Project Title: Clinical Wastewater as a Surveillance Tool: A Study on Cefiderocol-Resistant Bacteria

Supervisor: Dr. Michael Savin-Hoffmeyer

Institute/group: Institute of Hygiene and Public Health, One Health

Webpage: https://www.ukbonn.de/ihph/bereiche/onehealth/

Requirements:

- Basic knowledge of microbiology techniques
- First experience in a laboratory setting
- Familiarity with molecular biology methods is a plus
- Good communication and teamwork abilities

Skills to be learned (max. 50 words):

- Advanced microbiological techniques
- Molecular biology methods
- Data analysis and interpretation
- Environmental sampling and analysis

Project Description (max. 150 words):

This research project aims to investigate the epidemiology of cefiderocol-resistant bacteria in German hospitals, focusing on clinical wastewater as a potential vector for resistance dissemination. Clinical wastewater, often discharged untreated into municipal systems, can distribute resistant pathogens into the environment, posing a public health threat. The study's objectives include assessing the abundance and diversity of cefiderocol-resistant bacteria in wastewater from maximum care hospitals across different endemic regions in Germany. It also aims to determine the extent of cefiderocol resistance among clinical isolates of carbapenemresistant bacteria and characterize isolated cefiderocol-resistant target bacteria regarding their phenotypic and genotypic antimicrobial resistance profiles.

Support concept (max. 75 words):

The project will provide comprehensive training in advanced microbiological and molecular biology techniques, along with opportunities for data analysis and environmental sampling. Mentorship will be provided by experienced researchers in the field of antimicrobial resistance. Regular feedback sessions and progress reviews will ensure the student's development and successful project completion.