

Research Aid Award

Dr. Shariq Khan, *State University of New York*

Biography

Dr. Shariq Khan is a second-year orthodontic resident at the Stony Brook School of Dental Medicine. He completed his dental school training from University of Maryland School of Dentistry. His initial training was in molecular biology and during dental school he developed interest in pain neuroscience and microbiology. With his extensive research experience, he successfully led several projects, and produced several peer-reviewed publications from each project. Dr. Khan aspires to continue to be involved in basic and translational research pertinent to oral health and pursue a clinician-scientist career in the future.



Project Synopsis

Orthodontic tooth movement relies on effective bone remodeling of periodontal ligament and the alveolar. Bone remodeling is a highly dynamic process that interacts with a wide array of cells and tissues. Homeostatic balance of bone removal and replacement orchestrated by osteoblasts and osteoclasts. Similarly, orthodontic tooth movement is characterized by mechanical loading induction of compression and tension sides in the PDL, with a repeated process of bone resorption on the pressure side and new bone formation on the tension side. Although the exact mechanism of periodontal tissue remodeling is not clearly known, a number of cytokines including vascular endothelial growth factor (VEGF), which is a potent angiogenic factor, have reported be able to accelerate tooth movement by enhancing the bone remodeling process in animal studies. The current study aimed to study the specific VEGF receptors and intracellular signaling pathway(s) leading to the accelerated tooth movement through in vitro experiments. These findings will be important to understand the molecular mechanism of VEGF in the bone remodeling and tooth movement. By adding various exogenous substances whether to accelerate or decelerate tooth movement should be an important area to study with regards to short- and long-term outcomes of orthodontic treatment.

Importance of AAOF Funding

The AAOF generous funding and support will aid in the completion of this project. The AAOF support is vital to Dr. Khan's career as a clinician and researcher by helping him to pursue further a career as an independent researcher.