

PhD Studentship:

The contribution of mast cells to rhinovirus infections in asthma

Awarded to: Emily Swindle and D.E. Davies **Amount:** £27,000 (October 2013 – September 2016)

Lay summary

Asthma is a disease of the airways (the tubes that carry air into the lungs) which narrow from time-to-time (exacerbation) by triggers in the air making it difficult to breathe. Mast cells are a rare type of white blood cell that contribute to the symptoms of asthma triggered by allergens (e.g. pollen and dust). However, the common cold virus is a major trigger of asthma exacerbations and we do not know exactly how this occurs. We also do not know if or how mast cells respond to the common cold virus but we do know that these cells form part of an early warning system following infection with bugs (e.g. bacteria and viruses). Therefore this PhD studentship has been investigating how mast cells respond to infection with the common cold virus to help us understand their potential contribution to viral-induced asthma exacerbations. Charlene Akoto, who is in the final year of her PhD studentship, has shown that mast cells become infected with the common cold virus and are protected from infection following exposure to antiviral chemicals. She has presented her work at 2 international conferences (European Mast Cell and Basophil Research Network (EMBRN; Oct 2015) and European Academy of Allergy and Clinical Immunology (EAACI; June 2016)) and the Faculty of Medicine Research Conference (June 2016). At the EAACI Congress she received a travel scholarship to attend the meeting and also won 'best oral abstract in session'. Charlene continues to make excellent progress in her PhD studies which are to be completed in Sept 2017.

Publications

- Oral presentation entitled 'Mast cells support the replication of major and minor group rhinoviruses' at the 7th European Mast Cell and Basophil Research Network (EMBRN) International Mast Cell and Basophil Meeting, Marseille, France (October 2015).
 - Oral presentation entitled 'Human mast cells support rhinovirus replication but are protected from infection by IFN- β ' at the European Academy of Allergy and Clinical Immunology (EAACI) Congress, Vienna, Austria (June 2016).
 - Oral presentation entitled 'Rhinovirus infection of human mast cells results in viral shedding which is inhibited by interferon' at the Faculty of Medicine Research Conference, University of Southampton, Southampton, UK (June 2016).
-

Charlene has also prepared a manuscript of her current work entitled 'Mast cells are permissive for rhinovirus replication: implications for asthma exacerbations' which is currently under review in Clinical and Experimental Allergy (submitted Sept 2016). She also has received a Primerdesign silver studentship which gives her a discount on PCR reagents for gene expression analysis.
