

JEFFRESS RESEARCH GRANT AWARDS

The Allocations Committee of the Thomas F. and Kate Miller Jeffress Memorial Trust has announced the award of Jeffress Research Grants to the institutions listed below to support the research of the investigator whose name is given. The Jeffress Trust, established in 1981 under the will of Robert M. Jeffress, a business executive and philanthropist of Richmond, supports research in chemical, medical and other natural sciences through grants to non-profit research and educational institutions in the Commonwealth of Virginia. The Jeffress Research Grants being announced here have been awarded in 2005.

The Jeffress Memorial Trust is administered by Bank of America. Additional information about the program of the Trust may be obtained by writing to: Richard B. Brandt, Ph.D., Advisor, Thomas F. and Kate Miller Jeffress Memorial Trust, Bank of America, Private Bank, P. O. Box 26688, Richmond, VA 23261-6688. An unofficial website is listed under Grants and Awards, www.vacadsci.org/grants.htm.

Julio C. Alvarez. Virginia Commonwealth University. Development of Electrochemical Biosensors in Plastic Microfluidic Chips. \$10,000. (one year renewal).

Rebecca Ambers. Sweet Briar College. The Influence of Clay Mineralogy and Mineral Cements on Stream Channel Erodability. \$10,000. (one year renewal).

Joseph D. Ametepe. Hollins University. Studying and Using Discharges from a Novel High-Energy Ultraviolet Light Source for Destroying Viruses and Bacteria in Drinking Water. \$10,000. (one year renewal).

Mark Anderson. Virginia Polytechnic Institute and State University. Development and Characterization of a Multisensor Array for Biosensing. \$10,000. (one year renewal).

Carey K. Bagdassarian, College of William and Mary. Genetic-Algorithm Evolution of Large Food Webs and the Stability-Complexity Debate. \$26,000. (one year).

Ancha Baranova, George Mason University. Melanin Biosynthesis in Adipocytes: Cross-talk Between Energy Balance and Pigmentation Control. \$23,000. (one year).

Stephen F. Baron, Bridgewater College. Regulation of Extracellular Polyhydroxalkanoate Depolymerase Synthesis in *Streptomyces* spp.5A. \$10,000. (one year renewal).

Craig Bayse, Old Dominion University. Understanding the Role of Se...N, O Interactions in the Activity of Selenoproteins and their Mimics: A Theoretical Study. \$10,000. (one year renewal).

Barney M. Bishop, George Mason University. Folding β -Defensins and Precursors of Peptides. \$10,000. (one year renewal).

George M. Brooke, IV, Virginia Military Institute. Real-Time In-Situ Characterization of Trace Compounds and Aerosols using Cavity Ring-Down Spectroscopy. \$22,000. (one year).

Timothy N. Bullock, University of Virginia Medical School. Expression and Function of CD70 *in vivo*. \$23,750. (one year).

Joshua Burk, College of William and Mary. Posterior Parietal Cortical Acetylcholine and Attention. \$24,000. (one year).

Jan Chaloupka. The College of William and Mary. The Effect of the Longitudinal Electrical Field in an Intense Laser Pulse on the Double Ionization of Atoms. \$10,000. (one year renewal).

Randolph A. Coleman, College of William and Mary. Biochemical Studies of G-Protein Coupled Receptors via Stimulation and Modeling. \$30,000. (one year).

Charles D. Cook, Virginia Commonwealth University. Sex Differences in Chronic Pain and Opioid Antinociception: Role of the Serotonin System. \$25,000. (one year).

Richard M. Costanzo, Virginia Commonwealth University. Recovery from Olfactory Nerve Injury. \$10,000. (one year renewal).

Brian Cusato, Sweet Briar College. The Pavlovian Conditioning on Sexual Behavior and Fertility in Female Japanese Quail (*Coturnix japonica*). \$10,000. (one year renewal).

Jonathan Dattelbaum. University of Richmond. Genetically Engineered Protein Biosensors for Glutamate: An Important Human Neurotransmitter. \$10,000. (one year renewal).

Swati P. Deb, Virginia Commonwealth University. Function and Dysfunction of the Human Oncoprotein MDM2. \$10,000. (one year renewal).

Christopher Del Negro, The College of William and Mary. Do Pacemaker Neurons Generate the Rhythm for Breathing?. \$10,000. (one year renewal).

Michael R. Deschenes, The College of William and Mary. Effects of Senescence on Neuromuscular Adaptations to Disease. \$10,000. (one year renewal).

David A. DeWitt, Liberty University. Regulation of Staurosporine Induced Organelle Clustering in NT2 Cells. \$22,250. (one year).

Kelley Dodson, Virginia Commonwealth University Health System. Genetic Studies of High Frequency, Progressive and Unilateral Hearing Impairment. \$30,000. (one year).

C. Wade Downey, University of Richmond. The Development of New Stereo-Selective Intra Molecular Pericyclic Reactions. \$20,000. (one year).

Malgorzata Dukat, Virginia Commonwealth University. Novel Approaches to Pain Management. \$25,000. (one year).

James Eason, Washington and Lee University. The Mechanisms of Defibrillation During Acute Myocardial Ischemia \$10,000. (one year renewal).

Alev Erisir, University of Virginia. Afferent-target Relations in Developing Visual Cortex: Recovery from Deprivation. \$27,000. (one year).

Joshua Erlich, College of William and Mary. Hadrons, Strings, and Cosmology. \$28,000. (one year).

Karen D. Fairchild, University of Virginia School of Medicine. Measurement of Hypothermic Activation of NF-kappa B and Cytokine Expression. \$24,000. (one year).

Venkata Ramana Feeser, Virginia Commonwealth University Health System. Optimization of Wound Healing by the Immune Regulating Hormone Androstenediol. \$25,000. (one year).

Carla Finkielstein, Virginia Polytechnic Institute and State University. Controlling Cell Cycle Progression through the Cyclin/Cdk-dependent Phosphorylation Site in p27Xicl. \$23,000. (one year).

Mark L. Gabriele, James Madison University. Understanding Early Circuit Formation and the Spatial Arrangement of Ascending and Descending Projection Patterns in the Developing Auditory System Prior to the Onset of Hearing. \$10,000. (one year renewal).

Earl W. Godfrey, Eastern Virginia Medical School. Identification of Candidate Proteins for Polysynaptic Differentiation of the Neuromuscular Junction. \$10,000. (one year renewal).

Joel W. Hockensmith, University of Virginia Medical School. Inhibitors of DNA-Dependent ATP Hydrolytic Activity and Associated Functions. \$10,000. (one year renewal)

Lisa Horth, Old Dominion University. Linking Behavior to Genetics: Is Pheromone Receptor Molecular Genetic Variation Associated with Differences in Male Mating Behavior in Two Live-Bearing Fish Species? \$24,500. (one year).

Carol A. Hurney, James Madison University. Cloning and Expression of *MyoD* and *Myf5* in the Four-Toed Salamander: Insights into Segmentation and Tail Development. \$15,000. (one year).

Scott Huxtable, Virginia Polytechnic Institute and State University. Thermal Management Through Understanding and Control of Solid-State Interfacial Thermal Conductance. \$25,000. (one year).

Helen I'Anson, Washington and Lee University. Metabolic Regulation of the Onset of Puberty. \$10,000. (one year renewal).

Jeffrey E. Janovetz, Sweet Briar College. The Functional Morphology of Feeding in Piranhas and Related Fishes. \$10,000. (one year renewal).

Timothy Johann and Catherine Sarisky, Radford University. Characterization of the Active Site of MTHFS. \$24,000. (one year).

Kenneth W. Kambis, College of William and Mary. The Effects of Carbohydrate Ingestion Mood State During Endurance Work Performance at Moderate and High Altitude. \$10,000. (one year renewal).

Giti Khodaparast, Virginia Polytechnic Institute and State University. Tetrahertz Emission from Parabolic Semiconductor Heterostructures. \$10,000. (one year renewal).

Andrei Khokhlatchev, University of Virginia Medical School. Determine Tumor Suppressive Capabilities to Ras Effector NORE1A. \$24,000. (one year).

Scott W. Knight, University of Richmond. The Role of Zinc-Finger Protein in RNA Interference. \$25,000. (one year).

Keith G. Kozminski, University of Virginia. Regulation of Polarized Morphogenesis Functional Analysis of Zds2p in *S. cerevisiae*. \$10,000. (one year renewal).

Joel P. Kuehner, Washington and Lee University. Investigation of Nonresonant Laser-Induced Electrostrictive Gratings for Temperature Measurements in Air at Subatmosphenc Pressure. \$25,000. (one year).

Rahul Kulkarni, Virginia Polytechnic Institute and State University. Computational Analysis of Bacterial Quorum-Sensing Networks. \$10,000. (one year renewal).

David A. Lanning, Virginia Commonwealth University Health System. Homeobox Gene Expression in Fetal and Rabbit Wounds. \$10,000. (one year renewal).

Chris Lantz, James Madison University. Regulation of Contact Hypersensitivity and Basophil Development in Mice by Interleukin-3 Derived from CD4 Cells. \$27,000. (one year).

Timothy Larson, Virginia Polytechnic Institute and State University. Trafficking of Sulfur in Bacteria. \$10,000. (one year renewal).

Gyorgy Lonart, Eastern Virginia Medical School. Interaction of Phospho-RIM1 α with the Release Machinery. \$10,000. (one year renewal).

Robin Looft-Wilson. The College of William and Mary. Vascular Cell-to-Cell Communication in Hyperhomocysteinemia. \$10,000. (one year renewal).

Elizabeth G. Malcolm, Virginia Wesleyan College. Experimental Investigation of the Scavenging of Gaseous Mercury by Sea Salt Aerosols. \$24,000. (one year).

April Marchetti, Randolph-Macon College. Synthesis of Polyolefins Tethered to Inorganic Surfaces via Insertion Mechanisms. \$27,000. (one year).

Irma Mazilu. Washington and Lee University. A Study of Some Non-Equilibrium Driven Models and Their Contribution to the Understanding of Molecular Motors. \$10,000. (one year renewal).

Daniel F. McCain, Virginia Military Institute. The Metal Specificities of the PPM Phosphatases: Mechanistic Studies of Yeast Ptc3. \$20,000. (one year).

Glenn J. McGarvey, University of Virginia. Carbohydrate Protein Recognition - Implications for Cancer Vaccine Design. \$25,000. (one year).

David W. Mullins, University of Virginia Medical School. Chemokine Receptors on Human Cells: Implications for Anti-Tumor Vaccines. \$24,000. (one year).

Jeffrey K. Nelson, The College of William and Mary. Studies of the Charge Asymmetry in Cosmic Ray Muons and Atmospheric Neutrino Interactions. \$10,000. (one year renewal).

Kyungwha Park, Virginia Polytechnic Institute and State University. Computational Study of Magnetic Properties of Molecular Nanomagnets Tethered to Gold Surfaces. \$30,000. (one year).

Carol Parish, University of Richmond. Potential Anti-Cancer Warhead Drugs: A Theoretical Investigation of the Electronic Nature of Eneidyne Cyclization. \$25,000. (one year).

Robert D. Pike, The College of William and Mary. Bridging Caged Phosphite Ligands: New Metal-Organic Network Formers. \$10,000. (one year renewal).

Leonard Pysh, Roanoke College. SABRE and Root Cell Shapes in *Arahidopsis thaliana*. \$10,000. (one year renewal).

Gary Radice, University of Richmond. Origin and Specification of Lymphatic Heart Myoblasts. \$10,000. (one year renewal).

Shunlin Ren, Virginia Commonwealth University. Biochemical Study of Cholesterol Transporter in Bile Acid Synthesis. \$10,000. (one year renewal).

Suzanne M. Ruder, Virginia Commonwealth University. Synthesis of Liquid Crystalline Materials for Antibody Immobilization. \$25,000. (one year).

Charles Rutherford, Virginia Polytechnic Institute and State University. The Role of 5'Nucleotidase During Cell Differentiation *Dictyostelium*. \$10,000. (one year renewal).

Sean T. Scully, James Madison University. Neutrino Constraints on the Origin of Ultra-High Energy Cosmic Rays. \$20,000. (one year).

Kyle N. Seifert, James Madison University. The Role of Ssr-2 and Accessory Secretary Genes in the Pathogenesis of a Highly Virulent Lineage of Group B streptococci. \$25,000. (one year).

Yun Michael Shim, University of Virginia Medical School. Role of the Cytokine Receptor CCR2 and Dendritic Cells in Murine Allergic Inflammation. 424,000. (one year).

Vladimir Siderov, Virginia Commonwealth University Health System. Active Delivery of Substrates by Ditopic Receptors. \$10,000. (one year renewal).

Caroline Smith, James Madison University. The Aeroacoustics of Turbulent Coanda Jets. \$10,000. (one year renewal).

Janet Steven, Sweet Briar College. The Evolution of Hermaphroditic and Unisexual Flowers in *Thalictrum niacroslylum*: A Test of Multiple Causal Hypotheses. \$26,000. (one year).

Dong Sun, Virginia Commonwealth University Health System. Transplantation of Adult Human Neuronal/Stem Progenitor Cells in rats Following Brain Trauma. \$25,000. (one year).

David W. Thompson, The College of William and Mary. Silver Nanowire, Nanorod, and Nanosphere-High Performance Polymer Composites. \$30,000. (one year).

Matthew F. Tuchler, Washington and Lee University. Direct Determination of Equilibrium Constants of Oxides of Nitrogen with Cavity Ringdown Absorption Spectroscopy. \$10,000. (one year).

Erich Uffelman, Washington and Lee University. ^1H - ^{15}N IIMBC Spectroscopy of Complexes Relevant to Green Chemistry. \$10,000. (one year renewal).

Jill Venton, University of Virginia. Development of an Electrochemical Adenosine Sensor. \$25,000. (one year).

John M. Warrick, University of Richmond. CREB-Binding Protein Modulation in a *Drosophila* Model of MJD and the Role of Chaperones. \$10,000. (one year renewal).

James H. Westwood, Virginia Polytechnic Institute and State University. A Parasitic Plant as a Novel Tool for Studying Mobile mRNA. \$24,000. (one year).

Raphael J. Witorsch, Virginia Commonwealth University. G-Screen Microassay for the Identification of Xenoglucocorticoids \$10,000. (one year renewal).

Judith A. Wubah, James Madison University. The Role of Mitochondrial Salvage Enzymes During Early Mouse Development. \$10,000. (one year renewal).

Grace A. Wyngaard, James Madison University. Variability in Chromatin as a Mechanism of Rapid Evolution. \$10,000. (one year renewal).

Henry M. Yochum, III, Sweet Briar College. Optical Spectroscopy of Defects in Undoped Yttrium Orthovanadate Crystals. \$10,000. (one year renewal)

Patty Zwollo, College of William and Mary. Developing Molecular Tools for the Analysis of Trout Humoral Immunity: Isolation of Gene Encoding Transcription Factors PAX-5 and Blimp-1 Monoclonal Antibody Production. \$9,920. (one year renewal).

Chenming Zhang, Virginia Polytechnic Institute and State University. Effectiveness of Site Selection by Molecular Modeling for Site-Directed Protein Mutagenesis. \$10,000. (one year renewal).

Shiwei Zhang, College of William and Mary. Random Walks, Complex Phases, and Microscopic Simulations. \$10,000. (one year).

Zhongming Zhao, Virginia Commonwealth University. Analysis of Genetic Variation in Human CpG Islands. \$22,000. (one year).

Quihing Zhou, Virginia Commonwealth University. DNA Promoted Intercalating/Alkylating Drugs. \$10,000. (one year renewal).