

Exploring the mutual regulation of gamma-delta T cells and the oral microbiota.

Initiative: zukunft.niedersachsen (nur ausgewählte Ausschreibungen)

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Laufzeit:

A plethora of microorganisms and antigens from air and food constantly challenge the oral cavity, the gateway for both the gastrointestinal and respiratory tracts. The oral mucosa, in particular the gingival epithelium, provides an important immunological barrier against invading pathogens and monitors the biofilm developing on the tooth surface. The research group hypothesize that the oral microbiota is chronically activating the gingival epithelium as well as specialized immune cells contained within the oral mucosa. In previous cooperative research of the two applicants, they found that there is a mutual interplay of oral bacteria and strategically positioned $\gamma\delta$ T cells, which patrol the barriers and screen them for epithelial integrity. The scientists propose that these interactions induce a "trained immune response" and maintain a healthy immune homeostasis in the gingival mucosa. To explore the mutual regulation of $\gamma\delta$ T cells and the oral microbiota, the Israeli and German partners jointly employ unique genetic models, next-generation-sequencing, and advanced methods for in vivo and ex vivo microscopy. The two groups' complementary expertise in experimental research in the gingival immune system and $\gamma\delta$ T cells will warrant a highly synergistic and scientifically rewarding cooperation. Besides increasing the knowledge regarding the mechanisms regulating oral immune homeostasis, the scientists want to revealing novel mechanisms involved in the pathogenesis and prevention of chronic oral mucosal inflammation (periodontitis), which will contribute to public health.

Projektbeteiligte

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