

# AFRICA MICROSCOPY INITIATIVE AMI

Bolstering microscopy infrastructure,  
accessibility and expertise in Africa

# The Initiative

## Motivation

The African scientific community is a vital pillar in combating threats to global health, food security, and environmental conservation. Yet, researchers throughout the continent are commonly overlooked by well-intentioned technology dissemination programs. This marginalizes a large and important proportion of the global scientific community, denying the world a vital opportunity. To remedy this glaring inequity necessitates significant and sustained scientific research investment. It also spotlights the need to pave the way for African scientists to easily tap into the many global scientific resources that are not currently accessible in an equitable way. This is especially the case when it comes to microscopy, a resource-intensive but highly scalable research method that can be adapted to study a wide range of biological questions and length scales.

## Mission

The Africa Microscopy Initiative (AMI) is a multi-pronged, continent-wide undertaking aimed at addressing the inequitable access to advanced imaging techniques throughout Africa. It combines an open-access microscopy resource facility, with multifaceted educational opportunities, and an instrument distribution program. Its vision is propelled by the recognition that effective capacity building for microscopy in Africa hinges on the confluence of technology access, dissemination, and education. This program provides an unbroken flow of technology and expertise that will elevate life scientists in Africa working on critical research areas. A multi-tiered approach to education and instrument dissemination is strategically designed to create a deployable, critical mass of microscopy instruments and trainers who will empower African scientists. AMI comprises the following programs:



AMI  
Imaging  
Center



Imaging  
Africa



Project  
Incubator  
Center

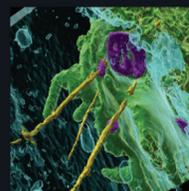
AMI



Partners in  
Teaching  
(PiTCH)



Program for  
Equipment  
Exchange &  
Reutilization



Microscopy  
Matters  
Webinars

# AMI Imaging Center

## **Centralized, open-access imaging center**

Central to the AMI program is the open-access imaging center housed at the University of Cape Town, South Africa. The AMI Imaging Center is modeled after the Advanced Imaging Center (AIC) at the Howard Hughes Medical Institute Janelia Research Campus.

Access to the AMI Imaging Center is through peer-reviewed proposals open to all African scientists working at a non-profit African institution. The imaging center will cover the cost of travel, local lodging, instrument time as well as the cost of the experiment within reason. Successful applicants will have approximately 4-6 weeks to complete the proposed microscopy experiments on site. The imaging center will also provide necessary post-visitation image analysis support.

## **Project Incubator Center**

The AMI Imaging Center will also serve as project incubator for potential high impact projects to transition to more advanced imaging centers such as those available at HHMI Janelia Research Campus, EMBL, University of California-Berkeley and elsewhere. By offering these projects the necessary support and the time to develop, the AMI Imaging Center will pave the way for these high-impact projects to take advantage of the more advanced technologies available in many international, open-access microscopy centers.



# Microscope Distribution Program

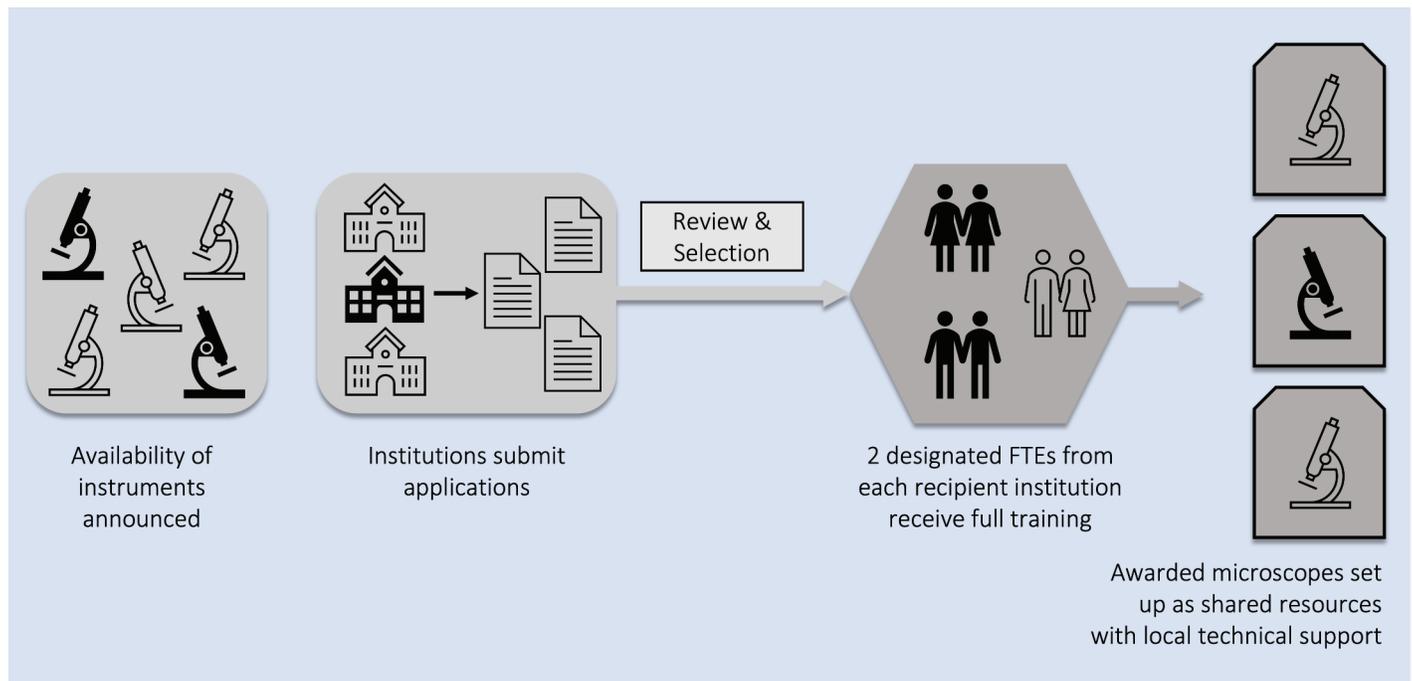
## Program for Equipment Exchange & Reutilization (PEER)

To complement the AMI Imaging Center at the University of Cape Town, the Initiative will create a distributed network of microscopes to get African scientists "off the ground" as they venture into microscopy. Without this, the centralized imaging center will remain a technology island and fail to effectively address the broader discrepancies experienced by most African researchers. To accomplish this, a novel Program for Equipment Exchange & Reutilization (PEER) has been put in place. PEER aims to redistribute to various African institutions the enormous cadre of pre-owned, high quality microscopes in the warehouses of many imaging instrument manufacturers through a peer-reviewed application process.

Successful recipient institutions will be required to cover the annual service contracts, and also to designate two full time employees (FTEs) to receive full training. They will also have the opportunity to visit other imaging centers through the Global Bioimaging job-shadowing program. PEER stipulates that the awarded instruments must be offered as shared research resources. The ultimate goal of the program is to support the expansion of imaging core facilities in Africa through the availability of high quality microscopes, maintenance support and local expertise.

Recipient institutions with demonstrable records of putting prior instruments to good shared utilization and educational activities will be encouraged to apply for newly available equipments in subsequent years.

## Program for Equipment Exchange & Reutilization (PEER)



# Educational Outreach Programs

## Imaging Africa

The continent-wide, all-expense covered microscopy workshop, *Imaging Africa*, has been a resounding success since its first inception in 2020 (Reiche *et al.*, 2021, Nature Methods). The workshop is an integral part of AMI and will be offered, in collaboration with the Advanced Imaging Center at Howard Hughes Medical Institute (aicjanelia.org), annually in different African cities. In addition, satellite microscopy workshops with more focused scientific themes will also be offered regionally.

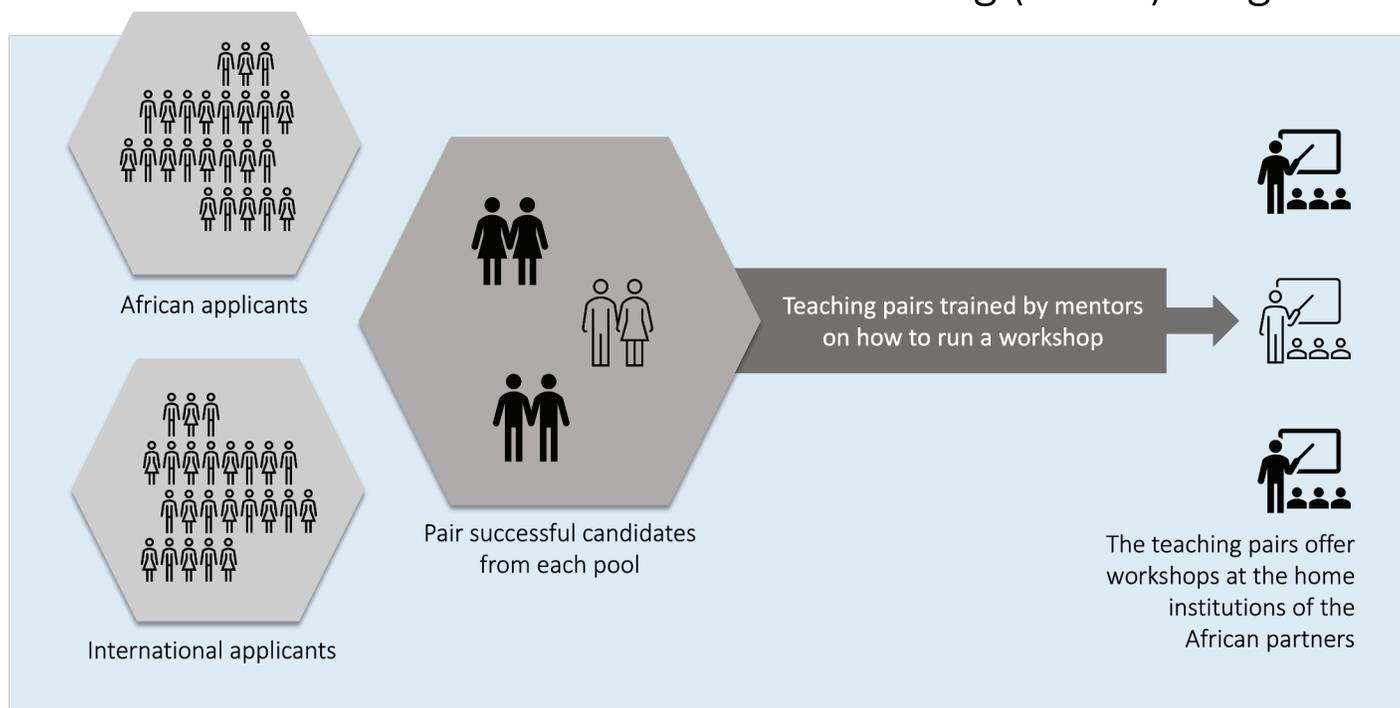
## Microscopy Matters webinar series

*Microscopy Matters* is a series of brief webinar lectures focusing on short but important topics of microscopy, to be delivered predominantly by African imaging scientists. The webinar series aims to contextualize these imaging-related materials specifically for research topics central to the African scientific community, and will supplement the various in-person microscopy workshops under the AMI programs.

## Partners in Teaching (PiTCH) Program

The PiTCH Fellowship Program aims to pair international early career imaging scientists who seek workshop-organizing and teaching experience with their counterparts from Africa. Upon selection, these pairs will be mentored by experienced international imaging scientists to develop a week-long microscopy training course. The fellowship will allow (i) the international imaging scientist to travel to the host institution of the African counterpart, (ii) and the African imaging scientist to conduct the workshop. There they will offer the training course to local scientists with their newly gained skills and freshly developed workshop curriculum.

## Partners in Teaching (PiTCH) Program





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