… to help support an **Aquaponically-driven biotechnological research question**

for the **spring 2020 semester**

Presidential Research Grant #17

Creating/Designing a Hybrid Bacterium for Ammonia Fixation

This project involves the design and creation of a hybrid bacterium for ammonia fixation in an aquaponics setting. There are two naturally occurring nitrifying bacteria (*Nitrosomonas* and *Nitrobacter* species) that provide nutrient conversion in an aquaponics system. These two bacteria work collectively to convert waste products (ammonia) from the fish to beneficial substrates (nitrate) for plants. Instead of requiring 2 bacteria, can we utilize 1 instead?

We are looking for **3 (three) HU Undergraduate Students (BTEC, INVS, and/or ENVS)** AND **1 (one) HU Biotechnology Graduate Student** to:

- create a hybrid bacterium composed of genes from 2 different bacteria (Biotechnology)
    - utilize a range of biotechnological techniques (plasmid purification, gel electrophoresis, PCR, DNA quantification, etc.)
- sequence and analyze gene expression of hybrid bacterium (Biotechnology & Biochemistry)
    - express and purify enzymes
- create aquaponics prototype for expression and analysis of hybrid bacterium (Biology & Environmental)

If interested, please email Aquaponics@HarrisburgU.edu by **December 6th** for additional details related to the research question of interest to you, and to schedule a time for an interview.