Title of PhD project / theme	**Development of a novel vaccine against leishmaniasis**
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Brief description of project / theme	This is an international collaborative project aimed to develop a novel DNA vaccine against leishmaniasis. Partners of this team involve LSHTM, Nagasaki University and German groups. Leishmaniasis is a vector-born protozoan infectious disease with wide varieties of clinical manifestations ranging from self-healing cutaneous leishmaniasis to life-threatening visceral leishmaniasis. While effective drug is available, it is costly and have significant adverse effects. Furthermore, drug resistant parasites are increasing. However, there is no vaccine available for human use. T cells are effective for the protection against leishimaniasis, since macrophages are the major target of the infection by Leishmania parasites. Our group established the DNA vaccine that is optimized for T cell immune responses and is effective against a mouse model of visceral leishmaniasis. In this project, we will perform preclinical study of this DNA vaccine against cutaneous leishimaniasis using mouse models. The effect of the immunization will be evaluated by immunological techniques as well as parasite burden and lesion size. Varieties of immunization methods will be tested to optimize the immunization conditions. At the end of this preclinical study, we will go on to phase I clinical studies.
Particular *prior* educational requirements for a student undertaking this project	Basic knowledge of immunology is required.

Skills we expect a student to develop/acquire whilst pursuing this project	Methods for the preclinical and clinical development of a novel vaccine via the international collaboration Protozoological and Immunological techniques and knowledge related to the vaccine development