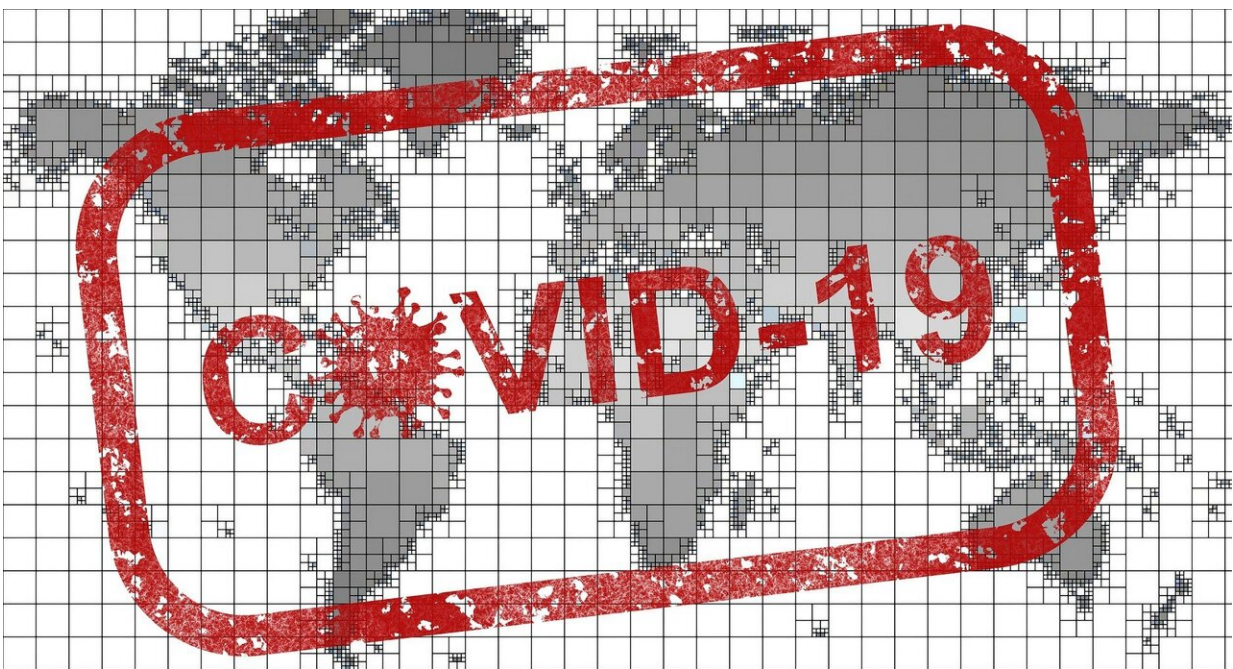


Study explores innate and acquired inflammatory responses during acute COVID-19

March 17 2023



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A study aiming to perform a spatial multiomic analyses from the tongue tissue of control and COVID-19 positive patients to understand the cell-type-specific and spatial regulation of innate and acquired inflammatory response during acute COVID-19 was presented at the 52nd Annual Meeting & Exhibition of the AADOCR, held in conjunction with the

47th Annual Meeting of the CADR. The AADOCR/CADR Annual Meeting & Exhibition took place at the Oregon Convention Center in Portland on March 15-18, 2023.

The study, led by Kevin M. Byrd of the ADA Science & Research Institute, performed autopsies on control and COVID-19 subjects (ETHICS APPROVAL 30364720.0.0000.0068); SARS-CoV-2 was confirmed by PCR. A panel of 43 mucosal, stromal, vasculature, and immune markers was optimized for highly-multiplexed immunohistochemistry (Phenocycler-Fusion) combined with in-situ hybridization (RNAscope). Images were segmented (QuPath) and phenotyped using manual, automated, and unsupervised methods. Cell neighborhood analyses were performed using k-nearest-neighbors (NeighborhoodCoordination). Tissue and ROI spatial "rulesets" were analyzed between healthy and COVID-19-matched tissues and across tissues to understand niche-specific immune responses to acute COVID-19.

The study found that seven of ten taste papillae from COVID-19 autopsies harbored SARS-CoV-2 in the barrier epithelia; the majority displayed neural degeneration and mild to moderate inflammation. Salivary glands also displayed mild to moderate inflammation, with a shift to adaptive immune responses resulting in sialadenitis. While immune responses across COVID-19 tissues were diverse within each niche, when compared to glands, immune responses of the taste papillae microniche were characterized by less overall cellular complexity. Immune profile complexity and adaptive immune profiles by niche were directly influenced by time since diagnosis and local infection/replication burden.

This is the first study to demonstrate and compare the immune consequences of SARS-CoV-2 in geographically-distinct oral tissues. It concluded that the immunoinflammatory response of COVID-19 is

distinct and may play an important role in [tissue](#) regeneration after infection.

More information: This research was presented as part of the Interactive Talk presentation, "Oral Niches Self-Direct Distinct Immune Cues During SARS-CoV-2 Infection", which took place on Wednesday, March 15, 2023, at 10:05 a.m. Pacific Daylight Time (UTC-07:00) during the "Craniofacial Biology II" session from 9:45 a.m.—11:15 a.m.

Provided by International Association for Dental Research

Citation: Study explores innate and acquired inflammatory responses during acute COVID-19 (2023, March 17) retrieved 23 April 2024 from <https://medicalxpress.com/news/2023-03-explores-innate-inflammatory-responses-acute.html>

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