

Marquette School of Dentistry: Researcher receives \$1.45M NIH grant to study effects of aging on oral health

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MILWAUKEE — Dr. Mariana Reis, a post-doctoral researcher in the Marquette School of Dentistry, has been awarded a Pathway to Independence Award from the National Institutes of Health worth about \$1,457,000 to study the effect aging and periodontal disease has on oral health in living organisms.

The research project, “Structure and Biology of the Cementum as a Function of Age and Disease,” will focus on how cementum, which is the connective mineralized tissue that provides support in both attaching the tooth to the gum and by absorbing the pressure of chewing, is affected by aging in living organisms and periodontal disease.

“Aging is an inevitable progressive series of events that effect all living organisms. Structural and compositional changes that occur to mineralized tissues such as cementum during aging can deteriorate their function and regeneration. Periodontal disease is highly prevalent in the older population and directly effects the biology and function of the cementum, as well,” Reis said. “The underlying functional properties of cementum with aging are unclear. Through this project, I hope to build a foundation for understanding mineral-to-matrix interactions and their probable roles in the functionality and regeneration of mineralized tissues.”

Through this project, Reis aims to identify the biochemical, structural and mechanical features of the aging cementum; define the state of periodontally involved cementum as a function of age; and unveil the impact of aging and

periodontal disease using a ligature-induced periodontitis animal model.

The Pathway to Independence program is intended to facilitate a timely transition of outstanding postdoctoral researchers from mentored research positions to independent, tenure-track or equivalent faculty positions. The award will span seven years, including the first two under the mentorship of Dr. Ana Bedran-Russo, chair and professor of general dental sciences. The final five years will be the independent phase.

“This is a truly exciting opportunity for Dr. Reis and is representative of the potential she has as a researcher and future tenure track faculty member,” Bedran-Russo said. “She has assembled a tremendous network of experts and co-mentors for this project, which has the potential to reveal uncharted areas of the structure, biology and biomechanics of the cementum as a function of age and disease and the impact of these processes on cementum regeneration.”

Additional mentorship will be provided by Dr. Afsar Naqvi, assistant professor of periodontics in the University of Illinois at Chicago College of Dentistry, and Dr. Xianghong Luan, professor of periodontics with the Texas A&M College of Dentistry. Additional collaborators on this project from Marquette include Dr. Jeffrey Toth, interim associate dean for research, Dr. Vrisiis Kofina, assistant professor and graduate program director in periodontics, and Dr. Shengtong Han, assistant professor of biostatistics. Dr. Alexandra Naba, assistant professor of physiology at UIC, will also serve as a consultant.