**ONS Research Pathways Program: Research Position(s) Description**

**Synopsis of PI’s interest/Lab-or group’s interest:**

We are exploring how genetic and epigenetic processes may underlie the ability of animals to colonize new areas. Our lab focusses on the house sparrow (*Passer domesticus*); a successful avian invader that has colonized every continent in the world (apart from Antarctica). From blood and tissue samples collected around the globe (from Senegal, Spain, Vietnam to Norway), we extract RNA and measure gene expression from important immune genes (toll-like receptor genes). We predict that invasive birds may be better able to regulate the expression of their immune genes, which in turn, may underly their capacity to colonize new areas with new pathogens.

**Possible Research project(s) for an Undergraduate Researcher:**

There may be opportunities for you to lead a small side-project, but for the main, you will contribute to a high-impact, large-scale research project on the concepts outlined above. There is a potential for authorship on peer-review publications and/or travel to research conferences (depending on your investment to the project). You will learn to conduct laboratory techniques independently and you will be a trusted and much valued member of our research team!

**What you will learn:**

You will learn state-of-the art molecular techniques involving blood and tissue samples from house sparrows. Specifically, you will learn RNA extraction using Trizol techniques, and gene expression quantification using dd-PCR. In doing so, you will also learn how to use many molecular biology machines, learn advanced bioinformatic skills, and transferable wet-laboratory skills. You will also gain skills in research management and be given constant support to foster your skills!

**Expectations of PI from you, as a student (commitment and number of hours)**

You will need to be present in the laboratory for a minimum of 12 hours per week (preferably in either 2-hour time slots to complete a dd-PCR or 5–6-hour time slots to complete an RNA extraction). You will need to be available for a minimum of two consecutive months. This can be flexible, but 1 hour lab sessions will not be productive. Working days are Monday to Friday 9am-5am. We are based in the IDRB in USF’s Tampa campus.  
**Ideal Student should know:**

We will provide training in pipetting, machine use and data interpretation. But, an eagerness to learn is essential. This project is on wildlife disease ecology but the skills you will acquire are transferrable to any wet-laboratory.

**Ideal Majors:** Biological sciences

**Interested students should please contact Dr. Sayan Basu (**[**sayandeb@honors.usf.edu**](mailto:sayandeb@honors.usf.edu)**) for an intake meeting and resume review, including discussion of coursework and relevant skills.**

Selected students will then be connected with Elizabeth Sheldon ([elsheldon@usf.edu](mailto:elsheldon@usf.edu)) for a follow-up.