Department of Biomedical, Chemical & Environmental Engineering
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: March 2, 2015

The Department of Biomedical, Chemical & Environmental Engineering 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: Non-viral Gene Delivery and Contrast-Enhanced Imaging Systems

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Project Description

Gene therapy has not been investigated as much as pharmacotherapy because of immunogenic issues when virus was used as a gene delivery vector. Despite the challenge, gene therapy still has attractive aspects. It has less side effects and is more site-specific compared to pharmacotherapy, and it also has potential for generic disease treatment or personalized medicine. Therefore, it would be truly beneficial if safe and reliable non-viral vectors are developed for a target of interest.

This research project is about development of non-viral gene delivery systems, which also have ability to enhance contrast of medical imaging to visualize targeting. The delivery systems are mainly composed of complex nanoparticle systems and medical devices to assist delivery, such as laser, ultrasound, or MRI. During the summer, you will have experience on developing nanoparticles and examining the characteristics to improve delivering and contrasting properties of the nanoparticles.

Basic chemistry lab experience is required.