



2024 RAA
Dr. Zainah Shaker, University of Illinois-Chicago

1) A Short Biography

I grew up in Saint Paul, Minnesota. I completed my Bachelor of Science degree in Nutritional Sciences at the University of Minnesota. I then continued my education by completing my Doctor of Dental Surgery degree at the University of Minnesota and graduated with high distinction.

Following completion of my doctorate degree I was determined to pursue further training in order to provide care to medically complex patients in both the clinical and operating room settings and

this led me to a General Practice Residency. I completed my General Practice Residency at the University of Minnesota Medical Center- Fairview Hospital. After residency I practiced as a general dentist in the Twin Cities area. During this time I worked in private practice as well as in a hospital providing care to patients in the operating room setting. Completion of my own orthodontic treatment inspired me to provide this care to my patients which led me to begin my orthodontics residency at the University of Illinois at Chicago.

2) A Brief Description of the Project

This study aims to characterize the craniofacial morphology of DMP-1 promoter-driven Dicer deficient mice. Dentin matrix protein 1 (DMP1), a product of the DMP-1 gene, is highly expressed in osteocytes. Osteocytes have been found to express DMP1 prominently within and along their canaliculi, while late osteoblasts exhibit minimal expression of DMP1. MicroRNA (miRNA) is a small, single-stranded, non-coding RNA molecule synthesized in cells, undergo cleavage with the enzyme "Dicer" to yield functional miRNA. Mature miRNA functions in RNA silencing and post-transcriptional regulation of gene expression, critically influencing gene expression's spatial and temporal patterns. This study will provide insight into the roles of functional miRNA on craniofacial morphology in vivo.

3) A Statement of How Orthodontic Education Will Benefit From Your Award

My American Association of Orthodontists Foundation Research Aid Award will enrich orthodontic education by shedding light on the functional miRNA dynamics in osteocytes, abundant in craniofacial bones. Through this study, I aim to gain more insights into the effects of deficiency of functional miRNAs in osteocytes of craniofacial bones, and hope to introduce innovative modalities for orthodontic treatment, ultimately enhancing contemporary orthodontic care.

4) Why the Foundation is Important to Your Project

The generous funding from the American Association of Orthodontists Foundation (AAOF) will equip me with the necessary resources to delve into the craniofacial morphology of Dmp-1 promoter-driven Dicer deficient mice, elucidating the roles of functional miRNAs in craniofacial bone biology. Furthermore, the success of this study holds promise for the discovery of novel modalities to enhance contemporary orthodontic practices. I plan to use the funding from AAOF to expand the research project's scope and eventually publish my study's results in a peer-reviewed journal.

5) How Foundation Funding is Expected to or Has Benefited Your Career.

American Association of Orthodontists Foundation (AAOF) funding will provide me with the necessary financial resources to further investigate the role of miRNAs in craniofacial bone biology, with the hope that my findings can be published in a peer-reviewed journal in the future. AAOF has an impeccable reputation and only with its support, can I expand my research project and enhance my academic portfolio. Affiliation with an exceptional foundation like AAOF through this research aid award will help enhance my professional career and reputation as well.