

# 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  
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**The African Academy of  
Sciences**

No. 8 Miotoni Lane, Karen

P.O. Box 24916 – 00502

Nairobi, Kenya

Tel: +254 20 896 0674/5

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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<sup>1</sup>) 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

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

Scientific event 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 & 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

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. Rafah 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 Kouliadiati, 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



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

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 Diori, 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 Waitthaka, 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

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

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



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