

Annual Report 2019

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE





“Nelson Mandela said that education is the most powerful weapon which you can use to change the world. That’s what this institution is doing every day; changing the world. Happy birthday to the London School of Hygiene & Tropical Medicine and may there be many more.”

Dr Tedros Adhanom Ghebreyesus

World Health Organization Director-General, MSc in Immunology of Infectious Diseases (1992)



“Antimicrobial resistance is a fight we’ve only just begun. I want to thank LSHTM for the support you’ve given me in learning how to do this fight. Because it’s not just about science, its politics. It’s about social movements. It’s about the alignment and sharing of agendas. You knew that and you helped me learn it, so that we as a nation can be more effective in this.”

Dame Sally Davies

UK Special Envoy on Antimicrobial Resistance, former Chief Medical Officer for England and Chief Scientific Adviser at the Department of Health 2011-19, LSHTM Honorary Fellow (2015)



“For 120 years LSHTM has stood for excellence, honesty, diversity, inclusivity and has addressed the big issues facing us and our planet. It has not shied away from speaking truth to power and to societies around the world. This has never been more important and now is the time to step up, ask the critical questions, provide and use the best available evidence to argue for the things that can enhance lives, argue for the values that you stand for and the sort of world you believe in.”

Dr Jeremy Farrar

Director of the Wellcome Trust



“When I look at LSHTM it’s not just the School, the books and the research, but it’s also a tremendous example of coaching and mentoring to grow the next generation. One of the most important lessons I have learned with the mentors I have worked with, is to ask the right questions. This is what breaks down the complexity of the issues we deal with, finding the right solutions that fit the local context, and making contributions that prove to be effective. LSHTM, with its vision, cross-sectionality and innovation, is important in not only asking the right questions, but also re-imagining what the future can be.”

Dr Muhammad Ali Pate

Global Director for Health, Nutrition and Population at the World Bank and Director of the Global Financing Facility for Women, Children and Adolescents, MSc in Health Systems Management (2000)

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Foreword

We marked the 120th anniversary of the founding of LSHTM in 2019, and our institution is as relevant today to improving public health as it was when it was founded. In the 120 years since LSHTM first opened its doors to students, our School has been at the forefront of health innovation through research, providing research-led teaching in public and global health and providing healthcare policy advice to governments throughout the world.

Progress in public and global health is continually challenged in an everchanging world—changing disease patterns, climate change, distrust of science, economic and social development, and political unknowns all create uncertainty. No doubt we will face new challenges in the future and that is why it is so critical that we continue to train the next generation of thought leaders and work together to innovate, respond and continue to improve healthcare outcomes globally.

Our excellence in research went from strength to strength and our scientists obtained over £180 million from a wide range of funders. We also saw an increase in our philanthropic gifts and our total income reached over £240 million; 130% higher than in 2010-2011. LSHTM is continuing with its program to re-develop and upgrade our Keppel Street building so that it meets the needs of our scientists and students in the 21st century, and the development of our new facility at Tavistock Place received full planning permission earlier this year.

I would like to thank Dame Marjorie Scardino DBE, who stepped down as Chair of Council in July 2019. Under her leadership the effectiveness of Council and the governance of our School has been transformed. After a lengthy and deep search for her successor, we are delighted that Mr Don Robert will become Chair of Council in the Spring. I would also like to thank my fellow members of Council and the many experts who sit on LSHTM’s sub-committees who give generously and unstintingly of their time and expertise throughout the year.

We believe LSHTM is better placed than ever to succeed in our mission of improving health worldwide and that global public health is as important and relevant in the 21st century as it was at the end of the 19th century.



John O'Donnell

John O'Donnell
Acting Chairman of Council

2019 was a defining year for a key issue that has rightly risen to the top of our priorities; climate change. This year we launched our 14th cross-disciplinary centre – the Centre on Climate Change and Planetary Health. Tackling the climate emergency is not only about our research. It requires tough choices and commitments from us all. That is why we are rolling out a comprehensive carbon and energy management plan, reviewing everything from the food we serve in our canteen to the emissions of our buildings and business travel. The MRC Unit The Gambia at LSHTM is leading the way by already drawing 25% of its electricity from solar energy.

New centres of excellence are emerging in many low- and middle-income countries, creating exciting opportunities for international partnerships for LSHTM, many of which are detailed in this report. Our School transformed in 2018 with the joining of the MRC Units in The Gambia and in Uganda, resulting in the development of our School as a truly global institution, with half of our staff now based in Africa. The joint Public Health England/LSHTM UK Public Health Rapid Support Team has been actively engaged in the protracted Ebola epidemic in the Democratic Republic of Congo, together with Congolese and international partners.

Our new Doctoral College is supporting the training of doctoral candidates and we are preparing the launch of a new MSc in Health Data Sciences. This year we will work hard to enhance and strengthen our educational offerings, both in London and online.

As mentioned by our Chair of Council, I will also greatly miss the support and wisdom of our dynamic Chairman Dame Marjorie Scardino. My thanks extend to John O'Donnell for his steady and valuable leadership until our new Chairman is appointed this year.

We deeply appreciate the generous support of our philanthropic donors, whose gifts ensure that we can offer scholarships to students, improve our physical environment, and expand our research worldwide. And finally, I would like to share my heartfelt thanks to our passionate and talented staff and students, as well as our dedicated Council members, for their continued commitment and hard work throughout 2019 on our shared mission of improving health worldwide.



P. Piot

Professor Peter Piot KCMG
Director, LSHTM

Research Highlights

Our diverse and multidisciplinary research underpins our position as a leader in public and global health. Our research ranges from the molecular to the global, the theoretical to the applied, the analytical to the political – all aiming to improve the health of people around the world. In 2019, our scientists published more than 3,000 research articles. Here is a selection of highlights from our three Faculties and our two Units in Africa – the Faculty of Epidemiology & Population Health, the Faculty of Infectious & Tropical Diseases, the Faculty of Public Health & Policy, MRC Unit The Gambia at LSHTM, and the MRC/UVRI & LSHTM Uganda Research Unit. Many of our research outputs are produced in collaboration with partners in the UK and around the world.



Discovery



Development & Evaluation



Delivery & Evaluation



Policy Appraisal & Analysis

Research Rankings

1st in the UK for the proportion of academic research with women listed as authors

5th in the world for the proportion of publications that have been written by co-authors from two or more countries

78% of our outputs are produced with an international collaborator

63% of our outputs are produced with a collaborator situated more than 5000 km from London

1st in Europe and **3rd** in the world for publishing open access research

1st in Europe and **8th** internationally for research impact on sciences based on proportion of publications that belong to the top 10% most frequently cited publications

	1	MIT
	2	Princeton University
	3	Stanford University
	4	Harvard University
	5	Caltech
	6	University of California – Berkeley
	7	Weizmann Institute of Science
	8	London School of Hygiene & Tropical Medicine
	9	University of California – San Francisco
	10	University of Chicago

Data from 2019 CWTS Leiden Ranking (All Sciences)



Infectious disease

Pioneering laboratory techniques have revealed secrets of early life from less than half a teaspoon of blood. The research identified which genes are turned on, which proteins are made and which metabolites are changing in the first seven days of human life. The findings from Professor Beate Kampmann and colleagues, published in *Nature Communications*, could transform our understanding of health and disease in babies, paving the way for improved **newborn vaccines**.

The gut-infecting bacterium *Clostridium difficile*, which can cause fatal infections, is evolving into two separate species with one group highly adapted to spread in hospitals. Research published in *Nature Genetics* by Professor Brendan Wren and

colleagues found genetic changes in the newly-emerging species allow it to thrive on the Western sugar-rich diet, evade common hospital disinfectants and spread easily. The research was the largest ever genomic study of *C. difficile* and could help inform patient diet and **infection control in hospitals**.

A study in Southern Africa suggested that a 'test and treat' approach could reduce new HIV infections by a third, thanks to the 10-year PopART research project from Professor Richard Hayes and colleagues. Results from the largest ever **HIV prevention** trial, published in the *New England Journal of Medicine*, show that offering entire communities voluntary HIV testing and immediately referring those who test

positive for HIV treatment in line with local guidelines could help control the HIV epidemic.

The first continent-wide genomic study of **malaria** parasites in Africa, published in *Science* by Dr Alfred Amambua-Ngwa and colleagues at MRC Unit The Gambia at LSHTM, suggests progress to eliminate malaria may be at risk if new forms of treatment aren't developed. Their discovery that ancestral clans of *Plasmodium falciparum* malaria parasites in each region of the continent share drug resistance genes, highlights that genomic surveillance on a large scale is going to be vital to track the emergence and spread of resistance to combination therapies.



Focus on: Ebola in the Democratic Republic of the Congo

As the DRC is facing the world's second largest Ebola epidemic on record, experts from across LSHTM have been crucial in supporting the response.

Experts from the **UK Public Health Rapid Support Team** led by Professor Dan Bausch were deployed throughout 2019 to support the DRC government and WHO with the response on the ground.

An Ebola vaccine was pre-qualified for the first time by WHO, following earlier work from LSHTM researchers led by WHO and Professor John Edmunds to design a major trial of 12,000 people in Guinea which found the vaccine, manufactured by Merck, was safe and highly protective against Ebola.

With support from the EU since 2015, Professor Debby Watson-Jones and colleagues in Sierra Leone and several African countries have been studying the two-dose Ebola vaccine manufactured by Johnson & Johnson. Now Professor Pontiano Kaleebu's team in Uganda have started a two-year trial among healthcare and frontline workers to investigate the J&J vaccine. This second vaccine was also introduced in DRC as part of a large-scale clinical trial, led by Prof Jean Jacques Muyembe of the Institut National de Recherche Biomédicale (DRC) with Profs Bausch and Watson-Jones, sponsored by LSHTM in collaboration with Médecins Sans Frontières to help prevent the spread of the epidemic and gather crucial information about its effectiveness to be better prepared to fight Ebola in the future.



Chronic conditions and diseases

Cancer survivors are likely to face increased risk of heart disease and blood circulation problems in the long-term, according to new estimates published in *The Lancet* by Professor Krishnan Bhaskaran and colleagues. An example of LSHTM's expertise in health data sciences, the research was one of the largest studies of its kind, analysing the medical records of more than 630,000 people in the UK. The findings suggest new strategies to reduce the risk of **cardiovascular disease** are needed for the growing population of cancer survivors.

For populations affected by disaster or conflict, the further suffering people face if they have **diabetes** was highlighted by Professor Bayard Roberts and colleagues in *The Lancet Diabetes & Endocrinology*. In humanitarian settings there are enormous constraints in accessing and receiving diabetes care due to the high costs, and clinical guidance is insufficient. More needs to be done to understand the burden of diabetes overall in crisis-affected populations and to develop guidelines and models of care.



Former England rugby international Jonathan Webb is measured as part of the BRAIN study looking at the long-term effects of rugby on brain health. Results are due in 2020. Credit: Christian Sinibaldi/LSHTM

Research Highlights

Health systems and economics

A 'snack tax' may be more effective than a sugary drink tax to tackle **obesity**, according to a study published by Dr Pauline Scheelbeek and colleagues in the *British Medical Journal*. The results of economic modelling in UK households suggest that a 20% price increase on biscuits, cakes, chocolates and sweets would reduce annual average energy intake by around 8,900 calories, leading to an average weight loss of 1.3 kg over one year. In contrast, a similar price increase on sugary drinks would result in an average weight loss of just 203g over one year.

A world free of **tuberculosis (TB)** is possible by 2045 if financial resources are directed towards priority areas and there is increased political will. Presented in the *Lancet Commission on TB*, Professor Anna Vassall from LSHTM's **Centre for Health Economics in London** and colleagues conducted analysis of the value of investing in TB and the resources available globally to do so.



A doctor at a TB clinic explains the next steps in a patient's treatment, Fajara, MRC Unit The Gambia at LSHTM. Credit: Louis Leeson/LSHTM.

Environment, climate change and health

Links between exposure to urban pollution and mortality risk were confirmed by Professor Antonio Gasparrini and colleagues in the largest international epidemiological assessment of its kind to date. Published in the *New England Journal of Medicine*, the analysis of 24 countries found an increased risk of mortality in the short-term after exposures to even small

concentrations of **urban air pollution**. The findings provide context for those assessing the potential benefits of interventions to reduce urban air pollution, and when revising existing regulatory limits.

Research from an international team including Professor Andy Haines showed a rapid global switch to renewable energy could save

millions of lives annually. Estimates in the *Proceedings of the National Academy of Sciences* suggested that reducing global air pollution from fossil fuels could prevent 3.5 million premature deaths annually, with **de-carbonisation** also improving food security and access to water for people in parts of Africa.

Total value of new research grants awarded to LSHTM 2018/19: £180m

London **£158.5m** | The Gambia **£17m** | Uganda **£4.6m**

Income from new research grants is phased over a number of years according to the grant duration. Research income data for 2018/19 is shown on page 21.

Health across the life course

In the midst of a worldwide resurgence of measles due to falling levels of vaccine coverage, the Vaccine Confidence Project, led by Professor Heidi Larson, continues to monitor **global vaccine hesitancy**, develop and evaluate interventions, and advise governments and health organisations on how to respond. LSHTM data for a Vaccine Confidence Index, published in the Wellcome Global Monitor report, showed Europe is the region with the least confidence in vaccines.

Analysis of the largest African **genomic datasets** ever collected could improve understanding of diseases and aid the search for treatments, as suggested in a study by Dr Segun Fatumo, Professor Pontiano Kaleebu and colleagues from the MRC/UVRI & LSHTM Uganda Research Unit, published in *Cell*. Around a quarter of the genetic variation identified in the new study had not been discovered before. By discovering novel genes that are linked to common and complex diseases found in Africa, researchers



A doctor prepares a dose of measles vaccine for a young child in a medical centre inside the Rohingya refugee camp in Kutupalong, Cox's Bazar, Bangladesh. Credit: Louis Leeson/LSHTM

could pave the way for new ways to diagnose, prevent and treat them.

In the UK, Dr Heather Wardle and colleagues called for a radical overhaul of **gambling** laws, including a tax on the industry to prevent gambling harms and support those with gambling problems. As gambling

is increasingly being recognised as a public health issue, analysis published in *BMJ* showed that the extent and cost of gambling has been significantly underestimated in Britain, and that major investment is needed to alleviate the growing burden on society.

Top funders for new research grants awarded to LSHTM 2018/19



UK Research and Innovation	£55.7m	Unitaid	£9.8m
UK Department of Health and Social Care	£30m	UK Department for International Development	£9m
Bill & Melinda Gates Foundation	£18.2m	European Union	£8.9m
Wellcome Trust	£11.1m	US Federal Funding	£7.8m

School Centres

Cross-institution networks of academics, collaborating and innovating to address global health challenges. In 2019, we launched a new Centre on Climate Change and Planetary Health.



Improving understanding and responses to chronic conditions globally.

CCGC was designated a WHO Collaborating Centre for Health Systems and Chronic Conditions. We formalised our partnership with the Population Health Research Institute in Canada to develop collaborative studies on health systems responses to cardiovascular disease.

@LSHTM_CGCC



Placing mental health on the global agenda.

Celebrating its 10th anniversary, CGMH continues to be instrumental in shaping the Global Mental Health field e.g., leading major events on mental health in the Americas and Africa, and advising organisations like DFID and the World Bank in their approach to mental health.

@GMentalHealth



Improving global health practice through evaluation.

The Centre launched its provision of bespoke training workshops on the design of rigorous Process Evaluations and how to integrate these into Impact Evaluations. So far, we have conducted workshops for research partners in South Africa, Zambia, Ethiopia and the UK.

@LSHTMEvaluation



Improving health worldwide for women, children and adolescents.

We celebrated 30 years of Maternal Health Research and in 2020 will celebrate a decade of the MARCH Centre. We partnered with UCL on the first text book on global health of women, children and adolescents and were short-listed for BMA book awards.

@MARCH_LSHTM



Inspiring innovation in AMR research through interdisciplinary and international engagements.

The AMR Centre ran its second short course in July 2019. All places were filled, with delegates from Africa, EU, Asia and the Middle East. The multi-disciplinary learning – from lab to policy – was applauded for its breadth and depth.

@LSHTM_AMR



Bringing vaccine research together.

Events organised on campus at LSHTM have been intentionally interdisciplinary and international such as: the Urban Immunisation workshop May 2019, UK-China vaccine symposium event June 2019, workshops on Vaccines for sexually transmitted diseases and Group A strep vaccine development in September and October 2019.

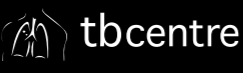
@LSHTM_AMR



Future-proofing our world.

LSHTM's newest Centre, on Climate Change and Planetary Health, opened in May 2019 and the launch attracted several hundred attendees. The Centre aims to improve global health worldwide through research and engagement to address global environmental changes.

@LSHTM_Planet



Research and advocacy to end TB.

Centre Co-Director Katharina Kranzer was awarded the prestigious Scientific Prize at the Union World Conference on Lung Health. The TB Centre was also named as a collaborating centre on WHO's new public-private mix learning network launched at the conference.

@LSHTM_TB



Improving the health of populations affected by humanitarian crises.

We worked with Afghanistan's Minister of Health to finalise a new priority package of health services for the whole country. This approach can be useful for other countries with ongoing armed conflict or chronic emergencies.

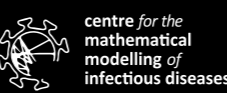
@LSHTM_Crises



Boosting big data expertise and applying genomic technologies across LSHTM.

Collaborations were initiated with London-based researchers, and LSHTM's African MRC Units to boost LSHTM genomics and informatics capabilities. International grants were funded using the TAGC network of genome centres.

tagc.lshtm.ac.uk



Modelling infectious disease dynamics to improve global health.

Our annual conference (IDDconf) sold out in 5.5 weeks and has become a major event in the national calendar. We also held our inaugural annual lecture to celebrate the on-going career of Professor Sunetra Gupta (University of Oxford) in infectious disease modelling.

@cmmid_lshtm



Contributing to historical understanding of public health policy and practice.

We embarked on an investigation into LSHTM's colonial past, with topics such as tropical medicine and education, research programmes and colonial continuities, and conflicts including the WWI and WWII.

@LSHTMhistory



Gathering statistical and methodological expertise to strengthen research capacity in epidemiology, public health, and policy.

The Centre recognises the importance of statistical machine learning and computational methods, with new themes on: 'Bayesian approaches' and 'Big Data and Machine Learning', which are part of the new MSc in Health Data Science.

@LSHTMstatmethod



Providing the authoritative academic voice on malaria.

For over 20 years, Centre members have generated evidence on the interventions that underpin two decades of unprecedented progress in malaria control. Our series of Anniversary Blogs reflect on these advances; whilst the 9th Malaria Centre Report 2017-2019 showcases current research – with 120 projects in 53 countries worldwide.

@LSHTM_malaria

LSHTM is home to a large number of active research groupings and networks, working to address major public and global health challenges. These include the Centre For Health Economics In London, the Gender Violence and Health Centre, the International Centre for Evidence in Disability, and the International Centre for Eye Health. Find out more about these and many others at lshtm.ac.uk/research

Partnerships



Following the MRC Unit The Gambia and the MRC/UVRI Uganda Research Unit joining LSHTM last year, this year we have been enhancing collaborative relationships in

Africa and dedicated some of our Wellcome-funded Institutional Strategic Support Fund to an **African partnership grants scheme**. Eight proposals were awarded funding and will support collaborative activity with both MRC Units and partners including Africa Health Research Institute, South Africa; Biomedical Research and Training Institute, Zimbabwe; Malawi Epidemiology and Intervention Research Unit, Malawi; Mwanza Intervention Trials Unit, Tanzania; and Zambart, Zambia.



In November we organised a joint conference with the Ethiopian Public Health Institute on **'Maternal, Newborn and Child Health in Ethiopia'**, showcasing collaborations between LSHTM and Ethiopian partners.



The Centre de Recherche Entomologique de Cotonou/LSHTM Collaborative Research Programme in Benin was certified as an OECD Good Laboratory Practice Compliant Facility in January. The facility is the first in West Africa and the second in Africa to achieve this accreditation for **vector control product evaluation**, delivered in

Japan and the Philippines, took place in April-June.



LSHTM has been supporting colleagues at Nagasaki University to develop an Asian Professional Diploma in Tropical Medicine & Hygiene. A pilot course, accredited by Nagasaki and delivered in Japan and the Philippines, took

place in April-June. LSHTM staff and students participated in a symposium to launch the Nagasaki University Doctoral Programme for World-leading Innovation and Smart Education (WISE) in March 2019. The WISE programme provides financial support to a number of students on the **LSHTM-Nagasaki Joint PhD programme**.



LSHTM and the National University of Singapore expanded their collaboration in vaccinology by jointly running a **'Policy Symposium and Workshop on Vaccinology'** in India in November, in collaboration with local partners, the Translational Health Science and Technology Institute and Jawaharlal Institute of Postgraduate Medical Education and Research.



We started a new partnership with the Rega Institute for Medical Research at the Catholic University of Leuven, focussing on collaboration in the areas of **infectious**

disease research and vaccine development with an exchange programme funded by the Rega Institute.



LSHTM and the University of Cambridge, together with partners from several LMIC countries, jointly organised a two-day workshop in June to explore **collaboration on major global health challenges**, focussing particularly on enteric infectious disease.



We have strengthened our collaboration with Hong Kong University and started accepting a number of their undergraduate medical students to undertake **intercalated Masters study** at LSHTM.



We renewed our memorandum of understanding for **research and development in public health** with the Public Health Foundation of India, including continued collaboration on the joint LSHTM-PHFI South Asia Centre for Disability Inclusive Development & Research.



LSHTM and Charité Global Health organised a joint panel discussion on **migration and health systems** at Berlin Science Week 2019 and a joint Lecture Series is being planned for 2020.



The second phase of **Innovative Methods and Metrics for Agriculture and Nutrition Actions (IMMANA)**, a collaboration between LSHTM, Tufts University, SOAS University of London and the London Centre of Integrative Research on Agriculture and Health, got underway with a £13m (\$18m) grant from UK Aid and the Bill & Melinda Gates Foundation.



A researcher from the MRC/UVRI Uganda Research Unit interviewing a farm manager about illness in his flock as part of research looking at the use of anti-microbials in society.

Education

Our research-led educational programmes train future health leaders, managers and researchers across the globe.

1,211

London-based students 2019/20
(718 Master's and 493 doctoral)

3,107

Distance learning students 2019/20

993

Professional development course participants throughout 2018/19

Students by region

Region	Doctoral	MSc (London-based)	Distance learning
Africa	73	93	427
Central and Eastern Asia, Middle East	27	33	252
UK	192	297	702
Europe (non-UK)	76	113	619
North and Central America (inc. Caribbean)	92	118	715
South America	5	10	44
South Asia	15	28	114
South East Asia & Oceania	13	26	237

In 2019, we proudly announced a new **MSc in Health Data Science**, funded by Health Data Research UK, to help address the skills shortage in data science in the UK. The MSc begins its first intake in September 2020 and will train a new generation of scientists in quantitative, computational, and practical data management skills applicable to the public and private sector.

New initiatives to enhance student experience included the launch of a **Student Hub** to provide key student services. Results from the

UK-wide Postgraduate Taught Experience Survey ranked LSHTM in the highest quarter of institutions for student engagement.

Professor Judith Glynn was appointed the new Head of our **Doctoral College** in March 2019 and has further strengthened and supported the training of doctoral students across LSHTM.

Our collaboration with WPP Health Practice led to the launch of a new series of **communications skills** lectures, designed to ensure our

students leave LSHTM with not only a rich understanding of global and public health, but also the skills to communicate effectively throughout their careers in a way that will foster action in the real world.

For the first time we delivered a **professional development** course at the MRC Unit The Gambia at LSHTM. The Introductory Course in Epidemiology & Medical Statistics was the first in what will be an expanded educational offering in West Africa.



Our students in 2019 on the steps of Keppel Street, London.



“The diploma I received at LSHTM has really been the foundation of everything I have done in broadcasting, in clinical medicine and in science.”

Dr Chris van Tulleken
Infection doctor and TV presenter,
Diploma in Tropical Medicine & Hygiene (2006)



“My MSc from LSHTM has transformed my life. I decided I didn’t want to just stay in the lab, I wanted to get out into the world and do something with my science. Suddenly it was not just about numbers. There are different ways in which you can use your qualifications from LSHTM, and it’s personally taken me into policy and now entrepreneurship, and I know this is a continuing journey.”

Dr Precious Lunga
CEO and Co-Founder of Baobab Circle
and member of LSHTM’s Council,
MSc in Epidemiology (2007)



7th in the UK for quality of teaching

90% of students reported a high level of overall satisfaction

Data from Postgraduate Taught Experience Survey 2019 across 84 UK higher education institutions



Collaborative Award for Teaching Excellence from Advance HE for Open Education in Eye Health at LSHTM



70,000+ participants globally have studied our free online courses to date

Free online courses launched in 2019:

Integrated Healthcare for Children with Developmental Disabilities

The Role of Diagnostics in the Antimicrobial Resistance Response

Disease Outbreaks in Low- & Middle-Income Countries

Staff Community

Staff from LSHTM proudly marched in London Pride to **celebrate diversity**. Marking 50 years since the birth of the modern LGBT+ rights movement, our staff helped make 2019 the biggest ever Pride in London event with over a million people taking part.

We announced eight **new Professorial appointments** in 2019:

- Antonio Gasparrini, Professor of Biostatistics and Epidemiology
- Karen Devries, Professor of Social Epidemiology
- Ruth Keogh, Professor of Medical Statistics
- ◊ Matthew Cotten, Professor of Pathogen Genomics
- ◊ Liz Miller, Professor of Vaccine Epidemiology
- ◊ Andrew Briggs, Professor in Health Economics
- ◊ Simon Frost, Professor of Pathogen Dynamics
- ◊ Jaime Miranda, Professor of Global Health



• Internal appointment ◊ External appointment



Esmael Habtamu Ali receives the 2019 Director's Award for 'Early Career Research' from Peter Piot.

2019 LSHTM Director's Award winners

Early career: Research – Esmael Habtamu Ali, Postdoctoral Research Fellow

Early career: Professional services – Fion Hay, Department Operations Administrator

Outstanding team: Research – The Social Aspects of Health Programme, MRC/UVRI & LSHTM Uganda Research Unit

Outstanding team: Professional Services – Central Services Unit, Faculty of Infectious and Tropical Diseases

Outstanding contribution to LSHTM: Research – Mustapha Ceesay, Senior Research Associate

Outstanding contribution to LSHTM: Professional Services – Ambrose Basoa, Head of Estates at MRC Unit The Gambia at LSHTM

Excellence for learning, teaching, assessment or the wider student experience – David Allen, Assistant Professor in Virology

Excellence in developing students as researchers – Jim Todd, Professor in Applied Biostatistics, and Nicki Thorogood, Associate Professor in Sociology (jointly awarded)

Innovation – LSHTM Refectory Team for the 'Planetary Pick' menu

Public engagement – Sadie Bell, Research Fellow

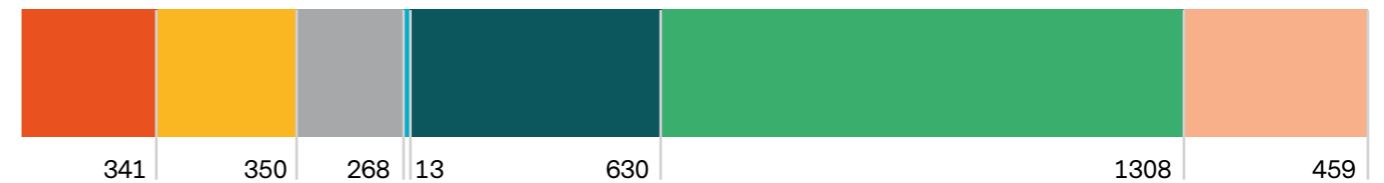


Dr Uduak Okomo

Notable awards and honours

- February: **Uduak Okomo** received an OWSD-Elsevier Foundation Award for Early-Career Women Scientists in the Developing World
- April: **Julian Peto** elected as a Fellow of the Royal Society
- April: **Vikram Patel**, LSHTM Honorary Professor, received the Canada Gairdner Global Health Award 2019
- April: **Ian Roberts** awarded the Faculty of Public Health's Bazalgette Professorship Champion of Evidence Award
- April: **LSHTM's sustainable labs initiative** wins the Laboratory Improvement category at the 2019 S-Lab Awards
- June: **Chris Whitty** appointed new Chief Medical Officer for England and the UK Government's Chief Medical Adviser
- June: **Charlotte Watts** appointed a Companion of the Most Distinguished Order of St Michael and St George in the Queen's Birthday Honours
- September: **Hans Kluge**, LSHTM Honorary Professor, nominated as WHO Regional Director for Europe
- September: **Martin McKee** received the WHO Europe Regional Director's award for health
- November: **David Mabey** awarded the Prince Mahidol Award 2019 in the field of Public Health
- November: L'Oréal-UNESCO Women in Science Young Talent Awards received by **Jacqueline Kyosiimire-Lugemwa** at MRC/UVRI & LSHTM Uganda Research Unit, and **Ines Ngho** at MRC Unit The Gambia at LSHTM

Staff by area of LSHTM:



● Faculty of Epidemiology & Population Health: 341 academic staff

● Faculty of Infectious & Tropical Diseases: 350 academic staff

● Faculty of Public Health & Policy: 268 academic staff

● LIDC & Central Services: 13 academic staff

● Professional services staff across LSHTM (non-Unit): 630 staff

● MRC Unit The Gambia at LSHTM: 811 scientific staff; 497 non-scientific staff

● MRC/UVRI and LSHTM Uganda Research Unit: 49 scientific staff; 410 non-scientific staff

000000 Total number of staff **3,369**

We have staff from **74** countries

LSHTM on the global stage in 2019



HRH The Duke of Cambridge, New Zealand Prime Minister Jacinda Ardern, and Friendship Bench founder Dr Dixon Chibanda on a mental health panel at Davos. Credit: Markus Schreiber/AP/Shutterstock.

Dame Sally Davies recognised the contribution of LSHTM to **improving global health** in her final annual report as Chief Medical Officer for England. Dame Sally highlighted LSHTM's work in disease outbreak response, health in humanitarian crises and mental health, as well as our role in developing the next generation of health professionals and leaders through research and postgraduate education programmes.

The MRC/UVRI & LSHTM Uganda Research Unit welcomed a visit from Dr Tedros Adhanom Ghebreyesus, **WHO Director-General**, who paid tribute to the Unit for their contribution to the country's Ebola surveillance and preparedness efforts.

Bill Gates also praised experts from across LSHTM who are working around the world to stop **infectious disease outbreaks**. In his Gates Notes series he applauded the work of Professor Peter Piot on Ebola, and of Professor Dan Bausch and the UK

Public Health Rapid Support Team in providing a crucial team to protect the world from the next pandemic.

In the UK, Her Royal Highness The Countess of Wessex met with LSHTM researchers from the **Commonwealth Eye Health Consortium** to find out how their work is developing and expanding eye health services across the Commonwealth.

His Royal Highness The Duke of Cambridge and the New Zealand Prime Minister, Jacinda Ardern, joined LSHTM Assistant Professor Dixon Chibanda at a major panel discussion on mental health at the World Economic Forum annual meeting in Davos, Switzerland. LSHTM's Dr Chibanda founded the innovative **'Friendship Bench'** programme which has become an international, community-led mental health intervention.

LSHTM's **Gender Violence and Health Centre**, led by Associate Professor

Heidi Stöckl, became a WHO Collaborating Centre on Research on Gender-based Violence. LSHTM now has four WHO Collaborating Centres, with the others focusing on new vaccines surveillance, sexually transmitted infections, and research and training in injury and violence prevention.



30,171 alumni in 194 countries/territories

37 alumni chapters

33 chapter events in 15 countries in 2019

120 alumni events planned in 2019/20 to celebrate 120 years of health innovation!



Focus on: climate action from our staff community

Our new Centre on Climate Change and Planetary Health launched this year to identify solutions to the impact of environmental change on human health. The Centre builds on more than 25 years of LSHTM environment-health research, with immediate focus on healthy and sustainable cities of the future, halting the spread of infectious diseases, and food systems that provide healthy and sustainable diets for all. Led by Professor Alan Dangour, the Centre has strong links with policy and practice communities and is connecting with the public to raise awareness that climate change is a health emergency that will affect all of us and our families. The Centre co-hosted an event with WHO at the UN Climate Change Conference COP25 in Madrid.

Prof Dangour was the specialist advisor to the UK Government's Environmental Audit Committee for their inquiry on planetary health. The resulting 'Our Planet, Our Health' report published by the House of Commons highlighted the extent to which climate change could affect the health and well-being of the UK's population and reported that high dependency on imported fresh food, coupled with failure to act on climate breakdown, is risking national food

security. Further contributions to the report were made by Professor Sir Andy Haines, Professor Charlotte Watts, Professor Chris Whitty and Professor Claire Heffernan.

Officials from the Gambian Government's Ministry of Petroleum & Energy and the United Nations Industrial Development Organization attended the historic inauguration of a solar power generation system at MRC Unit The Gambia at LSHTM. The system is the biggest of its kind in The Gambia. It will produce 920 megawatts per annum, reducing energy bills by 25% and cutting 1,250 tons of annual carbon emissions. The initiative was also highlighted by the Gambian Government at COP25.

Staff demonstrated their commitment to environmental sustainability throughout the year by introducing new initiatives across LSHTM and getting involved in events such as London Climate Action Week and the Global Climate Strike.

The Planetary Health Network grew to become a community of more than 100 early career researchers across LSHTM, running debates and discussions to collaborate on improving the health of people and the planet.

In order to reduce carbon emissions from flights, researchers in the Sustainable and Healthy Food Systems programme decided to replace their planned annual meeting in India with a virtual meeting between teams in the UK, India and South Africa. In addition to LSHTM investing in new virtual conferencing facilities, we rolled out new video conferencing software to all staff to provide a sustainable alternative to carbon-heavy business travel.

Food served in LSHTM's cafés and at catered events was redesigned to feature a 'Planetary Pick' menu that provides a healthy diet which also minimises environmental damage to our planet.

LSHTM jumped 66 places in the People & Planet University League between 2016 to 2019 and is now 52nd out of 154 UK universities for environmental and ethical performance.

In response to the UK Parliament declaring a climate change emergency in May 2019, we began developing a new energy and carbon management plan. Comprehensive actions to reduce emissions are being taken forward by our staff community with the aim of achieving carbon neutrality by 2030.



23,000+ news stories about LSHTM in newspapers, TV, radio and online around the world in 2019

120,000+ social media followers on @LSHTM Facebook, Twitter, Instagram and LinkedIn

9,408,000+ reach on YouTube, Twitter and Facebook for #LSHTM120



"One of the most important things I learned at LSHTM is about politics and social sciences in relation to health. When I sat and listened to lectures about social contexts, political contexts, developing policies, how decisions are made, it enabled me to do the work I am doing every day; negotiating the politics of public health."

Dr Matshidiso Moeti

WHO Regional Director for Africa,
MSc in Community Health for Developing Countries (1986), LSHTM Honorary Fellow (2018)

Innovation

The London School of Hygiene & Tropical Medicine was established in 1899 by Sir Patrick Manson and has been at the forefront of innovative scientific research and health discoveries throughout its history. As we mark our **120th year** we have been providing new opportunities for staff and students to translate their research into impact.

Our new **Innovation Seminar Series** saw Council members Dr Annalisa Jenkins and Dr Precious Lunga share their perspectives on how innovation has shaped their careers. During our annual LSHTM Week, an inaugural Dragon's Den-style innovation funding competition gave budding innovators from across the institution the opportunity to pitch transformational ideas to tackle global health challenges.



Dog sniffing malaria samples as part of ARCTEC's research. Credit: Once Upon a Pixel/LSHTM/Durham University/Medical Detection Dogs

A **UKRI Global Impact Accelerator Account** enhanced our ability to translate research into impact through capability strengthening, the development of innovative digital resources and engagement with policymakers in Africa and Asia.

Our spinouts have continued to transform our ideas and specialist knowledge into innovative products and services. **Peek Vision's** partnership with CBM International has established a school and community eye health programme

in Pakistan, which is currently seeing over 1,000 people per day. In Kenya, the Peek School Eye Health trial has been scaled up to include over 400 schools and nearly 200,000 children.

ARCTEC continues to thrive and enable innovation in vector control and drive social impact, with an expanding team of 20 staff. This year ARCTEC is leading several large-scale, intervention studies in Brazil and Cambodia to evaluate the impact of commercial vector control products on mosquito populations and disease

incidence. ARCTEC also recently co-led a study which demonstrated the effective use of dogs as a non-invasive malaria detection method. Professor James Logan excited audiences at TEDxLondon with his work on the use of sniffer dogs to detect malaria.

Our bench to bedside vaccine pipeline was strengthened through our partnership with the University of Oxford and Imperial College London in the UK's first dedicated **Vaccines Manufacturing Innovation**

Centre (VMIC), a £67 million facility supported by the Industrial Strategy Challenge Fund. Located at the Harwell HealthTec Cluster, VMIC will rapidly accelerate vaccine research and establish the UK's first vaccines advanced manufacturing capabilities.

Our innovation ecosystem will continue to be strengthened through a new **Wellcome Institutional Translation Partnership Award**, providing dedicated seed funding, training and translational facilitation.

A new £50m partnership, **NEST360°**, was co-founded by Professor Joy Lawn to find innovative solutions and technologies to support the UN target to halve newborn deaths by 2030. Worldwide, almost half of childhood deaths occur in the first four weeks of life, totalling 2.5 million each year, with the highest risks and slowest progress in Africa.

A special '**LSHTM 120 keynote lecture**' featured alumni who shared their personal accounts of working on the frontline of innovation in health. Following this, global and public health leaders joined staff, students and alumni to celebrate LSHTM's proud history of innovation and met with experts from our School working on current innovations from the Mostowy Lab, the Logan Research Group, Peek, NEST360°, and the Friendship Bench.

Forthcoming events and activities planned for 2020 can be found at lshtm.ac.uk/120



Celebrating women in science

To mark our 120th anniversary celebrations, we added three new names to the façade of our Grade II listed building on Keppel Street in London. Since opening in 1929, the frieze of our building has featured the names of 23 notable health scientists such as our founder Sir Patrick Manson, Nobel Prize winner Sir Ronald Ross, and microbiologist Louis Pasteur. They are the great and the good of health and tropical medicine. They are also all men. Three new names from the same historical era were suggested by our staff and better reflect the diversity of global talent in public health, medicine and the health sciences. The names of Marie Skłodowska-Curie, Florence Nightingale, and Alice Ball now proudly adorn our iconic building.



"I thank LSHTM for what I've learnt here, what we take to the streets, what we take around the world, that leadership. You saw beyond our race, you saw beyond our scarves, and you saw beyond our disabilities. You saw innovation."

Dorcas Gwata

Public Health Specialist at the Westminster Multi-agency Integrated Gangs Unit, MSc in Public Health (2008)

Historical Innovations from the London School of Hygiene & Tropical Medicine

For 120 years, we have been training future public health experts and carrying out research to improve health all around the world. Here are some of the ways we've changed health so far...

1948

We created the modern randomised controlled trial.

In 1948, while working on tuberculosis, Professor Austin Bradford Hill introduced methodology to evaluate health interventions: the randomised controlled trial. This is now the 'gold standard' of trial design, used by scientists around the world to make fair comparisons between interventions. It is also widely applied to study the impact of social and development interventions.



1953

We're home to the 'inventor of exercise'.

In 1953, Professor Jerry Morris published a famous study comparing heart disease between bus conductors and bus drivers. It showed that sedentary bus drivers had much higher rates of heart disease than the more active conductors. This was the first evidence demonstrating the important connection between exercise and health. So you can thank Jerry for those trips to the gym!



1980s

We established one of the largest and most comprehensive scientific studies of sexual behaviour in the world.

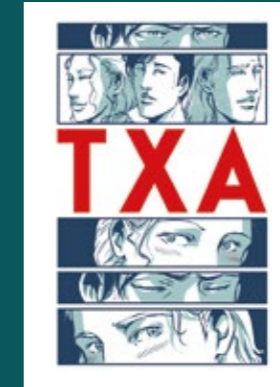
Working with UCL in the late 1980s, Professor Kaye Wellings and colleagues co-founded the National Survey of Sexual Attitudes and Lifestyles in response to the emerging HIV epidemic. Conducted every 10 years, the findings have greatly influenced current-day sexual health education and services in Britain, including those for HIV, chlamydia screening, teenage pregnancy, and health education campaigns for young people and men who have sex with men.



2000s

We helped expand access to effective antimalarial treatment through the private sector.

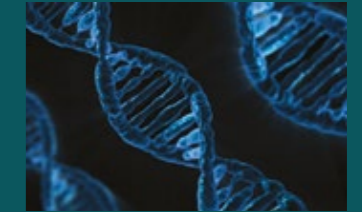
In the early 2000s, Professor Kara Hanson, Professor Catherine Goodman and colleagues showed antimalarial medicines were widely available from retail outlets, and evaluated the impact of private sector interventions. This played an influential role in the creation of a global financing mechanism designed to improve access to drugs through subsidies and price negotiations.



2010

We showed how a cheap and widely available drug could stop tens of thousands of trauma patients from bleeding to death needlessly.

In 2010, the CRASH-2 trial demonstrated that the clot stabilising drug tranexamic acid reduced the chances of death from severe blood loss by a third. Traumatic bleeding, mostly from road traffic accidents or violent crimes, kills millions of people per year. Professor Haleema Shakur-Still, Professor Ian Roberts and colleagues went on to demonstrate how the same drug could prevent women dying from blood loss in childbirth.



2015

We demonstrated that a mother's diet before conception can permanently alter how her child's genes function.

In 2015, Professor Andrew Prentice and colleagues at MRC Unit The Gambia at LSHTM published the first evidence of this epigenetic modification on future offspring's DNA. Further studies demonstrated changes to the function of a gene influencing immunity and cancer risk.

Here's to another 120 years of health innovation!



1950

We proved the link between smoking and lung cancer.

In 1950, Professors Richard Doll and Austin Bradford Hill published an early study connecting smoking with lung cancer. They went on to study the smoking habits of 40,000 doctors, providing important evidence that death rates from lung cancer and heart attacks increased with the amount smoked.

1958

We linked pollution with respiratory conditions.

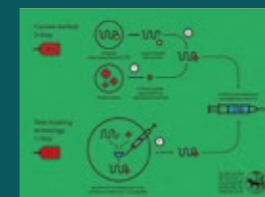
In 1958, Professor Donald Reid and Dr A S Fairbairn conducted surveys of respiratory illness among civil servants which suggested that areas with frequent, thick and polluted fog had a higher incidence of chronic bronchitis and that the disease in these areas had a more serious prognosis.



1980s

We showed that bed nets treated with insecticide could stop millions of children dying from malaria.

Since the 1980s, experts including Professor Brian Greenwood and Professor Umberto D'Alessandro have helped develop, test and roll out insecticide treated bed nets to people living in regions with malaria. We proved these nets could prevent millions of deaths and are highly cost-effective. Now over half the population of sub-Saharan Africa sleep under them. Their use has played a major part in halving malaria deaths over the past 20 years.



2000s

We developed a new method to create cheaper vaccines.

Professor Brendan Wren and Associate Professor Jon Cuccui developed an innovative glycoengineering technique to create vaccines. Traditional glycoconjugate vaccines for protection against bacterial pneumonia and meningitis require over 300 steps, are very expensive and not currently produced in the UK. This new method is incredibly low cost and can be used to create new vaccines for many bacterial diseases that do not currently have one.



2005

We put the issue of newborn deaths and still births on the global agenda.

In 2005, Professor Joy Lawn and colleagues published the first national estimates on the causes of newborn deaths and the numbers of stillbirths around the world. 99% of the 8 million deaths each year were in low- and middle-income countries, yet were invisible on the global and political agendas. Thanks to ongoing work, targets for preventing these deaths are now included in the UN's Sustainable Development Goals, and innovations in communities and hospitals are saving babies' lives daily.

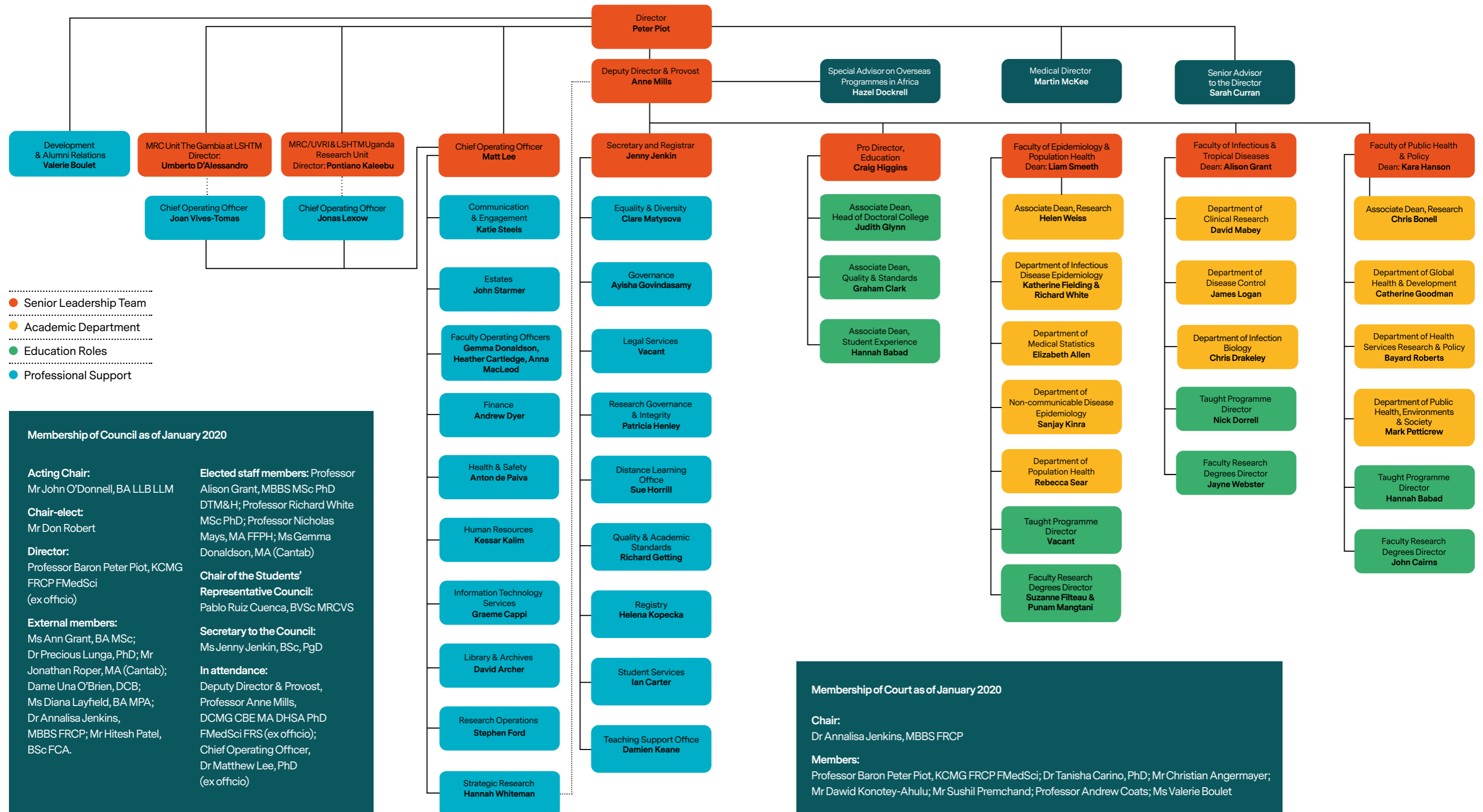
2014-16

We introduced a novel design for vaccinating people against Ebola.

In the 2014-16 Ebola outbreak in West Africa, Professor John Edmunds and colleagues designed an innovative 'ring vaccination' approach for a trial of the rVSV-ZEBOV vaccine in Guinea. The same design was later used as the vaccination strategy during 2019's major Ebola outbreak in the Democratic Republic of the Congo.



Organisational Chart as of January 2020



Financial summary 2018/19



Total annual income 2018/19:

UK Research and Innovation	£42.3m
UK government health and international development	£25.2m
European Union research	£22.3m
Bill & Melinda Gates Foundation	£18.1m
Wellcome Trust	£13.0m
Other funded research	£46.7m
Research England / Office for Students Core Research & Teaching	£26.3m
Tuition Fees	£22.6m
Donations	£6.2m
Other income	£18.6m

Combined competitive research income for 2018/19 £167.6m

Total annual operating income 2018/19:



Total annual operating expenditure 2018/19:



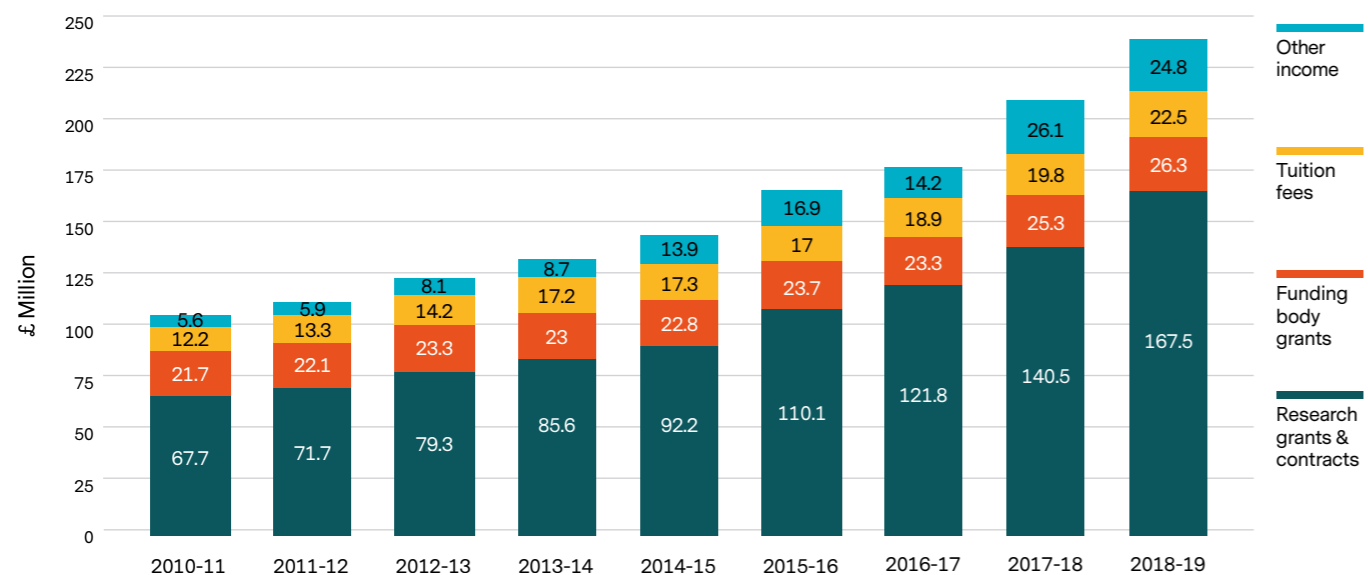
Total research income 2018/19 for MRC Unit The Gambia at LSHTM £24.2m

UK government Research & Innovation	£15.7m
UK government health and international development	£1.0m
European Union research	£1.2m
Charities	£2.4m
Other funded research	£3.9m

Total research income 2018/19 MRC/UVRI & LSHTM Uganda Research Unit £10.6m

UK government Research & Innovation	£6.0m
UK government health and international development	£0.7m
European Union research	£0.9m
Charities	£1.7m
Other funded research	£1.3m

Income growth



Thank you

We would like to thank all those who supported LSHTM in the last academic year (1 August 2018-31 July 2019). Members of our giving societies, along with our most generous corporate, foundation and governmental funders are listed below.

Special thanks goes to individuals who have helped LSHTM on its mission to improve health worldwide. These include Court representatives, the Board of the American Friends of LSHTM, the Japanese Ambassador HE Koji Tsuruoka, Sir Michael Hintze, Ben Plumley and Wim Sohler, as well as alumni who lead Chapters around the world.

In 2019, LSHTM was pleased to announce the establishment of the Takeda Chair in Global Child Health, endowed by a £3 million donation by Takeda Pharmaceutical Company Limited. This post will play a critical role in consolidating LSHTM's child health research across more than 100 countries, accelerating change for one of the biggest global health challenges, and further strengthening LSHTM's position as a leader in maternal, child and adolescent health.

We are also grateful to partners we have collaborated with, including The Milken Institute, Flanders Trade and Investment - Americas, Women Leaders in Global Health, ASTMH and Global Health Corps.

Corporations, foundations and governments	Countdown 2030	Gilead Sciences Europe Ltd	The Millby Foundation	Takeda Pharmaceutical Company Ltd	Charlie Easmon
3ie	David & Molly Pyott Foundation	9GlaxoSmithKline	Multiple Sclerosis Society	Thea Corporate Foundation	Albert Faber
The Academy of Medical Sciences	Defense Threat Reduction Agency	The Global Fund to Fight Aids	National Institute for Health Research	Tijssen Stichting	Ann Fazakerley
The Allan & NESTA Ferguson Charitable Trust	Department for Business Energy and Industrial Strategy	Global Alliance for TB Drug Development	National Institute of Academic Anaesthesia	UK Research and Innovation	Leah Fisch
Amgen Limited	Department for International Development	Global Campaign for Mental Health	Natural Environment Research Council	Unicef	Sally Gale
Astra International	Department of Foreign Affairs and Trade	The Health Foundation	Natural Environment Research Council	UNITAIDS	John Gawoski
AusAID	Department of Health	Healthcare Solutions Limited	Natural Environment Research Council	The Uplands Trust, in memory Anne and Hugh Johnson	Clare Gilbert
Bayer HealthCare	The Dowager Countess Eleanor Peel Trust	The Indigo Trust	The Novartis Foundation	UNAIDS	Mary Graham
Biotechnology and Biological Sciences Research Council	The Drake Foundation	Innovative Medicines Initiative	Novo Nordisk A/S	United Nations Development Programme	Brian & Alice Greenwood
Beckman Coulter, Inc	Drugs for Neglected Diseases Initiative	Intellectual Ventures / Global Good Fund	Oak Foundation	USAID	Andy Haines
Becton, Dickinson & Company	Economic & Social Research Council	Intensive Care National Audit & Research Centre	Open Society Foundations	Vertex Ltd	Lauren Hall & David Hearth
British Heart Foundation	Engineering & Physical Sciences Research Council	Inter-American Development Bank	Ove Arup & Partners Ltd	ViiV Healthcare UK Limited	Masood Haque
Bill & Melinda Gates Foundation	Enhancing Learning and Research for Humanitarian Assistance	J P Moulton Charitable Trust	Paget Foundation Stichting	Wellcome Trust	Chris Jukes
Boston Scientific Corporation	Epicentre	Janssen Pharmaceutica	Pancreatic Cancer Research Fund	Wellspring Philanthropic Fund	Sultana Khanum
Brien Holden Vision Institute	European and Developing Countries Clinical Trials Partnership	Johnson & Johnson	PATH	World Health Organization	Hannah Kuper
British Academy	European Commission	Kidney Research UK	The Pfizer Foundation	The Wolfson Foundation	Shirley Lennon
British Council	Food Standards Agency	King Baudouin Foundation	The Queen Elizabeth Diamond Jubilee Trust	Worldwide Support for Development	Gillian Mander
Buro Happold Limited	The Fred Hollows Foundation	Leverhulme Trust	Relief International	Zibp GmbH	Anne Mills
Cancer Research UK	Fundacion Centro Nacional De Investigaciones Cardiovasculares Carlos III	Light for the World	The Royal Society	Seva Foundation	Colin Morgan
The Carter Center	Medical Care Development International	ME Support Isle of Man	Royal College of Obstetricians and Gynaecologists	Shirley Methodist Church	John O'Donnell
Centers for Disease Control and Prevention	Medical Research Council	The MEA Ramsay Research Fund	Seva Foundation	Sightsavers International	Helen Oliver
Children's Investment Fund Foundation	Merck Foundation	Takeda Pharmaceutical Company Limited	Shirley Methodist Church	The Steel Charitable Trust	John Paget
Christoffel-Blindenmission	Merck Sharp & Dohme Limited	Medical Care Development International	Sightsavers International	Stichting Benevolentia	Peter Piot
Conrad N Hilton Foundation	Merck Sharp & Dohme Limited	Medical Research Council	The Steel Charitable Trust	Swiss Agency for Development and Cooperation	Marjorie Scardino
Consorzio per la Ricerca Sanitaria - CORIS		Merck Sharp & Dohme Limited	Stichting Benevolentia		Eduardo Simoes
					Kathleen Smith
					Staufer Smith
					Gary Spiegel
					Mary Stow
					Geoffrey Targett
					Sten Vermund
					Philip Weintraub
					Peter White
					David Winter
					Andrew Young

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