

# Undergraduate Research Day April 23, 2008, McKeldin Library

## Oral Presentations

1:45-2:45 pm

### *Room 1*

**The Role of Humanitarian Intervention during Ethnic Conflict in Rwanda and Burundi and the Impact on Durable Peace**

Nidhi Bouri

*Government and Politics*

*Senior Summer Scholar/Departmental Honors*

**Activism and Archaeology in the Parole Community of Annapolis, Maryland**

Erin Milloy McCord

*Anthropology*

*Senior Summer Scholar*

### *Room 2*

**It Looks Like We Traded the Store: Log Cabin Republicans and Their Activist Efforts in the 104th Congress**

Andrew Mark Bowen

*History*

*Senior Summer Scholar*

**Presidential Strategy behind Supreme Court Nominations**

Cyrus Aghamolla

*Government and Politics*

*Senior Summer Scholar*

**Testing Geometric Brownian Motion: An analytical look at the Black Scholes Option Pricing Model (PP)**

Julian Lamy

*Mathematics*

*Departmental Honors*

### *Room 3*

**Tert-butylperoxyl Radicals and Electron-Transfer Agents in the Oxidation of Tertiary Amines to Iminium Ions with Dirhodium(II) Caprolactamate**

Caitlyn L. Edgley

*Chemistry and Biochemistry*

*Howard Hughes Medical Institute/Departmental Honors*

**Hydroxyapatite Hydrogels**

John Lin

*Bioengineering*

*ASPIRE*

**Modeling and Simulation of Pursuit Control Laws in Bat Prey Capture**

Ermin Wei

*Electrical and Computer Engineering*

*Senior Summer Scholar*

**Poster Presentations  
Independent Projects**

*Section A*

*Listed by College*

**Agriculture and Natural Resources**

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**Monitoring Body Temperature of Post Partum Dairy  
Cows Using an Intra-vaginal Device**

Lisa Bornt

*Animal Science*

**Searching for Archaea in the Phyllosphere of Apple Trees**

Robin Choudhury

*Plant Science and Landscape Architecture*

**Does Nutritional Supplementation Affect Zebrafish Gamete  
Production and Survival through Metamorphosis?**

Curtis Crouse

*Animal and Avian Sciences*

**Lorikeet Nutrient Digestibility**

Max Gordon and Cindie Hengen

*Animal and Avian Science*

**Antioxidants in Milling Fractions of Wheat**

Stephanie Schreiber

*Nutrition and Food Science*

**Architecture**

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**Excavations in the Vesuvian Region & Roman Garden Documentation**

Anita Hsieh

*Architecture*

**Arts and Humanities**

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**Multimodal Compositions in the Writing Center**

Sarah Goldberg

*English*

**Female property laws 17th&18th centuries**

Peg Maguire

*History*

**Arts and Humanities continued**

**How Media Coverage Effects Teens Engaged in Violent Crimes**

Tahera Sparks

*English*

**Behavioral and Social Sciences**

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**Children's Word Learning: Differentiating Between Nouns and Verbs**

Shannon Elizabeth Auxier

*Hearing and Speech Sciences*

**Special Kids, Special Teachers, Special Education: The Value of Labels  
in a Special School for "Special" Youth**

Danielle Mauk

*Sociology*

*Departmental Honors*

**Billy the Ballerina**

Brooke Pfeffer

*Anthropology*

**Chemical and Life Sciences**

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**Labeling, Isolation, and Microarray Analysis of Nascent RNA via  
BrU and BrUTP in vitro and in vivo**

Michael Brodeur

*Cell Biology and Molecular Genetics*

**Allylic Oxidation of Terpenes Using Dirhodium Caprolactamate**

Grace Chiou

*Chemistry*

*Beckman Scholar*

**Role of Ca<sup>2+</sup> permeable AMPA receptors in Visual Cortex Synaptic Plasticity  
Following Brief Visual Deprivation**

Kevin McGehrin

*Biology*

*Departmental Honors*

**Selection For FIV Resistance To An Inhibitor of HIV-1 Budding**

Prashant Panchal

*Cell Biology and Molecular Genetics*

**Education**

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**Education in Ethiopia**

Girume Ashenafi

**Realizing the Economic Prowess of Individuals with Learning Disabilities: the Teacher, the Employer and the Student**

David Burstein

*Special Education*

**Engineering**

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**Smart Containers**

Natalija Djolevic

*Chemical Engineering*

**Impact of Integrated Superlattice  $\mu$ TEC Structures on Hot Spot Remediation**

Viatcheslav Litvinovitch

*Mechanical Engineering*

**Real-time Road Traffic Simulation**

David Alan McLaren

*Aerospace Engineering*

**The Regional Integrated Transportation Information System Mapping Application**

Julian Moyse and Jeffrey Steyer

*Civil Engineering*

**VDOT Incident Management System**

Dave Rabrun

*Civil and Environmental Engineering*

**Tapping the Tidewater: A Political Account of Western Maryland's Bid for the Mid-Atlantic**

Dylan Rebois

*Mechanical Engineering*

**Characterization of Magnetic Thin Films towards the Direct Measurement of Magnetic Phase Contrast**

Maeling Janelle Nicole Tapp  
*Material Science and Engineering*  
*Women in Engineering Research Fellowship/Departmental Honors*

## **Public Health and Human Performance**

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### **Step it UP: Increasing Stair Usage in a College Population**

Erin Kaye Howie  
*Kinesiology*  
*Departmental Honors*

### **Parenting of Black/White Biracial Children**

Dawnyea Dominique Jackson  
*Family Science*  
*McNair Scholar*

### **Practice and Transfer Effects on Grip Force Control in Children with DCD**

Davi Augusto Garcia Mazala  
*Kinesiology*

### **Eating Behaviors, Food Consumption, and Hunger of Low-Income, Urban Students**

Zainab Okolo  
*Family Science*

### **How Has the Civil War in Sierra Leone Manifested The Use of Prosthetic Devices?**

Omolola Olakanye  
*Kinesiology*

### **Contraction-induced Phosphorylation of the Mitogen Activated Protein Kinase (MAPK) Pathway in Skeletal Muscle of Female Mice**

Sean M. Sweeney  
*Kinesiology*

## **Individual Studies**

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### **The Future of Work: Understanding the Attitude towards Technological Changes in the Workplace among Undergraduate Students at UMD**

Adanze Okoroha  
*Construction Management*

# College Park Scholars

## *Section B*

### Discovery Projects

Discovery Projects are designed to empower college students to conduct primary research. In a Discovery Project, students seek a scholarly answer to a research question of significant personal interest. The research process they follow and their reflection on it lead to greater understanding of the process by which society creates knowledge.

### Community Based Research Discovery Projects

#### **Art Education at Joe's Movement Emporium**

Michelle Clementi and Jennifer Routh

#### **A Tipping Point: Use of Shelters by Homeless Women in Montgomery County**

Marianne Clinton, Caitlin Reichbach, and Monica Stern-Morales

### Traditional Discovery Projects

#### **Educating Autistic Children**

Amanda Ruderman

#### **Foreign Language Acquisition and Elementary School Requirements**

Christina "Maria" Jaunakais

#### **College Major Selections**

Taya Aillery

#### **Is the Electoral College Necessary for the 2008 Election?**

Maeve Atkins

#### **Prescription Drug Abuse**

Brian Custer

#### **Voter Turnout Among 18-24 Year Olds**

Neil Deshmukh

#### **Religion in Schools**

Jeremy Dillon

## Discovery Projects continued

### **New Technology and Its Impact on Popular Culture: Focusing on Celebrity Blogs**

Rachel Faust

### **Drugs/Brain/Adolescents**

Remy Feldman

### **Election 2008: Healthcare and the Youth Voter Block**

Connor Glennon

### **International Students on Campus**

Casey Gold

### **Adderall: The Perfect Way to Get an A for Whom?**

Samantha Hanagan

### **How Social and Economic Inequalities Lead to the Large Crime Rates of the Brazilian Favelas**

Kate Hogan

### **The Economic Impact of Illegal Immigration**

Salvatore Miragliotta

### **Infant Mortality in Brazil: A Look at Government's Role**

Adrienne Beaudoin

### **Aspects of Terrorism**

Michael Billinger

### **Protein Digestibility in Lorikeets**

Cindie Hengen

### **Evolutionary Basis for Female Mate Selection in Humans**

Casey Miller

### **The Correlation Between Defense Mechanism Usage and Gender**

Sharon Na

### **How Does the UMCP Campus Handle Reports of Rape and How Can the System Be Improved?**

Casey Gold

Vanessa Nagengast

## Discovery Projects continued

### **Medical Malpractice Restrictions**

Jurgen Rivero

### **Changes in Medical Insurance Due to Medical Outsourcing**

Robyn Selsor

### **Internet and the Trucking Industry**

Jacob Silvermets

### **Spectacular Growth in Bangalore**

Aravind Sreenath

### **Are There Peer Pressure Differences Between Social Science Majors and Natural Science Majors?**

Ariel Ursitti

### **Children's Health Care**

Elliot Wertheim

### **Social Networking in America**

Andrew Wilkins

## **Gemstone**

Junior Teams

*Section C*

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The Gemstone Program at the University of Maryland is a unique multidisciplinary four-year research program for selected undergraduate honors students of all majors. Under the guidance of faculty mentors and Gemstone staff, teams of students design, direct and conduct significant research exploring the interdependence of science and technology with society. Gemstone students are members of a living-learning community comprised of fellow students, faculty and staff who work together to enrich the undergraduate experience. This community challenges and supports the students in the development of their research, teamwork, communication and leadership skills. In the fourth year each team of students presents its project in the form of a thesis to leaders in the field, and the students complete the program with a citation and a tangible sense of accomplishment.

### **The Effects of Physical Activity on Cognition in Young Adults Age 18-25**

Dina Carlin, Shaina Castle, Maia Chisholm, Jon Facemire, Allison Fleming, Molly Goldman, Briana Lee, Jenna Schulz, and Margaret Wells

### **Wind Energy Options for the University of Maryland, College Park**

Phil Hannam, Rachelle Bye, Alex Meiseles, Sumegha Singhanian, Erin Conroy, Amy Zhang, Matt Kosmer, David Green, and Emma Roach



## Gemstone Juniors continued

### **Effectiveness of an Electric Fence in Reducing Mammalian Predation on Diamondback Terrapin Nests**

Gail Baltazar, Curtis Bennett, Sona Chaudhry, Marjorie Clemens, Lacy Gilmer, Sam Lee, Tom Parker, Emily Peterson, Jessica Rajkowski, Karen Shih, Sasika Subramaniam, Rachel Wells, and Jessica White

### **Students Helping Implement Natural Energy**

Mark Lomaskin, Rebecca Mahony, Lindsay Mooney, Joseph O'Brien, Ryan Robinson, Charlotte Sanford-Crane, and Adam Teitelbaum

### **Campus Navigation for the Blind**

Steve Caperna, Andrew Sun, James Yeh, Avishkar Luthra, Chris Cheng, Jansen Sheng, Paul Wong, Lee Stearns, Brendan O'Leary, Victoria Fan, Junghee Cho, and Roni Tessler

### **VOTE-CP, Voice of the Electorate Collegiate Participation**

Sarah Choi, Alka Jhaveri, Kristen Keefe, and Supraja Murali

### **ANSWER Poverty**

Jason George, Maryann Girgis, Maira Fonseca, Miriam Langer, Alex Mont, Shaun Robinson and Matt Sriram

### **Crossing the Cultural Divide: Assessing the Needs of the Local Immigrant Community**

Victoria Chisholm, Nancy Chow, Stephani Fei, Jenny Finder, Sarah Gan, Nicole Hosseinipour, Priya Kumar and Allison Wilson

### **FASTR: Finding Alternative Specialized Travel Routes**

Jake Cigna, James Czisny, Pratik Davé, Caitlin Hickey, Jessie Holzberger, Jeff James, Megan Kuhn, Siwei Kowk, Bryan O'Haver, Emily Ryan, and Laura Slivinski

### **Gemstone: Team HEAT**

Adam Blechman, George Braker, Kara Chaprka, Brad Chodnicki, Esther DuBow, Brandon Hall, Edward Kao, Kelly Pernia, Timothy Sy, Matt Thompson, and Jordan Tucker

### **Engineering Aerotolerance in Electricity Producing Bacteria**

Jenny Axe, Blake Billmyre, Christina Donnelly, Kevin Duty, Gregory Hitz, Kevin Lin, Mike Mergler, Zach Neuman, Lauren Trager, and Allison Weatherford

### **Glutamine Supplementation at the University of Maryland**

Daniel Ahmad, Megha Bansal, Liz Dillon, Shauna Dorsey, Aysha Jawed, Perry Katz, Andy Newton, Ashley Palaigos, Anita Sahu, Curtis Sharkey, Devang Sharma, and Sarah Tostanoski

## Gemstone Juniors continued

### **Risky Business**

Mark Limsam and Sarah Semmel

### **No More Needles**

David Baumgarten, Nicole Chait, David Chen, Linh Do, Jimmy Johnston, Keran Lu, Kevin Quinn, Ben Tylka, Vanessa Vichayakul, and Coral Zhou

## **Gemstone 104: Topics in Science, Technology and Society** *Section D*

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### **The Oily Mess: The Rise and Fall of Pithole**

Camila Alvarado, Haena Cho, Kathy Jee, and Tina Liu

### **The History of Ethanol Fuel: Advocacy and Abandonment**

Rima Bakhru, Becky Brinsko, and Laura Hereford

### **Baltimore Gas and Electric: Growing Pains**

Rebecca Certner, Stephen Gan, Stevephen Hung, Vadim Kashtelyan, and Rita Wu

### **Policy Changes to Ethanol Production: WWI - WWII**

Grace Chang, Alisa Chen, Avery Hackett, Greg Iannuzzi, Mary Jung

### **The Effect of Popular Culture on the Media's Portrayal of the 1902 Anthracite Coal Strike**

Elizabeth Ahn, Christopher DeCaro, Christine He, and Cory Mekelburg

### **The Rise and Fell of Ethanol in the Early 20th Century**

Andrew Chang, Sydney Chavis, Sarah Dobson, and Mark Elliot

### **Petroleum Ownership Laws and the Extraction of Petroleum from Cherokee Lands**

Laura Freyman, Valentina Lopez, Estefi Medina, and Adin Shuchatowitz

### **Tracing the Power Alcohol Movement of the 1920s and 1930s**

Hannah Jardine, Kelsey Nadig, Hannah Swirnow, and Sarah Watt

### **Maryland's Charcoal Iron Industry**

Elyse Geibel, Kalman Knizhnik, James McCarthy, Natasha Savranskaya, and Sharad Thaper

## Gemstone 104 continued

### **Self Service vs. Full Service**

Patricia Keane, Brian Kwong, Jessica Lieberman, and Mary Tellers

### **Controversy over Surface Mine Legislation in the Appalachian Region**

Karen Jo, Hailey Lin, and Louis Wu

### **The Sociology of Coal Extraction: Tragedy to Change**

Katherine Mann, Stephanie von Numers, and Johnny Wu

### **Team Fuels: Ethanol and Oil at the Turn of the Twentieth Century**

Kevin Matuszak, Zach Rodgers, and Sowmya Swamy

### **Popular Response to Petroleum Conservation Efforts and Propaganda during World War II**

Akhila Iruku, Kevin McGehee, Vin Paruchuri, and Dmitriy Portnyagin

### **Economic Implications of the Clean Air Act**

Patrick Feng, Kelly Grob, Jeffrey Lue, Sara Moghaddam-Taaheri, Vidya Sathyamoorthy

### **Remediation of the Baltimore Oil Terminal**

Michael Andrews, Lauren Ficco, Adam Pampori, MengMeng Xu and Edward Toumayan

### **Changing Societal Attitudes toward Biofuel Research and Consumption**

Sasha Derkacheva, William Guarino, Christine Lim, Neha Pancholi

### **Trends in Ethanol Consumption from 1973-1984**

Jarren Ginsburg, Christina Hitz, Henry Jin, and Michelle Parks

### **Resurrecting Abandoned Oil Wells**

Vivey Chen, Max Koehler, Stephanie Porter

### **The Consolidation Coal Company, Success Through The Ages**

Christine Kim, Michael Price, Tatsuya Saito and Jessie Tsai

### **The Norfolk & Western Railway - Effects of Expansion on the Labor Force**

Jacob Buchanan, Maria Chang, Ethan Schaler, Nick Van Aartsen, and Pragun Vohra

### **The Effects of the Oil Crisis of 1973 on the Economy of Maryland**

Mark Conley, Jade Lee, Taylor Schulz, and Kenny Voshell

### **Societal and Industrial Effects of the Transition from Wood to Coal in the 19th Century**

Monica Shim, Andrew Skoda, Jeffrey Tseng, and Matt Wooten

### **And the Oscar Goes to ... Coal?!**

Eran Barnoy, Hannah Miller, Christine Tobin, Elizabeth Weiner, and Christian Weber

**POLITICS - Preservation of Lands Involving the Invaluable Coal Seams**

Esther Blinkoff, Rick Urbanski, Justin Wong, and Melanie Wong

**Failure of the Energy Security Trust Fund**

Charles Chiang, Edna Ezzell, Christine Perry, Eshani Tarpara, and Mary Yanik

**Political Debates Surrounding the Chalk Point Generating Station**

Jennifer Au, Samantha Zenlea, and Patrick Zhou

**Blue Crab: Population in a Pinch**

Anne Axenfeld, Zao Chen, Bing Geng, and Junjie Hao

**Offshore Oil Drilling and the Submerged Lands Act of 1953**

Lena Binzer, Liz Chen, Syyu Chen, and Luciana Debenedetti

**Coal Extraction Economics in Allegany County Between WWI and WWII**

Anthony Bonomo, Ben Li, Ann Sun, and Diana Zhong

**The Development of Coal Slurry Technology**

Timothy Briner, Neelam Parikh, Jane Schulte, and Andy Tomaschko

**19th Century Fuel Cycle and its Modern Relevance**

Cal Burton, Jessica Cha, Yonaton Gefen, Sarah Green, and Jasjeet Khural

**Politics of Petroleum in Maryland During and After the 1973 Oil Crisis**

Nicholas Deckard, Laura Li, Jessica Cutler, Sean Henely, and Robert Rush

**Environmental Impacts of Extracting Wood for Fuel**

Angela Lee Max, Kathy Tang, and Levon Mkrtchyan Wolf

**Tapping the Tidewater: A Political Account of the Western Maryland's  
Bid for the Mid-Atlantic**

Jana Lovell, George Moomau, Max Nehl, and Dylan Rebois

**HOW: History of Wagner's Point**

Colin Kennedy, Susan Kim, Tana Luo, Emmaline Mlawer, and Vladimir Zhodzishsky

# A Scholars Program for Industry-Oriented Research in Engineering (ASPIRE)

## *Section E*

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ASPIRE seeks to broaden the educational experience of undergraduate engineering students through direct involvement in real-world engineering projects. ASPIRE offers students a unique opportunity to venture beyond the classroom through collaboration with engineering faculty and staff on mutually interesting projects with industry relevance.

### **The Effects of Charged Monomers on the Binding Capabilities of Molecularly Imprinted Hydrogels**

Omar Ayyub  
*Bioengineering*

### **Polymer Coatings to Enhance the Biocompatibility of Artificial Lungs**

Adam Behrens  
*Chemical Engineering*

### **Peo Based Block Copolymers as All-Solid State Battery Electrolyte**

Kathleen Farhang  
*Bioengineering*

### **Creation and Analysis of PEGDA and EHD Multilayer Scaffold for Orbital Bone Application**

William James Richbourg  
*Bioengineering*

## **Howard Hughes Medical Institute (HHMI)**

### *Section E*

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HHMI funds innovative proposals to improve undergraduate education in the biological sciences at selected American colleges and universities.

### **Identifying Critical Positions in CheA That Mediate Its Binding to CheY in the Chemotaxis Signaling Pathway of E. Coli**

Sarah Posner  
*Cell Biology and Molecular Genetics*  
*Departmental Honors*

**The Joint Institute for Food Safety and Applied Nutrition  
(JIFSAN)**  
*Section E*

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**Evaluation of Two Commercial ELISA Test Kits for Detection of Soy Protein**  
Nishant Kumar  
*Biology*

**Louis Stokes Alliance for Minority Participation (LSAMP)  
Program**  
*Section F*

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**An Analysis of the Conformational Change of Poly(Ethylene Glycol) using  
Dynamic Light Scattering**  
Adedayo Adeniran  
*Chemical Engineering*

**Calculating Viscosity of Fluids through Observation of Brownian Motion**  
Suehyun Cho  
*Physics*

**Communication among Signal Oscillators**  
Bianca Downs  
*Computer Science*

**Study of Concrete Bridge Substructures and Corrosion Damage**  
Jazalyn Dukes  
*Civil Engineering*

**Ternary Functional Graphs and the Discrete Logarithm Problem**  
Christina Frederick  
*Mathematics*

**Swirl Effect on Shock-Induced Mixing in Supersonic Flows**  
Adam Kareem  
*Mechanical Engineering*

**Investigating Syntactic Structures in Sentiment Analysis**  
Ederlyn Lacson  
*Computer Science*

**An Object-Oriented Stated Preference (SP) Mode Choice Web Survey**  
Michael Maness  
*Civil Engineering*

## Louis Stokes Alliance (LSAMP) continued

### **MusicPADD (Paper Augmented Digital Document)**

Robert Owolabi  
*Computer Science*

### **Electromagnetic Wave Propagation in Corrugated Slow Wave Plasma Structure Dr. Milchberg, Institute for Physical Science and Technology**

Darryl Waddy  
*Physics*

### **Effects of Telecommuting on Emission in Maryland**

Lissan Yared  
*Chemical Engineering*

## **Senior Summer Scholars**

### *Section G*

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The Senior Summer Scholars Program is a competitive grant sponsored by the Office of Undergraduate Studies. It provides an exciting opportunity for undergraduate students to enhance their academic experience by spending the summer working closely with faculty mentors on scholarly research or artistic projects.

### **The Schwinger Mechanism and Graphene**

Danielle Allor  
*Physics*

### **Relative Impact of Affect on Performance in Sequential Risk Tasks**

Justin Bonny  
*Psychology*  
*Departmental Honors*

### **The Relationship between Borderline Personality Disorder and Treatment Dropout among African American Drug Users Currently Receiving Residential Substance Abuse Treatment: The Role of Childhood Emotional Abuse**

Stephanie M. Gorka  
*Psychology*

### **Soil Redox Properties as a Function of Soil Carbon Content and Temperature under Saturated Conditions**

Vera B. Jaffe  
*Environmental Science and Policy*

Senior Summer Scholars continued

**Early Childhood Behavioral Inhibition and the Development of Ineffective Social Skills  
and Social Anxiety in Adolescence**

Katherine Korelitz

*Psychology*

**Assessing Approach/Withdrawal Motivation in Middle Childhood: Associations between  
Brain Activity and the Children's BIS/BAS Questionnaire**

Eva Lynn Kwong

*Psychology*

**Development of Synthetic Anion Transport Molecules**

April Lemanski

*Chemistry*

**Infants' Use of Emotional Information to Guide Their Own Behavior  
and to Understand the Behavior of Others**

Jacqueline Leventon

*Psychology*

*Departmental Honors*

**Regulatory Roles of WASP and N-WASP in B-Cell Receptor  
Internalization and Trafficking**

Vicky Lo

*Cell Biology and Molecular Genetics*

**The Schwinger Mechanism and Graphene**

David A. McGady

*Physics*

**Identifying genes in Pseudomonas Aeruginosa Involved in the Cyclic-di-GMP Regulation  
Pathway of Flagella-mediated Motility**

Sao-Mai Nguyen-Mau

*Cell Biology and Molecular Genetics*

**Fitness, Aging, and Cognitive Decline – A Preliminary Investigation**

Janet Savin-Murphy

*Kinesiology*

**Examining Parental and Adolescent Risk-Taking Propensities**

Frances Wang

*Psychology*

*Departmental Honors*