SURE: The Summer Undergraduate Agricultural Biotechnology Research Experience

Kjersti Clawson Decker
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
A02366513@usu.edu

Tyson J. Sorensen
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
tyson.sorensen@usu.edu

Aaron Thomas
Utah State University
4815 Old Main Hill
Logan, UT 84322-4815
(435) 797-0968
Aaron.thomas@usu.edu

Introduction/Need for Innovation

There is a shortage of students, particularly students from underrepresented ethnicities and economically disadvantaged groups, pursuing advanced degrees in agricultural sciences and seeking jobs in agricultural research or biotechnology. The purpose of this project is to increase the number of enrolled students from minority groups in agricultural science disciplines with focus on research and biotechnology. The **S**ummer **U**ndergraduate Agricultural Biotechnology **R**esearch **E**xperience (to be referred to as the *SURE* program) provides undergraduate students at non-research undergraduate institutions (e.g. two- and four- year) with the opportunity to complete a 10-week research internship at a major research university in the following areas (1) Animal, Dairy and Veterinary Sciences (2) Plant, Soils and Climate (3) Nutrition, Dietetics and Food Sciences (4) Poisonous Plant Research (5) Forage and Range.

Methods/Program Phases

The aim of this project is to provide undergraduate students with a stimulating 10-week summer research experience that is educational and potentially life changing. The SURE program has been in place since the summer of 2020 at Utah State University with collaborative agreements at other institutions/satellite campuses chosen to target specific minority groups. The SURE program will continue until 2024. The collaborator institutions recruit individuals for the program with an interest for agricultural research or biotechnology and encourage them to complete the application. Preference was given to students from the underrepresented ethnicities and economically disadvantaged groups. Program completers received a $4,000 stipend and housing at university dormitories. While at the internship, students worked in their assigned laboratory, received a faculty mentor, participated in weekly seminars and workshops and other summer activities. There were 10 available internship spots each summer at Utah State University. The program objectives were (1) increase participant knowledge and skills in agricultural research and biotechnology fields (e.g. research methods, scientific reasoning and communication) and (2) increase participant awareness and intentions of continued education and career opportunities in agricultural research and biotechnology fields.

Results to Date/Implications

The data from student participants were collected and aggregated for 2020 and 2021. Pre- and post-survey data were collected with significant increases in knowledge and ability. Participants at the end of the internship completed a program evaluation and participant satisfaction survey. Results from the past two years have shown not only increases in knowledge and ability but high participant satisfaction (see Table 1). Students were asked the questions, “What components of the program did you like the most?”, “What components of the program would you like to see changed?” and “What advice do you have to improve the experience for participants?” Students particularly enjoyed the hands-on experiences in the laboratory and working with professors. Participants recommended more workshops, visiting other interns in labs to learn more about their peers’ research and more faculty mentor time. This program began during the COVID-19 pandemic, so the program during 2020 was modified to include more virtual workshops and less

face-to-face collaborations and activities. In 2021 the program returned to fully face-to-face. Participant satisfaction results were significantly higher in 2021 than in 2020 during COVID-19.

Table 1. *2020 and 2021 Aggregated Participant Satisfaction Evaluation*

	Strongly Dissatisfied	Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Satisfied	Strongly Satisfied
	%	%	%	%	%	%
Program Cost	0	0	0	0	41.7	58.3
Workshop Topics	0	0	0	20.5	46.5	33.0
Hands-on learning	0	0	0	7.1	61.6	31.3
Free Time	0	0	0	0	47.9	52.1

Future Plans/Advice to Others

The funding for the SURE program at Utah State University will continue until summer of 2024. The university president and college dean are very supportive of this program and have allocated resources and will continue to provide resources for the program, even after grant funds end to continue this program in the future. Quantitative and qualitative research will continue to be conducted to determine the impacts of the program on underrepresented minority students. With university administrative support, this program will continue for years to come even after grant funds have ended. Administrative support at the university and college level is critical to the longevity and success of this program.

Costs/Resources Needed

While aspects of this project (e.g., 10-week research mentorships) have been going since 2016 with college supported funding, this specific project in 2020 received grant funding as part of the National Institute of Food and Agriculture (NIFA) Research and Extension Experiences for Undergraduate (REEU) funded program. Grant funds supported participant lodging at the university dorms, the $4,000 stipend, the cost of workshops, seminars and activities. Salary was also provided for program directors. The annual expenses for this program for 10 participants totaled about $75,000.