

PHARMACEUTICAL SCIENCES
PHARMACY

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: 03/01/2018

PROJECT TITLE: Investigating correlative association between microbiome, infections and cancer

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Project Description

Evidence of strong correlation between bacterial infection, cancer progression and anticancer drug resistance is emerging. Studies have shown that certain pathogens are disproportionately associated with certain cancers and also reduce the efficacy of anticancer drugs on cancer cells. The Kotagiri lab is interested in investigating these correlative associations and develop unique imaging probes to understand these processes further with an eye on transforming these probes into therapeutic molecules as the project matures.

The lab is well equipped for chemical biology research from designing and manufacturing of probes, to their evaluation in cell culture-bacterial system and eventually in animal models. The student will be involved in developing 3D co-cultures of cancer cells with bacteria and using fluorescence microscopy, including super-resolution microscopy to study interactions between these cells and their metabolites. The student will be trained in all the core techniques such as, 2D & 3D cultures, microscopy, image analysis, basics of probe design and bioconjugate chemistry. Depending on the progress made there will be opportunities to learn and analyze mass spectrometry data as well as next gen sequencing such as RNA seq.

The lab adopts an interdisciplinary approach towards its research projects and uses diverse technologies to address the issues under investigation. It will provide the student a wide perspective of the tools available to carry out biomedical research and offer a unique insight into the 'big picture' and be closely involved in the experimental and project design. The student will work closely with graduate students and postdocs in the lab, who will provide necessary guidance and training on core skills. Student will be involved in literature review relevant to the project and opportunities will be presented to present results at weekly lab meeting and at other forums in the university and outside. Upon successful completion of critical sequence of

experiments the student will be invited to draft a manuscript for publication.