



Anderson Gets Hands-On Experience in Summer Internship

By Matt Dougherty, NFHCA Director of Communications

CHANDLER, Ariz. – Hamilton senior Emma Anderson has always had an interest in biology, and over the past two summers has put that into action through internship opportunities that have allowed her to take part in key medical research.

She spent the past summer taking part in the internship program at Jackson Laboratory in Bar Harbor, Maine, working with mice in studies for determining effects of high-fat diets on development of diabetes and also for mutations responsible for tachycardia.

The opportunity became available in part because of Anderson's previous work with internship programs at Hamilton.

"I didn't really know what I wanted to study when I came to Hamilton," Anderson said. "I had an interest in biology in high school, and then I took it as a freshman and continued as a sophomore and decided to declare as a major. I've just always been interested in it and had conducted research at Hamilton the previous two summers. It was an awesome opportunity and it was a major reason that I was able to get such a prestigious research internship this summer because of my unique prior experience."

Even with her similar internship experience at Hamilton, Anderson was thrilled and somewhat surprised when she found out she had received the internship with Jackson Laboratory this summer.

"I had known about it forever because my grandparents live in Maine and we visit Acadia National Park, and Jackson Harbor is right on the edge of it," she said. "I applied two years ago and didn't get in, but got in this time. I applied to a handful of summer internships because Jackson Laboratory was the one I never thought I would get. But it turned out it was the only one I got. It was the one I wanted and when I heard back I was pleasantly shocked."

The Summer Student Program at Jackson Laboratory is designed to help its participants understand the nature of research science, with an emphasis on methods of discovery. Each student has a mentor, and presents findings at the end of the program. Anderson worked on two different research projects under

the advisement of Dr. Karen Svenson: The Effects of High-Fat Diets with Varied Carbohydrate Content on the Development of Diabetes in Obese Mouse Models, and Determination of the Mutation Responsible for the Tachycardiac Phenotype of ENU Mutant Strain HLB468.

“The project with the diabetic mice was a long-term diet study looking into the effects of carbohydrates in diet and leading to diabetes,” Anderson said. “There were four strains, two of which were genetically lean and the other two were genetically obese. It allowed us to compare the environmental effects of diet on being obese. The particular project involved measuring a lot of different parameters of the diabetic condition. Basically my role was to take all that data and put it into a comprehensive excel spreadsheet and put it into different ratios to get at what the data was telling us. It was a really cool experience to see what goes into those nice graphs. You have to look at them in a lot of different tables.”

She continued, “The other project I did was on genetic mutation of causing an elevated heart rate in a mouse chain. The mouse chain had this mutation that was causing an elevated heart rate and I was trying to figure out what gene it was. We think we figured it out but need further research to determine if it was the cause.”

Anderson learned a great deal from her research and hands-on experience.

“There is a lot of failing that goes into research but you only hear about the success. It can be frustrating at times and it’s really rewarding when you do find something and that really makes it worth it. I find that the environment was very collaborative and everyone was willing to help each other. People were really interested in everyone’s work and passionate about their jobs and working towards a common goal. Everyone wants to make a positive discovery to promote health and well-being.”

Anderson stated that the data was so large in the study of high-fat diets that the research team had some preliminary findings that carbohydrates could have a role in obesity, but need to do more work to establish a final report. In the tachycardia study, based on the findings the mutation that identified may be the cause of elevated heart rate but again more research is needed to come to a definitive conclusion since the mutation could act alone or in conjunction with something else.

“It was definitely great that we figured out this mutation because it was previously unknown,” Anderson said of the tachycardia study. “With the diet study they know what the next steps to take are and based on what we found they might alter the diets a little differently. The hands-on experience really was the best way to learn.”

Anderson believes the opportunity to intern at Jackson Laboratory would not have come about if not for her chance to do hands-on work at Hamilton College. Anderson’s experience at the school and with the field hockey program has been everything she had hoped for and more.

“I looked at a lot of different schools, but I kind of knew what I wanted which was a smaller school that was not too far away from home,” said Anderson, a native of Greene, New York. I knew that I wanted to play field hockey and have the opportunity to study abroad during college (which she did in Edinburgh, Scotland). I enjoyed the balance of athletics and academics, and our coach (Gillian McDonald) is so supportive with always making sure that academics come first. It’s a time commitment but there is also a great support system.”

She continued, "I love my teammates. They make every practice and everything so much fun. They are just great people to be around. The people at Hamilton are just amazing. The professors are so helpful in providing advice, and not just for school but life advice. I've had the opportunity to take a wide range of classes and have learned so much being here and outside my comfort zone.

Anderson's career at Hamilton is winding down this fall, and she has been a starter all season for an outstanding squad that has four wins over nationally-ranked opponents, including three in a row over the last 10 days. When her time is up on the field and in the classroom next spring, Anderson looks to continue what carry what she learned in internships into her professional life.

"I'm thinking about a career in the field of public health", Anderson said. "It would possibly be working in nutritional genomics to have the potential to impact a wide range of people. I would still work in research, but more involved in looking at data and patterns and correlation to find information and be able to educate on nutritional ways to improve overall health."