

UNIVERSITY OF ILLINOIS COLLEGE OF AGRICULTURAL, CONSUMER AND ENVIRONMENTAL SCIENCES
ACES UNDERGRADUATE RESEARCH SCHOLARSHIP PROGRAM

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University of Illinois College of ACES students have the opportunity to conduct a research project as part of their undergraduate experience. This research can be used to gain experience useful to a specific major, to further research or internship opportunities, or to preview an intended career. Undergraduate research also gives students an opportunity to develop and practice skills that will be beneficial in any career long after their education has been completed. To find more information on the ACES Undergraduate Research Scholarship Program, visit the website at <http://www.aces.uiuc.edu/Students/research.cfm>. The following are examples of research projects currently being conducted by ACES undergraduate students.

- ***Anti-Proliferative Effectiveness of Soy Saponins on Non-Cancer and Cancer Human Colon Cells***

The purpose of this experiment is to compare the anti-cancer action of soy saponins on cancerous and non-cancerous cells in the human colon. Previous research has shown soy saponins to enhance immune function and to decrease the proliferation of cancerous cells. This project is currently being conducted by a student in Food Science and Human Nutrition.

- ***Assessing the Effectiveness and Implications on Obesity of a Low-Fat Diet***

This experiment is aimed toward proving that an increase in obesity despite the practice of a low-fat diet is due to the replacement of fat in these diets with simple carbohydrates. This project will involve the review of articles evaluating different dietary practices and nutrient requirements, and the formation of a website (<http://web.aces.uiuc.edu/efed/>) to educate about a healthy diet using reliable scientific data. This project is being conducted by students in Food Science and Human Nutrition.

- ***Remote Sludge Level Measurement***

The purpose of this research project is to find an easier way to measure the depth of the sludge layer in manure lagoons. Excess sludge takes up space and reduces the treatment volume of the lagoon. The goal of this research is to build a remote controlled, battery powered boat equipped with a depth finder and GPS unit to create accurate contour maps of the sludge layer. If successful, this will provide a safer, more economical way to map sludge in lagoons, allowing producers to be more environmentally friendly by practicing better lagoon management. The student conducting this experiment is majoring in Agricultural and Biological Engineering.

- ***Gene Expression Profiling of Estrogen Effects on Ischemia and Ischemia/Reperfusion Treated Mouse Hearts***

The objective of this project is to determine if one aspect of estrogen's cardioprotective effect on heart function involves an effect on the interplay of circadian rhythm "clock" genes and voltage-gated ion channels. Previous research identified significant differences in the expression of genes associated with control of circadian rhythm and ion channel transporters. Experimenting with estrogenic effects could lead to a better understanding of the molecular basis on which soy-based foods would provide a beneficial effect in protecting the heart. The student conducting this research is majoring in Animal Sciences.

- ***Impact of Stress on Immune System in Pigs***

The objective of this project is to determine the long-term effects on immune function and stress responsiveness due to early weaning. Another goal of this experiment is to use its results in order to help swine producers implement changes to neonate management in order to improve swine health, reduce antibiotic dependence, and lower costs. The student conducting this research is majoring in Animal Sciences.

- ***Phosphorus Sorption on Suspended and Bed Sediments***

The purpose of this research is to study sorption mechanisms of phosphorus in Illinois streams to determine whether sediments are a source or sink for phosphorus. This study will be used to evaluate the effects of phosphorus in limiting stream biological growth, causing the overproduction of bacteria. This overproduction results in the depletion of oxygen and consequently hypoxia in areas such as the Gulf of Mexico. The student conducting this research is majoring in Natural Resources and Environmental Sciences.

- ***The Influence of Parents on Students' Money Management and Credit Behaviors***

The objective of this study is to investigate the influence that parents have on their students' money management and credit behaviors through both verbal and nonverbal communication. Teaching students how to handle their finances through verbal communication has been shown to be an important factor in students' money management skills, but little attention has been given to investigating the importance of nonverbal communication. The hypothesis of this study is that nonverbal communication may have a larger impact on students' financial behaviors than verbal communication because students may learn more by watching their parents' behaviors. The goal of this project is to make recommendations to parents, students, campus administrators, and financial professionals regarding this issue. The student conducting this research is majoring in Agricultural and Consumer Economics.

- ***Physical Mapping of the Genomic Region Containing a Gene Responsible for Arthrogyrosis Multiplex Congenita in Pigs***

This experiment is aimed at identifying the gene(s) that, if homozygous recessive, cause(s) joint curvature and/or fixation due to flexor muscle contraction in swine. This project will initially attempt to identify candidate genes using a high-resolution comparative map of the Arthrogyrosis Multiplex Congenita region by radiation hybrid mapping. This map will then be compared to the same region in species with the complete genomic sequence, such as mice and humans. The experiment described is being conducted by a student in Animal Sciences.

- ***The Biodistribution of Lycopene and Lycopene Metabolites in Lycopene Pre-Fed F344 Rats***

The purpose of this experiment is to see if lycopene or lycopene metabolites induce detoxification enzymes. Previous research done has shown a connection between increased lycopene intake and decreased risk of prostate cancer. Determining the action of lycopene and/or lycopene metabolites as detoxification enzyme inducers may assist in the understanding of the interaction between lycopene and prostate cancer. The student conducting this research is majoring in Animal Sciences.

- ***Student Perceptions of Effective High School Agriculture Programs***

The purpose of this study is to investigate the characteristics of high school agriculture programs and teachers that made the most lasting impact on students who excelled in the FFA organization. This project will involve interviewing the thirty members of the Illinois FFA State Officer Team to determine the leadership and demographic characteristics of these leaders and explore the students' perceptions of the characteristics of agriculture teachers and programs that made the biggest impact on them as students. The results of this project will prove very useful to many future and current educators of agriculture. The project described is being conducted by a student in Human and Community Development.

- ***Sudden Death Syndrome and Soybean Cyst Nematode Remote Sensing***

The purpose of this experiment was to determine the accuracy of remote sensing to detect differences between Sudden Death Syndrome and Soybean Cyst Nematode in experimental and commercial soybean fields. This study was also being used to determine if early remote sensing could detect crop stress, recovery, percent damage/infestation, and the correlation of these with yield loss. The student who conducted this experiment majored in Crop Sciences.