

## Research Award:

### The Role of CDHR3 in epithelial barrier function in asthma.

**Awarded to:** Donna Davies, A. Mudher and J. Collins **Amount:** £9,934

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#### Lay summary

Asthma is a chronic disease characterised by exaggerated responses to harmless stimuli such as dust, air pollutants and pet dander. One factor that contributes to these abnormal responses in asthma is the 'leakiness' the cell sheet (epithelium) that lines the airways to form a protective barrier that should prevent penetration of components of the inhaled air like pollutants, allergens and pathogens. Asthma also runs in families suggesting an underlying genetic susceptibility. While considerable progress has been made in identifying genes associated with inheritance of asthma, we know relatively little about how these genes work inside a cell and/or how the small changes in their genetic code modify their function to cause asthma. We have used fruit flies (*Drosophila*) to study the function of an asthma gene called 'CDHR3'. In our pilot work, we found that the asthma variant of CDHR3 makes the airways of the flies 'leaky' whereas normal CDHR3 is without effect. With support from the AAIR Charity, we investigated whether having the 'asthma variant' of CDHR3 causes epithelial cell cultures to be 'leaky' (as measured by their electrical properties), but we could not find a relationship. However, by further investigating the function of CDHR3 in flies, we have found that it plays a specific role in 'choreographing' the movement of cells in processes linked to tissue repair. We are now exploring this in our culture models. If successful, our work will link a genetic association with a key defect in asthma and may pave the way for novel disease-modifying strategies.

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#### Publications

MSc Allergy AAIR Bursaries Report: The MSc Allergy programme at the University of Southampton is designed to help healthcare professionals to gain a greater understanding of allergic diseases and to be able to translate this knowledge into their everyday practice. Offered by a World Allergy Organisation Centre of Excellence, our programme draws on the clinical, research and education strengths at Southampton, and will help our students develop better treatment for their patients. Our programme brings them up to date with current best practice, allowing them to improve their management of patients with allergies. It will also give you them the skills to share their allergy knowledge with colleagues and patients.

Our MSc Allergy Bursaries Fund provides support to students to develop their skills so that they can improve the care of patients living with allergies. We are proud to award 3 AAIR Bursaries to students in September 2017. These were

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worth £1500 to each student and provided using combined funding of £3000 from the MSc Allergy Bursary Fund together with £1500 donation from AAIR. The recipients were:

Rebecca Briggs, Specialist Dietitian in Gastroenterology and Food Allergy, Derriford Hospital, Plymouth

Aneta Ivanova, a Paediatric Allergy Nurse Consultant at Sandwell and West Birmingham Hospitals NHSFT

Hazel Millar, Allergy and Immunology Clinical Nurse Specialist, West of Scotland Anaphylaxis Service, NHS Greater Glasgow and Clyde

Many thanks to all at AAIR for the support you have given to our students. It is very much appreciated by both them, and the staff on the programme.

Yours sincerely

Judith Holloway

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### **Presentations**

Donna Davies was invited to give talks about the work at the British Thoracic Society (2017) and the European Research Society (2017). In both cases, the AAIR Charity was acknowledged for funding.

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