

## LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

### FACULTY OF INFECTIOUS AND TROPICAL DISEASES

#### DEPARTMENT OF CLINICAL RESEARCH

#### RESEARCH ASSISTANT – TRANSLATIONAL RESEARCH TO REDUCE MORTALITY FROM CNS INFECTIONS IN AFRICA (based in southern Africa)

<b>Job Title:</b>	Research Assistant
<b>Department:</b>	Clinical Research
<b>Faculty:</b>	Infectious and Tropical Diseases
<b>Location:</b>	Africa (Zimbabwe / Botswana / Malawi) with periods in London
<b>FTE:</b>	1.0 FTE
<b>Grade:</b>	Academic Pathway Grade 5 (Research Assistant)
<b>Accountable to:</b>	Professor Joe Jarvis

### GENERAL INFORMATION

#### 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, the School has expanded in recent years at its two main sites on Keppel Street and Tavistock Place. Our staff, students and alumni work in more than 150 countries in government, academia, international agencies and health services.

Research income has grown to more than £180 million per year from national and international funding sources including UK government and research councils, the European Union, the Wellcome Trust, Gates Foundation and other philanthropic sources.

Our diverse research talents, skills and experience, underpin our position as a leader in public and global health. These range from the molecular to the global, the theoretical to the applied, the analytical to the political. Our staff are conducting research in more than 100 countries.

We have 3,000 staff based all around the world with core hubs in London and at the MRC Units in The Gambia and Uganda, which joined LSHTM in February 2018. Our outstanding, diverse and committed staff make an impact where it is most needed - deploying research in real time in response to crises, developing innovative programmes for major health threats, or training the next generations of public and global health leaders and researchers.

Working in partnership is central to achieving our mission. Our strategic collaborations in the UK and across high-, middle- and low-income countries deliver health and socioeconomic benefits across the world, especially in the most disadvantaged communities.

LSHTM is also a member of the M8 Alliance of Academic Health Centers, Universities and National Academies, the Association of Schools of Public Health in the European Region, and the Consortium of Universities for Global Health.

We deliver research-led educational programmes to future health leaders, managers and researchers across the world. We have more than 1,000 face-to-face Master's and Doctoral students, 3,000 studying by distance learning, and 1,000 each year on short courses and continuous professional development. Our free online courses are studied by more than 55,000 participants globally.

LSHTM performs strongly in various global university league tables. In the 2018 Shanghai World Ranking we placed 151-200 overall, and ranked 3rd in public health, 40th in clinical medicine, and

76th in human biology. In the US News Best Global Universities Ranking 2019, we ranked ninth in the UK overall and 13th in the world in the fields of social sciences and public health in the 2019 QS World University Rankings.

In 2017, the inaugural Center for World University Rankings by Subject placed LSHTM first in the world for tropical medicine research, second for parasitology and seventh for infectious diseases, public, environment and occupational health and social sciences and biomedical. LSHTM ranked first in Europe for research impact in sciences, based on its proportion of publications that belong to the top 1% most frequently cited publications, in the 2018 CWT Leiden Ranking.

LSHTM was named University of the Year 2016 by Times Higher Education and awarded a Queen's Anniversary Prize for Higher and Further Education in 2017 in recognition of our response to the 2014 Ebola epidemic in West Africa. (LSHTM does not appear in the Times Higher Education World University Rankings as universities are excluded if they do not teach undergraduates).

We seek to foster and sustain a creative and supportive working environment based upon an ethos of respect and rigorous scientific enquiry. We embrace and value the diversity of our staff and student population and seek to promote equality as an essential element in contribution to improving health worldwide.

LSHTM is one of around 20 specialist institutions that receive institution specific funding from the Office for Students (OfS). This funding recognises the additional costs that LSHTM incurs because of its unique range of teaching, specialist facilities, and the scale of its contributions to national and international agencies.

## **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 Alison Grant, who is **Professor of International Health**. 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 three large research departments comprising: Clinical Research, Disease Control, and Infection Biology. 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 David Mabey)***

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 James Logan)***

The Department of Disease Control is a multidisciplinary, cross-cutting department, operating in a global context and committed to excellence in research, innovation, learning and engagement. We have an outstanding reputation for internationally competitive research and teaching excellence, with demonstrable impact in the control of diseases, worldwide. Our diverse scientific staff comprises entomologists, epidemiologists, mathematical modellers, geographers, public health engineers, hygiene specialists, social scientists, engineers, statisticians and clinical scientists. We also have a strong team of project administrators, coordinators, managers, and communication specialists, who provide expert support to our research programmes in the UK and overseas. We are a highly collaborative Department, with extensive partnerships and collaborations with researchers from many countries and organisations around the world, as well as internally, with multiple School Departments. Our work cuts across several School Centres such as the Vaccine Centre, the Malaria Centre, Centre for Evaluation and the MARCH Centre.

Our staff play influential roles as consultants and key advisors to organisations including the WHO, CDC, Malaria Consortium, Public Health England, Department of Health, DFID, Bill and Melinda Gates Foundation, the Royal Society, Research Councils, Academy of Medical Sciences, the World Bank, Governments and private sector manufacturers and innovators, amongst many others. Our range of expertise provides us with an impressive set of tools for addressing the control of diseases that are insect-borne, water-borne or associated with poor hygiene – mostly in low- and middle-income countries. Much of our research is directed at current health policy issues and addressing gaps between policy and practice.

***Department of Infection Biology (Head: Professor Chris Drakeley)***

The Department of Infection Biology brings together pathogen molecular biology and immunology and infection research across the School. The Department benefits from state of the art facilities and strong collaborations, many of which are with partners in disease endemic countries.

We study the molecular biology and genetics of pathogens and interaction with their hosts, to improve understanding and control of infectious diseases and 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 rationale 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. The Department is 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.

Our research in 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. We also conduct translational research for the development and evaluation of diagnostic approaches to identify disease foci and monitor drug resistance.

## JOB DESCRIPTION

We are seeking to appoint a Research Assistant to work with on a project entitled “Translational Research to Reduce Mortality from CNS Infections in Africa”. The project is directed by Professor Joe Jarvis, who is based full-time in Gaborone, Botswana. The project team also includes an Assistant Professor and a Clinical Research Fellow.

Infections of the central nervous system (CNS) are major causes of mortality in low- and middle-income countries. In sub-Saharan Africa CNS infections are a leading cause of death in HIV-infected adults, accounting for up to 30% of early mortality in ART programmes. Detailed understanding of the aetiology of adult meningitis in this setting is of critical importance to inform diagnostic pathways and treatment strategies. Novel affordable point-of-care diagnostic tests for meningitis, with the ability to detect multiple pathogens simultaneously, are urgently needed to facilitate diagnosis, screening and prevention strategies. Effective treatments are required to improve patient outcomes. The project seeks to improve outcomes of adult meningitis in high HIV-prevalence African settings. Specific objectives are to:

- (1) Develop a meningitis surveillance network using enhanced molecular diagnostics and metagenomic sequencing to describe meningitis aetiology, and determine the clinical impact of concurrent CNS pathogens;
- (2) Validate novel multiplex and rapid meningitis diagnostic technologies;
- (3) Evaluate novel short-course liposomal amphotericin B based treatment for HIV-associated CM in a multicentre phase-III randomized controlled trial (the AMBITION-cm study);
- (4) Investigate host genetic susceptibility to cryptococcal meningitis performing HLA genotyping, KIR genotyping, and a genome wide association study (GWAS) with linked immune phenotyping in a cohort of HIV-infected individuals with CM and controls.

The proposed research builds on ongoing meningitis surveillance and diagnostic studies in Botswana, and is closely aligned to an ongoing EDCTP / Joint Global Health Trials funded Phase III cryptococcal meningitis treatment trial in Botswana, South Africa, Zimbabwe, Malawi, and Uganda (the AMBITION-cm study - <http://blogs.lshtm.ac.uk/ambition/>). The research findings will enable diagnostic and treatment strategies across Africa to be updated, leading to significant improvements in outcomes from meningitis. The results of the trial have the potential to provide a highly effective treatment option for cryptococcal meningitis that is practical and accessible in Africa with the potential to prevent many thousands of deaths. In addition, advances in the understanding of the pathophysiology of cryptococcal infection will inform future patient-targeted immune modulation therapy.

The post-holder will be recruited to undertake laboratory aspects of the studies and will be based at one of the AMBITION study sites in Botswana, Zimbabwe or Malawi, with occasional travel to London (for between one to three months per year). It is a requirement that the post-holder register for a PhD at LSHTM, which will be fully funded as part of the post. The successful candidate will also be expected to support the clinical and laboratory teams in cross-cutting activities between the NIHR funded project, the AMBITION-cm clinical trial, and related ongoing projects. There will be substantial scope for the post-holder to perform challenging laboratory experiments and statistical analyses, to develop analytical skills, and to develop and answer novel research questions within the overall project and through further research grant applications.

We are therefore seeking to recruit a laboratory scientist with a strong interest in infectious diseases, experience in molecular diagnostics for infectious diseases, experience in running immunological assays (such as Luminex and flow-cytometry), interest in developing skills in transcriptomics, genomics, and bioinformatics, the ability to work independently with remote supervision, and a meticulous approach to research. The post-holder will be responsible for the day-to-day laboratory activities of the NIHR meningitis projects, overseen by the London-based Assistant Professor, and for delivery of all aspects of evaluation, sample testing and analysis that take place during the study.

## **Main Activities and Responsibilities**

### **KNOWLEDGE GENERATION**

1. Undertake high-quality research and scholarship, leading to a PhD based on work undertaken during the NIHR funded projects;
2. Contribute to peer-reviewed publications, including as lead author;
3. Manage small grants or elements of larger grants, ensuring compliance with good practice in relation to the conduct of research, the ethics policy and other relevant School policies.
4. Run pan-bacterial ribosomal 16S gene sequencing protocol, (b) pan-fungal Internal Transcribed Spacer (ITS1) sequencing, and (c) virus detection using a panel of quantitative PCRs and deep RNA-sequencing, in CSF samples collected from African patients to determine meningitis aetiology.
5. Perform DNA extraction and genotyping using the new Illumina African genotyping chip in 850 cryptococcal meningitis cases and controls.
6. Perform HLA genotyping and KIR genotyping using PCR and high-throughput sequencing on a subset of samples.
7. Determine the *Cryptococcus*-specific gene expression (transcriptome) signature in vitro using whole blood stimulated with *Cryptococcus* mannoprotein and heat-killed *C. neoformans*, and in vivo using patient samples, through RNA extraction and sequencing.
8. Assess functional immune correlates using a multiplex panel of blood biomarkers immune response factors that are being developed by collaborators at LSHTM, plus cytokine analysis of CSF.
9. Assist with bioinformatic and statistical analyses of above experiments.
10. Contribute to the overall scientific endeavour of the research group through development and implementation of research / sub-studies that address the current research programme, develop new plans within the group, and assist with other ongoing projects within the group.
11. Attend team meetings to discuss progress and to ensure milestone delivery and have regular contact with the Principal Investigator and with collaborators.
12. Maintain detailed and accurate records of all experimental methods, protocols used and results obtained during their time of employment in sufficient detail to allow critical evaluation of the experiments by others, and to allow experiments to be repeated.
13. Contribute to the daily management of the laboratory, order consumables and general supplies required for the project in agreement with the Principal Investigator(s), and ensure appropriate records are kept.

### **EDUCATION**

1. Contribute to the improvement of the quality of the School's education by participating in the development of new and updated learning and teaching materials or approaches;
2. Develop protocols and training materials for public sharing;
3. Participate in the supervision and training of other lab members;
4. Contribute to supervision of BSc and MSc students as appropriate to qualifications and experience;
5. Ensure that supervised students maintain detailed and accurate records of all experimental methods, protocols, results and data analysis used during their project and leave all lab books, computer files, methodology, raw data and details of experimental analysis in a clear and coherent format when they finish their projects.

### **INTERNAL CONTRIBUTION**

1. Undertake activities that support the Department, Faculty or the School.
2. Participate in the School's PDR (Personal Development Review) process.
3. Strengthen links between research groups within the Departments of Clinical Research (CRD), and between CRD and Immunology of Infectious Diseases (IID) through cross-cutting research activities and platform development;
4. Provide support to the NIHR meningitis project research team and other CRD/IID research teams;

## **EXTERNAL CONTRIBUTION**

Demonstrate good external citizenship by supporting the external academic and practice communities, and by contributing to learned society/conference events, journal and grant reviews etc.;

1. Build close working relationships with partners at the African study sites (Botswana Harvard AIDS Institute Partnership, University of Zimbabwe, UNC Project Malawi)
2. Build close working relationships with colleagues and collaborators at LSHTM
3. Engage with funders, stakeholders in diagnostics communities and similar;
4. Develop opportunities for public engagement and communications;

## **PROFESSIONAL DEVELOPMENT AND TRAINING**

1. Apply for and, if accepted, undertake a doctoral degree through LSHTM. Funding for tuition fees is available as part of the NIHR grant that funds this position.
2. Undertake and successfully complete the mandatory training required by the School as appropriate to the role.
3. Keep up-to-date with the latest research/thinking in the relevant academic field and with changes to pedagogic practice within the School and more generally.

## **PERSON SPECIFICATION**

### **ESSENTIAL CRITERIA:**

1. A Masters-level qualification in microbiology, biotechnology, immunology or related subject
2. Relevant experience working as a laboratory scientist in an African clinical research setting
3. Experience of running immunological assays including ELISAs and flow cytometry
4. Experience of molecular research techniques such as DNA extraction and PCR
5. Experience of working on GCP compliant studies.
6. Experience of managing research data and familiarity with statistical (e.g. STATA or R) analysis and data management software.
7. Excellent computing skills, including working knowledge of Microsoft Word, Excel, PowerPoint.
8. Excellent written and spoken English.
9. A highly professional and methodical approach to work, with proven attention to detail.

10. Able to work independently and as part of a multicultural and multidisciplinary scientific team.
11. Able to work collaboratively and effectively with colleagues and students with varying levels of expert knowledge/ experience.
12. Willingness to be based in Zimbabwe, Botswana and/or Malawi with travel to London (for between 1 - 3 months annually)

### **DESIRABLE CRITERIA**

1. Relevant experience of meningitis research in high HIV-prevalence settings
2. Experience of providing laboratory support to cryptococcal meningitis studies
3. Experience in DNA and/or RNA library preparation and sequencing.

### **SALARY AND CONDITIONS OF APPOINTMENT**

This full-time post is funded by the UK National Institute for Health Research (NIHR) for a period of 36 months, starting on or shortly after 1 January 2020. The post will be on the Academic Grade 5 (Research Assistant) scale, with a starting salary of £34,854 per annum (inclusive of London Weighting). The post will be subject to the LSHTM terms and conditions of service. Annual leave entitlement is 30 working days per year, pro rata for part time staff. In addition to this there are discretionary "Director's Days". Membership of the Pension Scheme is available.

Applications should be made on-line via our website at <http://jobs.lshtm.ac.uk>. Applications should also include the names and email contacts of 2 referees who can be contacted immediately if shortlisted. Online applications will be accepted by the automated system until 10pm of the closing date. Any queries regarding the application process may be addressed to [jobs@lshtm.ac.uk](mailto:jobs@lshtm.ac.uk). Please quote reference ITD-CRD-2019-35

The supporting statement section should set out how your qualifications, experience and training meet each of the selection criteria. Please provide one or more paragraphs addressing each criterion. The supporting statement is an essential part of the selection process and thus a failure to provide this information will mean that the application will not be considered. An answer to any of the criteria such as "Please see attached CV" will not be considered acceptable. Please note that if you are shortlisted and are unable to attend on the interview date it may not be possible to offer you an alternative date.

### **ASYLUM AND IMMIGRATION STATEMENT**

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 email a copy of their passport (and visa if applicable) to HR prior to their interview and if appointed will be asked to bring the original documents in to be copied and verified before their start date.

Applicants will be required to have the right to work in the country the post is based (or be eligible to apply for a suitable work visa).

## **Academic Expectations: Research Assistant**

Examples of expected types of activities are listed; the selection of activities will vary from year to year and not all activities in each category would necessarily be done in any one year. The statement in each shaded heading summarises the general expectations for contributions in each category. Given the nature of employment as a Research Assistant, it is expected that most activity will focus on knowledge generation, but some activity in other areas is desirable and will be required for career progression.

<b><i>Knowledge generation: High quality support for, and contribution to, research</i></b>
<i>Research and scholarship</i> <ul style="list-style-type: none"><li>• Undertaking research, as directed by line manager</li><li>• Contributions to funding applications including supporting more senior staff in completing applications</li><li>• Contributing to peer-reviewed outputs as expected by the subject area/discipline in terms of types of output</li><li>• Poster/oral presentations at conferences</li><li>• Social media contributions such as twitter, blogs, web-based media or webinars</li></ul> <i>Doctoral degree supervision</i> <ul style="list-style-type: none"><li>• None expected though involvement in advisory activities/roles or provision of practical skills training is encouraged where relevant</li></ul> <i>Research management, leadership and support</i> <ul style="list-style-type: none"><li>• Effective management of own time and activities</li><li>• Supporting the administration of projects he/she is employed on, eg taking meeting minutes</li></ul> <i>Professional development</i> <ul style="list-style-type: none"><li>• Appropriate courses and other development activities, referenced to RDF</li><li>• Especially for lab-based disciplines: where the length, nature and funding source of the position permit, to apply for and, if accepted, undertake a doctoral degree (if not already acquired).</li></ul>
<b><i>Education: Participation in educational activities<sup>1</sup></i></b>
<i>Teaching and assessment</i> <ul style="list-style-type: none"><li>• Limited participation in some aspects of the School's Education Programme or education outreach activities e.g. contributions to taught courses, research methods training, mentoring school pupils on outreach programmes</li></ul> <i>Educational development and innovation</i> <ul style="list-style-type: none"><li>• Limited contributions to educational innovations or developments, e.g. helping to update the content or delivery of a course or module</li></ul> <i>Educational leadership and management</i> <ul style="list-style-type: none"><li>• None expected</li></ul> <i>Professional development</i> <ul style="list-style-type: none"><li>• Formal study/training and/or other activities that develop educational knowledge and expertise, referenced to UKPSF</li></ul>
<b><i>Internal contribution: Support to the academic environment in the Department or beyond</i></b>
<i>Internal citizenship</i> <ul style="list-style-type: none"><li>• Supporting Department/Faculty/Centre/School events or special interest groups; organising seminars/lab meetings/journal clubs; group or departmental social organising; support to Athena Swan activities; support to external partnerships</li></ul> <i>General leadership and management roles</i>

<sup>1</sup> it is accepted that some RA roles and/or funding make it difficult to give time to Educational activities, but some degree of engagement is encouraged

- None expected but credit can be given if undertaken

***External contribution: Support to the external academic community***

*External citizenship*

- Involvement in journal or book reviews, if opportunities arise
- Sharing examples of good practice (e.g. contributing to discipline-specific interest group or professional bodies)

*Knowledge translation and enterprise: not expected but options include*

- Collection of evidence of research impact for impact case studies (e.g. policy records, correspondence with policy makers, media highlights)
- Engagement with policy/practice/industry/NGO communities and with the general public