

Title of PhD project / theme	<b>Is there an association between malaria and autoimmune disease in sub-Saharan African patients? An exploratory biomarker-based observational study</b>
Supervisory team	<p><b>LSHTM:</b> Dr. David Ishola (<a href="mailto:david.ishola@lshtm.ac.uk">david.ishola@lshtm.ac.uk</a>) Professor Brian Greenwood (Faculty of Infectious and Tropical Diseases)</p> <p><b>Nagasaki University:</b> Dr. Kunihiro Ichinose &lt;<a href="mailto:kichinos@nagasaki-u.ac.jp">kichinos@nagasaki-u.ac.jp</a>&gt;, Dr. Tomohiro Koga, Professor Atsushi Kawakami, (Department of Rheumatology and immunology, Postgraduate School of Biomedical Sciences), Professor Koya Ariyoshi (<a href="mailto:kari@nagasaki-u.ac.jp">kari@nagasaki-u.ac.jp</a>) (Department of Clinical Tropical Medicine)</p>
Brief description of project / theme	<p>It has long been suggested that the relative rarity of autoimmune disease (AD) in residents of Sub-Saharan African (SSA), despite the fact AD is prevalent in African populations outside of Africa. On the contrary, some infections are suggested to be associated with autoimmunity. The epidemiology of AD in SSA remains poorly elucidated, there are anecdotal suggestions that AD might be rarer in malaria endemic SSA as previously considered. We hypothesize that this could be explained by the high frequency of childhood infections such as malaria in SSA.</p> <p>This PhD project proposes to explore whether there is an association (in either direction) between infection and AD in a West African setting with a different malaria endemicity, through:</p> <ol style="list-style-type: none"> <li>1. LITERATURE REVIEWS: One to examine the evidence of association between infection and AD; and the other to collate epidemiological studies of AD in SSA.</li> <li>2. PRAGMATIC CLINICAL SURVEY: A multi-pronged clinical survey in an SSA country with a high and low malaria endemicity (Sierra Leone and The Gambia), using clinical features and selected biomarkers to identify a prevalence of AD (RA, SLE) and attempt to gain an insight into the clinical epidemiology. This would be done in a large hospital in an urban setting (Freetown, Banjul/Farafeni), via general medical clinics that cover cardiology, neurology and endocrinology patients; as well as in a rural setting (Kambia, Basse), via general out-patient clinics.</li> </ol>

	<p>3. CASE-CONTROL STUDY: A case-control study to compare the evidence of infection in AD patients with suitably matched control subjects, using memory recall of clinical information and previous medical records where available. This would also provide an opportunity to investigate the diagnostic value of biomarkers for AD in the context of malaria endemic SSA.</p> <p>It is hoped that the findings from the proposed project would provide background data for a future more definitive study, and eventually lead to pragmatic clinical trials on the care of AD patients with a focus on the SSA setting and to clarify molecular and immunological mechanisms of interactions between malaria and AD.</p> <p><i>This is an initial research idea outline, to be further developed and fine-tuned before and during the PhD project.</i></p>
<p>The role of LSHTM and NU in this collaborative project</p>	<p>The proposed project would have joint oversight from LSHTM and NU supervisors. The project fits well within existing key research areas in global health at both NU (the Postgraduate School of Biomedical Sciences and the Institute of Tropical Medicine) and LSHTM (Department of Clinical Research and the LSHTM Centre for Global Chronic Conditions). Both institutions are highly active in both infectious disease (ID) and chronic non-communicable disease (NCD) research, and this proposed project would contribute to connections across these two areas.</p> <p>In Sierra Leone and The Gambia, LSHTM has a field team with strong country partnerships and multi-method research interests in emerging infections and global health trials (Ebola vaccines), biomarker-based observational studies (follow-up cohorts and community surveys), qualitative studies, and research capacity building. The Department of Rheumatology and immunology, NU is one of the centre of RA and SLE research in Japan and has profound experiences of AD diagnosis and biomarkers. The proposed PhD project fits with and builds on these interests, and would help to extend the collaboration of NU and LSHTM into the West African region. Findings from the proposed project would be potentially valuable in developing future follow-up collaborative study proposals at both institutions.</p>
<p>Particular <i>prior</i> educational requirements for a student undertaking this project</p>	<p>The proposed project is highly multidisciplinary, with potential elements across clinical, epidemiological and laboratory sciences. Therefore, a candidate that is keen on broad-based development would be most suitable.</p> <p>Essential: A background in clinical medicine with some post-graduate medical training (to the level of MRCP, MWACP, or equivalent) in internal medicine, paediatrics, or other suitable speciality and evidence of an aptitude for research.</p>

	<p>Desirable: Some training and/or experience in rheumatology and immunology, epidemiology and/or laboratory research (with a strong willingness to acquire additional skills as may be needed). Ideally with an MSc in a relevant subject.</p>
<p>Skills we expect a student to develop/acquire whilst pursuing this project</p>	<p>The student would be exposed to global health research in a real-world setting, and would gain experience in conducting frontline field research in resource-limited circumstances as well as cutting-edge clinical practice of rheumatology in Japan.</p> <p>Literature review skills.</p> <p>Abstract and paper writing and presentation.</p> <p>Clinical epidemiological data management and analysis.</p> <p>Infection and inflammation biomarker assays.</p> <p>The mix of skills and experience to be gained/developed would depend on the final project design details.</p>