

The RESEARCHER

Championing Health Research in Africa

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DEVIDENTS AS GRANTSMANSHIP COMES OF AGE



Director General KEMRI, Prof. Yeri Kombe speaking to participants of a past Grants Management Workshop

The Grantsmanship Department initially known as the Office of Research Development (ORD), has truly come of age.

Between 2011 and October 2019, the department awarded a total of 168 grants to researchers, raising considerably the portfolio of government funded research in the institute ([Visit the website for the full list](#)).

During the last financial year, the department processed grants amounting to approximately Ksh. 102 million with the Government of Kenya (GOK) contributing slightly above Ksh. 60 Million of this money.

The office was established some 12 years ago with the support from the International Extramural Associates Research Development Awards (IEARDA) Grant, from National Institute of Health (NIF).

Grantsmanship is the art of acquiring financial grants through the process of grant writing. This term is typically used when referring to the skills necessary to secure peer-reviewed research funding and other necessary resources for the completion of the project.

KEMRI Grantsmanship program aims to build expertise and appropriate knowledge and skills in research administration and grants management. While its vision is to produce a specialized cadre of researchers and research administrators.

The department acquires grants both internationally and locally that are exclusive to KEMRI scientists. Locally the grants are offered by the Internal Research Grant (IRG) that has different streams of grants (Young, Senior and Innovations), while some of the International review streams come from the European Union (EU), Centres for Diseases Control (CDC), NIH and the Bill & Gates Foundation (BMGF) amongst others.

Different revenue streams have been established to support research in the Institute. For instance, other than the famed IRG grants, there is one targeting young scientists and two others including the Innovation grants that also benefits both young and senior scientists with innovative ideas. Besides these, the department also makes special

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Director General KEMRI, Prof Yeri Kombe in a group photo with KEMRI scientists who attended a recent International Grant Training

calls that addresses research gaps from time to time.

A distinct criterion is used in the issuance of grants in KEMRI. "Once we receive information from the Chief Finance Officer (CFO), that there is money allocated for research in a given financial year, we send out a call to the scientists," says Grants

Officer, Dr Judy Mwai.

Dr. Mwai explains that such as call would indicate eligibility requirements including necessary deadlines which usually is within three months period at which one is expected to write and submit the proposal.

KEMRI receives limited grants

"that are awarded competitively through a process that involves peer review by fellow scientists who are not applicants in the current call", explains Dr. Mwai adding that if the proposal qualifies, it is forwarded to the Internal Research Grant Committee (IRGC) for further processing including ranking the ideas through an established

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score sheet system and synchronizing the reviews from the three reviewers per any given proposal application. The vast expertise from scientists within the institute have made the review process possible.

The final decision is communicated to the Director General for recommendation of award. Notice of award is then given to the PI through the grants

department. applicants are also informed of the committee's decision. The committee finally evaluates and monitors the progress from time to time upon research project implementation phase.

"Grants offered either last for a year or two at most, however, we keep tabs to ensure that there is progress after the money has been released and the 1st progress report is expected within the first four months into the project, but in cases in which for some reasons the project stalls, then a withdrawal of funds letter is issued through the Director General," explains Dr. Mwai.

This action is never popular. It earns the department some not so very polite reactions especially from those that miss out of the awarded list."We have learnt to develop some thick skin and stick to the stipulated guidelines for objectivity and fairness to all," informs a smiling Dr. Mwai.

She explains that although the Institute has categorized its research activities into the six programs, some programmes receive more applications than others. However, some research proposals cut across other programs which forms part of important information that guides the grants issuance process.

The department plays an integral part in both pre and post

award processes. It has recently introduced the Monitoring and Evaluation arm of the IRG funded projects, where a spot check is done by the IRG secretariat and the IRG Committee members to ascertain that the funded project is on course and the objectives well met.

A PI is expected to submit quarterly reports and a close out report at the end of the project cycle with tangible research outputs including; abstracts, manuscripts, policy briefs etc.

Grantsmanship is the art of acquiring financial grants through the process of grant writing. This term is typically used when referring to the skills necessary to secure peer-reviewed research funding and other necessary resources for the completion of the project.

WHY KEMRI IS RANKED TOP IN AFRICA



A scientist operating the Cobas 8800 machine used in a HIV laboratory. The Institute relies on such State of the art laboratory infrastructure in its work that has placed it on top of the continent in health research rankings

The Kenya Medical Research Institute (KEMRI) is ranked the top health research institution in Africa because of health research output, according to the authoritative global information analytics giant, Scimago Lab.

The Institute out performs its contemporaries, the Medical Research Council (MRC) of South Africa, University College Hospital of Ibadan, Nigeria and the National Medical Research Institute (NIMRI) of Tanzania in

the September 2019 rankings released in by Scimago Lab in conjunction with Elsevier, a technologically-based company offering innovative solutions to improve the Scientific Visibility and Online Reputation.

Cont...

... Why KEMRI is ranked top in Africa

On receiving the news, Director General, KEMRI, Prof. Yeri Kombe said that the KEMRI Board of Management and the staff were humbled at the same time privileged to have received this encouraging revelation. He congratulated all the staff, the management team and the Board for this outstanding performance. "We at KEMRI are truly humbled and privileged to be ranked as one of the top institution in the World...This is living our vision of being the Leading Center of Excellence in Research for Human Health," said Prof Kombe.

In the report available on the firms' website www.scimagoir.com MRC is placed, a distant fourth, after NIMRI in third position, and College Hospital of Ibadan is 10. A total of 6,454 Institutions are ranked globally

among them the Harvard University, National Institute of Health, Massachusetts Institute of Technology and the Stanford University from the US.

Overall in all sectors in Africa, the Institute still registers an impressive showing by being ranked position seven, a head of MRC (9), NIMRI (8) and the International Livestock Research Institute (ILRI) 11. Globally, KEMRI is ranked 89 out of 1,252 institutions in health research output worldwide.

Scimago Lab works closely with international partners from the publishing realm, scientific information suppliers, universities and government agencies. Scimago Lab and Elsevier developed a cutting-edge analysis tools, and evaluation concepts which analyses institution research performance across the world based on comprehensive and authoritative data including high-level disambiguation procedures. It operates what is known as the Scimago Institutions Rankings (SIR), a classification of academic and research-related institutions ranked by a composite indicator that combines different sets of indicators based on research performance, innovation outputs and societal impact.

SIR reviews every dimension of the scholarly communication carried out at an organization providing valuable information about research performance, efficiency and effectiveness of the institution's research policies and programs.

In addition, the SIR provides a friendly interface that allows the visualization of any customized ranking from the combination of sets of indicators and compares the trends before arriving at a conclusion.

The SIR includes both, size-dependent and size-independent indicators; that is indicators influenced and not influenced by the size of the institutions. In this manner, the SIR provides overall statistics of the scientific publication and other output of institutions, at the same time that enables comparisons between institutions of different sizes. Some of the score Indicators include Research Factor, Normalized Impact, Excellence with Leadership Output, Scientific Leadership, High Quality Publications, International Collaboration among others. Others are Knowledge Patents, Technological Impact, Societal Factor etc.

"We at KEMRI are truly humbled and privileged to be ranked as one of the top institution in the World... This is living our vision of being the Leading Center of Excellence in Research for Human Health," said Prof Kombe.

INTERNATIONAL PARTNERSHIP INVESTIGATES CAUSES OF PROSTATE CANCER IN KENYA



Dr. Sheela Jayaraman



*Dr. Veronica Manduku,
Deputy Director, CCR-KEMRI*



Professor Kevin Gaston

United Kingdom and Kenyan researchers are leading a major new international research project to investigate the causes of prostate cancer in East African men.

The researchers from University of Birmingham, University of Nottingham and Kenya Medical

Research Institute (KEMRI) will investigate the importance of immune cells and immune signals of male patients in Kenya and the UK.

The international team is backed by a £660,000 International MRC Newton Fund Prostate Cancer grant.

In previous work, the team discovered that a protein called PRH stops prostate cells from replicating and invading other tissues - as prostate cancer becomes more advanced the activity of PRH is decreased, showing that PRH controls the activity of many genes important in allowing prostate

Cont...

... International partnership investigates causes of prostate cancer in Kenya

cells to respond to signals from immune cells.

The new project will see researchers finding out how changes in the levels and activity of PRH alter the response of prostate cells to immune signals. The team will collect blood, urine, and prostate tissue samples to determine PRH protein levels in men in Kenya and in the UK. They will also measure the levels of inflammatory signals and immune cells in the blood samples.

Project leader Dr. Sheela Jayaraman, from the University of Birmingham Cancer and Genomic Sciences, said: "This project is the result of many years of work in this area and I am excited that we are joining forces with colleagues in Nottingham and Kenya to investigate this disease.

"Radiotherapy and drug treatments are effective treatments for patients with moderately advanced disease, but have serious side effects including osteoporosis and bone fracture. In less advanced cases treatment may be unnecessary as the cancer is unlikely to spread.

"Better ways of identifying patients who need treatment and better treatments would be of immense value to patients and result in major cost savings."

Prostate cancer is the most common cancer in men and this disease has a particularly high incidence in men of African origin. Around 47,000 new cases are diagnosed each year in Kenya and this is increasing as men live longer.

Dr. Veronica Manduku, Deputy Director from the Kenya Medical Research Institute, said: "This is initial work for the Kenyan team to explore role of PRH and inflammatory markers among prostate cancer patients and help us to eventually develop strategies to tailor treatments to those that deserve rather than blanket treatments. This will also help us manage costs of care."

Professor Kevin Gaston, from the University of Nottingham (UoN) Cancer Sciences said:

"Prostate cancer is a global problem and we are proud to be part of this new international project. This work will tell us whether measuring levels of immune signals in blood and PRH in prostate cancer might be a good ways to predict which patients require treatment."

INNOVATIVE HEALTH KIOSK BRINGS HEALTHCARE CLOSER TO THE PEOPLE



Vihiga County Deputy Governor H.E. Dr. Patrick Saisi has his blood pressure checked at a health kiosk at Mudete Market

The Kenya Medical Research Institute has launched an innovative study that is using health kiosks manned by Community Health Workers (CHWs) and trained nurses in selected rural community markets to address the ever rising Non-Communicable Diseases (NCDs) challenge in Kenya.

“The study titled, “Strengthening the Primary Care System for Prevention and Control of Cardiovascular Diseases in Kenya: Feasibility Study of Health Kiosks in Community Markets,” is being piloted in four community markets in Vihiga Country.

Known as the “Newton-Utafiti Research Project”, the study seeks to address answer issues related to health challenges faced by the community in accessing healthcare such as the distance covered to reach a facility, health literacy and availability to well-trained personnel.

Besides, Cardiovascular diseases other NCDs being

Cont...

... Innovative health kiosk brings healthcare closer to the people



Dr. Robert Kimutai examines a patient at a past KEMRI Specialized Medical Camp. The Health Kiosks study aims at bringing services close to the community

addressed through learning and system thinking include Diabetes, High Blood Pressure, other lifestyle challenges such as smoking, alcohol abuse and lack of exercise.

“By setting up well-equipped and manned Health Kiosks within markets, we are hoping to see patients walking-in for regular check-up and promoting early screening,” said Dr. Lydia Kaduka, the study’s Principal Investigator.

The study probes the role that health kiosks manned by Community Health Workers (CHWs), Health Volunteers and nurses in community markets play in fostering the primary care system for prevention and control of NCDs in Kenya.

The MRC-NRF funded study also seeks to place great emphasis on the engagement of stakeholders from community to county leadership in the design, implementation and evaluation processes, promoting direct uptake of findings by the County Government of Vihiga.

The project is a collaboration between KEMRI, University of Nairobi, Moi University, Strathmore University and King’s Collage University and was formerly launched by Vihiga County Governor, H.E. Wilberforce Otichilo and other partners including senior officers from the Institute on Thursday, 15th, August 2019.

U-TAP PROJECT GOES LIVE

The Institute has launched the Enterprise Resource Planning (ERP) Monday, 1st, July 2019 following a vigorous preparation that began early this year. Styled as Utafiti Afya Project (U-TAP) the ERP is to play a

crucial role in the organization making staff more efficient, productive and expected to improve their general working environment.

The system automates some of the Institute's business processes, minimizing human processes that are prone to environmental and operational challenges. The ERP system will also enable the organization to manage their operational challenges through centralized repository.

Director General, Prof. Yeri Kombe symbolically tapped the switch, approving a staff leave request, signaling the "Go-Live" system change-over during an event attended by Senior Management team and technical staff from Dynasoft Business Solutions Ltd, the consultants implementing the process.

Prof. Kombe called upon all staff to embrace the new system and exercise patience during the transition period.



Director, Corporate Services Mr. Kamau Mugenda addressing members of staff during a ERP capacity building exercise shortly before the Go-Live on 1st July 2019.

CDC FOUNDATION TO SUPPORT FURTHER MALARIA RESEARCH IN KEMRI



A Senior Official from the Centers for Disease Control and Prevention (CDC) Foundation is encouraged by the level of high-class research being undertaken by KEMRI. Reema Bhakta, a Senior Program Officer with CDC Foundation who was making her maiden tour of the Institute on Thursday, 19th, September 2019 was impressed with the amount of sophisticated research taking place in KEMRI.

Bhakta's docket includes handling finances for the Foundation's Malaria Vaccine Implementation Program (MVIP) project in which KEMRI Scientist, Dr. Simon Kariuki is a beneficiary. The veteran, malaria

researcher is the Principal Investigator of the project that began in October 2018 and is expected to end in June 2020, with a possibility of an extension. CDC Foundation is an independent non-profit organization created to establish public and private partnerships to support the Centers for Disease Control and Prevention (CDC) critical health protection work. The Foundation has currently two programs aimed at eliminating malaria: the Malaria Zero and the MVIP, which receive considerable support from CDC and WHO to support activities in Ghana, Malawi and Kenya.

Her visit was aimed at strengthening relations between the two organizations. Other than a comprehensive visit at the CGHR, Bhakta was taken on a tour around the research facilities including the Centre for Traditional Medicine and Drugs Research (CTMDR), the Production Department, Training Centre and Centre for Clinical Research (CCR).

"I am excited to have visited the Institute and got to learn so much during this brief tour", she said shortly after concluding her two days tour that also took her to KEMRI's Kisumu-based, Center for Global Health Research (CGHR).

NEW CANCER REGISTRIES TO BOOST THE FIGHT AGAINST CANCER

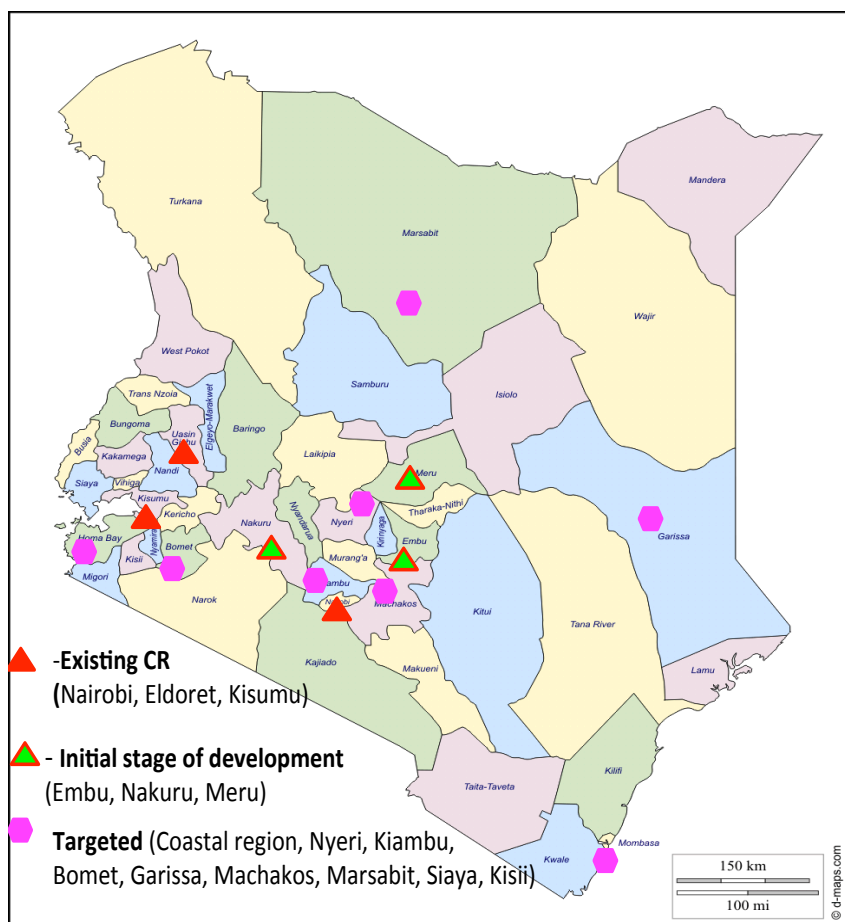
According to GLOBOCAN report compiled by the International Agency for Research on Cancer (IARC) done in 2012 indicates that 41,000 new cancer cases have been diagnosed of which 17,531 were men and 23,468 were women in Kenya.

The report further estimated that in the country the most prevalent cancer in men was prostate while it was breast cancer in women, with a total of 28,453 deaths occurring within that period.

The Head of Cancer Registry Unit Ms. Anne Korir says that cancer remains the third leading cause of death in Kenya, behind infectious and cardiovascular disease.

"The new cancer registration system will aid in accurate and timely data collection and analysis which will then inform research, policy, advocacy and efficient planning of cancer control programmes," she acknowledged.

She added that the Kenya National Cancer Registry (KNCR), through establishing cancer registries across the country, would conduct a baseline survey on cancer registration as well



There are now nine running population based cancer registries in Kenya under KEMRI, after six new registries were established in Meru, Machakos, Mombasa, Bomet, Kakamega and Nyeri to monitor trends of cancer in the country over time.

The three initial existing cancer registries in Nairobi, Kisumu and Eldoret have generated data that can be used to support the Ministry of Health by guiding planning and evaluation of cancer control programs as well as mapping out clusters of specific cancers in the region.

Cont...

... New Cancer Registries to Boost the Fight Against Cancer

as be a source of information for research and public health programme monitoring.

KNCR has conducted national cancer registration trainings of health personnel from selected counties in Kenya and managed to offer technical support to cancer registries at Kisumu, Meru, Bomet and Nyeri.

Moreover, KNCR has developed and implemented cancer registry awareness programmes for clinical and hospital staff in Mombasa, Machakos, Bomet, Kakamega, Nyeri, Meru, Embu, Kiambu and Nakuru to help the counties understand benefits of the cancer registration systems.

The Cancer Registry Unit Assistant Research Officer, Steve Emai intimated that despite securing additional funds to support staffing in Nairobi and Kisumu cancer registries, there is inadequate staff in some counties due to budgetary constraints, inadequate documentation of health records and lack of cooperation from some counties that are reluctant to hire staff.

Aside from these setbacks, he maintained that KNCR has established 7 out of 10 running cancer registries in the country and data collected from Nairobi and Eldoret cancer registries was included in an international publication on childhood cancer.

The Kenya National Cancer registry (KNCR) - KEMRI is mandated to establish a cancer registration system that will collate and compile National data on cancer in Kenya. Cancer surveillance serves as the foundation for a country to monitor its cancer burden.



REGIONAL PHARMBIOTRAC LAUNCHED BY UGANDA'S MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY



The World Bank Group (WBG) has developed a regional higher education program in Africa to promote regional specialization among participating higher education institutions within areas that address particular common regional development challenges and strengthen the capacities of

these institutions to deliver high quality training and applied research.

The objective of the program is to meet the demand for skills required for Africa's development in areas such as health, agriculture, energy, extractive industries, etc., while strengthening best African universities in education and training in science, technology, engineering, mathematics (STEM) and other relevant disciplines.

For Eastern and Southern Africa project – The Eastern and Southern Africa Higher Education Centers of Excellence Project (ACE II) has been setup. The main objective of the project is to establish and strengthen specialization and collaboration among a network of higher education institutions in the Eastern and Southern Africa region to deliver relevant and quality education and applied research to address key development challenges facing the region.

Mbarara University of Science and Technology in Uganda is one such center of excellence in the ACE II programme in the region. The University established collaboration with KEMRI and in February, 2018, two senior officers of the university visited KEMRI to fine tune areas of research activities and collectively drew up a Memorandum of Understanding

Cont...

... Regional Pharmbiotrac Launched by Uganda's Mbarara University of Science and Technology

(MoU) with their counterparts. Prof. Amon Ganafa Agaba (Chair, Learning Excellence, Pharm-Biotechnology and Traditional Medicine Centre (PHARMBIOTRAC) and Dr. Patrick Engeu Ogwang (Deputy Director/Deputy Centre Leader of PHARMBIOTRAC) were hosted in KEMRI by Dr. Festus M. Tolo who introduced them to the Director General and senior management team. The visitors were taken round KEMRI research facilities at the headquarters and in Kisumu to familiarize with the research infrastructure in the institute that forms a platform for the collaboration.

Mbarara University will collaborate with KEMRI in the following areas:-

- 1. Pre-Clinical and Clinical validation of the Traditional Medicine (TM) products and biopharmaceuticals. Joint clinical trial projects will be developed by PHARMBIOTRAC and KEMRI.*
- 2. PHARMBIOTRAC will invite KEMRI staff to offer block lectures and mentorship programs to students and staff in the area of clinical validation and product development. The Center for Traditional Medicines and Drug Research (CTMDR) at KEMRI is a regional center of excellence with vast experience in research and product development in TM and will be a major player.*

Additionally, Mbarara University aims to establish a PHARMBIOTRAC together with KEMRI to build capacity in the region to train and raise a critical mass of specialized and skilled human capital that can use multidisciplinary and trans-disciplinary approach to advance traditional medicine and pharmbiotechnology. The center will receive support from World Bank Group, the World Health Organization (WHO) and the Inter-University Council for East Africa (IUCEA).

Dr. Tolo, a Scientist and Head of the Natural Products Research and Drug Development Programme (NAPREDA) at KEMRI is optimistic that The same information would also help integrate herbal medicine in the mainstream health care system, a requirement that would greatly support the Universal Health Care as fronted by our Government.

this collaboration will work and provide necessary information to inform policy in the area of natural products research and product development.

Article by Dr. Festus M. Tolo
Head, NAPREDA Programme

ASSEMBLY OF A COMPREHENSIVE HIV GENOTYPING PROGRAM FOR KENYA



The KEMRI fraternity might be aware that since October 2005, our laboratories have gradually assembled the infrastructure required to satisfy the growing need for HIV molecular diagnostics. Working with other national reference laboratories, we have improved early infant diagnosis coverage to over 80 percent and viral load coverage to 92 percent nationwide. Funding for this work has come from multiple sources, including USAID PEPFAR, CHAI, UNITAID, HP, Hologic, Abbott Inc., Roche Diagnostics Inc. and CDC.

Cont...

... Assembly of a comprehensive HIV Genotyping Program for Kenya

To put this work in perspective, in 2017 alone more than one million viral load tests and 100,000 infant diagnosis tests were conducted in Kenya; more than 60 percent of these were conducted within KEMRI laboratories. In fact, Kenya has the third largest program of this kind globally.

As expected from a large viral load testing program, there has been intense demand for HIV genotyping to meet the needs of both adults and infants in whom current Antiretroviral therapy (ART) might be failing. However, whereas robust and state of the art infrastructure for infant diagnosis (EID) and viral load (VL) testing has been assembled and is in use, KEMRI has yet to develop genotyping capacity that can help bring HIV drug resistance and other antimicrobial resistance testing to scale.

On the global scale, the three UNAIDS goals of 90-90-90 if and when unpacked dictate the provision of universal HIV molecular testing coverage.

It is for this reason that in support of the global and national targets including the elimination of communicable diseases that the project integrated existing HIV molecular testing services in under a single roof including the human resource, hardware and necessary collaborations to assure universal HIV drug resistance testing coverage in Kenya.

The facility is building the necessary information management systems and the infrastructure to handle the big data that emanates from genotyping.

In this new approach, we propose to continue conducting EID and viral load testing as operations research in support of the national HIV program. We also propose to conduct HIV genotyping as operations research in support of ART programs in KEMRI Centres in both Nairobi and Busia.

In March 2018, the facility procured the first of two high throughput genotyping platforms for this work.

One ABI 3730XL can, theoretically, generate 500 complete HIV sequences in a week and additional platforms expected later this year.

The demand for HIV genotyping in Kenya may exceed 100,000 tests a year. To put that in perspective, the largest such program in the world has only reported 90,000 sequences in its database. The KEMRI team visited Stanford University School of Medicine which hosts the program and benchmarked with them and also attended training at the British Columbia Centre for Excellence in HIV to acquire the skills necessary to run the program.

By 2023, KEMRI will be running the most powerful HIV genotyping project in the world, and antiretroviral therapy in Kenya will be tailor-made for each individual patient dependent on the findings from HIV genotyping. Additionally, capacity for the understanding of diverse antimicrobial resistance will be built onto the same platforms.

In the near term, expected outputs will include HIV molecular Testing Capacity, publications in peer-reviewed journals, several masters and PhD theses as well as bespoke networks and collaborations. Findings will be used to inform national policy on Mother to Child Transmission of HIV, HIV drug resistance and on antiretroviral therapy. The outcomes will be evidence-driven policies and practice, while the impact will be a tangible decline in HIV treatment failure with concordant reduction in morbidity and mortality.

Article by Prof. Matilu Mwau
Deputy Director, CIPDCR

ALL ABOUT CONTROLLED HUMAN INFECTION MODELS STUDIES



Human infection models, also called human challenge studies, involve deliberately exposing consenting volunteers to infectious substances –bacteria, parasites and viruses. They allow researchers to understand how the body's immune system responds to an infection, and how infection could be treated or prevented.

They have been used in research for almost 300 years, but have enjoyed a resurgence in popularity in the past few years.

Human infection models involve complex ethical and logistical deliberations, but they also offer significant benefits. They can be used to investigate various things, such as:

- *Testing how effective a vaccine is against a specific pathogen e.g. typhoid*
- *Helping to identify targets for new vaccines, by allowing researchers to understand how the body mounts a protective immune response – e.g. malaria*
- *Testing new treatments, for example anti- influenza drugs*
- *Studying diseases for which no suitable animal model exists, e.g. dengue*

Cont...

... All About Controlled Human Infection Models Studies

More than 20 challenge models are currently in use and Wellcome has funded several of these studies over the past decade. Most of them have been carried out in Europe and the US, involving populations with a different genetic background and disease history to those living in the countries where vaccines and treatments are needed.

Malaria model in Kilifi, Kenya

KEMRI-Wellcome, based in Kenya, established a controlled human infection model for malaria in 2013, beginning in Nairobi and moving to Kilifi in 2015. So far ~125 volunteers have taken part.

What they're trying to find out:

We know from previous work that repeated infection with malaria results in increased immunity to the malaria parasites, but the biological processes that drive this immunity are not completely understood.

This model allows the research team to study natural immunity to malaria in the Kenyan population to help them understand which antibody responses are most protective against the parasite. The ultimate goal is to enable them to develop a next-generation malaria vaccine that targets the blood stage of the parasite's life cycle which could lead to an 'RTS,S plus' vaccine.

Making a malaria vaccine is complex:

The malaria parasite has around 5000 genes, around 200 of which are reasonable candidates for vaccine development against the blood stages of infection. But, making 1 vaccine from 1 gene and testing it can take several million \$ many years, before determining whether it works.

The KEMRI-Wellcome team have found already that some participants in their malaria challenge, in malaria-endemic regions, are completely parasite negative after challenge – the parasites just don't replicate in their bodies.

These people are super-immune. Super immunity is correlated with higher exposure to malaria in the past.

If scientists could replicate the responses leading to this immunity, in theory they could develop an effective vaccine.

How the study works:

On each round, 40 to 60 healthy adults, who've given informed consent, will be voluntarily infected with *Plasmodium falciparum* malaria parasites. They will then be closely monitored with regular blood tests (PCR) to measure how much malaria they have in their bodies.

Participants are treated at an early stage with antimalarial drugs before they reach a certain threshold of parasites. Some have a few symptoms when treated, but none have any severe symptoms. They spend the duration of the 1-month trial period in accommodation at a local University (Pwani) who are partners in the study, and the participants are financially reimbursed for their time.

Their sample has wide diversity of immune responses (i.e. adults with different antibody profiles, varying levels of past exposure to malaria). This is important for understanding immunity to the parasite and what protection looks like, so they can try to replicate it.

Why Human Challenge Studies is so important:

We can't do the same study in the field (real-life setting) because there are too many variables - whether participants use bednets or not, if they've taken anti-malarials, if they are bitten by mosquitoes regularly or not at all. Doing a challenge allows the experiment to be more controlled.

All of the primary laboratory analysis will be carried out in Kenya, making this an important resource for African scientists, and the resource will also be made available for international collaborations to other groups to learn the maximum amount from the study.

Article by Dr. Luna Kamau
Deputy Director, CBRD

EFFECTS OF HEALTH WORKERS' STRIKE ON HEALTHCARE



A past industrial action by health workers. The study speaks to the effect of such actions

The country has had a fair share of strikes involving health workers in the recent past. However, health workers' strikes have taken place throughout the world and are not unique to Kenya.

Strikes are known to have adverse effects on health care service provision wherever they occur. Researchers from the KEMRI-Wellcome Trust programme at the Center for Geographic Medicines Coast (CGMRC) embarked on a study to measure the effect of these industrial actions by health workers on mortality in Kilifi county in Kenya.

Previous reports used data collected from hospitals which do not identify deaths that take place outside hospitals. The team used the well-established Kilifi Health and Demographic Surveillance System (KHDSS), which collects data on births, deaths and migration for everyone living in the area. These data are routinely updated every four months.

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... Effects of Health Workers' Strike on Healthcare



A nurse attends to a patient. Study examined the effects of strikes on health workers

The strikes considered in this analysis were those that took place between January 2010 and November 2016. Six strikes were identified within that period ranging in length from nine (9) to 42 days.

The research showed no obvious change in overall mortality during strike periods; on average there were nine (9) deaths for every 1,000,000 people observed each day during the strike periods compared to 10 deaths for every 1,000,000 people observed each day during non-strike periods. This difference was not statistically significant. When the data were analyzed according to age group, the researchers found weak evidence of variation in mortality during strikes by age group. There was an apparent decrease in mortality during strike periods among infants aged 1-11 months and an increase among children aged 12-59 months. The researchers concluded that this variation could have been due to chance. The three month strike period of December 2016-March 2017 and June 2017-November 2017 were not included as these data is not yet ready.

Dr Anthony Etyang who led the study, speculated that these findings could have been the result of several different factors. He states, "the surprising findings could have been due to the combined effects of continued

private and limited public health care during the strikes, the relatively short duration of the strikes that were analysed, a high proportion of out-of-hospital deaths even when the health workers are not on strike and limited number of deaths that occurred within the region".

He notes that more work needs to be done in order to gauge the true effects of the health workers' strikes especially where the strikes are prolonged and believes that these can be teased out after analyzing the longer strikes experienced in 2017.

Other than Dr. Etyang, other researchers include Prof. Philip Bejon, Dr. Benjamin Tsofa, Dr. Gerald Ong'ayo, Dr. Amek Nyaguara, Michael Ooko all from the programme, Dr. Ruth Wang'ondy, from Yale University, in the US, Dr. Christian Bottomley, Thomas Williams from the programme but also an affiliate of the UK-based, Imperial College, and Prof. Anthony Scott also from the London School of Hygiene and Tropical Medicine. Prof. Bejon and Prof. Williams, are also affiliates of the UK-based, University of Oxford and Imperial College respectively.

HARMFUL BACTERIA FOUND ON MONEY AND CELLPHONES



A new study has found that money and mobile phones are contaminated with a harmful drug-resistant bacteria and pose a great risk to human life.

The study by a team of researchers from KEMRI's Center for Microbiology Research (CMR), their colleagues from the Center for Traditional Medicines and Drugs Research (CTMDR) and the US Army Medical Research Unit (USAMRU) found that dirty money especially low denomination currencies and cellphones handled by food handlers in Nairobi are carriers of harmful bacteria, *Escherichia coli* (E.coli), that is resistant to some of the commonly prescribed anti-biotics such as Ampicillin, Sulphamethoxazole, streptomycin and tetracycline.

The study concludes that food handlers from hotels and other and other food joints do not observe proper hygiene and handle money or their mobile phones transferring diarrheal causing germs to unsuspecting customers.

According to the study, resistance to the drugs

Cont...

... Harmful Bacteria Found on Money and Cellphones

is associated with decreased potency that may be due to drug degradation or and adulteration and the presence of a lower concentration of active ingredients.

Two students from the Technical University of Mombasa and Jomo Kenyatta University of Agriculture and Technology (JKUAT) were also involved in this research as part of the fulfilment of their post-graduate requirement.

The scientists were able to code six strains of *E. coli* that had a combination of genes identified as EPEC, EHEC and EIEC. Pathogenic *E. coli* isolated from food handlers in the study are a major causes of diarrheal diseases.

According to Dr. Richard Korir the lead researcher, study participants were enrolled from selected food handling establishments in Kenya. The researchers collected swabs from their money and cell-phones and cultured in laboratories for appropriate media for isolation, identification of *E. coli* and antimicrobial susceptibility testing.

The findings of this study titled "Molecular characterization and antibiotic profile of diarrhogenic *E.coli* isolated from money and cellphones of food handlers in Nairobi, Kenya" has significance in public health especially general hygiene and sanitation.

Other than Dr. Korir, the other researchers includes, the post graduate student, Gertrude Gati Kisan'g, Joseph Oundo from USAMRU, Zipporah Ng'ang'a from JKUAT and Joyce Ondicho from CTMDR. Dr. Korir is listed as the corresponding author of the study.

The findings were recently presented at the 7th, East African Health and Scientific Conference



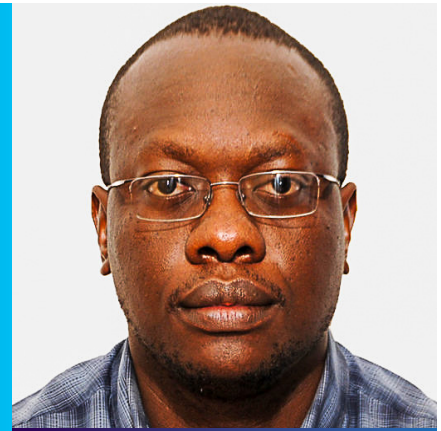
held in the Coastal City of Dar es Salaam, Tanzania from 27th to 29th, March 2019 at the Julius Nyerere International Convention Center.

The research method involved participants being enrolled from selected food handling establishments in Kenya, swabs being obtained from money and cell-phones before being cultured in appropriate media for the isolation, identification of and antimicrobial susceptibility testing.

Escherichia coli is nonpathogenic facultative flora of the human intestine. However, some strains have transformed to become pathogenic hence diarrheagenic *E. coli*. There is inadequate data on the role money and cellphones play in the transmission of *E. coli* and their antibiotic profiles in Kenya.



RENOWNED AFRICAN RESEARCH INSTITUTES IN PEDIATRIC PRAZIQUANTEL CONSORTIUM



Dr. Maurice Odiere,
PI & Head, NTD Unit at CGHR



Complementary experience offered by the Kenya Medical Research Institute (KEMRI) and the Université Félix Houphouët-Boigny (UFHB) in conducting clinical trials in sub-Saharan Africa will be instrumental for the success of the Consortium's phase III program.

KEMRI and Ivory Coast-based, Université Félix Houphouët-Boigny (UFHB) research experience has been called upon to boost Phase III in clinical trials aimed at making a child-friendly praziquantel treatment for preschool-age children suffering from schistosomiasis.

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... Renowned African Research Institutes in Pediatric Praziquantel Consortium

available for school-age children in sub-Saharan Africa through mass treatment campaigns, the group of preschool-age children is left untreated due to the absence of an appropriate pediatric formulation. In particular, the large size and bitter taste of the available tablets prohibit treatment of very young children in a mass treatment setting.

The Pediatric Praziquantel Consortium aims to develop, register and make available a 150mg orodispersible praziquantel tablet, palatable for small children.

By providing the Principal Investigators and clinical trial site teams for the phase III pediatric clinical study, KEMRI and UFHB play a crucial role in the development of the new drug.

"I am very pleased to welcome our new partners," commented Dr. Elly Kourany Lefoll, Consortium Program Lead and Head of Drug Development Neglected Tropical Diseases

The two institutions are part of an international effort by Pediatric Praziquantel Consortium (PPC) against the debilitating disease.

Schistosomiasis is one of the most prevalent parasitic diseases worldwide, with over 206 million people infected, of which more than 10 percent are preschool-age children. While an effective treatment – 600mg praziquantel tablets – is at the Merck Global Health Institute (Ares Trading S.A., Switzerland, an affiliate of Merck KGaA, Darmstadt, Germany). "UFHB and KEMRI are providing their expert support for the implementation of the phase III trial in Schistosoma-infected preschool-age children that started in 2018. They have the necessary infrastructure in place and significant experience in conducting studies in children living in remote areas in extreme poverty and carrying

chronic and debilitating parasitic infections such as schistosomiasis. Combined with our existing resources, this is instrumental for the success of the phase III program."

UFHB was involved in the conduct of the phase II clinical trial in Cote d'Ivoire. Prof Eliézer N'Goran, Director of the department of Zoology and parasitology at the UFHB, said: "My team and I are very excited to join the Pediatric Praziquantel Consortium. Since the 1990s, UFHB has actively pursued research in the areas of epidemiology, ecology, clinical research, and public health issues of schistosomiasis, which remain a huge challenge in my country today."

KEMRI is also providing decades of expertise in schistosomiasis research. "My unit is located and operates from western Kenya, along the shores of Lake Victoria, an area of high endemicity for schistosomiasis" said Dr. Maurice Odiere, Head of the Neglected Tropical Diseases Unit at KEMRI's Centre for Global Health Research. "The researchers in my team and I look forward to sharing our experience in schistosomiasis clinical field studies, and to mobilizing communities in endemic regions for participation in the research."

The Phase III program comprises the confirmatory clinical trial in Schistosoma-infected preschool-age children. If successful, the Phase III trial will confirm the efficacy and safety of the praziquantel orodispersible tablet formulation and dose, selected based on phase II results. The Consortium aims to submit a Marketing Authorization Application in 2020, and to have the product available in 2021, for launch in the first endemic countries in Africa.

RIFT VALLEY FEVER VACCINE SAFE FOR PREGNANT ANIMALS

Collaborative research has shown that a new vaccine, ChAdOx1 RVF, is effective at protecting pregnant sheep and goats from Rift Valley fever (RVF), a debilitating disease that can also be transmitted to humans.

Scientists from KEMRI-Wellcome Trust Research Programme, worked with the Pirbright Institute, The Jenner Institute at the University of Oxford, Wageningen University Research in the Netherlands, Biovacc Consulting Ltd on this project. The team's work will progress the development of the vaccine, which could be the first to be used against both a human and animal disease.

ChAdOx1 RVF was previously shown to be safe and effective at protecting animals and has since been scheduled for human trials. However, its safety in pregnant animals had not been verified. This collaborative study, published in *npj Vaccines*, has shown that pregnant sheep and goats immunised with a single dose of ChAdOx1 RVF remain healthy and suffer no pregnancy losses after challenge with a virulent strain of RVF virus. The protection was more robust in sheep than goats, despite the similar levels of immune response induced. This suggests that protection mechanisms against RVF could differ between livestock species.

The research shows that ChAdOx1 RVF overcomes drawbacks that current veterinary RVF vaccines experience, such as causing pregnancy complications or requiring multiple booster vaccinations. ChAdOx1 RVF also generates a rapid immune response and allows diagnostic tests to differentiate between infected and vaccinated animals (DIVA). These properties make this vaccine well suited for tackling outbreak situations and could limit the circulation of RVF amongst animals and people.



RVF is spread across Africa and the Arabian Peninsula and is caused by a virus that infects livestock such as sheep, goats, cattle and camels. Infection of animals with Rift Valley fever virus (RVFV) results in high mortality and poor outcomes during pregnancy, such as stillbirths, foetal malformations and abortions. It also poses a severe threat to human health but there is currently no licenced human vaccine available. People can contract and by

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... Rift Valley Fever Vaccine Safe for Pregnant Animals

the disease through contact with contaminated tissues and fluids of livestock, as well as being bitten by infected mosquitoes.

Dr. Anna Stedman, lead author, said: "Our study has provided further evidence of the vaccine's effectiveness and safety. Ensuring ChAdOx1 RVF can be used in pregnant animals will help livestock owners to protect their animals in the event of an outbreak, which in turn will reduce their own risk of infection."

Professor Yeri Kombe, Director General KEMRI, noted: "Research collaborations enable the progress of new developments in science and it is commendable that

this research will go a long way to aid the development of ChAdOx1 RVF for human use. We are excited to be part of this ground breaking work which may for the first time see a vaccine that can be used to prevent disease in both humans and animals"

Professor George Warimwe, leader of the Rift Valley Fever Vaccine Programme at the University of Oxford said: "This has been a tremendous collaborative achievement. The excellent safety profile of the vaccine in pregnant livestock will support further development of the product for use in both livestock and humans."



No, You Will Not Be Treated Like a Guinea Pig if You Accept to Participate in Scientific Research



Every one of us likes to enjoy the convenience of tools for disease prevention and healthcare emanating from scientific research and innovation. And we do it without a second thought; they have become a way of life; second nature. For example, we have a headache and quickly rush for that paracetamol pill; it is during the rainy season and mosquitoes are plenty and we ensure that every night our families are securely tucked under the safety of an insecticide treated mosquito net. Then there are the tools and implements that require the prescription of medical doctors, such as diagnostics and disease prevention, treatment and management solutions.

As we all can appreciate however, the battle against diseases is far from over because of a variety of reasons that I will not go into here, but suffice is to say that for many diseases and health conditions, there will always be the need not just for improved tools for their prevention and management but also for new approaches to dealing with the diseases and health conditions. Thus, scientists have their work cut out for them. But did you know that you too can make a contribution towards the development of these

tools and implements for disease prevention and management? Yes you can! And it is not just through the taxes that you pay, some of which are used to fund research in the country. You can contribute by offering to volunteer to participate in research studies as a human subject during the clinical and field testing phases of such studies. And no, you will not be treated like a guinea pig, that little animal that epitomizes animals used in research. Never mind that the animal is neither from Guinea nor a pig! I believe that many of us are reluctant to volunteer ourselves and our children for research studies because of the misconception surrounding participation as human subjects in such studies. And talking of guinea pigs, there lays yet another misconception; that animals used in research are ill-treated.

Research but also to ensure the protection of the rights and welfare of human subjects involved in the research. Any changes to the study must be communicated and approved by the Ethics Review Committee before they are implemented. Another important role of the Ethics Review Committee is to carry out periodic reviews of the research to ensure compliance. In Kenya, the National Commission for Science Technology and Innovations is the agency that carries out accreditation of institutional ethics review committees.

It is impossible to discuss the use of human subjects in biomedical and behavioural research without mentioning the 1979 Belmont Report. The Belmont Report is one of the leading works on the ethics of research involving human subjects and was prompted in part by the infamous 1932 to 1972 Tuskegee Syphilis study in which

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... No, you Will Not Be Treated Like a Guinea Pig if you Accept to Participate in Scientific Research

there was gross abuse of ethical standards. The Belmont Report explains the unifying ethical principles for using human subjects in research and has continued to be an essential reference for institutional ethics review committees throughout the world. Google is a friend of many Kenyans, so I am sure that those of you interested will read more on this subject but basically, the three fundamental ethical principles when using human subjects in research are: Respect for persons (protection of autonomy of persons), Beneficence (the “do no harm” principle) and Justice (the fair distribution of costs and benefits to potential research participants).

It is very important to be aware that one participates in a research study as a human subject out of their own volition and anything short of this would be a violation of the above principles. A critical step in the recruitment of participants is informed consenting where the researcher explains important facts about the research study and potential participants agree to volunteer based on a clear understanding. Some of the facts communicated are such as what the study is about and what will be required of participants. The informed consent explanation given to potential participant at recruitment forms part of the documentation that is reviewed by the ethics review committee so as to ensure that it adequately and honestly represents the planned research. It is a requirement that this informed consent explanation be devoid of scientific jargon. Participants are required to sign consent forms which are countersigned by the lead investigator; participants also retain a copy of the signed informed consent form. At the bottom of the form, the contact details of

persons to be contacted for questions and information about the study both from the research team and the ethics review committee are provided. Of course before being included in the research study, one is evaluated with regards to the inclusion criteria for the particular study and this may include having a medical examination. And like medical records, all information relating to one's participation including data from the research is kept confidential. Just as it is important to be aware that participation is completely voluntary, it is also important to be aware that one may withdraw consent to participate at any stage and for whatever reason, either before commencement of the study or during, and without repercussion.

Then there is the matter of whether one is paid to volunteer as a human subject, a very contentious issue. Payment practices vary widely but the general guidelines are that any form of compensation whether monetary or otherwise should be such that it will not be construed as undue inducement.

Going back to the guinea pig, there are institutional review committee that are concerned about the humane care and treatment of animals used in research but that is a subject for another day.

So, there you are! Though this barely scratches the surface on the matter at hand, I hope you are now more at ease about volunteering to participate in research studies. You too can make a contribution towards the development of advancements for improved human health and medical care that you hope to enjoy tomorrow.

Article by Dr. Luna Kamau
Deputy Director, CBRD

Family Planning and Prevention of STI's and HIV Must Come Together for the Sake of Women's Health



A woman who walks into a standard family planning clinic in Kenya is often not told an obvious truth: Only condoms can protect you from Sexually Transmitted Infections (STIs). For that simple advice, she must go to a separate outpatient clinic, or an STI or HIV clinic.

This needs to change. The recent results of the ECHO study, for which Professor Elizabeth Bukusi and I were lead researchers for the Kenya site at KEMRI-Kisumu, provide a sobering reminder of the devastating STI crisis facing girls and women of reproductive age.

We saw high rates of STIs among the women in our study site. One in five had Chlamydia, a third had genital herpes (HSV-2), and nearly 5 percent had Gonorrhea. Chlamydia is a leading cause

of infertility in women, HSV-2 can be managed but is incurable, and we currently have only one drug to treat gonorrhea, because of its increasing antimicrobial resistance. While STIs may not be life threatening, they can cause significant health problems if not treated.

The ECHO study sought to answer a public health question that had for decades cast a shadow on the use of the injectable contraceptive Depo Provera by women in areas with HIV prevalence, where the risk of infection is elevated. The purpose of ECHO was to compare the HIV risk associated with three methods: intramuscular Depot Medroxyprogesterone Acetate (commonly known as Depo), Copper Intrauterine Devices (IUDs), and Levonorgestrel (LNG) Implant commonly known as Jadelle. Study countries were Kenya, South Africa, Zambia and Eswatini. Some 7,829 women across 12 study sites in the four countries were randomized to three family planning methods:

The study results, which we presented on 13th June in Durban, South Africa, were met with relief: We found that risk of HIV infection among women using any of the three family planning methods tested was not significantly different. Besides, Depo Provera, the copper IUD (commonly referred to as the coil) and the implant were all safe and well accepted, and were excellent at preventing pregnancy.

However, ECHO found a HIV incidence of 3.8 percent among study participants overall. HIV incidence measures the number of people out of every 100 to become infected with the virus over a year. This high incidence— in study settings where women were offered comprehensive HIV

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... Family Planning and Prevention of STIs and HIV Must Come Together for the Sake of Women's Health

prevention counseling and STI screening and treatment— is another wake-up call that HIV is far from being conquered in our countries.

Sexually active women can choose various methods to prevent HIV and other STIs, from male and female condoms to the daily pre-exposure prophylaxis pill, PrEP. But clearly, these methods are not working for many women.

We need to grasp this opportunity and change our way of working, so that it works for women. The violence against women must stop. Parental and societal stigma against young women seeking reproductive health services must end, through education. Girls and women must be taught about their bodies and their health. Social and structural barriers to STI and HIV prevention

must be tackled. And the walls separating family planning and STI prevention services in our health system must come down.

In the words of Novelist Chimamanda Adichie, there is a danger of a single story. A single story that promotes family planning alone, or HIV/STI prevention alone is dangerous to the lives of young girls and women. Indeed, if we are to serve the needs of women, the story of family planning and story of STI and the story of HIV prevention must be told together and addressed in an integrated manner.

As a researcher and the mother of a daughter, I want a future in which sexually active girls and women of all ages can make informed choices—in the same setting—on family planning and STI prevention methods that work for their lives. And do so without stigma and discrimination.

The health of girls and women impacts us all. The time to integrate family planning and STI/HIV prevention is now. It cannot wait.



Article By Dr. Maricianah Onono
The PI, The Kenya Study on HPV Vaccine Efficacy

KEMRI SCIENTIST WINS PRESTIGIOUS RSTMH AWARD



Dr. Kinyanjui poses for a picture RSTMH President, Prof. Sarah Rowland-Jones shortly after being awarded the RSTMH Excellency Award Medal.

AKEMRI researcher is the recipient of this year's prestigious Royal Society of Tropical Medicine and Hygiene (RSTMH) award. Dr. Samson Kinyanjui was declared the winner of the 2019 Chalmers Medal Award for his contribution in capacity building of young researchers not just in Kenya, but throughout the African continent.

Dr. Kinyanjui, a senior researcher at the KEMRI-Wellcome Trust programme

and a founder director of the Initiative to Develop African Research Leaders (IDeAL), based at the Institute's Center for Geographic Medicine Research-Coast (CGMRC).

The Scientist was awarded during the 11th, European Congress on Tropical Medicine and International Health held recently in Liverpool, UK. The ceremony was witnessed by Mr. James Kiiru, the Head of Economic Section at the Kenya High Commissioner in the UK.

The Chalmers award is bestowed

to researchers in tropical medicine on international health who obtained their last relevant qualification between 15 to 20 years and have demonstrated evidence of mentoring and professional development of junior investigators and other forms of capacity building on the continent.

Through, IDeAL, Dr. Kinyanjui has revolutionised capacity building at the programme for the benefit of many young African researchers.

While congratulating Dr. Kinyanjui, Director General, Prof. Yeri Kombe lauded his diligence in the development and implementation of a comprehensive research career framework for attracting, training and retaining African research leaders. "Congratulations are in order for this great young scientist whose efforts have placed KEMRI on the global map," said Prof. Kombe.



HATS OFF AS PROF. OSIER SELECTED TED FELLOW

KEMRI scientist Prof. Faith Osier was selected as a TED Fellow, joining a class of 20 change-makers from around the world to deliver a talk on the TED stage in April in Vancouver.

Members of the new fellows class include a journalist who fight fake news in her native Ukraine; a Thai architect designing buildings and spaces with climate change in mind in order to protect vulnerable communities; and a

pediatrician who helps families file their taxes in the doctor's waiting room. A full list of the new TED Fellows and Senior Fellows is available at <https://blog.ted.com/meet-the-2018-class-of-ted-fellows-and-senior-fellows>.

Prof. Osier is an award-winning immunologist based at the Center for Geographic Medicines Research- Coast (CGMRC). She trained as a clinician at the University of Nairobi, and obtained her MBChB degree in 1996. She immediately took up her

Medical Internship at Coast General Provincial Hospital, in Kenya where she also worked as a Medical Officer in the department of Medicine until March 1998. Thereafter she took up a post as a Medical Officer/ Research Officer at KEMRI-Kilifi, working in the Paediatrics Department of Kilifi District Hospital. It was here that she began to develop a career in research, engaging in clinical research studies and actively taking part in institutional academic meetings including weekly journal clubs and seminars. She

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... HATS OFF AS PROF. OSIER SELECTED TED FELLOW

subsequently specialized in Paediatrics, training both in Kenya and the United Kingdom, becoming a member of the Royal College of Paediatrics and Child Health UK in 2003 and a Consultant Paediatrician in Kenya in 2009. She has spearheaded in investigations geared towards the development of a number of vaccines.

Founded in 2009, the TED Fellows program has 453 Fellows from 96 countries, whose talks have collectively been viewed more than 178 million times. In its nine-years

history, the TED Fellows program has created a powerful, far-reaching network – made up BRCK, the self-powered, mobile WiFi router that can work anywhere, even in the harshest conditions; Fine Acts, the international collective bringing together artists and activists to instigate social change; and Brick x Brick, a public art performance inspired by the 2016 election that builds human “walls” against misogyny.

“We are proud that our 2018 Fellows comprise a truly global,

cross-disciplinary group of individuals, each of whom has already had extraordinary impact in their fields. They are boldly using technology, the arts, science, advocacy and beyond to address some the most pressing topics of our day – including campus sexual assault, refugee health, a free and independent press, and climate change,” said TED Fellows Deputy Director Shoham Arad. “We believe deeply in the power of cross-cultural and cross-disciplinary collaboration to surface original solutions to seemingly intractable problems, and we look forward to seeing what this remarkable group is able to build as a result of joining the Fellows program.”

Congratulating Prof. Osier, Director General, Prof. Yeri Kombe said: “We are very proud of Prof. Osier and we want to join the rest of the world in congratulating her ...this shows that we as an Institute continue to provide leadership in health research not only in Africa but the world over.”

Once a year, the TED Fellows program opens applications to find a new class of extraordinary thinkers and doers, encouraging innovators over 18 years old to apply.



Prof. Osier deliver TED talk in Vancouver - Canada

NAPREDA WINS THE PHARMACEUTICAL PRICE FOR KEMRI AT THE 2019 MOMBASA INTERNATIONAL SHOW



Dr. Festus M. Tolo receives the 1st price for the Best Pharmaceutical Research, Innovative and Technological presentation at the Mombasa International Show from the Chair of the Agricultural Society of Kenya on 6th September, 2019

The Natural Products Research and Drug Development (NAPREDA) Programme has won the 1st price for the best pharmaceutical research, innovative and technological presentation at the Mombasa International Show held between the 4th and 8th September, 2019.

NAPREDA was part of the KEMRI exhibition at the show in which KEMRI also won the 1st price for the best Research and Development (R&D) stand. Presentations under the aegis of NAPREDA included TUNGICIDE, a

product developed at the Centre for Traditional Medicine and Drug Research (CTMDR) in collaboration with the KEMRI Production unit. The product is as a result of the KEMRI Pyrethrum Project (SSC 2969) which was facilitated through a special fund by the Parliamentary Select Committee on Health of the 11th Session of the Kenyan Parliament.

TUNGICIDE is an insecticide formulation which has demonstrated significant activity against Tunga penetrans, the flea that causes tungiasis, locally known as the jigger infestation. new anti-jigger

Also on exhibition was Zedupex, a herbal management therapy for herpes infection. Herpes is a viral infection of the skin and manifests as an opportunistic infection in immune compromised persons and is known to enhance acquisition and transmission of HIV. There is no known conventional cure of herpes. Other products included Papina, a herbal salt for management of mild hypertension, TMR1 capsules prepared from a medicinal plant for management of uncomplicated malaria and Moringa olifera "Tea" as a food supplement and immune booster, all the products being results of research at CTMDR.



Tungicide, an insecticide for management of Tunga penetrans, the flea that causes Tungiasis, locally known as the jigger infestation

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... NAPREDA WINS THE PHARMACEUTICAL PRICE FOR KEMRI AT THE 2019 MOMBASA INTERNATIONAL SHOW



Zedupex, a herbal management therapy for herpes infection. Herpes is a viral skin infection which manifests as an opportunistic infection in immunocompromised persons and is known to enhance acquisition and transmission of HIV



Papina, a herbal salt for management of mild hypertension



Moringa oleifera "Tea" a food supplement and immune buster



TMR1 capsules prepared from a medicinal plant for management of uncomplicated malaria

Live potted medicinal plants of *Prunus africana*, *Teclea simplicifolia* and *Warbugia ugandensis* were also on display as resource plants for ongoing research for identification of new therapeutic agents and also indirectly to sensitize the show enthusiasts on the importance of conservation of such plants for a continued resource of health products.

The Natural Products Research and Drug Development Programme is one of the six research programmes of KEMRI. The programme is aligned to the Institute's Strategic Master Plan and is a vision 2030 flagship project. The programme envisages to be a lead in the promotion of Natural Products Research and Drug Development and to improve human health and quality of life through promotion and development of safe, efficacious and quality herbal & traditional medicines, phytomedicines and drugs. The main programme purpose is to identify and develop effective herbal/traditional/phytomedicines and drugs for use against human diseases in partnership with relevant institutions, collaborators and government ministries.

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... NAPREDA WINS THE PHARMACEUTICAL PRICE FOR KEMRI AT THE 2019 MOMBASA INTERNATIONAL SHOW

Universal Health Converge (UHC) projects under NAPREDA in the 2019-21 framework consist of basic discovery science for identification of relevant new health interventions that include:-

1. Evaluation and commercialization of pyrethrin-based jiggers product-TUNGICIDE
2. Production and Commercialization of Zedupex- a herbal medication for herpes infection
3. Production and Commercialization of Papina herbal salt.

The programme has developed the following strategies to ensure all inclusive research in natural products:-

1. To provide a focal point for the coordination of research in the area of Natural Products in the Institute and beyond.
2. To source for partnerships and collaborations in the area of Natural Products research nationally and internationally.
3. To work as a think-tank for the identification of disease priorities in the region that needs therapies researchable within Natural Products.
4. To act as advisory to the MOH, through KEMRI, on policy formulations in the area of Natural Products research and drug development.



Mr. Davis Mkoji, Deputy Director Corporate Communications takes members of the press through a poster during the Mombasa show

Article by Dr. Festus M. Tolo
Head, NAPREDA Programme

KENYAN STUDY SHOWS WHY REUSING OLD MOSQUITO NETS SHOULD BE ENCOURAGED



Treated mosquito nets are vital in the fight against malaria. But the average lifespan of a net is about four years. The Conversation Africa interviewed Center for Dr. Lydiah Kibe to explain her research paper on how old and torn bed nets are being reused in coastal Kenya.

Question: Why are insecticide treated bed nets a critical protective barrier against mosquitoes?

Response: Mosquitoes are a nuisance and cause irritation. On the public health front, they transmit diseases such as malaria, Rift Valley Fever, Dengue fever, Zika virus and Chikungunya, yellow fever, filariasis among others.

One of the key ways mosquitoes are controlled is through the use of insecticide treated nets which are hung over beds, especially at night.

Insecticide treated nets reduce illnesses and deaths from malaria. It can reduce deaths in children by a fifth and episodes of malaria by half.

Since 2002 about 30 million nets have been distributed in Kenya to high risk groups especially pregnant women and children under five years.

In 2006, about 3.4 million Long Lasting Insecticides Nets were given at no cost to children under five in malaria endemic areas in Kenya. Six years later, 11.5 million treated

nets were distributed in the 87 malaria prone regions in the western, coast and parts of eastern Kenya. Furthermore, a mass distribution campaign is underway in Kenya to provide 15 million treated nets in 23 malaria prone counties. The aim is to achieve universal coverage, targeting one treated bed net per two household members.

Other interventions used to control mosquitoes include;

- aerosols- a spray that contains a natural active ingredient that kills mosquitoes
- repellents- applied to skin, clothing, or other surfaces to discourage mosquito from landing or climbing on that surface
- screening windows and eaves- netting material mostly on windows that prevents entry of mosquitoes
- larviciding- an insecticide that specifically targets the larval life stage of a mosquito

Question: What motivated your study into how old nets are being used?

Response: Our study was done in 888 households in Malindi, coastal Kenya. It was motivated by a lack of guidelines on disposing old, expired and torn mosquito nets especially after a mass distribution. We investigated the reuse of bed nets, particularly those that were old, torn and expired bed nets. The nets are made of polyethylene or polyester materials which are strong and long lasting.

There are no official guidelines to follow, but we found that residents had devised imaginative, creative and innovative ways of recycling them.

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... KENYAN STUDY SHOWS WHY REUSING OLD MOSQUITO NETS SHOULD BE ENCOURAGED

The most popular reuses we found were:

- a quarter of the respondents had used them to reinforce fences and shelters
- as net ropes for tying animals
- building and furniture materials (23%)
- protecting seedlings (17%)
- as chicken coops (13%)
- as window screens (11%)
- covering wells and water containers (4%)
- to scrub utensils
- as a sponge for personal hygiene during bathing.

Children also put them to use. We found that they had been fashioned into goal posts, strings and jumping ropes as well as swings.

We also found that women liked to use the material to make a traditional attire known as hando – a short skirt made of a long material, preferably cotton, folded into gathers. These are usually made from old clothes or material made from sisal.

Question: What reasons were given for the disposal of the bed nets?

Response: Nets eventually become ineffective. This happens when they are old, worn out and insecticidal activity is reduced. Residents dispose them once they've been repaired many times or the holes have become too big and numerous.

Damage to nets is often caused by tin lamps, friction from a mat or edge of the bed, sparks from a fire and children playing with them. They were also often washed frequently.

This is what some respondents had to say about why they disposed of the nets:

My net had big holes like the size of my fist and mosquitoes were entering through these holes. I had to buy another net to replace it.

Our houses are like you can see them (referring to mud thatched houses). We sleep with our chicken and goats inside the house. This makes the nets get dirty very fast as the goats sometimes urinate on the nets. You have to wash it regularly and this makes it get torn very fast.

Sometimes you repair the holes until the net cannot be repaired anymore. You repair it today, after a week you find another bigger one. If it's old you throw it away in the trash and get a new one or stay without one.

Question: What next?

Response: It's time that alternative uses of old and worn out nets wasn't interpreted as misuse but seen as an innovative way of using them.

However, health promotion officers should provide guidance on alternative uses. For example, people could be encouraged to use them in a way that compliments malaria control efforts such as using them as window screens and covering water wells.

In addition, efforts should be made to involve communities in viable and realistic ways of reusing old nets. This could be done without compromising the overall goals of malaria control initiatives. For example, they could serve as alternative sources of income by encouraging collection, sorting and making ropes which could then be sold.

NEGOTIATING SCARCITY TO IMPROVE QUALITY OF CARE AND SURVIVAL OF PRETERM BABIES IN KENYA



Question: What is Prematurity?

Response: When a pregnant woman goes into labor before 37 completed weeks of pregnancy then that labor is called preterm labor. It therefore follows that a baby born before 37 completed weeks is also referred to as a preterm baby. These babies have unique features and medical challenges often directly related to the level of prematurity. At one extreme are those labelled as “extreme” and “very” preterm babies, those born before 32 completed gestation weeks, and more often will require admission into a newborn unit, for specialized. On the other hand, are those labelled “moderate” and “near term” preterms who form the over 80% of all preterm babies. This category may require very little intervention with some being discharged just as the term babies. Unfortunately, this then is where most cracks seem to occur. We may be oblivious that these babies, though have good weight and no visible challenges are indeed not fully mature

and need just slightly more attention than term babies. They are often released home without any appropriate advice/care and that is how some end up developing preventable complications and some even die!

Global and a National Problem: Globally, 15 million babies are born prematurely, and sadly one million of those babies will pass away. Deaths among preterm is on the rise globally and is the main driver for neonatal deaths, which have persistently remained high in Africa and South Asia regardless of the declining under five years child mortality rates. Kenya is one of the African countries with high neonatal deaths ranking 6th overall.

Unfortunately, cultural inhibitions as well as poor documentation mask the actual burden of the problem since several cases are undocumented. In the society, a preterm delivery that ends in death may be ignored and not even counted, yet for the mother there are far reaching psychological effects and for our nation all these count as neonatal deaths giving poor reflection on our health indicators.

Question: What Steps can be taken to Prevent or Mitigate Prematurity?

Response: The World Health Organization released a list of evidence based interventions to improve preterm birth outcomes in 2015 most which are basically achievable but yet we still seem to lag behind. I would list three cornerstones that can help tighten loose ends to address the problems associated with prematurity namely:

1. Maternal factors: Proper care during antenatal period including management

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... NEGOTIATING SCARCITY TO IMPROVE QUALITY OF CARE AND SURVIVAL OF PRETERM BABIES IN KENYA

of infection, avoiding stress, management of high blood pressure and postnatal family planning are core 2. Proper diagnosis and time documentation are also necessary if appropriate care will be instituted 3. Appropriate immediate and early newborn measures: This period is essential in saving the life of the preterm baby and looking at four major pointers here, include; Prevention and management of infection, secondly ensuring proper breathing including supportive measures if necessary, thirdly keeping the baby warm including use of incubator or Kangaroo Mother care, and fourthly ensuring proper adequate feeding.

Question: What are some of the Challenges Experienced in Kenya in Managing Prematurity:

Response: There are several evidence-based interventions and strategies in place to save the lives of preterm babies, reduce preterm births as well as reduce morbidities associated with preterm births, however comprehensive implementation is lacking in Kenya mainly due to what I can term a complex of scarcity: The first and most important is lack of adequate staff. In Migori County for example, currently, there is only one obstetrician gynecologist and no paediatrician in public service. Midwives are very few and for any duty slot you find only one or two nurses in a shift. The second scarcity is lack of equipment and other necessary supplies: As much as there is general lack of supplies, the hardest hit group are the preterms because during procurement their tiny sizes are overlooked. So, you may find there tubes, cannulas, suckers but none for the babies born too soon! We have found that even medications that are specifically required for the preterm babies are missing in most facilities in

the rural counties. The third level of lack is around knowledge, skills and confidence in taking care of preterm babies. In the county where we have been working for one year, we found that most of health care providers, because of either lack of necessary supplies and/or exposure, had low confidence in taking care of preterm babies. During the training, this is highly specialized and reserved area for pediatricians, therefore most staff lacked the mentorship required, since this county has none. The fourth challenge is in proper diagnosis of who a preterm baby is. This is because mothers often do not remember their dates of the last menstrual period and care providers may also either document incorrectly or fail to take proper assessment. The fifth scarcity is good infrastructure that can enhance access and referral for care. In this there are very few health care facilities with very little to choose from. Additionally, referral system is still very weak, with no operational ambulances, lack of higher level specialized facility within the county and poor road network. The fifth is lack in coordination and synergy among partners. Most often, partners eager to give support go to the field independently and sometimes there is duplication of services or supplies. Sixthly there is lack of deliberate effort to combine several of well-known interventions to produce robust impact. Most often the tradition is just to resign to the level of whatever is available. control initiatives. For example, they could serve as alternative sources of income by encouraging collection, sorting and making ropes which could then be sold.

Question: What is Preterm Birth Initiative and What are we doing to address some of these Challenges?

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... NEGOTIATING SCARCITY TO IMPROVE QUALITY OF CARE AND SURVIVAL OF PRETERM BABIES IN KENYA

Response: Preterm Birth Initiative East Africa, has been working in selected sites in Kenya, Uganda, and Rwanda, PTBi East Africa with an aim to reduce morbidity and mortality among preterm babies in the first month of life. The plan involved using evidence-informed interventions and test novel approaches that were carefully adapted to the local context and implemented with local stakeholders. The approach has been grounded in a commitment to capacity building and long-term sustainability. While the primary focus has been improving implementation to save lives immediately, there are additional research work that has been conducted to gain new knowledge about preterm birth that are informing new solutions.

The Kenyan chapter is a collaboration between Kenya Medical Research Institute (KEMRI) and University of California San Francisco and supported by the Bill and Melinda Gates Foundation. The project has been underway in Migori County since May 2015. This implementation science study will take advantage of the evidence-based interventions and in innovative ways to strengthen multiple interventions concurrently to demonstrate impact on both morbidity and mortality of preterm babies and in effect reduce overall neonatal deaths. The project also takes advantage of the current global interest and support by donors towards reducing neonatal mortality as well as the long-standing collaborative research ventures between KEMRI and UCSF.

The four interventions that we are implementing concurrently include: 1. Data strengthening in which we have structured systematic ways of strengthening existing data collection processes in health care facilities; improve data collection practices to identify women at risk;

and provide tools to better assess gestational age. We are also creating digital tools to collect data that local providers, health officials, and national policy makers can use to aid decision making. 2. We have introduced the use of a safe childbirth check list which aims to improve quality of care and helping health providers check on timely appropriate care at different pause points from admission in labour to discharge of mother and baby. 3. We implement a labor, delivery, and postnatal care package based on PRONTO simulation methods with an aim to improve skills, timely response and overall confidence in care of women around labour and immediate care of the newborn. 4. Under quality Improvement cycles we work with the facility staff to form quality improvement teams, we introduce and institutionalize quality improvement cycles and regular project monitoring and evaluation. Working together all the other interventions feed and strengthen each other

Question: What are some of the Findings and Recommendations?

Response: Our project is implemented in 17 facilities considered to be high volume in the county. From June 2016 to October 2017, a total of 13196 deliveries have been recorded out of which 1773 are Preterm and Low Birth Weight Babies giving a rate of 13%. Our interventions involve training staff on site and an intense mentorship program using simulation methods among others. This work is still on going and will be able to give more outcomes and recommendations as we go along. Negotiating scarcity in our setting therefore calls for starting off by strengthening relatively low lying fruits of interventions that we can easily reach out too and then building on these as we go along.

Article Dr. Phelgona Otieno
PI, PTBI - Kenya Project

“MISSING” TB CASES ARE A HUGE PROBLEM. WHAT KENYA NEEDS TO DO TO FIND THEM”



Tuberculosis (TB) is one of the top ten causes of death worldwide. People with TB can infect up to 10 to 15 people annually if they are in close contact with them. Breaking the transmission cycle is key to fighting the disease. For that to happen diagnosis needs to be stepped up. In a recent interview with The Conversation Africa KEMRI Scientist, Dr Jane Ong'ango outlines strategies to find the missing TB cases in Kenya.

Question: What is the burden of tuberculosis globally and in Kenya?

Response: Great progress has been made to control and eliminate TB. However it remains one of the top infectious diseases causing death. It disproportionately affects the world's poor and is rated as one of the top 10 causes of death worldwide. In 2015 TB caused more deaths than HIV. There were an estimated 10.4 million cases across the world that year.

Global efforts to reduce illness and deaths from TB are part of the sustainable development goals and the World Health Organisation's End

TB Strategy. The objectives of these two global efforts is to eliminate TB globally by 2030 through the reduction of TB deaths by 90 percent and the reduction of TB incidence by 80 percent compared with levels in 2015.

A tuberculosis prevalence survey done in Kenya 2016 showed a prevalence rate of 558 tuberculosis cases per 100,000 population. This is double the 2015 WHO estimate of 233 cases per 100,000 population. Tuberculosis is the fourth biggest killer in Kenya after HIV/AIDS, maternal deaths and lower respiratory infections.

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... MISSING” TB CASES ARE A HUGE PROBLEM. WHAT KENYA NEEDS TO DO TO FIND THEM”

Based on the TB cases identified by the health system in 2015, the prevalence survey showed that every year about 40 percent of TB cases remain undetected in Kenya. This means that nearly half of the number of people with TB disease are undetected and not on treatment. They are considered as missing TB cases.

Question: Who constitutes the ‘missing’ TB cases?

Response: This is the gap between the estimated number of people who become ill with TB in a year and the number of people who were diagnosed and treated by the national TB programmes.

In 2015 the World Health Organisation estimated that there were about 4.3 million people “missing across” the world. India, Indonesia and Nigeria accounting for almost half of them.

Finding the missing cases is critical to eliminating TB because they actively contribute to transmitting the disease to others.

Question: Where are the missing cases?

Response: A majority (75 percent) of individuals who have TB usually have TB related symptoms which could include any of the following; cough of any duration, night sweats, weight loss, fatigue, fever, and shortness of breath. Among these individuals the severity of the symptoms differ, despite this all should be screened for TB at the earliest possible time from when the symptoms develop.

In addition about a quarter (25 percent) of individuals with TB do not have symptoms and will thus continue to spread the bacteria in the community. The missing TB cases may either have

symptoms or not and could be found within three scenarios in the community which include;

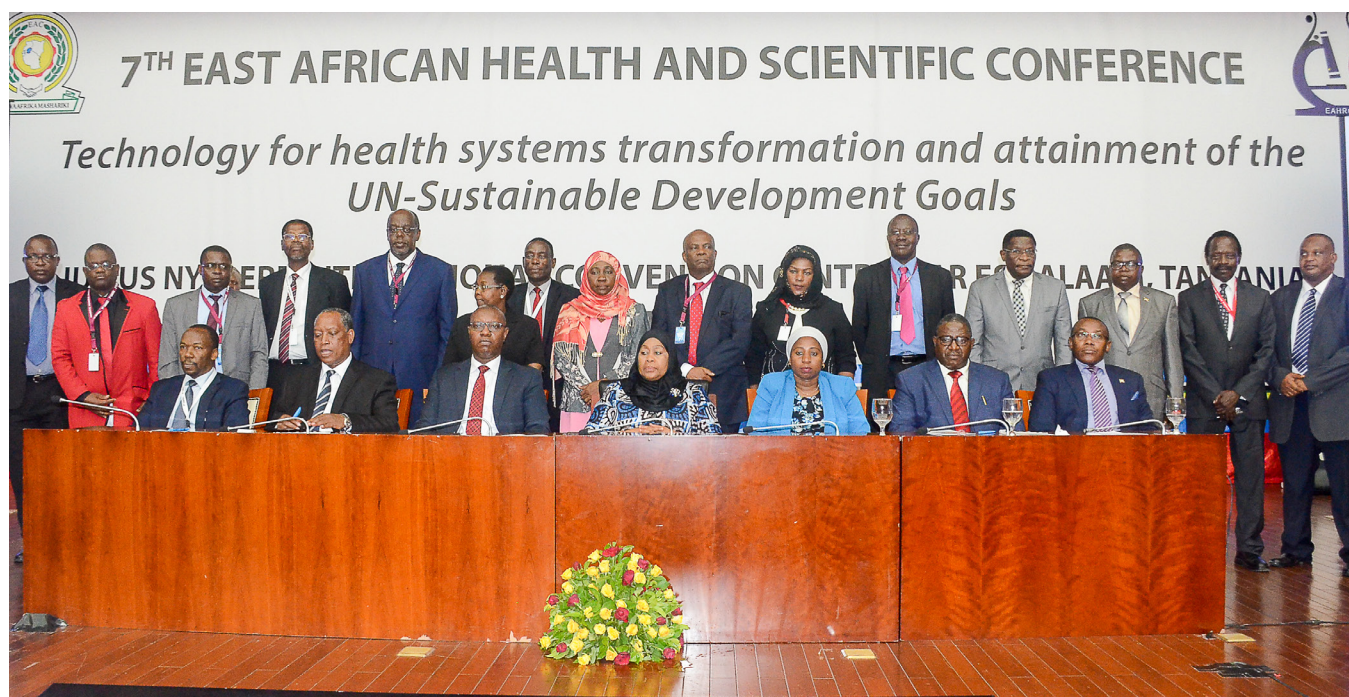
- Individuals in the community with non severe symptoms, and therefore do not seek care.
- Individuals at work, school, home or clinics are presumed not to have TB and hence not screened.
- Individuals seek care for TB symptoms at health facilities, but do not get diagnosed.

Question: What can we do to find the missing TB cases?

Response: There is need to provide public awareness on Tuberculosis including having targeted messages for the vulnerable populations to encourage people to seek early intervention for any TB related symptom.

Health facilities should screen all persons with TB symptoms within their various departments to reduce possible chances of missing the cases. In addition to symptom screening there is need to expand use of Chest X-ray and avail GeneXpert as the first diagnostic test for all presumed TB cases.

Kenya to host the 8th EAHSC in 2021



Commissioners of the EAHSC pose for a group photograph with Tanzania Vice President, H.E. Samia Suluhu. Director General KEMRI Prof. Yeri Kombe. Nairobi plays host of the next conference

KEMRI researchers were among a strong delegation of 44 participants from Kenya that attended the 7th, East African Health and Scientific Conference held in the Coastal City of Dar es Salaam, Tanzania from 27th to 29th, March 2019 at the Julius Nyerere International Convention Center.

The Chairman of KEMRI Board of Management, Dr. Naphtali Agata, Board members, Prof. Peter Ngure, Dr. Fatma Haji and Director General, Prof. Yeri Kombe led the Kenyan delegation.

The conference which is held after every two years is convened by the East African Health Research Commission (EAHRC) in collaboration with partner states through their respective National Ministries

responsible for Health, East African Community (EAC) affairs and other relevant institutions and bodies.

According to Amb. Liberat Mfumukelo, the (EAC) Secretary General, "the conference contributes towards strengthening regional cooperation in health research in line with Article 118 of the treaty for the establishment of the EAC as well as relevance of the EAC Common Market Protocol."

The Vice President of the United Republic of Tanzania, HE Samia Suluhu Hassan officially opened the conference whose theme was "Technology for health systems

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transformation & attainment of the UN-Sustainable Development Goals.”

The Vice President of the United Republic of Tanzania, HE Samia Suluhu Hassan officially opened the conference whose theme was “Technology for health systems transformation & attainment of the UN-Sustainable Development Goals.”

The Vice President was accompanied to the meeting by Tanzanian Minister of Health, Community Development, Gender and Children, Hon. Ummu Ally Mwalimu and Prof. Palamagamba Kabudi, Minister of Foreign Affairs and EAC Cooperation, Tanzania among other regional leaders.

During the ceremony, the vice president presided over the launch of the Digital Regional East African Community Health (Digital REACH) Strategic Plan, the Young East African Health Research Scientists Forum (YEARS’ FORUM) and the East Africa Web Portal for Health Information. EAHSC has identified 20 YEARS’ from member countries for mentorship and sponsorship for their PhDs. The objective of the YEARS’ FORUM is empowering young researchers in East Africa to be able to shape the future of research for health in the region. Kenya’s four members are Olipher Makwaga, Asiko Ongaya, Ng’ang’a Murima, Judy Mwai and Geoffrey Mutisia. , Asiko received a plaque on behalf of her countrymen from the vice president.

“We thank everyone who in many different ways have contributed towards this occasion. We wish you a successful conference and great experience in Tanzania city of Dar es Salaam,” said Prof. Eligius Lyamuya and Prof. Gibson Kibiki, joint 7th, EAHSC co-chairs during the opening ceremony. While, Prof. Kombe, representing KEMRI, is a commissioner of EAHSC, Dr. Evans Amukoye is both a member of the EAHSC National Focal Points Coordinators and Regional Steering

Committee (RSC). Other Kenyan members of EAHSC are Dr. Charles Nzioka and Mr. James Kariuki Ngumo.

After three days of lively deliberations in the break-away-sessions, symposia, electronic poster presentations and an International exhibition, the curtains came down on Friday 29th March 2019. On the last day, the Institute bagged two coveted awards – second runners-up in mounting the best exhibition stand and for mounting a successful symposium on Public-Private Partnership (PPP) at the 7th EAHSC conference at Dar es Salaam. Kenya were also named as the hosts of the 8th EAHSC in 2021, given that hosting of the event is rotational to each of the Partner States.

*“We thank everyone
who in many different ways
have contributed towards
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Climate and NTD Conference Marks The End of 2019



Dr. Evans Amukoye Ag. Director SPPGM delivering remarks at the closing ceremony of the Health, Environment & Climate Change Conference

The Kenya Medical Research Institute (KEMRI) hosted two high level scientific conferences towards the end of 2019.

First was the first ever Health, Environment and Climate Change Conference in the country that was held from the 2nd to 3rd, December 2019 at the Safari Park Hotel in Nairobi that was attended by 222 delegates from various national government institutions, County Governments, Multi-lateral organizations, Non-Governmental Organizations (NGOs), Academia, research institutions, civil organizations and the private sector.

The conference whose aim was to address health adaptation, resilience and technology solutions to climate change challenges, was also a commitment to advance the Sustainable Development Goals (SDGs) and underscore the Vision 2030 and the Big Four Agenda. It also aimed at advocacy of policy makers on the impacts of air pollution and climate change risks to health in order to strengthen sectoral leadership, governance and coordination roles, identifying synergies and opportunities to address environmental health risks associated with air pollution and climate change and to identify a framework for integrated and sustainable planning and programming in financing of health in relation to air pollution control, climate

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change and other related sector policies.

Director of Public Health at the Ministry of Health Dr. Kepha Ombacho officiated during the official opening ceremony on behalf of Health, Cabinet Secretary Hon. Cecily Kariuki.

“Climate Change affects the air people breath, the food they eat and the water they drink and there is need to continuously monitor human activities on the environment. Our planet is losing its capacity to sustain human lives due to environmental degradation that must however be weighed against human rights, agriculture and economic reasons,” says Dr. Kepha Ombacho.

The Chairman of the KEMRI Board of Management, Dr. Naphteli Agata and Director General, Prof. Yeri Kombe also attended the conference. Others present include keynote speakers including Dr. Evans Amukoye, Acting Director Scientific Programs, Partnership & Grantsmanship, Prof. Juma Bwika and Dr. Sitna Mwanza from Aga Khan University, Nickson Otieno from Niko Green, Prof. Charles Mirikau, Dr. Farida Were The conference whose aim was to address health adaptation, resilience and technology solutions to climate change challenges, was also a commitment to advance the Sustainable Development Goals (SDGs) and underscore the Vision 2030 and the Big Four Agenda. It also aimed at advocacy of policy makers on the impacts of air pollution and climate change risks to health in order to strengthen sectoral leadership, governance and coordination roles, identifying synergies and opportunities to address environmental health risks associated with air pollution and climate change and to identify a framework for integrated and sustainable planning and programming in financing of health in relation to air pollution control, climate change and other related sector policies.

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“Climate Change affects the air people breath, the food they eat and the water they drink and there is need to continuously monitor human activities on the

environment. Our planet is losing its capacity to sustain & Vincent Madadi of UoN among others.

In Kenya, diseases of respiratory system, largely caused by Household Air Pollution (HAP) is the top five leading causes of death and accounted to 42 percent of the disease burden as at 2014. It is estimated to be responsible for over a quarter (26 percent) of all deaths in Kenyan hospitals.

The closing ceremony was officiated by Hon. Keriako Tobiko, who also led the group in tree planting that marks the start of the 10 million plus tree planting initiative that will take place in various parts of the country.

“What is environment? It is easier to ask, what is not Environment? Environment is life. A clean and healthy environment is key in combating current and arising health issues. We have a role to play to help combat the severe effects of climate change,” concluded the Minister.

The conference was also attended by a number of partners including Ministry of Energy and Petroleum, National Environment Management Authority (NEMA), University of Nairobi (UON), International



From Left Cabinet Secretary Ministry of Environment & Forestry, Hon. Keriako Tobiko is joined by KEMRI Board of Management Chairman, Dr. Naphtali Agata, and the Director of Public Health Ministry of Health, Dr. Kepha Ombacho in watering a tree

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... Climate and NTD Conference marks the end of 2019

Livestock Research Institute (ILRI), Aga Khan University, Kenyatta University, World Health Organisation, International Council for Research in Agroforestry (ICRAF), Kenya Air Quality Network (KAQN), Nairobi City County Government and NCD Alliance Kenya.

Barely two days later, the 1st International Conference on Neglected Tropical Diseases (NTDs) in Africa held in conjunction with the 13th Kenya Ministry of Health (MoH) and the KEMRI Annual NTD Conference officially opened on Friday, 6th December 2019.

The conference that brought together health professionals including researchers, health practitioners, policy makers & implementers and stake holders holding on aspects of NTDs not just from Africa but all over the world. Among the keynote speakers was Dr. Mwelecele Ntuli Malecela, the Director Department of Control of NTDs at the World Health Organization (WHO) and Prof. David Molyneux, Emeritus Professor from the Liverpool School of Tropical Medicine.

Other key speakers included: Prof. Thomas Kariuki, Director of Programmes at the African Academy of Sciences (AAS), Dr. Rubina Imatiaz, Director Children Without Worms (CWW), Prof. Joseph Mathu, head of NTD Programme at Foundation for Innovative New Diagnostics (FIND) and Chancellor Jomo Kenyatta University of Agriculture & Technology (JKUAT) among others.

The conference was opened by the Chief Administrative Secretary MoH, Dr. Rashid Abdi Aman and saw over 80 abstracts and poster presentations being delivered.

Neglected tropical diseases remain a major public health concern in the world, and especially in sub-Saharan Africa (SSA) where over 90 percent of the disease burden is found.

Previous studies have indicated that NTDs are widespread among the poor with common NTDs, such as the soil-transmitted helminth (STH) infections,

schistosomiasis, lymphatic filariasis (LF), trachoma, and onchocerciasis affecting more than 500 million people.

“NTDs are diseases associated with poverty. By 2018, Kenya was mentioned the 41st Country free of NTDs. However, if our neighbors have not eliminated the burden of NTDs then we cannot say we are free. However, we are making impressive strides in Sub-Saharan Africa towards the control and elimination of NTDs,” Dr. Mwelecele Malecela.

In Kenya alone, over six million people are at risk of schistosomiasis, with a further 16.6 million being at risk of STH, 3.5 million are at risk of lymphatic filariasis, with about 7 million people living in 39 trachoma endemic districts. Guinea worm disease has been eliminated in Kenya, and currently the country is undertaking surveillance due to the possibility of cross border infections from Ethiopia and Sudan. About 50 percent of Kenyan population is at risk of at least one NTD.

“Kenya aspires to achieve Universal Health Coverage (UHC), to do so, the Ministry of Health’s Division of Vector Borne & Neglected Tropical Diseases has a great role to play by ensuring control, elimination and eventual eradication of NTDs,” says MoH CAS, Dr. Rashid Aman.

Dr. Mwelecele Malecela emphasized on the importance of country leadership being at the fore front in the fight against NTDs, “Country Leadership is important in the control of NTDs in the provision of healthcare and in achieving UHC to help safeguard human health.”

Institute roped into Global Antibiotic R&D Partnership Initiative



The Global Antibiotic Research and Development Partnership (GARDP) is a new initiative of the Drugs for Neglected Diseases initiative (DNDi) and the World Health Organization: – hosted by DNDi.

GARDP is a direct result of the Global Action Plan on Antimicrobial Resistance (GAP-AMR), adopted at the Sixty-eighth World Health Assembly in 2015, which required WHO to propose options for new partnerships to address priorities in R&D for antimicrobial resistance globally.

In May 2017, GARDP was launched and has the mandate to develop new antibiotic treatments, promote their responsible use and ensure equitable access of these antibiotics. Since then, much has been accomplished and GARDP has been actively reaching out to key countries to ensure its work directly responds to critical public health needs.

GARDP has R&D projects to develop needed new therapeutic solutions with the potential for short-term fruition, such as improving regimes of existing antibiotics, while also building more transversal approaches to antibiotic

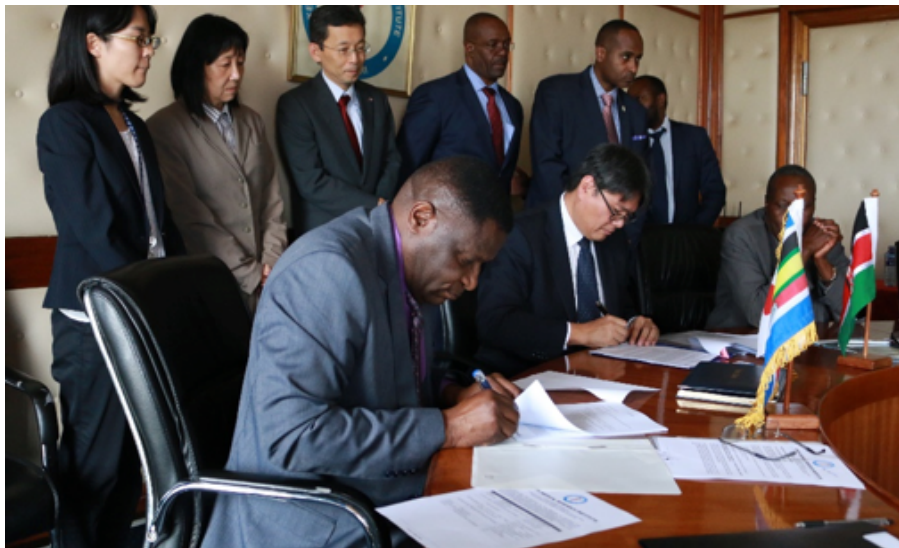
drug discovery, including the recovery of knowledge and assets of forgotten, withdrawn, or abandoned antibiotics.

Ultimately, it will develop a broader portfolio of new antibiotics treatments. GARDP has a goal of having at least two projects that address urgent global health needs ready for implementation since its launch. *Neisseria gonorrhoea* and neonatal sepsis are currently two examples that GARDP is in the process of addressing it concretely.

The Director of GARDP, Dr. Manica Balasegaram, who has vast experience both as a doctor, a researcher and clinical trial specialist in the field of neglected diseases, and as a global health policy expert, has toured Kenya and held discussions with key stakeholders in the country and the region while strengthening GARDP activities in the region.

The Center for Microbiology Research (CMR) has been leading the GARDP initiative in the Institute with Dr William Sang, Dr Christine Bii and Prof. Sam Kariuki who is now Director in charge of Research and Development in KEMRI being involved in the study.

THE RETURN OF THE THIRD COUNTRY TRAINING PROGRAMS IN KEMRI



Director general KEMRI Prof. Yeri Kombe, JICA Chief Representative Mr. Katsutoshi Komari with members of staff from KEMRI and JICA during the signing ceremony on 6th June 2019

The Japan International Cooperation Agency (JICA) and the KEMRI have signed a Memorandum of Understanding that ushers back the Third Country Training Program to benefit the East African Countries.

The training program, which returns to KEMRI after almost a decade break, aims at strengthening the capacity of laboratory managers who play a major role in preparedness and response to various infectious disease outbreaks and public health emergencies in East Africa.

The MOU was signed on Thursday, 6th, June 2019 between JICA Chief Representative, Mr. Katsutoshi Komori and his host, Director General of KEMRI, Prof. Yeri Kombe.

An elated Komori stated, “the course will in addition foster stronger partnerships and cooperative networks and information sharing among these countries.” His view was shared by Prof. Kombe who praised JICA for their longstanding friendship and commitment in the area of Infectious and Parasitic Diseases.

The course is set to begin later this month and will run for the next five years with a maximum of 20 participants attending each year from East Africa.

While, JICA will contribute institutional capacity development, specialized human resource development and partnership with global and regional development, KEMRI will be responsible for the overall coordination and implementation of the course in order to contribute towards social and economic development of Kenya and the target region.

JICA has also supported Nagasaki University in Japan, in order to provide opportunities for PhD course to students in African countries including Kenya where the University collaborates with KEMRI.

“I believe the training course will be successfully implemented by KEMRI and eventually contribute to strengthening the laboratory preparedness in the target countries.” concluded Mr. Katsutoshi Komari.

MILESTONE AS OFFICERS GRADUATES IN FORENSIC SEROLOGY AND DNA ANALYSIS



Participants of 2019 TCTP Workshop from seven regional countries are joined by diplomatic officials: Mr. Dessale Tecleab (Eritrea), Mr. Nathan Ndobou (Uganda) and Ministry of Health official, Dr. Osman Warfa (Kenya). JICA Senior Representative Mr. Shinjiro Amameshi, KEMRI Board of Management Chairman, Dr. Naphtali Agata and Dr. Evans Amukoye in a group photograph

It was a milestone for the KEMRI's Human DNA Identification Laboratory (HID) when it graduated 30 officers from the Directorate of Criminal Investigations (DCI) trained on Forensic Serology and DNA Analysis on 11th April, 2019.

The ceremony held at headquarters was officiated by the Director of Public Prosecution, Mr. Noordin Haji and witnessed by the DCI, Director, Mr. George Kinoti, the chairman of the KEMRI Board of Management, Dr. Naphtali Agata, Director General, Prof. Yeri Kombe and other senior officers from the two Institutions.

The primary intention of this training was to equip trainees with theoretical Basis of Forensic DNA analysis as well as the necessary practical skills required for DNA analysis reporting and presentation of evidence in court.

In addition, the training was primarily geared into training officers in the current techniques and technologies that are used in forensic DNA laboratories that will enable DCI to operationalize its forensic Biology Laboratory.

The training was officially launched by Mr. George Kinoti on 28th June 2018 and was structured to cover both theoretical and practical aspects of forensic Serology and DNA analysis. The training covered one month of theory and two months of intensive hands on training in the laboratory.

The 30 officers were also versed on Quality Management System, Laboratory safety, law of evidence and chain of custody documentation.

It exposed trainees to court procedures and assistance in developing the skills necessary for effective expert witness testimony.

Mr. Noordin Haji termed the training a "game changer in the Criminal Justice System since it will among other things ensure court cases are backed by well-documented evidence, enhancing chances of successful prosecutions."

He acknowledged that in the recent past, the justice system in the country has experienced challenges in forensic evidence presentation in court because of failures to effectively gather evidence in the criminal investigation process leading to unsolved crimes, unsuccessful prosecution, unpunished offenders and wrongful convictions.

He therefore hoped that KEMRI will continue to collaborate with the DCI and assist with the DNA typing of convicts and providing leadership in forensic DNA investigations in Kenya.



Curtains Fall on Pioneer Director, CEO of KEMRI

One of pioneer scientist and founding Director and CEO's of the Institute, Professor Mutuma Mugambi passed on after an illustrious scientific research and academic carrier.

Prof. Mugambi joined KEMRI at its inception in 1979. He initially served as the Director, Centre for Clinical Research (CCR), a department of KEMRI. From July 10, 1982 till January 12, 1989, Prof. Mugambi served as the Director and CEO of KEMRI.

Prof. Mugambi was a visionary leader, a mentor, and a great encourager, who impacted the lives of many at KEMRI, Kenya and beyond.

Under his leadership, KEMRI experienced tremendous growth in terms of infrastructural and staff development, and he will, especially, be remembered for his role in building and strengthening research capacity in the Institute during its affirmative years.

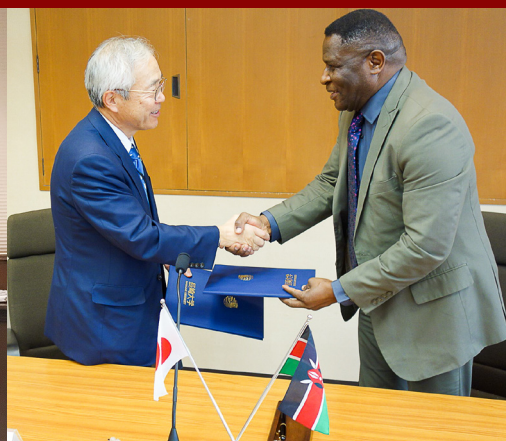
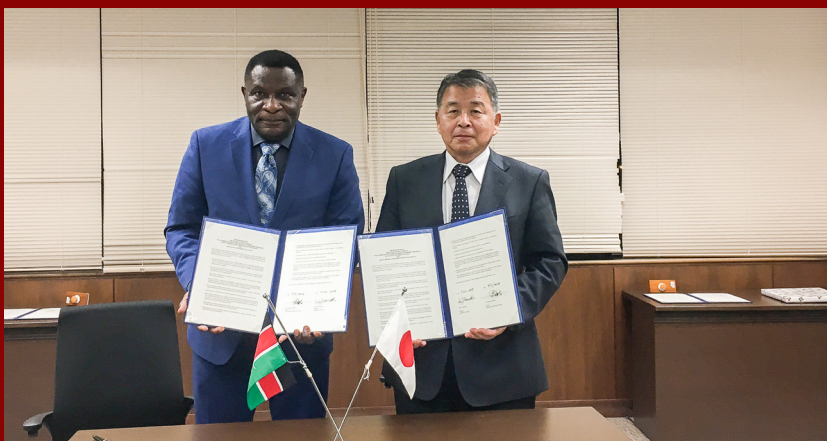
Prof. Mugambi will be missed by many who grew their research careers and served under his leadership. Many who passed through his tutelage hold respectable positions not just in Kenya and Africa, but throughout the world.



Chief Administrative Secretary Ministry of Health, Dr. Rashid Aman, Chairman KEMRI Board of Management Dr. Naphtali Agata, Director General KEMRI Prof. Yeri Kombe Pose for a photograph with KEMRI Board Members, Scientists and Senior KEMRI Staff during the 9th KASH Conference



William Chege Kiarie Formerly of DNA Lab presents a gift to the Director of Public Prosecutions Mr. Noordin Haji the Chief Guest during the 1st Directorate of Criminal Investigations (DCI) Graduation Ceremony on 11/04/2019 at KEMRI Headquarters. Looking on is Director (DCI), Mr. George Kinoti, Chairman KEMRI Board of Management Dr. Naphtali Agata, and Director General KEMRI, Prof. Yeri Kombe



Director General KEMRI, Prof. Yeri Kombe & Prof Shigeru Kohno President of Nagasaki University. KEMRI signed Collaborative MOUs with Nagasaki University, Oita University and Kanazawa University Between 7th, 8th and 9th November 2019





Participants of 2019 TCTP Workshop from Seven Regional Countries are Joined by Diplomatic Officials: Mr. Dessale Tecleab (Eritrea), Mr. Nathan Ndobou (Uganda) and Ministry of Health official, Dr. Osman Warfa (Kenya). JICA Senior Representative Mr. Shinjiro Amameshi, KEMRI Board of Management Chairman, Dr. Naphtali Agata and Dr. Evans Amukoye in a Group Photograph



Her Excellency the Tanzanian Vice President H.E. Samia Suluhu, presents a prize to Violet Asiko, a research officer at KEMRI



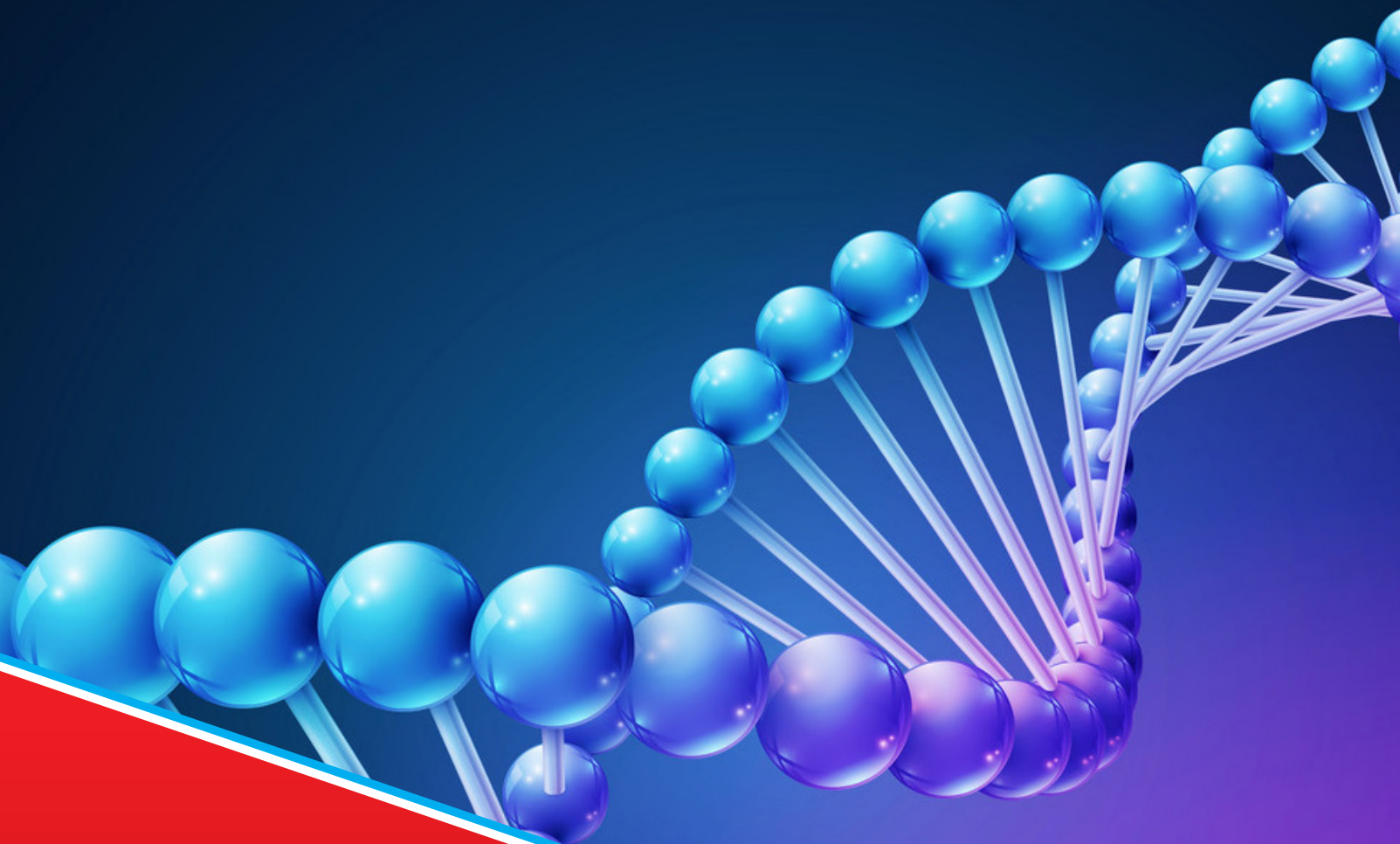
Prof. Yeri Kombe, Director General KEMRI Receiving a Trophy for the Best Exhibition Stand at the 7th EAHSC in Dar es Salaam



Kemri Ultimate Frisbee Club Was Formed in September 2017. Captured is Ms. Maryanne Metto Fighting For The Disk From an Opponent During A Recent Tournament



KEMRI Staff Participating in a Charity Walk



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