

# WV-INBRE NEWSLETTER

Volume 8

Fall 2006



## Johnson & Johnson Executive Featured Speaker at WV-INBRE Research Symposium

The Robert C. Byrd Health Sciences Center of West Virginia University was the venue for the 5<sup>th</sup> Annual WV-INBRE Summer Research Symposium held on August 3<sup>rd</sup>. The symposium featured oral and poster presentations by participants in the state-wide network including undergraduate and graduate summer interns and a summer faculty fellow who participated in the WV-INBRE Summer Research Program. This program is conducted jointly at West Virginia University and Marshall University. Faculty and students conducting research at their home institutions also presented the results of their research activities. For the first time, undergraduate interns from the Mary Babb Randolph Cancer Center Summer Research Program made poster presentations of their summer research, which brought the total

number of posters to 62. Oral presentations were made by the summer faculty fellow, a project investigator within the network, and five summer interns.

The keynote speaker for the symposium was **Dr. Ted Torphy**, Corporate Vice President for Science and Technology at Johnson & Johnson. Dr. Torphy, who received his Ph.D. in pharmacology and toxicology from West Virginia University, challenged the audience to “Imagine, Commit, and Invent” as biomedical research moves to address the health care needs of today and the future. A focus of his presentation was the concept of “technology convergence” whereby multiple disciplines have been brought together to address issues in health care and the role biomedical research has made in those advances.

### Inside this issue:

Dr. Ted Torphy - Featured Speaker	1
Students Working in the Lab	2-3
National IDeA Symposium	4
Message from Principal Investigator	5
Bioinformatics Workshop	6
Summer Research Symposium	6-8
Poster Titles	9-12
Bernie Boswell Co-Authors Paper	12
Steering Committee Members	13



Dr. Torphy, who received his Ph.D. in Pharmacology and Toxicology from West Virginia University, challenged the audience to “Imagine, Commit, and Invent”, as biomedical research moves to address the health care needs

### Institutions of the WV-INBRE

#### *Lead Universities*

Marshall University  
West Virginia University

#### *Network Research Institutions (NRIs)*

Alderson-Broaddus College  
Fairmont State University  
West Liberty State College  
West Virginia State University  
Wheeling Jesuit University

#### *Network Outreach Institutions (NOIs)*

Bluefield State College  
Concord University  
Davis & Elkins College  
Shepherd University  
University of Charleston  
West Virginia Wesleyan College

#### *Extended Outreach Institutions (EOIs)*

Bethany College  
Glennville State College  
Mountain State University  
Salem International University

**WV-INBRE Summer Students Working in the Labs**



Jill Rotruck  
Shepherd University

Mentor: Dr. Yon Rojanasaskul  
West Virginia University

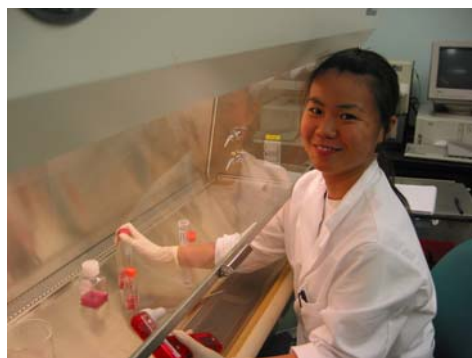
Jim Garland  
West Liberty State College

Mentor: Dr. Kathy Brundage  
West Virginia University



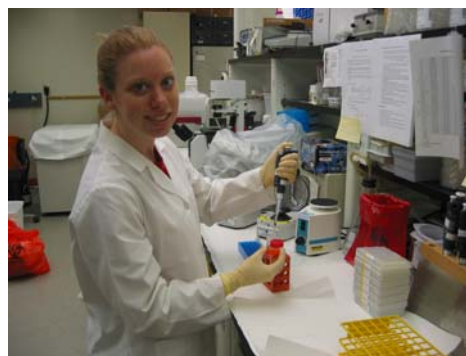
Masako Shimamoto  
Fairmont State University

Mentor: Dr. Elaine Hardman  
Marshall University



Kris Bacon  
Wheeling Jesuit University

Mentor: Dr. William Petros  
West Virginia University



WV-INBRE Summer Students Working in the Labs Continued:

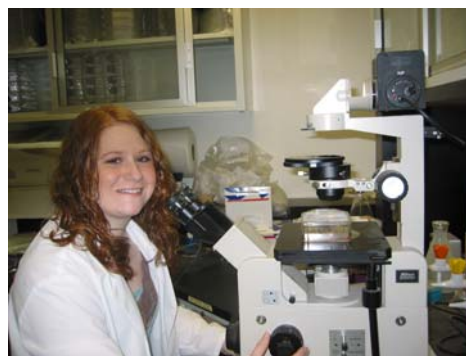


Jonathan Proto  
Wheeling Jesuit University

Mentor: Dr. Peter Gannett  
West Virginia University

Kendra Policz  
Bethany College

Dr. James Sheil  
West Virginia University



Rajeev Tajhya  
Salem International University

Dr. Patrick Callery  
West Virginia University



Dana Tiberio  
West Virginia Wesleyan College

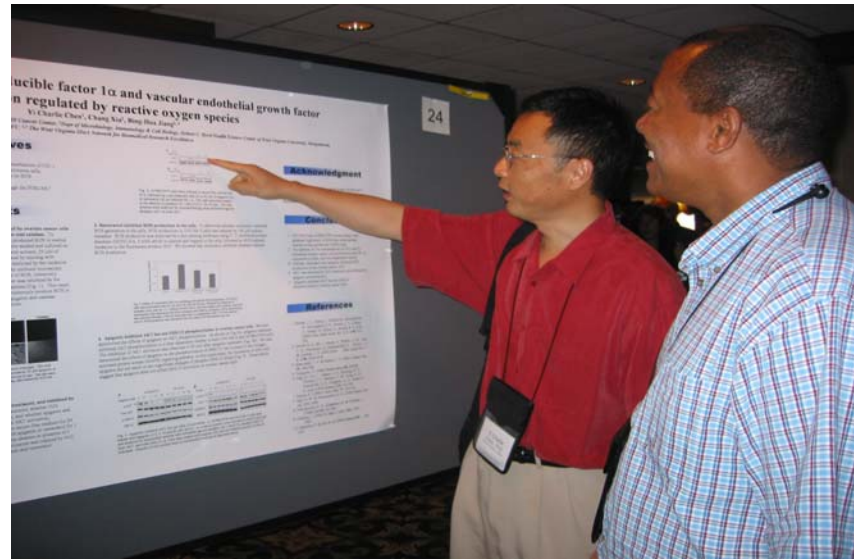
Mentor: Dr. Linda Vona-Davis  
West Virginia University



## WV-INBRE Faculty and Students Participate in National IDeA Symposium of Biomedical Research Excellence

This past summer, members of the WV-INBRE program participated in the first biennial National IDeA Symposium of Biomedical Research Excellence (NISBRE), held July 20-22 in Washington, D.C. This symposium hosted biomedical research programs in the Institutional Development Award (IDeA) initiative, funded by the National Center for Research Resources (NCRR), from around the country. These groups included representatives from both CoBRE (Center of Biomedical Research Excellence) and INBRE (IDeA Network of Biomedical Research Excellence) programs established in all 23 IDeA states and Puerto Rico.

The IDeA program is a federally-mandated initiative, supported through the NCRR and designed to enhance the biomedical research competitiveness of investigators through support for faculty development and research infrastructure at institutions within the IDeA states and Puerto Rico. The INBRE initiative is the second phase of the formerly designated Biomedical Research Infrastructure Networks (BRIN) program which was initiated in 2001 and is focused on supporting undergraduate institutions to develop and sustain biomedical research as a significant part of their academic mission.



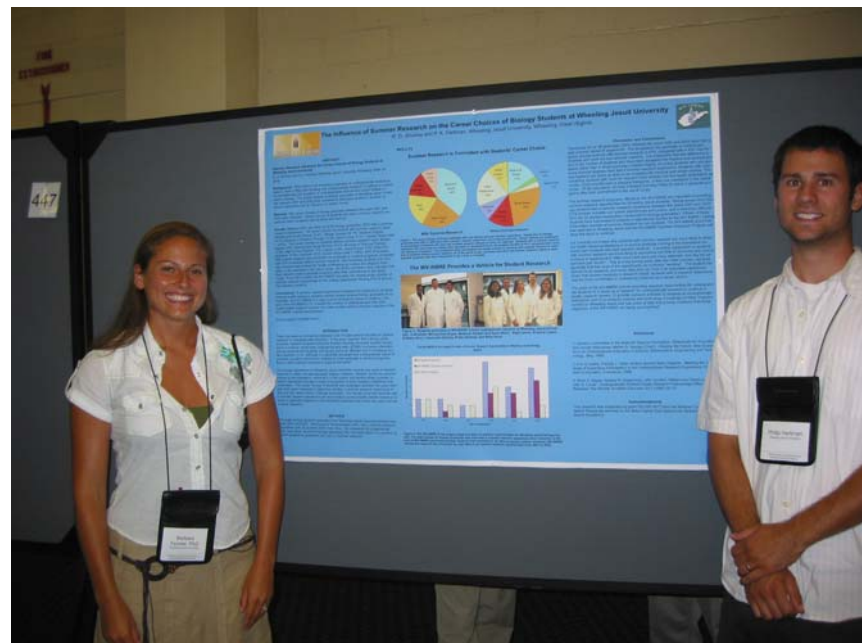
Dr. Yi Charlie Chen, a WV-INBRE project investigator from Alderson-Broaddus College, explains his project to Dr. Yehenew Agazie, of the Signal Transduction CoBRE Program from West Virginia University

The WV-INBRE program participants at NISBRE included representatives from the two lead institutions, Marshall University and West Virginia University – as well as faculty and students from the predominantly undergraduate

network institutions: Alderson-Broaddus College, Bluefield State College, Fairmont State University, West Liberty State College, and Wheeling Jesuit University.



Dr. James Sheil, Program Coordinator for the WV-INBRE program talks with Ava Dykes, Molecular & Biological Imaging Center at Marshall University



Dr. Barbara Fenner and student, Phillip Hartman, Wheeling Jesuit University were WV-INBRE participants in the NISBRE conference in Washington, D.C.

**Message from the Principal Investigator  
Gary O. Rankin, Ph.D**

Summer has come and gone, and as I look out across the West Virginia hills and mountains, the reds, yellows and oranges of the fall leaves remind me of the beauty of our State and the pleasure it is to see WV-INBRE continue to grow and mature. Since our last newsletter, there has been a lot of activity within our Network that has been beneficial for all of WV-INBRE.

For our research network, Dr. Charlie Chen, Alderson-Broadus College, became a new NRI Project Investigator on May 1, 2006. His project is entitled, "Signaling Pathways in Apigenin-inhibiting Tumor Growth". With Dr. Chen's selection, Alderson-Broadus College joined Fairmont State University, West Liberty State College, West Virginia State University and Wheeling Jesuit University as an NRI in May, 2006. In addition, the University of Charleston was granted Network Outreach Institution status early this fall.

Our Summer Research Program and Summer Symposium were also big successes again this year. Thirty students and one faculty member from the predominantly undergraduate institutions in West Virginia conducted summer research at Marshall and West Virginia Universities. The program was concluded on August 3 with a Research Symposium held at the Robert C. Byrd Health Sciences Center at West Virginia University. Dr. Theodore J. Torphy, Corporate Vice President for

Science and Technology at Johnson & Johnson, was the keynote speaker and gave a presentation entitled, "Biomedical Research and the Future of Health Care". Students and faculty from the Summer Program, PIs holding NRI grants, and those supported by Pilot Grants made seven oral and fifty-four poster presentations. We were joined this year by WVU Cancer Center Summer Interns who presented eight posters. Highlights of the meeting can be found inside this newsletter.

Another exciting piece of news is the hiring of Dr. Nalini Santanam to fill the Cardiovascular Scientist position within WV-INBRE. Dr. Santanam will be joining the Department of Pharmacology, Physiology & Toxicology at Marshall University in November. She is currently an Associate Professor of Pathology at the LSU Health Sciences Center in New Orleans, LA. Her research involves examining the role of oxidized lipids in cardiovascular disease, and she is currently funded by a grant from the National Institutes of Health. We look forward to her expertise and advice as part of the Appalachian Cardiovascular Research Network (ACoRN) group.

On June 25-26, 2006, WV-INBRE hosted the Annual Southeast Region BRIN/INBRE Principal Investigators meeting at the Marriott in Charleston, West Virginia. PIs or their representatives for INBREs in Arkansas, Kentucky, Louisiana, South Carolina



and West Virginia met to discuss topics related to the INBRE program. Dr. Donald Primerano, Director of ACoRN, was one of the featured speakers.

We have reached the half-way point for WV-INBRE. We have made, and continue to make, excellent progress toward our goals and expectations. However, it will continue to take hard work on everyone's part for us to realize our full potential and make WV-INBRE the success for West Virginia that it can be.

I hope that you all have an enjoyable and productive fall semester and holiday season.

We have made, and continue to make, excellent progress toward our goals and expectations.

## 2006 Annual WV-INBRE Bioinformatics Workshop

The 2006 Bioinformatics Workshop was held at Marshall University July 11 and 12, 2006. Bioinformaticians from the National Center for Biotechnology Information (NCBI, a division of the National Institutes of Health) presented two mini-courses on the first day using gene and protein analysis tools and databases. Dr. Steve Pechous covered the features of Entrez Gene, a search tool that brings together information on a single gene, such as location, sequence, expression, structure, functional and homology data, and links to the gene and gene product in the various NCBI databases, including the PubMed and GenBank databases.

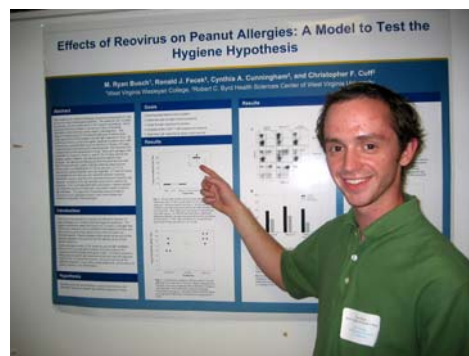
The course on the second day demonstrated the use of various web tools to analyze a DNA sequence, first to determine if it does code for a protein, and then to predict the function of the protein by finding known functional domains or motifs. Dr. Eric Sayer presented the Structure course, covering NCBI tools for exploring similarities between proteins at the three dimensional molecular structure level. Participants explored the structure databases and learned how to find a 3D structure similar to their protein of interest, align their protein to the known structure and find information to predict how differences in amino acid sequence would alter the 3D structure from the known protein.

## WV-INBRE Summer Research Symposium Poster Presentations

“Effects of Reovirus on Peanut Allergies: A Model to Test the Hygiene Hypothesis”

Ryan Busch  
West Virginia Wesleyan College

Mentor: Dr. Christopher Cuff  
West Virginia University



Ryan Busch has participated in the summer program the past two years.

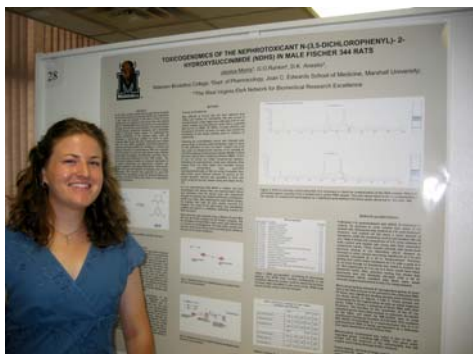


“Determining the Expression of DLC-1 in Human Melanoma Cells”

Renee A. West  
West Virginia State University

Mentor: Dr. Beverly C. Delidow  
Marshall University

Renee West (left) talks with Dr. Alice Lee, an External Advisory Committee (EAC) member of the WV-INBRE program.



“Toxicogenomics of the Nephrotoxicant N-(3,5-Dichlorophenyl)-2-Hydroxysuccinimide (NDHS) in Male Fischer 344 Rats”

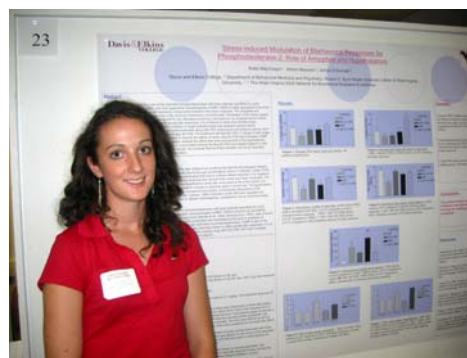
Jessica Morris  
Alderson-Broadus College

Mentor: Dr. Gary Rankin  
Marshall University

“Stress-Induced Modulation of Behavioral Responses by Phosphodiesterase-2: Role of Amygdala and Hypothalamus”

Katie MacGregor  
Davis & Elkins College

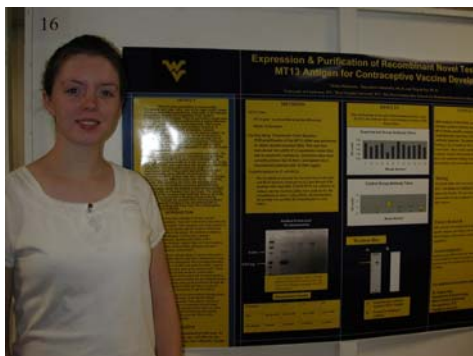
Mentor: Dr. James O’Donnell  
West Virginia University



“Expression and Purification of Recombinant Novel Testis-Specific Mt13 Antigen for Contraceptive Vaccine Development”

Jessica Hammons  
University of Charleston

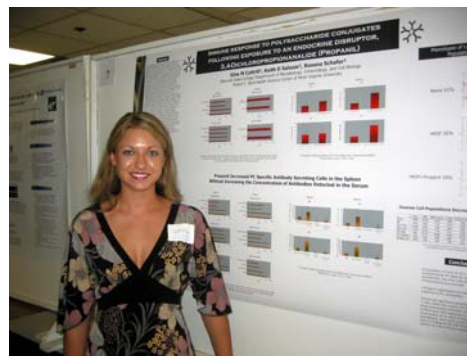
Mentor: Dr. Rajesh Naz  
West Virginia University



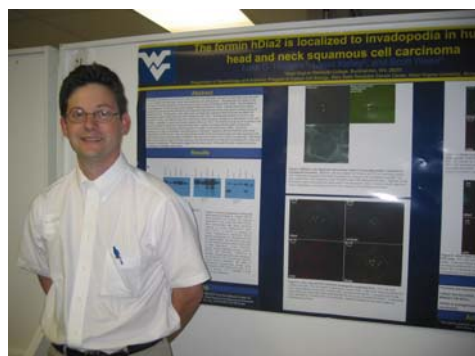
“Immune Response to Polysaccharide Conjugates Following Exposure to an Endocrine Disruptor, 3, 4-Dichloropropionanilide (Propanil)”

Gina M. Cottrill  
Glennville State College

Mentor: Dr. Rosana Schafer  
West Virginia University



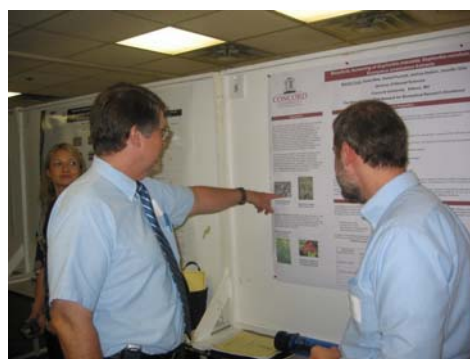
Faculty Present Posters at the WV-INBRE Summer Symposium



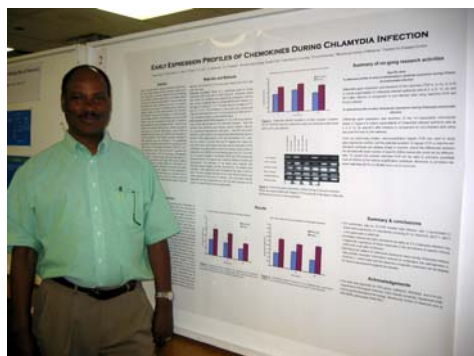
Dr. Luke Huggins, West Virginia Wesleyan College (NOI) was a faculty fellow participant of the WV-INBRE summer program



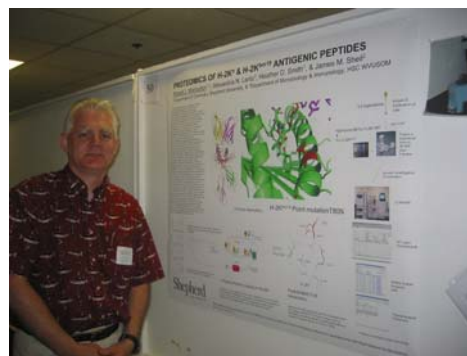
Dr. Mary O'Connor, West Liberty State College (NRI) is a recipient of a pilot grant through the WV-INBRE program



Dr. Crick (right), Concord University (NOI) answers a question for Dr. Robert Griffith (left), AC member of the WV-INBRE program



Dr. Tesfaye Belay, Bluefield State College (NOI) is a recipient of a pilot grant through the WV-INBRE program



Dr. Robert Warburton, Shepherd University (NOI), is a recipient of a pilot grant through the WV-INBRE program



## WV-INBRE 2006 Summer Research Symposium

Sixty two poster presentations were made at the 2006 Summer Research Symposium. Participants included interns from the Summer Research Program and faculty and students from the predominantly undergraduate colleges and universities whose research is supported by the WV-INBRE and summer interns supported by the Mary Babb Randolph Cancer Center Summer Research Program.

### ABSTRACT TITLES/AUTHORS

#### Posters presented by the WV-INBRE Participants

- 1) **Variations in the Genetic Coding Sequence of AGP and its Effect on the Binding Rate of Docetaxel in the Blood Plasma of Prostate Cancer Patients**, Kristina Bacon, Jing Jie Yu, Terry McManhus, Xiaobing Liang, Qi He, William Petros
- 2) **Early Expression Profiles of Chemokines During Chlamydia Infection**, Tesfaye Belay, Anthony Woart, E.L. Barr, S. Kimbro, F.O. Eko, J.U. Igietseme, G. A. Ananaba
- 3) **Cloning of Collagen-Like Proteins BclD and BclE of *Bacillus anthracis***, Stephanie Boblett, Christopher Garton, Clayton Caswell, Ewa Lukomska, Slawomir Lukomski
- 4) **Effects of Reovirus on Peanut Allergies: A Model to Test the Hygiene Hypothesis**, Ryan Busch, Ronald Fecek, Cynthia A. Cunningham, and Christopher F. Cuff
- 5) **Alginate Production In *Pseudomonas Fluorescens* Is Regulated By The MucA Pathway**, Danielle H. Carroll, Vonya M. Eisinger, Hongwei D. Yu
- 6) **Effect of Flavonoids in Regulating Reactive Oxygen Species and Vascular Endothelial Growth Factor Expression in Human Ovarian Cancer Cells**, Yi Charlie Chen, Chang Xia, Bing-Hua Jiang
- 7) **Immune Response to Polysaccharide Conjugates Following Exposure to an Endocrine Disruptor, 3,4-Dichloropropionanilide (Propanil)**, Gina M Cottrill, Keith D Salazar, Rosana Schafer
- 8) **Bioactivity Screening of Euphorbia Maculata, Euphorbia Corollata, and Euonymus Americanus Extracts**, Darrell Crick, Darla Wise, Daniel Puckett, Joshua Deaton, Jennifer Gills
- 9) **Molecular Dynamics Study of the 4 and 4' Substituents of Diphenylsulfone in the Presence of Flurbiprofen in the Active Site of Cytochrome P450 2C9**, Eric Danhart, Zachary R. Hartman, Peter M. Gannett, Jarrett S. Aguilar
- 10) **Effects of Antioxidant Supplementation and Repetitive Loading on the Expression of Antioxidant Genes**, Megan Docherty, Michael J. Ryan, Ken B. Geronilla, Emidio E. Pistilli, Janna R. Jackson, Sunjay Mannan, Stephen E. Alway
- 11) **Detection of Single Nucleotide Polymorphisms within Gene LRP8: Relation to Cardiovascular Disease in West Virginia**, Lisa Dofka, Amanda Francis, Robert Kreisberg
- 12) **3, 4 dichloropropionanilide (DCPA) Induced Change to the S17 Mouse Stromal Cell Line**, Frederick Garland, Kathleen Brundage
- 13) **Characterization of Collagen-Like Proteins of *Bacillus anthracis***, Chris Garton, Stephanie Boblett, Clay Caswell, Ewa Lukomska, Slawomir Lukomski
- 14) **Alteration of Acetaminophen Metabolism by the Addition of SAME Detected by HPLC**, Thomas F. Guetzloff, Monica A. Valentovic, Nachette Montgomery

Posters presented by the WV-INBRE Participants continued:

- 15) **Evaluation of Anti-Cortactin PY421 and PS405 Antibodies**, Sunam Gurung, Lesly A. Lopez, Scott A. Weed
- 16) **Expression and Purification of Recombinant Novel Testis-Specific Mt13 Antigen for Contraceptive Vaccine Development**, Jessica Hammons, Rajesh Naz, Rajendran Sellamuthu
- 17) **Resveratrol Affects the Response of A7r5 Cells to Mechanical Stretch**, Robert T. Harris, Rahamthulla S. Shaik, Eric R. Blough, Gary L. Wright
- 18) **Molecular Dynamics Study of Dapsone and Analogs Bound to Cytochrome P450 2C9**, Zachary R. Hartman, Eric Danhart, Peter M. Gannett, Jarrett S. Aguilar
- 19) **Generating an Antennapedia-GFP-AFAP Fusion Protein to Determine the Role of AFAP-110 in Angiogenesis**, PA Hartman, BL Venci, M Porta<sup>1</sup>, BM Fenner, DC Flynn, RD Shurina
- 20) **Assessing the Correlation of Homocysteine Levels with TCII, RFC, and FOLH Polymorphism**, Contessa Hill, Bonnie Freeman, Melinda Huff, Michelle Lindsey, Mark Flood, Jean Chappell, Bowie Kahle, Gary Wright, Todd Green, Paulette Wehner, Mark Studney, Elizabeth Murray
- 21) **The Formin hDia2 is Expressed in Invadopodia in Human Head and Neck Cancer Cell Lines**, Luke G. Huggins, Laura Kelley, Scott A. Weed
- 22) **Energy Analysis of CYP 2C9 *In Silico* Mutants Using MM-PBSA**, Monica R. Lee, Peter M. Gannett, Jarrett S. Aguilar
- 23) **Stress-Induced Modulation of Behavioral Responses by Phosphodiesterase-2: Role of Amygdala and Hypothalamus**, Katie MacGregor, Anbrin Masood, James O'Donnell
- 24) **Endothelial-Dependent and -Independent Vasodilation in Cerebral Resistance Arteries: Effects of Age and Estrogen Status**, Casey McCroskey, Rafael Reyes, Amanda LeBlanc, Judy Muller-Delp
- 25) **Human Cytochrome P450 2C9 R108I Mutant Created for Future Kinetics Studies Involving Flurbiprofen and Dapsone**, Stephanie L. McGary, Jacob R. White, Allan Rettie, Jarrett S. Aguilar, Mary V. O'Connor
- 26) **The Localization of Neurotrophin Receptors on the Neurons of Airway Ganglia in Ferrets**, Joseph M. McLane, Thomas Batchelor, Zhong-Xin Wu, Richard D. Dey
- 27) **Exercise Increases Adiponectin Receptor Expression in the Hypothalamus of Obese Zucker Rats**, Sarah Morgan, Amy Sindler, Judy Delp, Jonathan Peterson, Jefferson Frisbee, Randy Bryner, Stan Hileman
- 28) **Toxicogenomics of the Nephrotoxicant N-(3,5-Dichlorophenyl)-2-Hydroxysuccinimide (NDHS) in Male Fischer 344 Rats**, Jessica Morris, G.O.Rankin, D.K. Anestis
- 29) **2-D QSAR of Cytochrome P450 Substrates and Inhibitors**, M.V. O'Connor
- 30) **Effect Of 12(S)-Hete On iNOS AND eNOS Expression In A7r5 Rat Aortic Smooth Muscle Cells**, Matthew Palmer, Jennifer Cooke, Jonathan Hess, Todd L. Green
- 31) ***In Vitro* Effect Of Propanil + 2,4-D On Alloreactive Cytotoxic T Lymphocyte Function**, Kendra Policz Michael Balistreri, Kathleen M. Brundage, James M. Sheil
- 32) **Internalization of Antennapedia-AFAP-110 and Its Effects on Endothelial Cell Morphology**, MJ Porta, PA Hartman, BM Fenner, DC Flynn, RD Shurina

Posters presented by the WV-INBRE Participants continued:

- 33) The Synthesis of 8-(Hydroxymethylphenyl)-2'-Deoxyguanosine and Effects upon DNA Conformation,** Jonathan Proto, Peter M Gannett, Vorasit Vongsutilers
- 34) A Model System For Studying The Effect Of  $\gamma$ -Synuclein And Other Aggregating Proteins On The Leakiness Of The Rough Endoplasmic Reticulum,** James Reed, Andrew K. Shiemke, William F. Wonderlin
- 35) Nitric Oxide-Induced S-Nitrosylation of Bcl-2 Inhibits its Chromium(VI)-Induced Ubiquitination and Proteasomal Degradation,** Jill Rotruck, Neelam Azad, Yon Rojanasakul
- 36) Changes in Cell Surface Proteins Following the Induction of Apoptosis,** Chris Sedlacek, Tracy Serge, Alice Magro, Cynthia Cunningham, Albert Magro
- 37) Apoptosis and Steady State mRNA Expression of Cell Surface Proteins,** Tracy Serge, Chris Sedlacek, Alice Magro, Cynthia Cunningham, Albert Magro
- 38) Mechanism of Canola Oil to Slow Growth of Breast Cancer Cells,** Masako Shimamoto, Elaine Hardman, Gabriela Ion
- 39) Quantum Mechanical/Molecular Mechanical Analysis of CYP 2C9 Substrate Combinations,** Brittney Shook, Peter M. Gannett, Jarrett S. Aguilar
- 40) A Case for Pro-oxidative Mitochondrial Dysfunction in fALS-linked SOD1 Mutations,** Jenny Sisler, Joe Donahue, Michael Gunther
- 41) Regulation of Histidine Decarboxylase Expression by Cytokines,** Zechary C. Smith, Megan Stephenson, Rob Hayes, Carl Gruetter
- 42) Correlation of Genotypic Frequencies of Single Nucleotide Polymorphism in HDLBP, LRP1, And APOC3 Genes to Cardiovascular Disease in West Virginia,** Cassandra Starkey, Amanda Francis, Robert Kreisberg
- 43) Activity Levels in Lean and Genetically Obese Zucker Rats,** Melissa Surbaugh, Eunyoung Kim, Ben Dalton, Ryan Morrison, Lawrence Grover, William McCumbee, and Elsa Mangiarua
- 44) Synthesis, Stability, and Cytotoxicity of the Glutathione-Sulfonium Metabolite of the Anti-Cancer Drug, Busulfan,** Rajeev Tajhya, Islam R. Younis, Patrick S. Callery
- 45) Detection of Genomic Markers for Cardiovascular Disease; Single Nucleotide Polymorphisms in the LIPA Gene,** Chris Taylor, Amanda Francis, Robert Kreisberg
- 46) The Effect of a High Fat Diet on Water Consumption in Lean Zucker Rats,** Sabrena Thomas, Jessica Frankel, Ryan Morrison, Kan Huang, William McCumbee, Elsa Mangiarua
- 47) Evaluation of Aldehyde Dehydrogenase Enzymatic Activity for the Analysis of Stem and Progenitor Cells,** Jennifer Thompson, Vincent Sollars
- 48) Cell Proliferation and Aromatase Activity in Human Prostate Cancer Cell Line BPC-3 in Response to Leptin,** Dana Tiberio, Kristina Lopez, Stan Hileman, Linda Vona-Davis
- 49) Creation of Membrane-Permeable Fusion Proteins using Antennapedia and the Green Fluorescent Protein in the pGEX Fusion Protein Vector,** BL Venci, PA Hartman, BM Fenner, DC Flynn, RD Shurina

Posters presented by the WV-INBRE participants continued:

- 50) **Proteomics Of H-2K<sup>b</sup> & H-2K<sup>bm19</sup> Antigenic Peptides**, Robert J. Warburton, Alexandria N. Lantz, Heather D. Smith, James M. Sheil
- 51) **Role of MAP Kinase in Growth Hormone Signaling in Rat Hippocampus**, Melanie Ward, Lawrence Grover, Todd Green
- 52) **Human CYP 450 2C9 N204I Created Using Site-Directed Mutagenesis for Future Pharmaceutical Interaction Studies**, T.J. Warner, Jacob R. White, Allan Rettie, Jarrett S. Aguilar, Mary V. O'Conner
- 53) **Determining the Expression of DLC-1 in Human Melanoma Cells**, Renee A. West, Beverly C. Delidow
- 54) **Detection of Single Nucleotide Polymorphisms in Von Willebrand Factor and Endothelial Lipase for Genomic Markers of Cardiovascular Disease**, De Xiong Zheng, Amanda Francis, Robert Kreisberg

### Former WV-INBRE Summer Intern Co-Authors Paper in Top Scientific Journal

Bernie Boswell, a former undergraduate student intern in the WV-BRIN/INBRE Summer Research program and currently a Ph.D. student at West Virginia University, has co-authored a paper with Steven Frisch, Ph.D, of the Mary Babb Randolph Cancer Center and Department of Biochemistry and Molecular Pharmacology. This is the first paper co-authored by a former student intern of the WV-BRIN/INBRE program as part of his/her Ph.D. training program.

The citation for the study is: "Caspase-8 promotes cell motility and calpain activity under nonapoptotic conditions." Helfer B, **Boswell BC**, Finlay D, Cipres A, Vuori K, Bong Kang T, Wallach D, Dorfleutner A, Lahti JM, Flynn DC, Frisch SM., Mary Babb Randolph Cancer Center and Department of Biochemistry, West Virginia University, Morgantown, West Virginia 26506, USA. The paper appeared in Cancer Research. 2006 Apr 15;66(8):4273-8.



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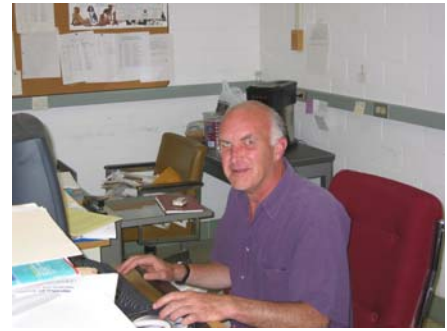
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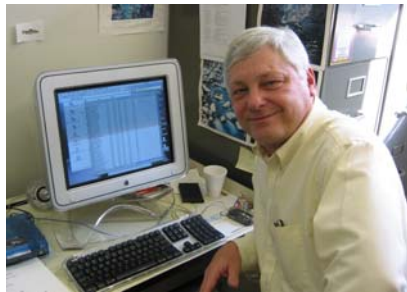
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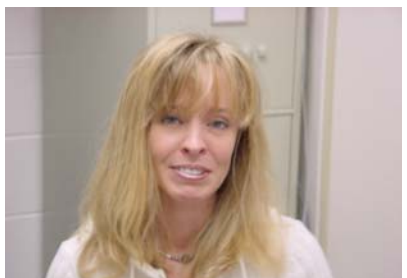
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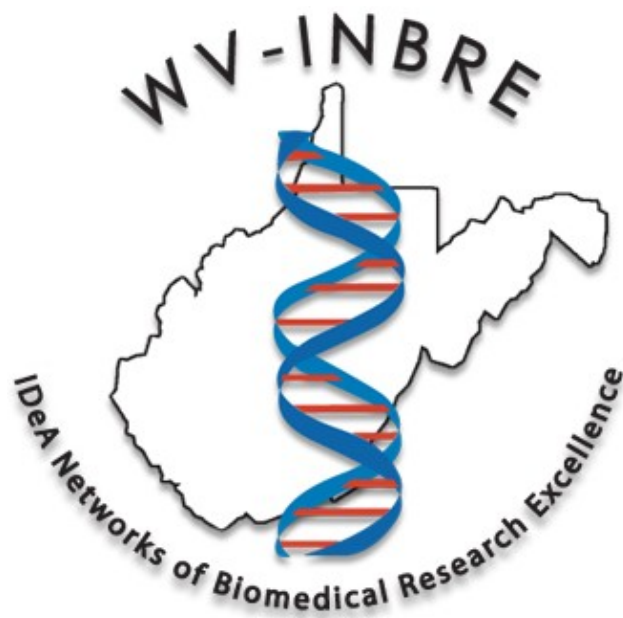
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