

***9th 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 14, 2006



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The National Institutes of Health
(NIGMS)***

**9th Annual Undergraduate Research Symposium
in the
Chemical and Biological Sciences**

Poster Session I

(A) Chemical Sciences 1

1st Place PROGRESS TOWARDS THE SYNTHESIS OF EZOAMINOUROIC ACID

Michael Campbell

Dr. Jesse More

Department of Chemistry, Loyola College in Maryland
4501 N. Charles St., Baltimore, MD 21210

2nd Place ENHANCED SYNTHESIS OF HEPTAMETHINE CYANINE DYE FOR THE
DETECTION OF ALTERED CELL POPULATIONS

Divine N. Kebulu, *Dr. Angela W. Winstead*

Department of Chemistry, Morgan State University

(B) Chemical Sciences 2

1st Place DEVELOPMENT OF NOVEL C-C BOND FORMING REACTIONS FOR THE
EFFICIENT SYNTHESIS OF FMOC-PROTECTED AMINES

Alison E. Hartman, *Timothy J. Peelen*

Department of Chemistry, Lebanon Valley College, 101 N. College Ave.,
Annville, PA 17003

2nd Place DOES UK-1 INHIBIT TOPOISOMERASE II BY BINDING AT THE
ENZYME'S ACTIVE SITE?

Dimitra Kontokosta

Paul J. Smith

Department of Chemistry and Biochemistry, University of Maryland Baltimore
County,
1000 Hilltop Circle, Baltimore, Maryland, 21250

(C) Chemical Sciences 3

1st Place CATALYTIC HYDROBORATION OF VINYLPHOSPHINES AS A ROUTE TO PHOSPHANYL(ORGANYL)BORANES

Sonia Thangavelu

Clare N. Muhoro

Department of Chemistry, Towson University

8000 York Road, Towson, Maryland 21252

2nd Place MICROWAVE ASSISTED SYNTHESIS OF A NOVEL SMALLPOX BIOSENSOR

Krystal Hart, *Dr. Angela W. Winstead*

Morgan State University, Chemistry Department

(D) Chemical Sciences 4

1st Place REVERSIBLE IONIC LIQUIDS: NOVEL SYSTEMS OF ACYCLIC AMIDINES AND PRIMARY AMINES WITH CO₂ GAS

Paul J. Lukac, *Taisuke Yamada* and *Richard G. Weiss*

Department of Chemistry, Georgetown University, Washington, DC 20057

2nd Place ROLE OF THE DISSOLUTION OF IRON SPECIES IN THE AQUEOUS PHASE OXIDATION OF 2-CHLOROPHENOL BY GOETHITE

Thomas R. Gordon

Anderson L. Marsh

Department of Chemistry

Lebanon Valley College

Annville, PA 17003

(E) Chemical Sciences 5

1st Place SERS OF TRIAZOLES, THIOPHENE & THIOLS ON AU, AG & CU NANOPARTICLES

Lyndanne Blahovec and Audra Agnelly

Dr. Boon H. Loo

Department of Chemistry, Towson University, Towson MD 21252

2nd Place DEPENDENCE OF RATES OF INTERFRACIAL ELECTRON TRANSFER ON ANCHORING GROUP AND DYE MCLT STATE ENERGY

Reid J. Gadziala and Dr. Debra L. Mohler, Department of Chemistry, James Madison University, Harrisonburg, VA 22807

(F) Biological Sciences 1

1st Place FACE: A BRIDGE TO UNDERSTANDING THE EFFECTS OF LVAD ON THE MITRAL VALVE

Martine Paulynice¹; Janet Barzilla², MSE; K. Jane Grande-Allen², PhD

¹Brooklyn College, Brooklyn, New York 11210

²Department of Bioengineering, Rice University, Houston, Texas 77005

2nd Place PREVALENCE OF OBESITY AND ITS RELATIONSHIPS TO HYPERINSULINEMIA AND OXIDATIVE STRESS/INFLAMMATION IN HORSES

Kimberly A. Negrin^{*} and Scott R. Pleasant

Craig D. Thatcher

^{*}Slippery Rock University, Department of Chemistry, 1 Morrow Way, Slippery Rock, PA 16057

Virginia-Maryland Regional College of Veterinary Medicine, Department of Large Animal Clinical Sciences, Virginia Tech, Blacksburg, VA 24061

(G) Biological Sciences 2

1st Place OXIDATIVE STRESS & INTESTINAL REMODELING DURING AMPHIBIAN METAMORPHOSIS: A BALANCING ACT!

Michelle Christ

Eileen Gardner and Jaishri Menon (Advisors)

Department of Biology, William Paterson University of New Jersey, Wayne, NJ

2nd Place CHARACTERIZATION OF THE ACTIVATION STATUS OF BV2 MICROGLIAL CELLS LOADED WITH SUPERPARAMAGNETIC LaAgMnO NANOPARTICLES

Roderick Bautista¹, Edward Roy², and Carolina Soto²

¹University of Maryland, Baltimore County (UMBC), Department of Biological Sciences, Baltimore, MD 21250; ²University of Illinois at Urbana-Champaign, Pathology, College of Medicine, Urbana, IL 61801

(H) Biological Sciences 3

1st Place HISTOLOGY AND FUNCTION OF SKIN GLANDS IN A TERRESTRIAL SALAMANDER, *PLETHODON SHERMANI*

William Largen and *Sarah Woodley*

Department of Biological Sciences, Duquesne University, 600 Forbes Ave,
Pittsburgh, PA 15282

2nd Place A ROLE FOR N-GLYCOSYLATION IN DIFFERENTIAL GROWTH CONTROL AND DROSOPHILA DEVELOPMENT: PHENOTYPIC ANALYSIS OF *alg10*

Evan P. Lebois

Erica M. Selva

Department of Biological Sciences, University of Delaware, 348 Wolf Hall,
Newark, DE 19711

(I) Biological Sciences 4

1st Place EXPANSION OF PREVIOUSLY RECORDED RANGE DISTRIBUTION OF THE ATLANTIC SURFCLAM, *SPISULA SIMILIS*

Olga É Péterfalvy, *Dr. Matthew P. Hare*

Biology Department, College of Chemical & Life Sciences, University of Maryland College Park

4201 Biology-Psychology Building, University of Maryland, College Park,
MD 20742-5815

2nd Place MOLECULAR GENETIC BASIS OF DENTAL EVOLUTION IN THE THREESPINE STICKLEBACK

Stephanie M. Núñez*

*Craig Miller***

*David Kingsley***

*Department of Chemistry and Biochemistry, UMBC, Baltimore, MD 21250

**HHMI and Department of Developmental Biology, Stanford University, 300
Pasteur Drive, Stanford, CA 94305

(J) Biological Sciences 5

1st Place GC-MS MEASUREMENTS OF ALKYL ALCOHOL UPTAKE IN WEAKLY-ELECTRIC FISH AND GOLDFISH

Jason Silverman

Eric Williamsen

Biochemistry and Molecular Biology Program, Ursinus College, 601 E. Main St, Collegeville, Pennsylvania 19426

2nd Place CHANGES IN SYNAPTIC AMPA RECEPTORS AFTER VISUAL DEPRIVATION

Linda Xu

Hey-Kyoung Lee

Department of Biology, University of Maryland College Park, Building 144 Rm 1200, College Park, Maryland 20742

(K) Biochemistry and Molecular Biology 1

1st Place PURIFICATION AND CHARACTERIZATION OF BIOTIN PROTIEIN LIGASE FROM *PYROCOCCUS HORIKOSHII*

Yishan Zhou

Dr. Dorothy Beckett

Department of Chemistry and Biochemistry
University of Maryland, College Park
College Park, MD 20742

2nd Place ASSEMBLY OF ORDERED 2D AND 3D NANOSTRUCTURES COMPOSED OF BIOLOGICAL MATERIALS—A FIRST STEP

James Nelson, Erinc Sahin, *Kristi Kiick*

Dept. of Materials Science & Engineering, Delaware Biotechnology Institute 15 Innovation Way University of Delaware, Newark, DE 19711

(L) Biochemistry and Molecular Biology 2

1st Place EXAMINATION OF THE ROLE OF JAM-A HOMODIMERIZATION IN ANGIOGENESIS

Wen Allen Tseng

Ulhas P. Naik

Department of Biological Sciences, University of Delaware, Newark, DE 19716

2nd Place LIGAND BINDING DOMAIN FUNCTION OF *C. ELEGANS* NUCLEAR RECEPTORS

Katherine Weber, Genevieve Cheng and *Bruce Wightman*
Biology Department, Muhlenberg College, Allentown, PA 18104

(M) Biochemistry and Molecular Biology 3

1st Place USING TOPOISOMERASE I DNA UNWINDING ASSAYS TO STUDY DRUG-DNA INTERACTIONS

Sadia Sahabi and *Ruel E. McKnight*
Department of Chemistry, State University of New York at Geneseo
1 College Circle, Geneseo, NY 14454

2nd Place HIGH-LEVEL EXPRESSION OF MELANOPSIN THROUGH A TETRACYCLINE-INDUCIBLE EXPRESSION SYSTEM

Tanu Sharma, Marquis Walker, and *Phyllis Robinson*
Department of Biological Sciences, University of Maryland, Baltimore County,
1000 Hilltop Circle, Baltimore, MD 21250

Poster Session II

(A) Chemical Sciences 1

1st Place STUDIES OF THE EXTREMELY EFFICIENT ENCAPSULATION OF CHARGED DYE MOLECULES BY CATIONIC SURFACTANT VESICLES

Emily J. Danoff
Douglas S. English
Department of Chemistry and Biochemistry, University of Maryland, College Park, Maryland 20742-2111

2nd Place PREPARATION AND DEPROTECTION OF NOSYL-PROTECTED AZA-CROWN-ETHER MACROCYCLES, AN ION ENCAPSULATION STUDY OF PROTECTED VS. FREE MACROCYCLIC AMINES

Timothy Garrett
Marc Harris
Department of Chemistry, Lebanon Valley College, Annville PA

(B) Chemical Sciences 2

1st Place DEVELOPMENT OF COLLOID CHEMISTRY EXPERIMENTS FOR ORGANIC AND NANOSCIENCE LABORATORY COURSES

Stephanie L. Torcivia

Kevin L. Caran

Department of Chemistry, James Madison University,
MSC 4501, Harrisonburg, VA 22807

2nd Place DRUG DELIVERY DEVICES BASED ON HYDROGELS OF NATURALLY-DERIVED BIOPOLYMERS

Robert Reeves

Dr. Leach, PhD

Department of Chemical and Biochemical Engineering
University of Maryland, Baltimore County
1000 Hilltop Circle, Baltimore, MD 21250

(C) Chemical Sciences 3

1st Place STRUCTURE AND ORGANIZATION OF ALCOHOL MONOLAYERS AT THE AIR-WATER INTERFACE

Deesha Mago

Suleyman Can, *Robert Walker*

Department of Chemistry and Biochemistry, University of Maryland,
College Park, MD 20742

2nd Place INVESTIGATION OF ANTI-AGGREGATION PROPERTIES OF A NOVEL BETA-SHEET BREAKER

Amy Opest

Christina Stewart

Dr. Melissa Barranger-Mathys

Department of Chemistry and Biochemistry, Mercyhurst College
501 E. 38th St., Erie, PA 16546

(D) Chemical Sciences 4

1st Place NOVEL ETHOXY-BRIDGED BIPYRIDINE OLIGOMERS THAT FUNCTION AS HOST MOLECULES FOR THE ENCAPSULATION OF SMALL ALKALI ION GUESTS, A LIQUID-LIQUID ION TRANSPORT STUDY

Kenny Houser

Marc Harris

Department of Chemistry, Lebanon Valley College, Annville PA

2nd Place CHARACTERIZATION OF MAGNETIC IRON OXIDE COMPOSITES

Allyson M. Jones

Kathryn A. Layman

Department of Chemistry, James Madison University, MSC 4501, Harrisonburg, VA 22807

(E) Chemical Sciences 5

1st Place MOLECULAR INTERACTIONS IN BINARY PHOSPHOLIPID MONOLAYERS AT AIR/WATER INTERFACE

Chia-Fang Chang

Robert A. Walker

Department of Chemistry and Biochemistry, University of Maryland College Park
0107 Chemistry Building College Park, Maryland 20742-4454

2nd Place X-RAY FLUORESCENCE IN PHARMACEUTICAL ELEMENTAL ANALYSIS

Sarah Tsay

Dr. Peter Larkin

Wyeth Pharmaceuticals Research and Development
401 N. Middletown Road, Pearl River, NY 10965

(F) Biological Sciences 1

1st Place ECOLOGY AND WATER CHEMISTRY OF A C.R.E.P. STREAM, SMITH CREEK, ROCKINGHAM COUNTY, VIRGINIA

Ania E. Austin, *Daniel M. Downey*

Department of Chemistry, James Madison University,
MSC 4501, Harrisonburg, Virginia 2280

2nd Place NUCLEOTIDE VARIATION WITHIN AND BETWEEN HOMINOID SPECIES AT *TGM4*: EFFECTS OF SOCIAL STRUCTURE AND SPERM COMPETITION

Sarah J. Carnahan

Michael I. Jensen-Seaman

Department of Biological Sciences, Duquesne University, Pittsburgh, Pennsylvania

(G) Biological Sciences 2

1st Place IDENTIFICATION OF NOVEL GENES AFFECTING THE *DROSOPHILA MELANOGASTER* IMMUNE RESPONSE TO *DROSOPHILA* X VIRUS (DXV)

Anne Macgregor

Dr. Louisa P. Wu

University of Maryland Biotechnology Institute, University of Maryland College Park

5115 Plant Sciences Building, College Park, Maryland 20742

2nd Place ENDOCRINE DISRUPTION IN CARP FROM LAKE ERIE: ANALYSIS OF PCBs, PBDEs AND VITELLOGENIN

Sherilyn Morgan¹, Fatin Samara², Alicia Pérez-Fuentetaja³, Mark D. Clapsadl³ & *Diana S. Aga*²

¹Department of Natural Sciences, Bowie State University, 14000 Jericho Park Road, Bowie, Maryland 20715

²Department of Chemistry, University at Buffalo, State University of New York, 608 Natural Sciences Complex, Buffalo, New York 14260

³Department of Biology, Buffalo State College, 1300 Elmwood Avenue, Buffalo, New York 14222

(H) Biological Sciences 3

1st Place CELLULAR FACTORS CONTROLLING THE ASSEMBLY OF THE TYPE III SECRETION SYSTEM IN *PSEUDOMONAS AERUGINOSA*.

Kellie M. Cicconi

*Arne Rietsch**

Department of Molecular Biology and Microbiology, Case Western Reserve University, 10900 Euclid Ave Cleveland, OH 44106

2nd Place ANAEROBIC AMMONIUM-OXIDATION (ANAMMOX) ACTIVITY AT DIFFERENT SALINITIES IN ANNAMOX ENRICHMENT

Sylvia K. Dasi¹

Dr. Yossi Tal,² Dr. Harold Schreier³

University of Maryland Eastern Shore¹, Center of Marine Biotechnology² and University of Maryland Biotechnology Institute². Center of Marine Biotechnology, University of Maryland Biotechnology Institute, 701 East Pratt Street, Baltimore, Maryland 21202

(I) Biological Sciences 4

1st Place ANALYSIS OF TRANSPOSON MOBILITY AND IDENTIFICATION OF ADDITIONAL *GLS* GENES IN *VOLVOX CATERI*

¹Manar Abdelkader, ¹Akelia Wauchope, ²Vladimir Kapitonov, ¹*Stephen M. Miller*.

¹Department of Biological Sciences, University of Maryland Baltimore County, Baltimore, MD 21250

²Genetic Information Research Institute, Mountain View, CA 94035

2nd Place ANALYSIS OF ASYMMETRIC CELL DIVISION IN THE ALGA, *Volvox carteri*

Christopher Bednarek

Stephen Miller

Department of Biological Sciences, University of Maryland Baltimore County
1000 Hilltop Circle Catonsville, MD 21250

(J) Biochemistry and Molecular Biology 1

1st Place THE RELATIONSHIP BETWEEN THE STRUCTURE OF FELINE IMMUNODEFICIENCY VIRUS MATRIX PROTEIN AND ITS ABILITY TO TARGET THE PLASMA MEMBRANE.

Jessica A. McGrath¹,

*Cassiah Smith*¹, *Dr. Michael F. Summers*¹

¹Department of Chemistry and Biochemistry, Howard Hughes Medical Institute, University of Maryland, Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250

2nd Place HOW MOUSE MAMMARY TUMOR VIRUS INTERACTS WITH TRANSFERRIN RECEPTOR 1 IN DIFFERENT SPECIES.

Nyamekye Obeng-Adjei¹,
*Susan Ross, Ph.D*²

¹ Department of Natural Sciences, University of Maryland Eastern Shore, 11868 Academic Oval, Princess Anne, MD.

² Department of Microbiology and Abramson Family Cancer Center, University of Pennsylvania, Philadelphia, Pennsylvania 19104

(K) Biochemistry and Molecular Biology 2

1st Place THE ANALYSIS OF TISSUE TRANSGLUTAMINASE IN NORMAL AND VIRUS TRANSFORMED CELLS IN CULTURE

Rebecca L. Wagner and Amanda J. Henry
Paul J. Birckbichler

Department of Chemistry, Slippery Rock University,
1 Morrow Way, Slippery Rock, PA, 16057

2nd Place ESTROGEN, BISPENOL A, AND THE IMMUNE RESPONSE: ESTROGEN RESPONSE ELEMENTS AND B LYMPHOCYTES

Michelle Heayn
Dr. Rebecca Roberts

Department of Biology, Ursinus College, Collegeville, PA 19426

(L) Biochemistry and Molecular Biology 3

1st Place EFFECT OF RADIATION ON OSTEOGENIC PROPERTIES OF TITANIUM-ATTACHED OROFACIAL BONE MARROW STROMAL CELLS

Parascevi. Giavis
S.O. Akintoye and F. Mante

¹Biochemistry and Molecular Biology, Ursinus College, Collegeville, PA, USA,

²Oral Medicine, University of Pennsylvania School of Dental Medicine, Philadelphia, USA

2nd Place THE ROLE OF GLUR5-CONTAINING KAINATE RECEPTORS IN EPILEPSY

Prince Awuah
Maria F. Braga

Department of Anatomy, Physiology and Genetics, Uniformed Services University of Health Sciences, 4301 Jones Bridge Rd, Bethesda, Maryland 20814

(M) Biochemistry and Molecular Biology 4

1st Place THE EFFECTS OF THE GENE *LIPB* ON THE GROWTH RATE
REGULATION OF THE *GND* GENE IN *Escherichia coli*.

Chuka A. Didigu

A. J. Pease

Department of Biological Sciences, Villa Julie College,
1525 Greenspring Valley Road, Stevenson, Maryland 21153

2nd Place BB2-CRYSTALLIN REGULATION OF THE LENS CYTOSKELETON

Corinne Decker, Kevin Duprey, and Yan Wang

Melinda Duncan

Department of Biological Sciences, University of Delaware, Newark, DE 19711