The London School of Hygiene & Tropical Medicine

The London School of Hygiene & Tropical Medicine is a world-leading centre for research and postgraduate education in public and global health. Our mission is to improve health and health equity in the UK and worldwide; working in partnership to achieve excellence in public and global health research, education and translation of knowledge into policy and practice.

Founded in 1899 by Sir Patrick Manson, the School has expanded in recent years at its two main sites on Keppel Street and Tavistock Place. The School’s multidisciplinary expertise includes clinicians, epidemiologists, statisticians, social scientists, molecular biologists and immunologists, and we work with partners worldwide to support the development of teaching and research capacity.

Research income has grown to over £85 million per year from national and international funding sources including the UK government, the European Commission, the Wellcome Trust and philanthropic sources.

Education programmes have grown to more than 1,000 London-based Master’s and Research students, 2,900 studying Master’s by distance learning and 1,000 on short courses and continuous professional development. We have also launched a series of free online courses, and more than 15,000 people registered on the first of these, Ebola in context. Our staff, students and alumni work in more than 150 countries in government, academia, international agencies and health services.

The School is highly ranked in various university league tables. It was named the world’s leading research-focused graduate school in the Times Higher Education World Rankings in 2013. In 2014, it was ranked in the top 10 universities in the world for citation rate by the new EU-supported U-Multirank database, fourth in the world for impact in medical sciences by the Leiden Ranking and third in the world for social science and public health in the US News Best Global Universities Ranking. According to the results of the UK government’s Research Excellence Framework, published in December 2014, the School was ranked second overall (after the Institute for Cancer Research) on the key measure of impact.

Faculty of Infectious and Tropical Diseases

The Faculty of Infectious and Tropical Diseases encompasses all of the laboratory-based research in the School as well as that on the clinical and epidemiological aspects of infectious and tropical diseases. It is headed by Brendan Wren, who is Professor of Microbial Pathogenesis. The range of disciplines represented in the faculty is very broad and inter-disciplinary research is a feature of much of our activity. The spectrum of diseases studied is wide and there are major research groups with a focus on malaria, tuberculosis, HIV/AIDS and other sexually transmitted diseases, vaccine development and evaluation, and vector biology and disease control. The Faculty is organised into four large research departments.
comprising: Pathogen Molecular Biology, Immunology and Infection, Disease Control, and Clinical Research. There is close interaction between scientists in different research teams. The Faculty has strong overseas links, which provide a basis for field studies and international collaborations in developed and developing countries. The teaching programme includes MSc courses, taught in-house and by distance learning, which are modular in structure, a variety of short-courses and an active doctoral programme (PhD and DrPH). For further information on the Faculty see: http://www.lshtm.ac.uk/itd/index.html.

**Department of Clinical Research (Head: Professor Philippe Mayaud)**

The Department of Clinical Research addresses infectious diseases of major public health importance in developing countries. Activities include trials of new therapies, vaccines and educational interventions; the development of new diagnostic tests; studies to elucidate the immunological and molecular correlates of pathogenesis and protective immunity, and to identify genetic polymorphisms conferring protection or susceptibility to infectious diseases; health services research which aims to identify the most efficient and cost-effective way to deliver health care; and health policy analysis. In addition to our many overseas collaborations, we have close links with the Hospital for Tropical Diseases, in purpose-built accommodation on the main UCL Hospital campus, five minutes walk from the School. The Wellcome Trust Bloomsbury Centre for Global Health Research is based in the Department, and supports Clinical Fellows at all levels, most of whom are based overseas.

The Department's main research interests include HIV and related infections; in particular, the interaction between HIV infection and tuberculosis, and other sexually transmitted diseases; malaria; trachoma; leprosy; diagnostic tests for resource limited settings; eye health; disability; and travel medicine.

**Department of Disease Control (Head: Professor Joanna Schellenberg)**

This multidisciplinary Department includes epidemiologists, entomologists, anthropologists and social scientists, clinical scientists, public health engineers and geographers. This range of expertise provides us with a battery of tools for focusing on the control of diseases that are insect-borne, water-borne or associated with poor hygiene – mostly in developing countries. Much of the research can be categorised as: evaluating disease control interventions; investigating implementation strategies - including working with the private sector; understanding the factors underlying household behaviour in relation to family health; or determining how control resources can be targeted most efficiently. Particular attention is paid to research directed at current health policy issues, including the gap between policy and practice.

The Department's Environmental Health Group plays a leadership role in research and operational support for hygiene behaviour change, household water supply and sanitation. Three key programmes which contribute to the work of the Group are the DFID funded consortium Sanitation and Hygiene Applied Research for Equity (SHARE), the Hygiene Centre (Unilever) and the improved sanitation randomised, controlled field trial jointly funded by the Bill & Melinda Gates Foundation and International Initiative for Impact Evaluation (3ie).

The Department houses the largest research group in LSHTM working on malaria control. Ongoing projects include: research capacity strengthening in Africa through the work of the Malaria Capacity Development Consortium (MCDC); novel approaches to combating malaria in pregnancy (MiP) in both Africa and India; a number of projects which develop and evaluate delivery mechanisms to improve ACT access, targeting, safety and quality, all funded by the ACT Consortium. In addition,
staff are involved in studies of Seasonal Malaria Chemoprevention (SMC) in West Africa and are supporting work on the large Phase 3 clinical trial study of the RTS,S malaria vaccine in children.

The Department is world-leading in applied entomology and insect borne diseases, and has provided a testing service for control products for over 20 years. The Arthropod Control Product Test Centre Arctec provides access to the Department’s valuable mosquito colonies and in-house facilities for testing of repellents, insecticides and after-bite treatments. Its entomological field sites in Tanzania, Benin, The Gambia and Kenya are involved in a variety of vector borne disease control trials. The PAMVERC alliance between LSHTM and African partners work in partnership with WHO and the manufacturing industry on product development and evaluation under laboratory and semi-field conditions and in community trials.

Staff from the Department lead on studies investigating how meningococcal meningitis is spread in Africa and the impact of a new serogroup meningococcal A vaccine on reducing transmission (MenAfriCar Consortium). Staff are also assisting in the evaluation of the impact of introduction of a pneumococcal conjugate vaccine into the routine EPI programme of The Gambia and in the initial testing of a new pneumococcal protein vaccine in the same area.

Also based with the Department is the IDEAS (Informed Decisions for Actions) project, which aims to improve the health and survival of mothers and babies through generating evidence to inform policy and practice. The Department also includes a major grouping of researchers using spatial analysis in public health.

**Department of Immunology and Infection (Head: Dr Colin Sutherland)**

Research in the Department of Immunology and Infection centres on analysis of the host response to infection at the molecular, cellular and population levels. The goals are to develop a greater understanding of basic mechanisms of immunological protection versus pathology, and to apply this knowledge to the development of immunological interventions and the identification of correlates of immune status. Our work involves application of state-of-the-art cellular and molecular approaches to the in vitro analysis of pathogen-host cell interactions, to in vivo studies in models and to the study of immunity at the population level in disease endemic areas. Main areas of research include the regulation of acute and chronic inflammation; macrophage-pathogen interactions; cellular pharmacology; the production of cytokines during innate and acquired immune responses; T-cell function and antigen recognition; the mechanisms of immunopathology; the development of vaccines; and delivery systems for vaccines and drugs.

Current research includes the role of acute phase proteins in resistance to infection, homeostasis and inflammatory disease, mechanisms of macrophage activation, control of cytokine synthesis and mammalian lectin interactions (J. Raynes); intracellular trafficking and secretory pathways of cells of the immune system (T. Ward); the role of innate responses in resistance to the bacterial pathogens, *Mycobacterium tuberculosis* and *Burkholderia pseudomallei*, activity and regulation of natural killer cells and their effect on macrophage activation and recruitment, regulation of chemokine receptors during infection and granulomatous tissue responses in the lung against *Cryptococcus neoformans* and *Mycobacterium tuberculosis* (G. Bancroft); longitudinal studies on immune correlates of protection against malaria in Uganda and a cluster-randomized trial on the impact of targeted interventions on malaria transmission in Kenya and Mali (T. Bousema); identification and evaluation of novel drugs and formulations for the treatment of leishmaniasis, malaria, human African trypanosomiasis (sleeping sickness) and American
trypanosomiasis (Chagas disease). This research includes projects on miltefosine, AmBisome and topical paromomycin as well as on drug – immune response interactions and PK PD relationships (S Croft); correlates of protection against tuberculosis and studies of BCG vaccination, human CD8+ T-cell responses to mycobacterial antigens and synthetic peptides, use of whole blood assays in immuno-epidemiology (H. Dockrell); innate and adaptive immunity to malaria including activation of natural killer cells, cytokine regulation in clinical immunity and immunopathology, regulation of antibody production and immunoglobulin class switching (E. Riley); induction and regulation of innate and adaptive immune responses to malaria pre-erythrocytic stage and blood stage parasites (J. Hafalla); using anti-malarial antibodies as a marker of malaria exposure & assessment of the use of sero-epidemiology to monitor and target malaria control measures www.seromap.com (C. Drakeley) transmission of Plasmodium falciparum malaria including antibody responses to gametocyte-infected erythrocyte surface antigens, effect of gamete antigen variability on transmission, gametocyte sequestration and development and gametocyticidal drug therapy (C. Sutherland); drug discovery for helminthic diseases notably schistosomiasis (Q. Bickle); impact of concomitant viral, bacterial, protozoal and helminth infections on induction of immune responses and immunopathology and T cell regulation and induction of mucosal immune responses during intestinal nematode infections (H. Helmby); anti protozoal chemotherapy with focus on anti-leishmanial drug discovery and development including drug combinations and drug delivery systems, anti-leishmanial vaccine development and immunotherapies, models for drug and vaccine development and the role of macrophages in context of anti-leishmanial drug treatment (K Seifert); the identification and evaluation of novel drugs and drug delivery systems for leishmaniasis, trypanosomiasis and malaria, interaction between antiparasitic drugs and the immune response (V. Yardley)

Host response to vaccination and development of improved vaccine strategies for protection against tuberculosis, growth inhibition assays, T-cell responses and vaccine trial immune monitoring (H. Fletcher) Dissecting red blood cell invasion pathways in the malaria parasite Plasmodium knowlesi (R. Moon)

Department of Pathogen Molecular Biology (Head: Professor David Conway)

Research in the Department of Pathogen Molecular Biology focuses on the molecular biology and genetics of pathogens and interaction with their hosts, to improve understanding and control of infectious diseases. This includes: (i) determining mechanisms of infection of globally important viral, bacterial and parasitic pathogens; (ii) deciphering the genetic diversity of disease agents in natural populations to understand epidemiological and functional processes, (iii) studying immune evasion mechanisms of particular disease agents, (iv) exploiting pathogens as model biological systems, and (v) developing practical applications including improved diagnostic tests and characterisation of vaccine candidates or drug targets.

Studies in the Department include analyses of malaria parasites (Plasmodium spp), Chagas disease (Trypanosoma cruzi), African sleeping sickness (Trypanosoma brucei), amoebic dysentery (Entamoeba), the Leishmania species, bacterial food borne pathogens (Campylobacter jejuni and Yersinia enterocolitica), gastric ulcers/cancer (Helicobacter pylori), pseudomembranous colitis (Clostridium difficile), plague (Yersinia pestis), paddy field melioidosis (Burkholderia pseudomallei), Tuberculosis (Mycobacterium tuberculosis), Pneumonia (Streptococcus pneumoniae), Bluetongue viral disease of livestock, Herpesviridae, SARS, hemorrhagic fever viruses, and enteric rotaviruses that cause significant diarrhoeal disease.
The overall aim of our research is to understand the complex and dynamic ways by which pathogens modulate virulence and interact with the human host. Such a holistic approach will vastly increase the scope for the rational of design of long-term intervention strategies to reduce the burden of infectious disease. In recent years such a mission has been significantly enhanced by the availability of whole genome sequences. Members of the Department are involved in several pathogen genome projects, and post genome studies which facilitate understanding of complex parasites. The interpretation and exploitation of this basic information is the platform for numerous new avenues of research on pathogenesis, epidemiology and the evolution of virulence.

**Teaching**

The School offers 19 one year full-time taught courses leading to the Master of Science (MSc) degree of the University of London and the Diploma of the London School of Hygiene and Tropical Medicine (DLSHTM). The Faculty of Infectious and Tropical Diseases runs or contributes substantially to ten of these courses and the “Immunology of Infectious Diseases” course is run from within the Department of Immunology and Infection. In addition, the Faculty is responsible for the three-month Diploma in Tropical Medicine and Hygiene (DTM&H), the Diploma in Tropical Nursing and offers a range of specialist short courses lasting usually one or two weeks. Five MSc courses are also offered by Distance-based Learning, including one on Infectious Diseases.

**Research Training**

The School offers two doctoral training programmes. The MPhil/PhD degrees are designed for those who wish to go on to a full time research career. The DrPH is directed towards those who expect their careers to be more in the practice of public health.
JOB DESCRIPTION

Post: Research Fellow
Grade: 6
Responsible to: Dr Teresa Cortes
Department: Pathogen Molecular Biology Department

Project information

The project is funded by an ERC Starting Grant from the European Research Council and the post holder will be key in studying the molecular mechanisms that allow selective translation in *Mycobacterium tuberculosis*, the causative agent of human tuberculosis (TB), and assess to what extent they contribute to biological adaptation in humans. The post-holders will join a UK leading research institution in tuberculosis research, supported by a dedicated TB Centre, with over 50 staff involved in all aspects of the pathogen and disease, including excellent genetics and genomics support and Biosafety Containment Level 3 facilities. The successful applicant will take part in a novel research project that will use cutting-edge technologies to investigate how translational regulation may explain many of the unusual properties of this important and generally intractable pathogen. The post-holder will have the opportunity to contribute to publications in high impact international scientific journals, and may have access to further professional or academic development through staff development courses, teaching and research.

Main duties and responsibilities:

- To plan, direct and undertake research to ensure completion of the objectives within the project.
- To design and develop an appropriate research methodology.
- To work with M. tuberculosis under Biosafety Level 3 Containment facilities.
- To keep meticulous records of experimental details, analyse results and write up results of research experiments.
- To monitor and incorporate research and technical advances related to the project.
- To publish original research in high-impact peer-reviewed journals and present research in relevant meetings.
- To assist in the daily maintenance of the laboratory environment.
- To play an active role in laboratory and departmental scientific meetings and journal clubs.
- To adhere to the School and Departmental Safety Guidelines relating to good laboratory practices and the handling of pathogenic materials.
- To contribute to the Faculty teaching program, up to 10% of your time per annum.
- To provide training support to PhD and MSc students associated with the group.
PERSON SPECIFICATION

Essential Requirements:

- PhD in biology, biochemistry or related area.
- Successful experience in molecular biology and microbiology as well as in general laboratory techniques.
- Demonstrable experience in protein biochemistry.
- Good knowledge and understanding of research approaches relevant to the project.
- Evidence of efficiency and high productivity in previous research.
- Demonstrable ability to work effectively and harmoniously with others within a team.
- Strong ability in scientific communication including writing and personal presentation.

Desirable Requirements:

- Experience in working with Mycobacterium tuberculosis.
- Experience of working in a Biosafety Containment Level 3 laboratory.
- Successful experience in ribosome profiling.
- Expertise in mass-spectrometry.

SALARY AND CONDITIONS OF APPOINTMENT

The post is funded by the European Research Council up to 31 January 2019 and is available from 1st August 2016. Salary is on the Academic Pathway Grade 6 scale from £37,477 to £42,560 per annum (inclusive of London Weighting). Annual leave entitlement is 30 working days per year for all staff (pro-rata for part-time staff). In addition, staff are entitled to public holidays and Director’s days on which the School is closed.

ASYLUM AND IMMIGRATION

The School will comply with the Immigration, Asylum and Nationality Act 2006, which requires all employees to provide documentary evidence of their legal right to work in this country prior to commencing employment. Candidates will be required to bring their passport (and visa if applicable) to interview so that it can be copied and verified.

Applications from candidates who require sponsorship to work in the UK will be considered alongside other applications. Applicants who do not currently have the right to work in the UK will have to satisfy UK Visas & Immigration regulations before they can be appointed.

Further information about Certificate of Sponsorship and eligibility to work in the UK, can be found at: www.ukba.homeoffice.gov.uk/employers/points

APPLICATIONS

Applications should be made online via our website at http://jobs.lshtm.ac.uk. The reference for this post is ITD-PMBD-03. Applications should also include the names and email contacts of 2 referees who can be contacted immediately if shortlisted. Closing date for the receipt of applications is 12 May 2016. Online applications will
be accepted by the automated system until 10pm on the closing date. Any queries regarding the application process may be addressed to jobs@lshtm.ac.uk.