



2025 - 2026 FACULTY AND STAFF GRANT PROGRAM APPLICATION

Name of Project/Program: _____ Date: _____

Applicant's Name: _____

GCC Position: _____ Department: _____

E-mail: _____ Phone _____

Please check which category best describes your project:

- Arts & Culture, Athletics & Fitness, Career & Work Training, College Operations & Facilities, Humanities/Social Sciences, Science & Technology, Other

Amount requested: \$ _____

Please attach a one- to two-page typed request that provides a comprehensive summary of your project/program and establishes the need. Please include the following:

- What do you propose to do? Who will be involved in the project/program? What are the benefits of this project/program to the students, college, and the community? How does this project/program support the College's Institutional Strategic Plan? Timeline for the project/program. How do you propose to use the funds requested? Please include specific budget information. Please list any other sources of funding you have applied for and include dollar amounts if already awarded. How will the Foundation's support be recognized? How do you plan to evaluate this project's success? If your project/program is successful, how will it inform your practice moving forward?

Please email this completed and signed form along with your proposal to zjacobs@glendale.edu

Submission Deadline – Thursday, May 29, 2025, by 5:00 PM PST

Signature box containing fields for Applicant's signature, Chair or Department Head Signature, and Print name of Chair or Department Head.

Grant Review Committee comments and/or recommendations:

This grant was denied/approved on _____ The amount awarded is \$ _____

1. What do you propose to do? I propose a twofold project designed to provide a unique hands-on research experience for GCC Biology students. **The first project** focuses on plant genetics where true-breeding variants of pea plants (*Pisum sativum*)—Green Arrow, Yellow Pea Soup, Golden Sweet, and Blue Pod Shelling—will be planted to recreate Mendel’s hybridization experiments. Growing these plants will allow for controlled cross-pollination. F1 seeds will be collected and will serve as the foundation for future analysis. The ultimate goal is to explore principles of inheritance and facilitate investigation at the molecular level. This project highlights the value of hands-on experimentation in understanding classical genetics and connects historical discoveries with modern scientific inquiry. **The second project** focuses on the molecular analysis of *Aplysia californica* (California sea hare), a large marine gastropod mollusk widely used in neuroscience research. Eggs of *Aplysia californica* at two distinct developmental stages will be analyzed to examine its molecular profile and lay the groundwork for future studies. Proposed projects will primarily include single-cell analysis of eggs, as well as investigation of the free-swimming trochophore larva and the veliger larva stage, which eventually metamorphoses into the adult sea hare. The requested funding will be used to purchase chemicals and laboratory equipment for these experiments. In Spring 2025, I am leading a BIOL50 Research Internship class in which we are analyzing data collected in collaboration with Professor Matalová (my former supervisor from the Academy of Sciences of the Czech Republic). As part of our project, we are conducting “data mining” by analyzing single-cell datasets to support our research objectives. A manuscript is currently in preparation, with all five students listed as co-authors: “*Characterization of dental pulp stem cells during embryonic and postnatal development: insights into early stem cell differentiation and function.*” These two new projects aim to generate publishable data and offer students valuable research experience and co-authorship opportunities. **Other potential projects** may be proposed as a continuation of the collaboration with Professor Matalová.

2. Who will be involved? This project would be implemented through **BIOL50** (Research Internship in Biological Sciences) under my supervision, Eva Janečková, PhD. **GCC Biology students** enrolled in this course will be directly involved.

3. What are the benefits of this project/program to the students, college, and the community? This project offers significant benefits across several levels. This project is going to be an opportunity for students to learn and understand basic research principles. **For students:** They will gain tangible hand-on experience in basic research principles, learning to follow a scientific project lifecycle from hypothesis to publication. Students will master specific laboratory techniques, including accurate micro pipetting, RNA isolation, reverse transcription real time quantitative polymerase chain reaction (RT-qPCR), as well as scanning electron microscopy (SEM). They will also develop critical scientific communication skills through reading primary scientific literature, participating in writing manuscripts for publication, and presenting their findings at the GCC Scientific Symposium. This type of research experience is invaluable for preparing students for success when they transfer to university. **For the college:** Affiliation with GCC on published manuscripts resulting from student research would be a unique and significant achievement, potentially enhancing the college’s reputation and attracting future enrollments. **For the community:** The published manuscripts will be open access, contributing to basic scientific knowledge. Participants in this research will be equipped to educate their classmates and the broader community about the scientific topics.

4. How does this project/program support the College’s Institutional Strategic Plan? This project directly supports several goals outlined in the College’s Institutional Strategic Plan. It strongly aligns with **Goal E: Ensure Student Learning** by providing students with high-impact experiential learning

opportunities that lead to the master of specific scientific techniques and the development of critical thinking and communication skills. These experiences are crucial for student learning outcomes and prepare students for successful transfer. The project also contributes to **Goal C: Facilitate Student Entry into Pathways** by offering an engaging research opportunities within the science pathway, making it more attractive and helping students clarify their academic and career interest. Furthermore, engaging in meaningful research can enhance connection to the college and their field of study, supporting **Goal D: Help Students Stay on Pathways** by contributing to student retention and progress. By fostering professional development opportunities for faculty and students in scientific research, the project also relates to **Goal F: Strengthen Institutional Effectiveness**, specifically F.4., which focuses on increasing and improving professional development opportunities.

5. Timeline for the project/program. One academic year: Fall 2025 and Spring 2026.

6. How do you propose to use the funds requested? Please include specific budget information. The funds requested will be used for molecular work, laboratory supplies, and publication costs essential to the research projects, with the goal of publication. **RNA extraction kits** (RNeasy Mini Kit by Qiagen, #74104, \$438); **cDNA reverse transcription** (Bio-Rad, #1725037, $268 \times 2 = \$536$), **qPCR reagents** (Bio-Rad, #1725270, $232 \times 3 = \$696$), **qPCR plates and foils** (Bio-Rad, #HSS9641, $137 + 170 = \$307$), **research publishing costs (open access):** \$2000, other molecular work and laboratory supplies: **reagents** (such as ethanol and water for molecular analysis, \$1000), **consumables** (pipette tips and tubes, Eppendorf, \$1000), **tools** (Eppendorf TRIO pipettes and carousel, $1415 \times 2 = \$2830$), **SEM scanning** (20 samples, 10 hours of SEM time at a discounted rate of \$35 per hour: $35 \times 10 = \$350$, Natural History museum, collaboration with Dr. Jann Vendetti). **Pea plant research** (seeds, starter pots, pots, soil, stick, etc., \$400). Total: **\$9557**.

7. Please list any other sources of funding you have applied for and include dollar amounts if already awarded. None.

8. How will the Foundation's support be recognized? Foundation's support will be recognized in the acknowledgments section of any published research papers resulting from these projects. The foundation will also be named on presentations at events such as the GCC Scientific Symposium and listed in funding resources associated with the project.

9. How do you plan to evaluate this project's success? The success of this project will be evaluated through tangible outcomes. A key measure of success is the goal of publishing a manuscript from student research in journals with an impact factor. Additionally, student engagement in the research process, participation in the GCC Scientific Symposium, and successful development of the specified laboratory and communication skills will be indicators of success.

10. If your project/program is successful, how will it inform your practice moving forward? A successful project, evidenced by published student research and high student engagement, would significantly inform my practice. The successful implementation and outcomes of these projects would serve as a model for designing and leading future iterations of the BIOL50 Research Internship course, allowing for continuous improvement of the curriculum and mentorship strategies. Lessons learned from managing the specific research workflows and mentoring students could be subsequently integrated into other courses. This could provide a strong basis for seeking future funding opportunities to expand the capacity and scope of student research within the Biology department, further embedding high-impact practices into student learning pathways at GCC.