

## University of Birmingham Research Placements

<b>Research Supervisor</b>	Sian Faustini
<b>Description of laboratory or group</b>	Clinical Immunology Service, Institute of Immunology and Immunotherapy
<b>Number of placements available</b>	1
<b>Project Title</b>	Determining the potential universal applicability of a diurnal response to vaccination and the associated circadian immune processes (Time of Day Vaccine Study)
<b>Start Date</b>	July 6, 2020
<b>Duration of placement</b>	5 weeks
<b>Project Description</b>	<p>Vaccination programmes are a key pillar of public health strategy. Public Health England publishes the Green Book that guides the NHS for vaccination programmes in children and adults. Children are naïve to the microbes in our environment and so vaccination provides protection against first exposure. Healthy adults, through vaccination and natural infection, have immunity against microbes in our own environment but may require vaccination for travel to other parts of the world where they may be exposed to new microbes. There is a second very common reason for vaccinating adults and that is to compensate for the decline in their immune system which commonly occurs as a result of disease or its treatment (secondary immunodeficiency) and universally occurs from middle age onwards as we age.</p> <p>The influenza vaccination is carried out by GP surgeries across the UK in an annual process with adjustment of the vaccine contents each year to account for frequent changes in the flu virus structure. This flu vaccine is recommended for adults aged 65+ years and younger adults with immunodeficiency. Despite good uptake of the vaccination amongst older adults (70.5% in 2016/17) the over 65s make up the highest proportion of the influenza-related hospitalisations and mortalities. A systematic review of 31 studies on clinical influenza vaccine efficacy found that 70-90% of young healthy adults (including health care workers) generated a protective antibody titre compared with only 17-53% in older adults.</p> <p>Pneumonia is the 5th highest cause of death in the UK, with pneumococcal bacteria being the most commonly isolated organism. Pneumococcal infections affect the extremes of lifespan being most common in the under 5s and over 65s and in secondary immunodeficiency patients with acquired immunodeficiency, on immunosuppression or with major organ dysfunction. Older adults and adults with secondary immunodeficiency produce suboptimal responses to vaccination and are therefore not fully protected against vaccine preventable infection despite their increased risk. Current vaccine guidelines are pragmatic rather than evidence based for secondary immunodeficiency. Given suboptimal responses, in those most at risk, there is a pressing need to optimise current regimens. One cost effective option would be to simply fix the time of day that vaccines are given at. A previous MRC funded study found that administering influenza vaccination in the morning versus the afternoon made a difference to how well the vaccine worked (how</p>

	<p>much vaccine specific antibody was produced in the blood) (Long et al., 2016). The results showed that the vaccine worked significantly better in the morning, which provides a cost neutral and quick way to improve vaccination responses in older adults. It is not known whether this effect can be reproduced in adults with secondary immunodeficiency or whether this observation is unique to influenza or can be extrapolated to the adult pneumococcal vaccination.</p> <p>We have recruited 140 healthy adults (aged 50 years old and over) and have collected study questionnaires at baseline, day 28 post-vaccination, and year 1 post-vaccination. The student will be asked to assist with data entry and analysis of the study questionnaire data for each study participant</p>
<b>Person Requirements</b>	<p>This student will need to have experience with data entry, if possible.</p> <p>Further training will be provided on data protection/patient confidentiality, as well as Good Clinical Practice (GCP).</p>
<b>Academic Requirements</b>	<p>Working towards a BMedSci degree or an intercalated BMedSci or BSc degree.</p>
<b>Development Opportunities</b>	<p>This will be a great opportunity for a student to contribute to an exciting vaccine study that will no doubt have a direct translational impact for patients receiving pneumococcal and influenza vaccination in the UK.</p> <p>The student will receive training on data protection, patient confidentiality, and GCP with regards to the oversight of a clinical study/trial. The student will also receive support/mentoring from the Research Fellow working on the study and will benefit from advice and guidance on the use of statistical software packages such as SPSS and/or GraphPad Prism.</p>
<b>Funding</b>	<p>Students will be provided with a bursary to contribute to costs or expenses for the duration of the internship</p>
<b>How to apply</b>	<p>Please complete a brief cover letter to demonstrate your interest, along with your CV at the link below. There is also space to submit any additional files i.e. poster presentations, publications.</p> <p><a href="https://uobasops.formstack.com/forms/uobresearch2020">https://uobasops.formstack.com/forms/uobresearch2020</a></p>