

# Institute of Aerospace Medicine

## Institute Seminar, December 14, 2017, *Abstract*

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### **The taste of infection**

A peculiar cell type of the respiratory and gastrointestinal epithelia, originally termed “brush cell” or “tuft cell” by electron microscopists because of its apical tuft of microvilli, utilizes the canonical bitter taste transduction cascade known from oropharyngeal taste buds to detect potential hazardous compounds, e.g. bacterial products. Upon stimulation, this cell initiates protective reflexes and local inflammatory responses through release of acetylcholine and chemokines. Guided by the understanding of these cells as sentinels, they have been newly discovered at previously unrecognized anatomical locations, including the auditory tube, the urethra, and the conjunctiva. Unexpectedly, they also have been identified in the epithelial network of the thymic medulla. The potential implications of the discovery of this novel cell type are enormous and far reaching, as these cells might be involved in monitoring and preventing ascending bacterial infection. However, although appealing, this is still speculative, since the actual number of distinct chemosensory cell types needs to be finally clarified, as well as their embryological origin, developmental dynamics, receptor equipment, modes of signalling to adjacent nerve fibres and other cells, repertoire of chemo- and cytokines, involvement in pathogenesis of diseases and many other aspects. The seminar talk will present yet unpublished data demonstrating direct responses to a novel class of bacterial products, paracrine cholinergic signalling, and dynamics of cell numbers and their role in bacterial infection.