IMPERIAL

Research Assistant / Associate in Infectious Disease Modelling and Health Economics (Maternity Cover)

Department/Division/Faculty:	Department of Infectious Disease Epidemiology. School of Public Health. Faculty of Medicine
Campus/Location:	White City Campus (Hybrid)
Job Family/Level:	Research Job Family, Research Assistant or Research Associate* (Research salary scale)
Responsible to:	Dr Lilith Whittles
Line management for:	N/A
Key working Relationships (Internal):	Dr Alba Halliday, Prof Azra Ghani, Dr Hugo Turner, Dr Nora Schmidt
Key Working Relationships (External):	Multiple collaborators – predominantly immunologists
Contract type:	This post is a full-time, fixed-term contract for 12 months (**maternity leave cover**). The expected start date is 04th January 2027.

Purpose of the Post

This post is funded by the Advanced Research and Invention Agency (ARIA) as part of its Sustained Viral Resilience programme, which aims to develop a new class of broad-spectrum antiviral prophylactics through modulation of the innate immune system. The successful candidate will contribute to research on modelling the potential effects of these interventions within individuals and their wider population health and economic impact.

Activities may include modelling interactions between viral replication and immune responses to predict changes in susceptibility, viral clearance, symptoms and infectiousness; exploring how these changes affect transmission and disease burden under different deployment strategies; and evaluating the resulting health benefits, costs and cost-effectiveness. The balance of activities will be agreed according to the successful candidate's experience and project priorities. We welcome candidates with experience in within-host modelling, health economics or transmission dynamics; experience across all three areas is not required.

The postholder will work closely with mathematical modellers, epidemiologists and immunologists at Imperial College London and collaborating institutions, contributing to the translation of experimental findings into predictions of clinical and epidemiological impact. At Research Associate level, the postholder will take responsibility for planning and delivering agreed modelling activities, in consultation with the Principal Investigator. At Research Assistant level, the postholder will contribute to these activities with appropriate supervision.

Key Responsibilities

Research Duties:

- Take forward agreed modelling and analytical activities across the study of infection within individuals and the assessment of population health and economic impact, maintaining continuity during the maternity-cover period. The balance of work will reflect the postholder's experience and project priorities.
- Contribute, as appropriate to the agreed work plan, to within-host models of viral replication and immune responses, transmission dynamic models, and health economic analyses of intervention benefits, costs and cost-effectiveness. Work with experienced colleagues when contributing to an unfamiliar area.
- Identify, review and synthesise relevant experimental, clinical, epidemiological and economic evidence. Work with collaborators to interpret findings, identify data needs and assess which model assumptions and mechanisms the available evidence can support.
- Apply appropriate statistical inference and parameter estimation methods, including Bayesian approaches where relevant, to inform and calibrate models. Conduct sensitivity and uncertainty analyses to assess the robustness of predictions.
- Work with colleagues to connect analyses of within-host infection, population-level transmission and health economic impact, sharing model outputs, assumptions and uncertainty estimates.
- Maintain well-documented, reproducible research code and accurate records of analyses, and contribute to open-source modelling tools. Check the validity and reliability of data, code and model outputs.
- Agree priorities and deliverables for the cover period with the line manager, document progress and outstanding questions, and prepare a clear handover of models, code and analyses.
- Present findings to collaborators and contribute to scientific publications, quarterly progress reports to research sponsors and conference presentations.
- Participate in Group research meetings, internal seminars and relevant workshops, and develop effective working relationships with colleagues and collaborators.

In addition, at Research Associate level:

- Take responsibility for planning and delivering agreed modelling and analytical activities within the postholder's areas of expertise, reviewing progress and priorities with the line manager and relevant colleagues.
- Lead the preparation of manuscripts and research reports arising from the agreed modelling work, in collaboration with the project team.

- Provide scientific guidance to colleagues and contribute to the supervision of students or research assistants where this forms part of the agreed work plan and is proportionate to the cover period.
- Contribute modelling input to relevant research proposals where appropriate and consistent with the agreed priorities for the appointment.

Other Duties:

- To undertake any necessary training and/or development.
- To undertake appropriate administration tasks.
- To attend relevant meetings.

Where Imperial or funder conditions necessitate, you will be required to complete timesheets for your work on projects in a timely manner.

Person Specification

Requirements Candidates/post holders will be expected to demonstrate the following:	**Essential (E)/ Desirable (D)**
Education	
Research Associate: Hold a PhD in mathematical biology, epidemiology, applied mathematics, statistics, health economics or a closely related discipline, or equivalent research, industrial or commercial experience. **Candidates who have not yet been officially awarded their PhD will be appointed as Research Assistant.* **Research Assistant:** A first / masters degree (or equivalent) in in mathematical biology, epidemiology, applied mathematics, statistics, health economics or a related quantitative discipline.	E
Experience	
Practical experience within a research environment and / or publication in relevant and refereed journals	E (Associate)
Experience developing and analysing mathematical, computational or statistical models in a relevant biological, epidemiological or health economic context	E
Experience applying statistical inference, model calibration or parameter estimation methods	E
Experience programming in R, Python or a comparable scientific programming language	E
Experience in transmission dynamic modelling of infectious diseases	D
Experience developing mechanistic models of within-host infection or immune responses	D
Experience in health economics, including economic evaluation or cost-effectiveness modelling	D

Experience using Bayesian inference methods	D

Knowledge

Understanding of quantitative modelling approaches relevant to within-host infection, transmission dynamics or health economic evaluation	E
Understanding of infectious disease biology and epidemiology	E
Knowledge of innate and adaptive immune responses to viral infection	D
Knowledge of research methods and statistical procedures	E

Skills & Abilities

Ability to critically evaluate scientific literature and integrate findings into mathematical models	E
Ability to work independently and collaboratively within a multidisciplinary research team	E
Experience developing reproducible, well-documented scientific software	D
Creative approach to problem-solving	E
Excellent verbal communication skills and the ability to deal with a wide range of people	E
Excellent written communication skills and the ability to write clearly and succinctly for publication	E
Ability to prioritise own work in response to deadlines	E

Further Information

Please note that job descriptions cannot be exhaustive, and the post-holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

Our values are at the root of everything we do and everyone in our community is expected to demonstrate Imperial:

- Respect
- Collaboration
- Excellence
- Integrity
- Innovation

Employees are also required to comply with all Imperial policies and regulations.

We are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender reassignment, sex, or sexual orientation. You can read more about our commitment on our webpages.

Imperial is a proud signatory to the San-Francisco Declaration on Research Assessment (DORA), which means that in hiring and promotion decisions, we evaluate applicants on the quality of their work, not the

journal impact factor where it is published. For more information, see https://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-evaluation/

Imperial believes that the use of animals in research is vital to improve human and animal health and welfare. Animals may only be used in research programmes which are ultimately aimed towards finding new treatments and making scientific and medical advances, and where there are no satisfactory or reasonably practical alternatives to their use. Imperial is committed to ensuring that, in cases where this research is deemed essential, all animals in our care are treated with full respect, and that all staff involved with this work show due consideration at every level. Find out more about animal research at Imperial.

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