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Single-cell RNA Sequencing Analysis of the Impact of Diabetes on the Host Response in Bacteria-induced Periodontitis

Alexandria, VA – A study examining leukocyte populations and their inflammatory responses in diabetic periodontitis was presented at the 54th Annual Meeting of the AADOCR, which was held in conjunction with the 49th Annual Meeting of the Canadian Association for Dental Research, on March 12-15, 2025 in New York, NY.

The abstract, “Single-cell RNA Sequencing Analysis of the Impact of Diabetes on the Host Response in Bacteria-induced Periodontitis” was presented by Bushra Alghamdi of the University of Pennsylvania during the “Periodontal Research-Pathogenesis: Advances in Host-Microbe Interplay in Periodontal Tissues” Poster Session that took place on Thursday, March 13, 2025 at 3:15 p.m. EDT (UTC-4).

Diabetes affects 10% of the global population and increases both risk and severity of periodontitis, the most common osteolytic disease in adults. This study used single-cell RNA sequencing to examine leukocyte populations and their inflammatory responses in diabetic periodontitis.

The study found that diabetes significantly alters the immune landscape in periodontitis, affecting leukocyte composition and gene expression. Blocking gamma delta T cell activation inhibits diabetes-enhanced periodontitis, pointing to the role of a previously unrecognized cell type as a key factor in diabetes-enhanced periodontal disease. These findings are particularly significant as enhanced inflammatory responses are common in diabetic complications.

About AADOCR

The American Association for Dental, Oral, and Craniofacial Research is a nonprofit organization with a mission to drive dental, oral, and craniofacial research to advance health and well-being. AADOCR represents the individual scientists, clinician-scientists, dental professionals, and students based in academic, government, non-profit and private-sector institutions who share our mission. AADOCR is the largest division of the International Association for Dental, Oral, and Craniofacial Research. Learn more at www.aadocr.org.