

# THRIVE Pump Priming Grant unveils more research opportunities in adolescent health

By *Mussa K. Nsanya* , *Bazil B. Kavishe* , *Saidi Kapiga*

*Mwanza Intervention Trials Unit (MITU) / National Institute for Medical Research (NIMR - Mwanza)*

In July 2014, THRIVE consortium awarded a pump priming grant to Dr Bazil Kavishe at the National Institute for Medical Research (NIMR) in Mwanza, Tanzania. Dr Kavishe led a team of researchers from NIMR and the Uganda Virus Research Institute in Entebbe to implement a research project aiming to describe the distribution of blood pressure (BP) and investigate factors associated with high BP among adolescents and young people in northwestern Tanzania and southern Uganda.



*A secondary school student measuring his Blood Pressure*

As part of this project, a cross-sectional survey was conducted among 1,500 students aged 12-24 years from schools and colleges in Mwanza city and

Entebbe between May and November 2015. Results from this study were recently published. Overall, 40% of the study population had high BP and the distribution of BP was similar across the two countries. Increasing

age, being male, and overweight/obesity were found to be associated with high BP in the study population.



*High school students being sensitized about high blood pressure*

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Dear Reader,

**A**t THRiVE

Secretariat we believe in changing the world. We share that vision with our fellows, alumni, researchers, partners and stakeholders. We welcome them to share ideas on how they challenge the status quo by applying new or adapted ground-breaking ideas to improve health and wellbeing of people in need. We are, however, keenly aware of the pressures among researchers and fellows to demonstrate research leadership and excellence to remain competitive in securing grants, publishing papers and have an impact on policy and practice. The coalition of research funders and charitable foundations (cOAlition S) is pushing to make full and immediate open access to research publications a reality; thus, ensuring that the results from publicly-funded research are published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo. The potential impact of these changes on researchers is enormous and may compound other existing challenges. In his article in *Nature* 557(7705): 294-296 (2018) "Some hard numbers on science's leadership problems" Van Noorden, Richard summarised findings from a European and US survey. A key message was that principal investigators who run labs have a much rosier picture of the dynamics in their research groups than do many people in those groups including post docs and PhD trainees. It seems senior and junior researchers belonging to the same research group may be living in separate worlds because of ineffective communication. Lack of training in research/lab and personnel management contributed greatly to an unhealthy lab culture. This may be true in other types of research. A stellar researcher is not necessarily a good manager of a research team. If we are to change the world, we should ensure we train researchers in research management including managing research resources and people.

## Our initial viewpoint regarding a

By Dr. Susan Atuhairwe and Dr. Dinah Amongin

"Child marriages worry Dokolo leaders" run a headline in Uganda's Monitor newspaper of 4<sup>th</sup> July 2019. In Uganda, not a week passes by without media reports on Sexual and Reproductive Health & Rights (SRH &R) challenges among adolescents featuring as a key subject area. As Obstetricians and Gynaecologists, we attend to adolescent girls whose SRH rights have been violated and rarely do we encounter boys experiencing the same. With this skewed view point, we

approached a planned training with expectation to learn something new in this fast growing field of adolescent health coupled with excitement about going to London School of Hygiene and Tropical Medicine! We thought we knew about Adolescent Health (ADH) in LMICs! What we encountered was beyond our expectations, totally life- changing. No truer statement had been made by one of the supervisors, Associate Prof. Lynn Atuyambe, about this course being one of the most important for our learning! He had highly



With Prof. Todd and Prof. Mabey



Certificate award ceremony

From Pg. 1

## THRiVE Pump Priming Grant unveils more research opportunities in adolescent health

Findings from this THRiVE-funded research helped to raise a number of questions which have set a foundation for further research. For example, the observed burden of high BP among adolescents and young people could not be fully explained by the observed risk factors in the study population. In order to explore other potential risk factors for high BP in this population, the Mwanza Intervention Trials Unit (MITU)/ NIMR in collaboration with Weill Cornell Medical College, NY, USA

have initiated a prospective cohort study among secondary school adolescents in Mwanza city to determine the incidence of high BP and associated factors. This two-year longitudinal study has enrolled 500 students between 11 and 15 years from three randomly selected public schools in Mwanza city. This study will generate new knowledge which will help increase our understanding of the evolution of high BP among adolescents and young people in Africa, and pave way for new research avenues.



# Adolescent health in Uganda and Sub-Sahara Africa



Group photo with Prof. David Ross With Prof. Todd and Prof. Mabey

recommended it and gave us the link the year before.

### What we found during the course

During the course overview, we could not help but sit upright and alert in our seats listening carefully regarding the topic mix and the very high caliber of the facilitators. As one student was later to say, it was like WHO-Geneva had moved into the classroom! By Day 2, we had gotten up to speed with the major health challenges contributing to the highest mortality and DALYs lost among adolescents globally and specifically in LMICs. We went through a transformation about the real challenges among adolescents; boys and girls, and realized that as

much as SRH&R is very important in our setting, there are other top killers such as accidents and mental health issues including the new challenges brought on board by social media.

Not only did we cover demographic profiles, health challenges and the future outlook, we were introduced to a lot of e-resources on ADH statistics, guidance and policies developed by the World Health Organization (WHO). We received valuable information on how to obtain data on the current status of adolescent health by region and respective countries.

Another critical learning aspect of the course

was a practical exercise on conducting needs assessment and landscape analysis for adolescent health in a country of our choice; Nigeria or India. This exercise enabled us improve our skills on conducting needs assessment for ADH and the final landscaping report that can be presented to a ministry of health. During this exercise, we were able to reflect on Uganda's landscaping report that was being launched and we did promise to come back and support the Ministry of Health -Uganda.

### What else happened: The weather, other THRiVE mentors, tour on the River Thames

In the midst of all this, we could not miss out on the fun of summer! The weather was beautiful and meeting Prof David Mabey and Prof Todd was a very exciting evening for a drink together. The course organizers did not rest either and Prof David Ross took the entire class for a boat cruise on the River Thames. We did not miss out on the "insects" at London School of Hygiene and Tropical Medicine (LSHTM). The

third week of our visit was mainly spent catching up on our PhD work. We also had opportunity to meet Prof. Lenka Benova one of our supervisors and Karen Zamboni, a PhD fellow who gave us interesting tips on the Work-Life-PhD balance.

### Benefits from the course: the take home messages in line with the environment in Uganda, (Ministry of Health) MOH landscaping for ADH, links to our PhD topics/ research areas

We returned home with a wealth of information on actual adolescent health in Low and Middle Income Countries (LMIC). A broader understanding beyond SRH and a firm repositioning that SRH&R remain key health problems in Uganda and sub-Sahara Africa in general. We are committed to finding solutions to the adolescent SRH&R challenges but are also now aware that we need to link this to other health challenges such as mental health, accidents and self-harm that have received minimal attention.

We want to extend our sincere gratitude to THRiVE Consortium for this life-transforming opportunity that has positioned us to better work for adolescents.



The two authors participate in group presentations during the training

# A full team and a full programme of activities at Cambridge

Corinna Alberg

University of Cambridge THRIVE/MUII Coordinator

The last few months have been an exciting time for the Cambridge – Africa programme with much activity both in Cambridge and in Africa. To start with Cambridge, the new team is complete and the new programme manager Dr Amit Bhasin joined the team in May. Amit has worked for the past 17 years at the London School of Hygiene and Tropical Medicine. Much of his work focused on malaria. As part of this, he was involved in the early days of MARCAD (Malaria Research Capacity Development in West and Central Africa), the DELTAS programme based in Senegal. More recently, the team appointed a coordinator for the ALBORADA programme, Parinaz Hariri. Parinaz has had much experience with the research operations office at the University of Cambridge. This is invaluable as in Cambridge we also have administrative challenges that hinder our programmes from working effectively.

During May we were delighted to host the visit of the Director of the Uganda Cancer Institute (UCI), Dr Jackson Orem. Dr Orem spent the month meeting the wide range of cancer research and cancer care related teams and

leaders in Cambridge as well as key individuals within the University. He was joined for a week by Dr Nixon Niyonzima, the Head of Research at the UCI, Dr Joyce Balagadde, the Head of Paediatric Oncology at UCI, Godfrey Osinde a Radiopharmacist and Ezra Anecho who manages the grants at UCI. This visit was facilitated by Cambridge-Africa and the Cambridge Cancer Centre and aimed to foster links between the two institutions. Since then, in June and July, Dr Paul Katongole, who is a MUII-plus fellow and Henry Wannume from the UCI came to the CRUK CI (Cancer Research – UK, Cambridge Institute {CRUK CI}) for a 2-month research training summer school. This was a pilot for the new CRUK CI summer school that is scheduled to start in the summer of 2020. This summer school is to provide training for those who would like to pursue a career in cancer research. It will be a very competitive scheme hoping to attract excellent candidates and two of the 12 places will be reserved for Ugandans who would like to pursue a research career in the field of cancer. The remaining 10 places will be for UK participants. There will be funding available to the successful Ugandan



*Dr. Paul Katongole and Henry Wannume at the Cancer Research UK Cambridge Institute*





*Agnes Nyabigambo - THRiVE Career Development Awardee, with her Cambridge mentor Professor John Doorbar*

candidates for their travel to Cambridge and their subsistence. I will inform the THRiVE Secretariat when the call is open for applications for Masters level candidates – those who are mid-way through their Masters programmes or have recently completed a relevant Masters programme.

During July and August, the Cambridge-Africa

offices have had another guest – Agnes Nyabigambo, a THRiVE Career Development Awardee who has spent time in the Department of Pathology with Professor John Doorbar, her research mentor. Agnes has been working on a novel form of cervical cancer screening, the patch cell lifting approach which has been developed in Professor

Doorbar's laboratory. This technique is being tested to see if it is more robust in identifying cervical cancer than the current method.

Finally, even the Queen heard about a Cambridge-Africa initiative. In June, the Queen visited NIAB (the National Institute of Agricultural Botany) which is based in Cambridge. There, Dr Alison Bentley, head of genetics and breeding at NIAB spoke to the Queen about an ALBORADA funded project in Ghana which is investigating cowpea variety improvement for food security.

And so to Africa. June saw the THRiVE Annual General Meeting (AGM) and a team from Cambridge attending the meeting. It was wonderful to hear about the THRiVE-2 Fellows' research. Most Fellows

now have interesting research outputs, having gained full admission to universities and ethics approvals. Since most readers will have been at the AGM I will not elaborate further on the meeting other than to say it was a stimulating and enjoyable meeting and there was much progress in evidence during the meeting. Do read Dr Gore's blog on his impressions of the meeting.

In July Professor David Dunne, Dr Amit Bhasin and myself went to the DELTAS AGM. This was the first time the Cambridge-Africa team has been to this event. The year ahead will be very important for THRiVE and the other 'deltoids' as the successor to the current DELTAS programme is clarified. One thing is certain, THRiVE-2 has performed well as was highlighted by Dr Joel Bargul being awarded the prize for the best spotlight talk by a male presenter at the DELTAS meeting. But THRiVE-2 will need to continue to show evidence of the success of the Fellows research activities as well as the impact of these research activities. Hopefully with Fellows' research entering the concluding phase, there will be plenty of outputs such as publications (citing THRiVE and DELTAS as the funder as advised by Professor Sewankambo), other grants secured, community engagement and also importantly, policy maker engagement to demonstrate the impact of THRiVE.



*Queen Elizabeth visits Cambridge in June and hears about the Cambridge -Africa ALBORADA funded Cowpea research project*

# INSIGHTS FROM THRIVE-2 RESEARCH ENRICHMENT: COMMUNITY AND PUBLIC ENGAGEMENT (RECPE) PLANNING MEETING

By Immaculate Nakityo and Dennis Kyewalabye

THRIVE organised a two-day planning meeting for RECPE project that brought together THRIVE Co-applicants and CPE leads in the partner institutions. The meeting was organised to plan for the roll-out and implementation of the project across the consortium. The meeting was hosted by Makerere University College of Health Sciences and was held at IDI McKinnell Knowledge Centre, Makerere University main campus starting on 29th April 2019 and ending on 30th April 2019. THRIVE Secretariat used the meeting as a platform to re-orient the implementing team on Community and Public Engagement (CPE) within THRIVE context and re-introduced RECPE to the team. All implementing institutions were also given an opportunity to share their plans for implementing RECPE. Central to the discussion was the need to define and agree on strategies for rolling out and implementing RECPE. The participants explored different theories and models of public engagement with young people while others shared their experiences with implementing (CPE) activities to foster learning. Research fellows and supervisors were given an



*Abraham Mamera of infers group shares his public engagement strategy*

opportunity to share their concerns related to the integration of CPE into their research given its complex nature. It was unanimously clarified that CPE projects can be school and/or community based but must be directly linked to research fellows' topics of research. During these discussions, it was agreed that THRIVE's priority was to ensure that research fellows complete their PhD programs in time. Participants learnt that CPE projects should not be too complex but should generate enough excitement and interest among research fellows and young people in schools if we are to scale up such activities in other communities. It was also agreed that there is

need for continued capacity building on CPE among research fellows so that they can meaningfully engage with young people. Moving forward, Professor Sewankambo emphasised the need for research fellows to implement CPE activities because its integration is critical for accessing future funding opportunities. It was agreed that participating institutions should identify collaborators, design implementation plans and budgets and share the same with the secretariat so that funds can be released. It was also agreed that a similar meeting should be organised after six months of implementation to assess progress and technically support each other.

## Insight from the DELTAS Africa Scientific Conference in Dakar, Senegal

By Onen H, UVRI THRIVE Masters Fellow

I am a student at Makerere University and a THRIVE-2 MSc. fellow attached to the Entomology Division at the Uganda Virus Research Institute (UVRI). At the institute, I am involved in rearing of *Anopheles gambiae* s.l. mosquitoes under insectary, field collection of adults and larvae, morphological identification of macro invertebrates and molecular identification of sibling species of *Anopheles gambiae* s.l.

My research focused on the ecology of immature stages of members of the *Anopheles gambiae* s.l. which are principal vector of malaria-causing parasites (*Plasmodium*) in Uganda. The submitted thesis title was "Diversity and distribution of macro-invertebrates associated with *Anopheles gambiae* breeding habitats in selected villages along River Sezibwa, Uganda". Result from this study may establish

the roles of macro-invertebrates in reducing the mosquito vector in the fight against malaria in Uganda.

For a sound conclusion to be derived from such study, enough base-line data should be collected. It's upon this background that I applied and won the THRIVE- 2 MSc. supplementary research grant of 2018 for dissertation improvement.

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## Insight from the DELTA Africa Scientific Conference in Dakar, Senegal

I was privileged to be invited for the DELTA Africa Scientific Conference which took place between July 5th-7th 2019 at the King Fahad Hotel, Dakar -Senegal. The theme of the conference was “A Critical Mass: Developing World-Class Research Leaders”. There were several attendees and presenters from different research institutions across Africa and overseas.

The conference brought into light several research being conducted on malaria, Tuberculosis, HIV/AIDS, among others. Since this conference had experienced researchers, from a malaria vector control point of view, it was of great relevance to my career as a young scientist whose effort is geared towards understanding how the ecology of mosquitoes can be exploited in the fight against malaria.

I would like to acknowledge the sponsors all the sponsors that gathered resources together to bring this conference to a completion. Special thanks go to THRiVE-2 without whose effort, I would not have attended this conference.



Hudson Onen standing by his poster at the DELTA African Annual Grantees Scientific conference at King Fahad Hotel, Dakar, Senegal, July 2019

## My experience as a THRiVE MSc Fellow: A Challenging yet exhilarating path of learning

By Tamre Richard Mwanda, THRiVE MSc Fellow, icipe



Richard in a LAB at ISIPE MBITA

I joined *icipe* as a THRiVE-2 MSc Fellow after completing my undergraduate degree. Although I had gained a substantial amount of knowledge during my undergraduate programme, most of it lacked the practical experience necessary in the scientific research field. As an *icipe* THRiVE-2 MSc Fellow, the opportunity offered the perfect bridge to the industry by providing an environment to get hands-on experience. This, attained with the help of invaluable supervisors; all of whom have aided, in the understanding of health challenges we face globally and the efforts we seek to address the challenges. Furthermore, the opportunity has allowed me to tap into an extensive network of extremely passionate, smart, friendly and capable fellows

and alumni who are doing amazing work in their careers. I could not have imagined a better way of being welcomed into the scientific world. I am amazed at how much I have learned so far. The research project we are undertaking concerning exploring a potential attract-and-kill strategy for the control of gravid malaria vector (*Anopheles gambiae sensu stricto*), is exciting, stressful, exhilarating and frustrating; a constant roller coaster every minute of each day. With weeks of thorough experimental setups, data collection and writing to meet both set objectives and university expectations, most of the challenges I have encountered are simply summarized into one major challenge, time. The sponsorship timeline set to finish my work, synergized with my University's requirements which overlap with experiments that suffer huge setbacks; due to factors such as the unpredictable and uncontrollable nature of test organisms to be unresponsive, prolongs the working timeframe. But I have learned so much! My time as a THRiVE-2 MSc Fellow in *icipe* is one of the most productive I've had in my life and I feel much more confident transitioning from academia into a fully-fledged scientific researcher; in growing as an individual in research, and ultimately in the process of achieving great things.

# Dr. Joel L. Bargul scoops the best DELTAS Africa Scientific Research Conference Male Oral Presenter Award

**M**y name is Joel Bargul, a Lecturer of Biochemistry at Jomo Kenyatta University of Agriculture and Technology, and a THRiVE-2 Postdoctoral Research Fellow currently researching on camel health improvement through accurate disease diagnosis and correct treatment. A significant part of my research study is conducted at the Animal Health and Molecular Biology and Bioinformatics Departments of the International Centre of Insect Physiology and Ecology (*icipe*, Nairobi), an internationally recognized centre of excellence in insect science. Being at *icipe* has placed me at a unique position of advantage as I have been able to establish further research collaborations – through *icipe* – with at least six national and international institutions that include; JKUAT (Kenya), University of Nairobi, International Livestock Research Institute (ILRI, Kenya), Gulu University (Uganda), University of Cambridge (UK), and University of Liverpool (UK). Most of these new collaborations are related to my ongoing THRiVE-funded study on camel trypanosomiasis and its potential transmitting insect vectors with main focus on determining the role of biting camel hippoboscids (commonly known as keds, or *Hippobosca camelina*) in disease transmission among camels in northern Kenya. We have catalogued major circulating disease-causing hemopathogens of camels, with trypanosomiasis and anaplasmosis – a zoonotic disease – being the most



Joel Bargul after receiving his award. Extreme left is Dr. Simon Kay of Wellcome Trust, extreme right is Dr. Tom Kariuki of AAS\_AESA and Dr. Martin Chalfie

prevalent infections. For the first time, we experimentally demonstrate the competence of camel keds in transmission of *Anaplasma* pathogens from naturally infected camels to laboratory mice.

Detection of trypanosomes and *Anaplasma* spp in camel keds and in camels is of great public health and veterinary concern. This information can guide formulation of disease control programs by animal and public health stakeholders.

We recently participated in DELTAS Africa Scientific Conference from 15–18 July 2019 at the King Fahd Palace

Hotel, Route des Almadies, Dakar, Senegal. I was selected, along with other colleagues from various DELTAS programs, to deliver a 5-min oral presentation about my research study titled “Detection of zoonotic disease pathogens in camels and their associated ectoparasite *Hippobosca camelina*: the potential application of keds in xenodiagnosis of camel haemopathogens” I won DELTAS Africa award for best oral presenter, and was presented with a plaque by Prof. Martin Chalfie (from Columbia University), the 2008 Nobel Prize laureate for discovery and development of green fluorescent protein.



Joel Bargul (first left) shares a light moment with other THRiVE fellows after receiving the award



# My THRIVE-2 Masters' Grant and networking experiences

Dr. Orgeness Mbwambo, KCMUCo Masters Fellow

When I embarked on my postgraduate studies, it was my dream to do a research project that would have an impact on my patients. It was while attending a workshop on transurethral resection of prostate (TURP) that I found a topic appealed to my fancy. I was intrigued by whether the antibiotic prophylaxis for patients undergoing the procedure could be better optimized, reducing the burden on our patients while maintaining antibiotic stewardship. Funding was however my biggest challenge; but luckily, I got a THRIVE 2 masters grant to help realize my dream. For me, this was truly a dream come true.

Drug resistance is a major worldwide problem currently. One of the strategies to reduce it is to prevent overuse of antibiotics. Despite the fact that antibiotics are important in reducing post-operative infectious complications after transurethral resection of prostate, its over use may potentially lead to increase in drug resistance, morbidity due to side effects, as well as increased costs to patients. If the overwhelming increase in drug resistance is not controlled, it is predicted that by 2050 all antimicrobials will have resistance. Our study aimed to reduce overuse of antibiotics among catheterized patients undergoing TURP. It is from this study that currently we have changed the protocol of antibiotics from 8 days to 3 days in our department at Kilimanjaro Christian Medical Centre (KCMC).

After receiving the email from THRIVE, we completed writing the proposal and presented in different academic fora for further input. We enrolled 83 patients who met the inclusion criteria and consented to participate in the study. The patients were randomized into two groups, whereby the control group received antibiotics for duration of eight days and the other group received antibiotics for three days with the first dose of antibiotics initiated one hour pre-operatively in both groups. At the end of my study, I had 66 participants who I analyzed and found that there is no difference if you use antibiotics for three days compared to eight days. This ended up being the spark that changed the antibiotic protocol in our department. This change translates into over 300 doses of antibiotics saved every year in the department.

In dissemination of my results, I got the opportunity to present at a College of East and Central Africa Surgeon's (COSECSA) conference which was held in December 2018 in Kigali; and this opened up my enrollment for COSECSA fellowship which I anticipate to complete in December 2019. I also got chance to network with champions in antimicrobial stewardship and am currently looking at

the possibility of further studies in antimicrobials.

I also had opportunity to attend and present my study at DELTAS Africa scientific conference in Dakar, Senegal from 15-17th July, 2019 where I met great African researchers from all over the world. This event was attended by over 200 African researchers. This is one of the most important African scientists' conferences which had the theme of developing world class research leaders. I also got opportunity to interact and connect with scientists and leaders of research organizations with interest in antibiotic resistance prevention.

Looking at the future for my study, I have started developing a continuation phase which I intend to carry into my PhD training. Thanks to THRiVE, my simple dream of a small study seems to be growing further and reaching people that I never imagined.



*Standing by my poster at DELTAS Africa scientific*

# Joel Bargul's Experience at the Ninth Indian Alliance Annual Fellows Meeting

Joel Bargul is a THRiVE postdoctoral fellow

I had great experience attending the 9th India Alliance Fellows meeting at the ITC Windsor Hotel in Bengaluru. My air-ticket was kindly provided by THRiVE. I enjoyed all the talks that were given ranging from cigarette smoking, TB, chemistry of nucleic acids, and stress management! It was great experience. Notably, I had been tasked by Dr Alphonsus Neba (Deputy Director Programmes, Science Support and Systems Programme Manager, DELTAS Africa) to present in the meeting his slides about "The African Academy of Sciences (AAS) and its programmes" This was well-received by the audience and AAS contacts were shared at the tail-end of the presentation in case there was a question or clarification needed.

I also got an opportunity to present



Joel Bargul delivering his presentation

a poster on "The role of camel biting flies in transmission of zoonotic pathogens" and exchanged contacts with two Indian Fellows who shared similar research interests. To me, the only key challenge in getting funded by the Wellcome Trust/DBT India Alliance was that the fellow

working in Africa or elsewhere must relocate to India to conduct research there, and additionally should address a problem facing India. This poses challenges to those working on research topics with localized importance, for instance a disease or vector present only in a particular area outside India.

## THRiVE Fellowship: A boost for my journey of passion, for a career in science

By: Kawira Mathenge at ICIPE



By Kawira Mathenge

**M**y interest in science began when I was in primary school. My favourite subject was

Science. At home, I was known for misusing my mother's cosmetic products to make concoctions, mimicking science shows on television. In high school, I became interested in biology and chemistry and knew that I would want to pursue a career in science. I was eager to learn how science could be exploited for the benefit of the society. Moreover, one of my family members was in the science field and I would often ask her questions about her work. After my 'O' levels, I was accepted for a degree in Business Administration. However, I had no passion for business. Fortunately, my parents were very supportive in helping me identify the right course, including

arranging consultative sessions with various people in the science field. As a result, I was able to make an informed decision to undertake a BSc in Biochemistry, a course that enabled me to understand the amazing possibilities science had to offer to sectors such as health, agriculture and technology. I was keen to find opportunities that would allow me to practice what I was learning. In my third year of university, I was fortunate to undertake a six-week internship at Heidelberg University Biochemistry Centre, Germany. In addition to learning new skills, this internship firmed up my decision to pursue a research career, as it introduced me to the laboratory environment and the role of molecular methods in biology.



# THRiVE Fellowship: A boost for my journey of passion, for a career in science

After graduation, I began my internship at the International Centre of Insect Physiology and Ecology (icipe). I have been working in the Animal Health Theme under the supervision and mentorship of Dr Daniel Masiga. I have played an active role in projects aimed towards the management of African Animal Trypanosomiasis (AAT) in Kenya. I have interacted with communities in coastal and western Kenya, where AAT has been a major problem,

igniting my desire to find a way to alleviate the burden of parasitemia. I have also sharpened my skills through workshops such as those organized by the Eastern Africa Network for Bioinformatics Training (EANBiT). This event also led to a six-month internship at the Institute of Global Health and Infection at the University of Liverpool, UK, under the mentorship and supervision of Dr. Andrew Jackson. I received training in trypanosome genomics

and gained a better understanding of the biology of host-pathogen interactions that could improve diagnostics in animals and potentially develop new treatments and vaccines. I have obtained invaluable experience and been exposed to professional networks that continually inspire me to contribute solutions for challenges being faced by Kenyans in their daily lives.

## Navigating the path to a career in biomedical science: Early life; tough choices; and finding the right fit

By *Trizah Koyi*

### *Getting started*

**E**arl Nightingale, a famous American radio host, once explained that there are two types of people: river people and goal people. I belong, to a significant extent, to the last category. Growing up, I wanted to be a medical doctor, maybe because like many children I grew up with, I was led to believe that the only acceptable careers were medicine, law or engineering. But along the way, I discovered Biochemistry and seized on the idea of pursuing a career in biomedical research. As a result, I enrolled for a BSc in Biochemistry at the University of Nairobi, even though at this stage the concept of research still seemed incredibly intimidating. The entire process: defining a research question; developing hypothesis; designing experiments and making sense of the data, seemed daunting. My first experience with research came in the final year of my undergraduate studies where we were tasked with designing a research project. I chose to focus on determining the effect of certain

medicinal plants on prostate cancer cell lines. This opportunity provided a unique early research experience. Particularly, it sparked my interest in natural product chemistry and became a genesis to my current career path.



### *Difficult choices*

The decision to pursue postgraduate training in science came easy. I pursued an MSc degree at the University of Nairobi where I continued research on the effect of selected plant

extracts on different cancer cell lines. After graduating, I was faced with the difficult decision of choosing between my career and starting a family. I opted for the latter, anticipating undertaking PhD studies locally. When I was ready to return to the academic scene, I knocked on many doors. And indeed, many doors opened, though thousands of miles away. Soon after accepting an offer to pursue my studies in Japan, I was fortunate to secure the THRiVE PhD fellowship. This opportunity came four years later – no doubt the decision to pursue doctoral studies locally cost me time. However, I have no regrets as I understand the challenges that women in science face, and the difficult choices they have to make.

### *My THRiVE experience*

Joining THRiVE was not a smooth ride either. I was not successful when I applied first and was only selected in the second cohort. I now know why the process was that rigorous. I can confidently say that THRiVE has introduced me to the world of science. Highlights include, i) the opportunity to attend several trainings and seminars; the most outstanding

# Navigating the path to a career in biomedical science

for me being a leadership training course, ii) Attending the annual general meeting, where awardees share research experiences, and hear and are inspired by the work being done by other. Most importantly, it was gratifying to attend the DELTAS conference where I met Prof. Martin Chalfie, the 2008 Nobel Prize winner in Chemistry. It had never occurred to me that I would share the same platform with the brain behind the discovery and development of green fluorescent protein (GFP). I may not be on the fast track for a Nobel Prize but just having the opportunity to converse with Prof. Chalfie was an exhilarating experience. I commend THRiVE for providing the platform for students to interact and make connections.

## Concluding remarks

I appreciate the amazing mentors who are currently supporting and guiding me through the process, including Prof. Baldwin Torto, Head, *icipe* Behavioural and Chemical Ecology Unit. One of my



most memorable experiences is when I first joined his laboratory and he took the opportunity to train me rather than assign me to a postdoctoral fellow or a technician. Prof Rhoel Dinglasan, based in the US, also travelled to Nairobi to train me and to ensure that I am well equipped with skills needed to tackle my research project.

Finally, even in the beginning I did not know what a career in science

entails, I now find science very practical, fascinating and I love what I do. For instance, science provides the opportunity to look at a complex situation, design a mechanism to resolve the problem and finally draw conclusions. I generally use these skills in every aspect of my life. As a result, my career has been an evolving quest, a continual learning experience and I can confidently say that I found the right fit.

## Emerging cyber Security Threats that you must be aware of

By Dickson Muyomba

**A**s the technology is evolving so are the cyber security threats. Being aware of these threats helps in reducing the risks by implementing mitigation strategies. There is always a misconception that cyber threats target only “big” organisations and that individuals do not have information valuable to the hackers. However, any information stored on a computing device is of interest to the hacker. We are also constantly relying on IT systems such as smart devices, computers and cloud-based systems and these are likely to be of interest to cyber criminals. Today we look at some of the current common cyber threats and

strategies we can use to protect our data.

### Ransomware

In this form of attack, hackers hold the victim’s device and data hostage, through encrypting the device. The victim is prompted to pay (often via bitcoin) for a key to regain access to the device or data. Ransomware attacks are often propagated through file-sharing networks or as executables attached to emails. Having an independent up-to-date backup solution should help in addressing these kinds of attacks.

As we are having more and more devices connect to the internet (printers, thermostats, refrigerators,

security cameras, smart watches—some powered by artificial intelligence), managing these devices is not yet fully factored into their design. This introduces IoT threats that may include hijacking one of these devices and use it to perform other functions such as sending spam emails.

As users are slowly moving away from desktop operating systems and embracing mobile devices, with more and more critical tasks being completed via mobile devices, it is only a matter of time before hackers switch tactics. It is highly recommended that mobile users frequently update their devices to address any security loopholes that may exist.