

WINSTON SALEM STATE UNIVERSITY BIOMEDICAL RESEARCH CENTER



### **BIOMEDICAL RESEARCH INFRASTRUCTURE CENTER**

Volume 1, Issue 2

WINSTON-SALEM STATE UNIVERSITY

Fall 2012 Newsletter

### A WORD FROM THE DIRECTOR...

The Biomedical Research Infrastructure Center (BRIC) is a non-profit WSSU center of excellence dedicated to basic biomedical and translational research to promote the understanding and prevention of human diseases including heart disease, cancer, drug addiction, neurological disorders and nociception. Areas of research include biochemical and cellular mechanisms of diseases, neuropathology, genetic control of cell growth and differentiation as well as tissue damage and regeneration. Our research in improving minority health is the foundation for new strategies, vaccines and diagnostics necessary to reduce mortality rate in the minority community. BRIC was established in 1996 and shares a basic laboratory research building with key collaborators at the Piedmont Triad Research Park where collaboration and teamwork is possible. Through dedication of our mission of improving health and our commitment in biomedical and translational research, I believe that our aim of training the future generation of scientists will be achieved. Our student-centered programs are responsible for training over 40 students in the last five years. The majority of them are in graduate or professional degree programs in the area of biomedical or behavioral sciences. I hope you will find this current issue of the newsletter informative as we highlight the achievements of our students and the aims of our programs.



Dr. Azeez Aileru, Director

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### RISE to the Top

A total of fourteen scholars have been trained in the MBRS-RISE program since its commencement in August, 2010. Three of the trainees are in PhD Programs at T-32 institutions; one is in a PharmD-PhD program; one is working towards a Master's degree in Occupational Therapy, one is a Post-Baccalaureate Research Education Program (PREP) and one is in the Undergraduate Neuroscience Training Cooperative (UNTRAC) Program leading to a minor degree in Neuroscience. In the Fall of 2011, one scholar moved from the MBRS-RISE to the MARC U\*STAR in a program called "RISE to MARC." There are currently six RISE scholars; one senior and five juniors. They are all from the Departments of Behavioral Sciences, Chemistry and Life Sciences. All six were involved in summer internship programs at research intensive institutions in the Summer of 2012.



### On the MARC

Since its inception in June, 2007, a total of fifteen scholars have been involved in the MARC U\*STAR Program including four Pre-MARC Scholars and eight MARC Affiliates Scholars. Of the fifteen trainees, seven are presently in PhD programs in the area of biomedical or behavioral sciences at T-32 predoctoral program institutions. One is in a Pharmacy school and one is in a Master's degree program aspiring towards a Dental degree. There are currently six MARC Scholars and two MARC Affiliate Scholars. Three are from the Department of Life Sciences, three are from the Department of Behavioral Sciences and two are from the Department of Human Performance & Sport Sciences. In the Summer of 2012, all eight current trainees attended summer internship programs at research intensive institutions.

### MEET THE RISE SCHOLARS



**Ebone Evans** 

Ebone Evans is a junior majoring in Biology. She has been under the tutelage of Dr. Stephanie Dance-Barnes for two years in the department of Life Sciences. Her research project involves analyzing the programmed cell death (PCD) effect of diallyl disulfide, a chemotherapeutic reagent, targeted toward basal-like breast cancer cells. Ms. Evans attended the 2012 Diversity Summer Internship Program (DSIP) at the Bloomberg School of Public Health at Johns Hopkins University to further her understanding in this area of research.

Georges Guillaume is a junior Chemistry major. His mentor is Dr. Charles Ebert, in the Department of Chemistry, whose research explores the use of human proteins to promote peripheral nerve growth. This research will potentially be used to aid the rehabilitation of damaged nerves, caused by car accidents and warfare, for example, and to allow the individual to not lose functionality of the limbs or resulting parts. Mr. Guillaume attended the 2012 Biomedical Science Training and Enrichment Program (BioSTEP) at Yale University School of Medicine, this past summer, to further his understanding in the area of regenerative medicine.



Georges Guillaume



Taylor Harris

Taylor Harris is a junior majoring in Chemistry. Dr. John Yi, in the Department of Chemistry, is her mentor. Her research project entails determining the most stable structure for the compound methylenedioxyamphetamine (MDA) similar to methylenedioxymethamphetamine (MDMA) compound also known as "Ecstasy". Understanding the structure and stability of MDA will lead to a better comprehensive grasp of the effects of MDA in humans. Ms. Harris participated in the 2012 Summer Undergraduate Research Program (SURP) at Boston University School of Medicine to further her understanding in the chemical structures of drugs of abuse.

Da'Lauren Mouzon-Smith is a junior majoring in Psychology in the Department of Behavioral Sciences. Her research mentor is Dr. David Mount at the Maya Angelou Center for Health Equity, Wake Forest University School of Medicine. She is exploring the total triglycerides and highdensity lipoprotein cholesterol levels in patients with type-II diabetes and an associated history of depression. Ms. Mouzon-Smith attended the 2012 Summer Research Training Program with the National Institute on Drug Abuse (NIDA) at New York University to further her research experience in the area of metabolic diseases as they relate to depression.



Da'Lauren Mouzon-Smith



Ashley Tucker

Ashley Tucker is a senior Psychology major. Her mentor is Dr. Gary Bond in the Department of Behavioral Sciences. Her research project is to study the effects of unfamiliar participants in inclusive group settings. This psychological study concerning group dynamics and hidden prejudices has been the main theme of her work with Dr. Bond. Ms. Tucker attended a 5-day workshop in May of 2012, the Organizational Science Summer Institute at UNC-Charlotte, to further enhance her qualitative and quantitative research method skills. She also participated in the WSSU Summer Student Research Fellowship in conjunction with the 2012 Wake Forest School of Medicine Summer Research Program.

Michelle Wright is a junior majoring in Psychology in the Department of Behavioral Sciences. She is under the tutelage of Dr. David Mount at the Maya Angelou Center for Health Equity, Wake Forest University School of Medicine. Her research project consists of retrieving data from patients' charts and the information that is obtained is used to determine what biological factors influence the risk of adverse mental health. Ms. Wright was a participant in the WSSU Summer Student Research Fellowship in conjunction with the 2012 Wake Forest School of Medicine Summer Research Program.



Michelle Wright

### MEET THE MARC SCHOLARS



Domonique Battle

Domonique Battle is a senior Biology major. Her mentor is Dr. Stephanie Dance-Barnes. She is currently involved in a study which attempts to tackle the question of whether p53 status would affect the ability of chlorophyllin to inhibit the proliferation of breast cancer cells. Ms. Battle participated in the 2012 Diversity Summer Internship Program (DSIP) at the Bloomberg School of Public Health at Johns Hopkins University to further her understanding in the field of Public Health as she pursues her dream to become a biomedical scientist.

Jamila Green is a senior majoring in Psychology. Under the tutelage of Dr. Anna Lee in the Department of Behavioral Sciences, she is studying the effects of chronic stress on African American college students' health on the campus of WSSU. Within the research study, she focuses on four specific stressors: financial, marital/partnered, parental and occupational. Ms. Green was involved in the 2012 Wake Forest School of Medicine Summer Research Program.



Jamila Green



Micha Myers

Micha Myers is a senior majoring in Psychology. Her research mentor is Dr. Anna Lee in the Department of Behavioral Sciences. She is studying race-related stress and pre-hypertension to see if internalized racism can lead to health disparities in the African-American population, particularly in males. Ms. Myers attended the 2012 Wake Forest School of Medicine Summer Research Program.

Edie Pettiford is a senior Exercise Science major working with Dr. Manju Bhat in the Department of Life Sciences. Her project is to study how propofol causes the sensation of pain by looking at its effects on calcium inside a cell. Ms. Pettiford participated in the 2012 Summer Undergraduate Research Internship Program (SURIP) at Penn State College of Medicine.



Edie Pettiford



Manuela Rigaud

Manuela Rigaud is a senior Psychology major. Her mentor is Dr. Gary Bond in the Department of Behavioral Sciences. The core of her research project is to determine if prosodic entrainment (pitch and amplitude) predicts implicit trust and whether or not it predicts performance. Ms. Rigaud attended the 2012 University of Maryland, School of Public Health's Summer Training and Research (STAR) Program where she continued to learn more about behavioral science research.

Jatyra Rivers is a senior majoring in Biology. Dr. Stephanie Dance-Barnes, in the Department of Life Sciences, is her mentor. Her research project involves performing various tests using the female hormone progesterone to determine if the use of oral contraceptives over time potentially leads to the production of breast cancer. Ms. Rivers attended the 2012 Diversity Summer Internship Program (DSIP) at the Bloomberg School of Public Health at Johns Hopkins University.



**Jatyra Rivers** 

### MEET THE MARC AFFILIATE SCHOLARS



Ashley Moore

**Ashley Moore** is a senior Biology major with a minor in Neuroscience. She has two mentors - Dr. David Cline and Dr. Janae Joyner; therefore, she has two research projects. Her first research project entails identifying undiagnosed hypertensive patients at the emergency department and determines the best way to treat them. Her second research project focuses on hypertensive patients and their feelings about their health as related to hopelessness in the emergency department compared to the community. Ms. Moore attended the 2012 Excellence in Cardiovascular Sciences (EICS) Summer Research Program for Diversity at Wake Forest University School of Medicine.

Chinaemeze Okoro is a junior majoring in Exercise Science. He joined the MARC Program in June, 2011. His mentor is Dr. Manju Bhat in the Department of Life Sciences. He is studying the effects of propofol on the capsaicin receptor, TRPV1, and other related receptors involved with pain mechanisms. Mr. Okoro attended the 2012 Davidson Research Initiative Summer Research Program at Davidson College to further his understanding in the field of biomedical sciences.



Chinaemeze Okoro

### MEET THE MARC AFFILIATE GRADUATES



Samantha-Rae Dickenson

Samantha-Rae Dickenson received a BS degree in Biology in May, 2012. She worked under the mentorship of Dr. Azeez Aileru. Her research project involved studying the expression and activities of sodium/potassium-ATPase isoforms in acquired and inherited forms of hypertension. Ms. Dickenson plans to pursue a career in the public health field and obtain a Master of Public Health degree.

"Eve" Savage graduated Hawanatu in May, 2012 with a BS degree in Molecular Biology. She was under the tutelage of Dr. Nickolay Hristov in the Department of Life Sciences and the Center for Design Innovation. Her research project examined the group behavior of Brazilian free-tailed bats (Tadarida brasiliensis). She tested the hypothesis "whether free-tailed bats group together to gain an energetic benefit." Ms. Savage plans to further her career path in medicine and intends to matriculate in a medical school in 2013.



Hawanatu "Eve" Savage

### UNTRAC Program in Neuroscience

The Undergraduate Neuroscience Training Cooperative (UNTRAC) is a two-year program geared toward a workforce development and diversity training in neuroscience. Participants will pursue a minor degree in Neuroscience at the undergraduate level leading to a Ph.D. or M.D. in neurological sciences. The UNTRAC program is

leading to a Ph.D. or M.D. in neurological sciences. The UNTRAC program is a cooperative agreement between WSSU and Wake Forest University (WFU). Students take part of the Neuroscience courses on the WFU Reynolda campus, in addition to their regular semester classes at WSSU. For further information, please contact Dr. Azeez Aileru at ailerua@wssu.edu.

### Downtown Shuttle EXPRESS SERVICE



The Downtown Shuttle Express for the Research Park campus is provided daily throughout the

year. The shuttle departs from the Wilveria B. Atkinson Science Building every hour on the hour from 9am - 5pm to the Biomedical Research Center. For further information, please contact Ray Famble in the Transportation Department at 416-1749.

## RISE Graduates: Where are they now?



ASHLEE CLARK completed a BS degree in Biology with a minor in Neuroscience in May, 2012. She was mentored by Dr. Tennille Presley in the Department of Chemistry. Her research project examined the effect of exercise and heat treatment on nitrite, nitrate, and heat shock protein levels in diabetic rodents. With this research, the hope is to find a relationship between exercising in heated environments and decreased cardiovascular complications that normally plague diabetic patients. Ms. Clark is now in the Neuroscience PhD degree program at Wake Forest University School of Health Sciences.

ANTHONY DIXON graduated in May, 2012 with a BS degree in Exercise Science. His mentor was Dr. Michael McKenzie. The title of his research project was "High Intensity Training Effects on Maximal Power and VO, Max." Within this study, they measured the participants' anaerobic and aerobic oxygen capacity to see if the high intensity training would alter the VO, max, mean and peak power. Currently, Mr. Dixon is working towards a Master of Science degree in Occupational Therapy at WSSU.





KIMBERLY HUNTER received a BS degree in Psychology, in May, 2012. She graduated summa cum laude. For the past two and a half years, she was mentored by Dr. Gary Bond. They studied the relationship between prosodic entrainment (how words are spoken) and levels of trust. Their initial data showed that voice matching correlates with higher implicit trust. Ms. Hunter is currently in the Master's degree program in General Experimental Psychology at New Mexico State University in Las Cruces. She plans to obtain a PhD degree in this area of study.

REMI ROYAL earned a BS degree in Biology in May, 2011. Presently, she is attending Rutgers University, The State University of New Jersey, in Newark. She is in the Physiology and Integrative Biology Program and anticipates completing her Master of Science degree in October, 2012. While at WSSU, Ms. Royal worked with Dr. Jeff Weiner (WFU) on "The Effect of Chronic Stress on Alcohol Self-Administration." She was also mentored by Dr. Brian McCool (WFU) and Dr. Dinesh Singh (WSSU). Under the tutelage of Dr. McCool, her last research project involved the appetitive behavior and consumptive behavior between three experimental groups of rodents based on their ethanol consumption.





KIARA VANN completed a BS degree in Biology with a minor in Neuroscience in December, 2011. While matriculating at WSSU, she was mentored by Dr. Jeffrey Overholt in the Department of Life Sciences. Her research project explored the cellular mechanisms of hypertension at the superior cervical ganglia. Ms. Vann is presently pursuing a PhD in Biomedical Sciences, specifically in the field of Neuroscience, at Morehouse School of Medicine in Atlanta, Georgia.

## MARC Graduates: Where are they now?



RAMINE ALEXANDER is presently in a PhD program in Human Nutrition, Foods and Exercise at Virginia Polytechnic Institute and State University (Virginia Tech). While at WSSU, her last mentor was Dr. Melicia Whitt-Glover. Ms. Alexander's research project title was "Instant Recess: Impact of 10-minute Exercise Breaks During the Day on Health and Related Behaviors in Children."

TEMPESTT EVANS is currently working with Dr. Allyn Howlett at Wake Forest University Baptist Medical Center. Her current research project consists of determining the presence of extracellular signal-regulated protein kinase (ERK) activity in neuronal cells by way of fluorescence resonance energy transfer (FRET). Her other work includes a study involving saliva components and gene expression in human skin cells. Ms. Evans is presently in a pre-dental postbaccalaureate program at UNC-Greensboro. Her ultimate goal is to attend dental school to become a dentist.



ANTENTOR HINTON, JR. is in a PhD program at the Graduate School of Biomedical Sciences at Baylor College of Medicine in Houston, Texas. He is studying Cell and Molecular Biology. Mr. Hinton was mentored by Dr. Azeez Aileru (WSSU), Dr. Karin Scarpinato (WFU) and Dr. Weiling Zhao (WFU), while matriculating at WSSU. His last research project entailed working with mismatch repair (MMR) proteins in Dr. Scarpinato's lab.

JACQUELINE JACKSON is in the PhD program, studying Cell and Molecular Biology at the University of Michigan, in Ann Arbor. While at WSSU, she trained under Dr. Dinesh Singh to explore the molecular structure of HIV cells.

Ms. Jackson also trained under Dr. Debra Diz (WFU) to study neuropeptides in hypertension.





**JAMES JOHNSON, JR.** is in a Biomedical Science PhD program at Meharry Medical College, School of Graduate Studies and Research in Nashville, Tennessee. He was mentored by Dr. Charles Ebert (WSSU) and Dr. Weiling Zhao (WFU). Mr. Johnson's last research project examined the biochemical basis of the interaction between keratin-derived materials and Schwann cells, under the tutelage of Dr. Ebert.

JASMINE RICHARDSON is a second-year student at Campbell University College of Pharmacy & Health Sciences in North Carolina. She is slated to graduate in May, 2015. While matriculating at WSSU, Ms. Richardson's mentor was Dr. Allyn Howlett. The crux of Dr. Howlett's research investigates cannabinoid and endocannabinoid compounds that stimulate the CB1 cannabinoid receptor and regulate signal transduction pathways in cultured neuronal cells.





**TIERRA RUDD** is attending the University of West Florida to earn a PhD in Psychology, Counseling Specialization/ Counseling Psychology.

**ASHLEY TAYLOR** graduated in May, 2012 and is pursuing a PhD in Chemistry at Louisiana State University in Baton Rouge. Dr. Sayo Fakayode was her mentor, while at WSSU. Ms. Taylor's last research project primarily explored the binding of heavy metals to Human Serum Albumin (HAS) and Bovine Serum Albumin (BSA). She also studied the binding of drugs to protein which will eventually lead to the remediation of these metals using different drugs from the protein.



No Picture Available

**LASSITER SPELLER** is in the Cognitive/Experimental Psychology PhD program studying Human Performance at The Ohio State University. He is slated to finish in 2014. Mr. Speller will then pursue work in industry.

# SEMINAR SERIES | FALL 2011 SPRING 2012

During the Fall and Spring semesters, the MARC and RISE Scholars met on Wednesday afternoons, for one hour, to attend the Seminar Series. Accomplished scientists, faculty and staff from various graduate and professional schools as well as WSSU faculty and staff provided insight on research, graduate school and future careers.

The Opening Session was held on August 31st. Dr. Azeez Aileru welcomed the new and returning MARC and RISE Scholars. Dr. Charles Wesley Ford, Jr., the Dean of the College of Arts and Sciences, also greeted the scholars.

On September 7th, Dr. Sanika Chirwa, a professor in the Department of Neuroscience and Pharmacology at Meharry Medical College and an adjunct professor at Vanderbilt University, gave an overview of a clinical study being conducted in Nashville. The goal of the study is to better understand how sleep quality during pregnancy affects maternal blood glucose and its impact on the welfare of the mother and child.

On September 14th, Dr. Ashalla Freeman, Director of Diversity Affairs and the Initiative for Maximizing Student Diversity, Office of Graduate Education at UNC-Chapel Hill, talked about "The Path to Graduate School and Beyond." Dr. Freeman's goal was to share information about her personal journey from her undergraduate days as a MARC U\*STAR scholar to her current position in biomedical graduate education administration and research. She also briefly spoke about her postdoctoral research. The subject was biophysics of phosphorelay systems in two-component signal transduction using Escherichia coli chemotaxis as a model system.

On September 21st, Dr. Kizhanipuram Vinodgopal, Chairman of the Department of Chemistry and a professor of Chemistry at North Carolina Central University presented his research data. His talk covered the unique properties of graphene (a carbon allotrope) which has a variety of applications ranging from electronics to energy storage.

On September 28th, Dr. Sarki Abdulkadir, Director of Graduate Studies in the Department of Pathology, Associate Professor of Pathology and Associate Professor of Cancer Biology at Vanderbilt University Medical Center delved into the cooperativity between oncogenic mutations being recognized as a fundamental feature of malignant transformation, primarily in the prostate.

On October 5th, Ms. LaMonica Sloan, Director of Career Services, here at WSSU, emphasized the need for students to schedule an appointment with Career Services to receive assistance with writing their personal statements and updating their résumés.

On October 12th, Dr. Gary Bond, an Assistant Professor of Psychology at WSSU talked about "The Role of Context in Learning and Transfer."

On October 19th, Dr. Li-An Yeh, Director of Biomanufacturing Research Institute and Technology Enterprise (BRITE) of North Carolina Central University (NCCU), gave a brief description of the BRITE programs at NCCU, discussed the possibility for research collaboration in drug discovery with BRITE through the core facility and lastly, talked about her recent publication on science.

On October 26th, Dr. Tina Brinkley, a Principal Investigator at Wake Forest University School of Medicine in the J. Paul Sticht Center on Aging in the Department of Internal Medicine Section on Gerontology and Geriatric Medicine, spoke about the clinical importance of arterial stiffness and how increased adiposity (i.e. obesity) may cause arteries to become stiff over time.

On November 9th-12th, fourteen of the MARC and RISE Scholars traveled to the Annual Biomedical Research Conference Minority Students (ABRCMS). It was held in St. Louis, Missouri. The majority of the students presented their research projects. In 2012, ABRCMS is slated to take place in San Jose, California.

On November 16th, Dr. David Mount, an Assistant Professor of Internal Medicine and Director of Community Outreach, Partnerships, and Patient Care for the Maya Angelou Center for Health Equity along with two graduate students, focused on mixed-methods

research methodology including steps toward developing focus groups and collection of survey data. Additionally, they addressed the importance of diversifying their research.

The Spring 2012 Seminar Series commenced with the Opening Ceremony on January 11th. Dr. Shea Gilliam-Davis, the Program Coordinator of the MARC U\*STAR and MBRS-RISE Programs welcomed the scholars back for the beginning of the new semester.

On January 18th, Dr. Jeffrey Overholt, an Associate Professor of Physiology in the Life Sciences Department at WSSU, spoke to the scholars about writing a scientific abstract and manuscript.

On January 25th, Dr. Caesar Jackson, the Interim Director of the new PhD Program in Integrated Biosciences, and Ms. Sabrina Butler, Director of Graduate Recruitment and Marketing at NCCU, conducted an interactive session with the scholars. They each talked briefly about their academic and career paths. Then they turned their attention to the graduate programs at NCCU.

On February 1st, Dr. James Alan Kendrick, Assistant Dean for Graduate Development at Duke University spoke to the scholars. He involved them in an exercise that helped them to understand the selection process of graduate students at his institution.

On February 8th, Dr. Evangeline Motley-Johnson, Associate Dean of School of Graduate Studies and Research at Meharry Medical College (MMC), presented an overview of her research which involves the study of the role of protease-activated receptors in signal transduction in the vascular endothelium. She also talked about the curriculum of the PhD Program in Biomedical Sciences at MMC.

On February 15th, Ms. Terri Houston, the Interim Chief Diversity Officer and Executive Director of Diversity and Multicultural Affairs at the UNC-Chapel Hill, presented an energy-packed workshop. Ms. H (as she likes to be called) explored the five qualities of making a lasting impression. She examined the keys to SPICE which is an acronym. S=Sensation, P=Presentation, I=Information, C=Communication and E=Expectation.

# SEMINAR SERIES | FALL 2011 Spring 2012

On February 22nd, Dr. Janet Southerland, Dean and Professor at Meharry Medical College (MMC) School of Dentistry, had an intimate discussion with the scholars about her academic and career paths. She then talked about the application process to enter into the MMC School of Dentistry.

On March 7th, Dr. Solomon Bililign, a Professor of Physics and the Director of the NO-AA-ISET Center at North Carolina A&T State University, spoke about research and education for sustainable development. He also elaborated on the need for an interdisciplinary approach to address problems of global significance.

On March 21st, Dr. Susan Marriott, a professor in the Department of Molecular Virology and Microbiology and the Director of the Graduate Program in Cell and Molecular Biology at Baylor College of Medicine in Houston, Texas, talked to the students about the best way to prepare to be a competitive applicant at top tier graduate programs. She also discussed the process of graduate school coursework and research, which will lead to becoming an independent scientist.

On April 11th, Mrs. Rochelle Smith, the Director of Diversity, Summer Research Programs and Community Outreach, Division of Biology and Biomedical Sciences at Washington University School of Medicine in St. Louis, touched on the theme: "If you can dream it, you are capable of achieving your goals." She also informed the scholars that Washington University has the largest MD/PhD Program in the country and twelve (12) programs leading to the PhD in the biomedical sciences.

The Closing Session was held on April 18th. Dr. Azeez Aileru welcomed the scholars. With great pride, Provost Brenda Allen acknowledged the accomplishments of each participant in the MARC U\*STAR and MBRS-RISE Programs. Certificates, awards and rewards were presented to several of the scholars. The five seniors were recognized and given their stoles which they wore at the WSSU Commencement Exercises on Saturday, May 12th.



Dr. Tina E. Brinkley





Dr. Caesar Jackson and Ms. Sabrina Butler

Dr. Janet Southerland



Dr. David Mount



Dr. Ashalla Freeman



Mrs. Rochelle Smith

Dr. Sarki Abdulkadir



Dr. J. Alan Kendrick

Dr. Li-An Yeh



Dr. Kizhanipuram Vinodgopal