



MMUST NEWS

A Weekly Digital Publication of Masinde Muliro University of Science and Technology

Post

Vol. 1 Issue 8: 4th November – 10th November 2018

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Unveiling the new look University Website

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- 13th Graduation Ceremony on Friday, 14th December 2018
- 2018 Gala Dinner and Awards, Friday, 21st December 2018
- National Youth Summit- February 2019



Editor's Pen

Welcome to the 8th Edition of the MMUST Newspost.

It is always a pleasure to have you our readers appreciate and give feedback on these Newspost issues. As we work to find a definite rhythm on content, we thank you for opening your doors to share events in your sections. Through the Newspost, the University, and its Campuses, is becoming more connected. The next step is to open it up to other external publics.

This week has been a collaborative one. UNIVEN has always been a worthy partner to MMUST while THB is closely following on its heels. We also bring the last part of the MMUST Big Four thematic areas of research. We hope it has been an enlightening series.

Together, let us tell our stories.

Nashilluh Brendah Kabindio

Chief Editor/ Ag. Public Relations Officer



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From left to right: Dr. Mario Kollenberg (Dept. Biol. Sc.), Prof. Dr. Martin Kraska (THB), Dr. Patrick Okoth (Dept. Biol. Sc.), Dr. Sabuni (Dep. Mechanical Engineering) and Mr. Osore (Dep. Mechanical Engineering) behind a 3-D printer assembled at that day.

By Wilberforce Shiundu

In September 2018, as part of the ongoing DAAD funded project ProUniEdu-WeK (Practice-oriented University Education in Western Kenya), two members of the Department of Biological Sciences of Masinde Muliro University of Science and Technology went to Brandenburg University of Applied Sciences (THB), in Germany, to participate in the workshop "Introduction to 3-D Printing and Application." Prof. Dr. Martin Kraska and Mrs. Lisa Jakobi trained our staff Dr. Patrick Okoth and Dr. Mario Kollenberg in the techniques of 3-dimensional modelling, 3-D programming and 3-D printing. As one result of the well proceeding cooperation between THB, MMUST and University of Applied Sciences Magdeburg-Stendal (HMS, Germany) THB donated a 3-D printer to the Department of Biological Sciences which is now successfully installed and operating in our new Computational Biology Lab located in SPD 207.

It was the intention of the Department of Biological Sciences to document the growing role of 3-D printing as a revolutionizing tool in pedagogy of Molecular Biology, Computational Biology, Bioinformatics and Biophysical principles. Technology and education go hand in hand; complementing each other in a spectacular fashion. 3-D modelling and printing provide us with the ability not just to transmit information to students but also to remarkably facilitate the learning experience.

This technology, now located at MMUST, introduces a new era of design freedom and high throughput production of customized objects and prototypes with sophisticated geometries virtually imposing no limit to the structural complexity. The construction of physical (3-D) models of biomolecules can uniquely contribute to the study of the structure-function relationship. Converting digital 3-D data into real objects will enable information to be perceived through an expanded range of human senses, including direct stereoscopic vision, touch, and interaction.

3-D prototyping and modelling of biological structures can help to explain the biophysical principles behind the working mechanism rather than just relying on theoretical aspects. This is a significant step towards the realization of excellence and expertise in life sciences and the domain of computational biology in MMUST of the 21st century.

The members of the Department of Biological Sciences appreciate Prof. Dr. Thomas Schrader of THB for the donation of a brand new 3-D printer, Prof. Dr. Martin Kraska for the execution of the workshop, Prof. Dr. Dietmar Wikarski of THB for managing the project and the DAAD for funding.

MMUST Migrates to a new look Website Template

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Vibrant Student Community

In the University's rebranding and improvement efforts, the webometrics advisory committee has embarked on a drive that will see MMUST communicate widely, visibly and attractively to the world.

This has seen the acquisition of a new website template and steady migration of content from the old template to the new interactive template.

The committee headed by the Acting Dean, School of Computing and Informatics is committed to ensure MMUST competes with the leading world-class Universities in webometrics ranking.

You can send us your recommendations on email webometrics@mmust.ac.ke



SENIOR PROFESSOR GEORGES EKOSSE'S VISIT TO MMUST

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Masinde Muliro University of Science and Technology (MMUST) and the University of Venda, South Africa (UNIVEN) have, in the last three years, been formidable partners in matters research and postgraduate support. In June 2018, the two higher learning institution, in collaboration with other African universities organized the first Pan African Research International Congress held in Kisumu, Kenya. Senior Professor Georges Ekosse, the Director of Research and Innovation at UNIVEN played a key role in the success of the Congress whose aim was to enhance collaborations among African universities. This past week Prof. Ekosse has been at the University from 5th to 9th November, 2018 to discuss and further cement research and collaborations between MMUST with other African knowledge bodies and institutions. The Professor also appraised and renewed the Memorandum of Understanding existing between MMUST and the UNIVEN.

Speaking during a Public Lecture in MMUST, Prof. Ekosse emphasized on collaborations between universities to elevate research. He highlighted research and innovation as one of the key pillars of a knowledge based economy. He also stated the need for funding research in higher learning institutions.

A number of issues were discussed during the visit including staff exchange programme through sabbatical leaves, the collaboration of postdoctoral research fellows exchange and discussions concerning the Big Four Agenda.

Prof. Ekosse was accompanied by Prof. Thomas Olwal from Tshwane University of Technology, South Africa.



Prof Ekosse giving a public lecture



The Big Four Agenda (Part 4)

HEALTH CARE

In this Issue, we follow up on the second thematic area where MMUST has set its sights on in pursuit of the Big Four Agenda.

THEMATIC AREA III: ACHIEVING UNIVERSAL HEALTHCARE COVERAGE IN KENYA

Research Area 1: Health Promotion, Sports and Exercise Science

Health Promotion, Sports and Exercise Science research are essential for the implementation of programs in health and nutrition, sports and lifestyle management and, corporate wellness. Sports can be used as a tool for community mobilization, advocacy and fundraising as has been witnessed in the case of Beyond Zero campaign for maternal health, Dettol Heart Run for bypass heart surgery for the under-five and 'Seeing Is Believing' Safaricom marathon. Exercise science promotes and integrates scientific research, education, and practical applications to maintain and enhance health, fitness, performance as well as the quality of life and work. Exercise science therapeutic modalities can be used in rehabilitation of sports, occupational and road accident injuries and also as a preventive strategy for lifestyle diseases. The challenge in Kenya has been how best to exploit the practice of Health Promotion, Sports and Exercise science to synergize youth employment, manufacturing and the prevention of lifestyle diseases.

Research Area 2: Ecological, Evolutionary and Economic Dynamics of Selected Enterobacteriaceae Responsible for Diarrheal Infections in Kenya

A number of bacteria have been found to be associated with persistent diarrheal infections (PD), such as *Salmonella* and viruses; however some *Escherichia coli* (*E.coli*) pathotypes namely EPEC and EAEC are the most commonly implicated bacterial pathogens especially among children in developing countries (de Andrade *et al.*, 2011), making it increasingly necessary that we understand the ecology and evolutionary trends of these microbes in our environment. Secondly, these pathogens have continued to evolve and acquiring new virulent traits, antibiotic resistance, un-characterized transmission routes and vehicles. Lastly current laboratory culturing methodologies employed by local laboratories to detect, monitor or track their presence in the environment have not been very effective in their recovery.

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On the other hand the National and County governments including local and international institutions engaged in health interventions have directed resources, through initiatives aimed at mitigating diarrheal infections. However, the measurement of how many resources are directly allocated and utilized towards treatment, management and control of diarrheal infections in Kenya is not clearly understood.

Research is required to generate precise and accurate information on resource requirements and thus economic impact of management of diarrheal infections is critical in attempting to meet universal health coverage in rural and informal settlements.

Research Area 3: Dynamics of Waterborne Bacterial Pathogens Contaminating Water Sources

Although diarrheal and waterborne related infections are common within the rural and informal settlements in Kenya. Generally, only limited data from health facilities does exist, information on water sources and related environment is limited or lacking. Communities inhabiting the watershed have therefore limited information of the potential risks associated with their water sources. Over the years monitoring of waterborne pathogens contaminating water sources in Kenya has relied on microbiological culture methods including detection of *Escherichia coli* presence. These methods have however not been reliable, and in some cases not able to detect viable but non-culturable (VBNC) bacterial forms. In the recent past however there has been great developments in the fields of molecular biology and bioinformatics, allowing for the emergence of high throughput technologies and computational software that can help solve this challenge.

Research in this area will contribute to health promotion and public health objectives by unraveling the dynamics of waterborne pathogens contaminating water sources, recognizing the factors that influence the maintenance and spread of waterborne bacterial pathogens and identifying potential pathogen hot spots in ecosystems.

Research Area 4: Biomedical, Health and Nutritional Sciences of Natural Products

In Kenya and sub-Saharan Africa, traditional herbal medicines are commonly used to treat a range of diseases. Such practices are especially wide-spread in rural areas where access to modern health care facilities is limited and the cost of modern medicines is beyond the means of most people. Herbalists and traditional medicine practitioners have been using medicines derived from indigenous plants, to treat these ailments for a long time, however, the safety, quality and efficacy of the herbs administered is not well understood. Therefore, there is need to establish a centre of excellence that will ensure that the herbal medicines are well harvested, preserved, processed and their efficacy tested and validated so that the increasing demand of these medicines & substantial amount of money generated from them does not compromise the issue of safety, quality and efficacy of the natural herbal products as recommended in the WHO Traditional medicine (TM) strategy 2014-2023, which recognizes TM as an important part of health services.

Health and Food Security are among the 'big four' agenda of the Kenyan Government at the moment. The research and community outreach activities under CAMNNF are addressing these two out of the four key issues that constitute the 'big four agenda.' Once fully established, the center will lead to enhanced research, collaboration and outreach networks that will help in disseminating knowledge, access markets, identify new problems and opportunities for academic exchange programmes and empower communities. The pharmaceutical and nutritional products will be commercialized leading to increased access to food and nutritional supplements while reducing expenditure incurred towards medical bills.

Research in this area will involve documentation, profiling and securing of indigenous knowledge, technologies and associated biological resources; scientific testing and validation of extracts from natural products for development health and nutritional merchandises for commercialization.

MMUST Represented at the New York City Marathon



Mr. Nicholas Oyie, a staff in the Department of Electrical and Communication Engineering, participated in the world's largest marathon, New York City 2018 Marathon as a volunteer. Mr. Oyie is a Ph.D student at the University of KwaZulu-Natal, South Africa currently on a short-term scholar program at Stevens Institute of Technology, New Jersey, U.S.A. The program is hosted by world-renowned Cognitive Networking and Machine Learning expert, Prof. R. Chandramouli. The Exchange Visitor Program volunteers were invited to the New York City Marathon Welcome Reception on Saturday, 3rd November 2018 at the U.N Mission to the United Nations Headquarters, NY. They networked with exchange participants and representatives from the U.S. Department of State, New York Road Runners and Exchange Visitor Program sponsor organizations. The NYC 2018 Marathon was held on Sunday, 4th November 2018. Mr. Oyie volunteered at Fluid Station - Mile 5, Brooklyn (Fourth Avenue between 43rd and 44th streets) from 6:00 a.m - 2.00 p.m. A Kenyan, Mary Keitany won the women's title among other Kenyans who participated in the event. He won a marathon training jersey in a raffle lucky winner competition during the reception at the U.N Mission to the United Nations offices.



MMUST HOLDS ITS FIRST MR. AND MISS FRESHERS



On Friday, 26th October, 2018, MMUST held its yearly Fresher's Night at the University's Graduation Square. The 2018 Fresher's Night, which was a welcoming party for the First Year students who joined the university on Monday 24th September, for the 2018/2019 academic year, was one of its kind. The event was organized by MMUST Cabinet Secretary for Sports and Entertainment, Bahati Mong'ari.

For the first time ever, new events and activities were introduced. Mr. and Miss Freshers were crowned, an activity that was preceded by modeling from various contestants. The winners, Reinhard Shiwani(IT student) and Debrah Muthoni(Computer Science student), were each given shopping vouchers from

Unimart and Khetias supermarket, as well as contracts to serve as brand ambassadors for the two supermarkets. The first and second runners up also received shopping vouchers.

The Mr. and Miss Fresher's modeling competition was an activity that was planned meticulously beforehand. Professionals were hired to train contestants in order to ensure the activity was a success. Local artists were given a platform to perform during the event but the performance of the night was from Moji Shortbabaa(Kenyan Gospel singer),who was the guest artist. Mr. and Miss MMUST were also in attendance.



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