

TWRI Mills Scholarship Application

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2. Contact information

3. Name and contact information for Faculty Advisor

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4. Description of the student's proposed research

The ubiquitous use of antibiotics has led to an increasing number of antibiotic-resistant bacterial strains, including strains that are multidrug resistant, pathogenic, or both. Significant levels of antibiotic resistance genes (ARGs) have been detected in urban and agricultural environments, in wastewater and drinking water treatment plants, and even in treated wastewater and drinking water (Pruden et al., 2006). There is potential for antibiotic-resistant bacteria to spread to humans because of their environmental presence. Many studies have demonstrated the presence of ARGs in wastewater treatment plants; however, relatively little research has been conducted to investigate the effectiveness of common wastewater treatment processes in reducing the concentration of ARGs. It is not clear whether wastewater treatments such as chlorination and UV light disinfection are effective in reducing ARG concentrations in treated wastewater.

The proposed study has two objectives. The first is to characterize the occurrence, prevalence, and diversity of tetracycline-resistant genes at seven points during the wastewater treatment process, using samples collected from Carter's Creek Wastewater Treatment Plant, College Station, Texas. The second objective is to investigate the effectiveness of UV light disinfection in reducing the concentration of tetracycline-resistant genes. The results of the study will be valuable in helping to reduce or prevent ARG contamination in Texas water.

Reference:

Pruden, A., Pei, R., Storteboom, H., Carlson, K., 2006. Antibiotic resistance genes as emerging contaminants: studies in northern Colorado. *Environmental Science and Technology* 40(23), 7445-7450.

5. Academic qualifications

Undergraduate: BS Agricultural Engineering, GPR:

Graduate: MS student Agricultural Engineering, GPR:

GRE:

Relevant courses:

6. Proposed use of funds

I intend to use the funds to present my research results at an international conference related to water quality research.

7. Intended career path

After receiving my MS degree, I will either pursue a career with a consulting firm working in water and environmental engineering or work towards my PhD. My ultimate goal is to work on developing sustainable water and sanitation solutions for underdeveloped areas.