Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Good

Explanation to Applicant
The applicant has a good academic record with several national presentations. The publication record (one second author paper in preparation) shows good productivity for a second year student but does not match the productivity of the top applications. At this level very little separates the top applications and small disparities lead to huge differences. [Applicant’s name]’s application suffers from this. Her proposal which on the impacts of bacterial respiration state on biofilm formation is interesting but is not quite as well written as comparative proposals. A more in-depth descriptions of its broader impact would also strengthen her proposal. Again [Applicant’s name] must convince the reader that this project is important and that she is the right person to carry it out.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Very Good

Explanation to Applicant
[Applicant’s name] has good community outreach serving as a member of ACS sponsored PAGES program and volunteering local for Girl's Inc. At this level of application, applicants must also present information that they would serve as a good ambassador for science nationally and in their community. While the work presented is commendable, comparatively (to the top applications) more evidence is needed.

Summary Comments
[Applicant’s name] presents a good application, but it is comparatively lacking in several areas which could improve her chances. At this level very small difference separate the candidates and [Applicant’s name]’s application suffers from this.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Excellent

Explanation to Applicant
The applicant has an outstanding academic record (dual BS degrees with high GPAs, many academic honors and scholarships, numerous publications and presentations), membership with 4 prestigious academic societies, as well as enriched experience in research related to the research proposal. Through her previous research work and [Applicant’s name], she gained valuable experience in life science studies, which will definitely benefit her future research. The proposal was perfectly prepared. Letters from advisors at all three of the aforementioned institutions attest to the applicant’s excellent aptitude for research in this field, from protocol design to laboratory procedures to analysis, as well as excellent communication skills.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Excellent

Explanation to Applicant
The applicant accumulated enriched research experience and multiple outreach activities, especially when she was the president
of a local Chemistry Club. She seems to be committed to broader impacts, not only as a result of carrying out research to better understand the biofilm, but also through mentoring, leadership. The applicant's numerous publications and presentations document dissemination to a wide audience.

**Summary Comments**
The applicant aims to investigate biofilm formation and identify key genetic players regulating biofilm formation under anoxic conditions. Both intellectual merit and broader impact aspects of the application are strong. Strong recommendations give confidence that this applicant has a bright future in her chosen field.

**Intellectual Merit Criterion**

**Overall Assessment of Intellectual Merit**
Very Good

**Explanation to Applicant**
Membership in ASM, ACS, and other scientific organisms demonstrates commitment to broader scientific participation. The applicant has experience presenting her research at many scientific meetings. The applicant attended a small liberal arts college, but sought out summer research experience focused on biofilms, and has experience doing an industry internship on bioinformatics. The applicant has strong grades as an undergraduate, while participating in college sports. The applicant has demonstrated leadership skills.

**Broader Impacts Criterion**

**Overall Assessment of Broader Impacts**
Very Good

**Explanation to Applicant**
Research may provide valuable insight into biofilm formation.

**Summary Comments**
Membership in ASM, ACS, and other scientific organisms demonstrates commitment to broader scientific participation. The applicant has experience presenting her research at many scientific meetings. The applicant attended a small liberal arts college, but sought out summer research experience focused on biofilms, and has experience doing an industry internship on bioinformatics. The applicant has strong grades as an undergraduate, while participating in college sports. The applicant has demonstrated leadership skills. Currently in a graduate program in [Redacted] at [Redacted] the candidate's proposal is focused on the effect of respiration on biofilm formation. In the second specific aim the applicant proposes an alternative approach using a bacterial suicide system fused to the type 1 pili promoter, but it is not clear whether this would work unless gene expression can be turned off VERY tightly under non-selective conditions, an issue that may bias types of suppressor mutations recovered.