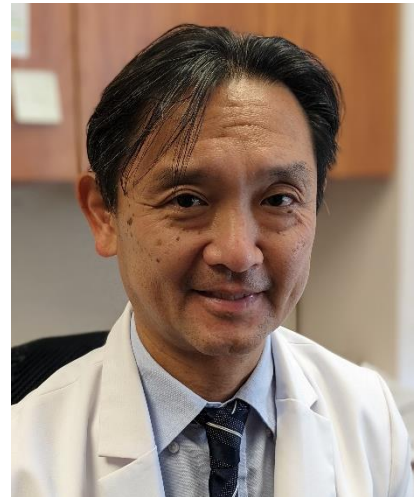


## Biomedical Research Award

### Dr. Toru Deguchi, *University of Louisville*

#### Biography

Dr. Toru Deguchi is a Professor and Graduate Program Director in the Division of Orthodontics at the Ohio State University College of Dentistry. He will eventually move as a Chair of Orthodontics (Rehabilitative and Reconstructive Dentistry) at University of Louisville starting July 2022. He completed his dental training at the Aichi-Gakuin University and received a PhD at the Okayama University. He also had orthodontic training at the Indiana University. He has been focusing his clinical interests in the field of temporary anchorage device (TADs), lingual orthodontics, and interdisciplinary cases. He has been engaged in the research field such as histomorphometric studies related to tooth movement and pain related studies. Dr. Deguchi is a Diplomate of the American Board of Orthodontics and a member of the Midwest Angle Society.



#### Project

Harmine is a new antiresorptive agent that inhibits osteoclast formation, differentiation, and function. Harmine is a B-carboline alkaloid that inhibits multinucleated osteoclast formation induced by RANKL. Harmine prevents RANKL induced bone resorption and, significantly, harmine increases expression of the osteoblast marker genes alkaline phosphatase (ALP) and Osteocalcin. It also enhances mineral formation by MC3T3-E1 cells. Therefore, harmine may be useful to prevent external apical root resorption resulting from orthodontic treatments.

#### AAOF Support

We may be able to reduce the occurrence of root resorption caused by orthodontic treatment which is one of the most well-known side effects. The AAOF will help and support to proceed the current project which has a potential for clinical application in orthodontic treatment. The AAOF has been supporting Dr. Deguchi's research career and would help for future extramural grants.