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Mutans *Streptococci* genomic sequencing: Potential applications for precision medicine to prevent tooth decay

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Tooth decay is the most prevalent chronic infectious disease in children. Mutans *Streptococci* (MS) is one of the major families of cariogenic bacteria. MS virulence is critical in determining its ability to cause tooth decay. We hypothesize that the virulence factors of MS are genetically determined. Therefore, we conducted a study to identify potential virulence genes in MS by comparing full genome sequences of mutans Streptococci isolates from caries free children versus children with severe early childhood caries. This study has identified several novel biosynthetic gene clusters that may play a significant role in regulating MS colonization and competition in oral biofilm and their cariogenicity. We are further studying the function of these genes and gene products. These findings can provide a scientific basis for developing genetic identification tools for caries risk assessment and targeted caries prevention as a part of precision medicine.

Biography

Ling Zhan is an Associate Professor in the Division of Pediatric Dentistry at University of California, San Francisco. She has completed her Dental training and PhD at the West China University of Medical Sciences and her Pediatric Dental Residency training at UCSF. She is a Member of the International and American Associations for Dental Research, the American Academy of Pediatric Dentistry and a Diplomate of the American Board of Pediatric Dentistry. Her research focuses on microbiological and translational aspects of prevention of tooth decay in children, aiming to establish an individualized oral health care model for children or precision pediatric dentistry.

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