PHD SCHOLARS PROGRAMME AT THE MAWAZO INSTITUTE

| WOMEN LEADING RESEARCH IN AFRICA
A PhD Scholars Programme for African Women

The Mawazo PhD Scholars Programme supports women’s capacity to find solutions to some of the most pressing needs facing the African continent. Our Scholars are African women under the age of 40 who are pursuing PhD studies in Science, Technology, Engineering, and Mathematics (STEM), and the social sciences at accredited universities in East Africa. Each year, we competitively select a cohort of PhD scholars whose research is relevant to African development priorities, contributes new knowledge to their field of study, and holds the potential for transformational change in their communities and beyond.

Over the course of a one-year, non-residential fellowship, PhD Scholars receive grants to support their research, conference travel, and ongoing training. Scholars also benefit from professional and leadership skills trainings provided by Mawazo and our partners, research and editorial support, as well as mentorship and networking opportunities. Our programme is designed to amplify our Scholars’ research and position them as the next generation of leading experts, thinkers, and innovators who are finding homegrown solutions to local development challenges.

WE ENVISION A WORLD IN WHICH THE VOICES AND IDEAS OF AFRICAN WOMEN ARE AMPLIFIED TO SHAPE THE FUTURE OF THE CONTINENT.

WHO WE ARE

A RESEARCH AND LEADERSHIP INCUBATOR FOR WOMEN WITH IDEAS.

Founded in 2017, the Mawazo Institute is a non-profit research institute based in Nairobi, Kenya. Our mission is to support the next generation of female scholars and thought leaders in East Africa, and to get policymakers and the general public engaged with their work. Our programmes equip female scientists\(^1\) to conduct high quality research on issues affecting the African continent. We also provide training and platforms for our programme beneficiaries and other local experts to spark important conversations and influence decision making in the public sphere. From our institution’s home base in Nairobi, we support the professional development of a broad audience of African researchers and practitioners via our digital platforms.

\(^1\) To us, science encompasses both the broad fields of STEM (Science, Technology, Engineering, Math), as well as the Social and Behavioral Sciences. We define science as inclusively as possible because we believe that multi-disciplinary tools are needed to tackle global challenges. Versatile thinkers challenging traditional boundaries of science will shape the future.

Learn more about Mawazo's other programmes including our Postdoctoral Research Fellowship, vibrant Public Engagement and Policy programme, and Training and Resources for early career researchers on our website: www.mawazoinstitute.org
African Women at a Glance

On average, women make up 30% of Africa’s researchers, and much less in many countries.1

Dominant expert voices on African issues are typically male, including scholars, news commentators, and industry, public sector, and civil society leaders.

Average enrollment of female students across universities in Eastern Africa is 30% of all total students, except in humanities and social sciences.2

Pervasive sexism and cultural biases persist in dissuading girls and women from the sciences.

Limited funds availability and self-funded nature of many PhD students exacerbate low completion rates.

Kenya at a Glance

Kenyan PhD students take an average of 6 years to complete their studies.3

Only 11% of every doctoral class graduates.4

Over half of teaching staff at public universities do not have PhDs.5

2:1 Ratio of men to women enrolled in PhD programmes with the ratio being even worse in STEM fields.6

80% of women pursuing PhD studies in Kenya are self-funded.7

Mawazo is helping meet Africa’s research needs by positioning more African women as experts, innovators, and thought leaders, and by promoting science engagement and uptake.


6 In 2018, Mawazo surveyed 170 women applicants to its 2018 PhD Scholars Programme. Among the questions asked was the source of funding applicants were using to conduct their research.
Disbursed:

- $44,000 in Research Grants
- $22,000 in Travel Grants
- $9,800 in Stipends
- $3,300 in Training Grants

Impact of the Programme¹:

- 100% of Scholars rate the Mawazo in-house training as 'Extremely Helpful' in achieving their research and career goals.
- 84% of Mawazo discretionary stipends were spent on childcare and other family expenses.
- 1 out of 2 Scholars secured additional external grants with support from Mawazo.

¹ Mawazo conducted Exit Surveys with its 2018 PhD Scholars to gauge their experience and rate the programme's effectiveness.
MEET OUR FIRST CLASS:
THE 2018 MAWAZO PHD SCHOLARS

Marilyn Ronoh
University of Nairobi
Field: Applied Mathematics

Project Title: Mathematical Modelling of HIV Transmission Dynamics Coupled with Awareness Among Adolescents and Young Adults in Kenya

Why is Your Research Important?
Kenya has made significant gains in controlling the HIV/AIDS epidemic over the past decade, however, a spike in new infections among adolescents and young adults, young women especially, is threatening to undo decades of progress. In my research, I use a mathematical model to explore the effects of increasing comprehensive knowledge of HIV/AIDS among Kenyan adolescents and young adults on the incidence and prevalence of the disease in this demographic group. Incorporating real epidemiological data, my model gives far more accurate predictions than existing models. In addition to assessing the efficacy of HIV/AIDS awareness interventions among adolescents and young adults in Kenya, my research will also help predict HIV re-emergence factors in this cohort, including revealing critical gender-specific trends.

My research will help government and other stakeholders make accurate projections for better resource allocation in addressing this emerging crisis. It also provides a foundation for further research by helping other mathematicians improve their models and enabling public health researchers and practitioners to develop and test better strategies to control HIV/AIDS.

How Has Mawazo Supported Your Research?
I attended five conferences and workshops across five countries, which taught me skills for current methodologies in my research area. The feedback I got from presentations made at conferences improved my work greatly. During the programme, I also successfully published two peer-reviewed academic articles. Lastly, Mawazo generously supported costs towards my university tuition fees that have made it possible for me to graduate on time.

Peris Ambala
Kenyatta University / Institute of Primate Research (IPR)
Field: Virology

Project Title: Determination of Molecular Characteristics of Filoviruses Circulating in Humans, Wild Caught Non-Human Primates, Bats and Rodents in Laikipia County in Kenya

Why is Your Research Important?
In the recent decade, dangerous human pathogenic viruses have emerged in different geographical locations within Africa, with outbreaks occurring almost annually. Majority of these viruses are zoonotic viruses, which means they can be transmitted directly from animals to humans. Currently, there is scarcity of information on filoviruses at the human-animal interphase in Kenya. These are a group of viruses, such as the ebola virus, that cause hemorrhagic fevers in humans. Specifically, my study looks into the zoonotic potential of filoviruses circulating in rodents, bats, non-human primates, and humans in Laikipia county of Kenya, where animals live in close proximity to humans.

My research will help fill knowledge gaps around filoviruses in Kenya and improve prevention and control of zoonotic viruses in the country. Data from my research may also be used for early detection of looming filovirus outbreaks. Moreover, subsequent characterization of the isolated viruses will be of benefit to the development of drugs, vaccines, and diagnostic kits in the region.

How Has Mawazo Supported Your Research?
Mawazo support allowed me to complete my research project, and I am currently analysing my findings and working on a first draft of my thesis manuscript with my supervisors. Mawazo support also enabled me to host a community sensitization workshop on filoviruses in partnership with USAID-Predict, where I engaged with stakeholders on the wider issues of zoonotic viruses and other pathogens in Laikipia County.
MEET OUR FIRST CLASS:
THE 2018 MAWAZO PHD SCHOLARS

MELISA ALLELA
Technical University of Kenya
Field: Design and Creative Media

Project Title: Storytelling Using Experimental Animation Techniques: Digital Mediation of African Orature Using New and Emerging Technologies

Why is Your Research Important?
In a rapidly changing world, how do we leverage the capabilities of emerging technologies to preserve African oral traditions of storytelling? My research on storytelling through experimental animation explores the use of emerging technologies such as artificial intelligence and virtual reality as a medium for relaying works of African oral literature. I study and create animation systems that bring together interactive narratives and animated virtual humans, and thus have the potential to relay the unique features of African oral storytelling in a digital medium.

My research employs a studio-based research design commonly used by practitioners in the creative industries, uniquely linking the worlds of academic research, interactive technology, and the creative arts. Through my research, I will make a conceptual and technical contribution in the use of emerging technologies for the preservation of our intangible cultural heritage.

How Has Mawazo Supported Your Research?
I acquired requisite equipment for Virtual Reality (VR) production and access to paid journals that progressed my work. Mawazo also supported my participation at the African Human Computer Interaction Conference and a VR hackathon at MIT. All of these developments allowed me to secure funding from the 2019 HEVA Cultural Heritage Seed Fund.

TERESIAH NJIHIA
Jomo Kenyatta University of Agriculture and Technology / International Centre of Insect Physiology and Ecology (icipe)
Field: Plant Health Science and Management

Project Title: Field Evaluation of a Trapping System for the Control of Antestia Bugs, Antestiopsis Thunbergii, in Coffee Plantations

Why is Your Research Important?
A specific threat to coffee crop cultivation in Kenya is infestation of the Antestia bug, a pest native to Africa. This pest poses a serious risk to smallholder farmers’ household incomes, causing crop losses estimated at 45% of total yield and ruining the coffee for the international market. My research provides new knowledge on the chemical cues involved in interspecific communication (plant-insect) and intraspecific communication (insect-insect) behavior. These behavior-modifying chemicals can provide a natural, non-toxic and target-specific alternative to costly and toxic pesticides.

Techniques applied in the study can also be used to study other insects which are pests or vectors of diseases (such as fall armyworm and mosquitoes) or beneficial insects (such as bees). My work will thus create a positive impact on agriculture, the backbone of African economies, and other aspects of environmental and human health.

How Has Mawazo Supported Your Research?
Mawazo’s support allowed me to complete the last stage of my research for which funding was lacking. I was able to submit my thesis for approval and graduated in 2019 with my doctoral degree. Trainings offered by Mawazo were also very helpful and educative, covering topic areas that were not taught in my PhD classes and helped me build my leadership, and public speaking skills.

“MAWAZO’S TRAINING ON EFFECTIVE GRANT WRITING WILL BE USEFUL IN APPLYING FOR OTHER GRANTS. THE SCIENCE COMMUNICATION AND PUBLIC ENGAGEMENT TRAININGS ALLOWED ME TO SEE NEW WAYS OF SHARING MY RESEARCH.”

− Edinah Song’oro, 2018 Mawazo PhD Scholar
MEET OUR FIRST CLASS:
THE 2018 MAWAZO PHD SCHOLARS

JUDITH KOSKEY
Egerton University
Field: Environmental Science

Project Title: Assessment of The Effects of Land Use on Water Quality and Macroinvertebrate Abundance and Diversities in Njoro and Kamweti Rivers, Kenya

Why is Your Research Important?
The River Njoro is a critical watershed in Kenya’s Rift Valley, important to the population of its catchment area as a source of water for domestic use and livestock. It is a source of riparian vegetation products and also of great economic value through tourism and the conservation of biodiversity. Over the years, it has experienced rapid population increase and associated land cover change resulting in negative impacts on water resources, human health, rural livelihoods, and the local economy. These socio-economic aspects and land use change over the past ten years — and their influence on the water quality and macroinvertebrates of River Njoro — before, and after its rehabilitation need to be assessed as an indicator of the watersheds’ conservation.

How Has Mawazo Supported Your Research?
Mawazo financed the research portion of my project in its entirety. Through their support, I conducted field trips to collect samples and analysed these in the lab. I have since completed my research and I am now working on my thesis for defense. The grant also allowed me to attend a GIS for Natural Resource Management training which equipped me with crucial GIS mapping and resource development skills used in my research.

WINNIE NYAMBOKI
University of Nairobi
Field: Economics

Project Title: The Economic Consequences of Poor Health in Kenya

Why is Your Research Important?
Previous literature has established that health plays a vital role in explaining labour market behaviour, with economists finding that a healthier workforce is more productive. In Kenya, Malaria and diseases of the respiratory system are leading causes of morbidity, accounting for 55.3% of all reported morbidity cases in 2015. While the prevalence of these conditions is still rising, it is not clear how this affects labour supply in the Kenyan context. Previous studies on the relationship between health status and labour market behaviour have generally focused on developed countries.

My study examines and quantifies the contribution of specific types of acute illness on the propensity to participate in the labour market in Kenya. This research will provide sound economic analysis on the burden of illness and injuries in Kenya, contributing important evidence for policy interventions at both the national and county levels.

How Has Mawazo Supported Your Research?
The 2019 research symposium hosted by Mawazo was critical in strengthening my research approach. The feedback received from established social scientists in attendance helped me refine my question and data sources, creating a stronger thesis. I also gained valuable networks, improved my confidence and public speaking skills, and became more aware of how to better navigate the research process.

BEING PART OF A GROUP OF WOMEN WHO ARE ALL PURSUING PHDS AND FROM DIFFERENT FIELDS WAS A RARE EXPERIENCE. IT HAS INSPIRED ME AND GIVEN ME HOPE FOR MY OWN PHD. ONE ON ONE INTERACTIONS WITH THE MAWAZO TEAM AND THE GUIDANCE I RECEIVED WAS ALSO INVALUABLE.

- Susan Gichuna, 2018 Mawazo PhD Scholar
MEET OUR FIRST CLASS:
THE 2018 MAWAZO PHD SCHOLARS

ELIZABETH MUTUA
Kenyatta University
Field: Computer Science

Project Title: Data Mining for Smart Cities: Predictive Analysis for Minimization of City Traffic Congestion: Case Study: Nairobi City (Kenya)

Why is Your Research Important?
Road traffic congestion is a major issue in many cities around the world. A lot of research has been done in the field of data mining and predictive modeling for smart cities, and especially in the transport sector. However, most research models in use, particularly in geographies like Africa, have significant limitations. Firstly, understanding traffic congestion patterns requires dynamic models that leverage high-quality historical traffic data to predict traffic conditions at different timescales, including hourly, weekly, and monthly. Rich spatial information also needs to be integrated into these models, such as alternate routes.

My study aims to create a model that fills these gaps, improving predictive ability and ultimately easing congestion. The model will be tested using data generated from recently-installed digital traffic cameras along four major roads leading into the Nairobi city centre. Once validated through comparisons with this real-world data set, my hybrid model will then be applicable for predicting road traffic in Nairobi and other smart cities.

How Has Mawazo Supported Your Research?
The academic writing and publishing trainings helped me write two papers required for my PhD programme which were critical for my research. Mawazo’s support allowed me to attend the 2018 Deep Learning Indaba Conference in South Africa, where I was appointed to the Accommodation Committee. The Mawazo Institute also helped pay off outstanding tuition fees that presented a challenge to completion of my degree.

JACQUELINE OWIGO
United States International University – Africa (USIU - Africa)
Field: International Relations

Project Title: Return and Reintegration in Post Conflict Contexts: A Case Study of Returnees in Somalia

Why is Your Research Important?
Globally, return migration is becoming an increasingly salient policy issue due to the high number of asylum seekers and refugees. Moreover, governments are increasingly determined to return undocumented migrants and, in some cases, refugees to their countries of origin. Currently, Somalia is experiencing significant increased return migration which includes people from the diaspora, deportees or failed asylum seekers, voluntary repatriation of refugees, and disengaged combatants. In addition, an estimated 1.1 million people are internally displaced within Somalia. Not all returns are voluntary and the returning refugees and migrants do not have the same needs, nor motivation to return.

Much more needs to be known about the experiences of those who have already returned and their reintegration outcomes. My research will highlight the experiences Somali returnees face from their very own perspective, with a view to identifying areas for policy intervention that may be effective in improving reintegration outcomes globally.

How Has Mawazo Supported Your Research?
Most importantly, Mawazo’s support enabled me to fund my dissertation research, which I would not have been able to afford on my own. The training on Op-Ed Writing was also very helpful, exposing me to communication platforms available to share my research, and allowing me to establish contact with an editor-in-charge. Mawazo also supported my attendance at valuable conferences like the 2018 UN Major Group for Children and Youth Pre-ICM Youth Forum.
SUSAN GICHUNA
University of Nairobi
Field: Climate Change and Adaptation

Project Title: Impact of Weather and Climate Variability on Urban Commuter Travel Behavior: A Case Study of Nairobi Central Business District

Why is Your Research Important?
Globally, climate change and variability is recognized as the greatest challenge to humanity. Climate change impacts such as floods, heat waves, unpredictable rainfall patterns, and extremely low temperatures, among others, worsen existing challenges in the transport sector. For instance, in the last year, Kenya experienced above normal rainfall that had a major effect on commuting and transport infrastructure in both urban and rural areas. Dilapidated bridges washed away, roads were cut off, and others blocked by mudslides, showing an urgent need to establish strategies for reducing risks associated with increased climate variability and extreme weather events in the Kenyan transport sector.

My research will contribute to knowledge on the impacts of climate change on urban transport and inform future urban transport policy and planning that can enhance climate resilience of urban transport, and commuters in Kenya.

How Has Mawazo Supported Your Research?
When I joined the Mawazo programme, I was stagnating with my research. I received invaluable personalized support and guidance that eventually led me to change my research topic during the fellowship year. I am happy with my new research topic that better aligns with my interests and career goals and as a result, I have been making good progress in completing my PhD.

EDINAH SONG’ORO
Jomo Kenyatta University of Agriculture and Technology / Pan African University Institute for Basic Sciences, Technology and Innovation (PAUSTI)
Field: Molecular Biology and Biotechnology

Project Title: Occurrence and Dynamics of Antimicrobial Resistance Genes in Selected Environments in Nairobi and Naivasha, Kenya

Why is Your Research Important?
For decades, antimicrobial resistance has been a growing threat to effective treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses, and fungi, making the treatment of patients difficult, costly, or even impossible. My research studies the diversity of anti-microbial resistant genes in Nairobi and Naivasha Counties, using genomic tools to isolate resistant genes from various environmental samples such as soil, river water, and sewage.

Findings from this research will help increase understanding of the relationship between resistance in the environment and the spread of antimicrobial resistance in human and animal populations. By sequencing the resistant genes found, I also plan to generate a data map showing antimicrobial resistance hotspots and areas of unique resistance genotypes. This research will be useful for stakeholders in finding more effective means of reducing the burden of infections caused by environmental microorganisms.

How Has Mawazo Supported Your Research?
Research grants offered by Mawazo enabled me to carry out the first part of my PhD research. Conference support also allowed me to attend conferences where I met experts and influencers in my field. Lastly, Mawazo’s training on effective grant writing will be useful in applying for other grants, and the science communication and public engagement training allowed me to see new ways of sharing my research.

THE INTERDISCIPLINARY NATURE OF THE PROGRAMME OFFERED ME A CHANCE TO INTERACT WITH SCHOLARS FROM DIFFERENT AREAS AND TAUGHT ME NOT TO BE NARROW MINDED TO MY FIELD.

- Judith Koskey, 2018 Mawazo PhD Scholar
THE GOAL OF THE MAWAZO PHD SCHOLARS PROGRAMME IS TO ENABLE MORE AFRICAN WOMEN TO ENJOY A WORLD CLASS RESEARCH EXPERIENCE THAT PROVIDES THE SUPPORT THEY NEED TO BECOME LEADERS ACROSS SOCIETY. THIS HAS BEEN MY STORY, AND IT CAN BE THE STORY OF MANY OTHER WOMEN IF GIVEN THE CHANCE TO THRIVE AND THE RESOURCES TO SUCCEED.

— DR. ROSE M. MUTISO, CEO & CO-FOUNDER OF THE MAWAZO INSTITUTE

APPLYING TO BECOME A MAWAZO PHD SCHOLAR

Applications for the Mawazo PhD Scholars Programme open once a year. Our Scholars are:

- **African Women**
- **Innovative**
- Engaged in compelling and interesting research
- **At the start of their career**
- **Living in East Africa**
- Want to be leaders in their field and society

To learn more about the PhD Scholars Programme, including the application process, visit us at [www.mawazoinstitute.org/phd-scholars](http://www.mawazoinstitute.org/phd-scholars)
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“... a transformative journey...”

- Melisa Allela, 2018 Mawazo PhD Scholar