

## The Magnesium Messenger

### Message from the ERC-RMB REU Coordinator DeRome Dunn

The Summer 2014 Research Experiences for Undergraduates (REU) is now underway within the NSF funded Engineering Research Center for Revolutionizing Metallic Biomaterials (ERC-RMB). This summer we have five undergraduate students as participants in this REU program. Their bios are given in this first issue of the newsletter for the summer.

These students have varied interesting backgrounds. They are from areas as remote as Cape Verde, West Africa to Los Angeles, California on the west coast of the United States joining us on the American East Coast in Greensboro, NC in the piedmont. Others come from the North-east portion of the United States. Also, these undergraduate students are diverse in other ways. They are from both private and public universities. These REUs are involved in a variety of research topics within the ERC-RMB this summer. They are rising sophomores to seniors. Also, they have various plans for career pursuits into the future after this summer's REU experience.

In order to enrich the REU experience beyond research, the ERC-RMB has planned multiple enrichment activities during its eight week program. Presentations on lab safety and keeping a lab notebook considering intellectual property concerns are included. There are weekly journal club and seminar meetings. We are traveling to a Greensboro Grasshoppers game for fun, food and fellowship. There are workshop on technical presentations, another on ethics/leadership and one on Responsible Conduct in Research. Next, field trips are planned to Wake Forest Institute for Regenerative Medicine and the David H. Murdock Research Institute. Finally, there will be closing activities that include a oral presentation contest between the REUs along with a judged group poster defense organized by their research mentor's group.

Please read on to further acquaint yourselves with this summer's REUs in residence at our ERC-REU for Summer 2014.



ERC-RMB  
Summer 2014  
REUs

Issue I

6/20/2014

### Revolutionizing Metallic Biographies!

#### Editors:

- Timothy Moses
- Thomas A. Campbell

#### In Issue I

#### Introducing:

- Lidia De Barros
- Lauren Seitz
- Timothy Moses
- Thomas A. Campbell
- Lissette Estala





## Biographies

### Lidia De Barros

My name is Lidia De Barros and I'm a rising sophomore majoring in Biomedical Engineering at Boston University. I was born and raised in Cape Verde, located on the west coast of Africa, and moved to the Boston area three years ago committed to finishing high school and pursuing a college career.

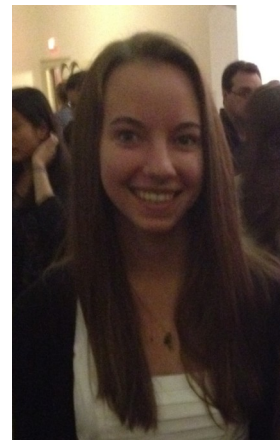
This summer I am working with Dr. McCullough and his graduate students to model degradable magnesium alloys on computer programs that simulate its reaction when implanted in the body as joint replacements, and its response to applied forces both suddenly and over extended periods of time.

This experience will be of great value to me since upon graduation my plan is to pursue a career in the health care industry working with medical devices and biotechnology.



### Lauren A. Seitz

My name is Lauren Seitz and I am from Deerfield, New Hampshire. I am a rising junior at Syracuse University where I am majoring in bioengineering and minoring in Engineering Management. At Syracuse, I am a Calculus tutor and a member of the Phi Sigma Pi Co-ed Honors Fraternity. My mentor for the summer is Dr. Boyce Collins. We will be using an x-ray CT scanner to analyze loaded and unloaded rat knees. This summer I am excited to learn about the research being done in the Engineering Research Center and to get a taste of North Carolina.





## Biographies

### Timothy Moses

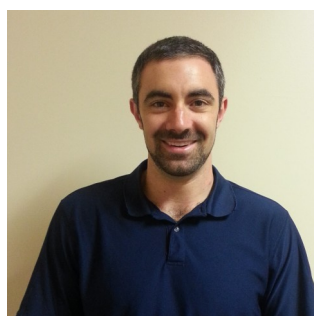
I am a senior Bioengineering major with a concentration in bio-materials at Clemson University. I have accumulated previous research experience working with spider silk surface characterization under Dr. D. Dean and Dr. M. Kennedy at Clemson University. This summer I will be working under the supervision of Dr. D. Kumar. In lab this summer I will study the potential of beta-tricalcium phosphate with a silver composite as a thin film coating for Magnesium bone fixation devices. In theory, the bioinert coating should slow down the corrosion of Magnesium alloys enough to allow the osseous tissue to repair. Once the coating has degraded, the Magnesium alloy fixation device corrodes away rapidly, leaving behind no evidence of a fixation device while repairing fractured osseous tissue. I plan to further my education and earn a masters degree in Bioengineering and thereafter pursue a career in the medical device industry.



### Thomas A. Campbell

I am from Warwick, Rhode Island. I am a rising senior at the University of Rhode Island, and am majoring in chemical engineering (biology track) and applied mathematics. During my research experience at North Carolina A&T State, my mentors will be Dr. Narayan Bhattarai, Roman Blount IV, and Udhav Adhikari. We will be working to develop magnesium alginate compounds that facilitate magnesium delivery for neural tissue repair. We will also be working to develop magnesium-based 3D scaffolds for tissue regeneration. I am excited to have the opportunity to participate in the modern research being conducted to benefit human health.

Upon completion of my undergraduate degree, I plan to pursue a Ph.D. in neuroscience. My career research interests include the genetic factors that influence neural function, how specific brain structures determine overall functionality, and biomaterials development to improve models of neural network behavior. In my spare time, I enjoy being the bassist in a local jazz band, thinking about the world, and outdoor activities such as travel, hiking, camping, and cycling.

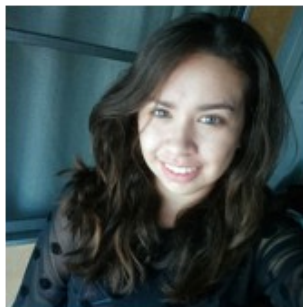




## Biographies

### Lissette Estala

I am a junior pursuing a Bachelor of Science degree in Biochemistry at California State University, Los Angeles. Under the guidance of Dr. Frank A. Gomez at CSULA, my research encompasses microfluidics and analytical chemistry with a concentration on developing and optimizing microfluidic devices with future applications in point-of-care (POC) diagnostics. Dr. Yeoheung Yun will be my mentor during my stay at NC A&T. This summer, my research focus will be paper-based microfluidics. The advantages of a paper stage include timely results, portability, and facile disposability. In addition, paper eliminates the need for external pumps or surface treatment for enzyme immobilization, greatly reducing production cost. The Engineering Research Center hosts interesting and truly interdisciplinary research that I am eager to learn more about since I look forward to a future career in biomedical research.



REU's cheer on the Greensboro Grasshoppers!

