

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Good

Explanation to Applicant

This applicant has a good academic record with a productive prior research experience in the relevant field. She received her BA degree in biologic science from [REDACTED]. Then she conducted her postbac research at [REDACTED] studying centrosome maturation, resulting in a second authored paper published in [REDACTED]. The proposed research is to study how the microtubule lifetime and dynamics is controlled by GTP hydrolysis rate. The applicant proposed to use the plus-end tracking protein EB1 to measure the GTP-cap of microtubule and measure the correlation between microtubule lifetime and growth, relationship between EB1 comet size and microtubule growth rate, and whether the EB1 comet size scales with microtubule lifetime in cells. Proposed experiments are overall feasible and informative. It is somewhat still not clear what novel finding could be obtained from the study considering that the GTP-cap stabilizes microtubules and GTP hydrolysis is required for microtubule dynamic instability. Letters from the advisors are extremely strong and of enthusiastic, attesting to the applicant's motivation, intellectual curiosity, hardworking, and her extraordinary research potential.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Very Good

Explanation to Applicant

The applicant seems to be committed to broader impacts. Besides the proposed research addressing an important cell biology question in cell cycle regulation, the applicant also has performed a number of outreach activities including mentoring, leadership and volunteer service. She also committed to mentor others and sharing science with other young groups.

Summary Comments

The applicant aims to study how microtubule dynamics is regulated by GTP hydrolysis rate in cells, which is an important basic question in cell cycle regulation. The applicant has a good academic record including a co-authored publication and demonstrated very good intellectual merit and broader impacts.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

The applicant has extensive and broad research experience, including 2 years in a postbac program, that has resulted in oral/poster presentations. The proposed research is interesting and will expand on the area of microtubule biology. Details should be added that would demonstrate a deeper knowledge of the project and allow for a better assessment of potential for the applicant to be successful in this project.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The applicant has experience in a variety of outreach projects through sports and academics, with a desire to continue her involvement in mentoring young women. In addition she has abilities as an effective team leader and mentor.

Summary Comments

The applicant has a strong history of research experience which indicates she can successfully work in a lab and communicate her results. She has demonstrated initiative and the ability to develop assays in a lab. She also has a demonstrated interest in pursuing mentoring as a large aspect of her future career.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

The intellectual merit of the proposal focuses on investigating the regulation of MT dynamics by GTP hydrolysis. The proposed research approach is intriguing and novel and increases my enthusiasm for the application. The merit of the proposed research is strengthened by the clarity of the writing and understanding of the global concerns related to the field.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Very Good

Explanation to Applicant

The applicant has demonstrated a strong commitment to maximizing the broader impacts of science by participating in various mentoring opportunities as an undergraduate and graduate student. Additionally, the applicant has demonstrated significant leadership qualities in numerous settings. The broader impacts of the proposed research were described in general. A more in-depth description of these would have garnered more enthusiasm.

Summary Comments

Overall, the application is bolstered by a strong research proposal and a very supportive environment. Additionally, the applicant has demonstrated a true desire to increase the broader impacts of science and science education. This is a quality application.