

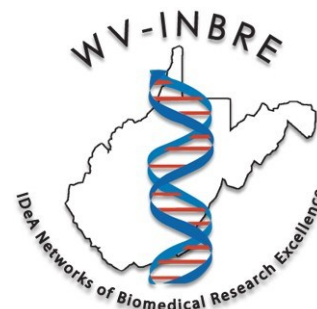
WV-INBRE NEWSLETTER

Volume 24

Fall/Winter 2018



Dr. Richard M. Goldberg was the keynote speaker at the 2018 WV-INBRE Summer Research Symposium



Dr. Richard M. Goldberg, MD

Richard M. Goldberg, MD, is West Virginia University Cancer Institute's (WVUCI) Director, and Director of the WVU Cancer Signature Program. He serves as a member of WVU Health Sciences Vice President and Executive Dean, Clay

Considered an international leader in gastrointestinal cancer treatment and research as well as in leadership of cancer programs in academic medicine, Dr. Goldberg has been Principal Investigator, Co-PI, Co-investigator and Mentor on multiple research and training grants funded through the National Cancer Institute (NCI). He has published more than 335 papers in peer-reviewed journals. His clinical interests are in management of patients with malignancies in the gastrointestinal tract, particularly colorectal and neuroendocrine cancers. His research focuses on defining new treatments, elucidating inherited cancer susceptibility, and identification of predictive and prognostic factors in gastrointestinal cancers. He helps to lead the Alliance for Clinical Trials in Oncology as the Associate Group Chair of this NCI funded organization that is a member of the National Clinical Trials Network. The Alliance conducts clinical trials and does translational research across the US and Canada.

He is a sought after lecturer at academic centers and scientific conferences across the nation and the world. He has mentored many MD, MD/PhD, and PhD students, post-doctoral researchers and junior faculty over his 34 years as a medical oncologist in academic settings.

He is a graduate of Harvard University, earning an undergraduate degree cum laude in biology in 1975 and received his medical degree from the State University of New York Upstate Medical University in 1989 where he was elected to the Alpha Omega Alpha honor medical society.

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Network Partners of the WV-INBRE

Lead Universities

Marshall University
West Virginia University

Predominantly Undergraduate Institutions (PUIs)

Alderson-Broaddus University
Bluefield State College
Concord University
Davis & Elkins College
Fairmont State University
Glenville State College
Shepherd University
University of Charleston
West Liberty University
West Virginia School of Osteopathic Medicine
West Virginia State University
West Virginia Wesleyan College
Wheeling Jesuit University

Message from the WV-INBRE Principal Investigator

- Gary O. Rankin, Ph.D. -



As I am writing this message, 2018 is coming to an end and 2019 is only a few weeks away. It is hard to believe that we are in the last year of Phase III of our INBRE program, but we have had a lot of activity in WV-INBRE this year with many positive results.

On March 27, 2018, we submitted our competitive renewal for WV-INBRE, along with many other IDEa states whose programs were up for renewal. Our application was reviewed on October 23 and received a very favorable impact score. We have received a "Just in Time" request from NIH, which is very encouraging, and will submit it to NIH before the holiday break. NIGMS Council will meet on January 24, 2019 to recommend scored applications for funding. Based on our impact score, I am optimistic that WV-INBRE will be renewed for five more years. To that end, I want to thank everyone who worked so hard on our competitive renewal application and those who help make WV-INBRE a successful program.

As we are looking toward another phase of WV-INBRE, Dr. Franklin G. Berger has been added as a new member to our External Advisory Committee. Dr. Berger is Professor of Science and Founder and

Director of the Center for Colon Cancer Research at the University of South Carolina. He is a former COBRE principal investigator, whose colon cancer COBRE recently completed all three phases of the COBRE program. Dr. Berger's expertise in cancer will be extremely valuable to our cancer researchers and our new cancer biology pilot project program that will be initiated during Phase IV.

One of the highlights of our program for me each year is the summer research program. In 2018, we had a wonderful summer research program and symposium with 26 undergraduate students from 11 of the 14 partner institutions conducting research at Marshall and West Virginia Universities. We also had four students from the SRIMS minority undergraduate research program and five students from the American Heart Association undergraduate program at Marshall University participate in many of the WV-INBRE activities, including presenting their work at the summer symposium. In addition, two partner institution faculty fellows and five Health Sciences and Technology Academy (HSTA) high school science teachers conducted research as part of the summer program this year. Dr. Shinichi Asano, Fairmont State University, worked in the laboratory of Dr. Paul Chantler at West Virginia University and Dr. Greg Polsinelli, Bethany College, worked with Dr. Hongwei Yu at Marshall University. The HSTA high school teachers worked in WV-INBRE funded la-

boratories at Bluefield State College, Shepherd University, West Virginia University and West Liberty University. The summer symposium was held at West Virginia University on July 31, 2018 with six oral and 72 poster research presentations being made. The keynote speaker was Dr. Richard Goldberg, Director of the West Virginia Cancer Institute whose presentation described his career pathway and gave us all hope in the battle of defeating cancers. Overall, a great day with lots of new information and fun!

I would be remiss if I didn't remind everyone that when you publish research or make a presentation based on WV-INBRE supported research or equipment purchased with WV-INBRE funds, please acknowledge support from NIH grant P20GM103434 awarded to West Virginia INBRE. These acknowledgements of WV-INBRE support are critical for our effort to demonstrate productivity in WV-INBRE and help get WV-INBRE renewed each cycle. If you have any questions about how to word the acknowledgement, please don't hesitate to contact me. Also, if you receive any honors, please let us know. We want to let NIH know that members of the WV-INBRE network are being recognized for what they are accomplishing.



Happy Holidays and may 2019 be your best year yet!

Dr. Horzempa selected Professor of the Year for West Virginia

Dr. Joseph A. Horzempa, Associate Professor of Biology at West Liberty University and a WV-INBRE-supported researcher, has been selected as the 2017 Professor of the Year for West Virginia. Dr. Horzempa has received funding from WV-INBRE from the



West Virginia's Professor of the Year
Dr. Joseph Horzempa is shown working
in his lab

beginning of his tenure at West Liberty University to support his research.

Dr. Horzempa studies the mechanism of erythrocyte invasion by *Francisella tularensis*. He investigates how and why *F. tularensis* invades red blood cells, antibiotic resistance, and vaccine development.

Dr. Horzempa's research has been published in prestigious journals including the Journal of Infectious Diseases, the American Journal of Virology, the American Medical Journal, and Immunology among others. <https://westliberty.edu/news/news/dr-joseph-horzempa-is-named-professor-of-the-year>



Pictured Left to Right: Dr. Robert Kreisberg, Dean of the College of Sciences, Dr. Horzempa (holding the award), Dr. Karen Kettler, Chair of the Department of Natural Sciences and Mathematics, and Dr. Stephen Greiner, President of West Liberty University.

Dr. Richard M. Goldberg was the keynote speaker at the 2018 WV-INBRE Summer Research Symposium (*continued from front page*)

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Prior to his arrival at WVU in 2017, he served as physician in chief of the both the James Cancer Hospital at The Ohio State University (OSU) and, prior to that, at the North Carolina Cancer Hospital at the University of North Carolina in Chapel Hill (UNC). He was an Associate Director at both the OSU the UNC Comprehensive Cancer Centers and the Division Chief of Hematology and Oncology at UNC and Acting Division Director of Medical Oncology at OSU. Prior to that he was a consultant at the Mayo Clinic in Rochester and Associate Chair of the Department of Medicine at the Geisinger Clinic in Danville, PA.

Dr. Goldberg serves on several national scientific advisory committees and on the scientific advisory committee for a number of pharmaceutical companies at the corporate level. He is a Fellow in the American

College of Physicians and the American Society of Clinical Oncology. He is married to Lynda Goldberg MBA, MPH and has two adult children.



2018 WV-INBRE Summer Research Symposium



Undergraduate college students, the majority from West Virginia, showcased their summer research projects on July 31st as part of the 17th Annual West Virginia IDEa Network for Biomedical Research (WV-INBRE) Summer Research Symposium. During the 2018 Summer Program, WV-INBRE supported twenty-seven undergraduate interns, two faculty fellows, and five high school science teachers from the West Virginia HSTA program. Seventeen interns and one faculty fellow carried out their research at West Virginia University. Ten interns and one faculty fellow conducted their research at Marshall University. The high school science teachers conducted their research at West Liberty University, Shepherd University, West Virginia University, and Bluefield State College.

The research projects presented at the symposium were conducted under the direction of faculty mentors during an intensive 9-week period. The projects included studies on the treatment of cancer, endometriosis, genetics of obesity and type 2 diabetes, opioid addiction, and the pathophysiology and treatment of infectious diseases among others.

WV-INBRE, which is designed to support biomedical research in the state, is funded by a grant from the National Institutes of Health (NIH) to Marshall University, in coopera-

tion with West Virginia University and fourteen other colleges and universities in the state. The summer program allows students enrolled in the Primarily Undergraduate Institutions (PUIs) in the WV-INBRE network research opportunities in labs at both Marshall University and



West Virginia University. In addition to the formal research training they receive, students attend workshops and seminars aimed at helping them understand the research process and graduate education.

The morning session of the symposium began with oral presentations by:

Shinishi Asano, Ph.D., Assistant Professor of Exercise Science, Fairmont State University; Summer Research Program Fellow.

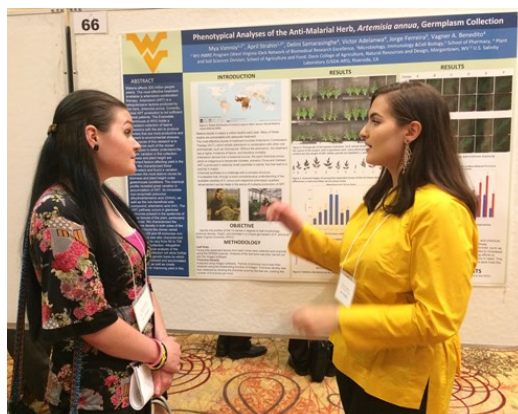
Jill Eller, High School Science Teacher at Wheeling Park High School in Wheeling, WV; WV-INBRE/HSTA Summer Research Fellow.

Kelsey Matusic (University of Charleston), Brandon Richter (West Virginia Wesleyan College), Oddai Gharib (West Virginia State University), and Yuen Man Tze (Concord

University); Summer Research Program Interns.

This year's summer research symposium featured keynote speaker Richard M. Goldberg, MD, West Virginia University Cancer Institute's (WVUCI) Director, and Director of the WVU Cancer Signature Program. He serves as a member of the leadership team for the WVU health sciences Vice President and Executive Dean, Clay Marsh. His presentation was entitled: "A Career Punctuated by "C" Words: Cancer, Caring, Curing, and Championing". Dr. Goldberg's talk was highly inspirational, entertaining, and very well received by everybody in attendance.

Following a luncheon, the symposium continued with poster presentations by students and faculty. There were a total of 73 posters. Participants presenting posters included: summer undergraduate interns and faculty fellows from the Primarily Undergraduate Institutions who conducted research at West Virginia University and Marshall University during the 9-week summer research program, and students and faculty conducting research at their home institutions. The high school science teachers supported by the WV-INBRE/HSTA initiative also presented posters.



WV-INBRE Interns at Marshall University



Pictured Left to Right: Front Row: Mackinzie Smith (Davis & Elkins College), Kristiana Sklioutovskaya-Lopez (University of Charleston), Kelsey Matusic (University of Charleston), Kaden Hudson (Concord University), and Abigail Turner (Bethany College). Back Row: Oddai Gharib (West Virginia State University), Matthew Rosolen (University of Charleston), Norman Cole (West Virginia Wesleyan), Alexa Smarra (Davis & Elkins College), Daria Securro (West Virginia Wesleyan), and Greg Polsinelli (Bethany College).

WV-INBRE Interns at West Virginia University



Pictured Left to Right: First row: Juliana Martin (Bethany College), Katie Quillen (West Virginia Wesleyan), Tania Nguyen (Shepherd University), Makayla Metzger (Fairmont State University). Second Row: Yuen-Man Tze (Concord University), Annika Naylor (West Virginia Wesleyan), Emily Means (West Virginia Wesleyan), Sabrina Burtner (West Virginia Wesleyan), Alexandra Metz (Bethany College). Third Row: Jennifer Faila (Wheeling Jesuit University), Morgan Winterbottom (Alderson-Broaddus College), Brandon Richter (West Virginia Wesleyan), Emily Rainey (Alderson-Broaddus College). Last Row: Gage Pyles (West Liberty University), Ethan McDonald (West Liberty University), Shin Asano (Fairmont State University), and Frederik Broendsted (West Virginia Wesleyan).

WV-INBRE 2018 Summer Fellows

WV-INBRE sponsors a Summer Research Fellowship Program for faculty members from the PUIs in the network. This year's summer fellows are Dr.

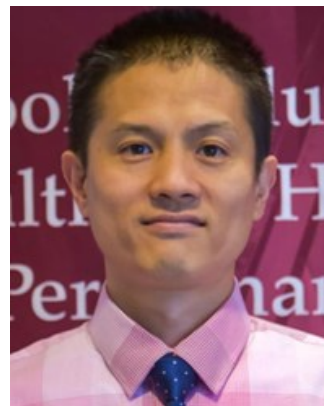


Greg Polsinelli and Dr. Shinichi Asano.

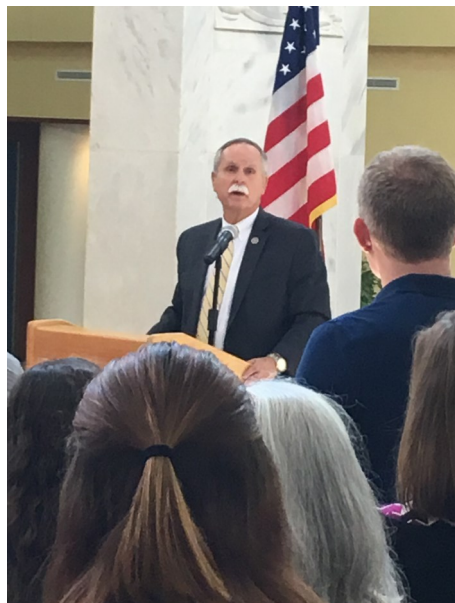
Dr. Greg Polsinelli, pictured to the left, is a Visiting Assistant Professor in the Department of Biology at Bethany College. He conducted his summer research in the

laboratory of Dr. Hongwei Yu at the Joan C. Edwards School of Medicine at Marshall University.

Dr. Shinichi Asano, pictured to the right, is an Assistant Professor of Exercise Science at Fairmont State University. Dr. Asano conducted his summer research in the laboratory of Dr. Paul Chantler at WVU.



Congressman McKinley Speaks at WVU Health Sciences



workshop focused on the importance of seeking research grants and understanding the intricacies of obtaining research funding.

Over the past several years, Congress has supported significant increases for the National Institutes of Health. To help ensure that institutions across West Virginia, including Primarily Undergraduate Institutions (PUI), are fully aware of new and existing NIH initiatives and programs, U.S. Congressman David B. McKinley, invited National Institutes of Health officials to the WVU Health Sciences Center to partici-

On September 19th and 20th, Congressman David B. McKinley, P.E. (WV-1) co-hosted a collaborative research workshop at WVU Health Sciences including leaders and officials from the National Institutes of Health. The Building Research Capacity in West Virginia work-

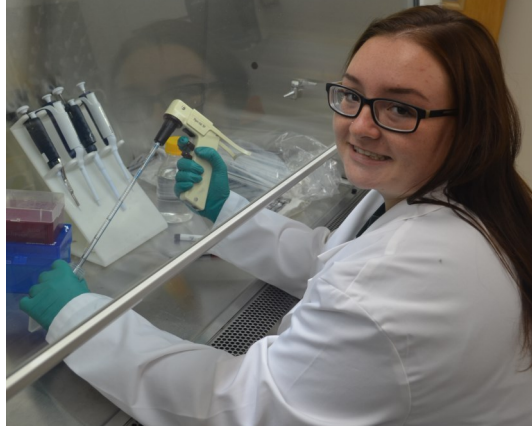
pate in several workshops and discussion groups. Faculty, staff, students and post-doctoral fellows attended sessions on emerging NIH initiatives and participated in focused workshops with NIH staff.

Presentations by leaders from the NIGMS, NIBIB, NINDS, NIDA, NIMHD and the Office of the Director were delivered. Discussions included the HEAL initiative, "All of Us", the IDEA program and the NIGMS-MIRA program with workshops focused on NIH application and review, the T32 funding mechanism, SEPA, AREA/R15 grants, SBIR/STTR opportunities and Fellowship/K awards.



Congressman McKinley, left, is pictured with Dr. Gary Rankin, PI of the WV-INBRE program.

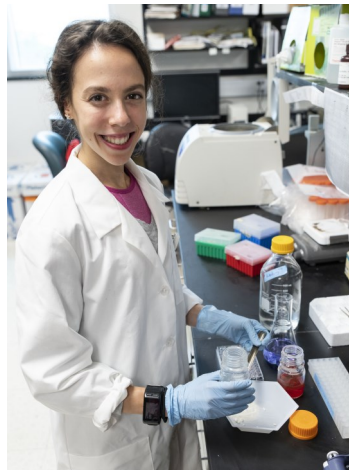
WV-INBRE participants working in the labs



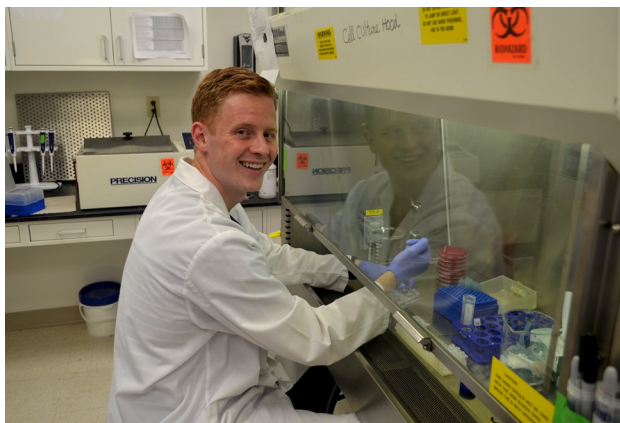
Julianna Martin, Bethany College, worked in Dr. Rajendran's lab at West Virginia University



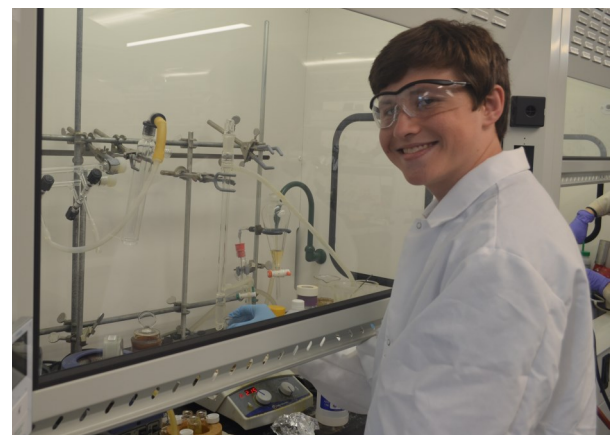
Oddai Gharib, West Virginia State University, worked in Dr. Li's lab at Marshall University



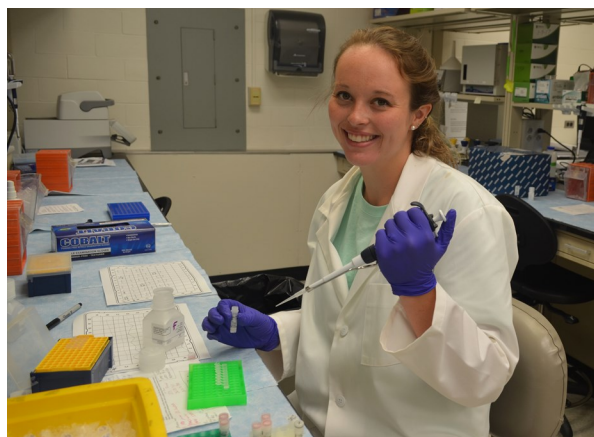
Kristiana Skilotovskaya-Lopez, University of Charleston, worked in Dr. Kim's lab at Marshall University



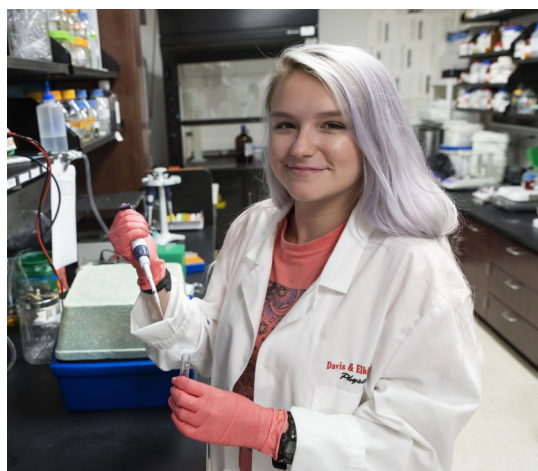
Frederick Broendsted, West Virginia Wesleyan College worked in Dr. Li's lab at West Virginia University



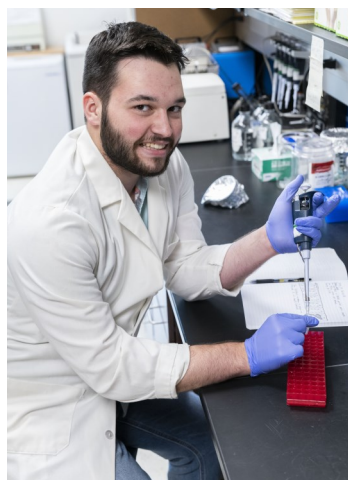
Brandon Richter, West Virginia Wesleyan College, worked in Dr. Geldenhuys' lab at West Virginia University



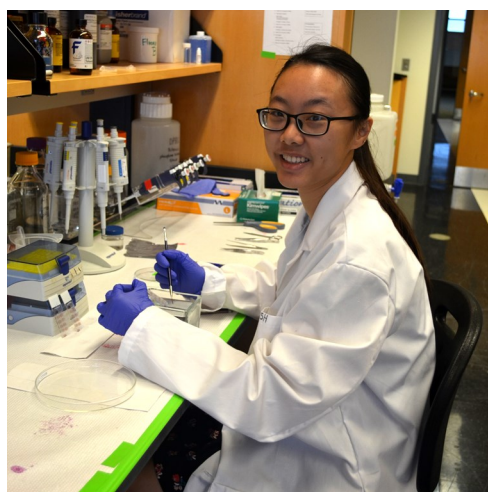
Morgan Winterbottom, Alderson-Broaddus College, worked in Dr. Hollander's lab at West Virginia University



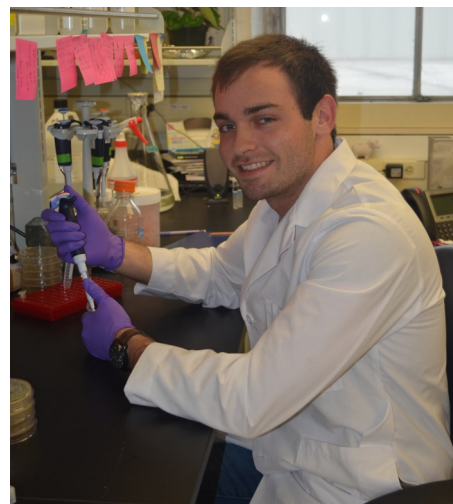
Mackinzie Smith, Davis & Elkins College, worked in Dr. Sollars' lab at Marshall University



Norman Cole, West Virginia Wesleyan College, worked in Dr. Georgel's lab at Marshall University

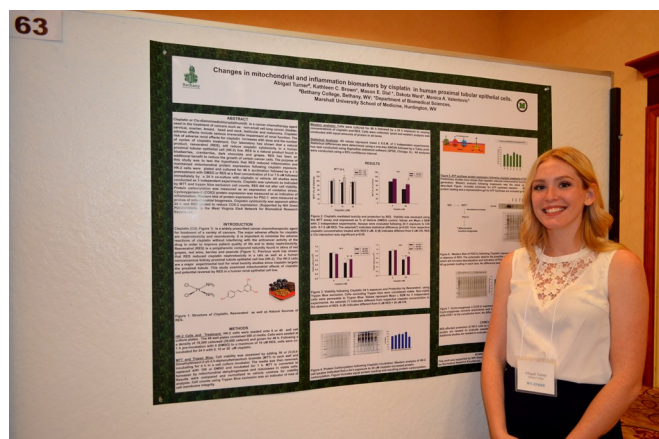


Yuen Man Tze, Concord University, worked in Dr. Brown's lab at West Virginia University

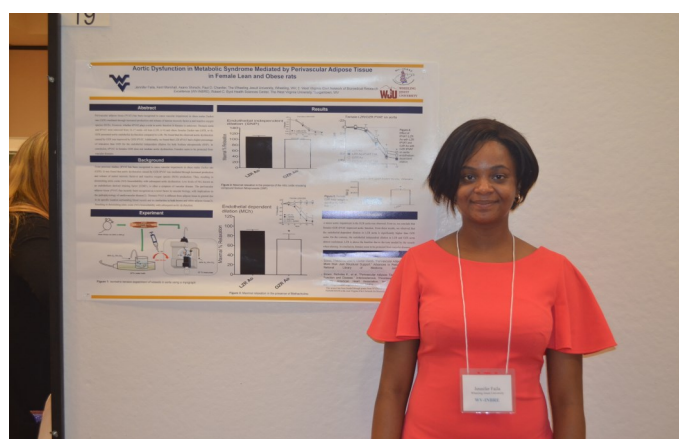


Gage Pyles, West Liberty University, worked in Dr. Barbier's lab at West Virginia University

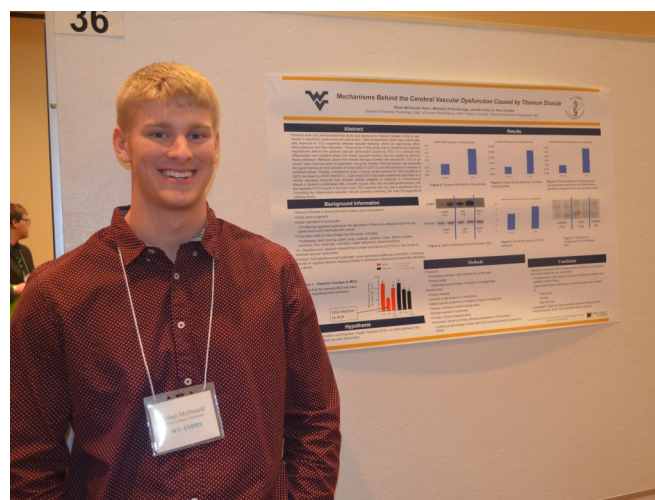
Summer Participants Presented Posters at WV-INBRE Symposium



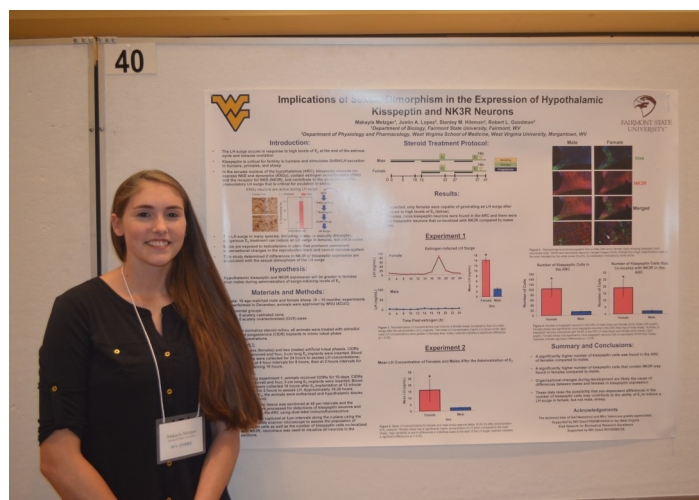
Abigail Turner, Bethany College, presented her poster "Changes in mitochondrial and inflammation biomarkers by cisplatin in human proximal tubular epithelial cells." Abigail worked with Dr. Valentovic at Marshall University.



Jennifer Falia, Wheeling Jesuit University, presented her poster "Aortic dysfunction in metabolic syndrome mediated by perivascular adipose tissue in female lean and obese rats." Jennifer worked with Dr. Chantler at West Virginia University.

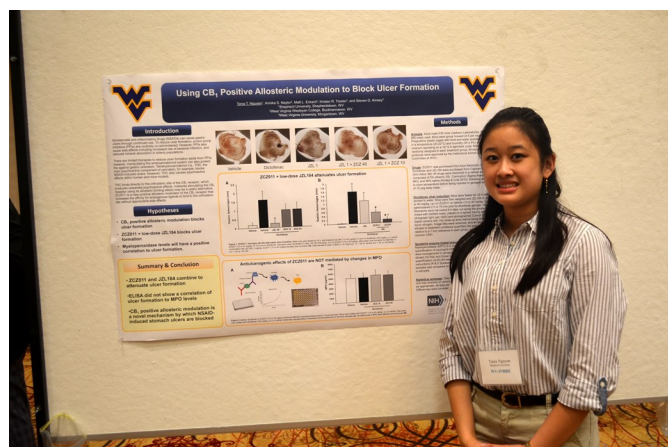


Ethan McDonald, West Liberty University, presented his poster "Mechanisms Behind the Cerebral Vascular Dysfunction Caused by Titanium Dioxide." Ethan worked with Dr. Chantler at West Virginia University.

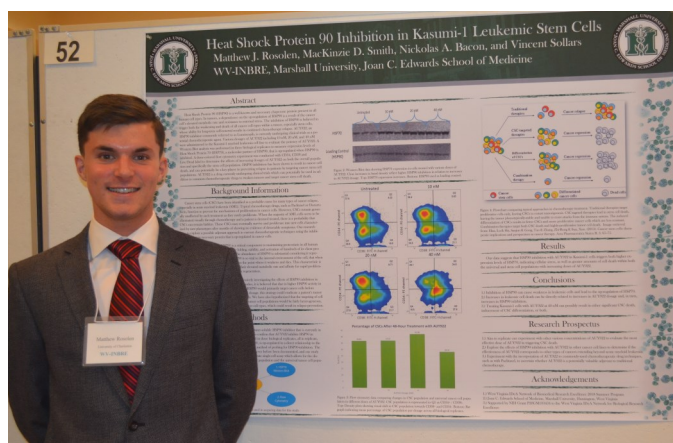


Makayla Metzger, Fairmont State University, presented her poster "Implications of sexual dimorphism in expression of hypothalamic kisspeptin and NK3R neurons in sheep." Makayla worked with Dr. Goodman at West Virginia University.

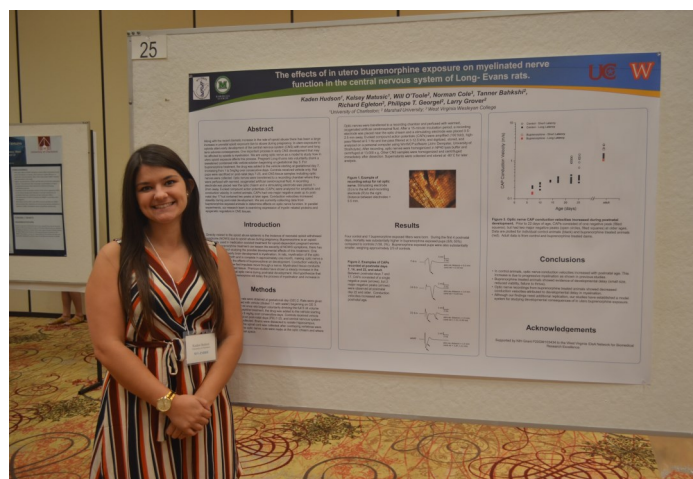
Summer Participants Presenting Posters at WV-INBRE Symposium



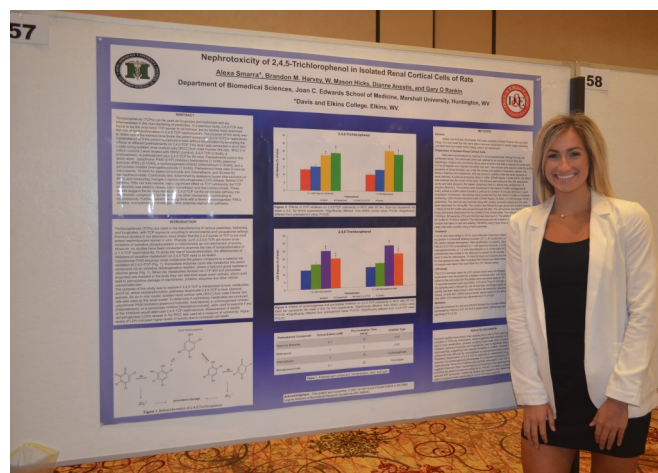
Tania Nguyen, Shepherd University, presented her poster "Using CB₁ positive allosteric modulation to block ulcer formation." Tania worked with Dr. Kinsey at West Virginia University.



Matthew Rosolen, University of Charleston, presented his poster "Heat Shock Protein 90 Inhibition in Kasumi-1 Leukemic Stem Cells." Matthew worked with Dr. Sollars at Marshall University.



Kaden Hudson, Concord University, presented her poster "The effects of in utero buprenorphine exposure on myelinated nerve function in the central nervous system of Long-Evans rats." Kaden worked with Dr. Grover at Marshall University.



Alexa Smarra, Davis & Elkins College, presented her poster "Nephrotoxicity of 2,4,5-Trichlorophenol in Isolated Renal Cortical Cells of Rats." Alexa worked with Dr. Rankin at Marshall University.

Bluefield State College Hosts Bioinformatics Workshop

Faculty members Dr. James Walters and Dr. Tesfaye Belay recently organized a Bioinformatics Workshop at Bluefield State College. The event included presentations to students from Dr. Walters and Marshall University faculty members Dr. Don Primerano and Dr. James Denvir. Dr. Primerano and Dr. Denvir are Genomics Core Faculty co-Directors at Marshall's Joan Edwards School of Medicine, and they are experts in the field of bioinformatics. "Technology has advanced to the point where we can efficiently sequence the human genome—the DNA that controls our bodies and how they run—then see the code, letter by letter," explained Dr. Walters. "This generates a mountain of data that can be invaluable in applications that include diagnosis and medical research."

Bioinformatics, the collection, classification, storage, and analysis of biochemical and biological information using computers, especially as applied to molecular genetics and genomics, provides a way to get a handle on this mountain of data, he added.

Biomedical and microbiology research currently being conducted by BSC faculty and students has grown significantly over the past decade. Much of the BSC-based research receives funding and support from the WV-Idea Network for Biomedical Research Excellence (WV-INBRE).

"For the 40 students from Bluefield and Princeton High Schools (including ten students who are enrolled in the Health Sciences Technology Academy) and for students from BSC, this workshop brought an introduction to bioinformatics," Dr. Belay added.

Drs. Primerano and Denvir are part of WV-INBRE, which supported the visit to BSC. They explained the process for sequencing genomic DNA, as well as how to make sense of the voluminous amount of data yielded thru sequencing. "They also discussed skills and interest needed by students interested in pursuing careers in the field," observed Dr. Walters, who also spoke during the workshop. The information from the lectures will be used immediately in Dr. Walters' research lab for two students' senior projects.

In sessions limited to faculty and staff from BSC and guests from Concord University, Drs. Primerano and Denvir shared information about the WV-INBRE network for supporting biomedical advances and infrastructure.



Pictured left to right: Ping Lu, PhD, Assistant Professor of Physics at BSC, Tesfaye Belay, PhD, Professor of Biology at BSC, Donald Primerano, PhD, WV-INBRE Co-Director of Genomics at MU, Marsha V. Krotseng, PhD, President of BSC, Jim Denvir, PhD, WV-INBRE Co-Director of Genomics at MU, and James Walters, PhD, Associate Professor of Biology at BSC.

HIGHLIGHT: Dr. Yi Charlie Chen of Alderson-Broaddus University

Dr. Yi Charlie Chen, professor of biology, has taught at Alderson Broaddus University since 2000. Dr. Chen has published over 80 scientific papers and book chapters in a wide range of scientific journals and books. In collaboration with professors at West Virginia University and Marshall University, Dr. Chen is currently working on the molecular biology of cancer. His research has focused on the use of anti-cancer drugs, especially natural compounds, on cell cycle, apoptosis and angiogenesis: the growth of blood vessels that provide nutrients to cancer cells and are essential for tumor growth. The natural compounds studied in Dr. Chen's lab include saponins, proanthocyanidins, Prodelphinidins, theaflavins, kaempferol, nobiletin, baicalin, baicalein, gallic acid, galangin, myricetin, 3-Hydroxyterphenyllin and chaetoglobosin K.

Recent scientific research has found that drinking tea, whether it is black tea or green tea, can significantly reduce the chance of getting ovarian cancer. Dr. Chen's group is currently working on isolating natural compounds from tea plants, and testing the effect of these compounds on normal and cancer cell growth using his established ovarian cancer cell model. One of the research topics in Dr. Chen's lab is to study the effects of natural compounds on cancer stem cell growth. Cancer stem cells or cancer stem-like cells (CSCs) are cancer cells with stem properties possessing high tumorigenic and metastatic potential. CSCs may generate tumors through the stem cell processes of self-renewal and differentiation into multiple cell types. Such cells are hypothesized to persist in tumors as a distinct population and cause relapses and metastasis by giving rise to new tumors. Conventional chemotherapies kill differentiated or differentiating cells, which form the bulk of the tumor but do not generate new cells. A population of CSCs, which gave rise to it, could remain untouched and cause relapse. Therefore, development of specific therapies targeted at CSCs holds great promise for improvement of survival and quality of life of cancer patients.

Dr. Chen is also working on nanochemo-

prevention using nanoparticles as a novel approach for cancer control. His group has studied the use of nanotechnology to specifically target cancer cells using natural compounds. Dr. Chen has received several major grants from the WV-INBRE, and WV-EPSCoR, Washington State Fruit Tree Commission, and USDA for scientific research.

Dr. Chen has also been nominated for the West Virginia Professor of the Year Award, a statewide award that honors the best teachers in West Virginia higher education. Dr. Chen is the recipient of the Faculty of the Year Award in 2013 selected by Alderson Broaddus students. Dr. Chen was the speaker for the 2013 ABU's Opening Convocation. He was also the featured professor in the 2013 spring issue of the *Neuron: West Virginia Journal of Science and Research*. Dr. Chen has been selected as the plenary speaker, keynote speaker, moderator, and session chair in various scientific conferences. Dr. Chen was also invited to be one of the ABU's Homecoming speakers.

Dr. Chen is currently serving as the Editor-in-Chief for a scientific journal: *Journal of Nutritional Medicine and Diet Care*. He also served as an Editor-in-Chief for *The Open Entomology Journal* between 2012-2015. He also serves as the Editorial Board Member for several scientific journals: *Journal of Biochemistry and Molecular Biology Research*, *Journal of Oncological Studies*, *The Scientific Pages of Toxicology*, *SM Journal of Environmental Toxicology*, *Austin Journal of Cancer and Clinical Research*, and *International Archives of Clinical Pharmacology*.



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