

## Research Aid Award

### Dr. Ozge Colak, The State *University of New York at Buffalo*

Dr. Ozge Colak completed dental school at Bezmialem University in Istanbul. In her third year in dental school, she joined a research externship program at the Center of Stomatology at the Academy of Sciences of Czech Republic. After finishing dental school, she started an Advanced Clinical Training Program in Orthodontics at the University of California in Los Angeles. Dr Colak joined many national and international research projects and has presented in many conferences. Dr Colak is currently a second-year orthodontic resident at the University at Buffalo. Apart from her academic background, she likes gardening and traveling.



#### **Project Summary:**

Retained primary second molars (Es) as a result of the congenital absence of mandibular second premolars are commonly seen in daily orthodontic practice. Managing these cases is challenging due to the complexity and variety in the case presentation and treatment options for each patient. Generally, orthodontists plan treatments based on their knowledge and clinical experience. Thus, the treatment plans made by experienced and less experienced orthodontists might differ. Therefore, a novel approach is needed to determine the optimal orthodontic treatment option for patients who have retained Es with no permanent successors. Artificial intelligence (AI)-assisted clinical decision-making tools could enhance the efficiency and accuracy of the treatment planning process and lead to improved treatment outcomes.

The aim of this study is to develop and apply an AI algorithm to aid the clinical decision-making process for managing retained Es with no permanent successors using neural network machine learning.

#### **How Orthodontic Education will benefit from this award:**

We expect that our final machine learning model will be able to predict the correct treatment decision. Our final aim is to utilize this model as a decision support system during orthodontic treatment and help the clinicians in the decision-making process in cases with retained primary second molars (Es) with no permanent successors.

By developing an AI expert system, the experience and knowledge will be transformed into the form of an algorithmic model and this model will ease the treatment decision process and serve as a guiding tool to many less experienced orthodontists in their early careers.

**Why the AAOF is important to this project:**

The collection of data in sufficient quality and quantity is crucial for the implementation of machine learning and development of an efficient algorithm. The support of the AAOF will allow us to be able to efficiently conduct the study and perform the analysis.

**How Foundation funding is expected to or has benefitted your career:**

The AAOF Research Aid Award will provide an opportunity for me to contribute to the field of orthodontics. The award will help me to reach my long-term career goal of becoming an orthodontic faculty member.