

Biomedical Research Award

Dr. Sumit Yadav, *University of Connecticut Health Center*

Dr. Yadav is an Associate Professor in the Division of Orthodontics in School of Dental Medicine at University of Connecticut Health Center. He is a board-certified orthodontist and currently acts as a research director for the orthodontic residents. He has published over 95 peer reviewed journal papers. Currently, collaborating with Musculoskeletal Biologist and UConn Center of Aging at, he is expanding his research arena and has been devising therapeutic strategies for the treatment of degenerative diseases of the cartilage of TMJ in older population.



Project Synopsis:

Old age is the single greatest risk factor for many diseases including the musculoskeletal health, oral health, dementia, diabetes and the heart diseases. Specifically, aging is associated with joint disorders of knee and the Temporomandibular Joint (TMJ), leading cause of musculoskeletal disability in the United States. Mandibular condylar cartilage (MCC) and the subchondral bone of the TMJ is a connective tissue and is susceptible to disorders associated with advancing age (older and aged individuals). As individual ages, there is a progressive loss of structure, function, coordination and physiological integrity, leading to impaired homeostasis of the osteochondral tissues of the TMJ, leading to degeneration. The United States population ages over the next several decades and the incidence of degeneration of the osteochondral tissues of the TMJ is expected to rise substantially. Current medical and surgical therapies for age-related TMJ degeneration are suboptimal, the majority relying on the implantation of foreign materials that are subject to a host of complications including infection and further fractures. For this reason, there is a critical need to develop interventions, which prevent or retrogress the age-related degeneration of the osteochondral tissues of the TMJ.

Specific Aim1: Does eliminating the senescent cells by senolytics can inhibit or delay the development of age-related degeneration of the osteochondral tissues of TMJ?

Benefit to Orthodontic Education:

Temporomandibular joint disorders (TMD) are estimated to affect 10-36 million individuals in the United States per year. Approximately 10% of people who have TMD have irreversible damage to the joint. Degenerative diseases of the TMJ

affect the mandibular condylar cartilage, the TMJ disc, and the cartilage of the glenoid fossa. This AAOF award will support the development of evidence whether FDA approved drug (senolytics) can be used for the treatment/prevent the age-related degeneration of TMJ

Importance of AAOF Funding:

The AAOF Biomedical grant will provide me the opportunity to publish preliminary data, which will be essential to be competitive and obtain a funding from NIH/NIDCR with a focus on basic science questions related to clinical issues in orthodontics.