**19 October 2022**

# Africa's most advanced imaging laboratory boosts the continent's biomedical research capacity

Africa's most advanced imaging facility, which provides research tools not previously available to African scientists seeking solutions to major biological and medical challenges, opened in Cape Town on Wednesday, 19 October 2022, with some of the world's best optical microscopes now available at no cost to scientists across the continent.

The tools provided by the Africa Microscopy Initiative (AMI) Imaging Centre, hosted the at the University of Cape Town's (UCT) Institute of Infectious Disease and Molecular Medicine, will include solve problems related to infectious diseases such as TB, HIV, malaria and non-infectious killers such as cancer, heart disease and diabetes. Millions of people die from these diseases each year. The facility will also enable ground-breaking new research into plant and animal diseases that threaten agriculture exports and food security, including sleeping sickness, *African Trypanosomiasis*, and *Cassava Mosaic Virus*.

The AMI Imaging Centre will enable African researchers to tap into a revolution in imaging for health and biomedical research.

"AMI aims to increase awareness of microscopy's potential as a research tool and enable greater use of bioimaging in Africa," says Digby Warner, Professor of Medical Microbiology and UCT lead partner in AMI. "Africa has until now been behind its global peers in microscopy, with under-funded institutions unable to afford state of the art equipment. The opening of the Africa Microscopy Initiative is a huge step for continental research, innovation and scientific development. Some of Africa's greatest health challenges will be solved by looking more closely, which is what advanced microscopy will enable for African scientists."

Combining visible light with complex arrays of lenses and advanced photophysics, modern optical microscopy enables scientists to accurately capture the smallest features and components in human, animal, and plant cells and tissues. The equipment enables scientists to view objects at the nanoscale, or billionths of a metre.

When combined with advanced analytical software, microscopy images can be used to tackle some of biology's most challenging research questions, such as how disease-causing bacteria bypass host defences to infect cells, or how damage to nerve cells can disrupt brain function.

Merging disciplines including physics, biology, chemistry, and data science, the AMI Imaging Center ranks among the best-equipped microscopy facilities globally, providing technical and scientific support and advanced instrument access.

It is a flagship of the AMI, which launched on the same day. AMI is the biggest microscopy initiative in Africa's history, and delivers on the African Union's ambitious Agenda 2063, a blueprint for transforming the continent by raising Africa's role in global research through investments in science, technology, research, innovation, and world-class infrastructure.

With funding from the Chan Zuckerberg Initiative (CZI) and the Bill & Melinda Gates Foundation, and support from industry partners including Zeiss Microscopy and TissueGnostics, AMI's multi-million dollar imaging facility was developed in collaboration with the IDM.

"AMI gives African scientists great access to tools with equal to what is available in America and Europe,' said Dr Olatunji Sunday Yinka, head of anatomy at Rwanda's Adventist School of Medicine of East Central Africa. "It strengthens African research capabilities and opens opportunities in what researchers can achieve with microscopes to solve different African challenges. AMI is second to none in Africa."

AMI initiatives are underpinned by a commitment to ensuring cost-free access to qualifying researchers and scientists from across Africa, with grants covering transport, accommodation, and technical or research support.

Visiting scientists to the AMI get full access to advanced optical microscopes tailored for the life sciences, with high spatial and temporal resolution to study a variety of biology in live and dead samples. AMI will be a platform for African education, training, and knowledge, and a hub through which microscopy equipment is distributed to research facilities across the continent.

***ENDS***

**Notes to editors:**

Researchers can access the AMI through a peer-reviewed application process that will open in Q1 2023. Interested researchers are encouraged to contact AMI in advance of the upcoming call for further information and assistance in preparing competitive applications. AMI was conceived by Dr Teng-Leong Chew of the Advanced Imaging Center in the US ( AIC-Janelia) and and developed in partnership with scientists at the University of Cape Town. AMI will accomplish its goals through a five-pronged strategy of facilitated open-access use of advanced equipment (AMI Imaging Centre), a programme for equipment exchange and redistribution (PEER), partnerships in teaching (PiTCH), Imaging Africa workshops, and an online Microscopy Matters forum including resources and training materials. AMI will work closely with the African BioImaging Consortium and national and international imaging consortia to raise awareness of microscopy's potential as a research tool, and to provide a platform for education, training, and knowledge.

**Equipment available to researchers at the AMI Imaging Centre includes:**

- ZEISS LSM 980 with Airyscan 2 - An advanced fluorescence confocal microscope used to image sub-cellular biological processes and structures within live individual cells and tissues.

- EISS Elyra7 - An advanced fluorescence widefield microscope with super-resolution capabilities used for imaging live cellular biology at scales approaching 20-nanometers (20 billionths of a metre)

- ZEISS Axio Observer 7 - A capable fluorescence widefield microscope used for studying a variety of live biological samples at a range of scales

- ZEISS Celldiscoverer 7 - A high-content fluorescence microscope used for screening large numbers of live cellular samples, and

- TissueGnostics TissueFAXS - A high-throughput fluorescence microscope used to automatically image large numbers of prepared tissue samples.

**The Institute of Infectious Disease and Molecular Medicine (IDM)**
The IDM is a cross-faculty postgraduate research institute based at the University of Cape Town (UCT). Established in 2004, the IDM aspires to be an international centre of excellence where world-class scientists work together at the interface of the laboratory, clinic, and community to tackle diseases of importance in Africa. Comprising a suite of laboratories and specialised core facilities on the UCT health sciences campus and clinical research sites in peri-urban townships around Cape Town and the Western Cape, researchers in the IDM focus on understanding and intervening in tuberculosis, HIV/AIDS, COVID-19, other viral, fungal, parasitic and bacterial diseases, and non-communicable diseases. As a global leader in TB and HIV research, the IDM is a major contributor to the high international standing of UCT in the field of infectious diseases.

**The Chan Zuckerberg Initiative**
The Chan Zuckerberg Initiative was founded in 2015 to help solve some of society's toughest challenges — from eradicating disease and improving education, to addressing the needs of our communities. Through collaboration, providing resources and building technology, our mission is to help build a more inclusive, just and healthy future for everyone. www.chanzuckerberg.com

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