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Title: ANO1 expression and activity in cystic fibrosis

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Body: Defective CFTR function in the airway epithelium is responsible for cystic fibrosis (CF) patient lung disease. CFTR represents the most important pathway for apical chloride (Cl-) secretion in human bronchial epithelial cells. Calcium activated Cl- channels (CaCCs) are also an important pathway of Cl- secretion. In 2008, three independent teams suggest that ANO1 (Anoctamine 1) also called TMEM16a could be a CaCC candidate. Mice lacking ANO1 exhibit a defect in epithelial Cl- transport and pathology similar to CF. The main aim of this study is to characterize ANO1 protein in CF vs non CF context. For this study, we used different CF and non CF models whose cell lines, mice and lung explants from CF and non CF patients. Our results show that ANO1 expression and activity are significantly decreased in CF compared to non CF models.

ANO1 is expressed at plasma membrane of bronchial epithelial cells and there is no difference in localization between CF and non CF cells. To understand the differential expression between CF and non-CF cells/tissus we will investigate miRNA expression that could modulate ANO1 protein. We conclude that decreased ANO1 activity in CF cells could be explained by decreased ANO1 ARNm and protein expression and may contribute to the worsening of ionic imbalance and decrease lung function. All of these results lead us to think that this Cl- channel could be a potential pharmacological target for the treatment of cystic fibrosis patients.