

STUDENT SUMMER RESEARCH POSTER SYMPOSIUM

September 24, 2012 | 4:15 p.m – 5:30 p.m.



LAFAYETTE

Student Summer Research Poster Titles and Authors

A layout of the posters in the Marlo room can be found on the back of this brochure.

Poster No. 1 Measuring Cell Circularity and Spreading on Thermo-responsive Surfaces

Tyler F. Fruneaux, Ashley J. Kaminski, and Lauren S. Anderson

No. 2 Evaluating Cell Attachment as a Function of Serum Content

Ashley J. Kaminski, and Lauren S. Anderson

No. 3 Survey of Macroinvertebrate Species as Biological Indicators of Water Quality in the Bushkill Creek Prior to Dam Removal

Ryan F. Hughes

No. 4 Competitive Feeding Behavior Between The Native Blue Crab, *Callinectes sapidus*, And The Invasive Asian Shore Crab, Hemig

Alex W. Pong and Megan Rothenberger

No. 5 Environmental characteristics and plankton dynamics of Raritan Bay

Thomas Swaffield, Megan B. Rothenberger, and Carolyn Cabrey

No. 6 Pectin Methylesterase expression in *Phytophthora infestans* and *Phytophthora sojae*

Manuel Ospina-Giraldo, Jason C. Ewer, and Juan Hernandez

No. 7 Transformation of the Chitin Synthase gene in *Phytophthora infestans*

Abdul Q. Dobson, Bradford C. Borman, and Manuel Ospina-Giraldo

No. 8 Improving Decision-Making and Performance of Surgical and Obstetrics-Gynecology Residents Under Stress

Andrew Kamilaris, Leo Spear, Elaine Reynolds, and Bill Boyer

No. 9 Effects of quorum sensing inhibitors on *Pseudomonad* biofilms in sandy soil

Tiffany A. Kimmel and Laurie Caslake

No. 10 Pollen tube escape by degradation of the pollen grain wall

Sumana Rao, Mai Nguyen, Andre Rafizadeh, Lenny Nguyen, and Anna Edlund

No. 11 Survival of Desert Crust Isolates to UV Exposure

Elizabeth B. Rentschler and Dr. Laurie Caslake

No. 12 The Functionality of Myd88 through siRNA inhibition

Kyle C. Tucker, Jacob Ricca, and Robert Kurt

No. 13 Peptide Inhibition of MYD88 in 4T1 Cancer Cells

Jacob Ricca and Robert Kurt

No. 14 Automated Biological Shape Recognition Using Blum's Medial Axis

Sean P. Waters and Rob Root

No. 15 Pd/Pt compounds of 1,1'-bis(disubstitutedphosphino)ferrocenes: dative bond formation between the Fe and Pd/Pt atoms

Chelsea L. Mandell, Margaret A. Tiedemann, Katherine M. Gramigna, William G. Dougherty, W. Scott Kassel, and Chip Nataro

No. 16 Computational Analysis of the Transitional State Theory for a series of SN2 reactions

Long B. Nguyen and Kenneth Haug

No. 17 Photo-Assisted Degradation of Ibuprofen in the Environment with Natural Organic Matter

Elise V. Meade and Steve Mylon

No. 18 Thin Film/Membrane Formation in Microfluidic Channels

Asad Akram and Joshua A. Levinson

No. 19 Kinetics of Dying Cotton Fabric with Fusticwood

Xingjian Ma and Polly Piergiovani

No. 20 Characterization of Stimulus Responsive Nanomaterials

Shanjun Qiao, Filippo Gambinasi, and James K. Ferri

No. 21 Modeling and Simulation of Hydrogen Diffusion and Reaction in Semiconductor Materials

Isaac S. Lavine, Joshua A. Levinson, and Kenneth G. Glogovsky

No. 22 Mixotrophic Growth of Microalgae *Chlorella Vulgaris* and *Scenedesmus Obliquus*

Yue Yin and Javad Tavakoli

No. 23 Deconvoluting Cohesion and Adhesion in Glassy Polymer Thin Films

Nevin W. Whalley, Hallie J. Zeller, and James K. Ferri

No. 24 Reducing the Computational Cost of Indoor Ratio-based Localization

John F. Keller and Xiaoyan Li

No. 25 C++ Framework for Model Simulation | Naing Htet

No. 26 Soil Structure Interaction Laboratory

Martin J. Anderson and Michael J. Hezel

No. 27 Pervious Concrete | Antonio A. Alves and Stephen D. Berkin

No. 28 Future Worlds: Investigating an Intelligent Cyberlearning System for Interactive Museum-Based Sustainability Modeling

Rebecca A. Citrin

No. 29 Fate of Estrogenic Compounds in Lehigh Valley's Wastewater

Emily M. Crossette

No. 30 Compost Technology, Management, and Nutrient Analysis

Andrew S. Goldberg, Arthur D. Kney, and Dale Shoemaker

No. 31 Bushkill Creek Watershed: Nutrient Analysis

Stacey-Ann Y. Pearson and Hannah Griesbach

No. 32 Structural Analysis Using Abaqus

Michael S. Tsai and Apratim Mukherjee

No. 33 Interaction of a Percutaneous Ventricular Assist Device with the Cardiovascular System

Yemai Liu

No. 34 Solar at Night: A Thermodynamic and Cost Analysis of Solar Syngas

Rijan Maharjan and Julia F. Nicodemus (both pictured on cover)

No. 35 Modeling Qualifications Based Selection using Agent Based Modeling in Netlogo

Lisa M. DeJoseph

No. 36 A NetLogo model of Biological Decision Making

Ryan C. Himmelwright, Elaine R. Reynolds, and Jeffrey Pfaffmann

No. 37 Visualization of an Agent-Based Model of the U.S. Cellphone Market Through Netlogo's Java API and Mathematica-Link

Kevin J. Myers

No. 38 Model Design and Implementation: The U.S. Cell Phone Market

Andrew J. O'Brien and Christopher Ruebeck

- No. 39** Evolving Recipes: Evolutionary Computation Tracking
Nicholas Orzal, Jeffrey Pfaffmann, and Chris Ruebeck
- No. 40** Model Implied Measures of Risk-Adjusted Returns in Stochastic Volatility Models
Qin Lu, Joshua Cape, William Dearden, William Gamber, and Linh Nguyen
- No. 41** Long-term Financial Needs of Charity-Funded Rural Water Systems: A Case Study in Uganda
Kelsey Lantz
- No. 42** Pakistan Floods: Response and Rehabilitation
Hassaan F. Khan and Amira S. Ahsan
- No. 43** Plowing Food Deserts in the West Ward | *Julia Seidenstein*
- No. 44** LVRC: Economic Variables for the Lehigh Valley
Patrick J. Pozzi and Chris Ruebeck
- No. 45** An Analysis of Lafayette Alcohol Use Data
Laura Brontzman, Emily Landau, and Charles Vincent
- No. 46** Supportive Housing for Young Parents
Kristin Anderson and Dr. Debbie Byrd
- No. 47** Constructing a Database of Easton's Library Records, 1811-1862
Christopher N. Phillips and Gavin Jones
- No. 48** The Generational Mentality Changes through Historical Transformations of State in The Upper Lusatia Region and Eisenhütt
Tia J. Siebold
- No. 49** Howard Buffet is the 'spawn of Jabba the Hutt': Negative Social Judgment in On-Line Comments about Occupy Wall Street
Cameron Roche and Luc Bruggeman
- No. 50** Responding to Domestic Violence: Why Estonia, Latvia, and Lithuania have long avoided establishing comprehensive legislation on domestic violence
Heather M. Hughes
- No. 51** Federalism in Supreme Court Rulings
Sarah Shahmirzadi and John Kincaid
- No. 52** East Asia Image Collection: Building a Digital Repository for History Research and Teaching
Li Guo
- No. 53** The 'Hope of Our Nation': Youth, Propaganda, and Gendered Power Plays in Peronist Argentina, 1946-1955
Thomas Brinkerhoff
- No. 54** Social networks: How to spread a virus?
Gary Gordon and Dorde Rakic
- No. 55** Intrinsically Linked Graphs
Joel Foisy, Cara Nickolaus, Justin Raimondi, Josh Wilson, and Liang Zhang
- No. 56** Sculptural Processes: From Ideas to the Exhibition
Nestor Armando Gil and Mark Adams Tajzler
- No. 57** Behavioral Analysis Approaches to Art Creation
Henry Lam and Luis F. Schettino
- No. 58** Lafayette Brain-Computer Interface Research: Past, Present, Future
Victoria L. Corbit, Jessica F. Cysner, and Sicheng Wang
- No. 59** How Does Education Affect the Problem Solving Abilities of Older Adults Under the Influence of Stereotype Threat?
Taylor J. Brown, Diana Zamora, Lina S. Bajwa, Samantha S. Garcon, and Peter J. Donovick, Ph.D
- No. 60** Bryostatin-1 Improves the Spatial Learning In a Transgenic Mouse Model of Alzheimer's Disease.
Morgan Q. Oskutis, Gabriel S. Johnson, Ashley D. Peairs, and Ping Yi
- No. 61** Individual differences in the open field test predict the outcome of behavioral battery on CB57-BI mice
Larry Z. Sanchez, Ricardo Cosio, Carol Vasquez, and Gabrielle Britton
- No. 62** Effects of diet on seizing behavior in a *Drosophila* model of epilepsy
Blaine Caslin, Andrew Kamilaris, and Elaine Reynolds
- No. 63** Understanding Truancy: Predictors and Intervention Programs
Jaqueline Bible
- No. 64** Procrastination and the post-reinforcement pause in variable ratio schedules
Julia Brodsky and Robert W. Allan
- No. 65** Can infants learn novel words, actions, and patterns from contingent FaceTime interactions?
Rachel B. LeWitt and Renee E. Gallo
- No. 66** Chaotic Wall Pinning and Melting in Xenon Adsorbed on Pt(111)
Jessica Bavaresco and Anthony D. Novaco
- No. 67** Growth Patterns of Dendritic Side Branches
Ian S. Crawley and Andrew Dougherty
- No. 68** A Tale of Two Groups: USGS 562 and 579 | *Jeremy J. Schwed*
- No. 69** Polarizability measurements of laser excited atomic cesium
Hannah Weaver and Andrew Kortyna
- No. 70** Introduction to Pulsars, the Interstellar Medium, and NANOGrav
Joseph Tumulty and Anthony Post
- No. 71** Probing the Interstellar Medium with Pulsars
Anthony Post and Joey Tumulty
- No. 72** Advances to a Biomechanical Model of Hydrocephalus
William R. Hendra and Joshua H. Smith
- No. 73** Simulation of Fluid Flow Using Computational Fluid Dynamics
Boyang Qin and Daniel R. Sabatino
- No. 74** Experimental and Numerical Study of High Thermal Conductivity Materials for Electronics Cooling
Katheryn Yoder and Daniel R. Sabatino
- No. 75** Design and Control of Automated Fluid Injection System
Andrew D. Sanders and Daniel R. Sabatino
- No. 76** Optimizing Seismic Performance of Houses in Haiti
Ninh Pham and Anne Raich

Welcome to the 2012 Student Summer Research Poster Symposium

This annual event highlights many of the research projects that Lafayette students were engaged in during the summer of 2012. The depth of the work and the diversity of topics being presented is a testament to the imaginative and productive scholars—both students and faculty—at Lafayette.

This event also testifies to Lafayette's long history of supporting research with undergraduates. Our Excel Scholars program began in 1986 with 14 students and has grown dramatically over the past twenty-seven years. In the Summer of 2012 there were well over 140 Lafayette students working on research projects. Most of them were Excel Scholars who were mentored by over seventy members of the faculty, representing many departments and programs, including: Art, Biology, Chemistry, Economics, all four departments in Engineering, English, Film and Media Studies, Philosophy, Psychology, Religious Studies, and many more. There were a number of other avenues for Lafayette students to explore research questions, in addition to the Excel Scholars program. Some students were LEARN Scholars, who worked on neuroscience projects in off-campus locations, including one student who worked in a laboratory in Panama. Lafayette students worked side-by-side with talented students from other colleges and universities in the Research Experiences for Undergraduates program organized by the Department of Mathematics. Lafayette students participated in the Grand Challenges Scholars Program, which provided funding for student projects based in Haiti, Pakistan, and Uganda. Other students received external support for their summer research projects from the National Science Foundation, and the Davis Projects for Peace program supported Lafayette students working in Bangladesh.

Lafayette continues to provide significant support for research with undergraduates. The annual expenditures for student salaries and housing are in excess of \$700,000, including money coming from faculty and institutional grants, income from gifts, and Lafayette's operating budget. This is an excellent investment of our resources, as these research projects produce high-impact scholarship and foster the sort of student-faculty engagement that is the hallmark of a liberal arts education.

The research on display in this poster session is new and much of it is still work in progress. Based on past performance I am quite sure that the scholarship on display today will be disseminated in research journals, artistic exhibitions, and at professional conferences. In particular, Lafayette has a twenty-year history of bringing one of the largest contingents of student scholars to the National Conference for Undergraduate Research. The reach and influence of Lafayette student scholarship has a long and rich history that supports our current efforts.

You can see for yourself that Lafayette is a national leader in student research. We provide university-sized resources in the context of a student-centered liberal arts college. This combination allows our students to produce exceptional creative work and forge lifelong connections with talented faculty mentors. As you walk through the session, I encourage you to ask questions, participate in conversations, learn, and add to the joy in the room.

—**John Meier**

Associate Provost for Faculty Development and Research Services

POSTER LAYOUT IN MARLO ROOM

