DIVISION OF PHARMACEUTICAL SCIENCES
COLLEGE OF PHARMACY

FOR APPLICATION YEAR: 2021

PROJECT TITLE: <u>Characterization of gingiva for sustained local drug delivery</u>

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Project Description

There is a lack of understanding of the barrier properties of human gingiva for drug delivery. This knowledge is essential to the development of effective systems for local drug delivery to the gingiva and surrounding tissues. For example, the gingiva is involved in oral diseases such as periodontitis. Current therapies are interventions such as scaling and root planning, which are invasive and moderately effective. Topical drug delivery methods are not very effective due to the dilution and rapid elimination of the drugs in the oral cavity and the gingival tissue barrier for drug penetration. A convenient and effective in-home method for local treatment of chronic periodontal diseases is not available. The present project will characterize the barrier properties of gingiva and develop a local drug delivery platform for disease treatment. Experiments will be conducted with gingiva in diffusion cells in vitro. The penetration of drugs and model compounds to the tissue will be evaluated to determine the permeability and other barrier properties of the gingiva. The data will be analyzed to establish a quantitative structure permeability relationship (QSPR) of the tissue. Physical enhancement methods and formulations to improve drug delivery will be explored.