

COLLEGE OF PHARMACY

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: 03/01/2018

PROJECT TITLE: Iontophoresis Treatment in Oral Care

Kevin Li
College of Pharmacy
MSB 3109
Cincinnati, OH 45267-0004
Email: kevin.li@uc.edu
Tel: (513) 558-0977
Fax: (513) 558-3233

Project Description

The objectives of the project are to (a) identify the iontophoresis protocols for effective delivery of fluoride, tin, and potassium ions to the enamel and dentin from an iontophoresis device and (b) understand the controlling factors of iontophoretic delivery to the enamel. The ultimate goal is to develop an iontophoresis delivery system for oral care. The iontophoresis approach can improve the treatments of tooth decalcification and sensitivity.

In this project, experiments will be conducted with bovine enamel in diffusion cells in vitro. The penetration of fluoride, tin, and potassium ions into the enamel will be evaluated after iontophoresis treatment and compared with a reference (e.g., fluoride varnish treatment). Different protocols of the iontophoresis treatment (electric current, treatment duration, ion concentration in the device) will be tested. The data will be analyzed to identify the optimal protocols for iontophoretic delivery to the tissues.

Requirements: Students are required to have engineering, chemistry, or pre-pharmacy backgrounds and have completed their college sophomore level classes (including calculus, general chemistry, and physics).