

October 20, 2023

Undergraduate Research Initiative Committee
University of Rhode Island
Kingston, RI 02881

Dear Committee Members,

I am extremely pleased to offer my support to Johanyx Rodriguez for her undergraduate research project, "Assessing the contribution of a cell wall enzyme to survival of *F. tularensis* in freshwater." My laboratory studies the molecular mechanisms that lead to pathogenicity of the human intracellular pathogen *Francisella tularensis*. While this organism is highly pathogenic to humans, my laboratory takes advantage of the model organism *F. tularensis* subsp. *holarctica* LVS (Live Vaccine Strain), which does not infect or cause disease in humans and we do not work with any of the highly pathogenic strains.

Johanyx is an academically excellent upper-level Cell and Molecular Biology student and is a new MARC U*STAR trainee. The goals of the MARC U*STAR program include training students to become critical thinkers, capable researchers, and future scientists, as well as develop a culture of excellence and community in undergraduate research at URI. Acceptance into the MARC U*STAR program is competitive and trainees are well-prepared to begin research. Over the summer, Johanyx participated in "rotations," or trials periods, in multiple research laboratories to identify a scientific group to join for her undergraduate research. The Ramsey laboratory is very pleased to welcome Johanyx to our group and is committed to helping her achieve her research and training goals.

When discussing ongoing research in the Ramsey laboratory, Johanyx expressed interest in continuing work initiated by a former undergraduate student. In particular, a previous student was investigating how *F. tularensis* survives outside of hosts, in only freshwater, for long periods of time. This ability of an intracellular pathogen to persist in the environment is unusual and poorly-understood. This former student undertook a genetic screen and identified a candidate gene which may be important for this long-term environmental survival. Johanyx's interest and goal is to determine if we can validate the hypothesis that this particular gene is important for environmental survival. It is exciting to me that she is interested in this topic because her work would provide insight into understanding how bacteria, and particularly pathogens, persist in the environment and maintain infectious reservoirs.

I think Johanyx's choice in projects will continue to provide new and exciting areas of research for her. If we do validate that this gene is important for environmental persistence, it would be a natural extension for her to study the role of this gene product in bacterial physiology. Alternatively, if her hypothesis is incorrect, it provides an opportunity to revisit the parameters of the genetic screen and improve our methods to find better candidate genes. Together, I enthusiastically support the continued development and undertaking of her independent research project.

Together with my graduate students, I will supervise all the proposed work in this project to ensure safety, rigor, and reproducibility. The success of this project will be based on Johanyx's ability to (i) learn and implement research protocols, (ii) critically analyze the resulting data, (iii)

make connections between the resulting data and the current scientific literature, and (iv) effectively communicate research findings, both within and outside our research group.

Johanyx is an outstanding student with great enthusiasm for laboratory research. Her undergraduate research experience in my laboratory, including the exciting work proposed here, will prepare her to achieve her future goal of entering graduate school in biomedical research. She is extremely well-prepared to carry out the proposed experiments and I support her application for an undergraduate grant for original student research without reservation and with enthusiasm.

Sincerely,

A handwritten signature in dark ink, appearing to be 'KR' followed by a horizontal line.

Kathryn M. Ramsey, PhD
University of Rhode Island
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