

## International Conference & Exhibition on Cell Science & Stem Cell Research

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**Objective:** The goal of this study is to determine if *Enterococcus faecalis*, a member of the oral microbiota, plays a role in maintaining cancer stemness by triggering  $\beta$ -catenin nuclear signaling and activating epidermal growth factor receptor (EGFR) signaling in oral cancer cells.

**Methods:**Oral cancer lesions were collected from 36 patients with progressive stages of oral squamous cell carcinoma. 454 pyrosequencing of the bacterial 16S rRNA and metagnomic analysis were used to identify members and potential functions of the oral microbiota within the oral cancer tumor microenvironment of the lesions. More than 800 unique bacterial clones were cultivated from the lesions and screened for cell proliferation. Bacterial clones that demonstrated cell proliferation were further analyzed in a colony-forming assay and for their ability to stimulate chromosomal instability, EGFR activity and Wnt// $\beta$ -catenin activity

**Results:** The oral microbial communities and their encoding functions were distinct in oral cancer lesions. One member of the oral community, *E. faecalis*, was more abundant in oral cancer lesions, demonstrated significantly enhanced chromosomal instability, cell proliferation, colony formation, activated EGFR and also triggered  $\beta$ -catenin nuclear localization.

**Conclusion:** Oral microbiota may play a role in induction of malignant transformation and maintenance of cancer stemness.

## Biography

Dr. Kanitsak Boonanantanasam DDS, PhD is a Diplomat of the American Board of Periodontology. Recently, he has joined Dr. Steven Gill's laboratory at the Department of Microbiology and Immunology, University of Rochester School of Medicine and Dentistry as a postdoctoral fellow and has an adjunct clinical position at the SUNY at Buffalo, School of Dental Medicine. He is a faculty member in the Department of Anatomy, Faculty of Dentistry, Mahidol University, Thailand. His research interests include oral microbiota, oral carcinogenesis and stem cell. Additionally, Dr. Boonanantanasarn also discovers natural growth factors from tropical herbs which initiates stem cell differentiation for periodontal tissue engineering. Moreover, in Thailand, he is a pioneer in the screening and development of tropical herbs which demonstrate anti-cancer properties in oral cancers. He has applied for several patents for these herbs as an adjunctive chemotherapy and inducers for tissue engineering.

## Oral microbiota and oral cancer: A possible role of the oral bacterial community in maintaining cancer stemness

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