

**Department of Science & Health
UC Clermont College**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 2, 2015

The Department of Science & Health is pleased to offer the following research project for the summer of 2015. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

Project Title: Encapsulated Micelles for Targeted Drug Delivery:

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Project Description

The purpose of targeted drug delivery in chemotherapy is to maximize the effectiveness of the drug in killing cancer cells while minimizing the interaction of the drug with healthy cells in the body. One way to accomplish this is to take advantage of the enhanced permeability and retention (EPR) effect, where a nano-sized carrier encapsulates the drug while it's in the blood stream, passes through the vasculature near the cancer cells and then releases the drug.

My students and I are developing a model drug delivery system for hydrophobic, therapeutic agents. Past WISE program students have defined tuning parameters for the stability of the micellar system and its binding effectiveness at neutral pH. The objective of this summer's research will be to determine the binding profile as a function of pH with the ultimate goal of understanding how to design a system that will protect the therapeutic agent at normal physiological pH and release it in the tumor tissue microenvironment or during endocytosis within the cancer cells.