



Dr. Laura Jacox
2026 Biomedical Research Award
University of North Carolina at Chapel Hill

1) a short biography

Dr. Laura Jacox is originally from a suburb of Chicago, and moved to Cambridge, MA for college at Massachusetts Institute of Technology (MIT) where she completed two bachelor's degrees of science in Biology and Earth, Atmospheric and Planetary Sciences in 2008. Here she discovered her love of oral health and translational biology, attending the Orthognathic Surgical Conferences at MGH and studying adult stem cell division mechanisms in the lab. She decided to pursue a dual DMD-PhD degree in the Harvard-MIT Health Sciences and Technology Program at Harvard Medical School, MIT and Harvard School of Dental Medicine. Through Dr. Jacox's graduate work in the Sive Lab at MIT's Whitehead Institute, she discovered a novel craniofacial organizer, known as the Extreme Anterior Domain, which is required for mouth formation and migration of cranial neural crest in *Xenopus laevis*. Her love of craniofacial development and patient care guided her to orthodontics, where she could merge clinical practice with substantial research, with each pursuit informing and inspiring the other. Laura completed her dual degree program at Harvard in 2016, and moved south to the University of North Carolina at Chapel Hill to complete her residency in orthodontics and post-doctoral research with Dr. Ching Ko and Dr. William Proffit. She graduated from residency in 2019, and was recruited as an Assistant Professor of Orthodontics at the University of North Carolina (UNC) at Chapel Hill.

During residency, Dr. Jacox began a major clinical study on the influence of jaw disharmonies on speech with linguistics and speech pathology collaborators, which has continued as a primary focus of her lab. The primary focus of her research program has been on longitudinal clinical studies of speech distortions in jaw surgery patients. The other focus of her lab is on social science research in dentistry, including qualitative methods (interviews, focus groups) and quantitative approaches (survey development) investigating technology and career trends in orthodontics. As part of the COVID-19 research response, her lab also studied antiseptic mouthrinses for their ability to limit salivary viral infectivity and the influence of the pandemic on dental practitioners. She has now expanded her research program to study microplastic exposure from clear aligners in orthodontic patients, in collaboration with engineers at Duke University who focus on environmental plastic exposures. Dr. Jacox is currently the Director of the Graduate Orthodontic Research Program and the Program Director of the Oral and Craniofacial Biomedicine PhD Program at the UNC Adams School of Dentistry.

2) a brief description of the project

Concerns regarding microplastic exposure are growing as adverse health effects of plastics have been documented in animals and humans, including organ damage, cell cycle and endocrine dysregulation, tumorigenesis, stroke, cardiovascular disease and death. Orthodontists routinely treat patients, including millions of growing adolescents, with intraoral, plastic aligners that have high potential for continuous release and patient ingestion of plastic compounds, with unknown exposure levels and effects. To measure exposure levels from clear aligner treatment, we propose following orthodontic patients longitudinally from before treatment through 5-6 months into care, with collection of saliva, urine and worn aligners, combined with simulated oral conditions for laboratory study of aligner plastic; determining exposure levels from clear aligner treatment is needed to develop safe-by-design principles for plastics and is a critical first step towards understanding potential health implications to inform orthodontic patient care.

3) a statement of how orthodontic education will benefit from your award

Understanding how microplastic exposure from clear aligners impacts patients will directly inform patient care recommendations, particularly for growing children and pregnant women. As a result, findings will be imminently relevant to what we teach our residents and dental students in orthodontic courses.

4) why the Foundation is important to your project

The AAO Foundation (AAOF) is a financial lifeline for orthodontic researchers to answer clinically relevant questions for improved patient care and to gather sufficient data to recruit NIH level resources. Without AAOF support, my team could not collect data to determine microplastic exposure levels from clear aligner orthodontic therapy and begin gaining insights into potential health effects through multi-omics assays on patient saliva. In these challenging funding times nationally, AAOF is more important than ever for supporting academic orthodontic research to provide evidence-based treatment recommendations for providers and residents nationwide.

5) how Foundation funding is expected to or has benefitted your career

The AAO Foundation (AAOF) has provided critical funding for my career development and research as a junior faculty member going up for tenure this year. Foundation funding provided needed research support for me as an orthodontic post-doc/junior faculty member fresh out of residency, followed by fellowship support to become a better orthodontic educator, and now with this biomedical research award, I can gather key data to continue publishing in top journals and apply for future NIH funding. Foundation funding has helped to support research protected time and data acquisition, along with supporting our educational and research missions with residents. Nearly every paper I have published and funding mechanism that I have received has stemmed from AAOF support in some way.