Research Aid Award

Dr. Erika Babikow, *University of North Carolina*

Biography

Dr. Erika Babikow is currently a third-year orthodontic resident and graduate student at the University of North Carolina Adams School of Dentistry. She completed her dental training at the University of Pittsburgh School of Dental Medicine. Her previous research experience included studying the voltage sensing membrane protein hTEM266 as part of a multi-year post-baccalaureate assistantship with the National Institutes of Health. Presently, she is working in the Jacox and Wallet labs, with a focus on investigating oral immune responses to COVID-19. The work sparked her interest as it utilizes basic science techniques for a goal of clinically improving oral health.

Project Description

The immune response to SARS-CoV-2 infection dictates the presentation, duration, and severity of COVID-19 symptoms. The oral cavity and upper respiratory tract are the primary site of SARS-CoV-2 initial exposure, and early defenses in these areas serve as barriers, minimizing viral replication and may predict or regulate succeeding immune cascades. Yet, there is a lack of understanding about early defense mechanisms, particularly the localized salivary immune response. It remains unclear how salivary immune mechanisms relate to patient clinical outcomes and are influenced by host demographics and comorbidities.

The study aims to characterize the immunological landscape of the oral cavity during early SARS-CoV-2 infection. De-identified saliva collected from SARS-CoV-2 positive subjects within 10 days of infection will be processed to quantify patient-specific immune responses, including inflammatory soluble mediators and salivary antibodies. These findings will be correlated with subject demographics, including age, race, comorbidities, symptomatology, disease severity, and vaccination status. Elucidating the profile of inflammatory biomarkers and antibody titers in early infection and understanding immune dysregulation in patients with mild versus severe COVID-19 will provide insights for prognostic and therapeutic applications. Findings promise to be clinically relevant, impacting orthodontic patient care and offering evidence-based treatment recommendations for the general public.

Importance of AAOF

Dr. Babikow aims to make significant contributions to the field of orthodontics as a researcher, teacher and clinician. The AAOF RAA funding supports development of Dr. Babikow's critical thinking and research skills throughout her professional career and promotes a future trajectory for a career in academics. The AAOF RAA funding of the proposed study is essential for purchase of the multiplex kits used to quantify the inflammatory biomarkers. The funding will also further bolster ongoing and future orthodontic resident-led COVID-19 investigations. This cumulative work will allow generation of essential data for understanding the host-immune response to SARS-CoV-2 in the oral cavity and has translational potential, informing the practice of orthodontics and beyond.