



Spring 2018 UConn IDEA Grant Award Recipients

Congratulations to the 40 UConn undergraduates who have been awarded UConn IDEA Grants! 26 of the award recipients will be completing individual projects, and 14 will be working on collaborative group projects.

The award recipients represent a variety of disciplines, from graphic design to history, animal science to biomedical engineering. They will conduct independent research, create art exhibitions and short films, design prototypes, and develop programs that engage the University community.

Special thanks to the faculty and staff that supported student applications to the UConn IDEA Grant and to those who will be mentoring the award recipients as they complete their projects.

Individual Projects

Suleyman Bozal '19 (Structural Biology & Biophysics, CLAS)

A Robust Delivery Method for the CRISPR-Cas9 System in Gene Editing

- The field of RNA therapeutics is growing rapidly and holds enormous potential for the treatment of a wide range of diseases. Suleyman's IDEA Grant project will seek to develop a continuous manufacturing formulation for liposomal delivery of the CRISPR/Cas9 system to human embryonic kidney cells.

Olivia Crosby '19 (Graphic Design, SFA)

Making Welcome: Space, Material, and Human Design

- Olivia will create an interactive solo exhibition featuring furniture, tableware, and woven work that welcomes people. Through design and focus on material, the exhibition will encourage viewers to look beyond functionality and see the beauty in the formal qualities of everyday objects.

Emerson Dang '19 (Physics, CLAS)

Exploring New Materials for Nanopositioning

- Emerson seeks to design a bimorph bender using strontium titanate as a piezoelectric. This device will be incorporated into a scanning SQUID microscope to investigate properties of superconductors at temperatures below 1K.

Jamie Georgelos '19 (Molecular & Cell Biology, CLAS)

*The role of probiotic lactic acid bacteria in treating *Clostridium difficile* infections*

- Jamie will investigate the effects of five lactic acid bacteria on growth, toxin production, spore germination and outgrowth, adsorption to intestinal walls, and change in gene expression of *Clostridium difficile*, with the goal of identifying strains that are effective in combating *Clostridium difficile* infections.

Kenneth Glazer '19 (Illustration, SFA)

My New Mommy: A reimagining of LGBT families In children's Books

- Kenneth will write and illustrate an LGBT children's book that focuses on a growing family, pushing the boundaries of what has previously been published.

Christine Goss '20 (Music History, SFA; Piano Performance, SFA)

Issues of Gender and Modernism in Ralph Vaughan Williams's Folk Songs of the Four Seasons

- Christine will lead an ensemble of female musicians in performing Vaughan Williams's *Folk Songs of the Four*. Through weekly rehearsals, Christine will facilitate the exploration of tropes surrounding women in music, allowing participants to share experiences and use them to recast *Folk Songs* as an empowering symbol of feminine modernism.

Kelli Knapp '19 (Animal Science, CAHNR; Equine Business Management, CAHNR)

Force Applied to the Horse's Head by Bitted and Bitless Bridles

- Kelli will measure the force applied to a horse's nose, mouth, and top of the head during basic riding maneuvers by bitted and bitless bridles in an effort to prevent pain and tissue damage and help horse riders and trainers improve equine welfare.

Joshua Lovett-Graff '21 (Biomedical Engineering, ENG)

Understanding Linkages between Gun Violence, Hate Crimes, and Prejudice in the U.S.

- Joshua will investigate the correlations of gun violence rate, hate crime rate, and implicit bias towards minorities. Statistical and spatiotemporal analysis will be employed to understand these relationships at the county level across the U.S.

Olivia Maher '19 (Biological Sciences, CLAS; Cognitive Science, CLAS)

*Transcriptomic Analysis of the Needle-Dropping Period for the Eastern Larch (*L. laricina*)*

- The Eastern Larch is a deciduous conifer tree, meaning that it drops its needles seasonally. Olivia's project looks at the varying levels of gene expression and pathways during the needle dropping period to determine the genetic implications of this phenomenon.

Sam Markelon '20 (Computer Science, ENG)

Analysis and Creation of Post-quantum Cryptosystems using Evolutionary Algorithms

- Sam will use evolutionary algorithms for analysis of post-quantum cryptographic schemes, and the eventual creation of one such protocol, to aid in the development of the next generation of necessary protocols to keep data secure, and uphold the fundamental right to privacy.

Leann McLaren '19 (Political Science, CLAS; History, CLAS)

Jamaican Immigrants, and their valuable influences on Hartford, CT

- Leann will research the ways in which Jamaican immigrants contributed to the area of Hartford, CT in the period of the 1980s, analyzing the economic and social influences on the community and exploring the impact and importance of this population.

Annette Montoya, Dec. '20 (Horticulture, CAHNR)

Children's Cognitive Garden

- Annette will create a children's cognitive garden at the UConn Avery Point campus to encourage experiential learning through sensory stimulation and self-directed play. The garden will be open to the community and serve as a model that can be used in other settings.

Shreya Murthy '20 (IMJR: Criminology; Human Rights, CLAS)

Worldwide Terrorism: Examining the Recruitment of Terrorist Organizations Worldwide

- Shreya will conduct a study to examine the ways in which different types of terrorist organizations radicalize and recruit new members and why individuals join terrorist organizations.

Susan Naseri '20 (Political Science, CLAS; Human Rights, CLAS)

Balancing Discrimination and Belonging: Analysis of Lived Experiences of Middle Eastern Refugee Youth in 3 U.S. Cities

- Through qualitative interviews, Susan seeks to examine the experiences of former Middle Eastern refugee youth that have completed primary and/or secondary school in the U.S to identify factors that have led to inclusion and exclusion and how their different social identities have impacted resettlement.

Ryan Newell '20 (Biomedical Engineering, ENG)

Prototyping and Development of a Hands-Free Umbrella System

- Ryan will prototype a hands-free umbrella system designed to provide ease to customers who need both hands free, but still want the benefit of an umbrella during rainy weather. The system consists of two products - a car door/window attachment and a magnetic clip for coats and backpack straps.

Ryanne Ramadan '19 (Biomedical Engineering, ENG; Electrical Engineering, ENG)

Low-Cost Wearable Rhythmic Auditory Stimulation Device (WearRAS) for Gait Enhancement

- Ryanne will prototype a realistic and cost-effective home-based wearable device to provide consistent Rhythmic Auditory Stimulation therapy to improve gait patterns for patients recovering from stroke or suffering from Parkinson's Disease.

David Rascati '19 (Sustainable Plant & Soil Systems, CAHNR)

Painting with Plants

- David will design and install a unique garden that captures the feeling of a painting in an enveloping three-dimensional space using plants as a medium.

Rachel Roach, Dec. '18 (History, CLAS; Africana Studies, CLAS)

Native American Mascot Database and Educational Tool

- The goal of this project is to construct an interactive database to catalog the institutional use of Native American Mascots. This database will function as a resource on Native American mascotry and as a tool for educators to teach the social implications of culturally insensitive mascots.

Isabella Saraceni '19 (Studio Art, SFA)

Renaissance Women: Exploring Femininity Through Underrepresented Artists of Renaissance and Contemporary Art

- Isabella will travel to Florence, Italy to study artworks of the forgotten female artists of the Renaissance. From this research she will create large scale paintings exploring femininity and the ideas of the Renaissance women of the past and present who still experience the same lack of exposure.

Justin Schroeder '20 (Mechanical Engineering, ENG; Computer Science Engineering, ENG)

SLA 3D Printing for the University Community

- Justin will design and build a stereolithographic projection 3D printer to give the University community access to this resource, as well as provide an open source guide to help others interested in SLA printing.

Ekaterina Skaritanov '20 (Physiology & Neurobiology, CLAS)

ETS transcription factor Pointed in Drosophila ovulation

- Ekaterina will investigate the role of the ETS transcription factor, Pointed, in ovulation and regulation of MMP activity, a proteolytic enzyme essential for ovulation. Using Drosophila reproductive system as a model, she will employ experimental methods to further the understanding of such ovulatory mechanisms.

Caitlyn Splaine '20 (Animal Science, CAHNR)

The Effects of Poor Maternal Nutrition on mRNA Expression of IGF-I, IGF-II, IGFBP-2, and IGFBP-3 in the Ovine Placenta

- Caitlyn's project will investigate how poor maternal nutrition during pregnancy affects the expression of specific growth factors and growth factor binding proteins in the placenta and, ultimately, the growth of the fetus in a sheep model.

Clarissa Tan '19 (English, CLAS; Secondary English Education, ED)

The Asian American Educational Experience

- Clarissa will conduct a qualitative study to examine the Asian American educational experience, with attention to the influence of culture, identity, and assumptions, with the goal of improving upon the U.S. education system and bringing this student population into conversations regarding educational policy.

Zoie Wallick '19 (Studio Art – Printmaking, SFA)

They, Them, and I

- Zoie will create 30 paintings addressing gender roles, identity, personal history, and most importantly the transgender experience. These paintings will be compiled into a book and exhibited at a solo art show.

Eilis Welsh '19 (Speech, Language, & Hearing Sciences, CLAS)

Finding Familiarity in the Unfamiliar

- Eilis will use electroencephalography (EEG) to explore the brain's enhanced ability to discriminate native speech sounds when these sounds are presented in a non-native context. By examining English consonants presented in a Mandarin Chinese language context, she aims to extend our understanding of the conditions that support the perception of native speech sounds.

Michael Zhu '21 (Molecular & Cell Biology, CLAS)

The Effect of an Intravenous Infection on the Pathogenesis of Alzheimer's Disease and Reactive Oxygen Species Levels

- Using transgenic *Drosophila melanogaster* as a model organism for Alzheimer's disease, Michael will assess the relationship between the pathogenesis of amyloid-beta plaques and infection of the blood. The underlying mechanisms of Alzheimer's pathogenesis will be observed by measuring ROS levels.

Group Projects

Ama Appiah '19 (Molecular & Cell Biology, CLAS; Communications, CLAS)

Meeshali Patel '19 (Allied Health, CAHNR)

Sejal Patel '19 (Molecular & Cell Biology, CLAS)

Sai Vietla '19 (Physiology & Neurobiology, CLAS)

Urinary Analysis on the Effects of Dietary Intake on Sulfur-Containing Metabolites in Newborns at Risk for Autism Spectrum Disorder (ASD)

- The team will investigate the diet's effect on sulfur-containing metabolic biomarkers based on the urine of newborns at-risk for ASD. A new metabolite biomarker could facilitate more research focused on newborn metabolism and its relation to the disorder, potentially leading to creation of ASD prevention methods.

Michael Costello '19 (Biomedical Engineering, ENG)

Sahil Laul '19 (Molecular & Cell Biology, CLAS; Global Health, CLAS)

An Exploration of Social, Political, and Economic Implications of Language in Catalonia through Documentary Film

- Michael and Sahil will produce a documentary film about the interaction between language and politics in the context of Spain and other countries, with a focus on the sharp divide between the social and political identities of Catalonia, and the rest of Spain.

Wanjiku Gatheru '20 (Environmental Sciences, CAHNR)

Abhishek Gupta '20 (Physiology & Neurobiology, CLAS)

UConn Access to Food Effort (UCAFE)

- Wanjiku and Abhishek will study the issue of food insecurity among members of the UConn Storrs community and develop an on-campus food pantry initiative that improves upon the current conventional food pantry system by providing healthy food items in a dignified and inclusive space to those in need.

Lucian Hatfield '19 (Theater Studies, SFA)

Regan Kilkenny '20 (Digital Media & Design, SFA)

Christian Partenio '19 (Digital Media & Design, SFA)

Paint: A Short Film

- Lucian, Regan, and Christian will write and produce a short dramatic film “Paint” that tracks the life of Lily, a young artist who falls in love with one of her own paintings while attempting to find meaning in her world.

Nancy Kuhn '20 (Allied Health Sciences, CAHNR)

Karl Douglass Mueller '20 (Materials Science & Engineering, ENG; German Studies, CLAS)

Meghan Palumbo '20 (Engineering for Manufacturing, ENG)

AT Hackathon

- Nancy, Karl, and Meghan will develop and launch the *UConn AT Hackathon* - a 12-hour challenge for engineers and makers to develop an assistive technology solution and create a prototype that addresses an individualized need of a person with a disability.

The UConn IDEA Grant program awards funding to support self-designed projects including artistic endeavors, community service initiatives, entrepreneurial ventures, research projects, and other creative and innovative projects. Undergraduates in all majors at all campuses can apply. Applications are accepted from individuals and from small groups who plan to work collaboratively on a project.

More information on the UConn IDEA Grant program can be found at <http://ugradresearch.uconn.edu/IDEA>.