

***8<sup>th</sup> 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 15, 2005***



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(NIGMS)***

**8th Annual Undergraduate Research Symposium  
in the  
Chemical and Biological Sciences**

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Poster Session I

(A) Chemical Sciences 1

**1<sup>st</sup> Place**      SYNTHESIS OF BIPYRIDINE CONTAINING AZA-CROWN-ETHER  
MACROCYCLES USING THE TEMPLATE EFFECT PROVIDED BY BULKY  
SULFONAMIDE PROTECTING GROUPS

Jeremy Umbenhauer and *Marc Harris*  
Department of Chemistry, Lebanon Valley College, Annville PA

**2<sup>nd</sup> Place**      ELECTROCHEMICAL DECHLORINATION OF DICHLOROBENZENE AT  
CARBON-FELT ELECTRODE IN LAMELLAR PHASE OF AQUEOUS  
DIDODECYLDIMETHYL-AMMONIUM BROMIDE

Yailouise Ndure, *Dr. Maurice O. Iwunze*  
Department of Chemistry, Morgan State University, Baltimore, Maryland  
21251

(B) Chemical Sciences 2

**1<sup>st</sup> Place**      MECHANISTIC STUDIES IN ORGANOCATALYSIS: ADDITIONS TO  
ALDEHYDES CATALYZED BY 2-SUBSTITUTED PYRROLIDINES

Daniel J. Smith, *Timothy J. Peelen*  
Department of Chemistry, Lebanon Valley College  
101 N. College Ave, Annville, PA 17003

**2<sup>nd</sup> Place**      SYNTHESIS OF QUATERNARY SALT DERIVATIVES

Nicole Fleming, *Angela Winstead*  
Department of Chemistry, Morgan State University, Baltimore, MD 21251

(C) Chemical Sciences 3

**1<sup>st</sup> Place** A THERMODYNAMIC COMPARISON OF METHANOL AND ACETONITRILE AS MOBILE PHASES ON FLUORO-OCTYL AND OCTYL STATIONARY PHASES IN HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY

Alexander Frey, Yan L. Liang, Dr. Eric Williamsen  
Department of Chemistry, Ursinus College, Collegeville, PA 19426

**2<sup>nd</sup> Place** DETERMINATION OF THE SIZE OF POLYMER-COATED METALLIC NANOPARTICLES BY MALDI-MS

Jason K. Navin and Anderson L. Marsh  
Department of Chemistry, Lebanon Valley College  
Annville, PA 17003

(D) Chemical Sciences 4

**1<sup>st</sup> Place** ANALYSIS OF LEAD CONTAMINATED SOIL USING SEQUENTIAL EXTRACTION PROCEDURE AND IMPLICATIONS FOR PHYTOEXTRACTION

Thapa, Mamata; Erickson, J.; Bare, W., and Bliss, K.  
Biology and Chemistry, Randolph-Macon Woman's College  
2500 Rivermont Ave., Lynchburg, VA 24503

**2<sup>nd</sup> Place** A MOBILE PHASE STUDY FOR PHENYL AND FLUOROPHENYL STATIONARY PHASES IN HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC)

David Thomas, Dr. Eric Williamsen  
Department of Chemistry, Ursinus College, 610 E. Main St., Collegeville,  
PA 191426

(E) Chemical Sciences 5

**1<sup>st</sup> Place** pH SENSITIVE LUMINESCENT COMPOUNDS

Jonathan T. Brunn, Dr. Benjamin DeGraff  
Department of Chemistry, James Madison University  
MSC 4501, Harrisonburg, VA 22807

**2<sup>nd</sup> Place** COMPUTATIONAL STUDY OF C-SIDE POCKET OF ARRESTIN

Andrew S. Kohlway, Susan Gregurick  
University of Maryland Baltimore County (UMBC), Department of  
Chemistry and Biochemistry, Baltimore, MD 21250

(F) Biological Sciences 1

**1<sup>st</sup> Place** PHARMACOLOGICAL MODULATION OF THALAMIC OSCILLATIONS IN  
GENERALIZED ABSENCE EPILEPSY

Gunnar Kwakye, Julia Brill  
Department of Natural Sciences, Carver Hall, University of Maryland  
Eastern Shore, Princess Anne, Maryland 21853

**2<sup>nd</sup> Place** THE ROLE OF PARASITOID WASPS AS AGENTS OF SELECTION ON  
NATURAL POPULATIONS OF *DROSOPHILA* LIKE FLIES

Syed R. Ahmed, Kate Laskowski, Jeff Leips  
Department of Biological Sciences, University of Baltimore County,  
1000 Hill Circle, Baltimore, Maryland 21250

(G) Biological Sciences 2

**1<sup>st</sup> Place** MOLECULAR GENETIC BASIS OF DENTAL EVOLUTION IN THE THREE-  
SPINE 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

**2<sup>nd</sup> Place** THE EFFECTS OF N-ETHYLMALIMIDE ON ENDOPLASMIC  
RETICULUM MORPHOLOGY AND VESICLE BUDDING ACTIVITY *IN*  
*VIVO*

Lauren A. Williams<sup>1</sup>, Dr. Christina H. Lee<sup>2</sup>  
<sup>1</sup>Department of Biological Sciences, Immaculata University, Immaculata,  
PA; <sup>2</sup>Department of Biology, Carnegie Mellon University, Pittsburgh, PA

(H) Biological Sciences 3

**1<sup>st</sup> Place** EFFECT OF UPTAKE ROUTE ON BIOACCUMULATION OF TRACE ELEMENTS IN LARVAL AMPHIBIANS

Katherine Jackson, Dr. Ryan Casey  
Department of Chemistry, Towson University  
8000 York Road, Towson, Maryland 21252

**2<sup>nd</sup> Place** STUDY OF CEREBRAL MECHANISMS FOR AUDITORY RECOGNITION MEMORY IN THE RHESUS MONKEY

Vanessa Flores, Jonathan Fritz, Jon Rueckeman, Richard C. Saunders and Mortimer Mishkin  
*Dr. Richard C. Saunders and Dr. Mortimer Mishkin*  
Laboratory of Neuropsychology, National Institutes of Mental Health, National Institutes of Health, Department of Health and Human Services, Bethesda, MD, 20892  
*Dr. Edward M. Bonder*  
Laboratory of Cell Biology, Department of Biological Sciences, Rutgers, The State University of New Jersey, 101 Warren St. Newark, NJ

(I) Biological Sciences 4

**1<sup>st</sup> Place** INVESTIGATION OF PROLACTIN-ANTAGONIST EXOTOXIN FUSION PROTEIN

Jones Jennifer.<sup>1</sup>, Amatriain Patricia.<sup>1</sup>, Seth T.<sup>2</sup>, Langenheim J. F.<sup>2</sup>, Chen W.Y.<sup>2</sup>, and Chen N.<sup>1</sup>  
1. Converse College, Spartanburg, SC. 2. Department of Biological Sciences, Clemson University, Clemson, SC, and Oncology Research Institute, Greenville Hospital System, Greenville, SC

**2<sup>nd</sup> Place** FUNCTIONAL PRESENCE AND INVOLVEMENT OF CB2 CANNABINOID RECEPTORS IN CHRONIC MILD STRESS MODEL OF DEPRESSION.

Lindsey Teasenfitz and E. S. Onaivi.  
Biology Department, William Paterson University, Wayne, NJ 07470

(J) Biochemistry and Molecular Biology 1

**1<sup>st</sup> Place** ASSESSMENT OF DOMAIN INTERACTIONS IN *E. COLI* GMP SYNTHETASE

Derek M. Hinds, *Walter A. Patton*  
Department of Chemistry, Lebanon Valley College  
101 N. College, Ave., Annville, PA 17003-1400

**2<sup>nd</sup> Place** CONSTRUCTION OF A MOLECULAR SCAFFOLD TO INVESTIGATE DOMAIN INTERACTIONS IN LIGAND-GATED ION CHANNELS

Anthony Agyapong<sup>1</sup>, *Edward Hawrot*<sup>2</sup>, Ph.D, João Paulo<sup>2</sup>  
1 - University of Maryland, Baltimore County - UMBC  
2 – Department of Molecular Pharmacology , Physiology & Biotechnology  
Brown University, 70 Ship Street, Rm 336; Providence, RI 02912

(K) Biochemistry and Molecular Biology 2

**1<sup>st</sup> Place** RED CELL OXIDATIVE STRESS IN HANDLS SUBJECTS

Adrienne K. Jones\*<sup>1</sup>, Luke B. Ravi<sup>1</sup>, Erika Nagababu<sup>1</sup>, Joseph M. Rifkind<sup>1</sup>, Alan B. Zonderman, Kamala Foster, Ngozi Ejiogu, Michelle Evans and *Joy G. Mohanty*<sup>1</sup>  
University of Maryland Eastern Shore\*, Princess Anne, MD 21853,  
Molecular Dynamics Section<sup>1</sup>, National Institute on Aging, Baltimore, MD 21224

**2<sup>nd</sup> Place** EFFECTS OF PEROXYNITRITE ON CONTRACTILE PROTEINS

Tyesha N. Burks, *William Guilford*, Ph.D.  
Department of Natural Sciences, University of Maryland Eastern Shore,  
Princess Anne, MD 21853

(L) Biochemistry and Molecular Biology 3

**1<sup>st</sup> Place** A SYSTEM FOR GENETIC ANALYSIS OF RHODOPSIN IN YEAST

Caitlin Reavey, Frank Fiol, Benjamin Nickle, *Phyllis Robinson*, *Philip Farabaugh*  
Department of Biological Sciences, University of Maryland Baltimore  
County, 1000 Hilltop Circle, Baltimore, MD, 21250

**2<sup>nd</sup> Place** THE ROLE OF PERFORIN IN PROVIDING RESISTANCE TO METASTATIC MAMMARY CARCINOMA IN STAT6-DEFICIENT MICE

Chineye Emeche<sup>1</sup>, Dr. Pratima Sinha<sup>2</sup>, *Dr. Suzanne Ostrand-Rosenberg*<sup>2</sup>

<sup>1</sup>University of Maryland Eastern Shore, Princess Anne, Maryland 21853

<sup>2</sup>Department of Biological Sciences, University of Maryland, Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250

(M) Biochemistry and Molecular Biology 4

**1<sup>st</sup> Place** STRUCTURAL STUDIES OF THE NUCLEAR FACTOR Y COMPLEX (NF-Y COMPLEX)

Sang K. Park, Dr. *Colin Garvie*

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

**2<sup>nd</sup> Place** EXPLORING O-GLCNACYLATION AND PHOSPHORYLATION IN THE DEVELOPING CHICK BRAIN

Farach, Andrew M; Galileo, DS, *Deni S. Galileo*

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

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**Poster Session II**

**(A) Chemical Sciences 1**

**1<sup>st</sup> Place**      DETERMINATION BY HPLC OF THE AMOUNT OF CAFFEINE LOST IN COFFEE BEANS DUE TO THE ROASTING PROCESS

*Christopher W. DeVore, Christopher P. Hallen, Toni A. Trumbo*  
Department of Chemistry, Bloomsburg University of Pennsylvania,  
Bloomsburg, PA 17815

**2<sup>nd</sup> Place**      OPTIMIZATION OF THE CONGO RED ASSAY FOR THE DETECTION OF AMYLOID FIBRIL FORMATION USING HEN EGG LYSOZYME AS A MODEL SYSTEM

*Robyn Eisert, Dr. Lesley Brown*  
Department of Chemistry, Goucher College, 1021 Dulaney Valley Road,  
Baltimore, MD 21204

**(B) Chemical Sciences 2**

**1<sup>st</sup> Place**      INHIBITING PHOSPHOLIPIDS MONOLAYER FORMATION WITH CHARGED SURFACTANTS

*Chia-Fang Chang, Robert A. Walker*  
Department of Chemistry and Biochemistry, 0107 Chemistry Building  
University of Maryland, College Park, Maryland 20742-4454

**2<sup>nd</sup> Place**      INVESTIGATION OF THE MECHAISMS OF NUCLEOPHILIC ACTIVATION BY METAL IONS IN PHOSPHODIESTER HYDROLYSIS

*Corey L. Cusack, Adam G. Cassano*  
Department of Chemistry, Drew University  
36 Madison Ave, Madison, NJ, 07940

(C) Chemical Sciences 3

**1<sup>st</sup> Place** FLAME SYNTHESIS OF NANOCRYSTALLINE WATER GAS SHIFT CATALYSTS

Sicong (Silvia) Hou, *Dr. Sheryl Ehrman*  
Department of Chemical and Biomolecular Engineering, University of Maryland College Park, College Park, Maryland, 20742

**2<sup>nd</sup> Place** SELF-ASSEMBLING COILED-COIL HYDROGELS AS DESIGNER BIOMATERIALS FOR CNS REGENERATION

Devin Downing, *Dr. David I. Shreiber*  
Biomedical Engineering Department, Rutgers the State University of New Jersey, Piscataway, NJ 08854

(D) Chemical Sciences 4

**1<sup>st</sup> Place** TANDEM HYDROACYLATION-MICHAEL ADDITION IN THE SYNTHESIS OF PHARMACUETICAL PRECURSORS

Daniel A. DiRocco, *Dr. Holly D. Bendorf*  
Department of Chemistry, Lycoming College, 700 College Place, Williamsport, Pennsylvania, 17701 USA

**2<sup>nd</sup> Place** DEVELOPMENT OF NOVEL C-C BOND FORMING REACTIONS FOR THE EFFICIENT SYNTHESIS OF FMOC-PROTECTED AMINES

Cheryl L. Brophy, Alison E. Hartman, *Timothy J. Peelen*  
Department of Chemistry, Lebanon Valley College, 101 N. College Ave., Annville, PA 17003

(E) Chemical Sciences 5

**1<sup>st</sup> Place** TEMPERATURE DEPENDENCE OF THE AQUEOUS PHASE OXIDATION OF 2-CHLOROPHENOL BY GOETHITE

Thomas R. Gordon and *Anderson L. Marsh*  
Department of Chemistry, Lebanon Valley College, Annville, PA 17003

**2<sup>nd</sup> Place** SYNTHESIS OF MEDIUM-SIZED HETEROCYCLES VIA CYCLOPROPANE FRAGMENTATION.

Blanchard, Andrew S.D.; Kingree, Seth V.; O'Neil, Kerry E.;  
Minbiole, Kevin P.C.  
Department of Chemistry, MSC 4501, James Madison University,  
Harrisonburg, VA

(F) Chemical Sciences 6

**1<sup>st</sup> Place** *ORTHO*-HYDROXY ISOPHTHALOYL DIAMIDE: AN APPROACH TO STRONGER ANION BINDING

Kevan J. Salimian, Hojun Li, *Dr. Jeffrey T. Davis*  
Department of Chemistry and Biochemistry,  
University of Maryland-College Park, College Park, MD 20742

**2<sup>nd</sup> Place** A STUDY OF CALIX[4]ARENE DERIVATIVES AS A MODEL FOR AMIDE HYDROGEN BONDING

Amber Mantz, *Daniel Blanchard*  
Department of Physical Science, Kutztown University of Pennsylvania,  
P.O. Box 730, Kutztown, PA 19530

(G) Biological Sciences 1

**1<sup>st</sup> Place** A QUANTITATIVE ANALYSIS OF THE MORPHOLOGICAL CHANGES IN PC12 CELLS RESULTING FROM NGF TREATMENT IN THE PRESENCE OR ABSENCE OF AN INHIBITOR OF THE CYCLIN DEPENDENT KINASE 5 PROTEIN (CDK5).

Leslie Burton, Elizabeth Perez and *Ann Aguanno*  
Department of Natural Sciences, Marymount Manhattan College  
221 East 71<sup>st</sup> Street, New York, NY 10021

**2<sup>nd</sup> Place** EFFECT OF THE S6 KINASE GENE ON AGE-SPECIFIC IMMUNE RESPONSE IN DROSOPHILA MELANOGASTER

Leanne Foster, *Dr. Jeff Leips*  
Department of Biological Sciences, University of Maryland Baltimore  
County, 1000 Hilltop Circle, Baltimore, MD 21250

(H) Biological Sciences 2

**1<sup>st</sup> Place** DIFFERENTIAL EXPRESSION OF LEUKOCYTE SPECIFIC PROTEIN ONE (LSP-1) IN THE LUPUS-PRONE MICE (MRL)

Adae Amoako

Department of Chemistry, Delaware State University, 1200 N. DuPont HWY, Dover, DE. 19901

**2<sup>nd</sup> Place** TIME COURSE OF ANESTHETIC ACTION AND RECOVERY OF ALKYL ALCOHOLS AND ALKYL ALDEHYDES

Caitlin Hanlon, Dr. James Sidie

Biology Department, Ursinus College, PO Box 1000 Collegeville, PA 19426

(I) Biological Sciences 3

**1<sup>st</sup> Place** INITIAL CHARACTERIZATION OF FURFURAL RESISTANT DERIVATIVES OF *ESCHERICHIA COLI*

Michael F. Ritchie<sup>1</sup>, Richard D. Pelletier<sup>2</sup>, Salim N. Shaikh<sup>1</sup>, Marcellino J. Manganelli IV<sup>1</sup>, Mariano J. Savelski<sup>2</sup>, Brian G. Lefebvre<sup>2</sup>, Gregory B. Hecht<sup>1</sup>

<sup>1</sup> Department of Biological Sciences, Rowan University, Glassboro NJ 08028; <sup>2</sup> Department of Chemical Engineering, Rowan University, Glassboro NJ 08028

**2<sup>nd</sup> Place** MOLECULAR IDENTIFICATION OF AQUIFER MICROBES USING THE 16S RIBOSOMAL RNA GENES

Asen Bagashev, Francis Lanzetta, Sandra Rivera

Karen P. York, Ph.D.

Biochemistry and Molecular Biology Program, Natural and Mathematical Sciences; The Richard Stockton College of New Jersey, PO Box 195, Pomona, NJ 08240

(J) Biological Sciences 4

**1<sup>st</sup> Place** CHANGES IN SYNAPTIC AMPA RECEPTORS IN VISUAL CORTEX  
AFTER VISUAL DEPRIVATION

Linda Xu, *Hey-Kyoung Lee*

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

**2<sup>nd</sup> Place** THE MORPHOLOGICAL EFFECT OF THE *NETRIN-4* GENE IN MOUSE  
CEREBELLA DEVELOPMENT

Bettel Mussie<sup>1</sup>, *William Brunken*<sup>2</sup>, and Yong Li<sup>2</sup>

<sup>1</sup>Department of Biological Sciences, University of Maryland, Baltimore  
County (UMBC), Baltimore, MD

<sup>2</sup>Department of Anatomy & Cellular Biology, Neuroscience, and the Tufts  
Center for Vision Research, Tufts University, Boston, MA

(K) Biochemistry and Molecular Biology 1

**1<sup>st</sup> Place** INVESTIGATING THE FUNCTION OF AN ELEMENT THAT IS  
NECESSARY FOR AUTONOMOUS PLASMID MAINTENANCE IN  
*TRYPANOSOMA BRUCEI*

Charleen Hunt and *Pradeep Patnaik*

Department of Biology, William Paterson University, Wayne, NJ 07470

**2<sup>nd</sup> Place** INDUCTION OF THE 4977-BP “COMMON DELETION” IN  
MITOCHONDRIAL DNA BY GAMMA RADIATION AND ABSOLUTE  
QUANTIFICATION BY REAL-TIME PCR

Nicholas Arpaia<sup>1</sup>, Robert O'Donnell,<sup>2</sup> and *Wendy K. Pogozelski*<sup>1</sup>

<sup>1</sup>Department of Chemistry, SUNY Geneseo

<sup>2</sup>Department of Biology, SUNY Geneseo  
Geneseo, NY 14454

(L) Biochemistry and Molecular Biology 2

**1<sup>st</sup> Place** MOLECULAR CHARACTERIZATION OF ARABIDOPSIS MUTANTS  
PRIOR TO ASSESSING THE ROLE OF AtEFH IN PLANT DEFENSE

Vincent DePaola and *David Slaymaker*  
Department of Biology, William Paterson University, Wayne, NJ

**2<sup>nd</sup> Place** GENETIC ANALYSIS OF THE SACCHAROMYCES CEREVISIAE  
RIBOSOMAL PROTEIN L17

Sabrina Walborn, *Dr. Janice Zengel*  
Department of Biological Sciences, University of Maryland, Baltimore  
County (UMBC), 1000 Hilltop Circle, Baltimore, MD 21250

(M) Biochemistry and Molecular Biology 3

**1<sup>st</sup> Place** AKT IS PREFERENTIALLY ACTIVATED IN PC-3 CELLS ADHERING TO  
BONE MATRIX

Nicole Barkley, \*Kathleen Ignatoski, Freddie Pruitt, Bianca Graves,  
Magna Naik, Ulhas Naik, and Carlton R. Cooper.  
University of Delaware, Department of Biological Sciences, Newark, DE.  
\*University of Michigan, Department of Urology, Ann Arbor, MI

**2<sup>nd</sup> Place** METHYLATION ACQUISITION ON THE PATERNAL ALLELE OF MOUSE  
GENE *GTL2*

Geneva Stein, Lu Mei He, Elizabeth Powell and *Tamara L. Davis*  
Department of Biology, Bryn Mawr College  
101 N. Merion Ave, Bryn Mawr, PA 19010-2899

(N) Biochemistry and Molecular Biology 4

**1<sup>st</sup> Place** CYCLIZATION OF DIUBQUITIN: A STRUCTURAL AND  
FUNCTIONAL STUDY OF CHEMICALLY ALTERED UBIQUITIN CHAINS

Bryan Dickinson, Ranjani Varadan, *Dr. David Fushman*  
Center for Biomolecular Structure and Organization  
Department of Chemistry and Biochemistry  
University of Maryland, College Park, College Park, MD 20742

**2<sup>nd</sup> Place**

CALPAIN CLEAVES THE  $\alpha_1C$  SUBUNIT OF THE L-TYPE CALCIUM CHANNEL  $Ca_v 1.2$

Joseph Castellano, Duane Hall, Ph.D., *Johannes Hell, Ph.D.*  
Carver College of Medicine, University of Iowa, Department of  
Pharmacology, Iowa City, IA 52240