# Oral Metagenomics: Gene Prospection In Health And Disease

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**INTRODUCTION:** Periodontitis is an infectious oral disease with elevated prevalence in the human population. Although specific bacteria have been previously implicated with periodontitis, there is still need for molecular-based investigations to further clarify the microbial role in this disease. This is particular important considering that approximately 50% of the oral microbiota in uncapable of undergoing cultivation. Metagenomics is a recent field of research that is based on heavy DNA sequencing analysis on the total genetic information of complex microbial communities. It has been proved to bring important information on the genetic structure, functionality, and taxonomic compostion of microbial communities of human, veterinary, and environmental microbial niches. **OBJECTIVES:** This study aims to shed additional light into the biological processes that may lead to periodontitis, based on the metagenomic analysis of saliva from healthy and periodontitis human subjects. **MATERIAL AND METHODS:** A total of 20 samples from healthy (n=10) and periodontitis subjects (n=10) from subjects attending the Dental Clinic of the Amazonas State University were analyzed. Samples were collected with sterile tubes containing TE buffer, transported to the laboratory, and stored at -20°C. The total DNA was extracted, enzimatically digested, barcoded, and submitted to the Illumina HiSeq plataform for NGS sequencing. After routine quality control and trimming procedures, sequences were clustered, filtered, and annotated according to orthologous groups (eggNOG), metabolic pathways (KEGG), carbohydrate activity (CAZy), and taxonomic identification (MicroNR). **RESULTS AND DISCUSSION:** Preliminary results show that the taxonomic composition is distinct among periodontitis and health samples, which may impart potential differences in orthologous groups, metabolic pathways, and functional genomics annotation. Such hypothesis will be validated in the next phase of the study. **CONCLUSION:** The study restate the importance of bacteria in periodontitis establishment and development, which in turn may contribute to the development of new therapeutic strategies against this important oral disease.

Keywords: Periodontitis, Microbiota, Bacteria