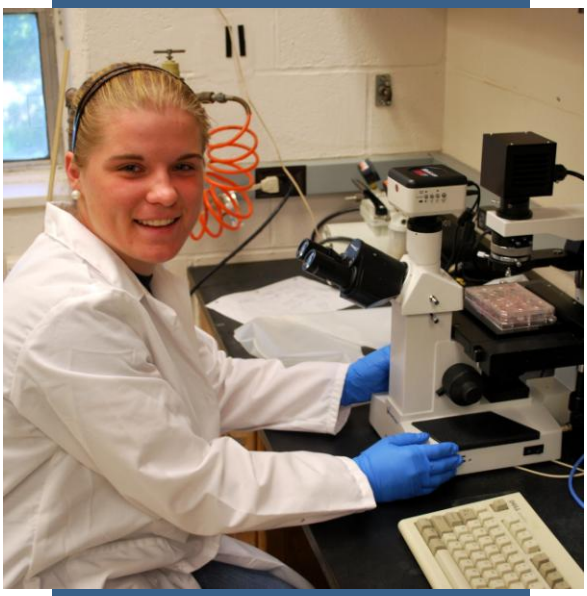
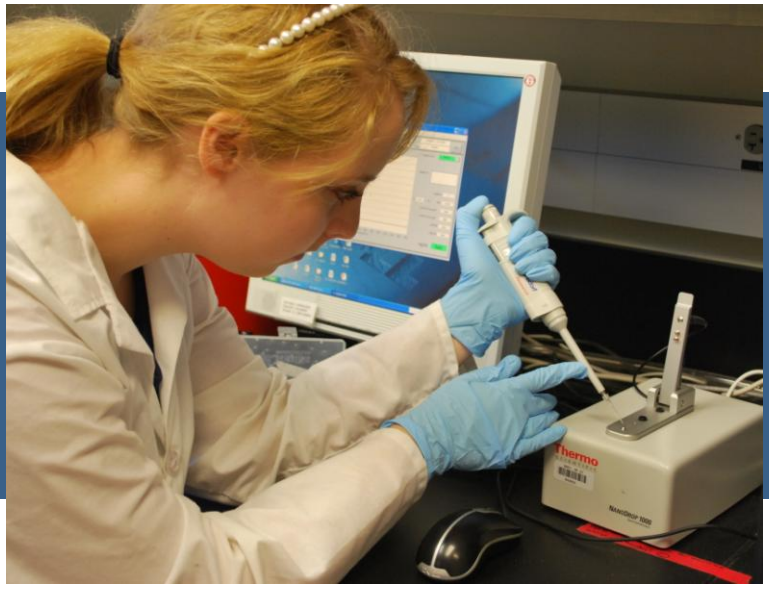
ANSC Undergraduates Participate In the Department's Research Programs

2013- 2014 Academic Year



Bethany Sullivan, an **ANSC junior** and member of the UConn Honors Program, works in the laboratory of **Dr. Sarah Reed**. Bethany is spending the summer researching how cytokines affect the proliferation, differentiation, and fusion of myoblasts and is hoping to use this as part of her Honors Thesis. In culture, myoblasts mimic satellite cells, which are muscle stem cells that aid in growth and repair of skeletal muscle. Cytokines are proteins that are normally secreted in a live animal to help facilitate repair of damaged skeletal muscle tissue or during periods of disease. To understand how specific cytokines are affecting myogenesis, Bethany is culturing C2C12 mouse myoblasts and treating them with two different concentrations of the cytokine interleukin (IL)-1β, then determining if IL-1β helps or hinders the growth of these cells and formation of muscle fibers. Since the effect of IL-1β on myoblasts has not been previously determined, Bethany's experiment will contribute to a larger study on the regulation of myoblasts and satellite cells by cytokines, which will provide insight into the mechanisms that contribute to muscle atrophy during disease conditions.



Katelyn McFadden, an **ANSC junior**, has been working in **Dr. Kristen Govoni's** laboratory since her senior year of high school. For the past year and a half, she has been working on her Honors thesis project to examine the effects of maternal supplementation of 25-hydroxycholecalciferol ($25OHD_3$), a vitamin D metabolite, on bone and cartilage development in fetal pigs. This is a collaborative study with Dr. Jessica Starkey at Texas Tech University. Lameness in pigs is often due to poor bone and cartilage development and creates a major health issue for the swine industry. The majority of bone and

cartilage development occurs during fetal and early postnatal development and vitamin D is required for proper development. Katelyn is interested in determining if maternal $25OHD_3$ supplementation will alter the gene expression of the fetal pig bone and cartilage. She has evaluated mRNA expression of markers in bone mineralization and cartilage development, genes that mediate the effect of vitamin D, as well as, genes involved in the somatotropic axis. This study is important to increase knowledge of the mechanisms by which vitamin D acts on bone and cartilage and to determine if $25OHD_3$ may alter expression of key genes in fetal bone and cartilage development to improve postnatal bone and cartilage formation. Katelyn was recently awarded third place in an undergraduate poster competition when she presented her research at the 2013 ADSA/ASAS Joint Annual Meeting. She has also been involved in a large collaborative project in the Animal Science department focusing on poor maternal nutrition using sheep as a model.

Kaitlyn Way, an **ANSC junior**, is working with **Dr. Sheila Andrew**, conducting research evaluating a rumen sensor technology. The technology she is working on stands to impact the dairy industry tremendously making tasks such as monitoring nutrition and basic vital signs as easy as looking at a computer screen. She has spent the summer working with Vital Herd and Dr. Andrew testing the technology and will soon be getting ready to test the first prototype. Kaitlyn is also planning to start another project with Dr. Andrew this fall monitoring the transition period from dry cow to fresh cow in dairy cattle here at UConn and investigating nutritional strategies to keep cows healthy during this metabolically active time in a cow's life. Kaitlyn is planning to use these experiences to enhance her career as a veterinarian.