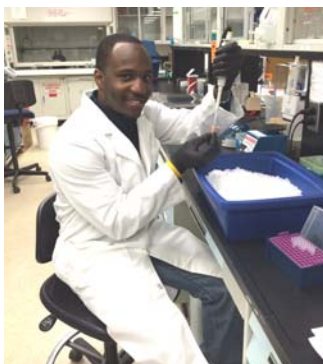


WV-INBRE NEWSLETTER

Volume 18
Spring, 2014



INBRE/HSTA Intern Chosen American Physiological Society Fellow



Gavin Washington

Gavin Washington is one of 4 Health Science Technology Academy (HSTA) Scholars attending West Virginia University, who were selected as biomedical research interns to work

in an INBRE-funded lab from October 2013 through April 2014. Washington was recently selected as an Undergraduate Research Fellow with the American Physiological Society (APS), in their Short-Term Research Education Program to Increase Diversity in Health-Related Research (STRIDE) for 2014. With funding through this fellowship, Gavin will continue to work with Dr. Mark Olfert and Dr. Linda Vona-Davis throughout the

summer, after his INBRE/HSTA internship is completed.

Starting five years ago, the WV-INBRE program offered biomedical research internships to HSTA scholars to work with INBRE-funded faculty at the partner institutions during the academic year. This past academic year, this opportunity was extended to HSTA scholars at West Virginia University and Marshall University to work with research faculty at these institutions.

Washington is originally from Martinsburg WV and attended Martinsburg High School, where he completed the HSTA program. The title of his INBRE-funded research project is "Adipose Tissue Capillarity in Adipocyte-specific VEGF Deficient Mice". He worked with Nicole Zachwieja, Dr. Linda Vona-Davis and Dr. Mark Olfert on this project in the West Virginia University School of Medicine Departments of Exercise Physiology and Surgery, the Mary Babb Randolph Cancer Center (MBRCC), and the Center for Cardiovascular and Respiratory Sciences (CCRS).

Washington plans to graduate in December 2014, with his B.S. degree in Exercise Physiology. He plans to enter a Radiology program in the Fall semester of 2015, and he plans to become involved in Radiology therapy in the treatment of cancer patients.

The other HSTA scholars working with West Virginia University research faculty are: Chandra Dunn with Dr. Patrick Callery; Katie Rollins with Dr. Julie Breczynski-Lewis; and Jacob Tyo with Dr. Peter Stoilov.



Network Partners of the WV-INBRE

Lead Universities

Marshall University
West Virginia University

Predominantly Undergraduate Institutions (PUIs)

Alderson-Broaddus College
Bethany College
Bluefield State College
Concord University
Davis & Elkins College
Fairmont State University
Glennville State College
Mountain State University
Salem International University
Shepherd University
University of Charleston
West Liberty University
West Virginia State University
West Virginia Wesleyan College
Wheeling Jesuit University

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Message from the WV-INBRE Principal Investigator - Gary O. Rankin, Ph.D. -

We are finally beginning to experience spring weather! It hasn't snowed for a couple of weeks and the cherry and Bradford pear trees are starting to bloom in Huntington. I certainly don't mind having winter behind us and look forward to warmer weather and sunny skies. Spring is a time of renewal and the beginning of a new cycle of life. This concept certainly applies to WV-INBRE as well this year.

Last June 19th, we submitted the competitive renewal application for the WV-INBRE program to the National Institutes of Health. The submission was a true team effort with all Administrative Core members and Core Directors contributing. In spite of all the issues with the government shut down over budget debates and re-scheduling of Study Sections, our application was finally reviewed on December 16, 2013. I am extremely pleased to let everyone know that we got an outstanding score and anticipate funding for another five years. To that end, we have extended the current year of funding (Y13) to July 31, 2014 with the anticipated start of our new award being August 1, 2014. This means that all current research and other sub-awards will be extended to a new end date of July 31, 2014. We have submitted a Carryover Request to the National Institute of General Medical Sciences (NIGMS) to use our unspent funds from previous years to cover most of the costs of extending Y13 to the end of July, including funding for our summer research program, and also to purchase new equipment for network institutions. We hope to get approval of our Carryover Request in the very near future.

With Phase III of WV-INBRE, there will be some activities that remain essentially the same, such as the summer research program, while other

activities will be new. We will again have major research awards at the partner institutions, and the competition for these three-year awards starting in Y14 (the first year of Phase III) is well underway. The applications that were received have been reviewed by external reviewers and scored. Following review by the External Advisory Committee and NIH approval, announcements of the applications funded will be made. In addition to our continuing Faculty Research Development Awards (FRDAs), Genomic Core Research Pilot Grants and Center for Natural Products Research (CNPR) Award programs, Phase III will include a Chronic Disease Pilot Project Award program. These developmental pilot awards will fund meritorious pilot projects that focus on chronic diseases and conditions (e.g. cancer, cardiovascular disease, diabetes, obesity) that are prevalent in West Virginia. This new program will be open to all biomedical research investigators in the WV-INBRE network.

It's always important to look for opportunities to present your research. This year the WV-INBRE Summer Research Symposium will be held on Monday, July 28, 2014 at West Virginia University in Morgantown, WV. Each year this symposium provides a venue for the summer research interns, summer research fellows, HSTA high school science educators, major research awardees and FRDA researchers (and their students) to present their research progress. This year we are extremely pleased that our Keynote Speaker will be Dr. Larry Walker, Director of the National Center for Natural Products Research at the University of Mississippi. Dr. Walker is an internationally recognized expert in natural products research, and I'm sure everyone will want to meet and talk with him during the meeting. Another opportunity for presenting research and

learning more about biomedical research is at the National IDeA Symposium of Biomedical Research Excellence (NISBRE) meeting.

This year, the NISBRE meeting will be held in Washington, D.C. on June 16-18, 2014, at the Omni Shoreham Hotel. The meeting details, with abstract, housing and registration information, can be found at <https://www.mpi-evv.com/2014idea/researchpath/default.htm>. The deadline for abstract submission is April 18, and the registration deadline is May 2 for early-bird registration. Travel awards for research presenters will be available from WV-INBRE (contact Robert Griffith; rgriffith@hsc.wvu.edu for more information,) and travel awards are also available from the NISBRE program (check the meeting website for details).

Another piece of good news is that Dr. Krishan Arora, who was the Director of the INBRE program when it was located at the National Center for Research Resources, has moved to the National Institute for General Medical Sciences as of February 24, 2014, and he will again be heading up the INBRE program. It was a pleasure working with Dr. Arora in the past, and we look forward to working with him again.

So, there is a lot of activity surrounding WV-INBRE as we close Phase II and begin Phase III. I am extremely pleased that this program will be able to continue helping to build the biomedical research infrastructure in West Virginia for the next five years, and I look forward to seeing our program continue to grow in the future.



12th Annual WV-INBRE Summer Symposium

The 2013 WV-INBRE Summer Research Program run from May 28 till July 29. Twenty-four talented undergraduate students participated in the WV-INBRE Summer Research Internship Program at West Virginia University and Marshall University. Nine interns were located at Marshall University and fifteen conducted their internship at WVU. Thirty-eight applications were reviewed to fill the twenty-four positions. Interns came from eleven of the thirteen Primarily Undergraduate Institutions (PUIs) in the WV-INBRE network. In addition, one intern from the new Bioinformatics Internships for Undergraduate Students in the Southeast INBRE Region participated in the summer program at Marshall University. Interns conducted biomedical research projects under the direction of faculty mentors. Over the summer, the interns gained valuable, hands-on experience doing graduate-level research in the labs of their mentors. The interns worked in state-of-the-art facilities on research projects related to cancer, cardiovascular disease, obesity and diabetes, neuroscience, toxicology and environmental health, infectious diseases and bioinformatics. They also learn how to share their findings at a scientific meeting and to network, all of which will help them build academic competitiveness for graduate school. The Summer Research Program promotes awareness of graduate degree programs and careers in biomedical research.

WV-INBRE Summer Research Internship Program Participants at West Virginia University

Interns

Morgan Johnson - Shepherd University
 Danielle Stankus - Shepherd University
 Alexander DelGiorno - Bethany College
 Ryan Finnegan - Davis and Elkins College
 Rachel Justus - Bluefield State College
 Colin Winkie - WV Wesleyan College
 Bina Malapur - Shepherd University
 Brandon Kirby - Bluefield State College
 Sricharan Mahavadi - Shepherd University
 Jeffrey Adams - Davis and Elkins College
 Andrew Abrahamian - Shepherd University
 Katherine Simmons - Alderson Broaddus University
 Seth Findling - Bethany College
 Kayla Sisson - Fairmont State University
 Jessica Allen - Concord University

Mentors

Dr. Alexey Ivanov
 Dr. John Hollander
 Dr. Julie Brefczynski-Lewis
 Dr. William Petros
 Dr. Joan Olson
 Dr. Bingyun Li
 Dr. Robert Goodman
 Dr. Gregory Konat
 Dr. Elena Pugacheva
 Dr. Joan Olson
 Dr. William Wonderlin
 Dr. Stephanie Frisbee
 Dr. Patrick Callery
 Dr. Stephen Alway
 Dr. Linda Vona-Davis

WV-INBRE Summer Research Internship Program Participants at Marshall University

Interns

Joshua Easterling - University of Charleston
 Rishi Reddy - West Virginia State University
 Hajer Mazagri - University of Charleston
 Anthony Schenelle - Wheeling Jesuit University
 Noah Mitchell - Bluefield State College
 Linh Vu - University of Charleston
 Rebecca Martin - Davis and Elkins College
 Jaya Ale - University of Charleston
 Alnairouz Katrib - WV State University

Mentors

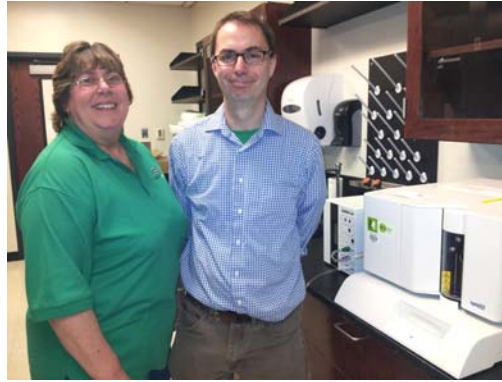
Dr. Elaine Hardman
 Dr. Larry Grover
 Dr. Richard Egleton
 Dr. Monica Valentovic
 Dr. Nalini Santanam
 Dr. Gary Rankin
 Dr. Piyali Dasgupta
 Dr. Eric Blough
 Dr. Beverly Delidow

Continued on page 5

The WV-INBRE program has recently applied funds for the purchase of two major equipment items housed in the core facilities at the two lead institutions, Marshall University and West Virginia University, to enhance the technical capabilities of the overall network. The Luminex LX200, at Marshall University in Huntington, is a flow cytometry-based analyzer. The Olympus MVX10 Macro Zoom Fluorescence Microscope is housed in the Microscope Imaging Facility at West Virginia University in Morgantown.

The *Luminex LX200 analyzer* is designed to quantitate multiple proteins (such as cytokines) using bead-based, ELISA-like assays. It can process up to 100 proteins per well of a 96-well microtiter plate with as little as 25 μ L of sample volume, using either magnetic bead or non-magnetic bead immunoassays. It can be programmed for protein or nucleic acid analyses through a selection of on-board functions. The Luminex LX200 replaces an outdated, ten year old Luminex 100 which could only process non-magnetic bead assays. Both Millipore and BioRad, the principal providers of the non-magnetic bead immunoassays, discontinued sales of their nonmagnetic bead assays in early 2014, thereby limiting the applicability and usefulness of the Luminex LX100 instrument. The LX200 is located in the Analytical Core Facility (room 429) of the Byrd Biotech Science Center at Marshall University. WV-INBRE investigators may contact Dr. Nalini Santanam (304-696-7321) to request training or sign up for a run. Investigators are

responsible for the acquisition and cost of all supplies and reagents used in experimentation.



Richard Egleton PhD and Carla Cook in the Department of Pharmacology, Physiology and Toxicology (Joan C. Edwards School of Medicine, Marshall University) will oversee use of the new Luminex LX200.

The *Olympus MVX10 Macro Zoom Fluorescence Microscope* is housed in the Microscope Imaging Facility at the Robert C. Byrd Health Sciences Center, West Virginia University. This instrument enhances the ability to observe fluorescence in intact organisms by fulfilling the need for both maximum detection sensitivity at low magnification as well as a large zoom range. Unlike standard stereo microscopes with two optical paths, the MVX10 is a mono-zoom microscope, which uses a single, large-diameter optical path to collect the weak light generated by fluorescence at all magnifications. This optical path, with specially designed lenses, provides exceptionally high numerical apertures (NAs), enabling increased bright-

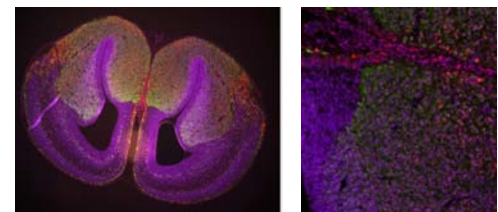
ness and resolution, while retaining the working distance and wide field of view of stereo microscopes. It ensures easy observation of dynamic processes over time.

Attributes of the system include:

- Brightfield and multichannel fluorescence, encompassing the visual spectrum from blues to far red.
- High fluorescence efficiency combined with stereo observation
- Specimen observation from 4x to 125x, allowing macro- to micro- observation of the same specimen
- Long working distance for observation at optimal magnification
- Short exposure times result in maximum protection for your specimen.



The MVX10 Macro Zoom Fluorescence



High resolution, multichannel image of a whole brain slice (left) and a zoomed-in section (right).

12th Annual WV-INBRE Summer Symposium (continued)

Bioinformatics Internships Program for Undergraduate Students in the Southeast INBRE Region - Participant at Marshall University

Intern

Bishnu Kafley - Berea College, KY

Mentors

Dr. Travis Salisbury/Dr. Jim Denvir

Two faculty members from PUIs also spent their summer conducting biomedical research as part of the WV-INBRE Summer Research Fellowship Program. Dr. Jennifer Franko, Assistant Professor of Biology at Bethany College, worked at WVU under the mentorship of Dr. Rosana Schafer. Dr. Sobha Goraguntula, Assistant Professor of Chemistry at Alderson Broaddus University worked at Marshall University under the mentorship of Dr. Travis Salisbury.

Goodner Speaks on Bioinformatics and Genomics at 12th Annual WV-INBRE Symposium

The 12th Annual WV-INBRE Summer Research Symposium featured keynote speaker Brad Goodner, Ph.D., Professor of Biology at Hiram College in Ohio. His talk was entitled: "Beyond Your Textbook: Using Genomics and Bioinformatics to Test the Role of Model Organisms"

The student Interns and faculty fellows also presented the results of their research at the 12th Annual WV-INBRE Summer Research Symposium on July 29 at Marshall University. The morning session of the symposium began with oral presentations by the following participants:

Dr. Cara Halldin, alumnus of the WV-INBRE program and currently Epidemiologist at CDC, NIOSH in Morgantown, WV, Jessica Allen, Rebecca Martin and Sricharan Mahavadi, WV-INBRE

Summer Research Program Interns, Dr. Jennifer Franko, Biology Professor at Bethany College, Summer Research Program Fellow, and Kathy Loughman, high school science teacher at John Marshall High School in Glen Dale, WV, WV-INBRE/HSTA Fellow.

Following a luncheon, the symposium continued with afternoon information sessions on bioinformatics and on applying to graduate school. To complete the afternoon, students and faculty presented their posters. There were a total of 58 posters, and participants presenting posters included: undergraduate student interns and faculty fellows from the PUIs who conducted research at WVU and Marshall University during the 9-week summer research program, students and faculty conducting research at their home institutions, as well as high school sci-

ence teachers supported by the WV-INBRE/HSTA initiative.



Brad Goodner, Ph.D. (above) is a Professor of Biology, Edward J. Smerek Chair of Mathematics, the Sciences, & Technology, and Director of the Center for Deciphering Life's Languages, Hiram College.

Student Intern Participants in the WV-INBRE Biomedical Research Summer Program

2013 Student Interns at Marshall University

Front Row Left to Right: Jaya Ale (University of Charleston), Hajer Mazagri (University of Charleston), Becca Martin (Davis and Elkins College), Linh Vu (University of Charleston)

Back Row left to right: Rishi Reddy (West Virginia State University), Nairouz Katrib (West Virginia State University), Noah Mitchell (Bluefield State College), Joshua Easterling (University of Charleston), Anthony Schenelle (Wheeling Jesuit University).



2013 Student Interns at West Virginia University

Front Row Left to Right: Kayla Sisson (Fairmont State University), Danielle Stankus (Shepherd University), Bina Malapur (Shepherd University), Andy Abrahamian (Shepherd University).

Second Row Left to Right: Jessica Allen (Concord University), Rachel Justus (Bluefield State College), Alexander DelGiorno (Bethany College).

Third Row Left to Right: Katherine Simmons (Alderson-Broadbuddus College), Jeffrey Adams (Davis and Elkins College), Morgan Johnson (Shepherd University), Sricharan Mahavadi (Shepherd University)

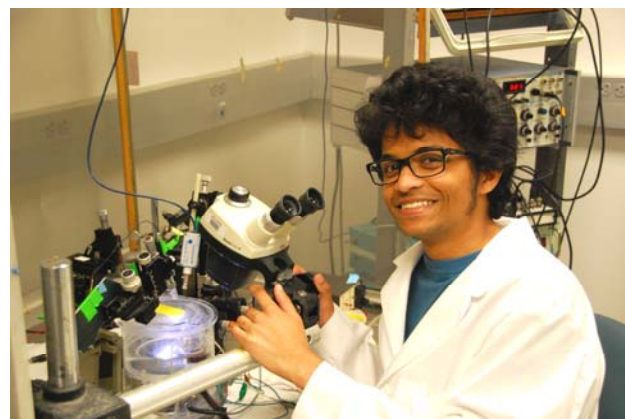
Back Row Left to Right: Colin Winkie (West Virginia Wesleyan College), Ryan Finnegan (Davis and Elkins College), Brandon Kirby (Bluefield State College) Seth Findling (Bethany College).



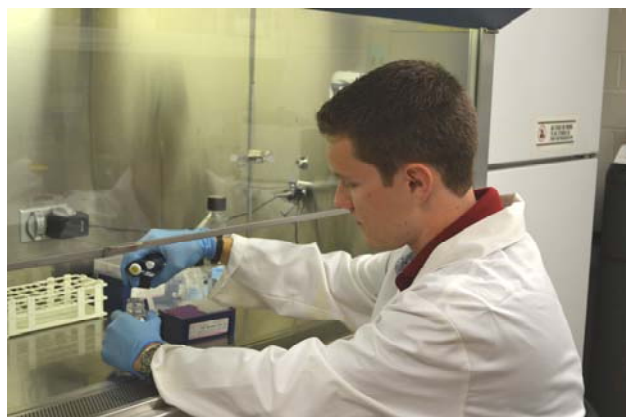
Student Interns Working In The Labs



Rebecca Martin worked in Dr. Dasgupta's lab at Marshall University.



Rishi Reddy worked in Dr. Grover's lab at Marshall University.



Brandon Kirby, Bluefield State College, worked in Dr. Konat's lab at West Virginia University.

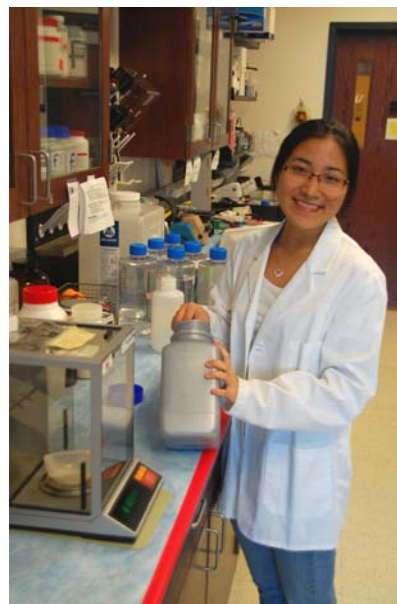


Jaya Ale worked in Dr. Blough's lab at Marshall University.

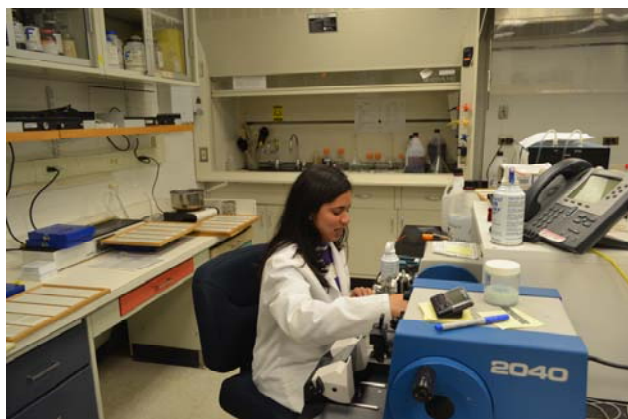
Student Interns Working In The Labs (continued)



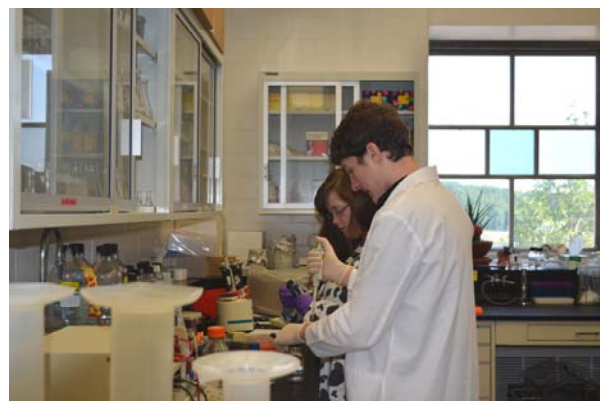
Joshua Easterling worked in Dr. Hardman's lab at Marshall University.



Linh Vu worked in Dr. Rankin's lab at Marshall university.

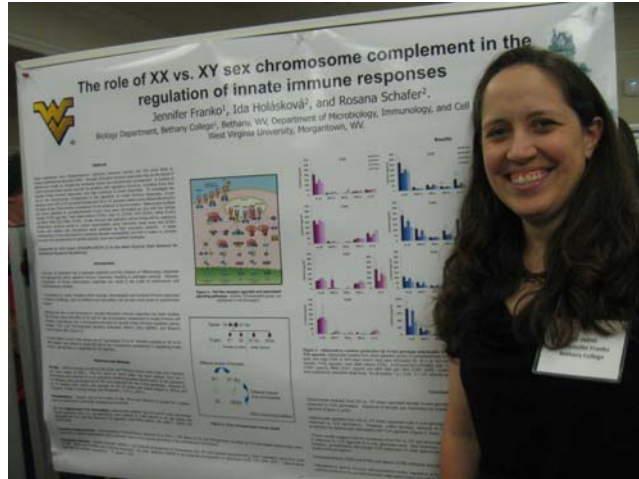


Bina Malapur, Shepherd University, worked in Dr. Goodman's lab at West Virginia University.

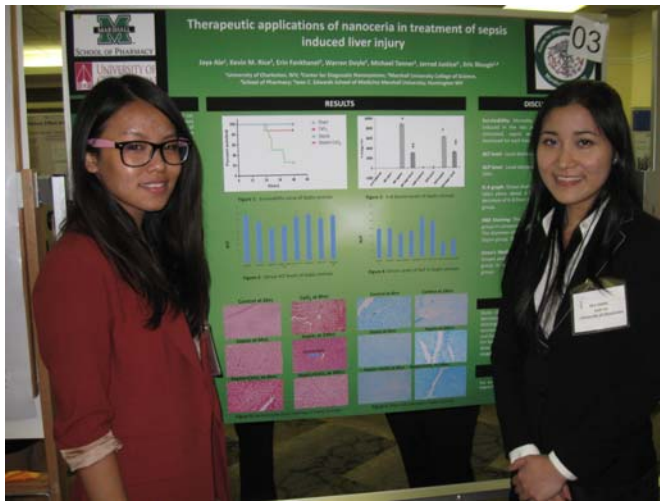


Jeffrey Adams, Davis and Elkins College and Rachel Justus, Bluefield State College both worked in Dr. Olson's lab at West Virginia University.

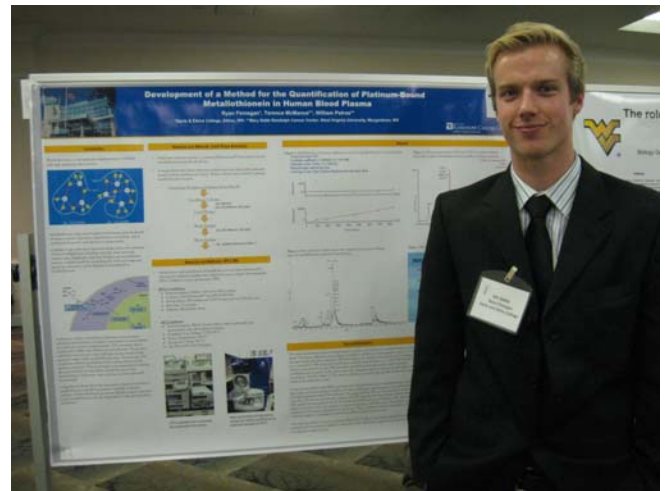
Summer Participants Present Posters at WV-INBRE Symposium



Dr. Jennifer Franko, a Faculty Fellow from Bethany College presents her poster on “The role of XX vs. XY sex chromosome complement in the regulation of innate immune responses.”



Jaya Ale and Linh Vu, student interns from the University of Charleston present their poster on “Therapeutic applications of nanoceria in treatment of sepsis induced liver injury.”



Ryan Finnegan, a student intern from Davis and Elkins College presents his poster on “Development of a Method for Quantification of Platinum-bound Metallothionein in Human Blood Plasma.”

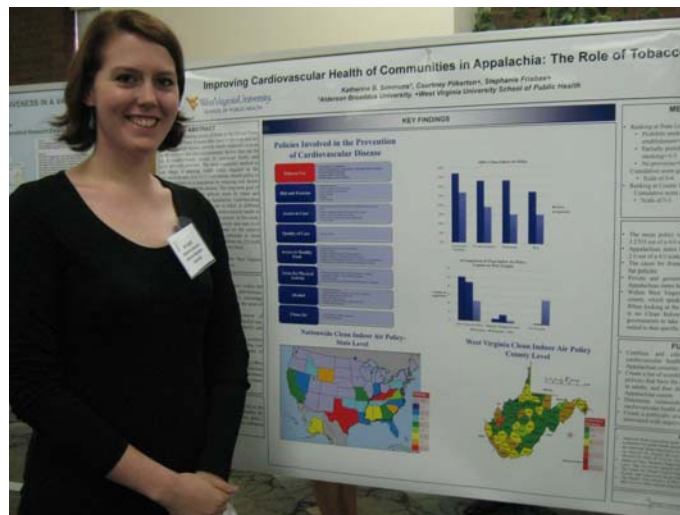
WV-INBRE Symposium Presentations (continued)



Sricharan Mahavadi, a student intern from Shepherd University, was selected for an oral presentation on “Metastatic Activity of breast Cancer Cells in the Presence of NEDD9.”



Jessica Allen, a student intern from Concord University, was selected for an oral presentation on “Investigating the Role of Vascular Endothelial Growth Factor in Adipocyte Specific VEGF Deficient Mice.”



Katherine Simmons, Alderson-Broaddus College presents her poster “Improving Cardiovascular Health of Communities in Appalachia: The Role of Tobacco Policy.”

NIGMS to Host 5th Biennial National IDEa Symposium

The 5th Biennial NIGMS National IDEa Symposium of Biomedical Research Excellence (NISBRE) will be held in Washington, D.C. at the Omni Shoreham Hotel on June 16-18, 2014. More information can be found on the meeting website:

(www.mpi-evv.com/2014idea/researchpath/default.htm)

The deadline for abstract submission is April 18, 2014 and the early bird registration deadline is May 2, 2014.

WV-INBRE has set aside funds to provide a number of travel awards for faculty and students who are presenting their research at the meeting; additional information will be made available concerning these awards in the near future.

Travel awards are also available from the NISBRE organizing committee on a competitive basis.

If you haven't already submitted an abstract to present your research at this very important IDEa meeting, please consider doing so. It is important for WV-INBRE supported research to be well represented at the NISBRE meeting.

In Memoriam: Goran Dragan Boskovic, Ph.D.

Goran Dragan Boskovic, Ph.D., manager of the MU Next Generation Sequencing and Microarray Core Facilities passed away unexpectedly on July 14 2013. Born in Nis, Serbia in 1963, he received a B.Sc. in Chemistry from the University of Nis. In 1990, Goran traveled to the United States to enter graduate school. In 1996 he earned a Ph.D. in Biochemistry from the Medical College of Wisconsin. Goran came to Marshall in 1996 to work as a postdoctoral fellow in the laboratory of Richard Niles, Chair of the Department of Biochemistry. In 2004 he joined

the Genomic Core facility, where he served as the manager of both the Microarray and the Next Generation Sequencing Core Facilities. Goran was very much the "go to" guy for designing and executing gene expression profiling, whole genome and whole exome studies, and RNA-Seq analyses. He collaborated on genomic and transcriptomic studies with Dick Niles, Laura Gibson, Don Primerano, Jim Denvir and other WV-INBRE investigators. He published his findings in Molecular Cancer, Molecular Immunology, Cancer Investigation, Investigative Genetics and

PLoS One. The Marshall University Biomedical Science First Year Academic Achievement Award has been named in Goran's honor.

Goran is survived by his wife and four children. Memorial contributions may be made to a college saving accounts for Luka Boskovic (Goran's son). To make a contribution, you may send checks to College Advantage, PO Box 932348, Cleveland OH 44193 and reference account #2484338. For additional information please contact College Advantage at 1-800-233-6734.

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