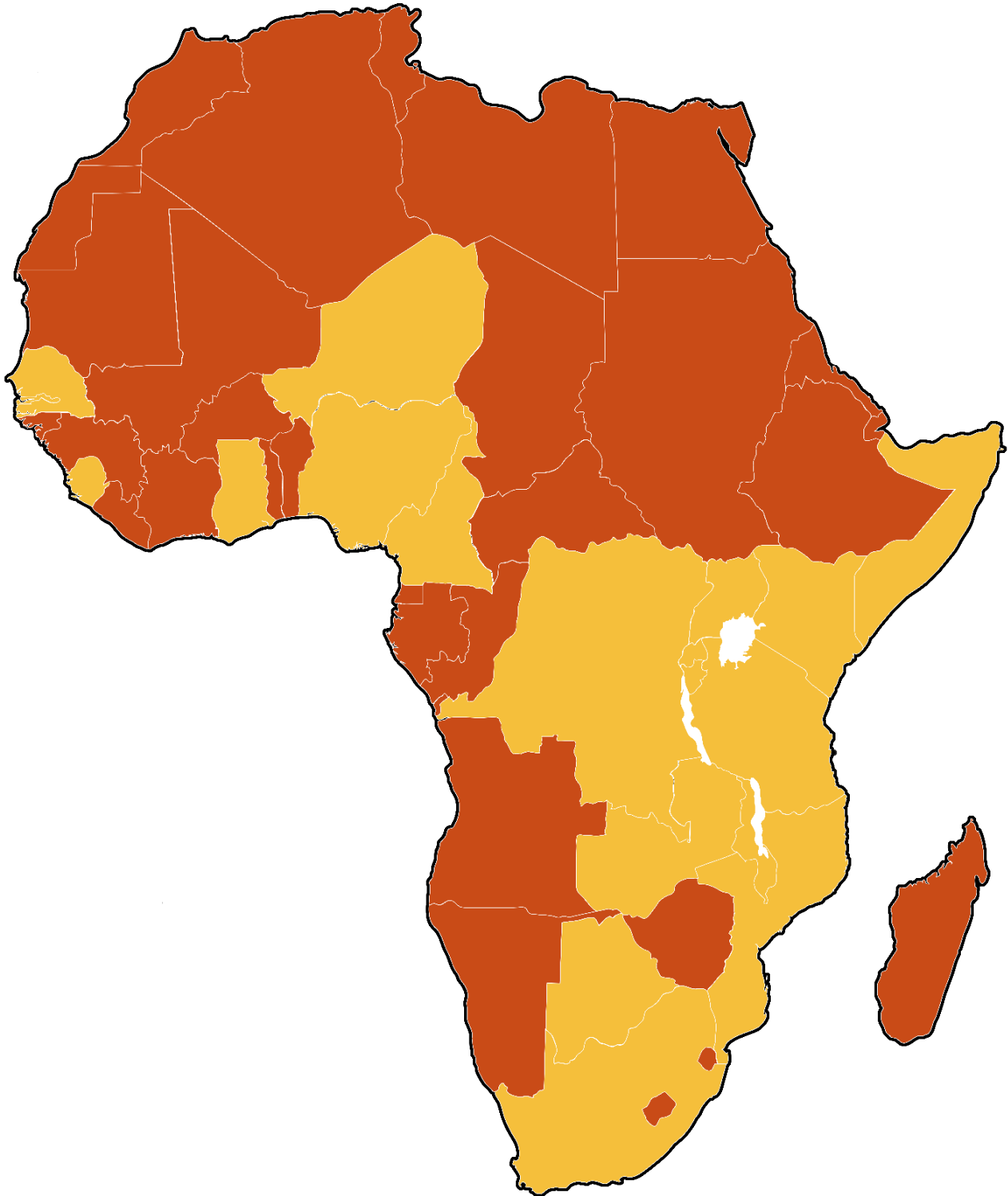


An overview of the Cambridge-Africa Programme

Supporting innovative, internationally-competitive and sustainable African research

2018



UNIVERSITY OF
CAMBRIDGE



CAMBRIDGE
AFRICA

Key facts

- Partners in 50 African institutions, across 18 countries
- Regional hubs in Ghana and Uganda
- 40 fields of research in health, food security, education and more
- Research management training in the African hubs
- A network of over 200 Cambridge collaborators
- Support for more than 40 African PhD Fellows in Africa and Cambridge
- Support for 75 Africa-based postdoctoral Fellows
- Initiated more than 150 new African-Cambridge research partnerships
- Over 170 publications by African research Fellows
- Live, interactive, video-linked lectures from Cambridge to Africa
- Support worth £4 million from the University of Cambridge
- £7.5 million in external funding into the Cambridge support Programme
- £25 million in external funding directly to African partners

Foreword



“There has been tremendous economic and development progress across sub-Saharan Africa over the last twenty years. But, to accelerate this progress and gain maximum well-being and social benefit in the context of firmly established knowledge-led societies, Africa needs to maximise the talents and support the ambitions of millions of its best young researchers. Unfortunately, there are still too few internationally competitive researchers in Africa’s universities and research institutions to mentor the numbers of new, young research leaders that Africa needs to catch-up with the world’s most prosperous countries. The Cambridge-Africa Programme was initiated 10 years ago to make a contribution to bridging this short-term mentorship gap, whilst avoiding the pitfalls of dependency and loss of indigenous talent that so often occurs when resource privileged researchers interact with the less privileged world.

Cambridge-Africa has always been a bottom-up programme. It was initiated by a few individual researchers, but it has become established and grown at phenomenal speed. It has developed to include the widest possible scope in terms of research areas and disciplines, so that Cambridge-wide expertise and resources can be made available to support African partners in response to their needs and priorities. The most crucial factor in the programme’s development was gaining the trust of our partners and buy-in from our academic community. This remains Cambridge-Africa’s core strength.

Universities that aspire, like Cambridge, to be leading international centres of academic and research excellence, have a responsibility to support and promote the development and well-being of students, academic colleagues, and institutions wherever there is a need in the world. However, building these relationships with Africa over the last 10 years has very significantly enriched Cambridge’s own academic environment, benefitting both our students and academic researchers. It is our hope that mutually beneficial engagement between African and Cambridge researchers will further deepen and flourish over the next 10 years, with African universities taking their place amongst the leading academic research institutions in the world.”

A handwritten signature in blue ink, consisting of a stylized, cursive name that appears to be 'David Dunne'.

**Professor David Dunne
Director of the Cambridge-Africa Programme, University of Cambridge, UK**

The Cambridge-Africa Programme

The African continent is home to >16% of the global population, yet its researchers produce less than 1% of the global research output. Africa needs indigenous world-class research-led universities to identify, analyse and provide African solutions for the continent's challenges. Universities are needed as development hubs and agents of change, devising sustainable African strategies for economic, social, scientific and cultural success, and to produce leaders in all aspects of civil society.

A major barrier to fulfilling these crucial roles is the shortage, even in some of the best sub-Saharan universities, of enough internationally-competitive researchers with access to the best facilities and techniques. This means that there are insufficient research leaders to provide mentorship and training for the next generation of young researchers, or to sustain competitive research environments. Scientific infrastructure, research training and mentorship are often under-resourced, making it difficult to apply modern technologies and medical advances to increase health and well-being.

International research-led universities like Cambridge are well-placed to provide the short to medium term support that African institutions need to bridge this current mentorship and resource gap. The challenge is to design and deliver programmes that overcome the obstacles facing talented young African researchers, while avoiding 'brain drain' and the dependency created by Western institutions when they provide the most talented Africans with research and training opportunities that are disconnected from Africa.

The University of Cambridge's response to this need is the Cambridge-Africa Programme

The Cambridge-Africa Programme is the Cambridge-wide initiative to make its expertise, resources and influence readily available to support African research, on African priorities, by Africans, in Africa. It contributes to mentoring the next generation of African researchers to fulfil their potential as global leaders, in self-sustaining research environments, in internationally-competitive African universities and research institutes.

Established in 2008, Cambridge-Africa emerged from individual, long-term, collaborations between Cambridge and African researchers. It is now a range of coordinated, multidisciplinary and interdisciplinary initiatives for high impact collaborative research with capacity building as the essential common theme. The Cambridge-Africa team and partners in Cambridge and Africa support

the programme's fundraising, governance and implementation, so that in 10 years it has become a leading initiative for supporting African researchers to combat health, economic and social challenges in Africa and globally.

The Cambridge-Africa model: Training for African researchers, on African priorities, in Africa

The Programme generally awards high-quality, personalised, postdoctoral or PhD research fellowships to the best academically-talented young academic staff in African universities. These Fellows and their research are carefully matched to highly experienced Cambridge research leaders to provide mentorship and collaborative support, both in visits to Cambridge, and in their home institutions. Generally, PhDs are registered in the African Fellow's home university, with the Cambridge mentor complementing the work of the local supervisors. This ensures that African researchers, research institutes and universities can access Cambridge's resources, and enables Cambridge-Africa to proactively partner and support local research facilities, research networks and initiatives.





Disciplinary breadth

The Programme extends to all subject areas and disciplines, but particularly health, biological and physical sciences, engineering, mathematics, humanities and social sciences, as well as research management and administration. Cambridge-Africa fellowships, scholarships and initiatives currently take place in 18 sub-Saharan African countries (see map on pages 6-7). However, Cambridge researchers and students have links with colleagues in at least 36 different countries in Africa.

A collaborative network

Cambridge-Africa supports African partnerships and initiatives with a robust network of Cambridge collaborators. In addition to ~200 Cambridge academics who are mentoring/engaging with African colleagues, there are numerous Cambridge, or Cambridge-affiliated projects, centres, initiatives and international consortia supporting African research. Cambridge-Africa supports these activities to add value, and strengthen links, between Cambridge and African partners.

Cambridge-Africa's networking and learning opportunities extend beyond each fellowship/scholarship, as they receive ongoing support for their career development, research programme and funding. African Fellows have been awarded joint research grants with their Cambridge collaborators during and after their fellowships. On-going partnerships have increased South-South networking with Cambridge support, promoting thriving African universities, businesses and communities.



Programme reach across the continent

MUII
Uganda

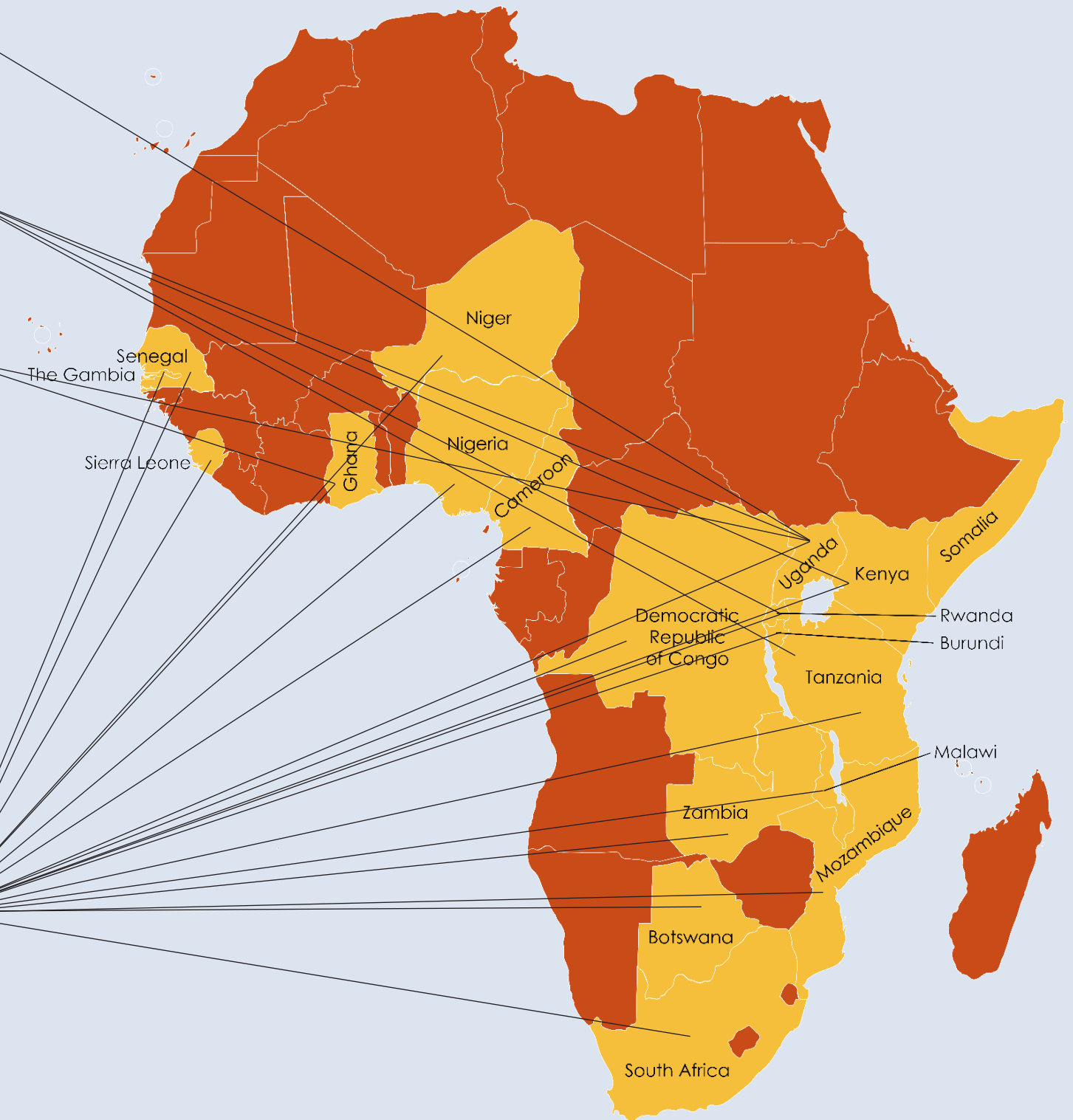
THRIVE
Kenya, Rwanda, Tanzania and Uganda

CAPREx
Ghana and Uganda

WT-CCGHR
Ghana, Kenya, Nigeria, Sierra Leone, Tanzania, The Gambia
and Uganda

Cambridge Africa PhD Scholarships
Ghana, Niger, Nigeria, Somalia, South Africa and Uganda

ALBORADA Research Fund
Botswana, Burundi, Cameroon, DR Congo, Ghana, Kenya,
Malawi, Mozambique, Niger, Nigeria, Rwanda, Senegal,
Sierra Leone, South Africa, Tanzania, The Gambia, Uganda
and Zambia



**Trust-Cambridge Centre
Health Research**

**Cambridge Africa PhD
Scholarship Scheme**

**Cambridge Africa
ALBORADA Research Fund**

Partnerships and initiatives

Cambridge-Africa provides unique learning experiences and partnerships through a variety of initiatives:

Makerere University-UVRI Infection and Immunology Research Training Programme (MUII), 2008-20:

The MUII initiative (which became part of the Wellcome Trust-funded DELTAS Africa Programme in 2015 and was renamed MUII-plus), aims to establish a centre of excellence for infection and immunity research in Uganda. The Programme primarily supports PhD and postdoctoral Fellows from Makerere University in Uganda and the Uganda Virus Research Institute (UVRI). Researchers from the University of Cambridge and the London School of Hygiene and Tropical Medicine (LSHTM) provide co-supervision and mentorship to the Fellows when based in Africa, and during visits to the UK. To date, four PhD and two postdoctoral African Fellows have been matched to Cambridge researchers for mentorship.

Cambridge-Africa's partnership with MUII-plus has also resulted in the initiation of a unique, new, contribution from the University of Cambridge through the beaming of live, interactive, multidisciplinary seminars by Cambridge academics into masters-level courses in Uganda, via videoconference. Since March 2017, 25 two-hour seminars have been given by academics from the University of Cambridge, the Wellcome Sanger Institute and the Babraham Institute.

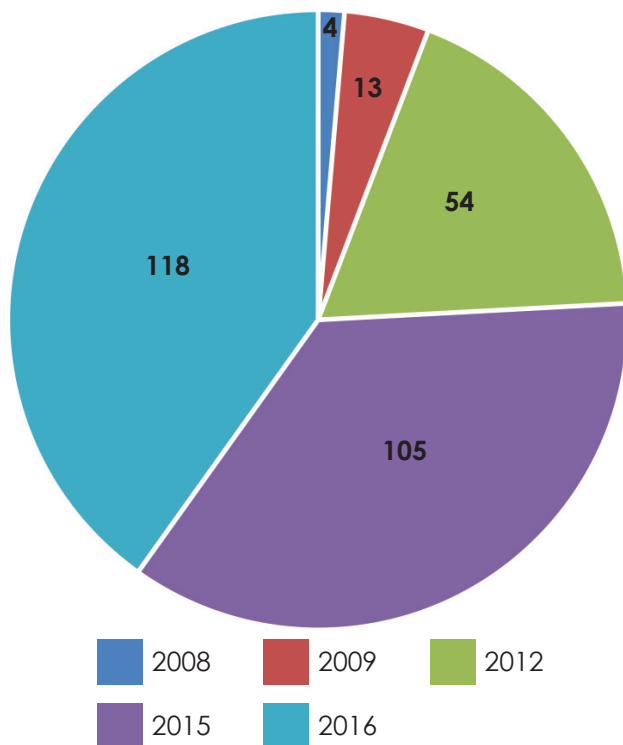
Training Health Researchers into Vocational Excellence in East Africa (THRiVE), 2009-21:

Also now a Wellcome Trust-funded DELTAS Africa Programme, this initiative aims to establish a regional network of research excellence - a community with the critical mass to address East African health priorities. There are currently six African universities and research institutions in the THRiVE Consortium: the International Centre of Insect Physiology and Ecology – icipe in Kenya; Makerere University, Gulu University and the UVRI in Uganda; Kilimanjaro Christian Medical University College and the National Institute for Medical Research (Mwanza) in Tanzania. (The National University of Rwanda was a partner from 2009-2015.) Researchers from Cambridge and the LSHTM also provide co-supervision and mentorship to the African Fellows. Fourteen THRiVE PhD and eight postdoctoral Fellows are linked to Cambridge researchers.

Cambridge-Africa Partnership for Research Excellence (CAPREx), 2012-18:

Funded by the Carnegie Corporation of New York and the Isaac Newton Trust, this initiative equips African academics with the skills, resources, networks and vision to become internationally-competitive and successful researchers. CAPREx brings 10-15 African postdoctoral Fellows from the University of Ghana and Makerere University in Uganda to Cambridge each year, working in close partnership with

Growth in Number of African PhD/Postdoctoral Researchers Supported by Cambridge-Africa



Cambridge academics in a wide range of subject areas. Sixty two African fellows have been collaborating with Cambridge researchers. Three more are to be connected.

From 2013-16, CAPREx also contributed to tailor-made research management and administration training at the partner universities in Ghana and Uganda. Staff at the University of Cambridge's Research Operations Office designed the training package in collaboration with African partners, and conducted the training in Africa to reach a wide group of participants. Selected African personnel were also awarded fellowship visits to Cambridge each year, to undergo training in research management and administration processes and for work-shadowing opportunities. This important intervention has underpinned key advances in institutional research and academic career development made by the CAPREx partnership so far.

The Cambridge-Africa ALBORADA Research Fund, 2012-26:

As a result of a generous, multi-million pound philanthropic donation from The ALBORADA Trust, this Fund was created to support a range of research collaborations within the Cambridge-Africa Programme. Small grants enable researchers from Cambridge and sub-Saharan African institutions to initiate and/or strengthen

collaborations, to travel between Cambridge and Africa, to organise relevant workshops/courses in Africa, and to purchase equipment for use in Africa. Since 2012, the Fund has supported ~150 Cambridge-Africa partnerships in 18 sub-Saharan African countries, to address key challenges in Africa in subject areas ranging from anthropology to zoology.

The Wellcome Trust-Cambridge Centre for Global Health Research (WT-CCGHR), 2013-18: Funded by the Wellcome Trust, the WT-CCGHR was established in 2013. It capitalises on the extensive basic biomedical and health-related research capacity across many Departments and research institutes at Cambridge and the Wellcome Sanger Institute, and uses these to support research capacity building and knowledge exchange partnerships.

The WT-CCGHR is organised to have special focus on three research themes: *Maternal, Neonatal and Reproductive Health* (focusing on links with Mulago Hospital and Makerere University in Uganda, and interacting with the UVRI and the Cambridge Global Health Partnerships), *Infectious Diseases* (particularly parasitic and neglected tropical diseases), and *Non-communicable Diseases* (including cardiovascular disease and diabetes).

Cambridge Africa PhD Scholarships, 2015-20: Funded by the University of Cambridge and the Cambridge Trust, this scheme is to support 25 (five per year for five years) outstanding applicants from sub-Saharan African countries to study for PhDs at the University of Cambridge. There are no restrictions on subject areas, for these PhDs. However, preference is given to applicants proposing to work on projects that focus on African priorities, and to those who have links to African institutions.

The first 15 scholars are from Ghana, Niger, Nigeria, Somalia, South Africa and Uganda. Their research projects are linked to archaeology, chemistry, development studies, education, engineering, gender studies, history, land economy, pathology, plant sciences, sociology, veterinary medicine and virology.



Examples of research projects supported by Cambridge-Africa

Health, Infection and Immunity

Including:

- Bioinformatics
- Breast and cervical cancers
- Sickle cell disease
- Genome sequencing and editing
- Helminthiasis
- Immunogenetics of pre-eclampsia
- Malaria
- Medication errors and adverse drug reactions
- Mental health (e.g. war-related)
- Nutrition
- Schistosomiasis
- Staphylococcus
- Trypanosomiasis
- Virology (HIV, Rotavirus, Norovirus)

Biotechnology, Chemistry, Development, Economics & Engineering

Including:

- Chemistry - organic and synthetic
- Demography
- Entrepreneurship
- Graphene research
- History of economic policy-making
- Income mobility
- Land economy
- Materials science
- Mobile money technology
- Nano-engineered water filtration
- Oil spillage and environmental remediation
- Road construction
- Solar technology
- Urbanisation: impact and policy



Culture, Governance, Community & Social Welfare

Including:

- African literature
- Citizenship in post-conflict societies
- Conservation and tourism
- Death penalty
- Gender studies
- Human resource retention in local government
- Language studies
- Peace building
- Social protest and democratic process

Education

Including:

- Distance education
- Gender and mathematics
- Impact on infant care and feeding
- Implementation of technology
- Leadership for learning
- Quality assurance systems
- Science curriculum
- Supporting disabled children
- Teacher education and mentoring

Food Security (plant & animal)

Including:

- Diseases and pests
- Genetic diversity
- Improving crop varieties
- Soil improvement



Case Study

Woman and child health

Programme case study: maternal-fetal health

Sub-Saharan Africa suffers from the highest regional maternal mortality rate, with 547 maternal deaths per 100,000 live births in 2015, and an annual decline of only 0.1%. The statistics vary for different African countries (e.g. 343 for Uganda, 138 for South Africa and 789 for South Sudan in 2015). However, in stark contrast, the average rate in developed countries was 14 in 2015.

Dr Annetee Nakimuli became involved with the Cambridge-Africa Programme at the start of her PhD studies in 2008. She was then a Lecturer at the Department of Obstetrics and Gynaecology at Makerere University in Uganda, and a member of staff at Mulago Hospital in Kampala. Through the Programme (MUII Initiative), Annetee was partnered with Professor Ashley Moffett from the Department of Pathology and visited Cambridge each year for research training, mentoring and collaboration. The devastating levels of pre-eclampsia mortality and morbidity she saw at Mulago Hospital motivated her to conduct PhD research to gain a better understanding of the underlying causes.

“Pre-eclampsia is a life-threatening condition which affects about one in ten people in Africa—more in particularly poor places such as Kampala’s Mulago District, where I practice as a clinician. We found that a combination of variable immune system genes associated with pre-eclampsia are far more prevalent in Ugandan women. My research to understand the pathogenesis of pre-eclampsia, and the immunological mechanisms regulating successful pregnancy, can save the lives of these mothers, and thousands of others across the globe.”

Upon completing her four-year PhD, Annetee was awarded a two-year MUII postdoctoral fellowship to conduct further research, continuing with Professor



Moffett as her Cambridge mentor. She also returned to clinical practice and lecturing. Ten years on, Annetee is now a MUII-plus Research Group Leader and is therefore receiving research training and support to develop her expanding research group. She is also now the Head of Mulago Hospital's Department of Obstetrics and Gynaecology. Makerere/Mulago and Cambridge are now seeking ways to build on this highly productive project, to establish a dedicated Maternal Health Research Centre in Mulago that would have international importance (see page 18).

Other examples of mother and child health projects supported include:

- **Dr Allen Kabagenyi and Dr Alice Reid:** Stalling high fertility rates in Uganda: is low contraceptive prevalence responsible?
- **Dr Dora Pereira and Dr Mohammad Ilias Hossain:** A novel nano-iron supplement (IHAT) to safely combat iron deficiency and anaemia in young children. Clinical trial in The Gambia.
- **Dr Moses Galukande, Dr Peter Campbell and Professor Mike Stratton:** Breast cancer among Ugandan women: molecular sub types, delays in diagnosis, risk factors and survival.
- **Dr Philippa Prentice and Professor Shane Norris:** Infancy lipidomic profiles, breast milk fat intake and infancy growth cohorts in South Africa.
- **Dr Gail Goldberg and Ms Florence Nabwire:** The effects of exposure to antiretroviral drugs during pregnancy and lactation on maternal bone health, lactation performance and infant growth, in urban Ugandans.

Case Study

Improving food security

Programme case study: agriculture and nutrition

'African sleeping sickness' (Trypanosomiasis) infection remains one of the major constraints on cattle productivity in sub-Saharan Africa, with a significant effect on the cattle populations in Ghana. A unique collaboration between Dr Theresa Manful (CAPREx postdoctoral Fellow, 2013-14) at the University of Ghana and Dr Mark Carrington, Cambridge Department of Biochemistry, is analysing the epidemiology of lifetime infections with trypanosomes in individual cattle in Ghana.

Animal trypanosomiasis, caused by different species of trypanosomes, affects both domestic and wild animals in sub-Saharan Africa. Theresa is using molecular fingerprinting to identify individual trypanosome genotypes and then to characterise the epidemiology of the trypanosome populations present in individual cows over their lifetimes. The data generated is providing invaluable information on the biology of trypanosome infection, which will help to inform control strategies in the affected areas.

Based on their initial research findings, these researchers also applied for and were successful in securing other prestigious funding for further research collaboration - including a Leverhulme Royal Society Africa Award worth ~£180,000 over three years. The additional funding has enabled the pair to organise annual three-week workshops at the University of Ghana over the past few years, to train other faculty members in specific skills.



Other examples of food security projects supported include:

- **Dr Ken Okwae and Dr John Carr:** The epidemiological role of cabbage aphids in the transmission of viral diseases and its impact on the yield of cabbage in Ghana.
- **Dr Tinashe Chiurugwi and Dr Elly Kafiriti:** Sustainable agricultural practices in Southern Tanzania.
- **Dr Bosco Rusuwa and Dr Hannes Svardal:** The genetic basis of fisheries-induced evolution in cichlid fish in Lake Malombe in Malawi.
- **Dr Seloame Nyako and Dr Uta Paszkowski:** Comparative transcriptome analysis of susceptible and resistant tomato genotypes to root-knot nematode.
- **Dr John Eleblu and Dr Alison Bentley:** Sorghum improvement for increased grain nutrient content. Also, establishment of tissue culture and genetic transformation for scalable cowpea improvement in sub-Saharan Africa.
- **Dr Angela Konadu and Dr Andrew Grant:** Characterisation of bacterial pathogens from informal dairy value chains.
- **Dr Richard Osei-Amponsah, Dr Carole Sargent and Professor Nabeel Affara:** Genetic diversity & genomic selection of the Ashanti Dwarf Pig of Ghana.
- **Dr Joseph Honger and Professor George Salmond:** Isolating and characterising bacterial species in yams.

Case Study

Meeting local energy, engineering, development and economic

Programme case study: Energy and sustainability

Electro porcelain is widely used to insulate electric cables in homes, on the railways, in telecoms systems—pretty much anywhere that uses electricity. Without it, humans would risk electrocution. However, facing a growing population and demands on the national grid, Ghana still imports all its electro porcelain, mostly from Asia—at great expense.

Dr Abu Yaya, Head of Department of Materials Science and Engineering at the University of Ghana, and CAPREx Fellow (2014-15), wanted to find ways in which locals could reduce the expense.

Now, he has become the best person to develop electro porcelain from raw materials, such as clay, found in Ghana. The process is cheap: all it needs is the raw materials, water and a furnace.

For his CAPREx research project, conducted in collaboration with Dr Kevin Knowles of the Department of Materials Science and Metallurgy in Cambridge, electro porcelain ceramics were formulated from these raw materials obtained from around the country. The properties of the resultant red materials were explored in relation to their workability, ring temperature, dielectric and mechanical characteristics.

"The CAPREx initiative has offered me the opportunity to enhance my career in terms of visibility by engaging with other researchers and also, sharing a great deal of experience.

I hope that one day my electro porcelain can be developed to meet international standards so it can be used across Ghana to build our own electro porcelain industry."



Other examples of projects supported include:

- **Dr Bruno Lule Yawe and Dr Jaideep Prabhu:** Effect of mobile money technology adoption on financial literacy and financial inclusion in Uganda.
- **Dr Juma Anthony Okuku and Dr Kun-Chin Lin:** Oil-led development outcomes in Uganda and Ghana.
- **Dr David Dodoo-Arhin and Dr Tawfique Hasan:** Inkjet printable graphene – production, characterization and applications: the energy perspective.
- **Dr Susan Namirembe Kavuma and Professor Andreas Kontoleon:** Determinants of income mobility and its impact on welfare in Uganda.
- **Dr Ahmed Mutunzi Kitunzi and Dr Shailendra Vyakarnam:** Advanced solar technology and viable investment opportunities for social enterprises in Uganda.
- **Mr Olamide Oguntoye and Professor Steve Evans:** Application of industrial sustainability principles in fostering socio-economic development of sub-Saharan Africa.
- **Mr Damilola Adewumi Adebayo and Professor Gareth Austin:** The influence of indigenous business associations on economic policy-making in colonial and post-colonial Nigeria.

Education

Examples of projects supported include:

- **Dr Henry Ssebuliba Busulwa and Dr Mark Winterbottom:** Developing a new science education curriculum to promote sustainability, ecology and the environment.
- **Dr Betty Nannyonaga, Dr Alicia Fentiman and Dr Sara Hennessy:** Shortening the shadow between gender and Mathematics in Africa.
- **Dr Harriet Mutambo Nabushawo and Dr Mark Winterbottom:** Development of teacher competencies through distance education.
- **Dr Euzobia Bain, Professor Maurice Galton, Dr David Good and Professor Nana Aba Amfo:** From entry to exit: a comparative study of Internal Quality Assurance Systems in graduate training in Makerere University, University of Ghana and Cambridge University.
- **Dr Rovincer Najjuma and Dr Elaine Wilson:** University-School partnerships and quality initial teacher education: closing the theory-practice gap.
- **Dr John Okiror, Professor Geoff Hayward and Dr Mark Winterbottom:** Developing vocational pedagogy to enhance the learning and teaching of agriculture in African schools and reduce youth unemployment.
- **Ms Margaret Ontita and Dr Maria Iacovou:** Assessing the impact of education on care and feeding practices of pre-term and low birth weight infants in an urban setting in Kenya.

Culture, Governance, Community and Social Welfare

Examples of projects supported include:

- **Dr William Tayeebwa and Dr Florence Brisset-Foucault:** Framing peace: exploring conciliatory radio programming in Burundi and Uganda.
- **Prof Abasi Kiyimba and Dr Chris Warnes:** Gender stereotypes in the oral literature of two Ugandan communities.
- **Dr Helen Nkabala Nambalirwa, Professor David Maxwell and Dr Emma Wild-Wood:** Rereading violent biblical texts to promote peaceful solutions: a model for African biblical hermeneutics.
- **Dr Umar Kakumba and Dr Shailaja Fennel:** Human resources retention in Uganda's Local Government: Review of policy and institutional mechanisms with lessons from the British experience.
- **Dr Kennedy Amone-P'Olak and Professor Peter Jones:** War-affected youths in northern Uganda: A longitudinal study of post-war mental health.
- **Dr Fridah Katushemererwe, Dr Paula Buttery and Dr Andrew Caines:** Computer-assisted language learning (CALL) for the revitalization of endangered languages: the case of Runyakitara.
- **Dr Paul Omach and Dr Devon Curtis:** Local communities, institutions and peace building in Northern Uganda.
- **Dr Wilber Ahebwa and Dr Chris Sandbrook:** Linking communities and conservation through tourism: an evaluation of enterprise approach in the Greater Virunga landscape.
- **Dr Michelle Henley and Dr Hannah Mumby:** Social and genetic relationships between male African elephants in South Africa and Mozambique.

Other key Cambridge-Africa activities/achievements

- The Programme supports Cambridge researchers to teach and organise demand-led courses and workshops in Africa (e.g. DR Congo, Ghana, Rwanda, Sierra Leone, Tanzania and Uganda), hence increasing African researchers' skills and institutional capacity.
- Cambridge researchers are also able to access support from Cambridge-Africa for the development of Africa-related initiatives and cross-department funding applications.
- Regular Cambridge-Africa networking events and seminars showcase visiting African Fellows' work to the Cambridge community and wider audiences.
- Supporting the African student community in Cambridge: In 2014, Cambridge-Africa helped to establish and continues to support the African student and alumni society in Cambridge. This society is building an exciting interface between Africans and non-Africans in Cambridge, creating a platform for networking and debate, fostering research capacity within Africa, as well as mentoring prospective students from Africa who wish to study at Cambridge.
- Cambridge-Africa also supports Cambridge student-led activities in Africa, such as the Cambridge Development Initiative's projects in Tanzania.

Sustainability and impact of the Cambridge-Africa Programme

Since 2008, Cambridge-Africa has been partnering with colleagues across sub-Saharan Africa to strengthen their research capacity, to exchange knowledge and ideas between academics in Cambridge and Africa, and to find African solutions to challenges (e.g. in health, resilience, poverty alleviation, gender equality, food security, energy and sustainable development, among others). We have been taking the best of Cambridge to Africa and bringing the best of Africa to Cambridge, through two-way research collaborations and visits.

The two existing Cambridge-Africa hubs (in Ghana for West Africa, and Uganda for East Africa) have underpinned the success of the Programme in establishing its initiatives in 18 countries and in bringing together a research network of 50 African institutions and ~200 Cambridge collaborators that continue to grow in both numbers and in priority areas.

Cambridge-Africa's vast number of case studies and track record to date (e.g. >40 PhDs and >70 postdoctoral researchers supported, >150 collaborative research projects, >170 publications) have proven the model to be highly successful. The model is also now influencing national and international funders, academic, governmental, non-governmental and industrial agencies.

There is still so much that Cambridge-Africa could do, using a collaborative approach, but unfortunately, there is not enough resource to make this feasible at present. The Programme, in its current guise, has reached its capacity in the number of projects that can be initiated and supported. Cambridge-Africa therefore welcomes discussions with current and new/potential sponsors who could contribute to the sustainability of this innovative Programme. Such support could help to extend/expand existing Cambridge-Africa initiatives, and/or set up new ones, in order to continue to boost African research capacity and scholarship and to contribute to society.

In order to make our vision for Cambridge-Africa' future a reality, we have identified four strategic areas of expansion:

1. Securing a facilitating hub in Cambridge

The unique strength and success of the Cambridge-Africa Programme is its ability to build research capacity and mutually-beneficial partnerships with African institutions, to match Cambridge academics with their African counterparts, to attract and support talented African students in Cambridge and Africa, and to take advantage of expressions of interest from new funders.

Whilst we are ready to scale up, a primary restriction on the continued growth of the Programme has been limitations in human and financial resource, particularly in Cambridge, but also in Africa. We have therefore identified a number of elements that will help us meet this need:

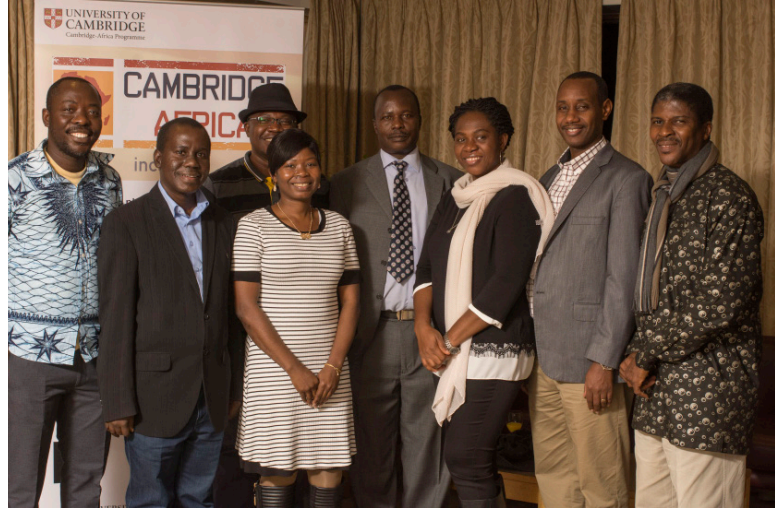
- The Cambridge-Africa Programme currently has one full-time dedicated management position and

four temporary coordinator posts (on six months to three year contracts). The Programme is directed by leading Cambridge academics, but this is done in addition to their already-full schedule of research and teaching. Building the Programme into a sustainable and truly cross-cutting initiative that draws on the full breadth and depth of Cambridge's expertise, and that can take full advantage of our existing African partnership reach, will require dedicated financial support for programme leadership and coordination.

Coordinators/Fellowship Support Officers will enable the development of the Cambridge-Africa Programme by building new partnerships between Cambridge and African staff and students, managing Fellowships and ensuring continued engagement with African Fellows after their formal term has ended. Current Cambridge-Africa staff are able to support around 20 Fellows each (pro-

rata), reflecting the deep engagement and support that they receive. Support Officers will focus on identifying future African leaders from non-traditional backgrounds.

- Key partner institutions in the Cambridge-Africa Programme also have Africa-based temporary Coordinators (on two to three year contracts) who manage and maximise the value of the collaboration with Cambridge. As the Programme grows, we aim to introduce more of such roles, and ideally on longer-term contracts, at additional African partner institutions. The Coordinators are key staff who help to monitor and evaluate our work and ensure that the Programme has meaningful impact in Africa as well as Cambridge.
- Support to increase the efficiency and effectiveness of training, dissemination and profile-raising of the Programme's initiatives.
- Creation of a travel fund for core staff to support partnership development in Cambridge and Africa.
- Overhead support in Cambridge will be essential to support existing and new Programme staff positions.



students who can focus on addressing African priorities through the fellowships and other research opportunities that could continue to be made available through the Programme. This includes students from both Cambridge and Africa, who could spend time in Africa and Cambridge respectively. Africa-based PhD students could spend up to a year of their four-year study period in Cambridge, taken as one visit or spread across the four years. Importantly, we will also support their African co-supervisors and institutions, as well as their Cambridge-based study, supervisors and mentors.

Supporting postdoctoral and early-career

researchers: Continuing to award grants to these researchers to help them propel their research and collaborations will be essential. Therefore, if Cambridge-Africa has the necessary resource, we could significantly increase the numbers of African postdoctoral Fellows who would spend up to eight months in Cambridge over their two-year fellowships, taken as one visit or spread across the two years. Working in collaboration with our regional African hubs, Cambridge-Africa would ensure that the Fellows are leading research locally, building national capacity and contributing to regional and international knowledge.



2. Supporting higher numbers of African PhD, postdoctoral and early-career researchers focused on African priorities

As it is critical to the future of applied research in Africa, Cambridge-Africa aims to support higher numbers of African PhD, postdoctoral and early-career researchers across the priority disciplines, in more African institutions and countries. The Programme has demonstrated (via the CAPREx, MUII and THRIVE initiatives) that supporting researchers at a critical time in both their research and future careers, as they set up and develop their own projects and programmes in Africa, is transformational and can have an impact on millions of people's lives.

Supporting PhD students: If we could secure additional Programme funding, facilitating staff and resources, Cambridge-Africa could increase the pipeline/number of talented African PhD

3. Creating a dedicated equipment fund for African partners

Cambridge-Africa currently has some funding from The ALBORADA Trust which supports the purchasing of Africa-related research reagents, small equipment for use in research, as well as travel and workshop expenses. However, based on the needs identified by our African colleagues, Cambridge-Africa also plans to create a dedicated equipment fund that will provide grants specifically for the improvement of facilities in African Fellows' / collaborators own research groups and institutions. This would reduce dependency on Cambridge infrastructure, speed up research and provide local facilities to train further research groups, hence extending research capacity in the African universities.

An equipment fund also has the potential to support the establishment of high-speed data links from academic sites in Cambridge to those in partner



institutions. This would markedly improve the degree of collaboration, integration and academic resource sharing between partner institutions.

4. Establishing a dedicated African Centre of Excellence for Pregnancy and Childbirth in Mulago Hospital, Uganda

Complications during and following pregnancy and childbirth exact enormous tolls on society globally. However, this problem is disproportionately high in sub-Saharan Africa. As at 2015, 66% of all global maternal deaths resulting from complications in pregnancy and/or childbirth occurred in this region (i.e. 830 women die every day, >300,000 die annually). Also, for every maternal death, six women survive but suffer chronic, debilitating ill health. The reasons for Africa's excessively high rates of maternal and neonatal death are neither adequately understood nor documented. Many basic assumptions are based on information gathered in the developed world, rather than in the many distinctive and diverse African cultural, environmental and genetic settings. It is vital to address the major knowledge gaps about pregnancy and childbirth in Africa, to provide effective life-saving interventions, but also to contribute information of fundamental importance to women and children's health globally. The Cambridge-Africa Programme, via its WT-CCGHR initiative, therefore aims to establish the first African Centre of Excellence in Pregnancy and

Childbirth at Mulago Hospital (where ~32,000 babies are delivered each year) by building on existing research collaborations at Makerere University, the University of Cambridge, affiliated research institutes such as the Wellcome Sanger Institute, and the clinical partnerships with Cambridge University Hospitals and Mulago Hospital in Uganda.

The proposed Centre, drawing on Cambridge and African expertise in maternal and neonatal health research and clinical practice, would support clinical and research capacity strengthening through the provision of extensive training in both the academic aspects of clinical guideline development and audit, and the practical implementation for key specialities identified in Uganda. Such an international collaboration would also provide an unparalleled opportunity to collect and analyse comprehensive data about pregnancies in African women. Furthermore, there are plans to write and publish the first textbook on African Obstetrics, through this collaboration. All of the above should help to better understand and provide the most effective and sustainable solutions to reducing high maternal and neonatal deaths and/or poor health outcomes in Uganda, Africa and other low- and middle-income countries.

Cambridge-Africa would welcome discussions and potential contributions for investing in the establishment of this vital African Centre of Excellence in Pregnancy and Childbirth in Uganda.

Closing remarks

“With our African partners, the Cambridge-Africa Programme has the ability — and the transformational opportunity — to span the entire African continent and academic disciplines, and to support a new generation of outstanding researchers to create an African research culture.

With continued internal and external investment and commitment, our African partners, in collaboration with Cambridge colleagues, will truly enhance internationally-competitive research in Africa. They will seed a continent-wide research community that strengthens generation after generation, and build critical masses to address African challenges with life-changing and world-wide impact.

PLEASE SUPPORT THIS WORTHY CAUSE, IN ANY WAY THAT YOU CAN.”

The Cambridge-Africa team, University of Cambridge, UK.



Dr Pauline Essah: Programme Manager



Ms Corinna Alberg: THRIVE & MUII Coordinator



Dr Sophia Mahroo: Coordinator for CAPREx and the ALBORADA Research Fund



Dr Watu Wamae: WT-CCGHR Senior Coordinator



Ms Hawa Sydique: WT-CCGHR Coordinator



Professor James Wood: Academic Champion, Biologicals Sciences



Dr Devon Curtis: Academic Champion, Social Sciences & Humanities



Professor Melinda Duer: Academic Champion, Physical Sciences

Acknowledgements for Programme support

The Cambridge-Africa Programme extends its sincere appreciation to the following for their help and support over the last 10 years, as without them there would be no viable engagement between Cambridge and African colleagues:

- African Researchers and Academic Champions
- Cambridge mentors/co-supervisors/collaborators
- Cambridge-Africa Steering and Advisory Group Members
- Departments, Centres, Institutes and Colleges in Cambridge that host the African researchers.

The Cambridge-Africa Programme also greatly values the **financial support** provided by all our funders, as this has been key to the Programme's growth, expansion and impact to date and for the future.

- University of Cambridge, UK
- The Cambridge Trust
- The Wellcome Trust
- The ALBORADA Trust
- The Carnegie Corporation of New York
- The Isaac Newton Trust



Further information

For further information, please contact:

Professor David Dunne

Director, Cambridge-Africa Programme

Tel: +44 (0) 1223 333326

Email: dwd10@cam.ac.uk

Dr Pauline Essah

Manager, Cambridge-Africa Programme

Tel: +44 (0) 1223 333336

Email: pae21@cam.ac.uk



www.cambridge-africa.cam.ac.uk