Getting neural about airway gland secretion

Gimano D. Amatngalim[1,2] and Carla M.P. Ribeiro[3,4]

Affiliations: [1]Dept of Pediatric Pulmonology, Wilhelmina Children's Hospital, University Medical Center Utrecht, NL, member of ERN-LUNG, Utrecht, The Netherlands. [2]Regenerative Medicine Utrecht, University Medical Center Utrecht, Utrecht, The Netherlands. [3]Dept of Medicine, Marsico Lung Institute and Cystic Fibrosis Research Center, The University of North Carolina at Chapel Hill, Chapel Hill, NC, USA. [4]Dept of Cell Biology and Physiology, The University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.

Correspondence: Gimano D. Amatngalim, University Medical Center Utrecht, Lundlaan 6, Utrecht 3508 GA, The Netherlands. E-mail: g.d.amatngalim@umcutrecht.nl

Cite this article as: Amatngalim GD, Ribeiro CMP. Getting neural about airway gland secretion. *Eur Respir J* 2020; 55: 2000466 [https://doi.org/10.1183/13993003.00466-2020].

Alterations in host defence functions of the airway epithelium play a central role in chronic airway diseases [1] by contributing to airway mucus obstruction, microbial dysbiosis and chronic airway inflammation. The contribution of altered epithelial functions to the pathogenesis of airway diseases is well illustrated in cystic fibrosis (CF), a monogenetic disease caused by inherited mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) gene [2]. Because of diminished CFTR-dependent chloride and fluid secretion by the airway epithelium, CF patients exhibit airway dehydration, mucus obstruction and decreased mucociliary clearance. In addition, reduced CFTR-mediated bicarbonate transport may decrease the activity of pH-sensitive antimicrobial proteins and peptides (AMPs) due to acidification of the airway surface liquid. Impaired mucus clearance and reduced activity of AMPs may contribute to selective outgrowth of respiratory pathogens in CF airways, which may trigger airway epithelial inflammatory responses. CFTR dysfunction may also promote airway epithelial inflammation, independently of infection [3]. Recent studies have shown that the absent/defective CFTR-dependent epithelial ion transport processes, together with inflammatory responses, contribute to an airway muco-inflammatory milieu in early CF lung disease [4].