THCAS Alumni Profile

Alumnus: Kari Carr

What degree(s) did you receive from ECU and what year(s)?
In May 2015, I will have earned my Bachelor of Science in Biology and my Bachelor of Arts in Anthropology.

Tell me about one of your favorite memories of your time at ECU?
It’s hard to select a favorite memory from ECU because there were so many good moments. Presenting at RCAW 2015; studying abroad in Gambao, Panama, with the Biology Department; and volunteering with Gamma Sigma Sigma, organizing a human trafficking awareness event and Relay for Life are among some of my favorites.

However, some of the neatest experiences at ECU involved going to lectures. My freshman year I had the opportunity to hear Dr. Jennifer Arnold speak. My sophomore year I had the chance to attend the Dr. Mae Jemison lecture and my junior year I was able to attend the lecture by Dr. Jane Goodall — I was in the front row for Dr. Goodall and I will always remember how excited I was to hear all three of these fantastic women speak!

Where are you currently employed?
In the fall of 2014, I worked as a biology tutor for ECU’s Project STEPP program and I absolutely loved it! While working with the STEPP program, I had the opportunity to work with students with learning disabilities. I helped students with course content and we worked together to develop study methods that worked for them. STEPP provides students with support and tools to help them achieve academic and professional success. The faculty and students are truly dedicated to ECU and they all are absolutely wonderful people.

Beginning in June, I will work as a research technician at the Brody School of Medicine with the Department of Anatomy and Cell Biology.

Description of Undergraduate Research:
As part of the graduation requirements for the Honors College, I am currently completing my honors thesis which is a bioinformatics research project concentrating on hox genes in vertebrate evolution. Specifically, I am investigating protein conservation in hox2 and hox11. This project is being conducted under the direction of my mentor, Dr. Jean-Luc Scemama. Hox genes are responsible for organism development and contain the information necessary for cellular differentiation and organization. Hox11 affects sacral vertebrae and hoxa2 affects neural crest development, two different spectrums of the backbone, but both important to vertebrate function and structure.

The purpose of the project was to develop an understanding of how gene evolution has shaped morphological complexity within the vertebrate lineage by evaluating protein sequence variations within hoxa2 and hox11 genes from six selected organisms. In order
for organisms to develop vertebrae and other bones, the genetic code to produce skeletal tissue had to become evolutionarily available. The hox genes and subsequent protein data were collected from the NCBI database, analyzed using the NCBI Basic Local Alignment Search Tool (BLAST) and ClustalΩ, and the gathered data were used to evaluate hox gene conservation and degeneration among the selected species.

**How do you feel ECU prepared you for your career/life outside of college?**
ECU has challenged me academically and has helped me develop my leadership, service, and professional skills. The THCAS has helped me significantly prepare for life beyond graduation. The skills gained from class, organizations, and my project mentor, as well as the many other wonderful faculty members within the university, has prepared me to confidently enter a graduate program. The knowledge collected in my years here will always prove worthwhile in future endeavors.

In addition, the opportunity to double major has also benefitted me. Studying anthropology and biology has provided me with a better understanding of disease processes and how people perceive their symptoms and quality of life. Perception of pain differs from person to person, and the biological and cultural influences that affect pain and disease processes are both significant in developing treatments for illness.

Studying cultural and biological anthropology has provided me with an awareness of cultural biases within the sciences. Social influences can affect a person’s approach to experiment construction and data interpretation, and the capability of noticing and eliminating minute traces of social bias at any point during experimental procedure will prove beneficial. In addition, having an appreciation of cultural differences allows me to be aware of multiple approaches to a problem, to ask how someone else would approach the question, as well as collaborate well with biologists and chemists from various cultural backgrounds.

**Currently, what are you most proud of accomplishing in your life?**
Currently, I am excited that I soon will be graduating. I take pride in knowing that after four years of hard-work I have earned two degrees and will be going on to Brody. I am proud that I am leaving the THCAS as a more confident and capable individual.

I hold fast to the idea that sometimes when something bad happens, life may simply be preparing us so that we are able to help another person at a later date. I am proud of myself and of anyone who asks for help when needed, who pushes forward, and when given the chance takes a less than good situation and turns it into a learning opportunity. During my senior year at ECU, I have come to the realization that all of my experiences — good and bad — have helped shape me into the person I am today. This realization is what I am most proud of, because the accompanying confidence and happiness will help me in both current and future endeavors.

**What are a couple of your future goals?**
I want to learn as much as possible while in graduate school, and I want to pursue research regarding cell responses to growth factors and connective tissue homeostasis.
Elements along these complex communication networks such as tyrosine kinases affect disease pathways such as osteoporosis, arthritis, and cancer. I am particularly interested in the elements that affect skeletal cell differentiation that lead to overexpression of growth factors in paracrine and endocrine pathways. Elucidating these pathway mechanisms will benefit the understanding of multiple disease processes. After completing the program, I hope to secure a post-doc research position.

**How do you like to spend your free time?**
Outside of academics and volunteering I like to read, spend time with family and friends, exercise, and watch TV and Netflix.

**Where do you currently reside (city/state)?**
Greenville, NC

**Is there anything else you would like to share with others about yourself?**
If I could offer advice to current and incoming ECU undergraduate students it would be:

Some people help make us who we are by being present in our lives and others do so by being absent — it’s because of both types of people that you are the person you are today, and that today you are amazing.

No matter what, don’t give up.