

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

The applicant combines an interest in population biology with an interest in programing that will help answer the relevant research questions. The publication record is impressive for a 2nd year grad student, inciting the applicant has the ability to complete projects and get things out into the world.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The applicant and letters mention a collaborative project to develop software for other researchers to analyze population genetics data. The applicant has mentored undergraduates and expresses interest in translating to high school students as well. He has shown leadership through starting a journal club and indicates an interest in bringing research about human evolution to the public.

Summary Comments

The combination of programing and interest in questions of evolutionary biology in population genetics is excellent, and probably necessary to answer relevant questions. The application shows an aptitude and interest in these research questions and the robust publication record indicates a great track record so far.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

Applicant has a very strong interest in biology and computer programming. Although his academic record is not stellar he has a unique combination of being a hard worker, a dedicated researcher, has the ability to think independently, and produces results.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Very Good

Explanation to Applicant

Applicant is successful by using his interests and dedication to accomplish his goals. He has a record of success (multiple publications, software developments, mentorship, independent thinking).

Summary Comments

I'm impressed with this student. I like that he went to Vienna and is using his resources effectively.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

The applicant has had numerous undergraduate research experiences, including two years at his home institution and two 6-month research experiences abroad. These have resulted in several poster presentations and 4 publications including a recent first author paper in PNAS. Unfortunately, the undergraduate academic record is not competitive, which detracts from the strength of the application, although the grades in graduate school are stronger. Reference letters indicate that he is exceedingly capable of conceiving of his own research projects, working independently, and directing his own research project. The proposal seeks to use machine learning techniques to detect admixture between human and archaic genomes in situations where a reference genome is unavailable. He will then extend this work to determine which of these sequences may have served an adaptive role. This is a highly innovative approach that is likely to produce valuable new data on hominid evolution and which will be broadly applicable for evolutionary genomics study.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Very Good

Explanation to Applicant

For broader impacts, the applicant plans to continue as a teaching assistant and mentor students, particularly those from underrepresented groups, through formal programs at UCLA and informal recruitment of high school students. He is also developing curriculum that introduces biologists to programming for a population genetics course and founded a genomics journal club. Taken together, these fill an important role in making computational genomics more accessible to a broader audience at all academic levels.

Summary Comments

This is a very strong study from an already highly successful researcher. He will use a novel approach to answer fundamental evolutionary questions; he has all the training, resources, and appropriate mentors to bring this project to completion, and indeed already has published papers from his graduate career. A commitment to mentoring and training is clearly demonstrated. Despite some mixed success in the classroom, the student has clearly found a career that uses his strengths to their fullest and that is worthy of support.