

A Tale of Two Strains: Comparative analysis of two closely related *Porphyromonas gingivalis* wild-type strains and their outer membrane vesicles

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*Porphyromonas gingivalis* is a keystone bacterium in the pathogenesis of chronic periodontitis, commonly known as gum disease. Two well-studied wild-type strains of *P. gingivalis*, 33277 and 381 have nearly identical genomes, however, they exhibit differing immunostimulatory capabilities. Experiments in our lab have compared the interbacterial interactions of these two strains, focusing on outer membrane vesicles (OMVs) as mediators via abundance and cargo. We have characterized differences in abundance of OMVs between the two strains, with 381 producing more. Despite producing more OMVs, 381 exhibits decreased protease activity compared to 33277, as determined by measuring the degradation of an antimicrobial peptide. When comparing the protein makeup of isolated OMVs subjected to SDS-PAGE, 381 OMVs displayed the absence of a band present in 33277 OMVs. From previous work, we know that OMVs could be a modulator in biofilm aggregation and here observed a difference in biofilm morphology, in which 381 formed a dense biofilm aggregating in columnar structures, while 33277 formed an evenly distributed biofilm. Our ongoing work aims to use quantitative methods to compare the protein contents of 381 and 33277 OMVs and outer membranes and gain a better understanding of the functional differences between the OMVs produced by these two strains.