



Science Fund Committee Recommendation

7-28-2026

Members: David Jeffcoach, Kale Wyngarden, Sue Giampietro, Margaret Moholt, Robert Ainley, Larry Owens

The Science Fund Committee a project request to support a student-led microbiology research project. COS Biology Professor, Dr. Erika Estrada submitted the request with a detailed plan to engaged approximately 6 lead students and another 45-75 data-gathering students in a community-based research study investigating food safety practices and microbial contamination in Central Valley Households. The merits of the project from a student experience and potential contribution to the food safety awareness in the Central Valley was valued by the committee. This is a predominately labor-intensive project on the part of the lead students and the lead faculty. The majority of the requested amount would go to stipends paid to the students and the faculty. Based on the experiences of the committee members' these amounts suggested are reasonable. The full proposal is for \$17,850. According to the COS Legacy Funds Committee Spending Authorization Policy, it exceeds the committees authority to approve the project for funding. The committee considered the proposal and chose to recommend funding it with available Science Fund resources.

Committee Recommendations

The Science Fund Committee members unanimously recommend funding the COS Microbiology Project proposal for \$17,850.



Science Fund 2026

Project Request

Project Lead/Requestor

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Senior Manager

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Signature	 Jesse Wilcoxson (May 7, 2026 13:20:15 PDT)		

Fund Request

1. Requested amount:	\$17,850
2. One time or ongoing?	One time
3. Description of what would be purchased or funded:	This grant will fund equipment, materials, and stipends for this student-led microbiology research project. It will also support a research presentation event and two community food microbiology training sessions. Additionally, the fund will provide student lead researchers with the opportunity to travel to and present their research findings at UC Davis, a top institution in food microbiology research.
4. Estimated number of students that would benefit. <i>As relevant, please provide context to that number, such as overall program size.</i>	Approximately 6 students will serve as primary student researchers and participate directly in all stages of the project. An additional 45 to 75 students will serve as data gatherers, and over 100 students will be invited to participate in a research presentation event and a food safety training class.

Rationale *Please keep all responses to 200 words.*

5. Project Description:
This project engages College of the Sequoias students in a community-based research study investigating food safety practices and microbial contamination in Central Valley households. Under Dr. Estrada's mentorship, six students will be selected as primary researchers to lead all stages of the project, from study design to data analysis and dissemination. An additional 45 - 75 students will be trained as data gatherers, gaining hands-on experience in research protocols, ethical data collection, and scientific methodology. Primary researchers will conduct literature reviews and develop a bilingual (English/Spanish) home-cooking activity, surveys, environmental sampling procedures, and microbial culturing protocols. Approximately 50 households will be recruited through COS students, who will collect data by administering surveys, documenting food preparation practices, and obtaining kitchen surface samples. Environmental samples will be processed to quantify and classify the bacteria present. Student researchers will analyze both qualitative and quantitative data to identify trends in microbial contamination and gaps in food safety knowledge. Findings will be shared through a formal research report, presentations, and bilingual community outreach materials promoting safe food-handling practices. Students will also present their work to UC Davis faculty and submit abstracts to national conferences. This project provides meaningful research experience while generating locally relevant data to improve food safety awareness in the Central Valley, thereby helping reduce the incidence of foodborne illness within our community.

6. How will the project benefit student success?

This project will directly support student success by providing multiple levels of research engagement at our institution. Primary student researchers will participate in all stages of the scientific process, from study design to data analysis and presentation, while developing hands-on laboratory skills commonly used in biological research. Through this experience, students will strengthen their critical thinking, problem-solving, and scientific literacy, while building confidence to pursue further education in STEM and envision themselves as scientists. This preparation also aligns with local workforce needs and summer research opportunities by equipping students with practical, in-demand laboratory and research skills.

Student data gatherers (about 75 COS students) will engage meaningfully by receiving training in data collection procedures, research ethics, and foundational food safety practices. This exposure allows them to understand how research is conducted and how data are generated, analyzed, and applied in real-world contexts.

All participating students will also develop essential soft skills, including responsibility, accountability, teamwork, and a stronger sense of belonging within the COS academic community. By integrating hands-on research with community-relevant topics, this project promotes persistence in STEM pathways and prepares students for transfer opportunities and careers in science-related fields, ultimately empowering them both academically and personally.

7. How will the project benefit your department/division?

This project will benefit College of the Sequoias as a whole by strengthening its presence within the scientific and applied research community. By supporting student-led research that is presented at local, regional, and international conferences and prepared for publication, COS will gain visibility as an institution that values innovation, inquiry, and undergraduate research. These efforts demonstrate that impactful research can originate from a community college setting.

The project will also strengthen connections with the Central Valley's food and agriculture industries by increasing student awareness of careers in food science, food safety, and quality assurance—fields that are in high demand locally. Through applied microbiology research, students will gain relevant, workforce-ready skills. Multiple departments, including Biology, Health Sciences, and Agriculture/Animal Science, will benefit from this initiative by reinforcing key concepts and providing hands-on learning experiences.

Overall, the project supports student engagement and persistence in STEM, particularly for first-generation and underrepresented students who may have never previously envisioned themselves as scientists. It also strengthens COS's visibility and lays the foundation for future curriculum development, grant funding, and industry partnerships, positioning COS as a hub for community-engaged research.

8. What are the anticipated outcomes of the project, and how will they be measured?

This project will increase student engagement, scientific confidence, and interest in STEM among both primary researchers and participating students, as measured through pre- and post-project surveys. Students will develop transferable research and professional skills—such as data management, teamwork, communication, and critical thinking—which will be evaluated through self-assessments, student leader feedback, and participation records.

Primary student researchers will gain hands-on laboratory and analytical skills in applied biology and microbiology. These outcomes will be assessed through instructor evaluations of students' ability to correctly perform laboratory techniques, organize data, and interpret qualitative and quantitative results.

The project will also improve food safety and microbiology awareness among participating households. Specifically, the project aims to educate community members about microbial contamination in home kitchens, foodborne pathogens, and safe food-handling practices so they can make more informed decisions in their daily lives. This outcome will be measured through pre- and post-training surveys, participant self-reporting, and short evaluations completed following the educational sessions.

Finally, the project will strengthen College of the Sequoias' presence within the scientific community through scholarly outputs, including student presentations, conference abstracts, and draft manuscripts prepared for dissemination.

☒ I attest that:

- What I have provided is true and correct to the best of my knowledge.
- The Project Lead Staff will keep Foundation staff apprised of the progress of the project.
- The COS Foundation will be included in funding recognitions and publicity where applicable.
- The Project Lead Staff will submit at least one written project update or evaluation within one year of initial funding.
- The Project Lead Staff will follow COS Foundation policy and procedures appropriate for financial transactions and Foundation records.
- The department or program affected by the Project currently has a satisfactory or above rating in the most recent program review.

Submit this application and budget document to nancy@cosgiving.org and CC your senior manager.

Project title: Microbial Food Safety Practices and Bacterial Contamination in Central Valley Households

Briefly describe if the funding is one-time or annually renewed and the estimated project timeline:

This request is for one-time funding to support a four-part, student-led applied research project examining food safety practices and bacterial contamination in Central Valley households. The project is expected to take place from August 2026 through April 2027. Project activities will include literature review, research design, environmental sampling and microbial quantification, data collection through surveys and video observations, data analysis, research presentations (locally and at UC Davis), community training sessions, and submission of an abstract to a national conference. If the abstract is accepted, the project team plans to seek additional funding to support student travel and conference participation.

Estimated number of students that would benefit. As relevant, please provide context to that number, such as overall program size.

Approximately 4 to 6 students will serve as primary student researchers and participate directly in all stages of project. An additional 45 to 75 students will serve as data gatherers. These students will receive training in research protocols and data collection methods, providing them with hands-on exposure to how scientific research is conducted.

Full Project description:

This project focuses on developing a research study to understand food safety practices and microbial contamination in Central Valley households. Under Dr. Estrada's mentorship, 4–6 students will be selected through an application process based on interest, academic major, and completed science coursework to serve as primary student researchers (Phase 0). These students will be responsible for the development and completion of the project, from research design to data presentation.

During Phase 1, student researchers will review scientific literature related to foodborne illness, microbial contamination, and household food-handling behaviors. They will design a standardized home-cooking activity, available in both English and Spanish, along with a questionnaire to assess food safety knowledge and practices. Additionally, they will develop and validate an environmental sampling and microbial culturing protocols for microbial quantification.

In Phase 2, approximately 50 households of COS students will be recruited as study subjects. Recruitment will begin with students enrolled in Dr. Estrada's biology courses and expand campus-wide if needed to meet the target number of participating households. Participation is voluntary and not part of any course requirement; therefore, all training and data collection will occur outside of class time. The COS students associated with each participating household will receive training in research protocols, including survey administration, ethical data and sample collection, and data recording. The first 50 students to complete the training will be selected as "data gatherers", responsible for collecting data within their own households by administering

questionnaires, recording food preparation practices, and collecting environmental kitchen surface samples.

In Phase 3, primary student researchers will analyze video and survey data and process environmental samples for microbial quantification. They will evaluate both qualitative data (survey responses and video observations) and quantitative data (microbial counts) to identify microbial trends and common misconceptions related to food safety and basic microbiology.

In Phase 4, student researchers will prepare a journal-style research report and develop a formal presentation to communicate their findings. They will also create educational training materials and conduct two community presentations—one in English and one in Spanish—to share results and promote safe food-handling practices. Students will also present their research findings in person to UC Davis Food Science faculty and graduate students, while learning about their renowned food safety programs. Finally, students will prepare and submit an abstract to national conferences to present their findings. If the abstract is accepted, additional funding will be requested to support conference registration and travel expenses.

Food safety studies of this nature are typically conducted near large research universities. By conducting this research locally, COS students gain hands-on research experience while generating data relevant to their own community, helping reduce foodborne illness risk and increase food microbiology awareness in the Central Valley.

How will the project benefit student's success?

This project will directly support student success by providing multiple levels of research engagement for students at our institution. Student researchers will have the opportunity to participate fully in all stages of the scientific process and to develop hands-on laboratory skills and techniques commonly used in biological science research. Through these activities, students will strengthen their critical thinking, problem-solving, and scientific literacy skills while gaining the confidence needed to continue their education in STEM fields and envision themselves as scientists. Additionally, this experience will prepare students for local employment opportunities and summer research programs by equipping them with practical laboratory and research skills valued by employers and academic institutions.

Student data gatherers will also engage in the research process in meaningful ways by receiving training in data collection procedures, research ethics, and basic food safety practices. Through this experience, these students will gain firsthand exposure to how research is conducted and how data are generated, analyzed, and applied.

All students participating in this project will also develop important soft skills, including responsibility, accountability, teamwork, and a sense of belonging within the COS academic community. Overall, this project will empower students both personally and academically, support persistence in STEM pathways, and prepare students for transfer and workforce opportunities.

How will the project benefit the college? What department(s)/division(s) will benefit?

This project will benefit College of the Sequoias as a whole by strengthening its presence within the scientific and applied research community. By supporting student-led research that will be presented at local, regional, and international conferences and prepared for publication, COS will gain increased visibility as an institution that values inquiry, innovation, and undergraduate research. These scholarly activities position COS as a contributor to the broader scientific community, demonstrating that impactful research can originate from a community college setting.

The project will also strengthen COS's relationships with local and regional industry, particularly within the food and agriculture sector that dominates the Central Valley economy. Many students are unaware that careers in food science, food safety, and quality assurance exist—or that these roles are in high demand locally. By introducing students to applied microbiology through food-focused research, COS helps increase awareness of diverse career pathways while preparing students with skills that are valued by local industry.

Multiple departments will benefit from this project. The initiative supports Health Sciences, Agriculture/Animal Science, and Biology pathways by reinforcing food safety, microbiology, and applied science concepts relevant to these careers. The Biology Department will directly benefit, as a significant portion of participant recruitment will occur through biology courses therefore this project ensures that these students leave our department with a positive and engaging experience that builds confidence, transferable skills, and research awareness they can carry into other disciplines.

Overall, this project increases student engagement and persistence in STEM pathways—particularly for first-generation and underrepresented students who may not have previously envisioned themselves as researchers. It enhances COS's visibility while laying the groundwork for future curriculum development, external grant funding, and industry partnerships. Ultimately, this project strengthens COS's role as a hub for applied, community-engaged research that serves both students and the Central Valley.

What are the anticipated outcomes of the project, and how will they be measured?

First, the project is expected to increase student engagement and scientific confidence among both primary student researchers and participating students. This outcome will be assessed using pre- and post-project surveys measuring confidence in science, understanding of the research process, interest in STEM pathways, and self-assessment of personal and professional growth.

Second, the project will support the development of transferable research and professional skills, including data management, teamwork, communication, and critical thinking. These skills will be evaluated through student self-assessments, student leader evaluations, and documentation of student participation in research tasks.

Third, student researchers will develop practical laboratory and analytical skills in applied biology and microbiology similar to those used in industry and research institutions. This

outcome will be measured through instructor evaluation of students' ability to correctly perform laboratory techniques, organize microbial data, and interpret qualitative and quantitative results generated during the project.

Fourth, the project aims to improve awareness of food safety and basic microbiology among participating households. This will be assessed through pre- and post-training surveys administered during participant education sessions designed to share findings and promote safer food-handling practices.

Finally, the project will strengthen College of the Sequoias' presence within the scientific community. This outcome will be measured through documentation of scholarly outputs, including student presentations, abstracts, and draft manuscripts prepared for future dissemination.

Estimated Project Timeline

Phase 0: Recruitment & Selection

- **Application development** : Summer 2026
- **Recruitment & Advertising**: August 2026
- **Application review**: Early September 2026
- **Selection of Student Researchers**: Early September 2026

Phase 1: Literature Review & Research Design

Fall 2026 (September – October)

- Dr. Estrada will mentor and train students through a week-long in-person intro and training workshop.
- Weekly group meetings will be held for progress updates.
- Student researchers will complete a literature review and design the research protocol.

Stipends:

- Student: \$500 per student = \$3000
- Dr. Estrada: \$1000 (Phase 0 and 1)

Phase 2:

A) Recruitment & Training of Study Subjects/Data Gatherers

Fall 2026 (October & November)

- COS students will be trained as data gatherers in research protocols, ethics, and data collection.
- Training will occur during Summer Session II and early Fall.

B) Data Collection

November & December

- Data will be collected in participating households.
- Weekly check-in meetings will be held to monitor progress and troubleshoot issues.

Phase 3: Data Analysis

January and February

- Student researchers will analyze survey and observational data.
- Weekly meetings will focus on data analysis training and troubleshooting.

Stipend for phase 2-3:

- Student: \$500 per student
- Dr. E: \$1500

Phase 4: Data Sharing & Subject Engagement**February - April**

- Student researchers will prepare and deliver a presentation to share findings with participants and the COS community.
- Presentations (Spanish and English) will include results and basic food safety education.
- Lead research students and Dr. Estrada will travel to UC Davis to present their research finding and to connect with highly regarded food microbiologists.
- Students will prepare an abstract and submit abstracts to present their research at National Conferences (SACNAS or IAFP) and compile a draft research write-up and a research poster.
- Bi-weekly meetings will be held with Dr. Estrada to finalize materials.

Stipend for phase 4:

- Student: \$500 per student
- Dr. E: \$ 700

Project Budget Summary

A. Student & Faculty Stipends

Item	Unit Cost	Quantity	Total
Student Stipend – Phase 1	\$500	6 students	\$3,000
Student Stipend – Phases 2–3	\$500	6 students	\$3,000
Student Stipend – Phases 5	\$500	6 students	\$3,000
Total Student Stipends			\$9,000
Faculty Stipend – Phases 0–1	\$1,500	1	\$1,500
Faculty Stipend – Phases 2–4	\$1,000	1	\$1,000
Faculty Stipend – Phases 5–6	\$700	1	\$700
Total Faculty Stipend			\$3,200

Student Researcher Stipends – Budget Justification

Student stipends are requested to compensate 4–6 primary student researchers for the time-intensive work required across multiple phases of the project. Providing stipends helps reduce financial barriers to participation and ensures equitable access to meaningful undergraduate research opportunities.

Faculty Stipend – Budget Justification

A faculty stipend is requested to support project coordination, student mentoring, and research oversight conducted outside of regular faculty contract responsibilities. This stipend represents modest compensation for sustained leadership, mentorship, and coordination of a high-impact research initiative that benefits COS students, supports workforce preparation, and engages the surrounding community.

B. Supplies & Participation incentives

Item	Unit Cost	Quantity	Total
External USB memory drive	\$100	1	\$100
Subjects Food supplies for recipe execution	\$5	75	\$400
Incentive raffle – student data gatherers	—	1	\$75
Incentive raffle – community seminar attendees	—	1	\$75
Printing & materials (surveys, consent forms, handouts, research poster)	—	—	\$200
Training kitchen utensils	—	—	\$75
Microbial quantification materials (broth, media plates, pipette tips) and sampling kits	—	—	\$2000
Researchers UC Davis Overnight Trip (food & lodging)	—	—	\$1250
Snacks for student researchers training sessions	—	1	\$75
Snacks for student data gathers training session	\$100	2	\$200

Snacks for community presentation	\$100	2	\$200
Contingencies	—	—	\$1,000
Total			\$5650

C. Grand Total Project Budget

Category	Total
Total Student Stipends	\$9,000
Total Faculty Stipend	\$3,200
Total Supplies & Participation Incentives	\$5,650
Grand Total	\$17,850