Dissociation of *S. gordonii* Biofilms by *P. gingivalis* Outer Membrane Vesicles

Dr. Sarah Alaei, Abigail B. Pineda

Periodontal disease is one of the most common infectious diseases worldwide, causing chronic inflammation which can increase the risk of various conditions. *Porphyromonas gingivalis* is a gram negative bacterium that plays a large role in the development of periodontal disease. *P. gingivalis* has previously been found to secrete an abundance of outer membrane vesicles (OMVs), which may play a role in the dissociation of biofilms. In this research, the dissociation of *Streptococcus gordonii* biofilms were analyzed in the presence of wild type *P. gingivalis* and of a mutant strain which produces little to no OMVs. The wild type and the mutant strain of *P. gingivalis* were introduced to *S. gordonii* biofilms then mounted for viewing under fluorescent light. The dissociation of the *S. gordonii* biofilms was determined using pixel counting software which estimates the proportion of *S. gordonii* and *P. gingivalis* cells. The mutant strain of *P. gingivalis* was found to dissociate the *S. gordonii* biofilms significantly less than that of the wild type strain. This result supports the hypothesis that the outer membrane vesicles of *P. gingivalis* plays a role in the dissociation of biofilms.