Biomedical Research Award

Dr. Amy Tasca, *University of Minnesota*

Biography:

Dr. Amy Tasca is a Clinical Assistant Professor in the Division of Orthodontics at the University of Minnesota and was recently named holder of the Robert J. Isaacson Chair in Orthodontics. Dr. Tasca completed the six-year BA/DDS program at the University of Missouri Kansas City. After practicing general dentistry for several years, she returned home to Minnesota and obtained her PhD and Certificate in Orthodontics from the University of Minnesota. Dr. Tasca currently serves as the director for pre-doctoral orthodontic courses, provides didactic and clinical instruction for the graduate residency program, is an active member of the cleft and craniofacial team, and continues to engage in research with the lab where she obtained her PhD. This AAOF award has provided Dr. Tasca an opportunity to team up with the primary investigator and mentor from her PhD training (Dr. Kim Mansky), as they mentor another PhD/Orthodontic Certificate candidate (Dr. Rachel Phillips).

Project Description:

Osteoclasts are derived from the myeloid lineage and fuse to form multinuclear cells responsible for bone degradation. Bone resorption by osteoclasts is crucial for biological processes including skeletal homeostasis, tooth eruption, bone healing, and orthodontic tooth movement. While there have been multiple studies to characterize differences between craniofacial and long bone mesenchymal stem cells, there have been very few studies to date to characterize differences in the osteoclast population between long bones and the craniofacial complex. Craniofacial bones including the mandible and the maxilla are developmentally and functionally distinct from the bones in the appendicular skeleton, however the majority of our understanding of osteoclasts comes from research done on long bones. The specific aim for this project is to determine the molecular signature of mandible and long bone derived bone marrow. To determine the transcriptomic differences between mandible and femur derived cells we will perform single cell sequencing of osteoclast precursors from the mandible and the femur to identify unbiased changes in the transcriptome.

How will orthodontic education benefit from your award:

The funds from this award will directly support the research and mentorship of a PhD/Orthodontic Certificate candidate. By promoting and supporting residents interested in research we are investing in future faculty.

Why the Foundation is important to your project:

Without the support from the AAOF this project would not be possible. This award has provided the monetary support necessary to obtain the preliminary data required for future NIH funding.

How Foundation funding is expected to or has benefited your career:

This funding has provided evidence to support my time dedicated to research. It has allowed me to continue to collaborate with my former lab and highlight the benefits of clinical faculty and basic scientist collaborations.