



Title of PhD project	<b>The role of the microbiome and epigenome in asthma phenotypes and asthma severity and control</b>	
Supervisor	<a href="#">Dr Lucy Pembrey</a>	LSHTM
Co-Supervisor	<a href="#">Dr Karin van Veldhoven</a>	LSHTM
Co-Supervisor	<a href="#">Professor Neil Pearce</a>	LSHTM
Brief description of project	<p>Asthma is increasing around the world, but the reasons for this are unclear. It is also apparent that the ‘standard model’, in which asthma is viewed as an allergic disease, does not explain the population patterns and time trends. Thus, it is important to investigate other potential causes and types of asthma. The objectives of this study are therefore to compare the diversity of the microbiome in the lung and epigenetic markers in the lung using samples that have already been collected in the UK, New Zealand, Brazil, Ecuador and Uganda. We will compare the microbiome and epigenetic findings by subtype of asthma, in high income and low-middle income countries, in high and low prevalence centres, and by asthma severity. These findings will be crucial in deepening our understanding of asthma, defining new subtypes, and eventually developing new treatments.</p>	
Skills we expect a student to develop/acquire whilst pursuing this project	Big data analysis, specific to microbiome and other omics.	
Particular <u>prior</u> educational requirements for a student undertaking this project	An MSc in health data science or statistics. Or an MSc in epidemiology (with strong statistics component).	
Project key words	Big data Biomarkers Asthma Microbiome Epigenomics	
Possible under 1+4 route? Master’s options identified.	No	
MRC Core Skills developed through this project	Quantitative skills Interdisciplinary skills	

MRC LID themes	Global Health Health Data Science
Further reading	<a href="#">Understanding asthma phenotypes: the World Asthma Phenotypes (WASP) international collaboration</a>  <a href="#">Epigenetics in Asthma</a>  <a href="#">Inflammatory phenotypes in patients with severe asthma are associated with distinct airway microbiology</a>  <a href="#">Airway Microbiome in Different Inflammatory Phenotypes of Asthma: A Cross-Sectional Study in Northeast China</a>