

## Stephan Holgate PhD Studentship: The role of ADAM33 in pre- and perinatal airway remodelling and the early life development of asthma.

**Awarded to:** Hans Michael Haitchi, C. Woelk and J. Kelly **Amount:** £58,100 (additional University of Southampton, Faculty of Medicine funding £48,100) (October 2014 – October 2018).

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### Lay summary

In October 2015 Joanne spent 3 weeks (supported by AAIR travel grant) in the pulmonary biology and bioinformatics group in Cincinnati Children's Hospital in the USA. Here she learned how to analyse large data sets from "next generation gene sequencing" (NGS) from our lung samples from our ADAM33 asthma model compared with "normal" lung samples. Back in Southampton she further studied the list of genes that were different in the ADAM33 asthma model in our existing lung samples.

Furthermore, Joanne successfully established an epithelial cell culture model by growing the cells that line the major airways from our ADAM33 asthma model. She studied the function and leakiness of these cells in the presence of the ADAM33 protein and will also study the list of genes she discovered by NGS in our ADAM33 asthma model in these cells.

From the NGS data Jo has discovered a potential interaction between ADAM33 induced airway remodelling and airway inflammation, which she is studying in fibroblasts, structural airway cells that do or do not express ADAM33 protein.

During this PhD fellowship Joanne has also made contributions to and is a co-author in a recent publication in the Journal of Clinical Investigation (JCI) Insight about how ADAM33 initiates airway remodelling to promote asthma in early life.

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### Publications

- E.R. Davies, J.F.C. Kelly, P.H. Howarth, D.I Wilson, S.T. Holgate, D.E. Davies, J.A. Whitsett, H.M. Haitchi. Soluble ADAM33 initiates airway remodeling to promote susceptibility for allergic asthma in early life. JCI Insight. 2016 Jul 21;1(11). pii: e87632. <https://insight.jci.org/articles/view/87632>.

- The press release from the University of Southampton related to our research publication had been widely covered by most major national newspapers as well as national radio and many other international media.  
<http://www.southampton.ac.uk/news/2016/07/adam-33-gene.page>.
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