CONCLUSIONS

Our investigations have contributed the following to the understanding of the properties of human nasal epithelium.

1) Dissociated nasal epithelial cells can be cultured *in vitro* as monolayers for a limited period of time and in suspension for months with preservation of many properties of differentiated cells, such as cilia.

2) In this suspension culture system ciliogenesis occurs in a reproducible and almost predictable way, resulting in morphologically and functionally normal cilia, and the cytoplasmic precursor stages are similar to those observed during fetal development.

3) Ciliogenesis, ciliary structure, beating and coordination in cystic fibrosis appear to be indistinguishable from controls.

4) In the apical membrane of nasal epithelial cells a chloride channel is present, which is similar to that found in tracheal cells.

5) Non-selective cation channels, which are calcium- and voltage-dependent, are present in the apical membrane and may be involved in Na^+ absorption.

6) Human fetal nasal epithelial cells in culture have outward-rectifying chloride channels as well as calcium- and voltage-dependent non-selective cation channels which are indistinguishable from the channels in cells from adults.

7) In cystic fibrosis the activation of the chloride channel is defective and this explains the diminished Cl^- secretion. Although alterations in the non-selective cation channels are not found, they may be involved in the increased Na^+ resorption.