

AAOF Biomedical Research Award

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Dr. Huja initially received his dental (1987) and orthodontic (1992) training from the Government Dental College and Hospital, Bombay. From 1993-2001, he was associated with three US institutions, receiving his MS (1995) from Marquette University, Milwaukee, his PhD (1999) and Orthodontic Certificate (1999) from Indiana University, Indianapolis and his DDS (2001) from University of Nebraska Medical Center College of Dentistry, Lincoln. His PhD was conducted under the mentorship of Dr. David Burr from the Department of Anatomy and Dr. W. Eugene Roberts in Orthodontics from Indiana University. From 2001-2011, he was a faculty at the Ohio State University working under the mentorship of Dr. Katherine Vig, a world renowned orthodontist and educator. In 2011, he moved to the University of Kentucky as Division Chief of Orthodontics. In 2016, he was appointed the Program Director of Orthodontics and Associate Dean for Faculty and Student Development and Graduate Studies at the University of Kentucky.



He has served as advisor for both PhD and Master graduate students and has taught Orthodontics and Bone Biology to dental and graduate students. He was the Principal Investigator on grants from the NIDCR, NIH, Corporate and Foundations. His research seeks to understand bone remodeling, osteoclast biology and adaptation to physical forces. His students have been recognized with national awards on projects related to tooth movement and implant adaptation biology. Dr. Huja is also the recipient of the prestigious B.F. Dewel Memorial Biomedical Research Award, from the American Association of Orthodontists Foundation.

Dr. Huja is a member of the Midwest component of the E.H. Angle Society and is a Diplomate of the American Board of Orthodontics, and he also maintains an intramural faculty practice. He is widely published in the field of Bone Biology and Orthodontics and is a frequent speaker at national and international meetings. He serves as the Vice Chair of the Planning and Award Review Committee of the American Association of Orthodontist Foundation and has served as an orthodontic site visitor for Commission on Dental Accreditation and now is serves as Predoctoral chair. He current serves CODA in other roles, being on the Orthodontic Review Committee and in the role of Pre-Doctoral Site visit Chair. He is an Alumnus of the ADEA Leadership Institute serving as the inaugural ADEA/ADEA Gies Foundation Drs. Connie L. and Richard R. Drisko Scholar. In addition, he serves as an Advisor in the ADEA Leadership Institute. He also served as the President of the Craniofacial Biology Group of the International Association of Dental Research.

Dr. Huja is married to Dr. Pinar Emecen-Huja, a Periodontist and they have young twin children.

A brief description of the project:

Our central hypothesis is that the trueness and precision of bracket erase software is dependent on the scanner used, tooth type/morphology, the type of software being used. We will test our hypothesis via two specific aims. Aim 1, will provide a “proof of principle” study and is essential to understand the inherent variability and precision in clinical scanners, specifically for scans that include metal orthodontic brackets. Tooth surface and metal substrates (e.g., amalgam, gold crowns) and complex metal substrates such as brackets are likely to perform differently in terms of accuracy and precision on a scan. In Aim 2, we will focus on critical quantitative studies to measure clinical workflows and examine tooth type and the type of software being used. We ask the question on whether virtual debonding increases the risk of poor fitting retainers. Our experience is that a discrepancy on tooth surfaces can occur where a tooth was over reduced during virtual bracket removal. This could lead to pressure areas and ultimately can lead to an active appliance that has the potential to move teeth in unwanted positions or cause patient discomfort. Our aims are listed below:

Aim 1: A single dentate cadaver will be used to examine the following subaims A: **Determine trueness and precision of three clinical intraoral scanners.** B: **Determine the trueness and precision of five bracket erase software.**

Aim 2: **To determine trueness and precision of virtual bracket erase software by examining both the arch (mandibular vs maxillary) and tooth type in scans obtained from patients.**

How orthodontic education will benefit from the award:

Currently there are anecdotal claims of superiority of various bracket erase software. It is critical that carefully designed studies address these claims. In addition, digital workflows will only increase in the coming decade. The results of these studies will impact the clinical practice of orthodontics. The project attempts to provide quantitative data to support digital workflows that are becoming increasingly common in orthodontics. Specifically, the accuracy of clinically available scanners and bracket erase softwares will be examined.

Why the Foundation is important to the project:

The AAOF has been supporting orthodontic research and careers. This project is specifically directed to the practice and business of orthodontics. The foundations support in providing evidence base to clinical practice is critical.

How Foundation funding might help advance the PI’s career, and how it has helped advance the PI’s career, assuming the PI has received AAOF funding in the Past:

As is documented in AAOF publications, the AAOF has been seminal in supporting Dr. Huja’s career since the initial support he received in ~2003 as a Jr. Faculty. This stream of funding has lead to research, and then NIH supported grants. It has helped Dr. Huja mentor orthodontic residents who have received 2 Thomas Graber Merit Awards and 1 Harry Sicher Awards from the AAO and numerous publications. Some of Dr. Huja’s mentees have progressed to full time faculty positions. Dr. Huja serves as the Dean of James B. Edwards College of Dental Medicine and of Professor in the Department of Orthodontics.