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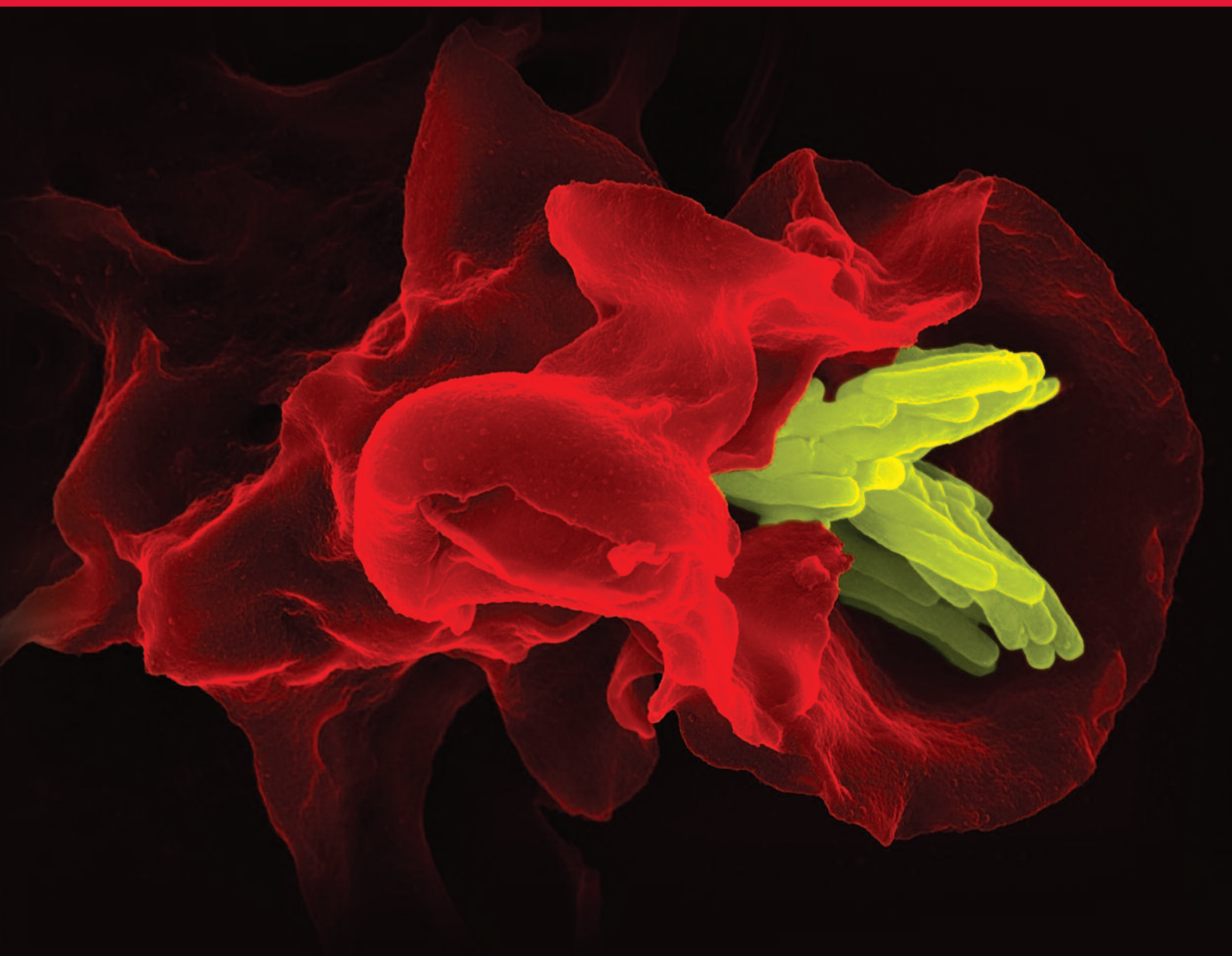
LSTM
LIVERPOOL SCHOOL
OF TROPICAL MEDICINE



Research Centre for Drugs & Diagnostics

2014-2015 issue

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Science in society: engaging with communitie

At LSTM we encourage our scientists and researchers to engage with the public. The aim is to inform public understanding of our work to improve the health of the world's poorest communities. In doing this, we hope to inspire the scientists and researchers of tomorrow. Equipping our staff with the skills and resources necessary to undertake these activities on a local and global scale.

Communicate your science workshop

In April 2014 LSTM researchers took part in a 'communicate your science' workshop, delivered by the British Science Association. The workshop provided an opportunity for participants to think about how their research affects society and how they can explain their work to the general public, rather than specialist audiences. Group discussions focussed on how outcomes will impact on society, allowing researchers the opportunity to explain their project in an accessible manner, while other members of the group, acting as members of the public, asked questions and gave feedback.

LSTM Senior Research Assistant in Pharmacovigilance, Cheryl Pace, said: "This was the first training I had ever done on public engagement and the challenge for me was to describe my area of drug safety in a way that most public audiences would understand. Referencing well known news stories and travel health, helped with communicating the importance of my work and how the outcomes of my research affects the public in the UK and overseas."

Workshops of this kind provide a sound base for researchers to work with LSTM's communications team, to give media interviews, organise events with schools, community groups and involvement with documentary programmes. With over 250 projects worldwide, there is a great deal of interest in LSTM activities. To meet this demand LSTM operates a wide-range of public engagement projects.

BRITISH SCIENCE ASSOCIATION

Research students release podcasts

LSTM research students Leigh Bowman, Kayla Barnes and Chris Spencer have collaborated with LSTM's communications team to introduce a monthly podcast highlighting some of the research work being carried out at LSTM. Each podcast contains two interviews with leading LSTM researchers talking about specific projects and initiatives. The first podcast released in February 2014, explored the work of the Cochrane Infectious Diseases Group, interviewing Co-ordinating Editor Professor Paul Garner and an interview with Professor Steve Torr, discussing his research into sleeping sickness and the changing behaviour of the tsetse fly.

While the second podcast released in early April 2014 featured Dr Rob Harrison, Head of LSTM's Alistair Reid Venom Research Unit, in conversation with podcast presenter Chris Spencer discussing the impact of snake bite on developing countries. Followed by Dr Esther Richards, LSTM Lecturer in Research Methods talking to presenter Kayla Barnes about research into the impact of gender on health-related outcomes. Visit LSTM's website and search for podcasts to discover more insights into our research.

s to inspire and inform

World Museum Creepy Crawly Weekend

Building upon the success of LSTM's rolling programme of school visits involving live mosquitoes, LSTM scientists are taking science out of the lab and into society. During December 2014, LSTM's Department of Vector Biology teamed up with World Museum Liverpool to present the second Creepy Crawly Weekend, organised in cooperation with Liverpool and Chester based Well Travelled Clinics. Hosted by World Museum, the aim of these weekends is to increase the understanding of LSTM's work on insect behaviour and control amongst a wider regional audience.

Various interactive displays, tools and games were specifically designed to target children and their parents, explaining how various insects behave and the risks affecting humans when travelling to disease-endemic regions. LSTM scientists set up a display of three different species of mosquitoes, which included a local mosquito species to compare with two species of anopheline mosquitoes that spread malaria. Live mosquito larvae and egg rafts were also on display under the microscope for children to play with and investigate. The most popular part of the workshop involved the feeding of the insects. Cages of mosquitoes were fed by offering up human arms and voracious tsetse flies were fed using an artificial membrane feeding system.

"The weekend was a great success and a lot of fun", said organiser Dr Lee Haines of LSTM's Vector Biology Department, "the children were engaged with the displays and asked a lot of good questions. They were really mesmerized by the behaviours of the mosquito larvae and how much blood pregnant tsetse flies could ingest. It was great to see their enthusiasm and how they took ideas from these insect experiences to then make their own insects in the crafts centre, where we provided them with all the building material they needed."

LSTM affiliated Well Travelled Clinics provided a display of bite prevention items and various forms of repellents that enlightened the parents of the visiting children. A comprehensive hand-out was available for future travellers to stay safe when visiting mosquito-infested destinations around the globe. The interactive workshop and displays were well attended with the Museum inviting LSTM to return for the next edition of Creepy Crawly and to contribute to a more permanent collection of insect vectors within the Bug House of the Museum.

"Engaging with the public about the work that is carried out at LSTM is of vital importance" continued Lee, "It gives us the opportunity to make sure that the wider public has a better understanding of LSTM, the kind of research that is carried out here and the impact that it has on healthcare globally."

Revealing the adaptive evolution of venom systems

Researchers from LSTM, along with a team of international biologists, recently sequenced the genome of the king cobra, one of the first snake genomes to be sequenced anywhere in the world, and believe that their work reveals dynamic evolution and adaptation in the snake venom system, which seemingly occurs in response to an evolutionary arms race between venomous snakes and their prey.

A paper co-led by Dr Nicholas Casewell, a Natural Environment Research Council (NERC) research Fellow at LSTM, and 34 co-authors from six countries, including the Director of the Alistair Reid Venom Research Unit at LSTM, Dr Robert Harrison, was published in the Proceedings of the National Academy of Sciences (PNAS) in December 2013. Members of this team also analysed the genome of the Burmese python (*Python molurus bivittatus*) and used it for comparison with the king cobra (*Ophiophagus hannah*). These papers represented the first complete and annotated snake genomes.

Snake venoms are complex protein mixtures encoded by several gene families and these proteins function synergistically to cause rapid paralysis or death in prey. The study provides an insight into the biology of the venom in snakes, and allows the understanding of the evolution of venom genes at the genome structural level. Armed with both the king cobra and Burmese python genome the team was able to show that, despite previous hypotheses that venom genes evolve "early" in the lineage leading to snakes, venom gene families do not duplicate early, in fact the study shows that the rapid and extensive expansion of functionally important venom toxin families is restricted to the venomous "advanced" snake lineage. The diversification of these toxins correlates directly with their functional importance in prey capture, for example the most pathogenic king cobra toxin family have undergone massive expansion, while, in contrast, venom proteins with less important functions do not participate in this evolutionary arms race occurring between snakes and their prey.

Dr Casewell said: "These are the first snake genomes to be sequenced and fully annotated and our results in relation to the king cobra provide a unique view of the origin and evolution of snake venom, including revealing multiple genome-level adaptive responses to natural selection in this complex biological weapon system. These adaptations include the massive and rapid expansion of gene families that produce venom toxins, providing the snake with a highly toxic protein mixture required to overcome a variety of different prey and also circumvent any resistance to venom that may have developed in such prey. Our study provides unique genome-wide perspectives on the adaptive evolution of venom systems as well as protein evolution in general. As such it contributes an essential foundation for understanding and comparing evolutionary genomic processes in venomous organisms."

Snakebite affects the lives of around 4.5 million people worldwide every year; seriously injuring 2.7 million men, women and children and killing in the region of 125,000 people every year. LSTM's Alistair Read Venom Unit has, for over 50 years, been researching snakes and their venom with the objective of improving the treatment of snakebite victims. The more research carried out to improve our understanding of the processes by which venom is produced and adapts to distinct environments is crucial to improve treatment. Dr Robert Harrison explained: "Venom comprises of about 200 different proteins and by being able to establish which of those proteins are the most toxic, and which adaptations lead to an increase in toxicity, we can look at ways to produce more effective antivenom, with potentially less severe side effects. We need to work on a global scale to improve the treatment of snakebite, working alongside international health agencies and national governments to ensure that it is prioritised as an important medical problem."

In addition to causing disfigurement and disability, research conducted in Sri Lanka with Professor David Lalloo has demonstrated the unrecognised psychological impact of snakebite. Compared to those who had not been bitten, snakebite victims were found to possess symptoms suggesting chronic psychological disability, as measured using indices of depression and post-traumatic stress. In Sri Lanka, the psychological impact of snakebite was found to be second only to the civil war. Findings were published in online open access journal Public Library of Science NTD.

King Cobra *Ophiophagus hannah*

Treating snakebite is typically unaffordable for sub-Saharan Africa's rural poor, particularly subsistence farmers who are at greatest risk. Treatment can cost as much as $400 for people – a substantial economic burden for people living on as little as $1 a day. The cost of antivenom is also unaffordable to many African government Ministries of Health in terms of the health benefits obtained for the funding invested. For example, despite the many successes of an LSTM-led project to address the antivenom supply crisis in Nigeria (2005-2011), funding from the Nigerian Federal Ministry of Health has been discontinued, resulting in a surge of snakebite deaths. It was hoped that recognition of snakebite as a neglected tropical disease by the World Health Organization in 2010 would help to address many of the issues concerning access and affordability of treatment, however, little progress has yet to be made.

The Alistair Reid Venom Research Unit receives funding to support therapeutic and basic biology research, from the Wellcome Trust, The Leverhulme Trust, the National Centre for the Replacement and Refinement & Reduction of Animals in Research, the UK Biotechnology, Biological Sciences Research Council, NERC and Medical Research Council. However, LSTM urgently needs to identify alternate sources of funding to further meet the needs of snakebite victims in Nigeria, and elsewhere in sub-Saharan Africa.

Proceedings of the National Academy of Science December 2013

115 years of excellence borne of philanthropy

Emerging from Liverpool's prominence as an international port, LSTM is a highly regarded part of Liverpool's diverse heritage. While our expansion and global reputation positions LSTM as a major contributor to Liverpool's resurgent future. On 12th November 1898 LSTM became the first institution in the world dedicated to research and teaching in the field of tropical medicine. As with many 19th century advancements, philanthropy was at the heart of LSTM's emergence. A £350 gift from successful shipping merchant Sir Alfred Lewis Jones (1845 – 1909) provided the impetus necessary to fuse scientific, humanitarian and commercial interests.

Sir Alfred was motivated by seeing masses of people returning from tropical countries having contracted a variety diseases and infections, including malaria, tropical dysentery, sleeping sickness and yellow fever. In addition to his humanitarian concerns, Sir Alfred was a businessman and the owner of the Elder Dempster shipping line and saw the financial benefits to conducting research into these life threatening diseases. Today The Elder Dempster Nigeria and Ghana Independence Trust, continues to support LSTM by offering scholarship funding to students from Nigeria and Ghana.

Upon becoming LSTM's first President in the 1960s, Brigadier Philip Toosey created a group of well-connected businessmen and influential decision makers, known as Vice Presidents. Individually and collectively responsible for facilitating philanthropic support. Today our Vice Presidents, have a broader remit and are selected from a wider stakeholder base, whilst continuing to campaign for funding on behalf of LSTM.

The support of the Bill & Melinda Gates Foundation, has helped LSTM to address some of the greatest health challenges facing the world's poorest communities. The Foundation, established by philanthropist and businessman Bill Gates, has had a huge impact on global health and the actions of governments and other funders. Significant funding from the Gates Foundation, to support LSTM research, provided the necessary confidence for public sector grant funding to support the building of LSTM's Centre for Tropical and Infectious Diseases. The Gates Foundation's Grand Challenges Exploration grant programme, awards grants to individuals working in any discipline to explore bold and innovative ideas that can break the mould in how we solve persistent global health and development challenges. During 2013 LSTM was the only organisation in the world to receive four of these awards.

In addition to receiving an annual donation from the Privy Purse Charitable Trust, LSTM enjoys the patronage of HRH The Princess Royal, who said: "That LSTM is celebrating 115 years is a testament to its excellence in experience, service and science in the field of tropical medicine and global health, also to its supporters and beneficiaries worldwide."

During a 115 year history, LSTM has grown into one of the leading international institutions in the fight against infectious,

debilitating and disabling diseases attracting scientists and students from across the world. Achievements and advancements to reduce the disease burden on the world's poorest communities that have been made possible thanks to the philanthropic spirit.

LSTM: A First World War Military Hospital

During the summer of 1914 the world was preparing for war and LSTM was building its first purpose built building, which would house Liverpool-based research and teaching facilities. The building on Pembroke Place, which remains at the heart of LSTM's campus today, was made possible thanks to a bequest from one of LSTM's founders, Sir Alfred Lewis Jones, which allowed LSTM to acquire and develop the site in 1913.

The building, consisted of five floors, constructed with a steel frame and fireproof concrete. The basement was to house photographic darkrooms and storage, the ground floor a lecture theatre, library and museum and academic departments and their laboratories on the upper floors. Topping it all off an animal house and insectaries on the roof.

Britain's entry into the First World War on 4th August 1914 led to the War Office's announcement that temporary military hospitals were needed in strategic locations throughout the UK. Due to Liverpool's significance as a major port a number of military hospitals were opened to treat returning soldiers. The new Sir Alfred Lewis Jones Tropical Diseases Ward at the Royal Infirmary in Liverpool, was used to treat emergency cases of wounded soldiers, however the Ward soon reached capacity. LSTM Chairman, Mr Danson and the governing body, immediately offered the new building, ideally situated only 300 yards from the Royal Infirmary.

In March 1915 Colonel William Coates (A.D.M.S. Western Command) accepted the offer saying "I have every reason to hope that this great kindness on your part and that of your committee will prove of the greatest service in this greatest national emergency." The Liverpool School of Tropical Medicine Auxiliary Medical Hospital opened on 8th December 1915, the Hospital contained over 200 beds for patients suffering from diseases and disorders, including malaria and dysentery.

Wards on the second and third floors were reserved for cases of 'tropical dysentery', where treatment and research was overseen by Professor Stephens, prior to him joining the war effort. 1916 saw the treatment of 3,436 cases and over 100 samples per day were examined for parasites, by LSTM diagnostic staff.

During the War the death toll from malaria outnumbered deaths from fighting.

During 1916 LSTM was asked by the War Office to conduct research into the treatment of malaria. Blood examinations were compulsory for all malaria patients, with over 2,000 cases coming through the doors in that year alone. Dr Blacklock was brought back from active service in The Dardanelles and Professor of Parasitology, Captain Warrington Yorke, who was based in Malta (1915-1916), returned to conduct malaria treatment studies. A series of 32 papers were published in the Annals of Tropical Medicine and Parasitology known as 'Studies in the Treatment of Malaria'. The scope of the research covered the treatment of malaria patients, diagnostic procedures, epidemiology, basic biological science and clinical observations. The nature of the research was determined by LSTM and supported by the War Office.

Blacklock found that the oral administration of quinine sulphate caused the cessation of febrile paroxysms and resulted in the disappearance of the parasite from the cutaneous blood in simple tertian malaria cases.

Prior to his retirement from LSTM in 1917, Lieutenant-Colonel Sir Ronald Ross, was designated Professor of Tropical Sanitation by the War Office due to his expertise in malaria prevention. Ross returned to India, the land of his birth, becoming a General in the British Indian Army and a consultant physician to the War Office.

The war had a major impact on teaching, with many lecturers, technical staff and potential students seeing active service. LSTM's Diploma in Tropical Medicine was suspended in 1915 and short courses for officers of the Royal Army Medical Corps were offered by the limited staff who remained behind.

At the end of the war in 1918, funding was no longer available to conduct expeditions, the last of which occurred in 1914. LSTM would now concentrate resources and efforts on establishing a more permanent presence in key locations. The Sir Alfred Lewis Jones Laboratory in Freetown Sierra Leone opened in 1921 and Blacklock was appointed LSTM's first Professor of Tropical Diseases in Africa. It was here that Blacklock demonstrated the transmission of the filarial worm that causes river blindness. The work of LSTM during and following the First World War would play an import part in an international effort that would ensure that casualties during the Second World War from diseases such as malaria were greatly reduced.

Professors Robert Newstead (bottom row far left), John WW Stephens (bottom row third from right) and Warrington Yorke (bottom row far right), with a class of Royal Army Medical Corps students in 1916.

Lanner WITNESS the improvement of the diagnosis and treatment of TB

Improving the diagnosis and treatment of tuberculosis (TB) in resource poor communities is a central aim of a five year initiative lead by The International Union Against Tuberculosis and Lung Disease (The Union) under the name TREAT-TB (Technology, Research, Education and Technical Assistance for TB) and funded by USAID. LSTM, a partner in the TREAT-TB initiative is helping to evaluate new diagnostic tools to determine how effective they will be once used at district and central level.

This work is supported by Lanner, a leading international company, offering business process simulation software.

WITNESS is a software product, provided by Lanner to LSTM at no cost for the evaluation of the impact of potential new diagnostic technologies for TB in Tanzania. LSTM Operational Research Analyst, Ivor Langley, is leading this work, applying operational research methods including simulation modelling and forecasting to determine the ideal placement and use of new technologies to ensure the poorest communities can access health services. Ivor said "Early diagnosis is critical to stop the spread of TB. Given the significant levels of investment required to deliver the new infrastructure and technology needed, it is fundamental that we demonstrate the likely change on patients, the population and health system costs in a risk-free environment."

The programme is now being used to guide policy in Tanzania on the implementation of new diagnostics for TB. Currently the WITNESS model is being implemented in Dar es Salaam for use by local staff in assessing the impact of new diagnostic technology in particular district health care settings. In this setting, infrastructure, data, finances, and available resources are limited, meaning approaches applied in countries such as the UK need to be adapted to a different context.

Simulation presents a low cost, low risk means of facilitating better decision-making, avoiding unintended consequences, and ensuring that precious funding for this type of projects is focused on the ultimate objective – improving healthcare and reducing mortality rates.

LSTM is now also extending this work to model the diagnosis of drug resistant TB in Brazil and South Africa. In a separate initiative, following collaboration with Lancaster University, it is hoped the WITNESS predictive process simulation can soon be applied to assisting in policy decisions for Blood Transfusion services in Ghana, opening another avenue of research.

This continues to be an exciting research programme with the potential to support significant improvements in healthcare in Africa and developing countries. WITNESS is performing a critical role in helping to model processes which maximise the sustainable outcomes for patients supported by rational and comprehensive decision support tools.

supported by

LANNER

Find out more at The International Union Against Tuberculosis and Lung Disease

www.theunion.org

Discovery, development and delivery of new therapeutics and diagnostics for global health

Launched at the 2013 British Society of Parsitology conference, LSTM's Research Centre for Drugs & Diagnostics (RCDD) is facilitating and catalysing future partnerships towards discovering, developing and delivering novel therapies and diagnostics against a range of pathogens.

Comprised of an experienced multi-disciplinary group of experts working in partnership with SMEs and larger organisations including academia and non-governmental organisations. Located at LSTM's Centre for Tropical and Infectious Diseases in Liverpool, RCDD has access to state-of-the art laboratories and equipment and offers flexible models of collaboration from open access to commercial service provision. Including, Category 3 laboratories for major human pathogen research, robotic liquid handling and high content imaging platforms.

The Centre offers:

- A track record in Public Private Partnerships and delivery of translational projects
- Laboratory facilities including Category 3 laboratories, medicinal chemistry laboratories, analytical laboratories, robotic liquid handling and high content imaging platforms
- Access to Hazard Group 3 human pathogens, e.g. Mycobacterium tuberculosis and Plasmodium falciparum
- Access to in vitro and in vivo models of infection
- Access to patient populations and pathways to drug and diagnostic evaluation and implementation in the UK, Africa, Asia and South America
- Field sites for monitoring and evaluation in Africa, South America, South-East Asia
- Links to policy makers such as WHO and advisory committees and funders
- Training of laboratory staff

Key Competencies and Expertise

Drugs:

- An established academic team with a strong track record in pathogen drug discovery
- International registration of one drug through to market
- Two drugs progressed into human clinical trials
- Four molecules progressed through pre-clinical development
- Experience of working with
  - Major stakeholders including MMV, DNDi, TB alliance, National Disease Control Programmes, BMGF and the Global Fund
  - Pharmaceutical companies including GSK, Astra Zeneca, Novartis, Abbot and Pfizer
- Strong collaborative links with endemic countries
- Extensive experience and expertise of clinical trials in disease endemic countries

Diagnostics:

- Proven record in evaluation of diagnostics
- Visceral Leishmaniasis WHO/TDR evaluation of RDTs and TB diagnostics
- Unique implementation methods
- Training of 3000 community workers for TB diagnostics
- Modelling of effect of diagnostic implementation on health systems
- GeneXpert® Cephid
- Systematic Reviews into diagnostic tools
- Plasmodium falciparum and vivax RDTs
- Molecular diagnostics for TB
- Field sites for monitoring and evaluation in Africa, South America, South-East Asia
- International collaborations
- Links to policy makers such as WHO and advisory committees and funders

LSTM through RCDD are a partner in the Liverpool-Guangdong Drug Discovery Unit, a collaboration to develop new drug therapies for the treatment of TB, Malaria and other infectious diseases. RCDD's Professor Ward and Dr Biagini visited China in March 2014, to meet with Consortium members and look at pharmaceutical companies that may be able to work with RCDD as industry partners.

Professor Ward said: "We were all very excited to be in China, particularly for the official opening of the Consortium laboratory which will focus on drug discovery in relation to infections such as TB, malaria, neglected and other infectious diseases which continue to affect marginalised people in the developing world. We hope that this collaboration will not only bring results in terms of research, but will also provide some of the students involved from Guangdong University of Technology the opportunity to study in Liverpool. Researchers from LSTM will be visiting the lab on a regular basis, to ensure progress and continued partnership towards our common goal."

www.rcdd.co.uk

LSTM
RESEARCH CENTRE FOR
DRUGS & DIAGNOSTICS

Increasing support for research students

The Leverhulme Trust

LSTM Key Travel Studentship for Research Students

Europe's leading travel management company, Key Travel and LSTM have created a new PhD studentship fund to support an LSTM research student. Support from Key Travel is matched by LSTM and offered to prospective research students applying from anywhere in the world towards research degree in the following areas: Vector Biology; Parasitology; Public Health; Sexual & Reproductive Health; Maternal & Newborn Health; Clinical Tropical Medicine or Humanitarian Research.

LSTM has over 100 research students, from over 30 countries and maintains a high level of interest from prospective students competing for scholarships. Director of Postgraduate Research, Professor Richard Pleass said: "Being able to fund research students is often very challenging, many worthy candidates with outstanding research ideas, are simply unable to obtain the necessary funding. Partnerships such as this, provide the vital support necessary to develop and deliver new effective health interventions."

Key Travel are dedicated to serving the travel requirements of the not-for-profit, academic and faith sectors. Helping organisations to maximise the value of their travel budget and manage staff welfare through effective travel solutions.

Applications and enquiries can be made at www.lstmed.ac.uk

KEY TRAVEL

William Hesketh Leverhulme Scholarship Trust

To celebrate the 150th anniversary of the birth of William Hesketh Lever, 1st Viscount Leverhulme (1851-1925), The William Hesketh Leverhulme Scholarship Trust was established at LSTM. Recognising Leverhulme's contribution to human health and wellbeing, the Trust provides scholarship support to students from low or middle income countries studying at LSTM.

Established in 2001 the Trust has now issued over 70 scholarships to LSTM students. The scholarships are generated from an endowment made by The Leverhulme Trust. Endowments of this kind are vital to LSTM and our ability to attract the most promising students from the poorest countries.

The 1st Viscount Leverhulme was a Victorian businessman, entrepreneur and committed philanthropist. The title Lord Leverhulme was conferred on Lever in 1922, in recognition of his business and charitable achievements. When he died in 1925, he left a share of his holdings in his company, Lever Brothers, to provide for specific trades charities, and to offer scholarships for research and education. The Leverhulme Trust was established in 1930, when Lever Brothers merged with the Van den Berghs margarine company to form Unilever — one of the world's major multinational companies. Today the Trust is one of the largest all-subject providers of research funding in the UK. Funding across academic disciplines, supporting talented individuals in the arts, humanities, sciences and social sciences to realise their personal vision in research and professional training.

One recipient of a 2004 scholarship, was Dr Babar Shaikh, whose research into Pakistan's health care system, led to his current appointment as Director of Health & Built Environment at the Aga Khan Foundation in Pakistan. The Foundation provides essential technical assistance to the government in health service delivery.

Today, LSTM is able to offer a limited number of scholarships to research students with the potential to improve health on a national and international scale. To increase the number of scholarships we are able to offer to research students, we require your support to help address some of the most important issues facing the world today and in the future.

If you are interested in contributing towards a PhD studentship, please visit the fundraising pages of our website for more information.

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THOMAS MARK SCHOLARSHIP IN TROPICAL PAEDIATRICS

LSTM is inviting applications from medical doctors (MBBS or equivalent) from developing countries, who have at least two years clinical working experience specialising in the field of Paediatrics and applying for the MSc Tropical Paediatrics at LSTM. Applicants are required to demonstrate a strong interest in research, demonstrated by published papers and conference presentations.

LSTM's MSc in Tropical Paediatrics produces graduates who are experienced, committed, informed, proactive and capable of taking substantial and leading professional roles.

DEADLINE – scholarship applications must be received by the **30 April.** Please visit the LSTM website for details of how to apply.

The programme is based in Liverpool (UK) and will be one year full-time commencing in September each year. The scholarship will cover tuition fees, flights, accommodation, and a living allowance.

www.lstmed.ac.uk

Johnson & Johnson support maternal and newborn health in Nigeria

According to the World Health Organization's 2010 figure approximately 40,000 Nigerian women die each year giving birth and another one million suffer complications. Meaning 1 in 29 Nigerian women currently die in pregnancy or childbirth, compared to an average of 1 in 380 for developed regions. Statistics that make Nigeria one of the most dangerous places in the world for a woman to give birth. Considerable progress has been made in reducing maternal and newborn deaths since 2000, however further improvements to the quality of maternal and newborn care are urgently needed.

LSTM's Centre Maternal and Newborn Health (CMNH) is the largest academic group in Europe focusing on global issues of maternal and newborn health and the global coordinating centre for the Making it Happen (MiH) programme. MiH, in partnership with the Royal College of Obstetricians & Gynaecologists (RCOG), is reducing maternal and newborn deaths by increasing availability and improving the quality of care delivered by Skilled Birth Attendants and Emergency Obstetric Care and Neonatal Care. Between 2012 and 2015, the MiH Programme is being delivered in 11 countries: eight in sub-Saharan Africa (Ghana, Kenya, Malawi, Nigeria, Republic of South Africa, Sierra Leone, Tanzania and Zimbabwe) and three countries in Asia (Bangladesh, India and Pakistan).

MIH is primarily funded by UK aid, with additional grants from a host of international funders. Donations totalling almost £200,000 from The Johnson and Johnson Corporate Citizenship Trust has helped MiH to increase the number health professionals trained in Life Saving Skills-Emergency Obstetric and Newborn Care (LSS-EOC&NC) across three centres in the Federal Capital Territory of Abuja and one centre in Niger state. MiH Nigeria is training 1000 health professionals to recognise and manage women with obstetric complications and babies requiring early newborn care. Part of the training is discussing the scale of the problem faced by health professionals. 54,000 women die each year in Nigeria from complications caused during pregnancy and childbirth.

14% of the world's maternal deaths occur in Nigeria

At the end of 2013, 348 participants were trained, including 24 master trainers who will ensure that a continuous programme of education and training is practiced to deliver a sustainable future for maternal and newborn health. These trainers have gone on to deliver EOC&NC related continuous medical education training at four of the largest referral hospitals in Abuja. In addition 12 referral hospitals have received equipment used during training for use on a permanent basis.

One participant said "I was impressed with the dedication and thirst for knowledge and skills that allowed the class to show significant improvement after the training, and grateful to LSTM and Johnson & Johnson for supporting local health workers in their quest to save maternal and newborn lives".

The Johnson & Johnson family of companies is one of the world's largest health care companies, with operations in over 60 countries, including Nigeria. Producing medical devices and diagnostics, pharmaceuticals and consumer healthcare for an international marketplace. The Trust is committed to making life-changing, long-term differences in human health by targeting the world's major health-related issues. Central to that aim is saving and improving the lives of women and children.

Assessing the NTD burden in Ethiopia and DRC

Neglected Tropical Diseases (NTDs) represent the most common diseases for the 2.7 billion people living on less than US$2 per day. At any one time as many as 500 million people in Africa (and over 1 billion globally) are infected with, or at risk of, one or more NTDs. The infections cause loss of livelihood, disfigurement, stigma, disability and poverty. These diseases can lead to irreversible blindness, chronic illness, physical deformities and death (half a million deaths occur globally from NTDs every year). NTDs affect the poorest, hardest to reach people, who are often in remote or conflict zones, with minimal access to health services.

NTDs are preventable with proven, cost-effective interventions, such as mass drug administration (MDA) which involves distributing drugs that are donated in whole or in part by pharmaceutical companies, and distributed by community volunteers. MDA costs circa US$0.50 to treat one person per year, with a resulting cost-effectiveness of less than US$10 per disability adjusted life year (DALY) averted. One DALY can be thought of as one year of healthy life lost through ill health, disability or death.

In 2011, the UK government scaled up its involvement in NTDs with additional funding of £195 million over 2011-15, and announced this formally at the 'London Declaration on NTDs' in January 2012. The event marked the launch of an expanded, coordinated effort against NTDs by the end of the decade, with a strong collaboration between donors, pharmaceutical companies, academia, foundations, international financial institutions and countries afflicted by NTDs. LSTM's Centre for Neglected Tropical Diseases (CNTD), under the direction of Professor Moses Bockarie, plays a central role in this effort, through its UK Department for International Development (DFID) funded Lymphatic Filariasis Elimination Programme.

The first step in combating NTDs is to establish the extent of diseases through mapping, to enable targeting of resources to areas most in need and provide the information required for medicine donations to be established and to determine changes of disease prevalence as treatments proceed.

As part of the DFID funded Lymphatic Filariasis Elimination Programme and with an additional investment from the philanthropic organisation, The END Fund, the CNTD team has in the last year made significant advances in mapping the burden and distribution of NTDs through conducting epidemiological surveys in collaboration with national Ministries of Health and the World Health Organization (WHO), with particular successes in Ethiopia and the Democratic Republic of Congo (DRC), two countries where it has previously been difficult to gather epidemiological data.

Mapping surveys were completed in Ethiopia in December 2013 and in DRC, only two of the 11 provinces remain to be mapped. The results of the mapping will enable the national Ministries of Health, with support from CNTD, to target the communities requiring treatment. Targeted MDA will be instrumental in achieving control or elimination of NTDs in both countries by 2020 as declared by WHO's Strategic and Technical Advisory Group in April 2013 and finally end the misery caused by these ancient diseases of poverty.

LSTM achieves Athena SWAN Bronze Award

In recognition of success in developing institutional employment practices to further and support the careers of women, the Athena SWAN Bronze Award has been bestowed upon LSTM by the Athena SWAN Equality Challenge Unit.

The Athena SWAN Charter recognises commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia. The Charter, launched in June 2005, is open for membership to any higher education institution or publicly-funded STEMM-focused research institute which is committed to the advancement and promotion of the careers of women in STEMM in higher education and research.

The Charter believes that Science cannot reach its full potential unless it can benefit from the talents of the whole population, and until women and men can benefit equally from the opportunities it affords. It is therefore vitally important that women are adequately represented in what has traditionally been, and is still, a male-dominated area.

27% of LSTM's professors are female compared to a national average of 10% for academic institutions. LSTM has a very strong research programme in gender and equity and many of the outputs of this group can be used to inform LSTM's own activities. Hence institutional support within LSTM for the principals and ideals of Athena SWAN charter is very strong throughout the organisations management.

LSTM Director Janet Hemingway said: 'I am delighted that we have achieved this award. After having been designated a Higher Education Institution in July 2013 we immediately signed up to the Athena Swan charter so that we could apply for the Bronze Award. It is such an important recognition of all our efforts in further enhancing the careers of women in science, which ultimately will benefit all of our employees.'

LSTM adheres to a full range of policies and procedures to ensure family-friendly working and transparent recruitment and promotion procedures. 'Having received the Bronze Award is proof of our commitment to equal opportunities for all of our employees', said Chris Greenway, Director Human Resources of LSTM. 'This award demonstrates our commitment to our staff. We hope that planned enhancements of our strategic development programme will lead to Silver status in the near future.'

The award, valid until April 2017, was granted by a panel of experts with a professional background in STEMM and equality and diversity.

The Charter is managed by the Equality Challenge Unit (ECU) and is funded by ECU, the Royal Society, the Biochemical Society and the Department of Health.

Developing policies improving practices transforming systems

The Collaboration for Applied Health Research and Delivery (CAHRD) is a network of individuals and institutions from around the world working to transform health systems to improve the health of low and middle-income populations. With a co-ordinating hub at LSTM, collaborative partnerships between individuals and organisations across the full range of applied health research disciplines, is at the heart of CAHRD endeavours.

CAHRD

COLLABORATION FOR APPLIED HEALTH RESEARCH AND DELIVERY

www.cahrd-network.org

Support LSTM
in a way that suits YOU

Centre for Maternal and Child Health

Work is now underway on LSTM's £7m Anson Court Development, a new state-of-the-art building which will house LSTM's Centre for Maternal and Child Health. Funds are still required to help with fitting out the building.

Support for new scholarships

Offering world-class education programmes ranging from short courses to research degrees attracts large numbers of outstanding applicants. Donations of any amount can contribute to an LSTM scholarship that can improve the knowledge and skills of a health professional working to improve the health of the world's resource poor communities.

Centre for Neglected Tropical Diseases

LSTM's Centre for Neglected Tropical Diseases (CNTD) requires further funding to deliver mass drug administration treatment in sub-Saharan Africa to eliminate diseases such as elephantiasis. CNTD is the coordinating centre for the Global Alliance to Eliminate Lymphatic Filariasis.

LSTM Donald Mason Library

Providing the necessary publications, journals, computer equipment and facilities for over 600 students requires ongoing support. Donations can help keep our Library open for longer hours and reduce the cost of services to students.

Reducing the burden of sickness and mortality in disease endemic countries, requires a broad range of financial and in-kind support, to undertake over 300 research, capacity building and education programmes.

Donations of any amount are welcomed to support specific areas of operation or an unrestricted contribution to allow LSTM to react to new developments as they happen.

If you would like information on how support LSTM please contact:

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Email: billy.dean@lstmed.ac.uk or Phone: +44 (0)151 705 3272

Ultrasound Equipment Fundraising Appeal

JustGiving™

Ultrasound is a well-recognised, low-cost diagnostic tool in low and middle income countries contributing to obstetric care, emergency medicine and many medical conditions such as tuberculosis and liver disease. LSTM is in need of a portable ultrasound machine to support research and education.

The portable ultrasound equipment will allow lecturers and researchers from LSTM to collect teaching materials overseas and for clinical MSc students and other qualified researchers to perform US-based research projects. Including a schistosomiasis dissertation project in Kenya.

£8,450 is required to buy the scanner and two transducers. You can support this appeal by visiting

www.justgiving.com/LSTMUltrasound

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INVESTORS IN PEOPLE

Athena SWAN Bronze Award

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Vision

To save lives in resource poor countries through research, education and capacity strengthening

Mission

To reduce the burden of sickness and mortality in disease endemic countries through the delivery of effective interventions which improve human health and are relevant to the poorest communities

Values

- Making a difference to health and wellbeing
- Excellence in innovation, leadership and science
- Achieving and delivering through partnership
- An ethical ethos founded on respect, accountability and honesty
- Creating a great place to work and study

www.lstmed.ac.uk

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Courtesy of ZEISS Microscopy.