

Biomedical Research Award

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Dr. Yadav is a Tenured 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 100 peer reviewed journal papers. Currently, collaborating with Musculoskeletal Biologist he is mapping out the pathways which leads to osteochondral tissue degeneration and devising therapeutic strategies for the treatment of degenerative diseases of the cartilage of TMJ in older population.



Project Synopsis:

Osteoarthritis (OA) of mandibular condylar cartilage (MCC) of the Temporomandibular Joint (TMJ) is a growing epidemic that afflicts men and women not only in United States but across the globe. OA is primarily characterized by cartilage degeneration, subchondral bone sclerosis and joint pain. It is well established that altered expression and activation of catabolic enzymes underlies the joint cartilage destruction observed in OA, however the precise molecular mechanisms responsible for promoting joint cartilage catabolism is not well understood, nor is there a defined understanding of the molecular mediators of OA. Temporomandibular joint (TMJ) disorders affect over 15 million Americans and incur annual costs of several billion dollars for related health care and disability needs. The proposed studies will clarify the osteochondral manifestation and mechanism involved in osteoarthritis of the TMJ due to lineage specific over expression of notch signaling.

Specific Aim 1: Determine the effects and mechanism of lineage-specific over expression of NICD1 on the osteochondral tissue of the 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 help in mapping our new molecular and cellular pathways affecting the degeneration of the osteochondral tissues of the 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.