

## American Association of Orthodontists Foundation

### Research Aid Award

#### Dr. Kimberly Fluger, *University at Buffalo*

Dr. Kimberly Fluger is currently a second-year orthodontic resident at the University at Buffalo School of Dental Medicine. She completed her undergraduate studies at University of Michigan and went on to obtain her dental degree from the University at Buffalo School of Dental Medicine. She then completed a General Practice Residency at New York Presbyterian-Weill Cornell prior to specializing in orthodontics. Since beginning her Advanced Education in Orthodontics, she has developed a compelling interest in the interplay of



orthodontics and sleep-related breathing disorder (SRBD). She has conducted and published a critical appraisal of the literature entitled, “Low-quality evidence supports the use of mandibular advancement appliances in managing obstructive sleep apnea in children,” which demonstrated the limitations and weaknesses in the study designs of existing scientific evidence.

This current research project, entitled “Mandibular movement analysis during sleep following Class II correction with functional mandibular advancement appliances,” uses a simple, non-invasive sensor to monitor mandibular movement (MM). This reliable MM pattern has been shown to be as efficacious as the gold standard diagnostic tool, polysomnography, in identifying apneic sleep disorders. The primary objective of this study is to evaluate, using machine learning algorithms, MM during sleep following Class II correction in patients with a retrognathic mandible treated with a functional mandibular advancing appliance. This study also aims to evaluate changes in subjective SRBD symptoms, dentoskeletal measurements, and airway dimensions following treatment with a functional appliance.

Prospective studies evaluating the effects of functional mandibular advancing appliances on respiratory outcomes in growing patients are needed in the orthodontic literature. This study will evaluate the efficacy of oral appliances during sleep as respiration is a dynamic function, changes predictably with sleep progression, and is highly correlated with respiratory effort. This study intends to provide superior quality evidence to the orthodontic community in order to make recommendations for clinical management of pediatric patients with high risk of SRBD.

Funding supported by the American Association of Orthodontists Foundation (AAOF) is essential to the success of this project. The monetary award will be applied primarily to cover the cost of research equipment and supplies such as the sensor, which is used to detect MM through Bluetooth technology. Without the support of the AAOF, this project would not be possible.

Support by the AAOF will be crucial in the development and further exploration of the Primary Investigator’s research interests. Her quest for knowledge, understanding, and answers will be applicable to a future career in academic and clinical practice.