

ANSC Undergraduates Conducting Research

Kathleen Atkinson, a junior Animal Science student, has been working in the laboratory of Dr. Dennis D'Amico since February of her sophomore year.

I had decided to pursue a minor in Molecular and Cell Biology the previous semester after thoroughly enjoying a microbiology class and its lab requirements. Dr. D'Amico's lab is a perfect combination between my major and my minor as I am conducting undergraduate research in Food Microbiology.

I began in Dr. D'Amico's lab with learning how to make and supplement certain types of growth media. This could involve many types of agar and broths designed specifically to provide nutrients for the desired bacteria of study. Most often, I would be making Brain Heart Infusion Agar, Trypticase Soy Agar with Yeast Extract, Modified Oxford Agar, or Phosphate Buffered Saline. These would be made, autoclaved, and plated individual into petri dishes. This also taught me a lot about how to make media more acidic or more basic depending on the pH required for optimal growth.

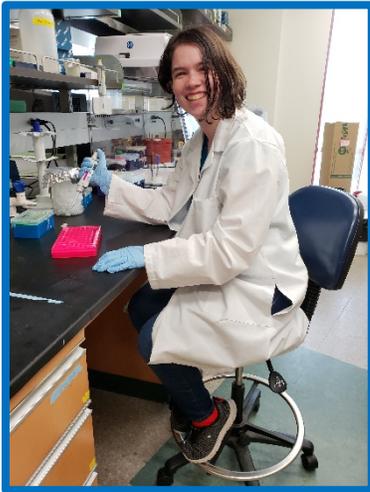
A graduate student in the lab I worked under was studying antimicrobials against a pathogenic bacteria called *Listeria monocytogenes* and its growth in cheeses. Therefore, after the media was made, I was trained in different plating techniques including T-streaking or spread plating, in addition to learning how to count plates of *L. monocytogenes* after an incubation period. Moreover, these techniques involved determining how to dilute samples to estimate the bacterial counts in the original sample, as the bacteria concentration or colonies per unit would be far too numerous to actually count.

This fall semester of 2019, I have started my own project working under graduate student, Lang Sun. I am currently studying the effects that different concentrations of glycolipid on the growth of a bacteria called *Viridibacillus arenosi* in both skim and whole milk. It is a spore-forming bacteria meaning that it can survive in a somewhat protective state and become resistant to many physical and chemical effects thus making it harder to actually eradicate. I am responsible for making each dilution of glycolipid, preparing the concentration of bacteria needed, involving other dilutions and centrifuging, and tracking the growth of each tube with extra positive and negative control tubes by plating and counting.



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I have thoroughly enjoyed being a part of Dr. D'Amico's lab and it has shown me how complex lab work can be and how great it is to be able to discover new things about our world. After graduating, I hope to attend veterinary school and pursue a career specializing in lab animal work such as veterinary microbiology or veterinary pathology.



Jenna Feyler, a senior Animal Science undergraduate, has worked with Dr. Kristen Govoni since January of her junior year. Jenna joined Dr. Govoni's laboratory in order to gain laboratory experience and expand her knowledge on growth and metabolism.

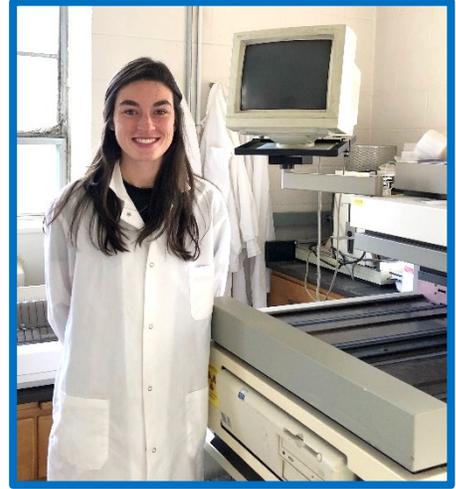
Dr. Govoni's laboratory uses a sheep model to examine the effects of maternal nutrition on fetal programming. This work is in collaboration with Dr. Sarah Reed, whose laboratory focuses on muscle physiology, and Dr. Zinn, whose laboratory focuses on endocrinology. Literature, including publications from the UConn ANSC department, indicate that poor maternal nutrition during gestation has effects on muscle development, Insulin like growth factors, metabolism, and postnatal growth and development. Poor maternal nutrition during gestation predisposes the offspring to disease, obesity, and other biological dysfunctions.

Jenna has participated in various projects in Dr. Govoni's laboratory and learned several laboratory techniques. She assists Dr. Govoni's graduate students in performing PCR and gel electrophoresis within the laboratory to determine the optimal temperature for primers to anneal. Additionally, Jenna processes blood samples, RNA extraction and quantification, and sample preparation.

Over the summer, Jenna assisted with a project which focused on the effects of probiotics on the growth of ram lambs. Her responsibilities included preparing dietary rations for the herd of 20 ram lambs, maintaining sanitary conditions within the pens, and utilizing proper techniques to restrain the lambs so that graduate students could trim hooves and shear the lambs in order to collect samples. This experience allowed Jenna to discover her passion for working with sheep and motivated her to join Dr. Govoni's latest project which is focused on the effect of maternal nutrition on fetal programming across multiple generations. This project is in collaboration with Dr. Reed's and Dr. Zinn's laboratories.

Working in Dr. Govoni's laboratory has given Jenna more confidence when working in lab settings and has provided her with the skills to perform PCR along with other various lab techniques. After graduating from UConn, she hopes to attend veterinary school and specialize in Exotic Companion Mammal medicine.

Lauren Soranno, a senior Animal Science undergraduate student in the Honors program, has worked with Dr. Sarah Reed since the spring of her freshman year. She began by shadowing a graduate student, Amanda Jones, who was working on one of her projects in Dr. Reed's laboratory. She learned different laboratory techniques such as pipetting and how to run different assays. Lauren then started assisting on a sheep project in collaboration with Dr. Govoni and Dr. Zinn's laboratories to analyze the effects of antioxidant supplementation on the growth of ram lambs. Each week she helped to feed the herd of 20 ram lambs, clean their pens, and properly restrain the lambs when samples were being collected from these animals. This early experience ultimately led Lauren to gain an interest in this area of research and pursue a formal position in Dr. Reed's laboratory to perform her own research for her honors thesis.



Dr. Reed's laboratory focuses on the effects of poor maternal nutrition during gestation on offspring muscle satellite cell function and metabolism in sheep. This work is conducted in collaboration with Dr. Govoni, whose laboratory focuses more on growth and development, and Dr. Zinn, who focuses more on endocrinology. After taking Dr. Zinn's endocrinology class, Lauren realized her fascination with this topic. In the spring of her sophomore year, she decided to work with Dr. Reed to design a project of her own that incorporated both Dr. Reed's work with poor maternal nutrition and Dr. Zinn's area of expertise: endocrinology. The objective of her project is to investigate the effects of poor maternal nutrition during gestation on ewe and offspring plasma concentrations of leptin and ghrelin. Leptin and ghrelin are hormones in the body that work together to regulate appetite. They have a role in energy regulation, so if they are affected there could be serious consequences on offspring development and health of the ewe. Over the past summer, Lauren completed a series of radioimmunoassays using plasma samples from the ewes over the entirety of gestation and from the offspring at birth to determine the concentrations of leptin and ghrelin. She is currently in the process of analyzing her data and writing her honors thesis.

Lauren has greatly enjoyed her research in Dr. Reed's laboratory and looks forward to all of it coming together. Undergraduate research has exposed her to scientific inquiry and given her a greater appreciation for the applications of research in real life. She just finished applying to veterinary school and hopes to eventually attain a DVM to pursue a career in small animal medicine.



Lindsey Vandermeir, a junior Animal Science undergraduate student, has worked with Dr. Mary Anne Amalaradjou since October of her freshman year. Dr. Amalaradjou's laboratory focuses on using probiotics to help prevent and reduce inflammation in the intestines (colitis). Current research shows there is a connection between good bacteria, such as probiotics, and influence in overall health.

Lindsey began her work in the Amalaradjou Lab by shadowing a graduate student and

learning the basic procedures and techniques. She then began working with Dr. Amalaradjou as an independent study student. Her roles included learning how to subculture and conduct bacteria growth curves. This experience exposed Lindsey to the graduate and undergraduate students working in Amalaradjou's laboratories and allowed her to ask questions about their research in the department, ultimately inspiring her to pursue a formal position in the Amalaradjou laboratory to perform a project of her own.

Lindsey is currently working on her own project which is funded in part by a UConn IDEA Grant from the Office of Undergraduate Research. The goal of this project is to determine which probiotic strains have cholesterol-lowering and anti-inflammatory potential. There are many diseases related to the liver, including non-alcoholic fatty liver disease and alcoholic liver disease. The liver is also responsible for producing cholesterol, in which high cholesterol levels are one of the leading components to cardiovascular diseases, one of the number one leading causes of death in the world. If something as simple as a probiotic could be taken in order to help and/or prevent this, it would be a huge success in the medical world. Probiotics also have significantly less side effects, one of the only ones being gastrointestinal upset, than other medications that may be used to treat these diseases. This finding also has the potential to be used not only as a treatment, but as a prevention as well. Lindsey's research involves using HepG2 cells to examine the anti-inflammatory activity of Typhi colonization factor (TCF and the lactic acid bacteria (LAB strains).

Working in Dr. Amalaradjou's lab has allowed Lindsey to hone her skills in the laboratory and give her a greater understanding and appreciation for the scientific process involved in research. After finishing her research and graduating from UConn, Lindsey plans to attend veterinary school to attain a DVM and pursue a career in veterinary medicine.