Unique Biomarkers in Saliva of Children with Sjögren Syndrome

Paula Gomez, DDS, Emily Starman, Kim Brogden, PhD,
Scott Lieberman MD, PhD, Emily Lanzel DDS,MS, Erliang Zeng, PhD

Research Mentors and Collaborators: Kim Brogden, PhD,
Scott Lieberman MD, PhD, Emily Lanzel DDS,MS, Erliang Zeng, PhD

Objective
Sjögren syndrome is a chronic autoimmune disease that is typically diagnosed in adults in their 4^{th} to 5^{th} decade. A focus on the events in the salivary tissues of children developing Sjögren syndrome would provide meaningful information on disease etiopathogenesis. The study's objective was to identify chemokines, cytokines, and biomarkers (CCBMs) in the saliva of children with Sjögren syndrome associated with immune cell infiltrates in their salivary tissues

Methods
We collected saliva from 11 children, 11-20 years of age, formally diagnosed with Sjögren syndrome. We collected saliva from healthy children, matched for gender and age, which served as controls. We determined the concentrations (pg/ml) of 105 CCBMs, in triplicate, using multiplexed fluorescent bead-based immunoassays and we used a one-way ANOVA, followed by a *t*-test, to detect differences among biomarker concentrations from the two groups at the .05 level of significance.

Results
Forty-three of 105 (41%) of the CCBMs we selected were different between the children with Sjögren syndrome and the healthy controls. Heat maps illustrated the differences in concentrations of these CCBMs and principal component analysis (PCA) illustrated the importance of these CCBMs to differentiate these two groups ($p < .05$). Using over-representation analysis (WebGestalt), the 43 CCBMs were enriched in 94 gene categories involving inflammation and 457 gene categories involving immune system and autoimmune diseases.

Conclusions
We believe a unique profile of CCBMs in children with Sjögren syndrome could identify early events in the etiopathogenesis of Sjögren syndrome and assist in the diagnosis of children with Sjögren syndrome.