Dr. Eliane Dutra
2026 Biomedical Research Award
University of Connecticut Health Center

Biography

I received my DDS from the Federal University of Santa Maria and a MSD in Orthodontics from the Pontifical Catholic University of Parana, in Brazil. I moved to the United States and obtained a PhD degree and an orthodontic certificate from the University of Connecticut Health (UCH). I am currently a full-time Associate Professor in the Division of Orthodontics at the UCH. I dedicate my time pursuing my passion towards craniofacial research, as well as contributing to orthodontic graduate students' education and patient care.

Project Synopsis

Osteoarthritis (OA) is a degenerative disease characterized by progressive loss of cartilage and subchondral bone sclerosis. Currently, treatments for OA are limited to educate the patient about the disease and its management, and to control pain with medications. There is no available treatment to cure OA; loss of the articular cartilage is progressive and irreversible. OA can involve the temporomandibular joint (TMJ) as well. TMJ-OA significantly impairs patients' quality of life by causing acute and chronic pain. The available treatments for TMJ-OA include non-surgical approaches, such as occlusal appliances, cold and warm packs, medications and physiotherapy, and surgical options such as arthrocentesis or joint replacement. These treatments only control patients' symptoms and do not cure TMJ-OA. Lubricin, or proteoglycan 4 (PRG4), is a mucinous glycoprotein secreted from the superficial zone chondrocytes and synovium with lubricating and anti-inflammatory properties. Several studies have reported that Recombinant Human PRG4 (rhPRG4) injections attenuate articular cartilage OA in knee joints; however, the effects of rhPRG4 in mouse model for TMJ degeneration and its underlying mechanisms are largely unknown. The purpose of this project is to dissect the mechanisms behind the effects of rhPRG4 on the cartilage of the TMJ and for the first time investigate whether exogenous rhPRG4 could repair degeneration in the cartilage of the TMJ. The proposed project addresses the hypothesis that rhPRG4 has anti-osteoarthritic effect in the cartilage of the TMJ. Furthermore, we will also study the cellular and molecular mechanism by which rhPRG4 exerts its effects on the cartilage of the TMJ. The findings from this study will contribute to and advance the understanding of TMJ OA by elucidating the role of PRG4 in the homeostasis of the cartilage in the TMJ. Furthermore, this work will provide the framework for future large animal preclinical studies and given the current clinical use of rhPRG4 for other applications the potential for rapid translational update is significant.

Importance of AAOF Funding

My journey as a junior faculty has been challenging but also very gratifying, and the funding from AAOF has been helping to establish myself as a successful academician in Orthodontics. Preliminary data collected thanks to the funds provided by AAOF were invaluable for my NIH KO1 award. My goal is to continue to grow as a clinician and craniofacial scientist. The support from AAOF through the 2026 Biomedical Research Award (BRA), *Burstone-Indiana Biomechanics Award,* will provide the necessary support to implement new research ideas, expanding my possibilities to create innovations in the field and new grants submission.