

American Association of Orthodontics Foundation

Research Aid Award

Dr. Youngjae Sung, University of Illinois at Chicago

Biography

Dr. Youngjae Sung is currently a third-year orthodontic resident at University of Illinois at Chicago, College of Dentistry. She completed her undergraduate degree at New York University (NYU), then went on to receive her DDS at University of California, Los Angeles (UCLA) School of Dentistry in 2020.



During her time in NYU and UCLA School of Dentistry, she had several research interests that revolved around clinically relevant mechanisms in oral tissues, including the biochemical effect of antioxidant compounds on carcinogens and the roles of specific ion channels in oral cancer cell regulation. Her current research focus is on understanding how specific genes and microRNA (miRNA) expressions can affect bone development and regulation, and how these specific mechanisms can affect orthodontic tooth movement.

Project Description

This project aims to examine the effect of functional miRNA deficiency in osteocytes at different stages of maturation on mandible phenotypes and tooth eruption patterns in vivo. The Dicer deficiency mouse models driven by either dentin matrix protein 1 (Dmp1)- or sclerostin (Sost)-cre promoter will be evaluated. Shedding light on how miRNAs can affect osteocytes at different stages of maturation (i.e. Dmp1 vs. Sost gene targets) can be an important step in elucidating the origin of bone-regulatory diseases and roles of miRNAs in osteocyte during the tooth eruption. Understanding the role of osteocytes in bone remodeling/modeling for tooth eruption is clinically important in craniofacial orthodontics, and examining the differences in how these mechanisms happen in pathological forms of bone, can expand the therapeutic scope of orthodontics in patients with craniofacial disorders.

Importance of AAOF

With the gracious support of the American Association of Orthodontists Foundation (AAOF), the funding will be used for various research supplies and animal housing. I want to thank AAOF and the opportunity provided to me with their support for this project, which will help me not further my own research knowledge but also expand my future career as a part-time orthodontic educator.