

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 β^2 -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

(C) Chemical Sciences 3

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

(D) Chemical Sciences 4

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*

(E) Chemical Sciences 5

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 REVERSABLE *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*

(F) Chemical Sciences 6

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 Cassano
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

(G) Chemical Sciences 7

1st Place ENDOCYTOSIS OF SARS CORONAVIRUS SPIKE PROTEIN

Ann Desdemonia Nde-Neh Fowajuh¹
*Carolyn Machamer*²
¹*Department of Natural Science, University of Maryland Eastern Shore,*
Princess Anne, MD 21853
²*Department 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

(H) Biological Sciences 1

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 CRYBB2^{PHIL} MUTANTS
Victoria H. Roop
M.K. Duncan
University of Delaware Department of Biological Sciences

2nd Place COMPARATIVE BIOCHEMICAL ANALYSIS OF A β 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 APPEARS 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

(L) Biological Sciences 5

1st Place EVIDENCE OF A RAC-RHO 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

(M) Biochemistry and Molecular Biology 1

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 Divakaruni^{1,3}, Dr. Gundula Bosch¹

Sean Prigge^{1,2}

¹*Malaria Research Institute, Dept. of Molecular Microbiology and Immunology*

²*Dept. of Biochemistry and Molecular Biology*

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21218

³*University of Maryland, Baltimore County, Baltimore, MD 21250*

(N) Biochemistry and Molecular Biology 2

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

(O) Biochemistry and Molecular Biology 3

1st Place IDENTIFYING STABLE FIVE RUNG CONSTRUCTS OF THE CPD
SCAFFOLD FOR PROTEIN DESIGN

Rachana Haliyur¹, Ellen White²

*Andrew Miranker*³

¹*University of Maryland Baltimore County, Baltimore, MD 21250*

^{2,3}*Department 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, Gisele
Andrade², Thomas W. Cronin⁴, Frederick Lee³

*Jeffry I. Fasick*¹

¹*Department of Biological Sciences, Kean University,*

²*Department of Psychology, Kean University,*

³*Department of Chemistry & Physics, Kean University,*

1000 Morris Avenue, Union, NJ 07083, USA

⁴*Department 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 McMahan

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 Turner¹

*Isiah M. Warner*²

¹ *Department of Chemistry and Biochemistry, University of Delaware, Newark, DE, 19717*

² *Chemistry, Louisiana 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 THAT EXPLAINS 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

(H) 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

(I) 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. Pupilampu-Dove¹

Ghislain Mandouma²

¹Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

²Chemistry Department, Furman University, Greenville, SC 29613

(J) 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

(K) Biological Sciences 5

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

(L) Biological Sciences 6

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 Arutyunyan*² and *Adel Nefzi*²

¹*Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853*

²*Torrey Pines Institute for Molecular Studies, Port Saint Lucie, FL 34987*

(M) Biochemistry and Molecular Biology 1

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

2nd Place 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*

(N) Biochemistry and Molecular Biology 2

1st Place CHARACTERIZATION OF NATURAL MOSQUITO MIDGUT BACTERIAL
FLORA AND INVESTIGATION OF THEIR ANTI-PLASMODIUM
ACTIVITY
Christelle Samen¹
*George Dimopoulos*²
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*

2nd Place 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

(O) Biochemistry and Molecular Biology 3

1st Place SMALL RNA REGULATION OF GENE EXPRESSION IN *VIBRIO
CHOLERA*E IN RESPONSE TO CHANGES IN CARBON SOURCE
Lisa Maria Mustachio, Selime Aksit, Ronak Mistry
Jane Liu
Department of Chemistry, Drew University, Madison, NJ 07940

2nd Place 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

(P) Biochemistry and Molecular Biology 4

1st Place FUNCTIONAL EVALUATION OF AUSTISM-RELATED MUTATIONS IN THE $\text{Na}^+(\text{K}^+)/\text{H}^+$ EXCHANGER NHE9 IN A YEAST MODEL

Nancy A. Abu-Bonsrah¹, Kalyan Kondapalli², Anniesha Hack²

*Rajini Rao*²

¹*Mount St. Mary's University, 16300 Old Emmitsburg Rd, Emmitsburg MD 21727;*

²*Department 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