

# The African Research Initiative for Scientific Excellence (ARISE)

Proceedings of the  
High-Level Scientific  
Convening for ARISE

**Theme:**  
Catalysing  
Africa's  
Development  
through  
Research &  
Innovation

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## Welcome Statement by the President of the African Academy of Sciences

Welcome to the ARISE Conference in the beautiful city of Hammamet, Tunisia. As the President of the African Academy of Sciences (AAS), it is my great pleasure to extend a warm welcome to each of you.

At the heart of our Academy lies a profound commitment to advance Research and Innovation (R&I) as pivotal forces driving Africa towards the prosperous future envisioned in Agenda 2063, the Africa We Want. This commitment is enshrined in our newly sharpened and ambitious strategic plan for 2023–2027.

Through this strategic framework, the AAS will continue to champion scientific excellence and innovation across Africa, contributing to the realisation of our continent's aspirations and to global scientific progress that holds the power to transform lives.

International cooperation is the cornerstone of excellence in science, enabling the exchange of ideas, expertise, and resources across borders. Transnational collaboration is essential in addressing the complex challenges facing humanity and the environment today. We recognise that global cooperation in research and innovation is built upon mutually agreed-upon agendas and principles, shaped by our contemporary realities.

This ARISE conference exemplifies our commitment to promoting quality research, fostering equitable partnerships, and ensuring that the priorities of the African Union and its member states are at the forefront of our collaborative efforts. The ARISE programme has been designed to support excellence in research, capacity building, job creation, and open science, with a focus on public health, the green transition, innovation, and technology for job creation, and strengthen capacities in science and higher education.

As we gather here, let us embrace the opportunity to engage in open and honest discussions on how we can continue to improve international cooperation in the R&I sphere. Together, we can drive forward the research and innovation landscape that will re-engineer the development trajectory of Africa and beyond.

Thank you for your participation, and I wish you a fruitful and inspiring conference.

**Professor Lise Korsten**

President, AAS



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**Transnational collaboration is essential in addressing the complex challenges facing humanity and the environment today. We recognise that global cooperation in research and innovation is built upon mutually agreed-upon agendas and principles, shaped by our contemporary realities.**

Professor Lise Korsten, President, AAS

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## Opening Remarks by the Executive Director of the AAS

Esteemed Guests, Colleagues, and Partners,

On behalf of the African Academy of Sciences (AAS), I extend a most enthusiastic welcome to this pivotal high-level scientific convening, a testament to the transformative power of research and innovation in catalysing Africa's development.

Today, we celebrate the achievements of our exceptional ARISE Fellows and reaffirm the pivotal role of science in shaping the "Africa We Want." The African Union's Agenda 2063 envisions a prosperous and peaceful continent, and science is the bedrock upon which this vision rests. From healthcare and agriculture to renewable energy and technological innovation, scientific advancement is essential to achieving social transformation and sustainable development across Africa.

The AAS is deeply committed to empowering researchers and fostering a thriving research ecosystem on the continent. We believe that investing in scientific talent and infrastructure is key to unlocking Africa's vast potential. This convening is a testament to the excellence in research

that already exists in our continent, and we are proud to showcase the groundbreaking work of our ARISE Fellows. Their achievements are a beacon of hope, demonstrating that African scientists are at the forefront of addressing our most pressing challenges.

The ARISE programme, a beacon of hope for African researchers, recognises their indispensable role in shaping our continent's scientific destiny. By providing essential resources and opportunities, ARISE empowers these brilliant minds to tackle Africa's unique challenges head-on, paving the way for sustainable development and inclusive prosperity.

This convening embodies the very spirit of ARISE – a vibrant platform for cross-continental collaboration, knowledge exchange, and the forging of lasting partnerships. Together, we will bridge the gap between groundbreaking research and its practical application, ensuring that scientific advancements translate into tangible solutions that improve the lives of millions across Africa. This is why the AAS is keen to grow our work on evidence-informed decision making by linking researchers to policy actors on the continent and beyond.

As we engage in enriching dialogue during this conference, I urge you to showcase the remarkable research and innovation projects that have already made a tangible difference in the lives of African people. Let us highlight the importance of equity and inclusion, ensuring that the benefits of research and innovation reach all segments of society, particularly marginalised communities, young people, and women, particularly those who reside in rural and peri urban areas. And let us champion partnerships between researchers, policymakers, practitioners, and the private sector, fostering a collaborative ecosystem that drives impactful innovation for development.

This convening is a meeting of minds and a catalyst for action. ***Together, we will spark solutions, shape policies, and engender development.*** We will transform ideas into action and impact, bridging the gap between innovation and policy. We will unleash the full potential of innovation through policy frameworks that drive sustainable progress.

I am confident that your active participation will make this ARISE conference a resounding success. Let us embrace the diverse perspectives and expertise within this room, engage in a productive exchange of ideas, and pave the way for a more vibrant and impactful African scientific landscape.

Thank you.

**Dr. Peggy Oti-Boateng**

Executive Director, AAS

## Foreword

### Africa's High-Level Scientific Conference

In a landmark event that showcased the power of research and innovation in Africa, the African Academy of Sciences (AAS), in partnership with the Institut Pasteur de Tunis, hosted a high-level scientific conference in Hammamet, Tunisia, from June 4-6, 2024. The event was a vibrant gathering of the continent's top scientific minds, policymakers, and thought leaders, underscoring the transformative impact of the African Research Initiative for Scientific Excellence (ARISE) programme.

The ARISE programme, launched in December 2020, is a groundbreaking R&I support initiative of the AAS, implemented by the AAS with support from the African Union Commission and the European Commission. ARISE provides a robust platform for research and innovation exchanges within Africa and beyond, contributing significantly to sustainable development, economic growth, and job creation. The current pilot phase supports nearly 600 early- to mid-career researchers across Africa, led by 47 principal investigators (ARISE Fellows) hosted in 38 African countries. This programme is primarily funded by the European Union, with additional support from the Carnegie Corporation of New York.

### A Platform for Innovation and Collaboration

Prof. Lise Korsten underscored the AAS' commitment to championing scientific excellence and innovation across Africa, contributing not only to the realization of our continent's aspirations but also to global scientific progress that holds the power to transform lives. "This ARISE conference exemplifies our commitment to promoting quality research, fostering equitable partnerships, and ensuring that the priorities of the African Union and its member states are at the forefront of our collaborative efforts", remarked Prof. Korsten.

Dr. Peggy Oti-Boateng, Executive Director of the AAS, highlighted the event's significance, stating, "The high-level scientific convening for ARISE in Tunisia is a testament to our commitment to fostering a robust scientific community in Africa. By investing

in our early- to mid-career researchers, we are enhancing their capabilities and fortifying the entire continent's science base. This conference has provided a platform for these brilliant minds to share their innovative research, collaborate on new projects, and drive sustainable development."

The ARISE programme addresses the urgent need to strengthen Africa's science base by investing in researchers and strengthening the capacity of African scientists to deliver cutting-edge research. It complements the efforts of African research institutions and universities by creating a critical mass of role models, enabling career development, and retaining research talent across the continent.

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**The high-level scientific convening for ARISE in Tunisia is a testament to our commitment to fostering a robust scientific community in Africa. By investing in our early- to mid-career researchers, we are enhancing their capabilities and fortifying the entire continent's science base**

Peggy Oti-Boateng, Executive Director of the AAS

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**600**

**Number of early- to mid-career researchers across Africa supported**

**47**

**Number of principal investigators (ARISE Fellows) hosted in 38 African countries**





## Executive Summary



Opening ceremony at the ARISE High-Level Scientific Convening in Hammamet, Tunisia. In attendance were key speakers including Dr. Peggy Oti-Boateng (Left), Stephen Agong (Center Left), Jean-Michel Sers (Center), Mohammed Zobaa (Center Back), Dr. Laurent Bochereau (Center Right), and Giancarlo (Right)

In June 2024, the African Academy of Sciences (AAS) convened a high-level scientific event in Hammamet, Tunisia, in partnership with the Institut Pasteur de Tunis. The event brought together policymakers, thought leaders, and scholars from Africa and beyond to discuss advances, challenges, and opportunities for enhancing investments and partnerships to facilitate research and innovation for Africa's development. Through a series of scientific sessions, panel discussions, keynote addresses, poster presentations, and research spotlight talks, the AAS showcased its work in advancing Africa's research and innovation agenda, focusing on the African Research Initiative for Scientific Excellence (ARISE) programme.

The meeting provided an opportunity for the 47 ARISE Fellows and their research teams to showcase their research projects and network with a diverse audience comprised of policymakers, practitioners, funders, and scholars from Africa and beyond. The conference's theme, **"Catalysing Africa's Development through Research and Innovation"**, was deliberately chosen to encapsulate the platform created by the conference to demonstrate the breadth of scientific outputs and innovations that have been midwived in Africa by the ARISE programme. The conference drew participants from the African Union, the European Union, academies of sciences, partners, donors and implementers, national science granting councils, and, critically, all 47 principal investigators supported through the programme and a select group of

their PhD and master's degree students. Furthermore, the conference had representatives from the United Nations (including UNESCO<sup>1</sup>, WMO<sup>2</sup>, UNECA<sup>3</sup>, IAEA<sup>4</sup> and DESA<sup>5</sup>) and other global institutions, as well as several representatives of EU member states. In addition to physical attendance, several participants joined the conference through the virtual environment.

Keynote presentations and roundtable discussions tackled the most pressing challenges facing the African research and innovation landscape. The focal areas of these sessions were global partnerships (concentrating in on the AU-EU partnership), scientific cooperation at the bilateral and multilateral levels, scientific and research integrity, equitable partnerships, the science and policy nexus, and funding for African research and innovation, among others.

The AAS and its partners believe that new relationships and partnerships were forged during the conference, with the potential for further funding to grow the research endeavour in Africa and build on existing collaboration between the European Union and the African Union, their member states, and scientists across the continents.

The report in this event book captures the full details of the conference. The outcomes of the High-Level Scientific Meeting will be shared over the next months through scientific publications, media communication, and blogs.

<sup>1</sup> United Nations Educational, Scientific and Cultural Organization

<sup>2</sup> World Meteorological Organization

<sup>3</sup> United Nations Economic Commission for Africa

<sup>4</sup> International Atomic Energy Agency

<sup>5</sup> United Nations Department of Economic and Social Affairs

## 1. Background Information



Participants at the ARISE High-Level Scientific Convening engaging in discussions on advancing Africa's research and innovation landscape.

The high-level scientific event in Hammamet, Tunisia brought together policymakers, thought leaders, and scholars from Africa and beyond to discuss advances, challenges, and opportunities for enhancing investments and partnerships to facilitate research and innovation for development in Africa. Through a series of scientific sessions, panel discussions, keynote addresses, poster presentations, and research spotlight talks, the AAS showcased its work in advancing Africa's research and innovation agenda, focusing on the ARISE programme.

A synthesis of key messages from the meeting shall be published and presented at the 9<sup>th</sup> edition of the Science Summit<sup>1</sup>, being organised at the margins of the 79<sup>th</sup> UN General Assembly in September 2024. As the world convenes under the auspices of the Summit of the Future<sup>2</sup>, insights from the ARISE event in Tunisia will contribute to solutions aimed at accelerating efforts made by the worldwide to meet existing international commitments and take concrete steps to respond to emerging challenges and opportunities.

### About ARISE

The African Research Initiative for Scientific Excellence (ARISE) is an innovative Research and Innovation (R&I) support programme implemented by the AAS with support from the African Union Commission (AUC) and the European Commission (EC). The programme is mainly funded by the European Union, with some co-funding from the Carnegie Corporation of New York. Founded on the AU-EU High-Level Policy Dialogue on Science, Technology, and Innovation, ARISE provides a vibrant platform and pathway for R&I exchanges within Africa and beyond, contributing to sustainable and inclusive development, economic growth, and job creation. Launched in December 2020, the current €25.5 million pilot

phase of ARISE – mainly funded by the European Union with additional support from the Carnegie Corporation of New York – supports nearly 600 early- to mid-career researchers across Africa, led by 47 principal investigators (ARISE Fellows), hosted in 38 African countries. More information about ARISE is available at <https://bit.ly/3CRcQta>

### 1.1 About the African Academy of Sciences

The African Academy of Sciences is a leading pan-African, independent organisation dedicated to driving sustainable development across Africa through science, technology, and innovation. Established in 1985, AAS is headquartered in Nairobi, Kenya, and holds diplomatic status in Kenya through a hosting agreement signed with the government of Kenya, granting it diplomatic privileges and tax immunities in support of its pan-African science mandate. The Academy's mission is to advance scientific excellence by fostering strategic partnerships, expanding research funding, and promoting collaboration among scientists in Africa and globally. The AAS plays a crucial role in enhancing public engagement with science, supporting policy development, and improving the continent's scientific infrastructure. The AAS empowers researchers to address Africa's most pressing challenges through its flagship programmes, including the Alliance for Accelerating Excellence in Science in Africa (AESA) and the African Research Initiatives for Scientific Excellence (ARISE). Committed to inclusivity and diversity, the AAS recognises and rewards excellence through its Fellows and Affiliates programmes, ensuring that scientific innovation leads to economic growth and social development. With a clear strategic vision for 2023–2027, the AAS is poised to strengthen its impact, promote science diplomacy, and remain a beacon of scientific leadership on the continent.

<sup>1</sup> <https://sciencesummitunga.com/>

<sup>2</sup> <https://www.un.org/en/summit-of-the-future>



## 2.Session Details



Fig. 1: Mr. G. Bochicchio (bottom left) and Dr. P. Oti-Boateng, Executive Director for the AAS (right), making their opening remarks at the conference

### 2.0 Session Details

#### 2.1 Opening Ceremony

The opening ceremony featured welcome addresses and highlighted the importance of scientific research and innovation for Africa's economic growth, societal transformation, and sustainable development. It set the stage for exhibiting the critical contributions of the ARISE programme to Africa's transformation in line with the African Union and European Union partnership in science, technology, and innovation.

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**There is need for enhanced funding, a peaceful environment, and science diplomacy and highlighting the importance of international collaboration with organisations such as the EU, UNESCO, and UN DESA to foster scientific excellence and innovation for sustainable development**

Peggy Oti-Boateng, Executive Director of the AAS

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In her opening remarks, Dr. Peggy Oti-Boateng, the AAS Executive Director, emphasised the need for enhanced funding, a peaceful environment, and science diplomacy and highlight the importance of international collaboration with organisations such as the EU, UNESCO, and UN DESA to foster scientific excellence and innovation for sustainable development. Mr. Gianfranco Bochicchio, Chef De Mission Adjoint at the EU Delegation in Tunisia underscored the strength of the EU-Africa partnership in scientific research and innovation. He said that the ARISE initiative is a key driver for sustainable development, economic growth, and job creation in Africa. He added that ARISE embodies joint efforts to support the next generation of African scientists and reiterated that the EU would continue supporting and funding projects such as ARISE to advance modernisation and growth of their partners.

Prof. Samia Menif, Director General for Institut Pasteur de Tunis, emphasized her institution's commitment to fostering collaboration and scientific excellence and to supporting research and innovation to address global challenges. She encouraged meeting participants to embrace the opportunity to exchange ideas, build a stronger scientific community, and advance Africa's scientific and innovative capacity.

On his part, Prof. Helmi Mardessi, Director of Horizon Europe Programme at Tunisia's Ministry of Higher Education & Research, noted that Tunisia was the first African country associated with the Horizon Europe programme. He indicated Tunisia's willingness to share experiences and called for more cooperation between North Africa and Sub-Saharan Africa in research.





Fig. 2: From left: Prof. S. Agong, Prof. A. Zobaa, and Dr. L. Bocheran during the ARISE meeting in Tunisia

## 2.2 Global and African Imperatives on Cooperation in Research and Innovation

Achieving the sustainable development goals in Africa and globally requires substantial investment and strategic and equitable cooperation in science, technology, and innovation. This session highlighted success stories, lessons learned, opportunities, and imperatives for enhanced scientific cooperation in contributing to sustainable development in Africa and globally. To this end, Prof. Lise Korsten, President of the AAS, underscored the need for global cooperation in research to be based on equality, respect, and mutual benefit. She noted that ARISE was championing a new paradigm of reciprocal partnerships, ensuring Africa's and partners' priorities are advanced, and called for counterpart funding from African governments and science grant councils for sustainability.

Noting ARISE's alignment with UNESCO's mission to advance

science, technology, and innovation for sustainable development, Prof. Lidia Brito, Assistant Director-General for UNESCO, emphasised the need for collaboration and knowledge sharing across borders, which is crucial to tackle global challenges and achieve sustainable development. She called for continued collaboration, openness, and innovation to leverage science, technology, and innovation for a sustainable and inclusive future for Africa. On his part, Prof. Fredrick Armah, Director of Research and Programmes, Association of African Universities, reiterated the role of collaboration in strengthening African research and innovation ecosystems. He called for better coordination between national research and development networks within Africa for a greater impact. To this end, Dr. Eliud Musotsi, Acting Deputy Director for Research Grants at Kenya's National Research Fund, highlighted the importance of overcoming physical and language barriers to facilitate knowledge sharing between African countries.

## 2.3 Capacities for Research & Innovation

In a world characterised by profound inequalities, including in knowledge creation and the transformation of science into innovative products for social improvement, achieving transformation depends on leaders capable of galvanising disruptive change. This session focused on pathways to moulding and supporting excellent researchers to grow into research leaders and the nexus between strong research leaders and innovation, discovery, and societal transformation. The session aimed to situate leadership at the centre of research and innovation.

Giving a keynote address, Prof. Shaukat Abdulrazak, Director of the Africa Division of International Atomic Energy, based in Austria, emphasised the need for research and innovation initiatives to focus on achieving social impact. He highlighted the need to focus on translating research into tangible solutions for social justice, bridging the gender gap in STEM<sup>1</sup> fields, encouraging young Africans to pursue careers in science, technology, and innovation, and mentorship and leadership development for scientists and researchers.

<sup>1</sup> Science, Technology, Engineering, and Mathematics



Fig. 3: Dr. R. Hamdi from JPI Climate making his contribution during the ARISE meeting in Tunisia





Fig. 4: Mr. Noomane Fehri, former ICT minister for Tunisia, making his presentation during the ARISE meeting

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**We need to acknowledged the existence of challenges in the translation of scientific research into economic value in Africa. The African continent needs to bridge the gap between science and entrepreneurship to drive economic and social development in Africa**

Mr. Noomane Fehri, Tunisia's former minister for ICT

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In his presentation, Mr. Noomane Fehri, Tunisia's former minister for ICT<sup>1</sup>, acknowledged the existence of challenges in the translation of scientific research into economic value in Africa. He highlighted the need to bridge the gap between science and entrepreneurship to drive economic and social development in Africa. On his part, Prof. Bitange Ndemo, Professor of Entrepreneurship, highlighted insufficient government investment in research, apathy towards research impact, and a weak culture of innovation as barriers to the generation and use of research and innovation in Africa.

Noting Africa's young and growing population, abundant resources, and ambitious development agenda, Dr. Laurent Bocherreau, EU Science Counsellor to the AU, encouraged young African scientists to pursue careers in research and innovation, highlighting diverse career paths beyond academia. He reiterated the EU's support for strengthening research capacity in Africa through programmes like ARISE. In the same vein, Prof. Maria Leptin, President of the European Research Council (ERC), lauded ARISE's bottom-up approach with long-term

funding, similar to the ERC model. Similarly, Mr. Jean-Michel Sers, Policy Officer at the European Commission, added that the ARISE programme tackles critical research and development gaps while fostering an environment conducive to scientific innovation and independence.

Advocating the need for African countries to increase their spending on research and development to keep pace with the G20 average, Mr. Lukovi Seke, Programme Officer at AUDA-NEPAD, opined that researchers should prioritise projects with practical applications that directly benefit Africa. On his part, Prof. Jean-Paul Moatti, Scientific Advisory Committee member for ARISE, advocated for the creation of platforms to help move research from the lab to the market, giving an example of France's *Société d'Accélération du Transfert de Technologie*. In addition, Prof. Bitange Ndemo made a case for a shared responsibility arguing that researchers must do a better job of communicating their work and ensuring it aligns with societal needs. On the other hand, policymakers need to acknowledge the value of research and allocate sufficient funding.

<sup>1</sup> Information and Communication Technologies



Fig. 5: Some of the ARISE Fellows making their research spotlight presentations. From Left: Dr. K. Beltako (Togo), Dr. H. Hafeez (Nigeria), Dr. H. Razafindrakoto (Madagascar), Prof. H. Malebo (Technical Panel Member, Tanzania), and Dr. M. Roubah (Algeria).

## 2.4 Research and Innovation for the SDGs

This session focused on promoting and advancing innovation to facilitate sustainable development. It examined strategies for practice and transitioning from ideas to concrete steps to effectuate the R&I ecosystem we want. Discussions utilised an R&I ecosystem lens and explored opportunities to test diverse assumptions around how international development cooperation and development agencies could best contribute to building stronger R&I ecosystems at local and regional levels. The discussions encompassed various issues, including the research ecosystem (capacities, gaps, volume), entrepreneurial support, the centrality of innovation and innovators, and, most importantly, the funding and leadership landscape.

As a good practice, Mr. Shaofeng Hu, Director for UNESCO's Division of Science Policy and Basic Sciences, emphasized the need for science literacy to engage the public and increase investment in science and technology at the country level. In addition, Ms. Brigitte Decadt, Senior Advisor for International Science and Technology Cooperation and Belgium's Belgian Federal Science Policy Office, called for aligning research initiatives to UNESCO's priorities, which include science culture, inclusiveness and open science. She also reiterated the need for a more significant impact and a smoother collaboration

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**There's need for science literacy to engage the public and increase investment in science and technology at the country level by aligning research initiatives to UNESCO's priorities, which include science culture, inclusiveness and open science.**

Mr. Shaofeng Hu, Director for UNESCO's Division of Science Policy and Basic Sciences

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between science and innovation cooperation and development cooperation.

On his part, Dr. Wei Liu, from the UN Inter-agency Task Team on STI for the SDGs, highlighted his office's work towards turning global commitments into tangible actions. As an example of ongoing initiatives, Dr. Liu introduced the Africa STI Coalition, a collaborative platform focused on Africa that is co-funded by South Africa, Morocco, Ghana, Ethiopia, and Cameroon. Noting that some African countries lacked a dedicated ministry for Science and Technology, Mr. Lukovi Seke, Programme Officer at AUDA-NEPAD, emphasised the need for these countries to prioritize education, science, technology, and innovation to speed up development and feed education.

Highlighting some good practices from Spain's CSIC<sup>1</sup>, Dr. Isabel Diaz, CSIC's Deputy Vice President of Internationalisation and cooperation, emphasised the importance of outreach, journalism, and science diplomacy in bringing these inventions and collaborations to the public and companies. Bemoaning the wide gap between research and industry, Dr. Victor Konde, UNECA's Scientific Affairs Officer at the Green Economy Innovations & Technologies Section, emphasised the importance of investing in education and training, creating supportive policies, and encouraging risk-taking for innovation.

Discussing some of the good practices in international scientific cooperation, Dr. Fadila Boughanemi from the European Commission's Directorate-General for Research and Innovation, highlighted the establishment of joint partnerships; implementation of critical projects; and building mutual trust and cooperation as some of the notable achievements from the AU-EU High-Level Policy Dialogue (HLPD) on STI. Ms. Eudy Mabuza, South Africa's Science & Innovation Representative to the EU, appreciated the opportunities presented by the AU-EU HLPD on STI, citing various examples of South Africa's involvement in and benefit from the platform.

Addressing the funding challenges in the research and innovation space, Dr. Mohamed Ali Marouani, Institut de Recherche pour le Développement's Representative in Tunisia, emphasised the need for bridging the gap between research and implementation, requiring efforts in law, economics, and technicalities, as well as funding. This clarion call resonated with contributions from representatives of science granting councils from Kenya, Zambia, and Ghana.

<sup>1</sup> Spanish National Research Council



## 2.5 Research & Innovation for Global Health

Enhanced investment in health research and innovation capacity strengthening is paramount to sustain the gains towards addressing Africa's health challenges. Specifically, investment focusing on addressing gaps in financing health research, health systems, South-South collaborations, human and infrastructure capacity, skills and knowledge management, and the global recognition of African research and researchers as envisioned in Africa's 2018-2030 Health Research and Innovation Strategy for Africa (HRISA). One of the strategic objectives of HRISA is to strengthen the capacity for sustained, integrated, coordinated and collaborative research, innovation, and translation for health. This session provided an opportunity to highlight success stories, lessons, opportunities, and imperatives for enhanced scientific cooperation and productivity in addressing the outstanding grand challenges in Africa's health space. The session involved a keynote presentation and a roundtable discussion with four panellists on the *Needs and Technologies for healthy societies with responsive and resilient health systems*.

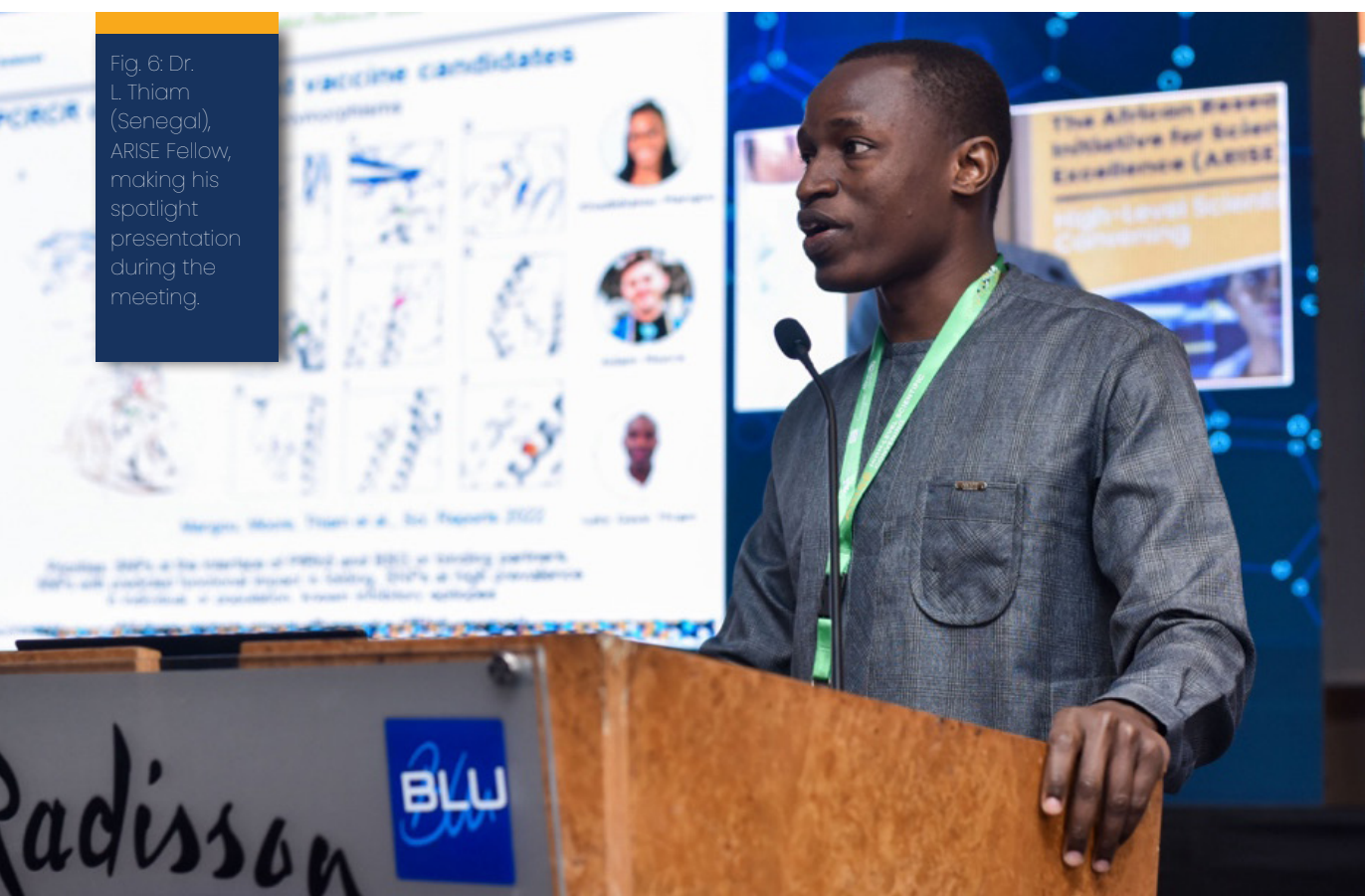
Making a keynote presentation on grand challenges and opportunities in global health based on a report commissioned by the EU and AU, Prof. Marleen Temmerman from the Aga Khan University in Kenya, emphasised the importance of translating research into policies and practices for effective impact, and the need to address regulatory development to implement research and innovation in Africa. Highlighting some of the most pressing issues facing Africa's health sector, Prof. Marleen emphasised the importance of understanding the epidemiology (mortality, morbidity, burden of disease) in African countries to prioritise health issues effectively. She added that governments should lead in setting health

priorities based on population-level needs and that research efforts should be aligned with defined priorities for each country or region. She called on stakeholders to collaborate effectively towards common health goals set by the countries and need to align their efforts and support national health priorities rather than working independently.

To strengthen Africa's capacity for sustained, integrated, coordinated and collaborative research, innovation, and translation for health, Prof. Faadiel Essop, President of the African Association of Physiological Sciences, suggested a multidisciplinary team approach, involving biomedical scientists, science diplomats, and science communicators, and communities also should be involved as active partners in research rather than passive bystanders. On brain drain, Dr. Meryem Khrouf, Tunisia's Director of Medical Research, proposed solutions such as temporary immigration to work in international systems and interact with experts from developed countries for technology transfer. She suggested establishment of national strategies to monitor individuals who go abroad, assess their contributions upon return, and plan their future development to meet the country's needs.

Speaking on some of the current shifts in policy on social determinants of health in Africa, Prof. Essop emphasized on the need to link social determinants with government policy, as they are linked to broader issues such as economic inequality. On Africa's health security and preparedness, Prof. Hechmi Louzir, Tunisia's former Director of the national campaign of COVID19 vaccination, emphasized that without developing local production capabilities for diagnostics, medicines, and vaccines, Africa may not be ready to effectively tackle health emergencies. He called for more coordination, access to vaccines and diagnostics, and the development of these capabilities within Africa.

Fig. 6: Dr. L. Thiam (Senegal), ARISE Fellow, making his spotlight presentation during the meeting.



## 2.6 Capacities for Science and Higher Education

This session utilised a roundtable format for the discourse on building the groundwork for embedding sound values and ethical principles for science and higher education and framing the guidance for science in Africa. Four key principles were discussed: academic freedom, institutional autonomy, scientific integrity, and equitable partnership. These principles foster academic excellence, innovation, and social, economic, and technological transformation. The roundtable aimed to put the ARISE programme, conceptualised as a vehicle through which scientific excellence births Africa's transformation, at the centre of addressing these issues.

Giving a keynote presentation on equitable scientific collaboration, Prof. Paul Zeleza from Howard University noted insufficient enrollment capacities, financial resources, human capital, and outdated facilities as some of the challenges facing African universities. He indicated that opportunities lie in Africa's youth growth, economic development, global knowledge shifts, digital revolution, diaspora contributions, innovative financing, and international collaborations. He concluded by highlighting the importance of equitable and transformative collaborations, promoting mutual trust, respect, and principled partnerships for addressing global challenges.

Speaking on the role of funding in academic freedom, Prof. Stephen Agong, Treasurer for the AAS, indicated that government

funding often prioritized national interests at the expense of academic exploration. He called on diversified support for researchers and urged researchers to refuse funding that compromises their intellectual convictions or scientific integrity, ensuring true academic freedom without political interference. On the relevance attached to academic freedom within the agendas of scientific discourses, Prof. Jean-Paul Moatti from Aix-Marseille University in France noted that research funding often comes with risks of interference, such as changing research outcomes for approval, as seen in some cases during COVID trials. He noted that ARISE fellows exemplified social responsibility in research, potentially leading new sustainable scientific practices.

Discussing the potential influence of policy interest on scientific processes, Prof. Rajaa Cherkaoui from University Mohammed V-Agdal from Morocco, noted that policy interests often drive research towards political and economic goals, neglecting crucial basic science. She called for adherence to ethical guidelines and the promotion of cooperation to foster trust and innovation. Dr. Noëline Rakotoarisoa and Prof. Refaat Chaabouni agreed with Prof. Cherkaoui's observations, adding that establishment and enforcement of scientific integrity policies and designing multilateral programs that involve multi-stakeholders were some of the ways to mitigate against the impact of policy interferences on scientific integrity.

Fig. 7: Dr. N. Aziz (Egypt), ARISE Fellow, making her presentation during the meeting.



Fig. 8: Some of the AAS Governing Council members and Fellows attending the ARISE event in Tunisia. From Right: Prof. R. Cherkaoui (VP, North Africa), Prof. M. Temmerman (Fellow), Prof. S. Agong' (Treasurer), Prof. P. Sereme (VP, West Africa), Prof. L. Korsten (President), and Dr. P. Oti-Boateng (Executive Director).





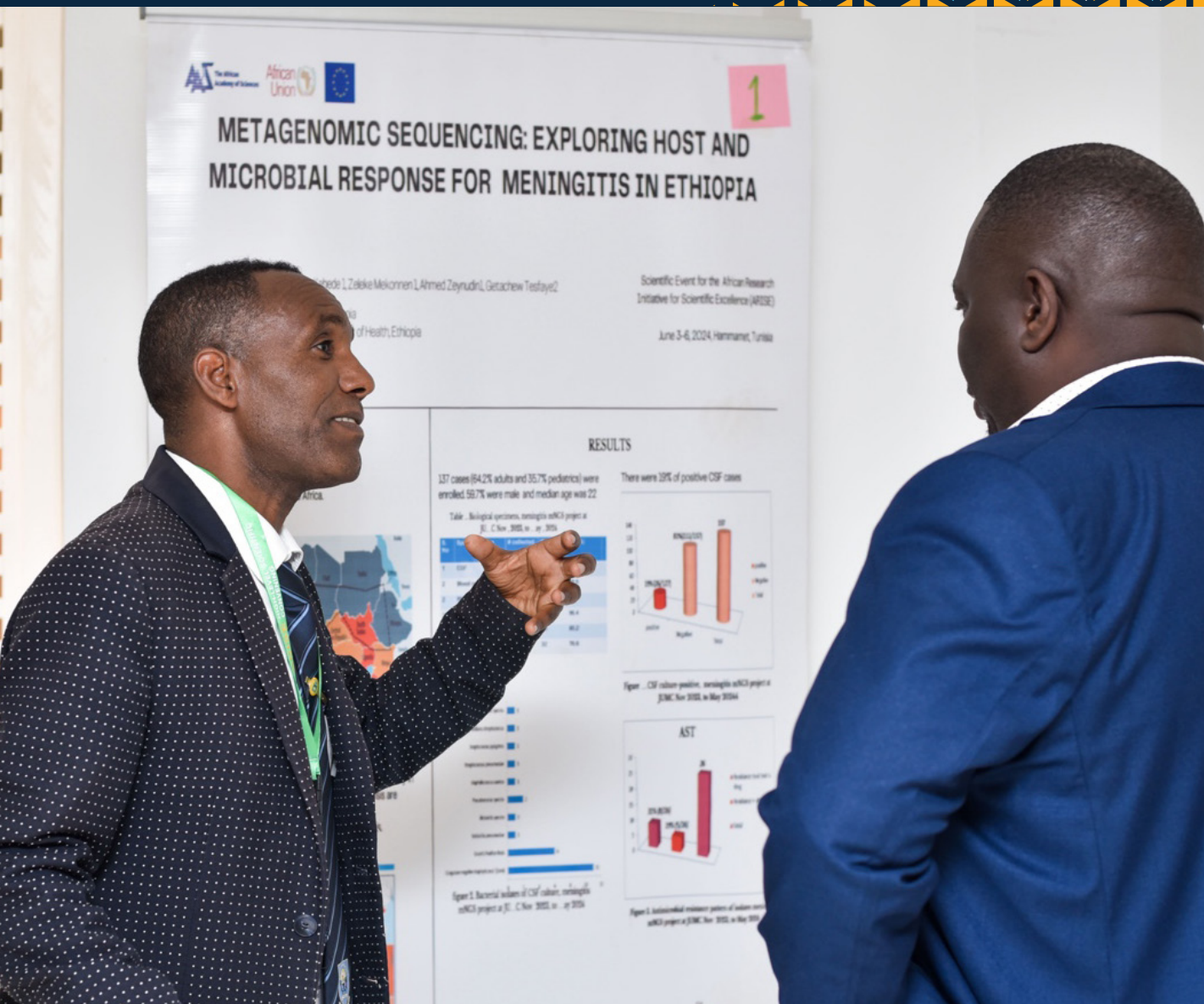


Fig. 9: Some of the ARISE Fellows having a chat. From Left: Dr. H. Razafindrakoto (Madagascar), Dr. S. Rakotonarivo (Madagascar), and Dr. M. Rouabah (Algeria)

## 2.7 Spotlight Presentations

The spotlight presentations were designed for the ARISE Fellows to introduce their ARISE projects and provide key highlights and innovations from their work thus far. As detailed below, the spotlight

presentations were themed around the AU-EU HLPD on STI priority areas, presented as Capacities for Research & Innovation, Technology and Innovation, Green Transition, and Global Health. A summary of ARISE Fellows' presentations is provided in subsection 4.2 of this report.

“

**Policy interests often drive research towards political and economic goals, neglecting crucial basic science. She called for adherence to ethical guidelines and the promotion of cooperation to foster trust and innovation. ARISE fellows exemplified social responsibility in research, potentially leading new sustainable scientific practices.**

Prof. Rajaa Cherkaoui, University Mohammed V-Agdal from Morocco

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## 2.7 Spotlight Presentations



Biological screening and validation of anti-Leishmania candidates predicted through AI approaches.

**Authors:** Rafeh Oualha, Yosser Zina Abdelkrim, Ikram Guizani, Emna Harigua-Souiai

**Presenting author:** Dr Rafeh Oualha, Institut Pasteur de Tunis



Optimizing the multi-faceted pipeline of AI-based drug discovery against infectious diseases.

**Authors:** Masmoudi Ons, Harigua-Souiai Emna

**Presenting author:** Ons Masmoudi, PhD student, Institut Pasteur de Tunis



User-centred design of a virtual clinic system for remote, rural, and underserved areas

**Authors:** Abby Blocker, Joyce Mwangama, Ishaaq Datay, Ahmed Biyabani, Bessie Malila

**Presenting author:** Abby Blocker, MSc Student, Division of Biomedical Engineering, University of Cape Town, South Africa



Metagenomic sequencing: exploring host and microbial response for meningitis in Ethiopia

**Authors:** Kadir Abdella, Esysas Kebede, Zeleke Mekonnen, Ahmed Zeynudin, and Getachew Tesfaye Beyene

**Presenting author:** Kadir Abdella



Extraction of cellulose from elephant dung for the development of adsorbents for water purification.

**Authors:** Phatsimo Matshediso, Ngonye Keroletswa, Samuel Chigome, Mathew Nindi, Edward Nxumalo and Simiso Dube

**Presenting author:** Phatsimo Matshediso, Department of Natural Resources & Materials, Botswana Institute for Technology Research & Innovation



Synthesis and characterisation of advanced nanomaterials for lung cancer diagnosis using human breath

**Authors:** George Chimowa and Ikanyeng Sereo

**Presenting author:** Ikanyeng Sereo, Department of Physics and Astronomy, Botswana International University of Science and Technology



Unstable laboratory Wolbachia strain w-Anga is negatively correlated with Plasmodium falciparum in wild malaria vectors

**Authors:** Dembélé L. Estelle, Gnambani E. Jacques, Saré Issiaka, Brian Lovett, Diabaté Abdoulaye, and Bilgo Etienne

**Presenting Author:** Dembélé L. Estelle, Institut de Recherche en Sciences de la Santé (IRSS) Direction Régionale de l'Ouest (DRO) / CNRST



Blocking Plasmodium development in mosquitoes using symbiotic bacteria Serratia ureilytica YNI

**Authors:** TRAORE Haoua, HIEN Domonbabele François de Sales, Gnambani E. Jacques, SOMDA Bienvenu Martin, DIABATE Abdoulaye, and BILGO Etienne

**Presenting author:** TRAORE Haoua, Université Nazi BONI (UNB)



## 2.7 Spotlight Presentations



Vulnerability Assessment of Groundwater in the Birrimien Basin of Siguiri Using Remote Sensing and GIS.

**Authors:** Adama KONE, Ahmed Amara KONATE, Vincent ASSOMA Tchimou

**Presenting author:** Adama KONE, Institut Supérieur des Mines et Géologie de Boké, Guinée



Evaluation of the potential use of off-bottom and floating raft systems to cultivate eucheimoids in Inhaca Island

**Authors:** Amos Nhaca, Esselina Fue, & Valeria Dias

**Presenting author:** Amos Nhaca, Universidade Eduardo Mondlane, Mozambique



Fig. II: Best poster presentation awardees, namely, Ms. Phatsimo Matshediso from Botswana (bottom left), Mr. Kadir Abdella from Ethiopia (top right), and Dr. Rafah Oualha (Tunisia), being awarded by Prof. A. Zobaa, Chair ARISE SAC (standing, in glasses)

### 3. Participant and Host Details: Speakers



#### **Prof Lise Korsten, President, African Academy of Sciences**

Professor Korsten is the President of the AAS and Co-Director at the Department of Science and Innovation, Centre of Excellence in Food Security. She chairs the Global Task Force of Food Security for the International Society for Plant Pathology and has addressed the South African Parliament on Food Safety Control. With extensive national and international funding, she led research on water pollution's impact on food safety and developed South Africa's first biocontrol agent for fruit. Prof Korsten's work emphasizes postharvest technology, food safety, and international trade in fresh produce. She supervises numerous students and researchers, with sustained industry support.



#### **Prof Stephen Agong, Treasurer, African Academy of Sciences**

Prof. Stephen Gaya Agong is a Professor of Horticulture and Director of the Blue Economy Research Institute. He serves as the founding Vice-Chancellor of Jaramogi Odinga University of Science and Technology. Currently Chairman of the Governing Council at Mount Kenya University, Prof Agong holds a BSc and MSc in Agriculture from the University of Nairobi, and a PhD in Agricultural Science from Justus Liebig University Giessen, Germany. With extensive leadership roles, including the Executive Director of the African Academy of Sciences, he has over 35 years of experience in education, research, and policy development. His research spans horticulture, blue economy, and sustainable agriculture, emphasizing food security and climate resilience.



#### **Prof. Rajaâ Cherkaoui El Moursli, North Africa Vice President, African Academy of Sciences**

Prof. Rajaâ Cherkaoui El Moursli holds a PhD in Nuclear Physics from the University of Joseph Fourier, Grenoble and is a distinguished professor at Mohammed V University, Rabat, Morocco. She has held several leadership positions, and her research focuses on medical physics, high energy physics, and nuclear applications, notably contributing to Morocco's involvement in the ATLAS project at CERN. She established pioneering master's programmes, including the first in medical physics in Morocco, and supervised numerous doctoral and master's students. Recognised internationally, she received the L'Oréal-UNESCO Women in Science Award for Africa and the Arab States in 2015. She has held leadership roles in scientific organisations and received multiple prestigious accolades.

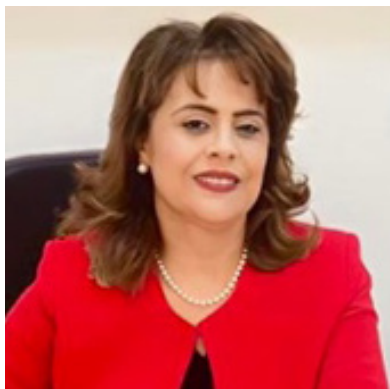


#### **Mr. Gianfranco Bochicchio, Chef De Mission Adjoint, EU Delegation in Tunisia**

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### 3. Participant and Host Details: Speakers



**Prof. Samia Menif, DG, Institut Pasteur de Tunis**

She is the Director General of the Pasteur Institute of Tunis, bringing over two decades of expertise in Hematology Biology and a strong commitment to advancing medical science. Her academic journey began with a medical degree from the University of Tunis in 1997, followed by a Master's degree in Genetics and Molecular Biology from the University of Tunis El Manar and the University of Montpellier, France, in 2001. Since joining the Pasteur Institute in 2002, she has focused on the molecular diagnosis and monitoring of leukemia, particularly Chronic Myeloid Leukemia (CML) and resistance mechanisms to TKIs. As the Head of the Hematology Department and a key member of the Molecular and Cellular Hematology Research Laboratory, she has led pioneering research that has significantly improved patient care in North Africa. Her leadership at the Pasteur Institute, where she has directed the Hematology Laboratory since 2005, reflects her passion for fostering innovation and advancing strategic research initiatives in hematology, with a commitment to improving healthcare outcomes through molecular medicine.



**Prof. Helmi Mardassi, Director of Horizon Europe, Minister of Higher Education & Research, Tunisia**

Prof. Mardassi was head of the laboratory of Molecular Microbiology, vaccinology and Biotechnology at Institut Pasteur de Tunis. He led a research group focusing on the delineation of the molecular mechanisms underlying emergence of TB outbreaks, the success of *M. tuberculosis* clones, and the impact of drug resistance on fitness. In 2021, he was appointed as the Director of the UGPO-H, the Horizon Europe Cooperation Unit at the Tunisian Ministry of Higher Education and Research, leading the national initiatives of Research and Innovation within the Horizon Europe Cooperation frameworks.



**Prof. Frederick Ato Armah, Director of Research and Programmes, Association of African Universities**

Frederick Armah is a distinguished Professor of Environmental and Sustainability Science, currently serving as the Director of Research and Programmes at the Association of African Universities (AAU) in Accra, Ghana. With over two decades of experience, he has demonstrated strong leadership in institutional development and project management across Africa and globally. His expertise spans designing, managing, and evaluating development projects and collaborating with national, regional, and international stakeholders to enhance management tools and policies. Prof. Armah has consulted for prominent organizations, including USAID, the World Bank, and the United Nations Environment, and has authored over 170 scholarly articles. He received the 2020 Association of American Publishers Awards for Professional and Scholarly Excellence (PROSE) Award for Environmental Sciences and contributes as a nexus assessment scoping expert and a member of Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services.

### 3. Participant and Host Details: Speakers



**Prof. Lidia Arthur Brito, Assistant Director-General for Natural Sciences, UNESCO**

Lidia Arthur Brito is the Assistant Director-General for Natural Sciences at UNESCO. Her work contributes to the development of innovative responses to contemporary environmental challenges. As a forest engineer with both a Master's and Doctorate in Forest and Wood Science from Colorado State University, USA, she was born in Mozambique and has been a part of the Eduardo Mondlane University staff since her graduation in Forest Engineering in 1981. Her career in Mozambique includes significant roles such as Head of the Forestry Department at the Faculty of Agronomy (1997-1998), Vice-Rector for Academic Affairs at Eduardo Mondlane University (1998-2000), Minister for Higher Education, Science and Technology (2000-2005), and Advisor for Strategic Planning and External Relations to the Mayor of Maputo City (2005-2008).



**Prof. Shaukat Abdulrazak, Director for Africa, International Atomic Energy Agency, Austria**

Shaukat Abdulrazak is the Director for the Division for Africa at the IAEA Department of Technical Cooperation. In this capacity, he facilitates IAEA technical cooperation support to 45 African countries. Before joining the IAEA, Abdulrazak worked as CEO at the Kenya National Commission for Science, Technology and Innovation. He has more than 20 years working experience as a professor and university administrator, chairman and member of national and international boards, including the African Technology Policy Studies, the Kenya National Economic Social Council, the African Commission on Nuclear Energy and the International Centre for Genetic Engineering and Biotechnology.



**Mr. Noomane Fehri, Former Minister for ICT, Tunisia**

Noomane Fehri, with 30 years of experience in Energy and Digital Technology across Africa, Europe, and Asia, has been a prominent leader and reformer in the digital economy. As Tunisia's Minister of Digital Economy (2015-2016), he spearheaded the creation of the Tunisian Startup Ecosystem through initiatives like the "Technology Payment Card" and the "Startup Act" Law, which influenced over ten African countries. Elected to the Tunisian Constituent Assembly in 2011 and re-elected in 2014, he helped draft Tunisia's new constitution. Since 2017, he has been the Managing Partner at ODF, focusing on innovation ecosystems and digital transformation. He is involved in multiple leadership roles, including CEO of technoriat.com, President of the Maghreb Business Angel Network, and advisor to various international institutions. Noomane holds a master's in Geophysics and an engineering degree from prestigious institutions and has received honours from Tunisia, Portugal, and Sweden.



**Dr. Partson Chikudza, Director, Research Council of Zimbabwe, Zimbabwe**

Dr. Chikudza is a renowned researcher and an expert in governance. Before joining the Research Council of Zimbabwe, he was a Director in the Office of the President and Cabinet in the Chief Secretary's Office. He has over thirty (30) years of senior-level experience in the Ministry of Education, and Public Service Commission. He has lectured and reviewed modules at some State Universities in Zimbabwe. Dr Chikudza has various experience as Board member of some State Enterprises, Parastatals and Zim-Sino Capacity Building Programmes as well as establishment and implementation of the Museum of African Liberations Projects. He is a holder of a PhD in Social Science Development Studies, a master's in development studies and a degree in Public Administration and Development Studies among other various qualifications. Read more at <https://www.rcz.ac.zw/>.



### 3. Participant and Host Details: Speakers



**Dr. Vanessa McBride, Science Director, International Science Council, France**

Vanessa McBride is Science Director at the International Science based in Paris. She has a PhD in Astronomy from the University of Southampton and over fifteen years of experience, including various leadership roles across different sectors in science. She is an adjunct associate professor at the University of Cape Town. In her previous positions, she has contributed to research management within research infrastructure environment at South Africa's National Research Foundation, and in a science-for-development environment as Deputy Director of the Office of Astronomy for Development.



**Dr. Laurent Bochereau, European Union Science Counsellor to the AU**

Since September 2023, Laurent Bochereau works as research and innovation counsellor at the EU Delegation to the African Union where he contributes to strengthen EU-AU cooperation in the areas of higher education, research and innovation. He gained a Laureate from the Ecole Polytechnique, a master's degree from the University of California and a PhD from the University of Paris Sorbonne. After several years working as a research project leader at INRAE, he served two years in the French Ministry for Research. He joined the European Commission in 1995 where he occupied several middle management positions and had several postings in the EU Delegations in Washington, Beijing and Moscow.



**Amb. Prof. Bitange Ndemo, Kenya's Ambassador to Belgium and European Union**

Bitange Ndemo is Kenya's Ambassador to Belgium, previously a Professor at the University of Nairobi focusing on ICT's impact on African SMEs. He chaired Kenya's AI Taskforce, shaping digital strategies. Formerly, he led Kenya's Ministry of Information and Communication, pioneering ICT projects like undersea cables and Silicon Savannah. Ndemo advises globally, including UN initiatives on Big Data, and contributes to MIT and OECD panels on AI and Blockchain. He advocates for Open Data and Big Data accessibility through columns and is a prominent figure in Africa's tech and diplomatic spheres.



**Prof. Maria Leptin, President, European Research Council**

Maria Leptin is the President of the European Research Council. After receiving a PhD at the University of Heidelberg, postdoctoral research in the UK and leading a research group in Germany, Maria Leptin became a professor at the Institute of Genetics, University of Cologne and Director of EMBO. Leptin is an elected member of EMBO, the Academia Europaea and the German National Academy of Sciences (Leopoldina), Honorary Fellow of the Academy of Medical Sciences, Foreign Member of the Royal Society and international member of the US National Academy of Sciences.

### 3. Participant and Host Details: Speakers



**Prof. Martin M Nyaga, University of the Free State, South Africa**

Martin Nyaga is an Associate Professor and the Head of the University of the Free State-Next Generation Sequencing (UFS-NGS) Unit. The UFS-NGS Unit is the WHO collaborating Center for Vaccine-Preventable Diseases (VPD) Surveillance and Pathogen Genomics. His academic affiliation is the Division of Medical Virology.

Prof. Nyaga's research interests utilise genomics on VPD, particularly pre- and post-vaccination of enteric and respiratory viruses surveillance at whole genome level. He is currently the PI in two Bill and Melinda Gates Foundation funded studies investigating the long-term effects of the introduction of the monovalent Rotarix vaccine and the Sequencing of the Antigenic Cartography of Enteric Viruses (SACEV) in five African countries. He also leads studies on metagenomics of gut and respiratory virome which aim to establish the role played by the gut and respiratory virome in young children over time to effect normal and metabolic disorders that may influence a child's healthy growth or impact medical conditions such as obesity later in life.

Prof. Nyaga is an NRF-rated researcher and has disseminated over 150 peer-reviewed articles in international journals and scientific conferences, deposited over 50,000 full-length and partial genome sequences at the NCBI GenBank and supervised over 30 postgraduate students.



**Prof. Marleen Temmerman, Director of the Centre of Excellence in Women and Child Health & Chair of the Department of Obstetrics and Gynaecology, Aga Khan University, Kenya**

Prof Marleen Temmerman is Director of the Centre of Excellence in Women and Child Health at Aga Khan University East-Africa and Chair of the Department of Obstetrics and Gynaecology at Aga Khan University Hospital Nairobi, Kenya. She has enormous experience in academia and political international organisations, particularly in collaboration with United Nations organizations and the European Union, the African Union, national governments in Europe and Africa. Prof Temmerman was elected as a Senator to the Belgian Parliament from 2007 to 2012 as a member of the Commission on Social Affairs, and Chair of the Commission on Foreign Affairs. She was Director of the Department of Reproductive Health and Research at the WHO, Geneva.



**Prof. Hechmi Louzir, Former Director of Institut Pasteur de Tunis and Director of the national campaign of COVID19 vaccination, Tunisia**

Hechmi Louzir graduated from the Tunis Medical School and completed a post-doctoral training at Institut Pasteur in Paris before joining Institut Pasteur in Tunis in 1988. He led research on leishmaniasis and developed the immunology curricula at the University Tunis El Manar. As Director of Institut Pasteur in Tunis (2007-2023), Louzir led over 40 research projects and authored over 70 scientific publications (h-index: 22, 2,147 citations). He serves on the International Network of Institut Pasteur's executive board and the Pasteur Institute's Assembly. Additionally, he is a member of PLoS Neglected Tropical Diseases' Editorial Board, an expert for the WHO, and led Tunisia's COVID-19 vaccination campaign.

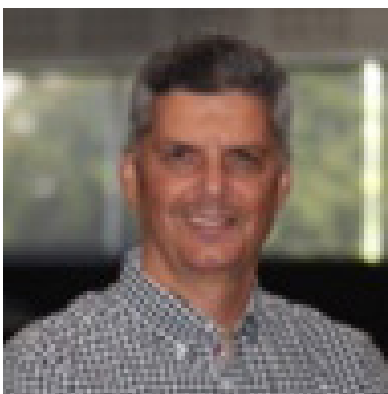


### 3. Participant and Host Details: Speakers



**Dr. Meryem Khrouf, Director of Medical Research in the Ministry of Health, Tunisia**

Myriam Razgallah Khrouf is a Professor of Pharmacology at the University of Monastir's Faculty of Pharmacy and Director of the Unit of Pharmacy and Drugs at Tunisia's Ministry of Health. She graduated from Monastir, specialising in hospital and industrial pharmacy, with a master's in pharmacokinetics. After training in Tunisia and France, including at Marseille's pharmacology federation, she worked as a pharmacokinetic assessor at France's ANSM and later managed clinical trials in a French pharmaceutical lab. Returning to Tunisia in 2011, she has been influential in hospital pharmacy and was pivotal in establishing a pharmaco-economics postgraduate diploma. Appointed Director in 2018, she contributed to Tunisia's COVID-19 vaccine registration and COVAX initiative, is a member of Monastir's scientific council, and an EML expert for WHO since 2021.



**Prof. Faadiel Essop, President, African Association of Physiological Sciences, South Africa**

Prof. Faadiel Essop is the Director of the Centre for Cardio-metabolic Research in Africa (CARMA) at Stellenbosch University (Cape Town, South Africa). He is the current President of the African Association of Physiological Sciences (AAPS) and a council member of the International Union of Physiological Sciences (IUPS). He is a Fellow of the American Physiological Society and was recently elected as a Fellow of the Royal Society of South Africa.



**Prof. Adesola Ajayi, First Technical University, Ibadan, Nigeria**

University Professor and an experienced agricultural scientist and higher education manager with a demonstrated history of working in the agricultural research for development domain in the last 30 years. Expert in seed supply system, seed technology, agricultural value chain analysis, agricultural enterprise development, plant genetic resources conservation, climate-smart agriculture and mentorship of early-career researchers.



**Prof. Paul Zeleza, Senior Advisor for Strategic Initiatives, Howard University, USA**

Paul Tiyambe Zeleza is Senior Advisor for Strategic Initiatives and Professor of African Studies at Howard University. Previously he was Associate Provost and the North Star Distinguished Professor at Case Western Reserve University (2021-2023), after serving as Vice Chancellor (President) and Professor of the Social Sciences and Humanities at the United States International University (USIU) in Kenya from 2016-2021. Prior to that he held distinguished academic and administrative positions as College Principal (Trent University, Canada), Director of the Center for African Studies (University of Illinois at Urbana-Champaign), Professor of History and African and African American Studies (Pennsylvania State University), Chair of the Department of African American Studies (University of Illinois at Chicago), Dean of the College of Liberal Arts (Loyola Marymount University), and Vice President for Academic Affairs (Quinnipiac University). Read more at <https://bit.ly/3YaPf2G>

### 3. Participant and Host Details: Speakers



**Prof. Jean-Paul Moatti, Aix-Marseille University, France**

Jean-Paul MOATTI was Professor of Health Economics at Aix-Marseille University and was the CEO of the French National Research Institute on Sustainable Development (IRD) in charge of scientific cooperation with developing countries (2015–2020). He strongly supported the creation of the ARISE programme.



**Dr. Noëline Raondry Rakotoarisoa, former Director, Man and Biosphere programme, UNESCO**

Noëline is a seasoned leader in ecological sciences and brings a wealth of expertise from academia, intergovernmental, and international arenas within the United Nations framework. She has a proven track record in fostering scientific international cooperation and steering programmes, especially within the African region. Noeline is a founding member of the Department of Natural Sciences of the University of Mahajanga (Madagascar), which celebrated its 40 years in October 2023.



**Prof. Refaat Chaabouni, Innovation Strategy and Innovation Policy expert & former Minister of Higher Education and Scientific Research, Tunisia**

Refaat Chaabouni is Professor Emeritus of Engineering at the University of Tunis El-Manar, National School of Engineering, where he spent most of his academic career. He has a long track record in higher education and scientific research activities at national and international levels. He contributed to the design and implementation of new development schemes for the Tunisian Research and Innovation system and to the modernization of the Tunisian Higher education system. He has been particularly active in the development of international scientific cooperation and especially the Euro-Mediterranean cooperation. He has collaborated for many years with several DGs of the European Commission as an expert- evaluator, reviewer, or steering committee member of international cooperation programs. Beside his academic duties, Professor Chaabouni, was actively involved in several high-level governmental missions and positions.



**Dr. Obed Ogega, Programmes Manager, AAS**

Obed is a climate scientist and program management specialist focusing on research capacity strengthening for development in response to Africa's developmental needs and priorities. As Programmes Manager, Dr Ogega leads a team at the AAS working towards creating a critical mass of emerging and established research leaders to deliver the 'Africa We Want' as envisioned in Africa's Agenda 2063. Before joining the AAS, Dr Ogega worked with CORDIO East Africa and the Embassy of Sweden in Nairobi in various capacities. He holds a PhD in Environmental Studies (Climate Change & Sustainability) and is well-published in climate science and research capacity strengthening.



### 3. Participant and Host Details: Speakers



**Mr. Shaofeng Hu, Director, Division of Science Policy and Basic Sciences, UNESCO, France**

Mr Hu has been the Director of UNESCO's Division of Science Policy and Basic Sciences since April 2023, overseeing the International Decade of Sciences for Sustainable Development and promoting Open Sciences. Previously with UNEP for 23 years, he supported Asia Pacific in climate policy, capacity building, and technology dissemination. He contributed to the Montreal Protocol at China's Ministry of Ecology and Environment and conducted research at the Chinese Academy of Environmental Sciences. Hu holds degrees from Peking University and leads UNESCO initiatives on STEM education, international science cooperation, and science popularization.



**Ms. Brigitte Decadt, Senior Advisor for International Science and Technology Cooperation, Belgian Federal Science Policy Office, Belgium**

Brigitte Decadt is an international science policy and collaborative RDI programme implementation facilitator, acting at the science-policy interface. She manages the bilateral and multilateral RDI- cooperation programmes at BELSPO and is Belgium's delegate in the EU-AU innovation agenda and bi-regional RDI- partnership in general.



**Dr. Mohamed Ali Marouani, Institut de Recherche pour le Développement (IRD) Representative in Tunisia**

Mohamed Ali Marouani is the IRD/CIRAD Representative in Tunisia, an associate professor in economics at the Sorbonne Institute of Development Studies and former director of its research lab. He is an ERF Research Fellow and a founding member of the RIEME initiative. He has been a Senior Scholar at the Humphrey Institute of Public Affairs (Minnesota University). His research focuses on the socio-economic impact of crises, structural transformation and migration.



**Dr. Wei Liu, Coordinator, Sustainable Development Officer, UN Inter-agency Task Team on Science, Technology and Innovation for the SDGs**

Dr. Wei Liu has been the UN Inter-agency Task Team Coordinator on Science, Technology and Innovation for the SDGs at UN DESA since 2016. He supports STI-related decisions in the 2030 Agenda, fosters partnerships, and implements STI roadmaps. Liu joined the UN in 2005 and has focused on development policy, contributing to publications and working at UN-ESCAP and the World Bank. He holds a Ph.D. in Economics from the University of Birmingham, leveraging his expertise to advance global STI initiatives and partnerships, including the Coalition on STI for Africa's Development.

### 3. Participant and Host Details: Speakers



**Mr. Lukovi Seke, Programme Officer for STI, AUDA-NEPAD**

Lukovi holds a master's degree in economics of trade and investment (University of Pretoria, South Africa) and a bachelor honours degree in mathematical economics (University of Kinshasa). He mentored undergraduate economics students (University of Pretoria) before joining the AU system. In his previous life, Lukovi was a web manager in a private media group and held various leadership positions in academic, national, regional, and continental youth movements focused on peace-making and peacebuilding. So far, he has trained over 3,000 national officials from 43 AU ministries responsible for STI and statistics offices using international guidelines (OECD manuals) for surveys conducted in the business, government, higher education and non-profit organizations sectors. He played a key role as a member of the drafting team of the recently approved AU-EU 10-year innovation agenda and now a member of its working group.



**Dr. Isabel Díaz, Deputy Vice President of Internationalization and Cooperation, CSIC, Spain**

Dr Isabel Díaz was appointed Deputy Vice-president of International Cooperation of CSIC in June 2022. Her unit handles the strategy of large international infrastructures at CSIC, as well as strategies to reinforce international cooperation with Africa and Latin America, and the Caribbean. Isabel Díaz got her PhD in Chemistry in 2001 from UAM with an Extraordinary Doctorate Award, with research stints at the University of St. Andrews (UK), Lund University (Sweden), and Tohoku University (Japan) to specialise in Transmission Electron Microscopy. She was a Fulbright Fellow at the University of Massachusetts and the University of Minnesota between 2002 and 2003. She is currently a Senior Researcher at Instituto de Catálisis y Petroleoquímica, ICP-CSIC in Madrid, Spain.



**Dr. Victor Konde, Scientific Affairs Officer, TCCNRMD- Green Economy Innovations & Technologies Section, UNECA**

Victor Konde is a Scientific Affairs Officer at UNECA and ECA's focal point on science, technology and innovation. He holds a PhD in Biochemistry (United Kingdom) and is a post-doctoral alumnus of Harvard University. He founded the African Technology Development Forum (ATDF, Geneva/Switzerland) and is a Fellow of the World Academy of Arts and Science. He works closely with AUDA-NEPAD, AU and about 70 universities and R&D institutions in Africa and beyond. He has developed and managed various institutional and country programmes. His current areas of interest include promoting innovation and entrepreneurship policies and strategies, intellectual asset management, and developing business models, especially for the youth.



**Dr. Fadila Boughanemi, Director General RTD, European Commission**

Dr. Fadila Boughanemi serves as the Deputy Head of Unit for Asia, Africa, and Middle East and North Africa (MENA) at the European Commission, Directorate General for Research and Innovation. She holds a PhD in political science from the University of Sciences-Po Aix in France.



### 3. Participant and Host Details: Speakers



**Prof. Helmi Mardassi, Director of Horizon Europe, Minister of Higher Education & Research, Tunisia**

Prof Mardassi was head of the laboratory of Molecular Microbiology, vaccinology and Biotechnology at Institut Pasteur de Tunis. He led a research group focusing on the delineation of the molecular mechanisms underlying emergence of TB outbreaks, the success of *M. tuberculosis* clones, and the impact of drug resistance on fitness. In 2021, he was appointed as the Director of the UGPO-H, the Horizon Europe Cooperation Unit at the Tunisian Ministry of Higher Education and Research, leading the national initiatives of Research and Innovation within the Horizon Europe Cooperation frameworks.



**Ms. Eudy Mabuza, South Africa's Science & Innovation Representative to the European Union**

Ms Mabuza has spent over eighteen years in the Public Sector, championing bilateral STI investments and positioning South Africa as a hub for science. As Minister Counsellor for Science & Innovation at the South African Mission in Brussels, she works to strengthen STI collaboration with the EU. Previously, she was Chief of Staff to the Minister of Higher Education, Science and Innovation and served as Minister Counsellor for Science & Technology in Japan for over five years. Ms Mabuza's other career highlights include interfacing with international agencies and advancing innovative initiatives, focusing on policy issues crucial to science and innovation development.



**Ms. Atridah Mulonga, Head of Research and Grants, National Science and Technology Council of Zambia**

Atridah Mulonga is Grants Officer at Zambia's National Science and Technology Council, National Coordinator for the Science Granting Councils Initiative in Sub-Saharan Africa, and the OR Tambo Africa Research Chairs Initiative. She serves on the Advisory Group of the Germany-Africa Research Collaboration. With over 15 years of experience, she oversees research project management. Holds an MSc in Tropical Hydrobiology & Fisheries and is currently a PhD candidate in Integrated Water Resources Management.



**Dr. Cephas Mensah, Director, Ministry of Environment, Science, Technology and Innovation, Ghana**

Cephas Adjei Mensah is a Senior Civil Servant and a Director with 20 years of experience in the Civil Service of the Republic of Ghana. He is presently the Director in charge of Research, Statistics and Information Management and Science Granting Council (SGC) Head of Research Council (HORC) at the Ministry of Environment, Science, Technology, and Innovation (MESTI), Ghana. He is very versatile in the public policy, administration, and technical arena with vast experience across sectors and ministries. He was previously the Deputy Director, Science, Technology & Innovation (STI), MESTI. Prior to his present Ministry, he worked with the Ministry of Aviation as a Deputy Director, Finance & Administration and Focal Person on Government High Priorities, Monitoring & Evaluation (M&E); Ministry of Education where he acted as Director, Tertiary Education. He has good knowledge in public policy and administration with a keen interest in shaping public policy, context and processes as well as institutional development. He was an Adjunct Lecturer (Biochemistry) at the Accra Technical University for Ten (10 years). He is a Biochemist, Policy Person, Chartered Professional Administrator, Adjunct Lecturer, Counsellor, Mentor, a Ministerial Trainee into the Ordained Ministry of the Presbyterian Church of Ghana at the Ramseyer Training Centre, Abetifi. He was awarded a Civil Service Excellence Award for outstanding performance – integrity category in 2019 for his hard work, exemplary leadership and professionalism in the service.



Fig. 12: Some of the ARISE Fellows attending the ARISE meeting in Tunisia

### 3.2.1 ARISE Fellows

This section introduces ARISE Fellows and provides a short description of their ARISE projects. The Fellows are grouped according to the four generic thematic areas for ARISE, namely, Capacities for Research & Innovation, Global Health, Innovation & Technology, and Green Transition.

#### 3.2.1 Capacities for Research and Innovation



**Dr. Mohamed T. Rouabah**, *Freres Mentouri University Constantine 1*

**Presentation:** *Light Scattering, Quantum Information & Quantum Simulation by Cold Atoms.*

**Description:** This project will optimise materials science to accelerate drug discovery and has the potential to revolutionise various aspects of health.

**Bio:** Mohamed Taha Rouabah is an Associate Professor of Physics at the University of Constantine 1, Algeria. He holds a Ph.D. in Physics from Université Côte d'Azur (France). His research interests include cutting-edge areas in quantum information science, including topological quantum computing, quantum programming, quantum algorithms, quantum machine learning, and quantum simulation.



**Dr. Katawoura Beltako**, *Université de Lomé, Togo*

**Presentation:** *Quantum Simulations and Energy Materials.*

**Description:** In this project, Dr Beltako discovered three new materials, including solar cells, a highly efficient at 33% (above the current 29% limit) and a machine learning-based package for thermoelectric materials properties predictions.

**Bio:** Dr. Katawoura Beltako, an AIMS alumnus and OIST Fellow, leads Quantum and Energy Materials research at the University of Lomé, Togo. His Ph.D. from Aix-Marseille University focused on the computational modelling of electronic quantum transport. He aims to pioneer quantum research in Africa for energy applications, focusing on energy materials and nanoelectronics with low power consumption while training young scientists and influencing policy for improved service delivery.



### 3.2.1 Capacities for Research and Innovation



**Dr. Hafeez Yusuf Hafeez**, *Federal University Dutse, Nigeria*

**Presentation:** *Development of efficient and robust mxene-based photocatalysts for production of solar fuel (hydrogen) via photocatalytic water splitting.*

**Description:** The photocatalysts fuel materials developed in this project are the first reported for solar fuel generation via photocatalytic water-splitting. Importantly, Dr Hafeez has constructed a new laboratory—Advanced Nanotechnology and Computational Physics Lab—for solar energy generation.

**Bio:** Dr. Hafeez Yusuf Hafeez is an experienced researcher and Senior Lecturer at the Department of Physics, Federal University Dutse, Jigawa state, Nigeria, with interests in the fields of 2D nanomaterials and MXene for solar fuel (Hydrogen) generation application.



**Dr Hoby Razafindrakoto**, *Institut et Observatoire de Géophysique d'Antananarivo, Madagascar*

**Presentation:** *Earthquakes monitoring and hazard evaluation in Madagascar.*

**Description:** We have developed a machine learning-based earthquake monitoring system, which allows the classification of natural and non-natural events and includes a phone application to provide timely information to the community and risk agencies.

**Bio:** Hoby Razafindrako obtained a master's in Geophysics from the University of Antananarivo in Madagascar and a PhD in Earth Science at the King Abdullah University of Science and Technology, Saudi Arabia. She had a postdoctoral fellowship at the University of Canterbury, New Zealand, and was a research scientist at GFZ. She leads the ARISE project.



**Dr. Samuel Bunani**, *University of Burundi, Burundi*

**Presentation:** *Development of an Electrochemical Process for Recovery of Nutrients from Liquid Waste Resources.*

**Description:** This project aims to recover valuable chemicals (nutrients: nitrogen and phosphorus) contained in aqueous waste streams.

**Bio:** Samuel Bunani is a professor at the University of Burundi, where he leads the ARISE-funded e-Pro4ReNs project, a five-year scientific endeavour. He is mostly interested in membrane separation technology applications for water reuse and recovery of valuable chemicals from water using electro-membrane processes.



**Dr. Bridget Mutuma**, *University of Nairobi, Kenya*

**Presentation:** *From plastic waste to low-cost carbon nanoreactors for use in monitoring environmental pollutants and nanoplastics.*

**Description:** This project assesses the adsorption of methylene blue dye in water utilising porous carbon and carbon nanotubes from plastic waste produced porous carbons and multiwalled carbon nanotubes from polypropylene terephthalate waste with demonstrated adsorption capacity for removing organic pollutants in wastewater.

**Bio:** Dr. Bridget Mutuma is a Research Associate in the Department of Chemistry at the University of Nairobi. She is also an AAS affiliate, ASLP member, and ARISE Fellow. Her research interests include the development of plastic waste-derived carbon nanomaterials/core-shell nanostructures for use in catalysis, energy storage, and conversion systems.

### 3.2.1 Capacities for Research and Innovation



**Dr. Gift Mehlana**, Midlands State University, Zimbabwe

**Presentation:** *Water stable porous Metal Organic Frameworks as host materials for biological catalysts in carbon dioxide conversion to methanol.*

**Description:** This project has engineered materials with sufficient space to house biological catalysts for conversion of CO<sub>2</sub> to methanol.

**Bio:** Gift Mehlana is an Associate Professor at the Midlands State University. His research focuses on developing materials for energy applications, water harvesting from the air and engineering of new cargo carriers for simultaneous drug release to the target sites. Gift Mehlana served as a member of the Royal Society of Chemistry Materials Horizon Community board from 2020 to 2022. He is the current secretary for the African Crystallographic Association whose aim to promote science in Africa Through crystallography.



**Dr Ngonye Keroletswe**, Botswana Institute for Technology Research and Innovation, Botswana

**Presentation:** Sustainable Water Filtration Using Cellulose-Based Membranes Derived from Local Biomass.

**Description:** This project will develop cellulose materials for water filtration from local biomass (invasive plants and animal excreta) and is envisioned to increase household and community access to safe clean water, meeting the United Nations Sustainable Development Goal 6.

**Bio:** Ngonye Keroletswe is a Senior Researcher at the Nanomaterials Division, Botswana Institute for Technology Research and Innovation. She leads a team valorising local biomass as cellulose source materials for water filtration. Ngonye holds a PhD in Chemistry, an MSc in Organic Chemistry, and a B.Ed. (Science Chemistry) from the University of Botswana.





### 3.2.2 Technology and Innovation



**Dr Bessie Malila**, University of Cape Town, S. Africa

**Presentation:** Development of a secure 5G and beyond digital health test bed for modelling telemedicine systems, mHealth applications and smart hospitals.

**Description:** Highlights to date include the development of a virtual clinic system consisting of state-of-the-art smart medical devices and integrated on a software application based on user-centred design. The project has also developed a method for using a hyperspectral imaging camera to aid latent tuberculosis screening.

**Bio:** Bessie Malila is a Junior Research Fellow at the University of Cape Town. She currently Leads the Telemedicine and Connected Care research group in the BME division. Her research interest includes the application of digital technologies in health, medical imaging, AI and machine learning, blockchain and 5G/6G technologies.



**Dr. Emna Harigua**, Institut Pasteur de Tunis, Tunisia

**Presentation:** Bioinformatics and artificial Intelligence for infectious and Neglected Diseases drug discovery research Platform.

**Description:** We aim to reduce the length of time and cost of drug discovery while enhancing its outcomes in successful lead compounds. Through the BIND, we consolidated our expertise in Computer-Aided Drug Discovery leveraging Bioinformatics, Artificial Intelligence and Quantum computing. We have developed an AI-empowered open platform CidalsDB for Drug Discovery & Design.

**Bio:** Emna Harigua is a Bioinformatician, with a multi-disciplinary profile. She is an Analytical Chemistry engineer with a master's degree in Information Processing and a PhD in Structural Bioinformatics (Institut Pasteur Paris). She is an assistant professor at Institut Pasteur de Tunis, leading a team developing Bioinformatics and Artificial Intelligence for Biomedical research applications.



**Dr. Alassan Assani Seidou**, University of Parakou, Benin

**Presentation:** Developing mobile application for formulating cost-efficient balanced and climate sensitive rations for improving livelihood of smallholder cattle farmers in West-Africa.

**Description:** This application will provide innovations in sustainable intensification of local cattle productivity for milk and meat in West Africa and contribute to improving smallholder farmers' livelihoods, household food security, and reduction of the carbon footprint

**Bio:** Dr. Alassan Assani Seidou, an ARISE fellow and Assistant Professor at the University of Parakou, Benin, specialises in Animal Science. He earned his Ph.D. from the University of Parakou in 2017 and has co-authored 70 peer-reviewed publications, two books, and two monographs. He aims to advance his career, become an independent scientist, train young African researchers, and influence livestock sector policies in sub-Saharan Africa.



**Dr. Hajar El Hammouti**, Université Mohammed VI Polytechnique, Morocco

**Presentation:** Broadband Internet Access for Unconnected and Under-connected areas.

**Description:** This project will create efficient approaches to optimise the trajectory of drones, improve their energy efficiency, and prolong their battery life, and ultimately develop mechanisms to quickly connect users in remote areas to spatial networks.

**Bio:** Hajar El Hammouti, an ARISE and Fulbright alumni, joined Université Mohammed VI Polytechnique as an assistant professor in 2021. She earned her PhD in computer science and telecommunications from the National Institute of Posts and Telecommunications, Morocco. Her research focuses on modeling and optimising wireless networks systems, with a keen interest in applying machine learning to mobile communications.

### 3.2.2 Technology and Innovation



**Dr. Thomas Kivevele**, Nelson Mandela African Institute of Science and Technology, Tanzania

**Presentation:** Solar–biogas hybrid dryer: an energy efficient and environmentally friendly technology for drying agricultural products.

**Description:** This project has developed a hybrid solar biogas from locally sourced materials for continuous drying solutions, serving as a backup and ensuring reliable operation. It will potentially improve food preservation, quality, and security and boosts farmers' income.

**Bio:** Thomas Kivevele is an Associate Professor at the Nelson Mandela African Institution of Science and Technology (NM-AIST) based in Arusha, Tanzania. He excels in clean energy technologies. He has secured over US \$2.3 million in research funding, authored 70+ articles, holds three patents, and received the 2018 Fulbright African Senior Research Scholar award for biofuels research.



**Dr. Sonia Semedo**, Universidade de Cabo Verde, Cape Verde

**Presentation:** Smart solutions for water and agriculture to face the Climate Change Crisis in Cabo Verde.

**Description:** This project proposes a framework for adapting the Internet of Things to specific agricultural conditions of Cabo Verde, aiming to reduce costs through farmer-shared communication infrastructure while maintaining control over individual sensors and actuators accessed via an app.

**Bio:** Sónia Semedo holds a Ph.D. in Physics Engineering from the University of Coimbra. She is an Assistant Professor at the University of Cape Verde and the coordinator of the RS2Lab. She specialises in the Internet of Things and Artificial Intelligence for agriculture and water. She has also received AI4D AFRICA and Fulbright scholarships to advance her research.





### 3.2.3 Green Transition



**Dr Edem Mahu**, University of Ghana, Ghana

**Presentation:** Oyster Shell Models for Hindcasting Holocene Environmental Conditions in Equatorial Atlantic Coastal Waters of Africa.

**Description:** The project uses the isotopic and trace element composition of modern-day *C. tulipa* shells to develop locality-specific models for reconstructing past temperature, and salinity regimes of the *C. tulipa* and coastal environments. An Isotope Ratio Mass Spectrometer, purchased under this project and installed at the University of Ghana, is the first of its kind in West Africa and addresses the problem of shipping samples overseas for analysis.

**Bio:** Dr. Edem Mahu is a Senior Lecturer at the University of Ghana. She is a fellow of the ARISE programme and the recipient of the 2022 American Geophysical Union Africa Award for Research Excellence in Ocean Science. Her work spans past climate reconstruction, upwelling, ocean productivity, and ocean acidification.

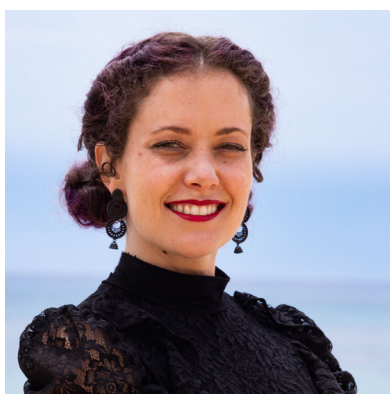


**Dr Abdallah MAHAMAT NOUR**, University of N'Djamena, Chad

**Presentation:** Impact of climate change on wetlands from the Lake Chad basin and its consequences on groundwater recharge.

**Description:** The project aims to strengthen the knowledge necessary to address the vulnerabilities linked to water and climate change, by improving monitoring and forecasting tools, and to strengthen knowledge, expertise, and technology transfer.

**Bio:** Dr MAHAMAT NOUR Abdallah is an ARISE Fellow, a teacher-researcher, and an assistant professor of Geology at the University of N'Djamena. He holds a PhD in Geosciences from the University of Aix Marseille. His work mainly focuses on understanding the functioning of surface waters and Sahelian and transboundary aquifers in the Lake Chad Basin.



**Dr Jessica Thorn**, University of Namibia, Namibia

**Presentation:** Future Landscape Optimisation for peri-urban Resilience and Ecosystem Health.

**Description:** This research evaluates the effectiveness of green infrastructure innovations in informal and peri-urban areas for disaster risk reduction in peri-urban areas. We have contributed to five policy reports, including the IPCC WG II mountains and human settlements chapter, the AU Climate Change Strategy and the UN Food and Agricultural Organisation Urban Forestry report.

**Bio:** Jessica Thorn is an ARISE fellow at the Department of Environmental Sciences, University of Namibia and a lecturer at the University of St Andrews. Her research focuses on climate change adaptation, green infrastructure, and social-ecological transitions. She has contributed to significant policy and scientific reports, including the IPCC AR6 and UN FAO Urban Forestry in Sub-Saharan Africa.



**Dr. Sarobidy Rakotonarivo**, University of Antananarivo, Madagascar

**Presentation:** *An experimental approach to optimizing policy for scaling-up climate-smart agriculture in Africa.*

**Description:** Using a randomised controlled trial, this study provides robust empirical evidence on the key policy instruments that support the widespread adoption of climate-smart agriculture in Madagascar.

**Bio:** Dr Rakotonarivo is an environmental socio-economist studying the predictors of effective nature-based solutions (such as forest conservation, restoration, and climate-smart agriculture) in Africa. Her research and engagement activities aim to support the design of policies that contribute to the long-term well-being of people and nature.

### 3.2.3 Green Transition



**Dr. Eltayb Abdellatef**, National Center for Research, Sudan

**Presentation:** *MetaGenomics-Led Harnessing of the African Orphan Cereals-Rhizosphere-Microbiota for Sustainable and Climate-Resilient Agriculture in Sub Saharan Africa.*

**Description:** This research aims to establish an eco-friendly production system for indigenous African Cereals (Sorghum and Pearl Millet) by developing **efficient** nutrient uptake cultivars/N-fixation abilities and replacing N-fertilizers with cereal-specific bio-fertilizers that contain active plant-beneficial microbes.

**Bio:** Dr Abdellatef is a scientist at the Commission for Biotechnology and Genetic Engineering, National Centre for Research, Sudan. He received a PhD from Justus-Liebig University, Giessen, Germany, in 2015 and has actively contributed to applying advanced biotechnology to meet agricultural development challenges and utilise and conserve plant genetic resources, including advanced molecular biology techniques in a wide range of crops (Barley, Maize, Sesame, and Chickpea).



**Dr. Geoffrey Onaga**, Africa Rice Center, Cote d'Ivoire

**Presentation:** *Harnessing Oryza glaberrima genomic resources for rice disease resistance in a changing climate.*

**Description:** This project contributes to climate change and environment adaptation as a strategic and thematic focus of the African Union and European Union and to developing genomic and bioinformatic resources to identify and deliver stable blast-resistant rice traits.

**Bio:** Geoffrey Onaga has a PhD in Plant Pathology and an MSc in Plant Breeding and Seed Systems. He is an ARISE fellow presently working at AfricaRice in Cote d'Ivoire. He studies plant diseases and their interaction with hosts and the environment to develop sustainable and environmentally friendly disease management solutions.



**Dr. Koffi Kibalou Palanga**, Université de Kara, Togo

**Presentation:** *Agromorphological, genetic and biochemical Characterization of three neglected legumes species grown in Togo and assessment for their adaptability to drought.*

**Description:** This project contributes to mitigating malnutrition and climate change effects through valorising three neglected and underused legume crops (Kersting's groundnut, Bambara groundnut and common beans).

**Bio:** Dr Koffi Kibalou, an ARISE fellow, obtained his PhD in Biochemistry and Molecular Biology from the Chinese Academy of Agricultural Sciences. His research interests include the identification of quantitative trait loci and the biochemical compounds associated with *Gossypium hirsutum* (Upland Cotton) resistance to *Verticillium dahliae*.



**Dr. Ahmed Amara Konate**, Higher Institute of Mines and Geology of Boké, Guinea

**Presentation:** *Multi-scale study of artisanal gold mining processes in West Africa for developing better safe practices.*

**Description:** Through this project, we have established a geospatial database for mapping groundwater vulnerability parameters, Mapped the fractures of the prefecture and land use, runoff and infiltration of pollutants, and established the vulnerability map.

**Bio:** Dr Ahmed Amara Konaté is an ARISE fellow and an Assistant Professor at the Higher Institute of Mines and Geology of Boké, Republic of Guinea. Dr Konaté's current research aims to develop new approaches to solving environmental and societal problems linked to mining activities in West African states.



### 3.2.3 Green Transition



**Dr. Ibrahim Karidio Diori**, CERMES, Niger

**Presentation:** Investigation of local food sources of prebiotics for the prevention and management of moderate acute malnutrition in Niger.

**Description:** The project has a dynamic multidisciplinary team working to acquire new technologies and local solutions to infant nutritional challenges.

**Bio:** KARIDIO D. Ibrahim is a researcher at CERMES. He holds a PhD in Biochemistry from Ege University. His research focuses on transforming traditional food habits and practices into scientific evidence as local solutions to facilitate food transition in infants at a critical period of the installation and maturation of their gut microbiota.



**Dr. Margaret Aanyu**, NARO, Uganda

**Presentation:** Adopting multi-disciplinary approaches in genetic improvements, nutritional enhancement and climate change adaptation for improved production of Nile tilapia in Uganda. **Description:** The project aims to breed indigenous Nile tilapia strains from lakes in Uganda for improved growth and adaptation to elevated temperatures and develop commercially competitive and environmentally safe feeds and feeding regimes customised to maximise the growth of the bred tilapia strains.

**Bio:** Margaret Aanyu is a Principal Research Officer at the National Agricultural Research Organisation in Uganda. She is also an Aquaculture Research Scientist and a Programme Leader for Innovations and Post-Harvest Fisheries Management. Her research aims to increase aquaculture productivity and profitability in an environmentally safe manner.



**Dr. Valera Lucena Dias**, Universidade Eduardo Mondlane, Mozambique

**Presentation:** Evaluation of Eucheumoids cultivation and exploitation in the Southern of Mozambique.

**Description:** This project aims to enhance cultivation techniques, develop new seaweed-based products, and explore innovative uses, including as supplements, pharmaceuticals, and cosmetics, and through it mitigate climate impact on the environment while improving income for communities.

**Bio:** Valeria Dias is an Assistant Professor at Eduardo Mondlane University in Mozambique. She holds a PhD in Molecular and Cellular Biology (specialising in Biotechnology), with a research focus on the biology, cultivation, and application of marine algae.



**Dr. Grace Jopaul LOUBOTA PANZOU**, Marien Ngouabi University, Republic of Congo

**Presentation:** Quantifying impacts of human-induced disturbances on biodiversity-ecosystem functioning relationships in Central Africa.

**Description:** This project builds upon the ecosystem functions framework, integrating culture and indigenous and local knowledge to understand the links between people and nature.

**Bio:** Grace Loubota is an Assistant Professor in global ecology for global change at the Denis Sassou N'guesso University and an associate researcher in forest ecology and management at the Laboratory of Biodiversity and Ecosystem and Environment Management at the Marien Ngouabi University in the Republic of Congo.

### 3.2.3 Green Transition



**Dr. Sidy Ba**, *Ecole Nationale d'Ingenieurs Abderhamane Baba Touré, Mali*

**Presentation:** *Enzymatic biotechnology for nature-based remediation of environmental pollution.* **Description:** This is the first-known crosslinked enzymes aggregates embedded within polyethersulfone hyperbranched polyethyleneimine membranes to remove HIV antiretroviral drugs in water. The novel membrane biocatalyst has a high potential for (waste)water treatment for some micropollutants.

**Bio:** Sidy Ba is an Associate Professor of Environmental Engineering. He earned a Ph.D. in Chemical Engineering at the University of Sherbrooke (Canada) after an M.Sc. in Environmental Engineering at Montana State University-Bozeman (USA). His research focuses on water pollution and Nature-Based Solutions, including using enzymes and constructed wetlands to abate micropollutants in wastewater.



**Dr. Celimphilo Mavuso**, *University of Eswatini, Eswatini*

**Presentation:** *Harnessing Plant Biotechnology Techniques for the Upliftment of Smallholder Agripreneurs in Eswatini.*

**Description:** This project utilises plant tissue culture expertise and available equipment from the University of Eswatini to produce high-quality, disease-free, and uniform planting material using in-vitro protocols.

**Bio:** Celimphilo Shakes Mavuso completed his Doctor of Philosophy in 2017 at the National Pingtung University of Science and Technology, Taiwan. He is currently employed by the University of Eswatini as a lecturer, where he heads the Department of Horticulture and is assigned to the Plant Biotechnology Laboratory.





### 3.2.4 Global Health



**Dr. Euclides Sacomboio**, *Universidade Agostino Neto, Angola*

**Presentation:** Blood group Polymorphism and Susceptibility to malaria.

**Description:** The ARISE project facilitated the establishment of a community laboratory, ensuring community access to diagnosis services.

**Bio:** Euclides holds a PhD in Health Sciences from the Pontifícia Universidade Católica do Paraná (PUCPR) and is a professor at Instituto de Ciências da Saúde / Universidade Agostinho Neto, where he works on Blood group polymorphism and susceptibility to malaria, sickle cell anaemia, and malaria.



**Dr. Hyacinthe Toe**, *Centre National de Recherche et de Formation sur le Paludisme, Burkina Faso*

**Presentation:** Ecology and behaviour of insecticide resistant *Aedes aegypti* for dengue and other emerging arboviruses control in West Africa.

**Description:** This project aims to identify arbovirus high-risk areas in Cameroon, set up sentinel sites for active surveillance, and evaluate new, innovative, and low-cost surveillance methods to establish guidelines for detection and surveillance in Cameroon.

**Bio:** Dr Hyacinthe K. TOE is a senior lecturer and an experimented field and laboratory entomologist studying malaria- and dengue-transmitting mosquitoes. He is particularly interested in testing different vector control tools in semi-field conditions and investigating the impact of resistance on mosquito ecology, behaviour, and control strategies.



**Dr Etienne Bilgo**, *Institut de Recherche en Science de Sante, Burkina Faso*

**Presentation:** Innovative Vector control strategies using entomopathogenic fungi for safe and reliable control of mosquitoes that transmit malaria and Dengue virus.

**Description:** This project has discovered new strains of microorganisms (*Metarhizium pingshaense*, *Chromobacterium anophelis*, *Microsporidia MB*, *Serratia sp.* and lines of *Aedes aegypti*) from Burkina Faso with *Wolbachia wAlbB* and *wAu*, which could be used in the vector control toolbox.

**Bio:** Etienne is a research fellow at Burkina Faso, focusing on mosquito control for malaria and dengue. He was awarded the 2020 AAAS-Newcomb Cleveland Prize for Best Early/Middle Career Researcher in 2020. He was selected in 2023 as one of the Ten Rising Stars in West Africa for impactful work.



**Dr. Ngu Abanda**, *Centre Pasteur of Cameroon, Cameroon*

**Presentation:** Improving the diagnosis and surveillance of emerging arboviruses.

**Description:** This project aims to identify high-risk areas of arbovirus in Cameroon, set up sentinel sites for active surveillance, and evaluate new, innovative, and low-cost surveillance methods to establish guidelines for detection and surveillance in Cameroon.

**Bio:** Dr. Abandu is a research scientist at Centre Pasteur du Cameroon (CPC), a public health and research institute in Cameroon. At CPC, he is the lead scientist for the arbovirus public health and research laboratory. Dr. Abanda's research focuses on the epidemiology, immunology, pathology and diagnosis of arboviruses.

### 3.2.4 Global Health



**Dr. Laty Gaye Thiam**, Institut Pasteur de Dakar, Senegal

**Presentation:** Assessing the functional contribution of genetic diversity in *Plasmodium falciparum* RH5 vaccine candidate complex in immune evasion.

**Description:** This project uses a multidisciplinary approach, combining functional immunological assays, next-generation sequencing, gene-editing, and structural prediction strategies to prioritise efficacious allelic combinations, trigger higher antibody titres, and direct the immune response to generate durable and potentially sterilising protective immunity.

**Bio:** Laty is a research associate fellow at the Institut Pasteur de Dakar, Senegal. He co-leads a research team that applies experimental genetic approaches to test the functional impact of genetic diversity on immune evasion to inform vaccine design.



**Dr Protus Arrey Tarkang**, Institute of Medical Research and Medicinal Plants Studies, Cameroon

**Presentation:** Combining metabolomics profiling of polyherbals and *Plasmodium falciparum* asexual blood stage-specificity to improve mechanistic knowledge on malaria therapeutic lead discovery.

**Description:** This project Exploits the synergistic interactions between the constituent plant extracts of selected antimalarial polyherbals to improve their therapeutic selectivity.

**Bio:** Protus Arrey Tarkang is a Cameroonian Pharmacognosist/Biochemist and an ARISE Fellow. His research aims to discover new anti-infective agents and validate novel drug targets by combining mass spectrometry-based metabolites plant profiling (metabolomics) and high-throughput screening-based susceptibility profiling of *P. falciparum* asexual blood-specific stages.



**Dr. Emmanuel Amlabu**, Ahmadu Bello University, Nigeria

**Presentation:** Development of novel antimalarial therapeutics targeting *Plasmodium falciparum* Lipid-binding proteins.

**Description:** This project is anticipated to result in drug discovery.

**Bio:** Dr. Emmanuel Amlabu's ARISE fellowship is at the Africa Centre of Excellence for Neglected Tropical Diseases and Forensic Biotechnology (ACENTDFB), Ahmadu Bello University, Zaria, Nigeria. He is interested in understanding the molecular biology of malaria parasite erythrocyte invasion for intervention-design purposes.



**Dr Dacquin Kasumba**, Institut National de Recherche Biomédicale, Democratic Republic of Congo

**Presentation:** Investigating factors associated with Ebola virus disease outcome in patients receiving monoclonal antibody therapies.

**Description:** With this project, we have setup an innovative quantitative analytical method to quantify EBOV proteins to establish intrinsic and extrinsic relationships with disease severity in patients.

**Bio:** Dr. Dacquin Kasumba is a published immunologist who studies host-microbe interactions to improve or develop mitigation approaches against infectious diseases in general and viral diseases in particular.



### 3.2.4 Global Health



**Dr. Judicaël Obame-Nkoghe**, *University of Science and Technology of Masuku, Gabon*

**Presentation:** *What are the bioecological drivers underlying the invasive success of *Aedes albopictus*, and risks of arbovirus emergence in Gabon, Central-Africa?*

**Description:** The study assesses how microhabitats' physicochemical parameters shape the invasion process of the *Aedes albopictus* mosquito species in an equatorial forested ecosystem in Gabon through a field-based microhabitat survey.

**Bio:** Judicaël Obame-Nkoghe is a medical entomologist and senior lecturer at the University of Science and Technology of Masuku. His research focuses on understanding vector systems from a one-health perspective, especially invasive vectors *Ae. albopictus*, in tropical ecosystems and their role in the emergence of zoonotic viruses in the human population.



**Dr. Mary Oboh**, *Medical Research Council Unit, The Gambia*

**Presentation:** *Unravelling the bi-directional patho-immunological effect of the human gut microbiome and malaria in children with varied clinical malaria manifestation.*

**Description:** This study will contribute to alternative malaria diagnostic tools, especially with the increasing emergence and spread of *Plasmodium falciparum* histidine-rich protein II, and in detecting other genes or regulatory elements for malaria diagnosis.

**Bio:** Mary Oboh is a molecular biologist (parasitologist) whose ultimate goal is to understand the interactions and evolution of parasitic pathogens in interactions with other organisms in the context of host immune response and how this impacts different pathological outcomes.



**Dr. Nada Abdel Aziz**, *Cairo University, Egypt*

**Presentation:** *The role of *Foxp3+* regulatory T cells in the control of schistosomiasis-induced liver fibro-granulomatous inflammation.*

**Description:** This project focuses on gender-specific differences in schistosomiasis susceptibility and the role of *Foxp3+* regulatory T cells and informs gender-specific treatment protocols, promote research into immune regulation mechanisms, and implement preventative measures to reduce re-infection and inflammation.

**Bio:** Dr. Nada Abdel Aziz obtained her PhD from University of Cape Town and is Lecturer at Cairo University, Egypt. Her research aims to advance understanding of immune regulation under helminth infection and develop therapeutic strategies, train young scientists, and conduct research to inform policy decisions and improve human health.



**Dr. George Chimowa**, *Botswana International University of Science and Technology, Botswana*

**Presentation:** *Advanced Nanomaterials for disease diagnosis using human breath.*

**Description:** This project aims to synthesise and optimise advanced carbon-based nanomaterials for specific sensors of volatile organic compounds found in Tuberculosis and Lung Cancer patients to provide a rapid and early diagnosis tool of these diseases and reduce their high mortality rate.

**Bio:** Dr George Chimowa is an ARISE fellow and Senior Lecturer at Botswana International University of Science and Technology, where he leads a group exploring the possibilities of diagnosing TB, Lung Cancer, and Asthma using human breath.

### 3.2.4 Global Health



**Dr. Getachew Tesfaye Beyene**, Armauer Hansen Research Institute, Ethiopia

**Presentation:** *Enhancing diagnosis of acute meningitis in meningitis belt resource-limited setting, Ethiopia.*

**Description:** This project assesses the comparative efficiency of CSF and blood PCR in detecting agents of meningitis to design a diagnostic test based on an easy-to-collect blood sample.

**Bio:** Getachew Tesfaye Beyene is a researcher at Armauer Hansen Research Institute. He obtained a PhD degree in Health Medical Science (Medical Microbiology) from the Faculty of Medicine, University of Oslo, in 2017. His research focuses on molecular diagnostic tools for infectious diseases – (specifically meningitis), genomics, and Antimicrobial Resistance.



**Dr. Annette Uwineza**, University of Rwanda, Rwanda

**Presentation:** *Genomic and Environmental factors of neurodevelopmental disorders in sub-Saharan African children.*

**Description:** This project will provide a rich resource of samples and phenotypic and genotypic data for neurodevelopmental disorders and offer information on environmental factors predisposing children to them in Rwanda.

**Bio:** Annette Uwineza is a medical doctor and Associate Professor of Human Genetics at the School of Medicine and Pharmacy, College of Medicine and Health Sciences at the University of Rwanda. She has dedicated her career to clinical services, academics, research, and administration, with research interests on identifying genetic aetiologies of rare diseases.



**Dr. Charles Ndawula**, National Livestock Resources Research Institute, Uganda

**Presentation:** *Development of Theileria parva-transmission blocking universal vaccines: toward control of East Coast fever cattle-disease.*

**Description:** This project aims to develop vaccines with the potential to interfere with ECF-pathogen transmission in cattle and ticks. So far, our findings illustrate the potential of developing chemo-attenuated whole-parasite ECF-cattle vaccines.

**Bio:** Charles is a Biochemist and Molecular Biologist passionate about developing novel and alternative strategies for control of the tick population and interfering with the tick-pathogen transmission to control of the re-emerging tick-borne diseases affecting livestock and humans.



**Dr. Violet Kayamba**, University of Zambia, Zambia

**Presentation:** *Gastric cancer in Zambia: A comprehensive evaluation of epidemiology and mechanisms of carcinogenesis.*

**Description:** We studied gastric cancer in relation to PD-L1, E-cadherin, melatonin and exposure to fumonisins, and using the results obtained, work is underway to modify guidelines for *H. pylori* treatment in Zambia.

**Bio:** Dr. Violet Kayamba is a specialist in Internal Medicine and Gastroenterology and is currently based at the University of Zambia in Lusaka. She is a member of several international associations and research consortia, with particular focus on gastrointestinal malignancies and *Helicobacter pylori* infection.



### 3.2.4 Global Health



**Dr. Graeme Hoddinott**, *University of Namibia, Namibia*

**Presentation:** Optimizing Care for Adolescents with Tuberculosis: A Pilot Implementation Study in Namibia.

**Description:** With this project, for the first time in Africa, socio-behavioural science is being embedded in the building of a research site for TB clinical, epidemiological, and intervention research.

**Bio:** Graeme's a Senior Lecturer in Global Health (The University of Sydney), Senior Researcher (Stellenbosch University) and ARISE Fellow (University of Namibia). His research bridges public health and socio-behavioural science to address people's health experiences, especially among children, adolescents, and their families.



**Dr. Christian Nkanga**, *University of Kinshasa, D R Congo*

**Presentation:** *Antimicrobial biogenic nanocomposite formulations from banana and plantain plants (Musa spp.).*

**Description:** This project investigated nanoparticles from banana plants for new antimicrobial/wound healing drugs with the potential of green nanotechnology to extract biologically compounds from plants.

**Bio:** Dr Nkanga is an Associate Professor of Pharmaceutical Sciences at the University of Kinshasa. He holds a Ph.D. in Chemistry/Nano Drug Delivery from Rhodes University and a postdoctoral fellowship in Nanoengineering from the University of California, San Diego. He is co-founder of DRC Young Academy and a member of the Global Young Academy.



**Dr. Sandra Jumbe**, *Millenium University, Malawi*

**Presentation:** *Implementing a Malawi Mental Health Literacy e-Curriculum (MHLeC) to students in universities within a randomised feasibility trial.*

**Description:** We have developed a Mental Health Literacy e-Curriculum (MHLeC) for first-year students in Malawi universities. This culturally relevant curriculum informs students in tertiary education settings about mental health, including how to support themselves and those around them. The young people co-designed this curriculum so that it is more relevant to their context and needs.

**Bio:** Dr Jumbe is a professional health psychologist who works as a senior lecturer in mental health research at Millennium University in Malawi.



Fig. 13: Dr. F. Boughanemi from DG RTD congratulating Prof. L. Korsten (AAS President) on a job well-done.

### 3.3 ARISE Management and Oversight Teams

#### 3.3.1 ARISE Strategic Steering Committee

The Strategic Steering Committee (SSC) provides overall strategic oversight and coordination on all aspects of the ARISE implementation (including decisions on the research priorities), in consultation with the Scientific Advisory Committee (SAC), and as advised by the ARISE Programme Team.

Membership of the SSC includes strategic stakeholders such as the European Commission and the African Union Commission,

who will act as co-chairs and representatives from relevant EU and African institutions and member states. The current SSC team (Table 1) is comprised of representatives of the African Union Commission (AUC), the European Commission (EC) Directorate General for International Partnerships (DG INTPA) and the Directorate General for Research and Innovation (DG RTD).



## Composition of the current ARISE SSC



**Ms Daniela Rofi**

**Affiliation:** (Acting)  
Head of Unit Regional  
and Multi-Country  
Programmes for Africa

**Description:**  
Represents European  
Commission DG  
International  
Partnerships (INTPA.A.2)



**Mr. Fabio di Stefano**

**Affiliation:** Head of  
Sector for Science  
Technology and  
Innovation

**Description:**  
Represents European  
Commission DG  
International  
Partnerships (INTPA.F.5)



**Ms. Nienke Buisman**

**Affiliation:** Head of  
Unit, International  
Cooperation (Africa)

**Description:**  
Represents EC  
Directorate General  
for Research and  
Innovation (RTD.H.2)



**Dr. Peggy Oti-Boateng**

**Affiliation:** AAS  
Executive Director and  
ARISE Senior Advisor

**Description:**  
Represents AAS



Participants engage in a panel discussion at the Second ARISE Scientific Conference in Hammamet, Tunisia. With the theme *Catalysing Africa's Development through Research & Innovation*, the event brought together scholars, policymakers, and thought leaders to explore the future of African R&I.

### 3.3.2 ARISE Scientific Advisory Committee

ARISE SAC Members supported by a team of African and European experts



**Prof. Ahmed Zobaa, Chair of ARISE SAC**

Ahmed Faheem Zobaa holds a PhD in Electrical Power & Machines from Cairo University and is a professor at Cairo University, University of Exeter, and Brunel University London. He specializes in power quality, renewable energy, smart grids, energy efficiency, and lighting applications. Dr. Zobaa serves as Executive Editor-in-Chief of Smart Grids and Sustainable Energy Journal and holds key editorial roles in multiple international journals. He chairs the ARISE Scientific Advisory Committee.



**Prof. Marleen Temmerman**

Prof Marleen Temmerman is Director of the Centre of Excellence in Women and Child Health at Aga Khan University East-Africa and Chair of the Department of Obstetrics and Gynaecology at Aga Khan University Hospital Nairobi, Kenya. She has enormous experience in academia and international political organisations, particularly in collaboration with United Nations organizations and, the European Union, the African Union, and national governments in Europe and Africa. Prof Temmerman was elected as a Senator to the Belgian Parliament from 2007 to 2012 as a member of the Commission on Social Affairs and Chair of the Commission on Foreign Affairs. She was Director of the Department of Reproductive Health and Research at the WHO, Geneva.



**Prof. Jean Moatti**

Jean-Paul MOATTI was a Professor of Health Economics at Aix-Marseille University (South-Eastern France) with many scientific publications on cancer, infectious diseases and health systems financing and strengthening. He has been an advisor to the Executive Director of the Global Fund to Fight AIDS, TB & Malaria. He was the CEO of the French National Research Institute on Sustainable Development (IRD) and a member of the UN panel in charge of the 2019 Global Sustainable Development Report



**Dr. Noeline Rakotoarisoa**

Noëline is a seasoned leader in ecological sciences and brings a wealth of expertise from academia, intergovernmental, and international arenas within the United Nations framework. She has a proven track record in fostering scientific international cooperation and steering programmes, especially in Africa. Noeline is a founding member of the Department of Natural Sciences of the University of Mahajanga (Madagascar), which celebrated its 40 years in October 2023.



### 3.3.2 ARISE Scientific Advisory Committee

ARISE SAC Members supported by a team of African and European experts



#### **Prof. Jean-Pierre Bourguignon**

Prof. Jean-Pierre Bourguignon is President ad interim of the European Research Council (ERC) (from 27 July 2020 until the next ERC President is selected and takes up duties). A mathematician by training, he spent his whole career as a fellow of the Centre National de la Recherche Scientifique (CNRS). He held a professor position at École polytechnique from 1986 to 2012. From 1990 to 1992, he was President of the Société Mathématique de France and President of the European Mathematical Society from 1995 to 1998. He is a former member of the Board of the EuroScience organisation (2002-2006) and served on EuroScience Open Forum (ESOF) committees since 2004.



#### **Prof. Ernest Aryeetey**

Prof. Aryeetey is the Secretary-General of the African Research Universities Alliance (ARUA) and a former Vice-Chancellor of the University of Ghana. Before he was appointed Vice-Chancellor, he was a Senior Fellow and Director of the Africa Growth Initiative at the Brookings Institution, Washington, D.C. He was also Director of the Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana, Legon for the period February 2003 – January 2010. Read more at: [here](#).



#### **Prof. Daniel Nahon**

Prof. Daniel Nahon is a world-renowned soil specialist with great experience in Africa. He is founder and former director of CEREGE (European Centre for Research and Teaching in Environmental Geoscience) and founder of a national TECHNOPOLE on environmental sciences & risks.

Prof. Daniel Nahon brings to ARISE many years of experience in various high-level function, among others: President of the Center for International Cooperation in Agronomic Research for Development (CIRAD); advisor to the Minister of National Education, Research and Technology; Director General of Research (MENRT); director of the Environmental Geosciences Laboratory of the University of Aix-Marseille; Vice-president of the Major Program of the National Institute of Sciences of the Universe (INSU-CNRS) "Dynamics and Global Balance of the Earth"; President of the National University Committee.



Fig. 14: Some of the SAC and Technical Panel members for ARISE attending the ARISE event in Tunisia

### 3.3.3 ARISE Technical Panel Members

ARISE is supported by a pool of hundreds of experts from Africa and beyond who provide technical reviews and expert input into the programme processes. Below is a Technical Panel Members who joined the SAC members to form the ARISE grantee selection committee.

### 3.3.3 ARISE Technical Panel Members



#### **Prof. Hamisi Malebo, National Commission for UNESCO, Tanzania**

Prof. Hamisi M. Malebo has academic background in Chemistry and Biology. He received Diploma in Education (Chemistry & Biology) from Mkwawa Teachers College, Iringa, Tanzania in 1990; Bachelor of Science with Education (Chemistry & Biology) from the University of Dar es Salaam, Tanzania in 1996; Master of Science (Natural Products Chemistry) from the University of Dar es Salaam, Tanzania in 2000; and PhD (Medicinal Phytochemistry) by sandwich from Kenyatta University, Kenya and University of Basel, Switzerland in 2009. Prof. Malebo also holds International Certificate in Malaria Control from the Institute of Parasitic Diseases in Shanghai, China in 2002, Advanced Certificate in Translational Bioinformatics for Drug Discovery and Development from Pasteur Institute, Tunis, Tunisia in 2010; Advanced Certificate in Genetic Resources and Intellectual Property Rights from the University of Uppsala and SIDA in Uppsala, Sweden and Bangkok, Thailand in 2012/2013.



#### **Prof. Christopher Oludhe, University of Nairobi**

Prof. Christopher Oludhe is an Associate Professor at the University of Nairobi's Department of Earth and Climate Sciences and the Institute for Climate Change and Adaptation. He is an expert in meteorology, renewable energy resources, and wind energy assessment studies. He is a former recipient of three DAAD scholarships and is deeply involved in teaching, research, and supervision at the University of Nairobi. He has extensive experience in climate change-related activities and has coordinated numerous capacity-building training workshops for the Greater Horn of Africa (GHA) and the SADC region. In 2015, Prof. Oludhe was pivotal in developing the PAUWES research agenda in Tlemcen, Algeria, focusing on Water, Energy, Climate Change, and Nexus Research, funded by BMBF.



### 3.3.3 ARISE Technical Panel Members



**Prof. Chris Nwani, University of Nigeria Nsukka, Nigeria**

Prof C.D Nwani was awarded TWAS-UNESCO fellowship in 2011 as a visiting scholar for 3 years at the Chinese Academy of Science, Institute of Hydrobiology Hubei, China. In 2017, Professor Nwani was awarded the INTRA-ACP Mobility Scholarship – TRECCAfrica as a visiting scholar at the Institute of Climate Change, Mekelle University Ethiopia. In 2018, he won the Elsevier Foundation scholarship as a visiting Professor at Mekelle University Ethiopia.



**Prof Martin M Nyaga, University of the Free State, South Africa**

Martin Nyaga is an associate professor and head of next-generation sequencing (UFS-NGS) at the University of the Free State, designated the WHO Collaborating Center for Vaccine-Preventable Diseases Surveillance and Pathogen Genomics. Based in the Division of Medical Virology, his research focuses on genomics in Vaccine-Preventable Diseases (VPD), specifically conducting pre- and post-vaccination surveillance of enteric and respiratory viruses at the whole genome level. He leads projects funded by the Bill and Melinda Gates Foundation, including studies on the long-term impacts of the Rotarix vaccine and the Sequencing of the Antigenic Cartography of Enteric Viruses (SACEV) across five African countries. His studies on metagenomics of the gut and respiratory virome also explore their roles in childhood development and potential links to metabolic disorders.



**Prof. David Onyango, Maseno University, Kenya**

David Miruka Onyango (PhD) is an Associate Professor of Cell, Molecular Microbiology, and Biotechnology at Maseno University's Department of Zoology. With over 24 years of research experience, he specialises in molecular epidemiology, antimicrobial drug resistance of gastroenteritis microbes in humans and animals, molecular mechanisms, and gene regulation. Currently serving as the Acting Director of Science, Technology, and Innovation at Maseno University, he coordinates Cell and Molecular Biology activities within the department. Prof. Onyango has successfully secured competitive research grants that facilitated the establishment of a state-of-the-art Molecular Biology laboratory at his institution. His expertise includes project development and management, senior leadership development, and resource mobilisation.



**Prof. Cherif Matta, Mount Saint Vincent University, Canada**

Chérif F. Matta (B.Pharm.Sci., PhD, HDR, FRSA, FRSB, FlinstP, FRSC, FAAS, FAAAS) is a distinguished Professor and Department Head at Mount Saint Vincent University, also holding Honorary Professorships at Dalhousie, Laval, and Saint Mary's Universities. His research spans theoretical and computational chemistry, mitochondrial biophysics, and the discovery of electron localisation-delocalisation matrices and hydrogen-hydrogen bonding. With over 200 publications and four books cited over 9,000 times, he has received numerous national and international awards, including fellowships in prestigious scientific societies. He has chaired the Canadian Research Chairs, served on Tri-Council panels, and contributes to quantum crystallography and Canadian crystallography initiatives.

### 3.3.3 ARISE Technical Panel Members



**Prof. Adesola Ajayi, First Technical University, Ibadan, Nigeria**

Adesola Ajayi is a university professor and an experienced agricultural scientist and higher education manager with a demonstrated history of working in the agricultural research for development domain in the last 30 years. He is an expert in seed supply system, seed technology, agricultural value chain analysis, agricultural enterprise development, plant genetic resources conservation, climate-smart agriculture and mentorship of early-career researchers. He belongs to a rich and extensive network of experts in the agricultural research for development fraternity. I regularly facilitate agricultural policy dialogues and national stakeholders' meetings on seed sector development, improving crop productivity and increasing farmers' income.



**Prof. Charles Muyanja, Makerere University, Uganda**

Charles Muyanja is a full professor at the Department of Food Technology and Nutrition, Makerere University, Uganda. He has expertise in Food Technology, Food safety, Clusters and innovation systems, designing, planning and facilitating adult learning process, Personal Mastery and soft skills. Muyanja has over 30 years of experience in teaching, research and consultancy, working in the area of food science and technology, food safety, food value chain development, food systems and nutrition.

More details of the ARISE teams are provided at <https://aasciences.africa/Programmes/ARISE>







Fig. 15: Some of the AAS ARISE team members attending the ARISE event in Tunisia. From Left: Dorcas, Rowland, Linnus, Obed, Peggy, Boniface, Nicholas, and Patterson.

### 3.3.4 ARISE Programme Team at the AAS

#### 3.3.4 Core ARISE Programme Team



#### **Dr. Peggy Oti-Boateng, Executive Director, AAS**

Dr. Peggy Oti-Boateng became the Executive Director of the African Academy of Sciences in 2022, providing leadership and strategic direction to enable the Academy to achieve its vision, mission, and objectives. Previously, Dr. Oti-Boateng held several leadership positions at UNESCO, including Senior Science Advisor for Natural Sciences and the Director of the Division of Science Policy and Capacity Building in the Natural Sciences Sector in Paris, France. She was responsible for programmes on science policy and capacity building in basic sciences and engineering at the multisectoral UNESCO regional office in Harare, Zimbabwe. She was also a regional thematic adviser for Africa for formulating policies and capacity building in science, technology, innovation and engineering. Dr. Oti-Boateng holds a PhD in Food Science and Technology from the University of Adelaide in Australia and a BSc, specialising in Biochemistry, obtained from the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana.



#### **Dr. Obed Ogega, Programmes Manager, AAS**

Obed is a climate scientist and program management specialist with a focus on research capacity strengthening for development in response to Africa's developmental needs and priorities. In his role as Programmes Manager, Obed leads a team at the AAS that is working towards creating a critical mass of emerging, and established, research leaders that will deliver the 'Africa We Want' as envisioned in Africa's Agenda 2063. Before joining the AAS, he worked with CORDIO East Africa and the Embassy of Sweden in Nairobi in various capacities. He holds a PhD in Environmental Studies (Climate Change & Sustainability) and is well-published in research capacity strengthening as well as climate science and its application to various sectors.

### 3.3.4 ARISE Programme Team at the AAS

#### 3.3.4 Core ARISE Programme Team



**Dr. Boniface Ushie, Programmes Officer, AAS**

Dr. Boniface Ushie is a seasoned social science researcher with over 18 years of experience in Sexual, Reproductive, Maternal, Newborn, Child, and Adolescent Health. He leads multinational research projects, providing technical guidance and advancing scholarly discourse. His expertise includes programme implementation, methodological development, and integrating research findings into strategic frameworks to advance global health knowledge and research initiatives.



**Dr. Rowland Opisa, Programme Officer, Monitoring, Evaluation, & Learning, AAS**

Rowland is a programme monitoring and evaluation specialist, with considerable experience in programme design and implementation and has led several programmes in Eastern Africa as Head of Projects, MEL Lead, Regional MEAL Manager, Research Manager, and MEAL Coordinator. Rowland has a BSc in Medical Microbiology, an MSc in Computing and Information Systems, an MA and a DPhil in Project Planning and Management.



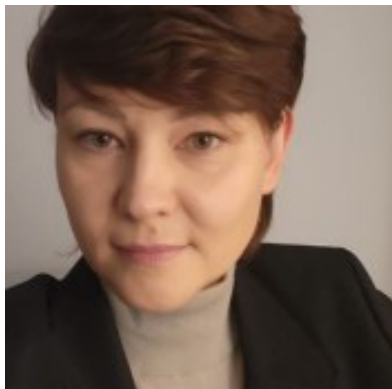
**Shylee Mbuchucha, Communications Officer, AAS**

Shylee Mbuchucha is the Communications Officer at the African Academy of Sciences (AAS) headquartered in Nairobi, Kenya. She focuses on showcasing African science through storytelling and developing knowledge products for non-scientific audiences. She also coordinates science communication training for early-career researchers at the AAS and works on increasing the visibility of the AAS through content development, digital marketing, media engagement and branding.

**Other staff members, including Ms Dorcas Waithaka, Mr Nicholas Kiprop, Mr Linnus Ngine and Mr Patterson Siema supported the team.**



### 3.3.5 ARISE Programme Team at the European Commission



**Inga NAVARDAUSKIENE**

Ms Inga works at the European Commission – International Partnerships Directorate-General (INTPA) – focusing on regional and multi-country programmes for Sub-Saharan Africa in the fields of Science, Technology, Innovation and Space. Before this, she worked on Global Gateway, Team Europe, joint implementation, and coordination with EU Member States on promoting the development of effectiveness principles. She was also the head of cooperation at the EU delegation in Israel. She has over 25 years of policy, legal and financial experience.



**Jean-Michel Sers**

Jean-Michel Sers is graduated in International and European law and business administration. He is currently Policy Officer at the European Commission – Directorate General for International Partnerships (DG INTPA), in charge of strategic orientations and policy formulation of the EU development cooperation in science, technology and innovation.







Fig. 16: Some of the host team members from Institut Pasteur de Tunis, led by Dr. Emna Harigua (right) and being appreciated by Dr. Peggy Oti-Boateng, AAS Executive Director (second right)

### 3.4. Local Host Team in Tunisia: l'Institut Pasteur de Tunis Team



**Prof. Samia Menif, DG, Institut Pasteur de Tunis**

She is the Director General of the Pasteur Institute of Tunis, bringing over two decades of expertise in Hematology Biology and a strong commitment to advancing medical science. Her academic journey began with a medical degree from the University of Tunis in 1997, followed by a Master's degree in Genetics and Molecular Biology from the University of Tunis El Manar and the University of Montpellier, France, in 2001. Since joining the Pasteur Institute in 2002, she has focused on the molecular diagnosis and monitoring of leukemia, particularly Chronic Myeloid Leukemia (CML) and resistance mechanisms to TKIs. As the Head of the Hematology Department and a key member of the Molecular and Cellular Hematology Research Laboratory, she has led pioneering research that has significantly improved patient care in North Africa. Her leadership at the Pasteur Institute, where she has directed the Hematology Laboratory since 2005, reflects her passion for fostering innovation and advancing strategic research initiatives in hematology, with a commitment to improving healthcare outcomes through molecular medicine.



**Dr. Emna Harigua, ARISE Fellow, Institut Pasteur de Tunis**

Dr. Emna Harigua is a Bioinformatician with a multi-disciplinary profile. She is an Analytical Chemistry engineer with a master's in information processing and a PhD in Structural Bioinformatics (Institut Pasteur Paris). She is an assistant professor at Institut Pasteur de Tunis, leading a team developing Bioinformatics and Artificial Intelligence for Biomedical research applications.



### 3.4. Local Host Team in Tunisia: l'Institut Pasteur de Tunis Team



**Rafeh Oualha**

Dr. Rafeh Oualha is a researcher at Institut Pasteur de Tunis, specializing in cell biology and immunology under the ARISE BIND project. She focuses on infectious diseases and computer-aided drug discovery. In 2023, she was elected President of the Scientific Symposium Committee.



**Dr. Oussama Souiai**

Dr. Souiai, with a PhD in Bioinformatics, is an assistant professor at the University of Tunis El Manar and conducts research at Institut Pasteur de Tunis. He specialises in Omics data analysis, focusing on host-pathogen interactions and various pathologies.



**Ons Masmoudi**

Ms. Ons Masmoudi, a PhD student at Tunisia Polytechnic School and Institut Pasteur de Tunis, joined the BIND project in 2024. She holds a Bachelor's in Medical Biology and a Master's in Bioinformatics, specialising in AI for drug discovery against infectious diseases.



**Ms. Sonia Abbes**

Ms. Sonia Abbes, a team member of the BIND project under the ARISE programme. She holds a Bachelor's and Master's in Biochemistry and Microbiology. She manages project administration and conducts literature reviews on drug and molecule toxicity.



**Nesrine Fekih-Romdhane**

Ms. Nesrine Fekih-Romdhane is an AI Engineer on the BIND project under the ARISE programme. She specialises in data analysis and statistics. With a background in Data Science from the Higher School of Statistics and Information Analysis of Tunis, she develops and optimises machine learning pipelines for drug discovery.



Fig. 17: Some of the ARISE Fellows having a light moment during the closing ceremony

## 4. Closing Remarks and Next Steps

The ARISE event aimed at convening policymakers, thought leaders, scholars, and ARISE Fellows to showcase advances and discuss challenges and opportunities for enhancing investments and partnerships to facilitate research and innovation for development. The meeting convened over 100 participants physically in Tunisia with at least 450 others joining the meeting virtually. Through a series of keynotes,

presentations, roundtable discussions, and question-and-answer sessions with the audience, the meeting covered a wide range of topics, including scientific cooperation at the bilateral and multilateral levels, scientific and research integrity, equitable partnerships, science and policy nexus, and funding for African research and innovation.

**100+**

Number of participants convened physically in Tunisia during the meeting

**450+**

Number of participants who joined the forum virtually



Keynote sessions at the ARISE High-Level Scientific Convening, where experts shared insights on enhancing investments in research and innovation across Africa.





Participants at the ARISE High-Level Scientific Convening engaging in discussions on advancing Africa's research and innovation landscape.

## Key points from the conference

**1 ARISE provides unparalleled opportunities for African scientists:** For example, the ARISE fellow from Zimbabwe was already one foot out of Africa on his way to Germany when ARISE saved the situation and kept his talent in Africa. This is a testimony to the commitment to nurture and retain African talent on the continent.

**2 A platform for partnerships:** We heard in this conference the importance of partnerships, whether bilateral between countries, regional cooperation between the African Union and European Commission, or between AAS, AU, and EC. We have also heard about researcher-to-researcher partnerships. We urge you as scientists not to work in silos but to partner among yourselves, as collaboration is the bedrock of innovation and progress. We must also have a holistic approach to our research and innovation endeavours.

**3 Institutional infrastructure capitalisation/Equipment:** The ARISE programme is enabling African research to thrive by providing high-quality, state of the art equipment to ARISE Fellows. Dr. Edem Mahu from Ghana, Dr Gift Mehlana from Zimbabwe, and Dr Bridget Mutuma from Kenya, among others, have equipped their labs with new equipment. We encourage ARISE Fellows to work together and share the equipment you have procured. We also encourage you to make good plans for maintenance and replacement to ensure longevity and efficiency.

**4 Capacity building of technicians:** Scientists need technicians to make science possible. Not everyone can hold a PhD, and we do not all need PhDs to be scientists or contribute to the scientific enterprise. We need to work on the capacity of technicians and with institutions to translate science into products for commercialization.

**5 Investment in science by African governments through science granting councils:** While we receive and appreciate funding from our international partners, we encourage our science granting councils to contribute a percentage in counterpart funding to support our scientists.

**6 Employment opportunities created:** We have heard about the positive impact the ARISE programme has had on job creation. In Niger, the ARISE grantee has set up two satellite institutes as offshoot of the ARISE grant. In each of these satellite institutes, people are employed. All 47 ARISE grantees have employed people and are training large numbers of future scientists.

A post-event survey showed an overall satisfaction rating of 90% among the participants surveyed. The ARISE programme received more visibility across Africa, Europe, and beyond; the work done by ARISE Fellows was celebrated and given more visibility; and new relationships and partnerships were forged while existing networks and relationships were solidified. The next phase of ARISE implementation aims towards consolidating the gains made while forging more partnerships to achieve even greater exploits in advancing research and innovation in Africa and beyond.

## ARISE Partners



### 4.1 African Union

The African Union supports ARISE under the auspices of the African Union (AU)–European Union (EU) High-level Policy Dialogue on Science, Technology, and Innovation. Working with the AU's Commission for Education, Science, Technology, and Innovation (ESTI) and the AU Development Agency (AUDA-NEPAD), the AAS, through ARISE and other programmes, contributes to the promotion of AU's work in education and STI development.



### Funded by the European Union

### 4.2 European Union

ARISE is mainly funded by the European Union (EU), with an initial investment of €25 million from the EU's International Partnerships division. ARISE is part of the EU's [Global Gateway Africa – Europe Investment Package](#) which aims to mobilise up to €150 billion in investments between 2021 and 2027 for Africa to support a strong, inclusive, green and digital recovery and transformation. Global Gateway Africa supports the [Joint Vision for 2030](#) agreed by the leaders of the African Union (AU) and the European Union (EU) at the 6th EU-AU Summit on 17 and 18 February 2022 in Brussels.



### 4.3 Carnegie Corporation of New York

The Carnegie Corporation of New York, through its [Higher Education and Research in Africa](#) program, co-funds the ARISE pilot programme with an initial support of USD 540,000. This amount is part of a \$2 million support awarded to the AAS in 2017 to pilot a programme, [AESA-RISE Postdoctoral Fellowship Programme](#), to support postdoctoral fellows in Africa. The first part of the Corporation's funding supported seven postdoctoral fellows between 2018–2022 under the AESA-RISE Postdoctoral Fellowship Programme. The second part of the funding supports two Fellows under ARISE – which is an offshoot and successor of the AESA-RISE Postdoctoral Fellowship Programme.



# **Appendices**

## **Event Programme**



The African  
Academy of Sciences

# The African Research Initiative for Scientific Excellence (ARISE)

## High-Level Scientific Convening

**Theme:**  
Catalysing  
Africa's  
Development  
through  
Research &  
Innovation

**4 - 6**

**June 2024**

**Venue: Radisson Blu  
Resort & Thalasso,  
Hammamet, Tunisia**



Funded by  
the European Union



African  
Union







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## Welcome Note

Esteemed Guests, Colleagues, and Partners in Progress,

On behalf of the African Academy of Sciences, I extend a most enthusiastic welcome to you all. It's with profound appreciation that we gather for this pivotal meeting, convened through one of the AAS' current flagship programmes: the African Research Initiative for Scientific Excellence (ARISE).

We offer our deepest gratitude to our esteemed ARISE partners, the African Union, the **European Union** and the **Carnegie Corporation of New York**. Their unwavering commitment to igniting scientific excellence across Africa is truly inspiring.

The ARISE program stands as a cornerstone for African researchers. It recognizes their crucial role as architects of the continent's scientific future. ARISE bridges a critical gap by empowering African researchers with the resources and opportunities they need to thrive.

This gathering embodies ARISE's very essence – a vibrant platform for cross-continental collaboration. By fostering knowledge exchange and partnerships, we can bridge the divide between groundbreaking research and its practical application. This vital convergence between scientific policy and the transformation of research into tangible solutions lies at the heart of addressing Africa's unique challenges and propelling sustainable development.

I am confident that your participation will be instrumental. The diverse perspectives and expertise within this room promise an enriching dialogue and a truly momentous ARISE meeting. We eagerly anticipate your contributions and look forward to a productive exchange that paves the way for a more vibrant and impactful African scientific landscape.

### Dr. Peggy Oti-Boateng

Executive Director

The African Academy of Sciences





## Background Information

The African Research Initiative for Scientific Excellence (ARISE) is an innovative Research and Innovation (R&I) support programme implemented by the AAS with support from the African Union Commission (AUC) and the European Commission (EC). The programme is mainly funded by the European Union, with some co-funding from the Carnegie Corporation of New York. Founded on the AU-EU High Level Policy Dialogue on Science, Technology, and Innovation, ARISE provides a vibrant platform and pathway for R&I exchanges within Africa and beyond, in contribution to sustainable and inclusive development, economic growth, and job creation. Launched in December 2020, the current €25.5 million pilot phase of ARISE – mainly funded by the European Union with additional support from the Carnegie Corporation of New York – supports nearly 600 early- to mid-career researchers across Africa, led by 47 principal investigators (ARISE Fellows), hosted in 38 African countries. More information about ARISE is available at <https://bit.ly/3CRcQta>.

From 4-6 June 2024, the AAS, in partnership with the Institut Pasteur de Tunis, shall convene a high-level Scientific event

at <https://aasciences.africa/Programmes/ARISE>

in **Hammamet, Tunisia**. Through a series of scientific sessions, panel discussions, keynote addresses, poster presentations, and research spotlight talks, the event will convene policy makers, thought leaders, scholars, and ARISE Fellows to showcase and discuss advances, challenges, and opportunities for enhancing investments and partnerships to facilitate research and innovation for development.

At the end of the conference, we hope to have a vibrant community of ARISE scholars committed to brokering connections that enhance their career progression while accelerating their contribution to the transformation of lives in Africa through science. Additionally, key messages from the event in Tunisia shall be presented at the 9<sup>th</sup> edition of the [Science Summit](#) being organised at the margins of the 79<sup>th</sup> UN General Assembly in September 2024. As the world convenes under the auspices of the [Summit of the Future](#), we hope that insights from ARISE will contribute to solutions aimed at accelerating efforts made by the world to meet existing international commitments and take concrete steps to respond to emerging challenges and opportunities.

## TUESDAY, 4 JUNE 2024

09:00 – 10:30

**Session 1a: Opening Ceremony****Master of Ceremony:** Mr. Hatem Karoui, Tunisia (all sessions)**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms Dorcas Waithaka, AAS**Welcome Remarks**

- Dr. Emna Harigua, ARISE Fellow, Institut Pasteur de Tunis
- Dr. Peggy Oti-Boateng, Executive Director, AAS
- Mr. Marcus Cornaro, Head of Delegation, EU Delegation to Tunisia
- H.E. Prof. Mohammed Belhocine, Commissioner, ESTI, African Union Commission (video)
- Prof. Samia Menif, DG, Institut Pasteur de Tunis
- Prof. Ali Mrabet, Minister for Health, Tunisia
- Prof. Moncef Boukthir, Minister for Higher Education and Scientific Research, Tunisia

**Session 1b: Global and African Imperatives on Cooperation in Research and Innovation****Moderator:** Prof. Rajaa Cherkaoui, AAS Vice President for North Africa**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms Dorcas Waithaka, AAS**Keynotes:**

- Prof. Lise Korsten, President, AAS
- Helmi Mardassi, Director of Horizon Europe programme at the Min. of Higher Education & Research, Tunisia
- Prof. Frederick Ato Armah, Director of Research and Programmes, Association of African Universities
- Prof. Quarraisha Abdool Karim, President, The World Academy of Sciences (virtual)
- Prof. Lidia Arthur Brito, Assistant Director-General for Natural Sciences, UNESCO (video)

10:30 – 11:00

Break &amp; Photo op

11:00 – 13:00

**Session 2a: Capacities for Research & Innovation****Moderator:** Prof. Stephen Agong, Treasurer, AAS**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms Dorcas Waithaka, AAS**Opening Keynote:** Research and Innovation for Social Justice*Prof. Shaukat Abdulrazak, Director for the Africa Division, International Atomic Energy Agency, Austria (Virtual)***High-Level Roundtable Conversation:** Role of Leadership in Catalysing Research & Innovation for Development

- Mr. Noomane Fehri, former Minister for ICT, Tunisia
- Dr. Partson Chikudza, Director, Research Council of Zimbabwe, Zimbabwe
- Dr. Vanessa McBride, Science Director, International Science Council, France (Virtual)
- Dr. Laurent Bochereau, EU Science Counsellor to the AU
- Amb. Prof. Bitange Ndemo, Professor of Entrepreneurship and Kenya's Ambassador to Belgium and EU, Belgium (virtual)
- Prof. Maria Leptin, European Research Council (virtual)
- Open discussion and audience questions

13:00 – 14:00

Lunch Break



## TUESDAY, 4 JUNE 2024

14:00 – 15:15

### Session 2b: Capacities for Research & Innovation

**Introductory Remarks:** The African Research Initiative for Scientific Excellence (ARISE)

- Dr. Peggy Oti-Boateng, Executive Director, AAS
- Dr. Obed Ogega, Programmes Manager, AAS
- Mr. Jean-Michel Sers, DG INTPA, European Commission

#### Research Spotlight Presentations – part 1

**Moderator:** Prof. Hamisi Malebo, National Commission for UNESCO, Tanzania

**Rapporteurs:** Ms. Ons Masmoudi, IPT & Dr. Rowland Opisa, AAS

- Light Scattering, Quantum Information & Quantum Simulation by Cold Atoms: *Dr. Mohamed T. Rouabah, Freres Mentouri University Constantine 1*
- Quantum Simulations and Energy Materials: *Dr. Katawoura Beltako, Université de Lomé, Togo*
- Development of efficient and robust mxene based photocatalysts for production of solar fuel (hydrogen) via photocatalytic water splitting: *Dr. Hafeez Yusuf Hafeez, Federal University Dutse, Nigeria*
- Earthquakes Monitoring and hazard evaluation in Madagascar: *Dr Hoby Razafindrakoto, Institut et Observatoire de Géophysique d'Antananarivo, Madagascar*

#### Q&A (20 Mins)

15:15 – 15:45

Break

15:45 – 17:00

### Session 2c: Capacities for Research & Innovation

**Moderator:** Prof. Hamisi Malebo, National Commission for UNESCO, Tanzania

**Rapporteurs:** Ms. Ons Masmoudi, IPT & Dr. Rowland Opisa, AAS

#### Research Spotlight Presentations – Part 2

- Development of an Electrochemical Process for Recovery of Nutrients from Liquid Waste Resources: *Dr. Samuel Bunani, University of Burundi, Burundi*
- From plastic waste to low-cost carbon nanoreactors for use in monitoring environmental pollutants and nanoplastics: *Dr. Bridget Mutuma, University of Nairobi, Kenya*
- Water stable porous Metal Organic Frameworks as host materials for biological catalysts in carbon dioxide conversion to methanol: *Dr. Gift Mehlana, Midlands State University, Zimbabwe*
- Sustainable Water Filtration Using Cellulose Based Membranes Derived from Local Biomass: *Dr. Ngonye Keroletswa, Botswana Institute for Technology Research and Innovation, Botswana*

#### Q&A

17:30 – 21:00

- Poster presentations/Talent Exhibitions (1 Hour 30 Mins)
- Tunisian Culture Experience (Traditional band from Tunisia)
- Networking dinner

WEDNESDAY, 5 JUNE 2024

09:00 – 11:00

**Session 3: Research and innovation for the SDGs****Moderator:** Dr. Obed Ogega, Programmes Manager, AAS**Rapporteurs:** Dr. Rafeh Oualha, IPT & Dr. Boniface Ushie, AAS**Opening Keynote:** the role of Research and Innovation in the realisation of Africa's Agenda 2063 – the "Africa We Want"*Prof. Jean Koulidiati, Rector, Pan African University (virtual)***Roundtable discussion:** Strengthening the Ecosystem for Development, Use, and Scale of Innovation in Africa

Panellists: Part 1

- Mr. Shaofeng Hu, Director, Division of Science Policy and Basic Sciences, UNESCO, France
- Ms. Brigitte Decadt, Senior Advisor for International Science and Technology Cooperation, Belgian Federal Science Policy Office, Belgium
- Dr. Mohamed Ali Marouani, Institut de Recherche pour le Développement (IRD) Representative in Tunisia
- Mr. Fabrice Rousseau, Counsellor for Cultural Affairs and Cooperation at the French Embassy in Tunis
- Dr. Wei Liu, Coordinator, Sustainable Development Officer, UN Inter-agency Task Team on Science, Technology and Innovation for the SDGs
- Mr. Lukovi Seke, Programme Officer for STI, AUDA-NEPAD
- Dr. Victor Konde, Scientific Affairs Officer, TCCNRMD- Green Economy Innovations & Technologies Section, UNECA

**Open discussion and audience questions****Panellists: Part 2**

- Dr. Fadila Boughanemi, DG RTD, European Commission
- Ms. Eudy Mabuza, South Africa's Science & Innovation Representative to the EU
- Dr. Eliud Musotsi, Ag. Deputy Director, Research Grants, National Research Fund, Kenya
- Ms. Atridah Mulonga, Head of Research and Grants, National Science and Technology Council of Zambia
- Dr. Cephas Mensah, Director, Ministry of Environment, Science, Technology and Innovation, Ghana
- Open discussion and audience questions

11:00 – 11:15

Break



## WEDNESDAY, 5 JUNE 2024

11:15 – 12:45

### Session 4: Technology and Innovation

**Moderator:** Prof. Ahmed Zobaa, Chair ARISE SAC

**Rapporteurs:** Ms. Ons Masmoudi, IPT & Dr. Rowland Opisa, AAS

#### Research Spotlight Presentations

- Development of a secure 5G and beyond digital health test bed for modelling telemedicine systems, mHealth applications and smart hospitals: *Dr. Bessie Malila, University of Cape Town, S. Africa*
- Bioinformatics and artificial Intelligence for infectious and Neglected Diseases drug discovery research Platform: *Dr. Emna Harigua, Institut Pasteur de Tunis, Tunisia*
- Developing mobile application for formulating cost-efficient balanced and climate sensitive rations for improving livelihood of smallholder cattle farmers in West-Africa: *Dr. Alassan Assani Seidou, University of Parakou, Benin*
- Broadband Internet Access for Unconnected and Under-connected areas: *Dr. Hajar El Hammouti, Université Mohammed VI Polytechnique, Morocco*
- Solar-biogas hybrid dryer: an energy efficient and environmentally friendly technology for drying agricultural products: *Dr. Thomas Kivevele, Nelson Mandela African Institute of Science and Technology, Tanzania*
- Smart solutions for water and agriculture to face the Climate Change Crisis in Cabo Verde: *Dr. Sonia Semedo, Universidade de Cabo Verde, Cape Verde*

#### Q&A (20 Mins)

12:45 – 13:30

Lunch Break

EVENT PROGRAMME

## WEDNESDAY, 5 JUNE 2024

13:30 – 15:15

**Session 5a: Green Transition****Moderator:** Prof. Christopher Oludhe, University of Nairobi**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms. Dorcas Waithaka, AAS**Keynote 1:** Connecting climate knowledge with the users: Insights from the World Meteorological Organisation (WMO) Regional Office for Africa*Dr. Ernest Afiesimama, WMO Regional Officer for Africa***Keynote 2:** Connecting climate knowledge with the users: Insights from EU's Joint Programming Initiative for Climate (JPI Climate)*Dr. Rafiq Hamdi, Researcher, Royal Meteorological Institute of Belgium***Research Spotlight Presentations – part 1**

- Oyster Shell Models for Hindcasting Holocene Environmental Conditions in Equatorial Atlantic Coastal Waters of Africa: *Dr Edem Mahu, University of Ghana, Ghana*
- Impact of climate change on wetlands from the Lake Chad basin and its consequences on groundwater recharge: *Dr Abdallah MAHAMAT NOUR, University of N'Djamena, Chad*
- Future Landscape Optimisation for peri-Urban Resilience and ecoSystem Health: *Dr Jessica Thorn, University of Namibia, Namibia*
- An experimental approach to optimizing policy for scaling-up climate-smart agriculture in Africa: *Dr. Sarobidy Rakotonarivo, University of Antananarivo, Madagascar*
- MetaGenomics-Led Harnessing of the African Orphan Cereals-Rhizosphere-Microbiota for Sustainable and Climate-Resilient Agriculture in Sub Saharan Africa: *Dr. Eltayb Abdellatef, National Center for Research, Sudan*
- Harnessing Oryza glaberrima genomic resources for rice disease resistance in a changing climate: *Dr. Geoffrey Onaga, Africa Rice Center, Cote d'Ivoire*
- Agromorphological, genetic and biochemical Characterization of three neglected legumes species grown in Togo and assessment for their adaptability to drought: *Dr. Koffi Kibalou Palanga, Université de Kara, Togo*

**Q&A (20 Mins)**

15:15 – 15:30

Break



WEDNESDAY, 5 JUNE 2024

15:30 – 17:00

### Session 5b: Green Transition

**Moderator:** Prof. Chris Nwani, University of Nigeria Nsukka, Nigeria

**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms. Dorcas Waithaka, AAS

**Keynote 3:** How to transform Africa's food system

*Dr. Obed Ogega, Climate Scientist & Programmes Manager, AAS*

### Research Spotlight Presentations – part 2

- Multi-scale study of artisanal gold mining processes in West Africa for developing better safe practices: *Dr. Ahmed Amara Konate, Higher Institute of Mines and Geology of Boké, Guinea*
- Investigation of local food sources of prebiotics for the prevention and management of moderate acute malnutrition in Niger: *Dr. Ibrahim Karidio Dior, CERMES, Niger*
- Adopting multi-disciplinary approaches in genetic improvements, nutritional enhancement and climate change adaptation for improved production of Nile tilapia in Uganda: *Dr. Margaret Aanyu, NARO, Uganda*
- Evaluation of Eucheumoids cultivation and exploitation in the Southern of Mozambique: *Dr. Valera Lucena Dias, Universidade Eduardo Mondlane, Mozambique*
- Quantifying impacts of human-induced disturbances on biodiversity–ecosystem functioning relationships in Central Africa: *Dr. Grace J.L. Panzou, Marien Ngouabi University, Republic of Congo*
- Enzymatic biotechnology for nature-based remediation of environmental pollution: *Dr. Sidy Ba, Ecole Nationale d'Ingenieurs Abderhamane Baba Touré, Mali*
- Harnessing Plant Biotechnology Techniques for the Upliftment of Smallholder Agripreneurs in Eswatini: *Dr. Celimphilo Mavuso, University of Eswatini, Eswatini*

**Q&A (20 Mins)**

EVENT PROGRAMME

## THURSDAY, 6 JUNE 2024

09:00 – 10:30

**Session 6a: Research & Innovation for Global Health****Moderator:** Prof Martin M Nyaga, University of the Free State, South Africa**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms. Dorcas Waithaka, AAS**Keynote Presentation:** Grand Challenges and Opportunities in Global Health: Perspectives from the AU-EU Policy Study on Health

Prof. Marleen Temmerman, Aga Khan University, Kenya

**Research Spotlight Presentations: Part 1**

- Blood group Polymorphism and Susceptibility to malaria: *Dr. Euclides Sacomboio, Universidade Agostino Neto, Angola;*
- Ecology and behaviour of insecticide resistant *Aedes aegypti* for dengue and other emerging arboviruses control in West Africa: *Dr. Hyacinthe Toe, Centre National de Recherche et de Formation sur le Paludisme, Burkina Faso*
- Innovative Vector control strategies using entomopathogenic fungi for safe and reliable control of mosquitoes that transmit malaria and Dengue virus: *Dr Etienne Bilgo, Institut de Recherche en Science de Sante, Burkina Faso*
- Improving the diagnosis and surveillance of emerging arboviruses: *Dr. Ngu Abanda, Centre Pasteur of Cameroon, Cameroon*
- Assessing the functional contribution of genetic diversity in *Plasmodium falciparum* RH5 vaccine candidate complex in immune evasion: *Dr. Laty Gaye Thiam, Institut Pasteur de Dakar, Senegal*
- Combining metabolomics profiling of polyherbals and *Plasmodium falciparum* asexual blood stage-specificity to improve mechanistic knowledge on malaria therapeutic lead discovery: *Dr Protus Arrey Tarkang, Institute of Medical Research and Medicinal Plants Studies, Cameroon*

**Q&A (20 Mins)**

10:45 – 11:00

Break



THURSDAY, 6 JUNE 2024

11:00 – 12:30

**Session 6b: Research & Innovation for Global Health**

**Moderator:** Dr. Rowland Opisa, AAS

**Rapporteurs:** Ms. Ons Masmoudi, IPT & Ms. Dorcas Waithaka, AAS

**Research Spotlight Presentations**

- Development of novel antimalarial therapeutics targeting Plasmodium falciparum Lipid-binding proteins: *Dr. Emmanuel Amlabu, Ahmadu Bello University, Nigeria*
- Investigating factors associated with Ebola virus disease outcome in patients receiving monoclonal antibody therapies: *Dr Dacquin Kasumba, Institut National de Recherche Biomédicale, Democratic Republic of Congo*
- What are the bioecological drivers underlying the invasive success of Aedes albopictus, and risks of arbovirus emergence in Gabon, Central-Africa? *Dr Judicaël Obame-Nkoghe, University of Science and Technology of Masuku, Gabon*
- Unravelling the bi-directional patho-immunological effect of the human gut microbiome and malaria in children with varied clinical malaria manifestation: *Dr. Mary Oboh, Medical Research Council Unit, The Gambia*

**Q&A (20 Mins)**

**Roundtable discussion:** Needs & Technologies for healthy societies with responsive & resilient health systems

**Moderator:** Prof. David Onyango, Maseno University, Kenya

**Rapporteurs:** Ms. Ons Masmoudi, IPT & Ms. Dorcas Waithaka, AAS

- Prof. Hechmi Louzir, Former Director of Institut Pasteur de Tunis and Director of the national campaign of COVID19 vaccination, Tunisia
- Dr. Meryem Khrouf, Director of Medical Research in the Ministry of Health, Tunisia
- Prof. Marleen Temmerman, Director of the Centre of Excellence in Women and Child Health & Chair of the Department of Obstetrics and Gynaecology, the Aga Khan University East Africa, Kenya
- Prof. Faadiel Essop, President, African Association of Physiological Sciences, South Africa

**Open discussion and audience questions**

12:30 – 13:15

Lunch Break

EVENT PROGRAMME

THURSDAY, 6 JUNE 2024

13:15 – 15:30

**Session 7a: Capacities for Science and Higher Education****Moderator:** Prof. Adesola Ajayi, First Technical University, Ibadan, Nigeria**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms. Dorcas Waithaka, AAS**Keynote presentation** on Equitable Scientific Collaboration

Prof. Paul Zeleza, Senior Advisor for Strategic Initiatives, Howard University, USA

**Research Spotlight Presentations**

- The role of Foxp3+ regulatory T cells in the control of schistosomiasis-induced liver fibro-granulomatous inflammation: *Dr. Nada Abdel Aziz, Cairo University, Egypt*
- Advanced Nanomaterials for disease diagnosis using human breath: *Dr. George Chimowa, Botswana International University of Science and Technology, Botswana*
- Enhancing diagnosis of acute meningitis in meningitis belt resource-limited setting, Ethiopia: *Dr. Getachew Tesfaye Beyene, Armauer Hansen Research Institute, Ethiopia*
- Genomic and Environmental factors of neurodevelopmental disorders in sub-Saharan African children: *Dr. Annette Uwineza, University of Rwanda, Rwanda*
- Development of Theileria parva-transmission blocking universal vaccines: toward control of East Coast fever cattle-disease: *Dr. Charles Ndawula, National Livestock Resources Research Institute, Uganda*
- Gastric cancer in Zambia: A comprehensive evaluation of epidemiology and mechanisms of carcinogenesis: *Dr. Violet Kayamba, University of Zambia, Zambia*
- Optimizing Care for Adolescents with Tuberculosis: A Pilot Implementation Study in Namibia: *Dr. Graeme Hoddinott, University of Namibia, Namibia*
- Antimicrobial biogenic nanocomposite formulations from banana and plantain plants (*Musa spp.*): *Dr. Christian Nkanga, University of Kinshasa, D R Congo*
- Implementing a Malawi Mental Health Literacy e-Curriculum (MHLeC) to students in universities within a randomised feasibility trial: *Dr. Sandra Jumbe, Millenium University, Malawi*

**Q&A (20 Mins)**

15:30 – 15:45

Break



15:45 – 16:30

## Session 7b: Capacities for Science and Higher Education

**Moderator:** Dr. Boniface Ushie, AAS

**Rapporteurs:** Dr. Rafeh Oualha, IPT & Ms. Dorcas Waithaka, AAS

**Roundtable discussion:** Academic freedom, scientific integrity, and equitable treatment in scientific collaboration

- Prof. Jean-Paul Moatti, Aix-Marseille University, France
- Dr. Noëline Raondry Rakotoarisoa, former Director, Man and Biosphere programme, UNESCO
- Prof. Refaat Chaabouni, Innovation Strategy and Innovation Policy expert & former Minister of Higher Education and Scientific Research, Tunisia
- Prof. Paul Zeleza, Senior Advisor for Strategic Initiatives, Howard University, USA
- Prof. Stephen Agong, AAS Treasurer & Chairman of Mount Kenya University Council, Kenya
- Prof. Rajaa Cherkaoui, AAS VP for North Africa & Professor at University Mohammed V-Agdal, Morocco
- Dr. Isabel Diaz, Deputy Vice President of Internationalization and Cooperation, CSIC, Spain

**Open discussion and audience questions**

16:30

Lunch Break

16:30

## Session 8: Closing Ceremony

- Award of best poster presentations: Prof. Ahmed Zobaa, ARISE SAC Chairperson
- Vote of thanks: Dr. Sidy Ba, ARISE Fellows' representative

**Closing Remarks from:**

- Dr. Peggy Oti-Boateng, Executive Director, AAS

## Colophon

July 2024

*This document serves as a meeting report summarising the High-level Scientific meeting for ARISE held in Hammamet, Tunisia from 4-6 June 2024. Any opinions expressed in this document do not necessarily represent the official position or policies of the African Academy of Sciences, the African Union, the European Union, the Carnegie Corporation of New York, or the institutions to which the meeting participants are affiliated.*

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**Design:** John Wahome

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