Winners List

13th ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM IN THE CHEMICAL AND BIOLOGICAL SCIENCES

Hosted by

Department of Chemistry and Biochemistry
Department of Biological Sciences
University of Maryland, Baltimore County

Saturday, October 30, 2010

Sponsored in part through the generosity of The National Institutes of Health (NIGMS)
13th Annual Undergraduate Research Symposium
in the
Chemical and Biological Sciences

Poster Session I (Morning Session)

(A) Chemical Sciences 1

1st Place

DEVELOPMENT OF A LUMINESCENCE-BASED LACTATE SENSOR USING SMART-HYDROGELS AND AN ENVIRONMENT SENSITIVE LUMINOPORE
Matthew M. Myers and Mingqi Hang
Kristi A. Kneas, James A. MacKay
Department of Chemistry, Elizabethtown College
1 Alpha Drive Elizabethtown, PA 17022

2nd Place

ORGANOCATALYZED reactions of AMINO ALDEHYDES FOR THE ASYMMETRIC SYNTHESIS OF UNNATURAL, FMOC-PROTECTED β2-AMINO ACIDS
Samantha J. Bowen, Nicholas C. Boaz, Timothy J. Peelen
Department of Chemistry, Lebanon Valley College
101 N. College Ave., Annville, PA 17003

(B) Chemical Sciences 2

1st Place

METAL-ORGANIC FRAMEWORKS CONSTRUCTED FROM PHOSPHINIC ACIDS AND DIVALENT METALS
Michael R. White
Jeffrey A. Rood
Department of Chemistry and Biochemistry, Elizabethtown College,
1 Alpha Drive, Elizabethtown, PA 17022

2nd Place

THE CONSTRUCTION OF AZEPINES FROM CYCLOPROPANOL FRAGMENTATION
Isaac J. Kimsey, Georgia T. Stoyanov, Kevin P. C. Minbiole
Department of Chemistry and Biochemistry, James Madison University,
Harrisonburg VA 22807
1st Place  COUPLING OF ELECTROCHEMICAL REDUCTION AND IRON RELEASE IN RECOMBINANT HORSE H-CHAIN FERRITIN MUTANTS
Christine M. Lundblad and Brandon L. Scott
Donald C. Zapien
Department of Chemistry, Slippery Rock University, Slippery Rock, PA 16057

2nd Place  DYNAMICS IN THIN FILMS OF DEEPLY SUPERCOOLED WATER
Candace N. Payne, Deepanjan Bhattacharya
Vladislav Sadtchenko
Department of Chemistry, The George Washington University
725 21st Street, NW, Washington, DC 20052

1st Place  DESIGN AND TESTING OF MAGNETIC SEPARATOR SYSTEM USED FOR REMOVAL OF MAGNETIC COBALT NANOSPHERES FROM FLOWING FLUID
Weipeng Zhuo, John Van Druff
Jennie Leach
Department of Chemical Engineering, University of Maryland, Baltimore County, 1000 Hilltop Circle, Baltimore, Maryland 21250

2nd Place  A SEQUENTIAL EXTRACTION APPROACH TO EVALUATION AND COMPARISON OF SELECTED METALS IN SOILS FROM AROUND THE UNITED STATES: PRELIMINARY RESULTS
Daniel A. Soisson
Mark T. Stauffer
Chemistry Department, Division of Natural Sciences, Mathematics, and Engineering, University of Pittsburgh at Greensburg, 150 Finoli Drive, Greensburg, PA 15601

1st Place  STUDIES ON AN ALLENOLATE VARIANT OF THE INTRAMOLECULAR RAUHUT-CURRIER REACTION
Zachary C. Landis & Stephen E. Motika
James A. MacKay
Department of Chemistry and Biochemistry, Elizabethtown College
1 Alpha Drive, Elizabethtown, Pennsylvania 17022

2nd Place  TRAPPING A REVERSIBLE $o$-QUINONE METHIDE – 2’-DEOXYADENOSINE ADDUCT
Omer Ad and Michael P. McCrane
Steven E. Rokita
Department of Chemistry and Biochemistry, University of Maryland, College Park, 0107 Building-91, University of Maryland, College Park, MD 20742
1st Place  THE CATALYSIS OF PHOSPHODIESTER HYDROLYSIS BY CA$^{2+}$: TEMPERATURE DEPENDENCE AND SOLVENT DEUTERIUM ISOTOPE EFFECT STUDIES  
Dillon Feigenbaum, Christina Karas, and Kyle Messina  
Adam Casssano  
Department of Chemistry, Drew University  
36 Madison Ave, Madison, New Jersey 07940

2nd Place  FORMATION OF OCTAHYDROINDOLES FROM 2-ACYL-5-AMINO OXAZOLIUM SALTS  
Corey Basch  
Stephen A. Habay  
Department of Chemistry, Salisbury University, 1101 Camden Ave., Salisbury, Maryland 21801

1st Place  ENDOCYTOSIS OF SARS CORONAVIRUS SPIKE PROTEIN  
Ann Desdemonia Nde-Neh Fowajuh¹  
Carolyn Machamer²  
¹Department of Natural Science, University of Maryland Eastern Shore, Princess Anne, MD 21853  
²Department of Cell Biology, Johns Hopkins University School of Medicine, Baltimore, MD 21205

2nd Place  DEVELOPMENT OF AN UNDERGRADUATE, PROJECT-BASED LABORATORY TO INTRODUCE STUDENTS TO DRUG DISCOVERY  
Justin M. Kontra, Brandon W. Parks  
Timothy J. Peelen  
Department of Chemistry, Lebanon Valley College 101 North College Avenue, Annville, PA 17003

1st Place  HOST-PATHOGEN PROTEIN-PROTEIN INTERACTIONS OF TRYPANOSOMA CRUZI AND TRYPANOSOMA BRUCEI  
Kelly Proimos, Santuza Teixeira, and Jungmin Choi  
Najib El-Sayed  
Department of Cellular Biology and Molecular Genetics, University of Maryland, College Park, MD 20742

2nd Place  PHARMACOLOGICAL STUDY OF THE EFFECTS OF OCTOPAMINE ON HEART RATE OF CRASSOSTREA VIGINICA  
Kerri Pryce and Jordan Knight  
Margaret A. Carroll and Edward J. Catapane  
Dept. of Biology, Medgar Evers College, 1150 Carroll Street, Brooklyn, NY 11225
(I) Biological Sciences 2

1st Place  CHARACTERIZATION OF THE EMT RESPONSE IN CRYBB2PHIL MUTANTS
           Victoria H. Roop
           M.K. Duncan
           University of Delaware Department of Biological Sciences

2nd Place  COMPARATIVE BIOCHEMICAL ANALYSIS OF Aβ FRAGMENTS IN ALZHEIMER’S HUMAN AND TRANSGENIC MOUSE BRAINS
           Stephanie C. Chan, Farron McIntee, Thomas Neubert, Agueda Rostagno
           Jorge A. Ghiso
           Departments of Pathology and Pharmacology, New York University School of Medicine, 550 First Avenue, New York, NY 10016

(J) Biological Sciences 3

1st Place  EPIGENETIC CONSEQUENCES OF SEXUAL VS. ASEXUAL DEVELOPMENT IN THE PEA APHID
           Amelie A. Raz
           Gregory Davis, Tamara Davis
           Department of Biology, Bryn Mawr College, 101 Merion Ave, Bryn Mawr, Pennsylvania 19010

2nd Place  SYNTHESIS OF SILVER NANOPARTICLES FOR USE IN AN ANIMAL MODEL
           Suranjit Mukherjee
           Dr. Anja Nohe
           Department of Biological Sciences, University of Delaware, Newark DE 19716

(K) Biological Sciences 4

1st Place  FIBRONECTIN APPARES IN DISTINCTIVE PATTERNS IN THE LENS OF THE EYE
           Matthew R. King
           Melinda K. Duncan
           Department of Biology, University of Delaware, 118 Wolf Hall, Newark, Delaware 19711

2nd Place  ANALYSIS OF DIFFERENTIAL DNA METHYLATION ACQUISITION AT THE DLK1-DMR IN MOUSE
           Alyssa Gagne and Mahvish Qureshi
           Tamara Davis
           Department of Biology, Bryn Mawr College, 101 North Merion Avenue, Bryn Mawr, Pennsylvania 19010
1st Place  EVIDENCE OF A RAC-RH0 PROLIFERATIVE CONTROL SWITCH BETWEEN NORMAL AND IDIOPATHIC PULMONARY ARTERIAL HYPERTENSION PATIENT-DERIVED VASCULAR SMOOTH MUSCLE CELLS
Nicole Calabro
Dana P. Ward
Department of Science, Mount Saint Mary’s University, 16300 Old Emmitsburg Road, Emmitsburg, MD 21727

2nd Place  THE ROLE OF ATG18 IN SIGNAL TRANSDUCTION PATHWAYS DURING DROSOPHILA DEVELOPMENT
Erica Boetefuer
Erica M. Selva
Department of Biological Sciences, University of Delaware, 118 Wolf Hall, Newark, DE 19716

1st Place  CONFORMATIONAL EXPLORATIONS INTO DNA POLYMERASE X FROM AFRICAN SWINE FEVER VIRUS IN THE PRESENCE OF OXOG LESIONS
Jasmina Bogdanovic
Benedetta A. Sampoli Benitez
Department of Natural Sciences and Mathematics, Marymount Manhattan College, 221 East 71st Street, New York, New York 10021

2nd Place  EXPRESSION AND PURIFICATION OF THE MALARIA APICoplast FERREDOXIN REDOX CASCADE AND ITS ELECTRON ACCEPTORS
Anupama Divakaruni1,3, Dr. Gundula Bosch1
Sean Prigge1,2
1Malaria Research Institute, Dept. of Molecular Microbiology and Immunology
2Dept. of Biochemistry and Molecular Biology
3Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21218

1st Place  MECHANISM AND SPECIFICITY OF HUMAN MITOCHONDRIAL TRANSCRIPTION FACTOR A BINDING TO THE LIGHT-STRAND PROMOTER
Nitin Kumar
Craig E. Cameron
Department of Biochemistry & Molecular Biology, The Pennsylvania State University, University Park, Pennsylvania 16802
2nd Place  THE FUNCTIONAL AMINO ACID NAVIGATOR
Jason Cargill, Salvador Gomez, Renee Solimeo
Peter Palenchar
Chemistry Department, Rutgers University,
303 Cooper Street, Camden, NJ 0810

1st Place  IDENTIFYING STABLE FIVE RUNG CONSTRUCTS OF THE CPD
SCAFFOLD FOR PROTEIN DESIGN
Rachana Haliyur¹, Ellen White²
Andrew Miranker³
¹University of Maryland Baltimore County, Baltimore, MD 21250
²,³Department of Molecular Biophysics and Biochemistry,
Yale University, New Haven, CT 06520

2nd Place  ESTIMATED ABSORBANCE SPECTRA OF THE VISUAL PIGMENTS OF
THE MYSTICETE WHALES AND THEIR POTENTIAL ROLE IN
DETECTING CONCENTRATIONS OF PREY SPECIES
Nicole M. Bischoff¹, Stephanie Velasquez¹, Stephanie Brennan¹, Giselle
Andrade², Thomas W. Cronin³, Frederick Lee³
Jeffry I. Fasick¹
¹Department of Biological Sciences, Kean University,
²Department of Psychology, Kean University,
³Department of Chemistry & Physics, Kean University,
1000 Morris Avenue, Union, NJ 07083, USA
⁴Department of Biological Sciences, University of Maryland Baltimore County,
1000 Hilltop Circle, Baltimore, MD 21250, USA

Poster Session II (Afternoon)

(A)  Chemical Sciences 1

1st Place  COMPLEXATION STUDIES OF ETHYLENE-OXIDE BRIDGED
RUTHENIUM OLIGOMERS
Stephanie Velardo, Lindsey McMahon
Marc Harris
Chemistry, Lebanon Valley College, 101 N. College Avenue, Annville Pa, 17003

2nd Place  DIMERIC PROPARGYLIC ALCOHOLS AND PALLADIUM(II)ACETATE: A
NOVEL METALLOGELATOR SYSTEM
Michael A. Salim and Ryan M. Byrne
Michal Sabat and Kevin L. Caran
Department of Chemistry and Biochemistry, James Madison University
800 South Main Street, Harrisonburg, Virginia 22807
(B) Chemical Sciences 2

1st Place  HYDROGELS AS TRANSDUCERS IN LUMINESCENCE-BASED HUMIDITY SENSORS
John Tellis
Kristi Kneas
Elizabethtown College Department of Chemistry and Biochemistry
One Alpha Drive, Elizabethtown, PA 17022

2nd Place  VESICLE FORMATION THROUGH ENCAPSULATION OF BIOLOGICALLY-COMPATIBLE IONIC LIQUIDS
Devan Turner
Isiah M. Warner
1 Department of Chemistry and Biochemistry, University of Delaware, Newark, DE, 19717
2 Chemistry, Lousiana State University, Baton Rouge, LA, 70803

(C) Chemical Sciences 3

1st Place  TOTAL ORGANOCHLORINE IN CONSUMER HYGIENE PRODUCTS
Chrissy Galifianakis
Alessandra Leri
Department of Natural Sciences, Marymount Manhattan College
221 East 71st Street, New York, N.Y. 10021

2nd Place  CONDUCTING POLYMER ELECTRODES: SUITABLE FOR IN VIVO APPLICATION?
Julia H. Roberts, Elizabeth J. Hanna, and Anthony D. Kammerich
J. Faye Rubinson
Chemistry Department, Georgetown University 37th and O Street Washington, DC 20057

(D) Chemical Sciences 4

1st Place  EXPRESSION, PURIFICATION, AND CHARACTERIZATION OF A DESIGNED 3-HIS DI-IRON CARBOXYLATE PROTEIN
Susan Butch
Dr. Amanda J. Reig
Chemistry Department, Ursinus College, 601 E. Main Street Collegeville, PA 19426

2nd Place  INVESTIGATING THE OXIDATION OF 2-BUTANOL CATALYZED BY AU AND PD NANOPARTICLES USING ATR-FTIR
Andre Santa, Rebecca Seepersad
Janet Petroski
Mount Saint Mary College, Division of Natural Sciences
330 Powell Ave, Newburgh, NY 12550
(E) Chemical Sciences 5

1st Place
STUDIES TOWARD A β-LACTAM SYNTHESIS VIA INTRAMOLECULAR CYCLIZATION
Gregory A. Berends
James A. MacKay
Department of Chemistry and Biochemistry, Elizabethtown College, 1 Alpha Drive, Elizabethtown, PA 17022

2nd Place
SYNTHESIS AND CHARACTERIZATION OF HYBRID FRAMEWORKS DERIVED FROM POLY(TRIAZOLYL)BORATE LIGANDS
Jonathan A. Boltersdorf, Paul M. Forester
Dr. Barbara Reisner
Department of Chemistry and Biochemistry, James Madison University, Harrisonburg, VA 22807

(F) Chemical Sciences 6

1st Place
SYNTHESIS OF SWALLOW-TAIL SUBSTITUTED PERYLENE MONOIMIDES
William Bogen
Lisa Kelly
University of Maryland, Baltimore County, Baltimore, Maryland 21250

2nd Place
IDENTIFICATION AND CLONING OF A GLUTATHIONE TRANSFERASE SUPERFAMILY GENE IN LEISHMANIA TARENTOLAE
Nana Yaw Osei Owusu, Rashalai Currington
Joseph Pitula and Jennifer L. Hearne
Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853 USA

(G) Biological Sciences 1

1st Place
COMPLEX INTERACTIONS BETWEEN BONE STROMA AND PROSTATE CANCER CELLS IS MEDIATED THROUGH TGF-BETA SIGNALING
Navpreet S. Tung and Fayth L. Miles
Robert A. Sikes
Department of Biological Sciences, Center for Translational Cancer Research, University of Delaware, Newark, DE 19716

2nd Place
A NOVEL MECHANISM OF RESISTANCE TO APOPTOSIS IN IMMUNE SUPPRESSIVE CELLS THATExplains ENHANCED TUMOR GROWTH IN THE INFLAMMATORY ENVIRONMENT
Chris Ecker, Olesya Chornoguz, and Suzanne Ostrand-Rosenberg
Department of Biological Sciences, University of Maryland Baltimore County, 1000 Hilltop Circle, Baltimore, Maryland 21250
Biological Sciences 2

1st Place  THE INVOLVEMENT OF SIP1 IN NEURAL CREST FORMATION
Renee Fleming
Marianne Bronner and Crystal Rogers
Department of Biology, Medgar Evers College
1150 Carroll Street, Brooklyn, NY 11225

2nd Place  EVALUATING MACROINVERTEBRATE COMMUNITIES AT THE NEXUS OF FREESTONE AND LIMESTONE STREAMS
Jennifer Hellmann
Jeff Erikson
Department of Biological Sciences, Messiah College,
One College Ave, Grantham, Pennsylvania, 17027

Biological Sciences 3

1st Place  BAX FORMS GATED-VOLTAGE CHANNELS
Toan D. Nguyen
Marco Colombini
Department of Biology, University of Maryland, College Park, MD, 20742

2nd Place  SYNTHESIS OF 1, 13-DICHLORO 5, 6, 8, 9-TETRAAZA DIBENZO ANTHRACENE, HELICAL CONSIDERATIONS
Yvonne A. Puplampu-Dove1
Ghislain Mandouma2
1Department of Natural Sciences, University of Maryland Eastern Shore,
Princess Anne, MD 21853
2Chemistry Department, Furman University, Greenville, SC 29613

Biological Sciences 4

1st Place  UNDERSTANDING THE ROLE OF CYCLIN DEPENDENT KINASE 5 IN INSULIN RELATED NEURODEGENERATIVE DISEASE
Raymond Romano
Ann Aguanno
Department of Natural Sciences and Mathematics, Marymount Manhattan College, New York NY

2nd Place  IDENTIFICATION OF NUCLEAR EXPORT SEQUENCES IN CIITA
Emily Chiu, Theresa Gold
Drew E. Cressman
Department of Biology, Sarah Lawrence College
1 Mead Way, Bronxville NY 10708
1st Place
FIELD TRAPPING LITTLE FIRE ANT, WASMANNIA AUROPUNCTATA (ROGER) (HYMENOPTERA: FORMICIDAE)
Caitlyn Suttles
Nathan Derstine, Elisa Troyer, Leigh Siderhurst, Eric Jang, & Matthew Siderhurst
Chemistry Department, Eastern Mennonite University, 1200 Park Rd., Harrisonburg, VA 22802

2nd Place
EXTREMOPHILES: ISOLATION AND CHARACTERIZATION OF ULTRA-VIOLET RADIATION RESISTANT MICROORGANISMS
Prashant Gabani
Om V. Singh
Division of Biological and Health Sciences, University of Pittsburgh- Bradford, Bradford, PA-16701
1 Park Place, Elmira, New York 14901

1st Place
THE FUNCTIONAL ANALYSES OF A MUTATED TENTACLE WITHIN THE L4 PROTEIN
Brandon Young, Lasse Lindahl
Janice Zengel
Department of Biological Sciences, University of Maryland Baltimore County
1000 Hilltop Circle, Baltimore, Maryland 21250

2nd Place
INNOVATIVE APPROACHES TO OLIGOHETEROCYCLIC PEPTIDOMIMETICS
Shamika Rose1
Sergey Arutyunyan2 and Adel Nefzi2
1Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853
2Torrey Pines Institute for Molecular Studies, Port Saint Lucie, FL 34987

1st Place
CYCLIN DEPENDENT KINASE 1 (CDK1) REGULATES THE CLASS II TRANSACTIVATOR (CIITA) OF THE IMMUNE RESPONSE
Jesse Gelles-Hurwitz
Drew Cressman
Department of Biology, Sarah Lawrence College, 1 Meadway Bronxville, NY 10708
PATHWAYS TO NATURAL ORGANOCHLORINE FORMATION IN DECAYING PLANT MATERIAL: A NOVEL ASSAY
Laura Herren
Alessandra C. Leri
Department of Natural Sciences and Mathematics, Marymount Manhattan College, 221 E 71st St., New York, NY 10021

CHARACTERIZATION OF NATURAL MOSQUITO MIDGUT BACTERIAL FLORA AND INVESTIGATION OF THEIR ANTI-PLASMODIUM ACTIVITY
Christelle Samen¹
George Dimopoulos²
¹ University of Maryland, Baltimore County, Baltimore, Maryland
² Malaria Research Institute, W. Harry Feinstone Department of Molecular Microbiology and Immunology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland

DEVELOPMENT OF A PEPTIDE NUCLEIC ACID BASED siRNA DELIVERY SYSTEM
Tejal U. Naik
Millicent O. Sullivan
Chemical Engineering, University of Delaware, 5 W Main St, Newark, DE

SMALL RNA REGULATION OF GENE EXPRESSION IN VIBRIO CHOLERAE IN RESPONSE TO CHANGES IN CARBON SOURCE
Lisa Maria Mustachio, Selime Aksit, Ronak Mistry
Jane Liu
Department of Chemistry, Drew University, Madison, NJ 07940

AN INVESTIGATION OF HISTONE MODIFICATION IN RASGRF1 IN MOUSE
Sara E. Marlow
Tamara L. Davis
Biology Department, Bryn Mawr College
101 N. Merion Ave. Bryn Mawr, PA 19010
1st Place  FUNCTIONAL EVALUATION OF AUSTISM-RELATED MUTATIONS IN THE NA⁺(K⁺)/H⁺ EXCHANGER NHE9 IN A YEAST MODEL  Nancy A. Abu-Bonsrah¹, Kalyan Kondapalli², Anniesha Hack²  Rajini Rao² ¹Mount St. Mary’s University, 16300 Old Emmitsburg Rd, Emmitsburg MD 21727; ²Department of Physiology, Johns Hopkins University School of Medicine, 725 N. Wolfe Street, Baltimore, MD 21205, USA

2nd Place  THE STRUCTURAL CHARACTERISTICS OF SYNTHETICALLY GLYCOSYLATED TAU PROTEIN SEQUENCES  Michael A. Brister and Agata A. Bielska  Neal J. Zondlo  Department of Chemistry and Biochemistry, University of Delaware, 210 South College Avenue, Newark, DE 19716