett, Andrzej Krezel	"Type III TGF beta receptor ligand binding specificity"	Medicine, Biological Sciences	1999
Akram Aldroubi	"Wavelet and Spline Image Processing Tools for Functional Neuroimages"	Mathematics	1999
Sandy Rosenthal, Randy Blakely, Louis DeFelice	"Nanocrystal Fluorescent Labels for Membrane Proteins"	Chemistry, Pharmacology	1999
JoAnne Bachorowski	"Emotion-Based and Volitional Laughter: Development and Neuroimaging"	Psychology	2000
Ellen Fanning	"How does the human Cdc6 protein control chromosome replication in human cells?"	Biological Sciences	2000
James G. Patton	"Regulation of Splicing by a Novel Member of the SR Protein Superfamily"	Biological Sciences	2000
Bridget Rogers, Timothy Hanusa, Leonard Feldman	"Ultra-High Vacuum Chemical Vapor Deposition and Characterization of High Permittivity Dielectric Thin Films"	Chemical Engineering, Physics and Astronomy	2000
Robert Galloway, William Chapman	"Engineering Surgery: Merging Image-Guided Surgery and Minimally Invasive Surgery"	Biomedical Engineering, Medicine	2000

Sidney Fleischer	"The Role of FK Binding Protein FKBP12.6 in Heart Disease as Studied in Genetically Engineered Mice"	Biological Sciences	2000
Bharat Bhuva, Rick Haselton	"Development of a Methodology for DNA Chip Manufacturing and Automated Hybridization Protection"	Electrical Engineering, Biomedical Engineering	2000
Cynthia Paschal, Michael Fitzpatrick, Robert Kessler, Ron Price	"Correction of Geometric Distortions in Echo Planar Imaging"	Biomedical Engineering, Electrical Engineering and Computer Science, Radiology	2001
E.Duco Jansen	"Microvasculature Characterization with Optical Coherence Tomography"	Biomedical Engineering	2000
Isabel Gauthier	"A New Set of Artificial Stimuli to Study Expertise involved in letter recognition"	Psychology	2000
John Janusek, Deborah Blom	"Prehistoric Landscape and State Development in the Desaguaero Basin, Bolivia"	Anthropology	2000
David McCauley	"Population and Quantitative Genetics of an Invasive Plant"	Biology	2000
Calvin Miller	" <i>In situ</i> Microanalysis of Pb Isotope Ratios in Feldspars"	Geology	2000
Tom Weiler	"Particle Astrophysics at Extreme Energies"	Physics and Astronomy	2000
Paul Sheldon	"VAMPIRE parallel computing facility"	Physics and Astronomy	2000
Bruce Appel	"Identification of Genetic Modifiers of Mutant Phenotype Using Zebrafish"	Biological Sciences	2001
Marvin Chun	"Neuroimaging Investigations of Attention & Learning Mechanisms in the Brain"	Psychology	2001
Daniel Funk	"Planting an Aphid Garden: A Model System for Ecological and Genetic Analysis of Speciation"	Biological Sciences	2001

Richard Haglund, Leonard Feldman	"The Role of Interface Barriers in Organic Semi-conductor films: Light Emission and Electron Mobility"	Physics and Astronomy	2001
Thomas Palmeri	"fMRI Studies of Perceptual Categorization"	Psychology	2001
Gerald Stubbs	"Crystallographic Studies of Filamentous Virus Coat Proteins"	Biological Sciences	2001
John Vasquez	"Alliances and the Probability of War, 1816-1992"	Political Science	2001
David Zald	"Functional MRI Studies of Reinforcer Processing"	Psychology	2001
David Hercules	"Repair of X-ray Photoelectron Spectrometer"	Chemistry	2001
Karthik Srinivasan	"Developing a Multi-level analysis framework for Activity-Based Travel Demand Modeling"	Civil Engineering	2001
Ford Ebner	"Tactile Response in Visual Cortex of Blind Rats"	Psychology	2001
Kane Jennings	"The Chemical Integration of Photosystem I with Self-Assembled Films"	Chemical Engineering	2001
Carol Rubin	"Interface Between Computer-Aided Design and Finite Element Analysis"	Mechanical Engineering	2001
David Kosson	"Inductively Coupled Plasma-Mass Spectrometer & Thermal Gravimetric Analyzer-Mass Spectrometer for Enhanced Materials Characterization"	Civil Engineering	2001
Franciso Estrada-Belli	"Archeological and Remote Sensing Explorations in Holmul, Guatemala"	Anthropology	2001
Ellen Goldring	"Parent Choice and Parent Involvement: Integrating Perspectives"	Leadership & Organizations	2002
Roy Xu	"A Biologically Inspired Design to Measure Intrinsic Interfacial Strengths"	Civil and Environmental	2002

	of Dissimilar Materials”	Engineering	
Nilanjan Sarker	“Understanding Psychophysiological Feedback for Robot Control”	Mechanical Engineering	2002
Rick Haselton	“A New Paradigm for Gene Expression Screening”	Biomedical Engineering	2002
Michael Miga	“Compensating for Intraoperative Brain Shift with Models”	Biomedical Engineering	2002
William Fowler	“Cultural Landscape of Conquest: Ciudad Vieja, El Salvador”	Anthropology	2002
Laurence Zwiebel	“Cloning and Characterization of Mosquito Receptor Genes”	Biological Sciences	2002
Laura Desimone	“The Effects of Standards-Based Reform on Teachers’ Instruction”	Leadership and Organizations	2002
Charles Lukehart	“Graphitic Carbon Nanofiber/Organic Polymer Composites as Structural Materials Having Superior Mechanical Properties”	Chemistry	2002
E. B. Saaf	“Special Year in Approximation Theory and Applications”	Mathematics	2002
Clint Carter	“Analysis of Polymorphisms of Cytokines and Cytokine Receptor Genes”	Biological Sciences	2002
Richard Shiavi	“Vocal Characteristics and Suicidality”	Biomedical Engineering	2002
Lawrence Borden	“Music Cognition Lab”	Blair School of Music	2001
Prodyot Basu	“Development of Smart Subsurface Barriers for Waste Remediation”	Civil & Environmental Engineering	2003
Ellen Fanning	“Mapping Human Chromosomal Origins of DNA Replication Near Unstable Trinucleotide Repeats Associated with Progressive Neurological Disease	Biological Sciences	2003
Karthik Srinivasan	Quantitative Network-based Models for	Civil & Environmental	2003

	Integrating Transportation Security in Planning and Design Practice	Engineering	
Mark Stremler	Mixing Viscous Fluids with Topological Chaos	Mechanical Engineering	2003
Susan Hespos	Study of Auditory Perception in Human Infants using fMRI	Psychology & Human Development	2003
Sohee Park	Neural Correlates of Working Memory Deficit in Schizophrenia	Psychology & Human Development	2003
John Burke	Stephanomeria, a New Model System for Studying the Genetics of Speciation	Biological Sciences	2003
Tingyu Li	Chemically Functionalized Adsorbent Materials for Air Purification	Chemistry	2003
Terry Page	Circadian Rhythms in Olfaction	Biological Sciences	2003
Kathleen Lane	Project BASE: Behavior and Academic Support	Special Education, Peabody	2003
Eric Barth	Fuel Core Powered Stirling Engine/Alternator for Small-Scale Electric Power Generation	Mechanical Engineering	2003
Kaye Savage	Synthesis and Characterization of Arsenian Pyrite: Preparation for Oxidation Rate Studies	Geology	2003
David Wright	Nanocrystal Diagnostics for Infectious Diseases	Chemistry	2003
Craig Kennedy	Behavioral Pharmacology of Mice Lacking the <i>tailless</i> Gene	Special Education, Peabody	2003
David Dilts	Reducing Workflow Infrastructural Barriers to Early Cancer Clinical Trials	Engineering and Owen	2003
Leonard Bickman	Developing a Clinical Decision Support System for Child and Adolescent Mental Health	Psychology & Human Development	2003
Tedra Walden	Emotional Arousal, Regulation and Childhood Stuttering	Psychology & Human Development	2003

Greg Walker	Ion-track Thermal Coupling	Mechanical Engineering	2003
Todd Giorgio	RNA Interference: Understanding Mechanisms and Optimizing for Practical Applications	Biomedical Engineering	2003
Wallace LeStourgeon	Crystallization Screens on HnRNP C1	Biological Sciences	2004
Bahr Weiss	Preliminary Steps Towards Identifying a Genetic Diathesis for Schizophrenia in a Rural Village in Northern Vietnam	Psychology & Human Development	2004
Katherine Friedman	Characterization of a Negative-regulatory Domain in the Catalytic Subunit of <i>schizosaccharomyces pombe</i> Telomerase	Biological Sciences	2004
Todd Graham	Conservation of Type IV P-type ATPase Function in Protein Trafficking	Biological Sciences	2004
Mark Wolery	Measuring Instructional Learning Opportunities in Young Children's Environments	Special Education	2004
Manuel Leal	To See or Not to See: Habitat Light, Signal Detectability and Species Diversity in <i>Anolis</i> Lizards	Biological Sciences	2004
Bruce Compas	Daily Assessment of Stress and Sickle Cell Pain	Psychology & Human Development	2004
John Wikswo	Development of a Planar Perfusion System for <i>in-vitro</i> Tissue Microenvironments	Physics & Astronomy	2004
James Wittig	Novel Ferromagnetic Nanoparticles and Magnetic Nanocomposites	Materials Science	2004
Georgene Troseth	Visual-Spatial Processing in Children with Prader-Will and Williams Syndromes: Etiology-related Cognitive Strengths and Weaknesses	Psychology & Human Development	2004

Robert Hodapp	Adolescents with Down Syndrome: Relating Psychological, Health and Family Functioning	Special Education	2004
Elisabeth Dykens	Music and Anxiety in Williams Syndrome: A Whole Person Approach	Psychology & Human Development	2004
David McCauley	<i>atpA</i> Diversity in the Mitochondrial Genome of <i>Silene Vulgaris</i> , a Gynodioecious Plant	Biological Sciences	2004
Carl Johnson	Circadian Clock Gene Polymorphisms and Shift Work Among Nurses	Biological Sciences	2004
Gerald Stubbs	Structural Analysis of Disordered Macromolecular Filaments	Biological Sciences	2004
Prasad Shastri	Autologous Engineering of Cartilage Using the In Vivo Bioreactor	Biomedical Engineering	2005
Anna Roe	Optical Imaging of Short Term Working Memory in Prefrontal Cortex of the Macaque Monkey	Psychology	2005
Bruce Appel	A Screen for Chemicals that Promote Neural Stem Cell Proliferation and Oligodendrocyte Formation in Zebrafish	Biological Sciences	2005
Piotr Kaszynski	Neutron Sensors: Detection of Neutron Radiation Using Liquid Crystalline Materials	Chemistry	2005
Brandt Eichman	Molecular Mechanism of Eukaryotic DNA Replication Initiation	Biological Sciences	2005
Arthur Demarest	The Verapaz/Peten Archaeological Survey: The Corridor Between the Highland and Lowland Ancient Maya Worlds	Anthropology	2005
Clare McCabe	Molecular Modeling of Skin Lipids	Chemical Engineering	2005
Benoit Dawant	Computer-Assisted Placement of Deep Brain Stimulators	Electrical Engineering & Computer Science	2005
Andrew Rossi	Linking Studies of Visual Attention in	Psychology	2005

Humans and Macaque Monkeys Using  
Multiple Electrophysiological  
Techniques

Patrick Abbott	The Genetic Structure of Variable Mutualisms: Geographic Variation in Ant-Tended Membracids	Biological Sciences	2005
Carolyn Hughes	Project Self-Direct	Special Education	2005
Douglas Schmidt	Intelligent Middleware for Next Generation Petascale Scientific Computing	Electrical Engineering & Computer Science	2005
J. Michael Fitzpatrick	Enhanced MR Distortion Reduction with Parallel Imaging	Electrical Engineering & Computer Science	2005
Julie Adams	Cognitive Work Analysis for Human-Robotic Chemical, Biological, Radiological, Nuclear, and Explosive Search & Rescue Teams	Electrical Engineering & Computer Science	2005
David Noelle	The Neural Basis of Rule Representations in Category Learning: Using fMRI to Test a Computational Neuroscience Model	Electrical Engineering & Computer Science	2005
Norbert Ross	The Architecture of Race: Psychological and Social Components of Racism	Anthropology	2005
Robert Bodenheimer	Construction of Virtual Environments for Learning & Cognition	Electrical Engineering & Computer Science	2005
Isabel Gauthier	Visual Expertise in the Perception of Musical Notation	Psychology	2006
Jon Kaas	Mapping Brain Connections with Quantum Dots	Psychology	2006
Tiffany Tung	Bioarchaeological and Genetic Analyses for Reconstructing Biosocial Histories of Ancient and Modern Populations from the Peruvian Andes	Anthropology	2006
David Wright	Virus Detection Using DNA Logic Tags	Chemistry	2006

Daniel Kaplan	Modulation of DNA Structure by the Eukaryotic Replication Fork	Biological Sciences	2006
Joshua Gamse	Screening for Interactors with the Asymmetrically Expressed Zebrafish Lov, Ron, and Dex Proteins	Biological Sciences	2006
Xenofon Koutsokos	High Precision Node Localization in Wireless Sensor Networks	Electrical Engineering & Computer Science	2006
Nilanjan Sarkar	A Smart Robot for Rehabilitating Arm and Hand Function	Mechanical Engineering	2006
Charles Singleton	Translational Regulation by Ifks/eIF2 During Development of Dictyostelium	Biological Sciences	2006
William Robinson	Feasibility Study to Develop Reliability-Aware High-Level Synthesis	Electrical Engineering & Computer Science	2006
Yi Cui	Utility-Based Multimedia Information Processing and Distribution in Intelligent Networks	Electrical Engineering & Computer Science	2006
Harold Park	Investigating the Thermomechanical Behavior of Shape Memory Metal Nanowires	Civil & Environmental Engineering	2006
James Dickerson	<i>In Situ</i> Observation of the Electric Field-Assisted Assembly of Nanocrystal Monolayers on Conducting Electrodes	Physics & Astronomy	2006
Donna Webb	The Spatial Regulation of Cdc42 Activity by a Novel GEF	Biological Sciences	2006
Carol Rubin	An Expert System for Stress Analysis of Human Teeth	Mechanical Engineering	2006
Daniel Funk	Speciation and Species Distributions in North American Tiger Beetles of the <i>Cirindela Sylvania</i> Species Group: Abiotic Factors and an Ecophylogeographic Approach	Biological Sciences	2006
Tom Dillehay	Long-term Human, Climatic, and Environmental Interaction at Huaca	Anthropology	2007

Prieta, Peru

Gary Sulikowski	Building Preparative Chiral Chromatography Infrastructure at Vanderbilt	Chemistry	2007
Tedra Walden	Measuring Emotional Reactivity and Regulation using Psychophysical Measures for Children who do and do not Stutter	Psychology & Human Development	2007
Steven Wernke	Spatial Analysis Research Lab (SARL): An Advanced Geographical Information System and Remote Sensing Facility	Anthropology	2007
Robert Bodenheimer	Motion Analysis to Assess Surgical Treatment of Movement Disorders	Electrical Engineering & Computer Science	2007
Sharon Weiss	Direct DNA Attachment and Antifouling Coatings for a Porous Silicon Sensors	Electrical Engineering & Computer Science	2007
Deyu Li	Development of a Unique Technique to Measure Thermoelectric Properties of Individual Boron and Boride Nanowires	Mechanical Engineering /Engineering	2007
Owen Jones	The Neural Basis of Assessing Deserved Punishment	Law/Biological Sciences	2007
Kathy Friedman	Structure/Function Analysis of the Est3 Protein of Yeast Telomerass	Biological Sciences	2007
Francisco Estrada-Belli	Early Human-environment Interactions in the Maya Lowlands: archaeological and paleo-environmental data from Cival and Holmul, Guatemala	Anthropology	2007
Sandra Rosenthal	Magic-Sized Nanocrystals as White-Light Nanophosphors	Chemistry	2007
Ellen Fanning	Role of Cullin 7 (Cul&) in the regulation of cell proliferation	Biological Sciences	2007
Eric Barth	Control Based Design of Free Piston Stirling Engines	Mechanical Engineering	2008
Stephen Benning	Investigating the Interpersonal	Psychology	2008

Emotional Reactivity of Individuals with  
Psychopathic Traits and Their Observers

James Dickerson	Noninvasive Detection of Vulnerable Atherosclerotic Plaque Using Multifunctional, Proximity Activated Nanoparticles	Physics & Astronomy	2008
Ford Ebner	Restoring cortical function after early sensory deprivation	Psychology	2008
Robert Galloway	Image Guided Kidney Surgery	Biomedical Engineering	2008
Todd Giorgio	Nanotechnology based Microfluidic Biomarker Sensor	Biomedical Engineering	2008
Julián Hillyer	Mosquito Immunity Against The Sporogonic Stages of Malaria Parasites	Biological Sciences	2008
John Janusek	Machaca Over the Last Millennium: Archaeology, History, and Ethnography in the Andean Highlands	Anthropology	2008
Jens Meiler	Novel Protein Therapeutics to Fight Microbial Vancomycin Resistance	Chemistry	2008
Michael Miga	Quantifying Breast Cancer Architecture in Murine Systems Using Mechanical Testing, Cellular Assays, and Elastographic Imaging Methods	Biomedical Engineering	2008
Sohee Park	Assessment of frontal cortical function in Parkinson's disease patients before and after deep brain stimulation; a behavioral functional neuroimaging study	Psychology	2008
James Patton	Quantitative Analysis Core for Biological Sciences	Biological Sciences	2008
Gerald Stubbs	Cryo-electron microscopy and X-ray fiber diffraction in structural studies of filamentous biological assemblies	Biological Sciences	2008
Frank Tong	Neural decoding of abstract mental states	Psychology	2008

Greg Walker	Nanophase thermographic phosphors for remote temperature sensing	Mechanical Engineering	2008
Adriane Seiffert	"Self and Object Tracking"	Psychology	2009
Xenofon Koutsoukos	"Novel Pollution Monitoring System"	Electrical Engineering & Computer Science	2009
Mark Does	"Investigation of the relationship between bone biomechanics and cortical bone water NMR properties"	Biomedical Engineering	2009
Robert Webster	"Fluid-Powered Locomotion, Sensing, and Intervention In the GI Tract"	Mechanical Engineering	2009
Jamey Young	"Comprehensive analysis of tumor metabolism using stable isotope tracers and quantitative flux determination"	Chemical Engineering	2009
Donna Webb	"Using Microfluidic Chips to Image Spine and Synapse Formation in Real Time in Hippocampal Neurons"	Biological Sciences	2009
Kelly Holley-Bockelmann	"Kicking Black Holes in Globular Clusters"	Physics & Astronomy	2009
Mark McDonald	"Cyber Physical Systems Solutions to Overcoming Vehicular Traffic Congestion"	Civil Engineering	2009
Andrew Berlind	"Statistics of Large-Scale Structure"	Physics & Astronomy	2009
Daniel Kaplan	"Role of <i>S. cerevisiae</i> Dpb11 in the Initiation of DNA Replication"	Biological Sciences	2009
Carl Johnson	"Hypersomnia/Substances Abuse and Circadian Clock Genes"	Biological Sciences	2009
Seth Bordenstein	"The Infectious Basis of Hybrid Mortality in an Insect Model"	Biological Sciences	2010
Kenneth Catania	"Mechanosensation and Brain Organization in the Nile Crocodile"	Biological Sciences	2010
Craig Duvall	"Development of an Injectable,	Biomedical Engineering	2010

Controlled Release Scaffold for siRNA  
Delivery to Skin Wounds"

Todd Graham	"Influence of phospholipid asymmetry on cholesterol dynamics in membranes"	Biological Sciences	2010
Eva Harth	"Multifunctional nanoparticle for the simultaneous delivery and imaging for anti-cancer therapy"	Chemistry	2010
Bunmi Olatunji	"Stimulus Specificity and the Neurobiology of Disgust in OCD"	Psychology	2010
David Wright	"Low resource pathogen detection using the coffee ring phenomenon"	Chemistry	2010
Brandt Eichman	"Structural Basis For Regulation of Asymmetric Brain Development"	Biological Sciences	2010
Steven Wernke	"A Negotiated Settlement: An Interdisciplinary Investigation of a Planned Colonial Town in the Andean Highlands of Peru"	Anthropology	2010
Charles Singleton	"Ammonium Transporters of Dictyostelium as models for sensory transporters"	Biological Sciences	2010
Piotr Kaszynski	"Supramolecular Architectures of Verdazyls and Benzo[1,2,4]triazinyls for Magnetic Semiconductors"	Chemistry	2010
John McLean	"A Converging Ion Funnel for a Multi-Channel Mass Spectrometer"	Chemistry	2010
Steven Goodbred	"Establishing direct links between climate, environmental change, and cultural transformations in early Peruvian civilization"	Earth & Environmental Sciences	2010
James Patton	"Identification of novel noncoding RNAs in Zebrafish"	Biological Sciences	2010