

Aaron Byrd



Major:
Biology (Molecular Concentration)

Class:
Senior

Mentor:
Ben A Bahr, PhD.

Academic Experience:
*UNCP Honor's List (2013-2014)
*Associate Degree of Art, Richmond Community College,
(2012)

Research Presentations:
RISE End-of-Summer Research Symposium, August 2014

Research Experience:

William C. Friday Laboratory with Ben Bahr, PhD.

My current research with Dr. Bahr examines the toxicity of possible drugs for the treatment of Alzheimer's disease by performing GST assays on mouse samples that have been given different drugs. GST is an enzyme that is responsible for ridding the body of xenobiotics; therefore if these samples show high levels of GST the drugs must be toxic in some way.

Research Interests:

My research interests span the entirety of Molecular Biology, from DNA replication to protein synthesis. Particularly, I would love to explore the folding patterns of proteins and discover why they always fold the same way instead of the multiple different conformations that are usually possible.

Research Interests:

After earning a Ph.D. in Molecular Biology or Molecular Genetics, I intend to conduct research as a professor at a university in an effort to further our knowledge of Molecular Biology while also having the opportunity to teach new generations of biologists.

ALEX FOSTER



Major:

Applied Physics (B.S.) and Philosophy and Religion (B.A.), Philosophy Concentration

Class:

Senior

Mentor:

William Brandon, PhD.

UNCP-RISE Membership:

Cohort 8 (2013-2014)

Cohort 9 (2014-2015)

Undergraduate Research/Academic Experience and Awards:

Methodist University Dean's List (both enrolled semesters 2010 – 2011)

Methodist University Presidential Scholarship

UNCP Chancellor's List (all enrolled semesters 2011 – 2014)

Methodist University Honors College

UNCP Esther G. Maynor Honors College

Gustafson Memorial Scholarship in Philosophy and Religion

RISE Cohorts 8 & 9

Vanderbilt University 2014 Summer REU for Theoretical/Computational Nuclear Physics

Research Interests and Experience:

My interests are, admittedly, extremely broad – for better or for worse. Most of my research thus far as a RISE fellow portrays my preference for theoretical work in physics, although I am becoming more and more interested in the interface between theory and experiment, this interface itself being theoretical at bottom. My research from this past academic year at UNCP includes: a progressive yet cogent calculation of the Casimir pressure for electrically neutral, parallel, non-conducting plates immersed in vacuum, relying on an intriguing cosmological model (the Wheeler one electron universe); generalized nanoscale device theory proceeding largely from elementary, classical rotational dynamics; and, to break the motif, a qualitative verification of the Faraday rotation of light in air. I am currently continuing the research I began at Vanderbilt University this past summer, which involves using computational means to substantiate a four-neutrino hypothesis and thus verify the existence of a light, sterile neutrino, the implications of which are wide-ranging and dramatic for at least astronomy, cosmology, and particle physics. Attending this will be my research for the ninth RISE cohort, where we will attempt to use an auto-balanced, phase-sensitive detection scheme to obtain quantitative results for the Faraday rotation of light in air, an endeavor not yet reported to have ever been conducted at the undergraduate level, worldwide. Furthermore, I may pick some theoretical side projects from motley options such as the alpha cascade, class structures, and so on.

About Me:

I am a student of both physics and philosophy, two subjects which I believe cannot afford to forego transactions with one another – in fact, it was likely my philosophical considerations that led me to pursue a degree in physics. My ultimate goal is to affect either field on a fundamental and normative level, progressing the modes and methods of inquiry in both to new regions. Philosophy tempers my conceptual and critical apparatus and encourages me to probe the meaning and logical significance of propositions within and outside of modern science; physics serves as a disciplinary outlet, a palette of expression as it were, for these concerns, coloring and shaping my generalized, philosophical considerations.

Alexander McGirt



Major: Physics

Class: Sophomore

Mentor: William Brandon, Ph.D

Conference Attendance:

I plan to attend the TECHCON National Conference in Austin, Texas in September 2014.

I also plan to attend the ABRCMS National Conference in San Antonio, Texas in November 2014.

Research Experience:

Currently conducting research with Dr. William Brandon in the Physics Laboratory on the campus of UNCP.

Also conducted research at the Joint School of Nanoscience and Nanoengineering (Summer 2014)

Honors:

UNCP-RISE Fellow

Career Goals:

I currently aim to do further research within the areas of Physics and Engineering to develop new devices or materials that have a positive impact on the environment and also help progress society.

CALEB STUBBS



Major: Molecular Biology

Class: Junior

Mentor: Maria Santisteban, Ph.D.

Research Interests:

My research interests are in Molecular/Cellular Biology, mainly in areas involving genetics, cell signaling and regulation of cellular pathways.

Research Experience:

- University of North Carolina at Pembroke (2013-2014)
- Pepperdine University, Malibu CA (2014)

Current Research:

The current project I am working on is studying more about the Histones in *Saccharomyces cerevisiae* (Yeast) and relatable patterns concerning transcription of different genes throughout their genome. Currently we are working on identifying a possible suppressor of a synthetic lethality between two mutants of histone related genes (*RBJ2-2* and *htz1*).

In the future I plan on entering into a PhD program and continue doing scientific research.

Conferences & Presentations:

ABRCMS- Annual Biomedical Research Conference for Minority Students (Fall 2013)

NCAS- North Carolina Academies of Science (Spring 2014)

- Poster Presentation

UNCP PURC- Pembroke Undergraduate Research and Creativity Center (Spring 2014)

- Poster Presentation

Carlisha Hall



Major: Environmental Science / **Minor:** Geology

Class: Senior

Mentor: John Roe, Ph.D.

Research Interests:

My research interests are primarily on environmental issues and animal conservation. I am extremely passionate about preserving and protecting our environment and other organisms. Unfortunately, various species are endangered due to human impacts on the environment. I am determined to make a difference in this world by getting involved in wildlife and environmental studies.

Research Experience:

-**The University of North Carolina at Pembroke**, Field Work with Dr. John Roe, PhD studying Eastern Box turtles and their responses to prescribed wildfires. My focus is primarily on box turtle physiology during the overwintering season (2013-Present)

-**Indiana University**, working with a graduate student studying the impacts of food restriction on reproductive development in Siberian hamsters, a seasonally reproducing mammal.

Academic Awards and Honors:

University Honors List (Spring 2012, Fall 2013, Spring 2014)

Chancellor's List (Fall 2011)

PURC Poster Presentation, 3rd Place (Spring 2014)

UNCP RISE Fellowship (2013-2014; 2014-2015)

Herpetology Conference Poster Presentation, 1st Place (Spring 2014)

Clubs and Professional Organizations:

Journal Club

Tri Beta (National Honors Society)

Presentations:

The impacts of food restriction on reproductive development in a seasonally-reproducing mammal, the Siberian hamster (*Phodopus sungorus*) (Poster: RISE Summer Research Symposium, UNCP, 2014 and Oral: CISAB Summer Research Symposium, Indiana, 2014).

How deep are Eastern Box Turtles (*Terrapene Carolina*) burying to escape severe winter conditions? (Poster: PURC, UNCP, 2014 and 37th Annual Herpetology Conference, Florida, 2014).

Science-Related Conferences/Symposiums:

Center for the Integrative Study of Animal Behavior (CISAB 2014)

Pembroke Undergraduate Research and Creativity Center (PURC 2014)

37th Annual Herpetology Conference (2014)

North Carolina Academy of Sciences (2014)

Annual Biomedical Research Conference for Minority Students (ABRCMS 2013)

CARY MUNDELL



Major: Molecular Biology

Class: Sophomore

Mentor: Ben Bahr, Ph.D.

Conference Attendance:

Attended SNCURCS at UNC-Charlotte

Planning to attend ABRCMS in San Antonio Texas in November 2014

Research Experience:

Currently conducting research at the William C. Friday Laboratory with Ben Bahr, Ph.D.

Honors:

Chancellors List 2013-2014

UNCP-RISE Fellow, 2014

Career Goals: Pursue a career in Immunological Research

Catheryn Wilson



Major: Biology, environmental concentration

Class: Senior

Mentor: Maria Pereira, Ph.D.

Research Interests:

My research interests involve environment-organism interactions. I am interested in bioenergy, particularly within the process, development, and application of biofuels.

Research Experience:

- The University of North Carolina at Pembroke**, Field Work with Dr. John Roe, PhD (2012-2013)
- The University of Alaska Anchorage**, with Khrystyne Duddlestone, PhD, and Jonathan Stecyk, PhD, labs; UAA Vivarium—animal husbandry—with Jonathan Stecyk, PhD (summer 2014)
- The University of North Carolina at Pembroke**, working with Maria Pereira, PhD (present)

Academic Awards and Honors:

University Honors List (2013-2014)
National Science Foundation Summer REU Internship, UAA (2014)
UNCP RISE Fellowship (2013-2014; 2014-2015)
The Arrowhead 1887 Scholarship recipient (2013-2014; 2014-2015)

Abstracts:

Wilson CD, Stevenson TJ, Stecyk JA, and Duddlestone KN. Influence of cold temperature and anoxia on the red-eared slider turtle gut microbiota. (*Research Experience for Undergraduates Program University of Alaska Anchorage Symposium*) (2014).

Wilson CD, Hall CA, and Roe JH. Anticipating hibernation emergence of Eastern Box turtles in southeastern fire-managed systems. (*The 2014 Alpha Chi National Convention; The Pembroke Undergraduate Research and Creativity Center Symposium; The 37th Annual Herpetology Conference*) (2014).

Hall CA, **Wilson CD**, and Roe JH. How deep are Eastern Box turtles (*Terrapene C. Carolina*) burying to escape severe winter conditions? (*The North Carolina Academy of Science; The Pembroke Undergraduate Research and Creativity Center Symposium; The 37th Annual Herpetology Conference*) (2014).

Justin Branch



Major:

Biology (Biomedical Emphasis)

Class:

Senior

Mentor:

Claire Gordy, PhD. - Fall 2014

Ben Bahr, PhD. - Spring 2015

Research Presentations:

RISE End-of-Summer Research Symposium, August 2014

Research Experience:

- During the summer of 2014 my time was spent with Dr. Maria Santisteban annotating genomic sequences of *Drosophila biarmipies* for the Genomics Education Partnership. Using evidence based annotation and tools of bioinformatics, gene models were curated and sent to the partnership who place the final models in GenBank, a National Institute of Health Genetic Database, for future studies.
- During the fall of 2014 my work consists of studying yeast autophagy, a process in which the cytosol and organelles are delivered to the lysosome or vacuole when the cell is under particular types of stress. Understanding the process of autophagy in yeast may hopefully provide insight to how this process occurs in humans and provide a model for certain diseases.

Interests:

The field of genomics continues to impact human health exponentially and has influenced me to pursue research in genetics. My interests include using the genetic code for diagnosis and unraveling the many mysteries the code still has to offer. I'm also interested in silencing the very debatable issue of "genetically modified organisms" and human safety. The disagreement that scientists have on the issues of health, along with claims made that these organisms are beneficial on an economic standpoint, are irrefutable without proper research and require the need for better data.

Marcus Sherman



Major: Biology with biomedical emphasis

Class: Senior

Mentor: Conner I. Sandefur, Ph.D.

Research Interests:

I want to pursue research paths in biomedical and health informatics, computational biology, computational neuroscience, and neurobiology. I feel these avenues would place me in the best position to practice translational medicine in a growing field.

Research Experience:

1. Undergraduate R.I.S.E./Honors Research: John Eric Reissner Scientific Computing and Visualization Laboratory, Department of Biology, UNC-Pembroke, 02/2014 - present (research advisor: Conner Sandefur, Ph.D.)
2. R.I.S.E Summer Research Opportunity: William C. Friday Alzheimer's Disease Research Lab, UNC-Pembroke, 05/2014 - 08/2014 (research advisor: Ben Bahr, Ph.D.)
3. Reticulation of Lactate Dehydrogenase: Department of Chemistry & Physics, UNC-Pembroke, 01/2013 - 04/2014 (research advisor: Siva Mandjiny, Ph.D.)

Academic Awards and Honors:

- Research Initiative for Scientific Enhancement (R.I.S.E.) 2014-present
- Esther G. Maynor Honors College, 2012-present
- Beta Beta Beta (President), 2013
- Biology Faculty Award, 2014
- Alpha Chi, 2013
- Gamma Sigma Epsilon, 2013
- Alpha Sigma Lambda, 2013
- Lambda Sigma, 2012
- Chancellor's List, 2011-present

Career Goals:

I plan on applying for a medical scientist training program (MSTP) in order to attain a dual-degree. I would be able to bridge the gap of bench to bedside, and have a more comprehensive understanding to practice translational medicine.

MORGAN PAIT



Major: Chemistry

Class: Senior

Mentor: Ben Bahr, Ph.D.

Academic Experience:

Obtained an Associate of Arts in College Transfer from Bladen Community College (May 2013)
Graduate of the North Carolina Community College System's (NCCCS) Student Leadership Development Program (2012-2013)

Research Interest:

I wish to pursue a doctorate in Pharmacology. At this time, I would like to concentrate my Pharmacology research in the area of Neuroscience. More specifically, I am interested in studying Alzheimer's disease or Traumatic Brain Injury.

Research Experience:

The University of North Carolina at Pembroke, William C. Friday Laboratory (2013-2014, Present)
Duke University, Blobe Laboratory (Summer 2014)

Academic Awards & Honors:

Bladen Community College President's List (Fall 2011, Spring 2012, Fall 2012, Spring 2013)
University of North Carolina at Pembroke Honor's List (Fall 2013) and Chancellor's List (Spring 2014)
UNCP PURC Fellow (Spring 2014)
2nd Place in the Sciences at the 2014 PURC Symposium at UNCP (2014)
SURPH Fellow at Duke University (Summer 2014)
UNCP RISE Fellow (2014-2015)

Extracurricular Activities:

Member of Sigma Kappa Delta, English Honor Society at Bladen Community College (January 2012-May 2013)
Student President of Sigma Kappa Delta (2012-2013)
Bladen Community College Student Government Association Senator (2012-2013)
Assistant Editor of Ink Quill Society, creative writing club, at Bladen Community College (January 2012-May 2013)
Member of Phi Theta Kappa at Bladen Community College (2013)
Co-facilitator for the NCCCS's Student Leadership Development Program (2013-2014)

PAUL LASCUNA



Major: Biology (Biomedical Concentration)

Class: Sophomore

Mentor: Ben Bahr, Ph.D.

Research Interests:

Currently I am interested in Biomedical research as well as research within the field of Cancer Biology. My hopes are to bridge the gap between the basic sciences and medicine. I would like to study effects of cancerous treatments and hope to improve the quality of life for cancer patients. I would also like to venture into exploring possible targeted therapies for cancers lacking typical gene expressions used for treatment; such as Triple-Negative Breast Cancer (TNBC). Finally I am also interested in using research to help communities overcome health disparities; a personal interest of mine is public health. I guess you can say I hope to do a little bit of everything in my quest to make a difference in the world.

Research Experience:

I am a first semester RISE fellow and will be partaking in my first undergraduate research project under Dr. Bahr. I look forward to gaining insight to the biological effects of disrupted brain function and possible therapeutic treatments. I am also excited to study age-related neurodegenerative diseases such as Alzheimer's.

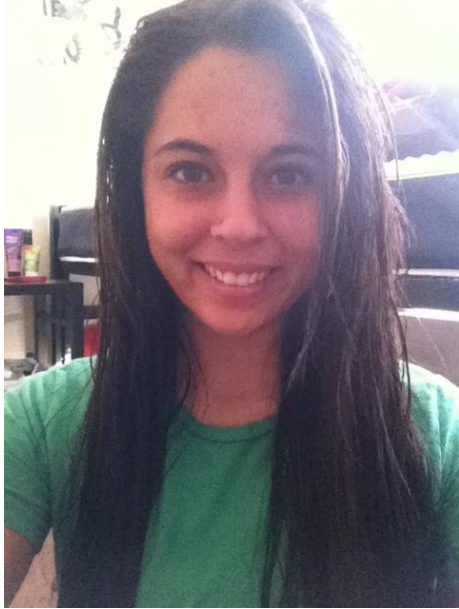
Honors:

Chancellor's List, Fall 2012- Present
President, Lambda Sigma Honor Society, 2014
Maynor Honors College Scholar, 2014
NSF S-Stem COMPASS Program Scholar, 2014
UNCP-RISE Fellow, 2014

About Me:

I am a second year student at UNCP trying to be the best me I can be. Originally I am from Pensacola, Florida and have traveled all over the country as a military child. I am 20 years young and the oldest of 5 siblings ranging ages 2-19.

SARA McEWAN



Major:

Biology (Molecular Biology)

Class:

Senior

Mentor:

Ben A Bahr, PhD.

Research Presentation Attendance:

RISE End-of-Summer Research Symposium, August 2014

UNCP-RISE Membership:

Cohort 9 (2014-2015)

Research Experience:

William C. Friday Laboratory with Ben Bahr, PhD.

Currently I am working under the mentorship of Dr. Ben Bahr to further research into the understanding of and possible treatments for Alzheimer's disease.

Research Interests:

I am interested in conducting research concerning the areas of Neurobiology and Infectious Disease.

Research Goal:

Upon graduation from UNC- Pembroke in May 2015, I hope to be accepted into an MD/PhD program and conduct clinical research related to neurodegenerative disease.