

Rachael Duffy '19, Bringing the Fight to Cancer

Rachael Duffy is a senior Chemistry major with a concentration in Biochemistry and a minor in Biology. During the summer and fall of 2017, she took part in an internship at CreaGen Biosciences, Inc., which was funded by the Massachusetts Life Sciences Center. While working with PhD chemists to synthesize cancer-fighting molecules, she discovered her passion.

Why did you choose Framingham State?

I originally majored in Food and Nutrition and chose Framingham State because the Coordinated Program is highly regarded. I had no intention of changing majors, but while taking my first Chemistry course, I fell in love with the subject and the faculty in the department and was inspired to switch over. I've always been interested in the idea of using food to help people get better, which is why I started out in nutrition. But I've come to realize there are even broader applications of that interest within chemistry.

What have you enjoyed most about your experience as a Chemistry major?

It's been amazing. The staff are so personable and really care about every student, their success and their lives in general. The courses I've taken are so interesting and have real-world applications which I have been able to utilize in my experience in the labs. Science has always been interesting to me, but I didn't have a great experience with chemistry in high school due to my teacher at the time. I wasn't sure that I would excel at it in college, but the faculty have made all the difference.

How did you enjoy your internship through the Massachusetts Life Sciences Center?

Massachusetts Life Sciences Center is an incredible organization that funds internships in chemistry, biology, biotech and other life sciences. They financed the internship at CreaGen Biosciences, a small company in Woburn. I was surprised at how much responsibility I was given there. They immediately included me in their exciting projects, and on day one I started performing reactions in the lab toward the synthesis of cancer-fighting molecules. It was refreshing to see that what I had been learning in my Organic Chemistry lectures and labs was exceptionally applicable to the work I was asked to do at the company. One of our projects was to take a lead molecule that they knew was effective in killing cancer cells and attempt to modify it to optimize its effectiveness and safety. After two months and countless obstacles, my first molecule was finished, and after testing it was found to be more effective at killing cancer cells

than the lead molecule. It just passed cell testing, which means the next phase is putting it in mice, and then on to larger animals.

What are your plans for the future?

I want to work in a research lab. Even given the frustration and downfalls that can come with research, the reward is worth it. It's so motivating to go in every day and know that you are working toward finding a better treatment or cure for cancer or some other rare disease. I plan on working for a year or two in industry and then I want to get my PhD. I've definitely found something I am really passionate about, which is exciting.