# Orthodontic Faculty Development Fellowship Award

Dr. Ginny Ching Yun Hsu, *Oregon Health & Science University*

Dr. Hsu is an Assistant Professor from Oregon Health & Science University, Department of Orthodontics. Dr. Hsu was born and raised in Taiwan. She earned her dental degree from Shanghai Jiao Tong University and received a Master of Science in Oral biology from the University of California, Los Angeles. After receiving orthodontics training at New York University, Dr. Hsu pushed the envelope of her research field to stem cell in bone regeneration by attending Johns Hopkins University, School of Medicine, Department of Pathology, for three years of postdoctoral training.
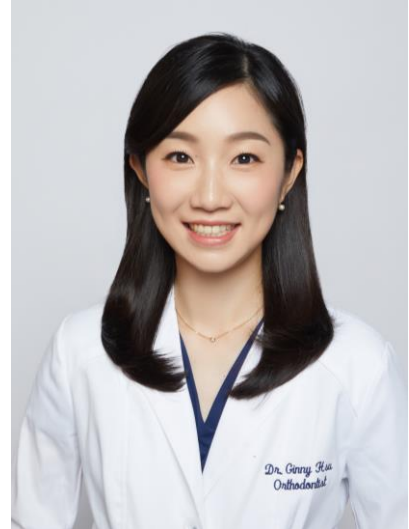
Dr. Hsu's research focuses on craniofacial biology, osteoprogenitor cells, and tissue engineering. Her postdoctoral fellowship training, in particular, has sparked the interest in the tissue-specific properties of progenitor cells which lie within the perivascular mesenchyme, including microvascular pericytes. Dr. Hsu's research has received several diverse awards from the Northeastern Society of Orthodontists, the American Association of Orthodontists Foundation, and the Maryland Stem Cell Research Fund. Recently, the National Institute of Dental and Craniofacial Research has awarded Dr. Hsu with a five-year career development K08 award.

Dr. Hsu's interests in craniofacial development and regeneration led to the proposed research project: "Perivascular stem cell-loaded photopolymerized hydrogel in bone regeneration." Craniofacial skeletal non-healing bone defects, such as cleft palate or extensive critical size wound defects, remain a significant problem in orthopedic treatment, accompanied by individual hardships and societal burdens. This project will test the working hypotheses that optimized perivascular stem cells distribution and graft stiffness will: (1) significantly improve osteogenic differentiation and vascularization in mouse calvarial defect healing, and (2) result in a superior bone-forming efficacy with improved safety profile compared to current standards for care. The preliminary data generated from OFDFA will support Dr. Hsu's future NIH R series application.

The career development portion of the OFDFA will support Dr. Hsu's education and training by refining her existing scientific knowledge and supporting the accrual of new skill sets to become an independent clinician-scientist in the field of orthodontics and dentofacial orthopedics, and an educator who can inspire the next generation of orthodontists to develop interests in research. The AAOF OFDFA will provide the necessary funding to complete the research project and facilitate Dr. Hsu's career development into an independent investigator.