



Cambridge Africa Partnership for Research Excellence

Summary of Programme Activities & Impact





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Introduction

Cambridge-Africa Partnership for Research Excellence (CAPREx) was designed and implemented as a collaborative initiative between the University of Cambridge, UK, Makerere University, Uganda and the University of Ghana, Legon, Ghana. The initiative aimed to strengthen capacity for sustainable research excellence in the African institutes, through close collaborative work with the regions most talented individuals. The strategic objectives of the initiative were to:

- 1. Strengthen faculty research capacity**
- 2. Strengthen research management capacity**
- 3. Enhance international research competitiveness**

This was achieved through offering postdoctoral fellowships where academics from partner institutions could develop the skills, networks and vision to become internationally competitive, successful researchers. It also offered research management fellowships for managers or administrators to develop skills and share knowledge supported by the Research Operations Office at the University of Cambridge (figure 1).

The initiative was funded by the Carnegie Corporation of New York, USA, (\$2.2 million 2012 - 2019) and the Isaac Newton Trust (£179,000 2012- 2016). Research projects were funded by the ALBORADA Trust, with a maximum of £6,000 to fund each project in humanities and social science, or £20,000 for each science and engineering project. CAPREx ran from 2012 to 2019, split into phase 1 (2012-2015) and phase 2 (2015-2019).

Additionally, the final phase of the initiative in 2021 offered up to \$5,000 to CAPREx fellows to further support their research, resulting in 23 awards being made to cover a range of purposes such as equipment, laboratory consumables, and fieldwork. In this report, we describe the key components of the initiative, specifically the CAPREx Postdoctoral fellowships and the Research Management fellowships, integrating key data collected through evaluation reports. We also highlight the main successes of the programme and reflect on the areas for improvement. Finally, interviews with four Postdoctoral fellows illustrate the impact that CAPREx has had on their career progression.





CAPREx Post-Doctoral Fellowships

The major component of CAPREx was the post-doctoral research fellowship. This aimed to hone the research skills of early-career Fellows (<10 years post PhD) and mid-career Fellows (10-20 years from PhD) from the University of Ghana and Makerere University.

The fellowship enabled fellows to complete a tailored training program and spend 1 to 6 months working on a collaborative Cambridge-Africa ALBORADA Research Fund project with academics at the University of Cambridge. Funding also facilitated attendance at an

international conference, enabling fellows to further participate in the broader research community and enhance their networks.

The African universities played to their different strengths, with the University of Ghana predominantly focusing on Biological Science and Engineering, and Makerere University focusing on the Social Sciences and Humanities. A total of 67 scientists were awarded CAPREx fellowships, 33 from Ghana, and 34 from Uganda. Across the whole programme, 24 (36%) fellows were female with gender parity achieved in the later intakes.

		Ghana	Makerere	Total
Phase	1 (2012-2015)	19 (58%)	22 (65%)	41 (61%)
	2 (2015-2019)	14 (42%)	12 (35%)	26 (39%)
Gender	Female	12 (36%)	12 (35%)	24 (36%)
	Male	21 (64%)	22 (65%)	43 (64%)

Table 1: Distribution of the CAPREx Post-Doctoral Fellowship across initiative phases and gender.

The CAPREx post-doctoral fellowships were officially a year long, but collaborations endured beyond this and output from the fellows demonstrated how they made full use of this opportunity. Comparing before and after the fellowship, the mean number of scientific articles accepted for publication per fellow rose from about 2 to about 5, and the number of abstracts accepted at conferences rose from around 1 to 3. A total of 31 (46%) CAPREx fellows were promoted within their university and a total of 52 new grants were awarded to the fellows within the evaluation period. Notably, 66 of the 67 CAPREx fellows (98%) remained at their host African institution after completing the fellowship.

Fellows reported that CAPREx was successful in improving skills from data collection techniques and methods of analysis to communication and project management. Similarly, many

fellows commented on how the fellowship gave them skills in designing and managing social enterprises and business start-ups.



Figure 2: CAPREx Postdoctoral Fellow conducting their research project



CAPREx Research Management Fellowships

For CAPREx to achieve its overall aim of capacity-building and sustainable excellence in research at the partner universities, research management and administration needed strengthening at these universities. Therefore, initially, 12 Research Management Fellowships were also awarded by CAPREx to participate in a bespoke training course in research management and administration processes and procedures designed by the University of Cambridge's Research Operations Office. This component was a key strength and important dimension of CAPREx and benefited all partners.

The Office of Research, Innovation and Development (ORID) was established in 2010 as the research support arm of the University of Ghana. During the CAPREx programme, ORID was reviewed and supported by the Research Operations Office in Cambridge to strengthen its ability to provide central institutional support to promote, coordinate and facilitate research activities and strategy across the university. ORID now acts as a model for a growing number of research-intensive African universities.



Reflections on the programme

All CAPREx partners viewed the initiative as a success and the model has since been used as a basis for further grant applications from Cambridge and the African partners. The fellowship was included in a UK Collaboration on Development Research report in 2019 on research capacity development in Africa, citing the strength of the fellowship being a result of committed engagement by the University of Cambridge.

Similarly, the initiative solidified partnerships between academics and the institutes, as demonstrated through the ongoing engagement in collaborative grants, for example, Professor James Wood and Dr Osbourne Quaye, who were awarded £603,000 by UK Research and Innovation (UKRI) to study “The Dynamics of Filovirus Infection in bats in Ghana”. The collaborations developed, paved the way for the Mastercard Foundation Scholar’s Program in 2022, in which the University of Cambridge partnered with the University of Ghana, Makerere University, and the University of Cape Town, to develop a research collaborative on climate change and sustainability.

CAPREx fellows appreciated the opportunities provided by this fellowship. For example, one fellow, Dr Joseph Honger from Uganda, named bacterial strains after the initiative (*Enterobacter cloacae* -CAPREx E7 and CAPREx E2-2, and the *Serratia marcescens* strains -CAPREx SY13 and CAPREx SY21).

The success of CAPREx’s research management training influenced Cambridge to embed the research management training programme into their Research Operations Office activities. In June 2019, research managers from five African institutions (University of Ghana, Makerere University, University of Makeni (Sierra Leone), University of Namibia, and Botswana Institute for Technology, Research and Innovation (BITRI)), attended a week-long training course in Cambridge supported by funds allocated by the University of Cambridge from the UK Global Challenges Research Fund (figure 3). We expect that all parties will derive substantial long-term benefit from these activities, which also align with a key priority area for the African Academy of Science.



Figure 3: Mrs Afua Yeboah (Senior Assistant Registrar, Office of Research, Innovation and Development - ORID, University of Ghana) giving a presentation on 'Building Research Management Capacity: The University of Ghana's Journey to Research Excellence' at Cambridge-Africa Day 2018'

The evaluation reports produced by the University of Ghana and Makerere University, identified several lessons that can be used to strengthen future programmes. The first being the need for greater support and engagement from the higher management levels within the African partner universities, such as Principals of Colleges, Deans of Schools, and Heads of Departments. This would ensure that the fellows are able to operationalise ideas and practices acquired

through the initiative and bring a further level of collaboration between universities. Additionally, it is beneficial to provide more information to fellows prior to their visit, such as giving a pre-departure briefing on visiting Cambridge, as well as information on the data collection strategy to maximise completion and accuracy of the data without overwhelming fellows with requests for feedback.



Case studies of CAPREx Post-doctoral Fellows

Cambridge-Africa is proud to be associated with CAPREx fellows and in this report, we highlight the impact the fellowship had through case studies of four scientists. These fellows spoke to Cambridge-Africa Programme Manager Dr Tabitha Mwangi about their career journeys and how CAPREx influenced their trajectories.



William Tayeebwa (Makerere University)

Upon completion of my PhD in Canada in autumn 2012, I flew back to Uganda and landed in a severely understaffed Department. The teaching and graduate supervision workload was such that I could not find time to continue the transformation of my doctoral dissertation into journal articles and/or book chapters. The CAPREx postdoctoral fellowship, that came to me in autumn 2013, was therefore an amazing opportunity to leapfrog my academic career.

The fellowship offered an opportunity to work with a main collaborator, together with many other experts. In my case, I immensely benefited from the expertise and generosity of Dr. Florence Brisset-Foucault, my main collaborator. However, over time I received invaluable support from Dr. Devon Curtis of POLIS, Dr. Harri Englund of CAS, Dr. Sharath Srinivasan and Dr. Claudia Lopes of POLIS. These colleagues provided useful comments to my research presented in the seminar series on three book chapter manuscripts. The supplementary field research in Africa was supported by the Cambridge-Africa ALBORADA Research Fund. All the work was

[published between 2015 and 2017](#), thus leading to my academic promotion to Senior Lecturer in 2018.

The 40 weeks I spent at Cambridge were also an excellent avenue for networking through avenues such as the seminar series at the Centre of Governance and Human Rights (CGHR), seminars organised by the Centre for African Studies (CAS) and the African Society at Cambridge. I also benefitted from opportunities for professional advancement through several short courses offered by the Cambridge University Computing Services in academic writing, proposal writing, academic engagement and networking, using the Web of Knowledge and Scopus, and organisational skills among others.

Moreover, I had also been nominated by the College of Humanities and Social Sciences (CHUSS) to receive a research management fellowship under the Cambridge Research Operations Office (ROO). I returned to Cambridge in autumn 2014 for training in research management, costing grants, basic skills in

auditing and compliance procedures. The skills have remained crucial in my successful grant-writing over the years. I have always leveraged the CAPREx fellowship in all the funding I have applied for.

I am currently a Senior Lecturer in the Makerere University's of Department of Journalism and Communication. I submitted my application for Associate Professor. Since my CAPREx fellowship, I have received funding from the Andrew Mellon

Foundation in the USA, the American Council of Learned Societies (ACLS), the Norwegian Agency for International Cooperation (NORAD), the UNESCO, and the United States Agency for International Development (USAID). In 2019, I completed a writing fellowship at the Interdisciplinary Center for the Study of Global Change (ICGC) at the University of Minnesota, USA. I will always be indebted to the CAPREx fellowship for the global networking doors it opened for me as an early-career researcher.





Dr Saudah Namyalo (Makerere University)

Did you always want to study linguistics?

I had wanted to do physics, biology and chemistry for my 'A' levels but I had not done well in chemistry and they were offering me agriculture. Out of frustration, I ditched sciences and studied history, economics and geography instead. In my second year, I was informed that I would need a 4th subject in order to qualify for university. I choose Luganda, expecting to drop it soon after.

At Makerere, I was doing an education degree in history and Luganda. I thought I could drop Luganda but anyone taking the language was forced to major in it. Because I did not want to study the subject, I did poorly in it for my first year but later convinced myself to do my best. In fact, I did so well, when I completed my undergraduate, I was retained at the then, Institute of Languages, as an assistant lecturer, teaching Luganda.

When did you decide to get into research?

In 2005 I registered for a PhD at Makerere University but my first PhD supervisor passed away and my second wanted me to change topics. So I gave up. I picked this up again in 2008 when I got a DAAD (German Academic Exchange Service) scholarship. I studied partly in Germany and Uganda.

When did CAPREX come in?

After my PhD, I got a short post-doc in Zurich University in Switzerland and a year-long African Humanities Program where I spend time in Ethiopia. In 2014, I learned about CAPREx and after finding a collaborator, Dr Jenneke van der Wal (Department of Theoretical and Applied Linguistics, University of Cambridge), I applied for and won a CAPREx fellowship.

What did CAPREx do for you?

We have so far published 4 papers from this collaboration and hope to make it to 5 and compile these into a book. However, the research was only part of what I gained from the fellowship. Being associated with the University of Cambridge raised my profile.

I got the opportunity to network with linguists from across the globe and I have found myself

in projects that I would never have had an opportunity to participate in, were it not for the CAPREx exposure. I attended several international conferences and presented my work at the Africa Conference on African Linguistics (ACAL) in the USA and at the World Congress of African Languages (WOCAL) in Morocco.

Along with colleagues in Cambridge and Oxford, we wrote a proposal, which though not funded gave me a wonderful opportunity to hone my proposal writing skills. I used that experience to apply for a Volkswagen senior fellowship and this time I got funding of €195,000 which has enabled my team to grow. I now have post-docs, PhD students and have applied for Associate professor position at Makerere University.

What is the impact of your research?

My work in youth urban languages has raised general awareness and importance of these languages. I have spoken to Ugandan police about how to use the language to foster peace and security in Kampala. I also teach a course on youth urban languages to the Peace and Conflict Program at Makerere University. A lot more research is being conducted in relation to youth urban languages and I would not be blowing my trumpet too loudly in saying that I am one of the leading scientists in this field in the region.

It seems schooling was smooth sailing for you?

Not really. To make this clear, let me give you some background. My father is an Islamic teacher and my mother did not get much education. We are five siblings, 4 daughters and a son. My brother, Swaibu Mukalazi, is the eldest sibling and was a primary school teacher, so he knew the value of education. My parents, on the other hand, did not see the value of their daughters going beyond lower primary school. However, Swaibu, saw that I wanted to continue with my education and he intervened. I was able to join, Kako Primary, a boarding school, 30 km away from home.

Throughout upper primary and secondary school, every time I went home during school holidays, my parents were keen to introduce me to all these

men who wanted to marry me. All my classmates from lower primary school married young, none went to secondary school. Getting to 20 years without being married, I was considered old for marriage and people thought I would never marry. However, Swaibu continued to insist that I be allowed to stay in school for as long as I wished.

It was only when I joined the university that my mother was proud of my achievements, telling people, 'My daughter is in Makerere University' because it was assumed that you have to be especially bright to go there.

Although none of my sisters finished secondary school, I have inspired the next generation, all my nephews and nieces have degrees in various fields.

What is the future for Saudah?

I would like to redouble my efforts in preserving and developing Uganda's indigenous languages and cultures. This will be done through conducting research in youth urban languages as well as describing and documenting less studied languages, a number of which face extinction. I have enthusiasm in language development and I see the scientific, educational and economic value that may accrue from the growth of mother tongue industries. I look at Africa's multilinguism with creative hope and pragmatic realism, rather than pessimism and frustration at the sheer number of languages.

Having benefited so much from great mentorship from several colleagues, I would like to replicate this by mentoring students and junior lecturers through supervision, joint publication and research.





Dr Mary Chama (University of Ghana)

Dr Mary Anti Chama studied chemistry at the University of Ghana, completing her PhD in 2008. Her research work is rather unique as her focus is the discovery of new drugs from Ghanaian plants thought to be of medicinal value. Through isolating bioactive novel molecules from plants, she has discovered unusual compounds, whose medicinal use is not known or understood.

She applied for and was awarded the CAPREx fellowship in 2016. Part of the fellowship included spending nine months at the University of Cambridge. Having done all her previous studies and research at the University of Ghana, this was the first time that Dr Chama was spending a protracted period of time in another research setting.

With her collaborator, Dr Andreas Bender, at the Department of Chemistry, Dr Chama trained in cheminformatics specifically, learning how to use computer derived models to study the mode of action of dichapetalins, a class of triterpenoids compounds. This knowledge would in future translate to the rapid development of new and affordable drugs.

Not only did she acquire knowledge in computational drug discovery, but she was able carry out some bench work in Prof. Melinda Duer's lab with Nuclear Magnetic Resonance (NMR) Spectrometer as well as mass spectrometer instruments in the Yusuf Hamied lab, both in Department of Chemistry. Though not her immediate supervisor, Prof. Duer took an interest in Dr Chama's work and later visited Ghana and was able to see how she engaged with her students.

It was therefore not surprising that when Prof Duer was due to pass on her Suffrage Science Award, Dr Chama was her choice. The Suffrage award for women in science celebrates women who are at various stages in their career, acknowledging not just their publications, but their collaboration and mentorship with other women and girls.

The winning woman holds the award for two years and then passes it on to a woman that she admires.

Receiving the Suffrage Science Award has already started to open doors for Dr Chama. The award ceremony in 2021 was a virtual event due to the Covid19 pandemic. However, Dr Chama was still able to use the opportunity to expand her networks. She met Dr Isabella Palacios who uses fruit flies (*drosophila*) instead of laboratory animals for biological tests including testing for the toxicity of compounds. In collaboration with Prof Regina Appiah-Opong from the Noguchi Memorial Institute for Medical Research (NMIMR), they hosted a virtual workshop in Ghana on 'Drosophila: A simple, yet powerful model for biomedical research' in October of 2021, which was graced with presentations from two American Nobel laureates - Prof. E. Wieschaus (Princeton, USA) and Prof. M. Rosbash (MA, USA). Students and academics from Ghana were able to network with speakers from Nigeria, United Kingdom, United States, Spain, Portugal and Italy.

Through the CAPREx fellowship, Dr Chama received funds from the ALBORADA research grant to buy equipment for her lab, purchasing a rotary evaporator set comprised of a recirculating chiller, a pump, a water bath, and the rotary evaporator hardware as well as A UV lamp. These have enabled Dr Chama and her colleagues to undertake research in drug discovery. Using the same grant, Dr Chama and her colleagues organized a Workshop on 'Computational techniques in drug discovery' at University of Ghana on 11-13 April, 2017.

Dr Chama summarizes her experience, 'CAPREx has had a profound impact on my academic life and was a gateway to my capacity development. I have established local and international collaborations and these networks have helped cushion my research group if the lab lacks expertise or instrumentations in a particular area. I have been able to establish a lab equipped with

the necessities for natural product chemistry from grants received during my CAPREx fellowship and afterwards. The presence of this well-resourced lab has led to research visits by scientists from Uganda and Cameroon. Early career scientists who may have had to go abroad to do some

of their research can now come to my lab in Ghana. It has also increased my grant winning ability and research dissemination through article publications, conference attendances and organising or participating in workshops’.





Dr Osbourne Quaye (University of Ghana)

Did you always want to be scientist?

I was put in a science class by my high school teachers because they thought I was bright. At the undergraduate level, I wanted to do Medicine, but at the time in the University of Ghana, one would have to do Biological Science in the first year, which if you did well, you were invited for an interview. I did well on the program but did not pass my interview that would have enable me to join the Medical School. I was extremely disappointed, but I picked myself up and took up the 'next best' option which was Biochemistry.

How did you get into research?

On graduation from my undergraduate programme, I felt my options were either to go into industry or academia. I thought academia suited me better, and so after national service, I returned to my Department for a Master's degree program. I was later employed at the Noguchi Memorial Institute of Medical Research as a Research Assistant. I knew it will take a long time before I would be granted study leave to do a PhD if I remained at Noguchi, so I decided to apply for PhD programs on my own. I got admitted into Georgia State University and resigned from Noguchi to go to the USA for studies. After my PhD in Mechanistic Enzymology (the study of the mechanisms by which enzymes function), I could not get a postdoctoral fellowship in this field and so I took on a job as a Microbiologists at the Centre for Disease Control and Prevention (CDC) in Atlanta, Georgia. I worked there for 3 years and decided to return to Ghana for an academic or research position.

What led you to that decision?

I had always wanted to lead a research group/team; an opportunity I did not see myself getting soon at the CDC. In my opinion, my contributions at CDC were a drop in the ocean, and I felt I would be better fulfilled career-wise in Ghana and as a mentor to the younger generation. I took a big salary cut but I have never regretted my decision to relocate in 2013 and start work at the University of Ghana.

When did you hear about the CAPREx fellowship?

When I joined the Department of Biochemistry, Cell and Molecular Biology at the University of Ghana, I met people who had applied for the CAPREx fellowship and were awaiting to go and spend time at the University of Cambridge. Flyers for applying to the program were also widely circulated in the University of Ghana emailing platform, so I decided to give it a try.

How has CAPREx helped grow your career?

I was matched with Barbara Blacklaws and Caroline Trotter, both of the Department of Veterinary Medicine at the University of Cambridge, and I was interested in gastroenteric viruses that are found in domestic animals, mainly pigs and cattle, and their zoonotic potential. I collected samples in Ghana and spent 4 months in Cambridge analysing them. The work eventually got published in a reputable peer-reviewed journal. The CAPREx fellowship gave me the needed experience, confidence, and training to search for funding to support my research work. I was able to apply for funding with two other colleagues at Cambridge, a Medical Research Council grant with James Wood, and recently, DARPA (Defense Advanced Research Projects Agency) of the United States Department of Defense with Olivier Restif. These are people I would not have met were it not for CAPREx.

It's been about 9 years since I relocated to the University of Ghana; I have moved from a Lecturer to an Associate Professor, and I am looking forward to becoming a Professor sometime soon. I am also currently the Head of the Department of Biochemistry, Cell and Molecular Biology.

What is your research on and what difference has it made?

My research has generally been in Molecular Virology, and I have worked on various viruses as pathogens including gastroenteric viruses, HIV, hepatitis viruses, yellow fever virus, and SARS-CoV-2 among others. On bat viruses, the focus

was to understand the dynamics of filoviruses and henipaviruses in bat roosts in Ghana, and work towards the prevention of spillover events or zoonotic transmission. I am also studying Epstein Barr virus (EBV) to determine population-specific circulating strains that predispose to cancer in sub-Saharan Africa, and to identify diagnostic/prognostic biomarkers for EBV-induced cancers.

Was school smooth-sailing for you and who inspired you in your early years?

My Dad was a banker and my Mum was a teacher, and education was very important to them. I am the second of five children, and my mother in particular took going to school very seriously and made sure we all stayed in school and studied. Growing up as a young boy, there was a time I mentioned to my Mum that I would like to be a footballer, but she would have none of that and said, 'If you break a leg, that's the end of your

career, but you can use education for as long as you live'. If there is someone who really shaped who I am today, it's my Mum.

What does the future hold for Osbourne? What is your vision of research and the future?

The excitement of being a mentor to the younger generation never wanes for me. I am therefore inspired to work with and train as many people to become scientists as possible. I have always believed that the more people who get to do scientific research, the closer the world will be towards solving life's problems/challenges.

I hope to stay in research/academia for the long term. In as much as I do not see myself to be in competition with anybody when it comes to research, I have a vision of contributing significantly/meaningfully to scientific knowledge by working hard to achieve the best I can.

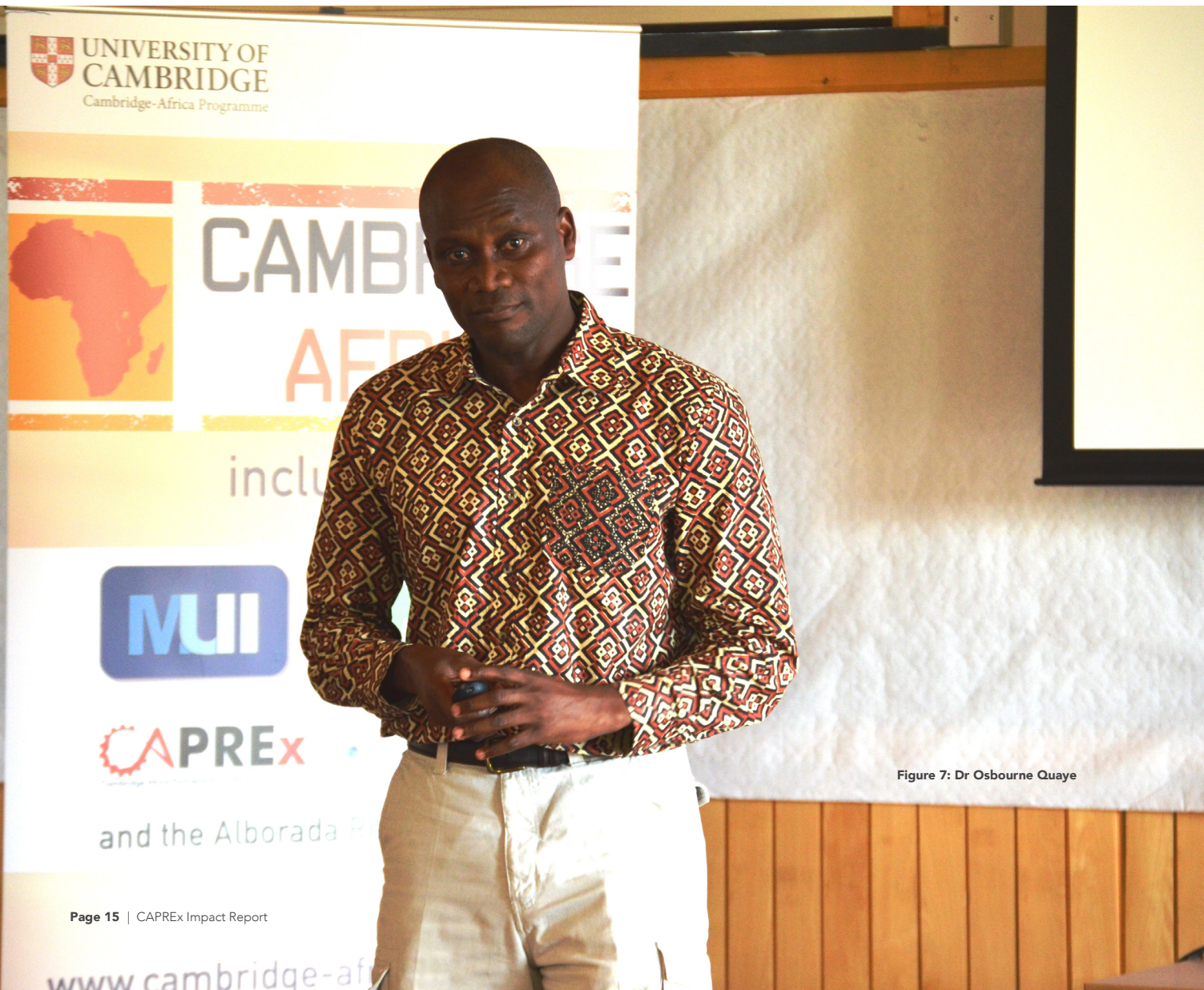


Figure 7: Dr Osbourne Quaye



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