NIHR GLOBAL HEALTH RESEARCH GROUP PHD STUDENTSHIPS

Overview

Background: Timely access to accurate diagnostic tests is fundamental to treatment and control of human diseases, but more than half of the population of sub-Saharan Africa do not have access to essential diagnostic tests. Digital diagnostics have potential to transform diagnostic access and quality in sub-Saharan Africa. Digital diagnostics use lab-on-chip technology to detect analytes. They generate, process, and transmit digital data, with real-time connectivity, providing results to the user and data for disease surveillance. We have developed a modular digital molecular diagnostic platform which has the sensitivity of PCR in a handheld, easy-to-use format, suitable for point-of-care diagnosis in many African healthcare settings. We have developed a series of tests for different diagnostic situations including detection of malaria parasites and other pathogens, and distinguishing causes of childhood febrile illness. Data from each diagnostic test is transmitted to a smart phone which provides the user interface and secure onwards transmission of data. We envisage that this technology could revolutionise the diagnostic ecosystem in many settings in sub-Saharan Africa.

The Research Group: More information about the Digital Diagnostics for Africa Network is available on our website (https://www.digitaldiagnostics4africa.org/). The current project involves 40 partners across 13 organizations in 7 countries with expertise ranging from electronic and design engineering to health systems research, and from molecular microbiology to mathematical modelling.

PhD Fellowships: We have funding for 10 PhD fellowships to form a cohort of the most talented African students who will work closely together to develop and evaluate the potential of digital diagnostics to tackle major infectious disease challenges in sub-Saharan Africa. Together with an expert international faculty of advisors, our PhD fellows will develop an evidence-base to support the development, implementation, and impact of digital diagnostic technology in African health systems. They will receive a bespoke program of training to develop the skills and networks that will allow them to become future pioneers of this breakthrough technology. PhD fellowships are intended to commence on 1st August 2022 and will have a duration of up to 48 months. The funding will cover tuition fees, stipend, and project related costs such as travel and training. A full list of the PhD fellowship projects is shown in Table 1.

Eligibility

Applicants must be nationals of an African country and be suitably qualified to enter a PhD program at the host University. We expect that successful applicants will have a track-record of academic excellence, with a first class or upper second class (or equivalent) undergraduate degree and a relevant Masters degree (or clinical qualification). Applicants who do not have these qualifications but believe that they have equivalent relevant research or industrial experience should explain this clearly in their letter of motivation. For some projects additional eligibility criteria apply.

Process

Timeline

Applications open: 8th April 2022, 12pm BST (British Summer Time)

Applications close: 13th May 2022, 5pm BST (option to extend to 20th May if few applications)

Shortlisting completed: 27th May 2022

Interview invitations sent by: 1st June 2022

Interviews: week commencing 13th June 2022, on-line

Final selection meeting: week commencing 20th June 2022

Provisional outcome notifications: by 1st July 2022

Application process

Applicants must submit all three of the following documents by email to the Digital Diagnostics for Africa Network Project Manager, Ms. Francesca Piffer, f.piffer@imperial.ac.uk

1. Completed application form

2. Curriculum Vitae (maximum 2 pages)

3. Letter of Motivation (maximum 1 page)

Applications must be written in English. If English is not your first language, please state this in your letter of Motivation. Further details of the requirements for each document are given below

Application form. This is used for administrative and eligibility purposes and will not form part of the primary assessment process.

- Disclaimer / agreement for data processing, storage, and contact in accordance with GDPR
- Name, Gender, Date of Birth
- Nationality, any other Nationalities held
- PhD projects (numbers) that you would like to be considered for, in rank order (you can be considered for more than one project). See **Table 1** for project numbers and details.
- Project partner countries in which you would be prepared to work
- Contact Address, phone number, email etc
- Referee contact details (we may contact them before interview)

Curriculum vitae. Maximum 2-pages. Use this to showcase your achievements, skills and experience. Ensure that it includes your name as written on the application form. Do not include your picture or other personal information like address or phone number. Please ensure you include the following with dates

- Education and academic qualifications, with dates (most recent first)
- Prizes and honours
- Relevant work experience
- Relevant technical or professional skills
- Membership of Professional Organisations
- Publications and presentations at National or International meetings, highlighting those most relevant to the topic of your application

Letter of Motivation. Maximum 1 page. Use this to tell us why you are excited about studying for a PhD related to digital diagnostics, and why you think you have the appropriate qualifications and skills to undertake one or more of the PhD projects. Please be as specific as possible when describing examples of your most relevant skills and experience.

Assessment and Selection process

Shortlisting. We will use the Curriculum Vitae and Letters of Motivation to shortlist applicants who can demonstrate that they have outstanding academic potential, and are scientifically curious, highly motivated, hard-working, professional, and excellent team players, with a strong interest in the potential of digital diagnostics technologies. We expect PhD fellows to demonstrate that they have knowledge, skills and some experience relevant to the project(s) they wish to undertake, or that they could easily gain relevant knowledge and skills.

Interviews. Interviews will be conducted on-line. We will send further details to the candidates shortlisted for interview. We will require proof of identity, proof of qualifications, and any other relevant documentation to be presented at the interview. Interviews will be conducted by a diverse and gender balanced panel from within the network, including representatives from host institutions. We will try to offer flexibility in interview dates and times, but due to the number of applications and posts we may not be able to accommodate some requests.

Although eligibility varies by project, our selection panel will aim to ensure our cohort of fellows is diverse, and we will strive to ensure gender balance and representation of students from countries with fewer opportunities for PhD funding, whilst also ensuring all fellows meet our rigorous selection criteria.

After interview. Successful applicants will receive provisional confirmation of our intention to award them PhD Fellowship funding. **This does not mean that they have been accepted onto the PhD programme at the relevant University**. Applicants must **also** apply and be accepted to study at the University where the Fellowship will be held (see **Table 1**) before funding can commence.

Bespoke Training for Digital Diagnostics PhD Fellows

Training and capacity strengthening is embedded at the heart of this project, equipping our PhD Fellows with the skills and insight to transcend disciplinary boundaries, generating underpinning scientific evidence and engaging with stakeholders at all levels to advocate for transformative digital diagnostic technologies. The cohort of 10 Digital Diagnostics PhD Fellows will work closely together throughout the project to learn from- and support each through their inter-related projects, and will receive training and mentorship from our expert international faculty of researchers and practitioners, in addition to training and supervision offered through their own Universities. Building on our successful network model, we will have virtual cohort meetings every two weeks. These meetings will allow time for students to network, collaborate, and share experiences and progress, with facilitation from the Research Group training lead, and will provide short formal training in topics on a co-developed curriculum. We will address both generic professional development (eg. time management, writing for publication, grant writing, team working, communication and influencing, interview skills) and skills specifically needed for the projects (eg. effective community engagement; identifying and interviewing key informants; leading focus groups; understanding the digital

ecosystem etc.). Each student will have additional travel and training allowances to enable them to undertake research and / or specific training courses as appropriate to their project and needs, and we anticipate brining all students together in years 1 and 3, to cement their relationships with one another.

Table 1. Available PhD Projects. Please use the project number (#) to indicate preferences in your application form

#	Project title	Countries in which work will be conducted	Base location	University awarding PhD	Eligibility	Supervisors	Supervisor's email address
1.	Evaluation of the detection of asymptomatic carriage of malaria parasites in cross-sectional community screening surveys using a point of care digital diagnostic	The Gambia and Burkina Faso	The MRC Gambia Unit @ LSHTM (The Gambia)	London School of Hygiene and Tropical Medicine (LSHTM)	Student from any African country	Umberto D'Alessandro Halidou Tinto	udalessandro@mrc.gm
2.	Evaluation of the detection of malaria parasite species and anti-malarial resistance in uncomplicated malaria patients using a point of care digital diagnostic	Ghana	University of Ghana (Accra)	University of Ghana	Student from Ghana or any African country*	Linda Amoah Gordon Awandare	levaamoah@noguchi.ug.edu.gh
3.	Evaluation of the detection of malaria in pregnancy and anti-malarial drug resistance using a point of care digital diagnostic	Zambia	Zambia (Tropical Disease Research Centre)	University of Cape Town	Zambian student Must be clinically qualified	Christine Manyando	
4.	Evaluation of detection of P. falciparum and P. vivax malaria and G6PD deficiency using a point of care digital diagnostic	Sudan	University of Khartoum	University of Khartoum (PhD in Biochemistry or Molecular Biology)	Student from Sudan Medical and health studies board registration	Abdelrahim Mohamed Muzamil Mahdi	abdelrahim_osman@yahoo.com mahdi@iend.org
5.	Evaluating a digital diagnostic to distinguish between causes of childhood febrile illness	Ghana and The Gambia	University of Ghana	University of Ghana	Student from Ghana or any African country*	Samuel Duodu Effua Usuf Aubrey Cunnington	saduodu@ug.edu.gh Effua.Usuf@lshtm.ac.uk

6.	Developing and evaluating a digital diagnostic for environmental pathogen detection	Kenya	Masinde Muliro University of Science and Technology, Kenya	Masinde Muliro University of Science and Technology, Kenya (PhD in Microbiology)	Student from Kenya	Anthony Sifuna Jesus Rodriguez-Manzano	asifuna@mmust.ac.ke j.rodriguez-manzano@imperial.ac.uk
7.	Evaluating digital diagnostic implementation through national and international health policy & health systems analysis	Ghana	University of Ghana	University of Ghana (PhD in Public Health)	Student from Ghana or any African* country	Julie Balen Alfred Yawson Shunmay Yeung	aeyawson@ug.edu.gh
8.	Evaluating digital diagnostic implementation through local health systems and service analysis	The Gambia and Ghana	The MRC Gambia Unit @ LSHTM (The Gambia)	London School of Hygiene and Tropical Medicine (LSHTM)	Student from any African country	Shunmay Yeung Julie Balen Luc de Witte	l.p.dewitte@hhs.nl
9.	Co-design and development of user interfaces for digital diagnostics	The Gambia and Ghana	University of Ghana	University of Ghana (PhD in Computing)	Student from Ghana or any African country*	Jamal-Deen Abdullai Talya Porat Weston Baxter	t.porat@imperial.ac.uk
10.	Integration and application of data from digital diagnostics for disease surveillance and control	Ghana	University of Ghana	University of Ghana (PhD in Computing)	Student from Ghana or any African country*	Jamal-Deen Abdullai Darlington Akogo Lucy Okell Ceire Costelloe	l.okell@imperial.ac.uk

*Any two of the five PhDs at University of Ghana are available to non-Ghanaian African students