

Institutes for Cell & Molecular Biosciences & Cellular Medicine

Cystic Fibrosis Trust funded PhD to determine if alternative chloride channels (ACCs) can help restore the anion transport defect in human cystic fibrosis (CF) airway cells, irrespective of CF mutation

This fully-funded 3.5 year PhD is part of a Strategic Research Centre (SRC) grant - **Personalised Therapies for all: Restoring airway function in CF using Alternative Chloride Channels (ACCs)**, that aims to develop new therapeutic strategies to restore airway function in all people with CF using a personalised therapeutic approach. The SRC is a multi-national project involving groups in the UK, Holland, Portugal and Germany.

In CF lungs, defects in CFTR, the ion channel that is defective in CF, leads to an acidic and dehydrated airways surface liquid (ASL) that reduces mucociliary clearance and innate defence, predisposing the lungs to infection. Therefore, rebalancing ASL hydration and pH is predicted to prevent lung disease. Because current CFTR modulators have provided limited improvement for most people with CF, there is an urgent need to develop new strategies. We will target ACCs as a viable approach, as well as determine if ACC modulators are combined with CFTR-directed therapeutics, whether this improves efficacy and applicability, in a patient-specific manner.

The aim of this PhD is to determine individual donor responses to ACC modulators alone, or in combination with CFTR modulators, on ASL pH, transepithelial ion, fluid, and mucus transport in fully differentiated 2D and 3D adult and paediatric CF airway cultures *in vitro*. During the first year the student will spend 1 month in the lab of Dr Jeff Beekman (Utrecht University), to gain experience in the differentiated procedure to produce 3D airway organoids, as well as organoid functional assays (e.g. fluid secretion assay). All SRC members will meet annually at the CF Basic Science conference (<https://www.ecfs.eu/conferences>) to discuss progress and future directions

This is an exciting opportunity for a dynamic student to contribute to the development of new treatments for all people with CF.

Award and Eligibility

The award provides an annual tax-free stipend in line with the Cystic Fibrosis Trust rate (currently £19,919; with annual increment). UK/EU and International applicants that have, or expect to achieve, a first-class or upper-second-class Honours degree (or equivalent) in a relevant Biomedical science subject are eligible to apply; however, the award only covers tuition fees at the UK/EU rate.

For further information and how to apply see:

<https://www.ncl.ac.uk/postgraduate/funding/sources/allstudents/cb147.html>

Informal enquiries contact: Dr Mike Gray (m.a.gray@newcastle.ac.uk)

Closing date for applications: 18 July 2018