

Students and Teachers As Research Scientists Program  
SCHOLAR RESEARCH PAPERS  
Friday, July 17, 2009  
101 Benton Hall – 120 Research Complex – 121 Research Complex

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Mr. Tony Kardis, Senior Program Advisor  
Mr. Terry Brennan, Student Advisor

Ms. Sarah Falkoff, Student Advisor  
Ms. Jen Freund, Student Advisor

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**Sereno Adams**, Wentzville Holt High School, “The Crystallography of the Polymorphs and Solvates of Sulfathiazole,” Dr. Nigam Rath, UM-St. Louis

**Sofia Aronson**, MICDS, “Modulation of RecO DNA Annealing and Binding Properties by RecR from *Escherichia coli* and *Deinococcus radiodurans*,” Dr. Sergey Korolev, Saint Louis University

**Roshan Babu**, Rivermont Collegiate, “Pore Forming Activity of Mutant Forms of Bax:  $\Delta$ C19Bax (C62A, C126A),” Dr. Paul Schlesinger, Washington University

**Sneha Bagavandoss**, Marquette High School, “Dopamine Modulates Neuronal Circuitry in the Stress Response Through a D1 Dopamine Receptor,” Dr. Wendi Neckameyer, Saint Louis University

**Matt Benson**, Mascoutah Community High School, “Immobilizing Capacity of Bilirubin Oxidase in Nafion® Polymers in an Air Breathable Biocathode,” Dr. Shelley Minter, Saint Louis University

**Sonia Boodram**, Parkway West High School, “The Effect of Nicotine on the Release of NE from Synaptic Vesicles,” Dr. Amy Harkins, Saint Louis University

**Adam Brandt**, Timberland High School, “Characterizing Defects with Magneto Absorption,” Dr. Sophia Hayes, Washington University

**David Bruns-Smith**, Ladue Horton Watkins High School, “Saturation Effects in Microchannel Plate Detectors in the Photodetachment of Iodine Ion,” Dr. Richard Mabbs, Washington University

**Lukas Bundonis**, Ladue Horton Watkins High School, “Opioid Modulation of Mouse Stem Cell Neural Differentiation,” Dr. Mariana Beltcheva, Saint Louis University

**Tess Butcher**, Crossroads College Preparatory School, “A Model of Global Warming and Its Influence on Policy Making,” Dr. Ramesh Agarwal, Washington University

**Audrey Dang**, Lindbergh High School, “Optimizing a Laccase and Anthracene-Modified Chitosan Biocathode,” Dr. Shelley Minter, Saint Louis University

**Anchana Dominic**, Visitation Academy, “Comparisons of Equal Interval Retrieval and Expanded Retrieval,” Dr. David Balota, Washington University

**Tom Evashwick**, Clayton High School, “Analysis of Retinoblastoma Protein Levels in Multiple Myeloma Cells,” Dr. Michael Tomasson, Washington University

**Luba Ezerskiy**, Parkway West High School, “Mechanism of Morphine Inhibition of Synapse Formation in Primary Astrocyte-Neuron Co-Cultures,” Dr. Mariana Beltcheva, Saint Louis University

**Paul Flasiński**, Marquette High School, “Histone Modification’s Effect on Gene Expression in *Drosophila melanogaster*,” Dr. Joel Eissenberg, Saint Louis University

**Liron Ganel**, Parkway Central High School, “A Study of the Effect of Cations on KirBac 1.1,” Dr. Decha Enkvetchakul, Saint Louis University

**Dina Ghosh**, Eureka High School, “Collection of Sex Pheromone in Brown House Snake *Lamprophis fuliginosus*,” Dr. Robert Aldridge, Saint Louis University

**Rupsha Ghosh**, Visitation Academy, “The Exploration of the Storage of Uric Acid in the Large Intestine of Snakes,” Dr. Robert Aldridge, Saint Louis University

**Liz Godar**, Villa Duchesne Oak Hill School, “The Response of Lead Sulfide in Groundwater to Carbon Dioxide Leakage from Deep Formations,” Dr. Young-Shin Jun, Washington University

**David Goldfeld**, Parkway North High School, “The Integration of Carbon Nanostructures in Patternable Microfluidic Biofuel Cell Electrodes,” Dr. Shelley Minteer, Saint Louis University

**Zach Gornet**, MICDS, “Application of Structural and Chemical Properties of Triclinic and Hexagonal Birnessite Cat-Ion Exchange,” Dr. Jeffrey Catalano, Washington University

**Jodie Guller**, Parkway North High School, “Impact of Caffeine on Brain Development in Preterm Infants,” Dr. Amit Mathur/Dr. Terrie Inder, Washington University

**Amy Hacker**, Wentzville Holt High School, “Using Nanoporous Gold as a Platform for Biomarker Recognition by Electrochemical Detection of an Oxidation Product,” Dr. Keith Stine, UM-St. Louis

**Adam Hockman**, Timberland High School, “The Identification of Acquired Mutations in Mitochondrial DNA Using Bioluminescent Photon Emission,” Dr. Peter Zassenhaus, Saint Louis University

**Eric Hsu**, Marquette High School, “Expression and Function of Sodium-Dependent Myo-Inositol Transporter 2 Protein,” Dr. Richard Ostlund/Dr. Chaya Gopalan, Washington University

**Phillip Hsu**, Marquette High School, “Role of Sodium-Dependent Myo-Inositol Transporter 2 Protein in the Transfer of Inositols,” Dr. Richard Ostlund/Dr. Chaya Gopalan, Washington University

**Sarah Huynh**, Affton High School, “The Effects of pH and Free Chlorine on the Solubility of Platternerite (PbO<sub>2</sub>),” Dr. Daniel Giammar, Washington University

**Gabby Inder**, Clayton High School, “The Significance of Genetic Mutations in the Tissue Nonspecific Alkaline Phosphatase (TNSALP) Gene in Hypophosphatasia Patients,” Dr. Steven Mumm/Dr. Michael Whyte, Washington University

**Saya Jacob**, Ladue Horton Watkins High School, “Expression of a Putative Non-specific Phospholipase C in Arabidopsis (PLC514),” Dr. Xuemin (Sam) Wang, UM-St. Louis/Donald Danforth Plant Science Center

**Bria James**, Lutheran High School North, “The Role of Oxidized LDL in Chronic Inflammation,” Dr. Rajeev Aurora, Saint Louis University

**Will Johnston**, MICDS, “The Structure and Function of Pet28A Isopropylmalate Dehydrogenase,” Dr. Joseph Jez, Donald Danforth Plant Science Center

**Ravi Kasinadhuni**, Marquette High School, “Dopamine Receptors in *Drosophila melanogaster* in Relation to Stressors,” Dr. Wendi Neckameyer, Saint Louis University

**Andrew Kastner**, Saint Louis University High School, “Effects of Ibotenic Acid Lesions on the Globus Pallidus on ISS after Sleep Deprivation,” Dr. Michael Anch, Saint Louis University

**Rishub Keelara**, MICDS, “Pore Forming Activity of Mutant Forms of Bax: Full Length Wild Type Bax and Mutant C62A, C126A,” Dr. Paul Schlesinger, Washington University

**Travis Knight**, Hazelwood West High School, “The Crystallization and X-ray Diffraction of Sulfathiazole Polymorphs and Solvates,” Dr. Nigam Rath, UM-St. Louis

**John Lee**, Parkway Central High School, “The Synthesis and Spectroscopy of Organocobalt Compounds,” Dr. John Bleeke, Washington University

**Kenny Lu**, Parkway Central High School, “Electrostatics and Dispersion Interactions in Arene Molecules,” Dr. Michael Lewis, Saint Louis University

**Michael Lublin**, John Burroughs School, “Correlation of Stratigraphic Layers in Missouri Using Mass Spectrometry,” Dr. Robert Ripperdan, Saint Louis University

**Shamaita Majumdar**, John Burroughs School, “Comparison of Adult and Neonate Response to Respiratory Syncytial Virus,” Dr. Laurie Shornick, Saint Louis University

**Alex Markov**, MICDS, “PET 28A IPMDH-3 Structure and Function,” Dr. Joseph Jez, Donald Danforth Plant Science Center

**Nevatha Mathialagan**, Marquette High School, “The Effects of the DIP1 Mutation on Seed Viability in *Arabidopsis thaliana*,” Dr. Wenyan Xiao, Saint Louis University

**Kunal Mathur**, Marquette High School, “Novel Peptidomimetics for Probing Mitochondrial Membrane Potential within Human Epidermal Carcinoma Cells,” Dr. Vijay Sharma, Washington University

**Tony Melillo**, Saint Louis University High School, “Streamlining a C++ Program to Increase the Accuracy and Efficiency of Velocity-Map Imaging,” Dr. Richard Mabbs, Washington University

**Ben Minden-Birkenmaier**, Saint Louis University High School, “Correlating the Behavior of Physical and Numerical Models of Structures,” Dr. Shirley Dyke, Washington University

**Rishi Mohan**, Francis Howell High School, “Experimental and Computational Studies of the Photocatalytic Decomposition of Chemical Weapon Simulants,” Dr. Ryan McCulla, Saint Louis University

**Parishi Patel**, Edwardsville Senior High School, “Genes Affecting Glutamate Receptor Expression in *Drosophila melanogaster*,” Dr. Faith Liebl, SIU-Edwardsville

**Charles Qin**, Parkway Central High School, “Effect of ATM on AMPK Activation,” Dr. Jonathan Fisher, Saint Louis University

**Meredith Redick**, Clayton High School, “Intracavity Laser Absorption Spectroscopy of Transition Metal Diatomic Molecules: Electronic Transitions of Titanium Fluoride in the Near Infrared Spectral Region,” Dr. James O'Brien, UM-St. Louis/Dr. Leah O'Brien, SIU-Edwardsville

**Ally Renth**, Mascoutah Community High School, “Investigating the Role of ATM in Insulin Signaling,” Dr. Jonathan Fisher, Saint Louis University

**Mike Rizzo**, MICDS, “Simulating the Combination of Drugs Applied to Different Targets in the Kinetic Pathway of Epidermal Growth Factor Receptor in Non-small Cell Lung Cancer,” Dr. Chung Wong, UM-St. Louis

**Amit Roy**, John Burroughs School, “A Study of the Correlation Between Area-Level Characteristics and the Walkability of St. Louis,” Dr. Ross Brownson, Washington University

**Ben Sammons**, Francis Howell High School, “Expressing Salutaridine Synthase Gene and Salutaridinol 7-O-Acetyl Transferase Gene in Yeast *Pichia pastoris*,” Dr. Toni Kutchan, Donald Danforth Plant Science Center

**Frank Schumacher**, Saint Louis University High School, “Investigation of Drug-Binding Kinetics on the Signal Transduction Pathway of Non-Small Cell Lung Cancer,” Dr. Chung Wong, UM-St. Louis

**Ali Sehizadeh**, Clayton High School, “Advancing the Methods of Measuring the Degree of Laterality in Human Facial Expressions,” Dr. J. Gail Neely, Washington University

**Chelsea Shapland**, Lafayette High School, "Facial Expression in Human Communication: A Laterality Pilot," Dr. J. Gail Neely, Washington University

**Monica Sharma**, Eureka High School, "Association of Information from Heart Rate Patterns on Holter Recordings and Sudden Cardiac Death in the Elderly," Dr. Phyllis Stein, Washington University

**Anjali Shekar**, O'Fallon Township High School, "Fluorescence Characterization of the Calcium Binding Domain Mutant E99QE143Q of NOX5," Dr. Chin-Chuan Wei, SIU-Edwardsville

**Diane Shen**, Parkway South High School, "Determination of the Impact of Caffeine on Preterm Infants Through Diffusion-Tensor Imaging," Dr. Amit Mathur/Dr. Terrie Inder, Washington University

**Mindy Siebert**, Maplewood-Richmond Heights High School, "Effects of Ibotenic Acid Lesions of the Globus Pallidus on ISS after Sleep Deprivation," Dr. Michael Anch, Saint Louis University

**Shivani Singh**, Missouri Academy of Science, Mathematics and Computing, "Determining if Sleep Apnea is a Risk Factor for Sudden Cardiac Death in the Elderly Using Holter Recordings," Dr. Phyllis Stein, Washington University

**Caleb Small**, Chaminade College Preparatory, "Stability Analysis of Nanoaluminum Particles Capped with Epoxydodecane," Dr. Steven Buckner, Saint Louis University

**Ted Staley**, MICDS, "Electrochemical Oscillations of a Nickel Electrode," Dr. Istvan Kiss, Saint Louis University

**Becca Steinberg**, Clayton High School, "Intracavity Laser Absorption Spectroscopy of Transition Metal Diatomic Molecules: Electronic Transitions of Palladium Dimer in the Near Infrared Spectral Region," Dr. James O'Brien, UM-St. Louis/Dr. Leah O'Brien, SIU-Edwardsville

**Tanvi Subramanian**, John Burroughs School, "Calculating the Vaporization Enthalpies and Vapor Pressures of Different Perfluorocarbons Using Gas Chromatography," Dr. James Chickos, UM-St. Louis

**Quin Thames**, Saint Louis University High School, "An Analysis of Dynamic Behavior in Physical and Numerical Models," Dr. Shirley Dyke, Washington University

**Luke Thampy**, Westminster Christian Academy, "Substituent Effects in Arene-Arene Interactions," Dr. Michael Lewis, Saint Louis University

**Shaun Vaidyan**, Ladue Horton Watkins High School, "Factors Affecting the Accumulation and Degradation of GFP-Reporter Proteins," Dr. Dorota Skowrya, Saint Louis University

**Sneha Viswanathan**, Clayton High School, "Enhancing Catalytic Activity of a Heat-Pressed Air-Breathable Bilirubin Oxidase Biocathode," Dr. Shelley Minter, Saint Louis University

**Casie Wang**, Marquette High School, "Design and Validation of Radiolabeled and Fluorescent Peptides as Probes of Mitochondrial Membrane Potential," Dr. Vijay Sharma, Washington University

**Cara Welker**, Parkway South High School, "Parasitism of Leaf-Tying Caterpillars in Various Oak Species and Forest Levels," Dr. Robert Marquis, UM-St. Louis

**Marta Wells**, Lafayette High School, "Nanoporous Gold as a Support for Competitive Immunoassays in Prostate Cancer Diagnosis Using UV-Visible Spectrophotometry," Dr. Keith Stine, UM-St. Louis

**Tom Winter**, Westminster Christian Academy, "Measuring Phase Change Enthalpies of Perfluorocarbons Using Gas Chromatography," Dr. James Chickos, UM-St. Louis