AI for Overcoming Global Disparities in Cancer Care - closing remarks

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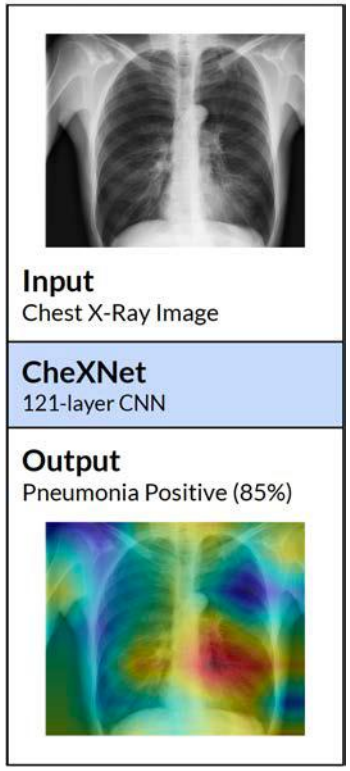
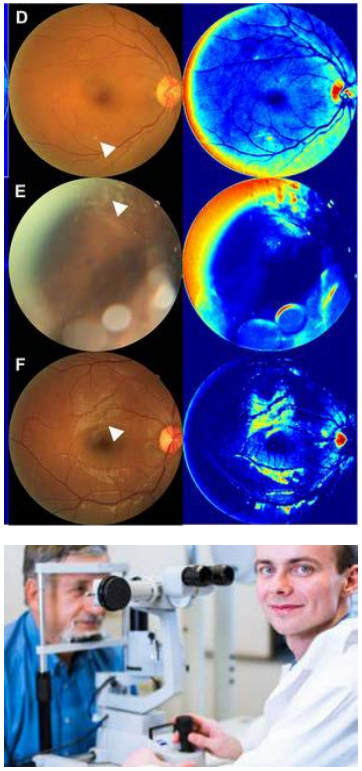
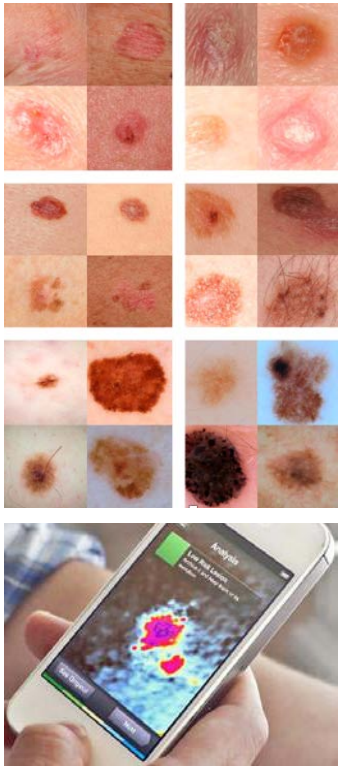
Disclosure

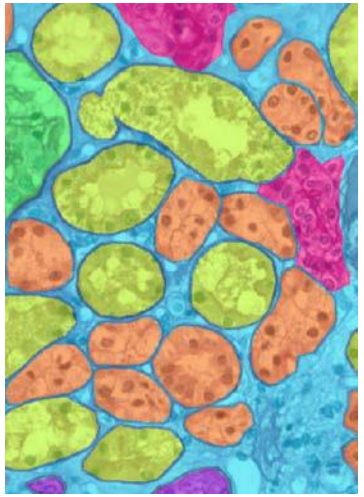
- Founder, co-owner and Chief Scientific Officer of Aiforia Technologies

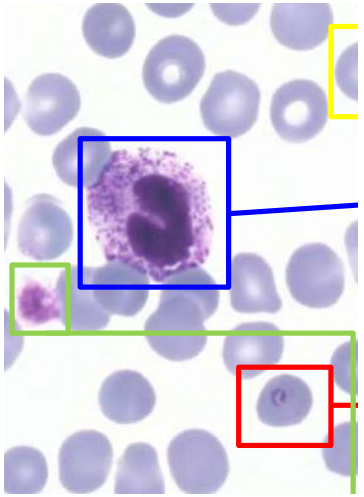
AI will impact all medical fields where an expert makes a visual interpretation











Radiology Ophthalmology Dermatology Pathology Microbiology

>7-8 billion examinations per year globally

Three big promises of medical AI today

- Create virtual and personal expert assistants
- Go beyond current expert-based capabilities
  → achieve superhuman performance
  → make AI-based discoveries
- Improve access to diagnostics

THE SUNDAY TIMES | Today's sections | Past six days | My articles

Scotland

Cancer crisis looms due to lack of experts

Dearth of Scots specialists slowing treatment

Feb 8, 2018

INDY/PULSE

CANCER SURVIVAL RATES HAMPERED BY SHORTAGE OF NHS PATHOLOGISTS

China Struggling to Keep Up with Demand for Anatomic Pathologists

Dec 15, 2017 | Instruments & Equipment, Laboratory Hiring & Human Resources, Laboratory Management and Operations, Laboratory News, Laboratory Operations, Laboratory Pathology, Laboratory Testing, Management & Operations

Health

Shortage of pathologists burden on healthcare—Lancet

By Judd-Leonard Okafor | Publish Date: Mar 16 2018 2:51PM

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/ VÄSTERNORRLAND

Väntetiden för patienter med cancer är oacceptabelt lång och ett hot mot patientsäkerheten. Foto: TT.

Cancer care in Sweden suffers from lack of pathologists

Publicerad 2 november 2018

THE CITIZEN | ELECTION RESULTS 2015 | TANZANIA ELECTIONS 2015 | NEWS | MAGAZINES

SATURDAY, AUGUST 23, 2014

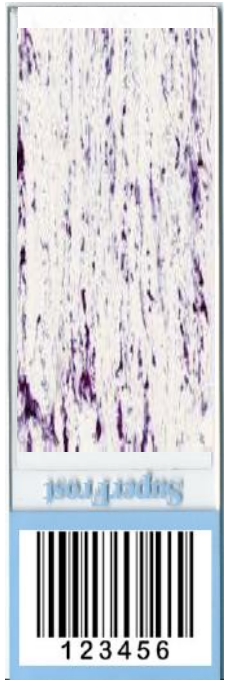
Tanzania short of pathologists, says Zanzibar President

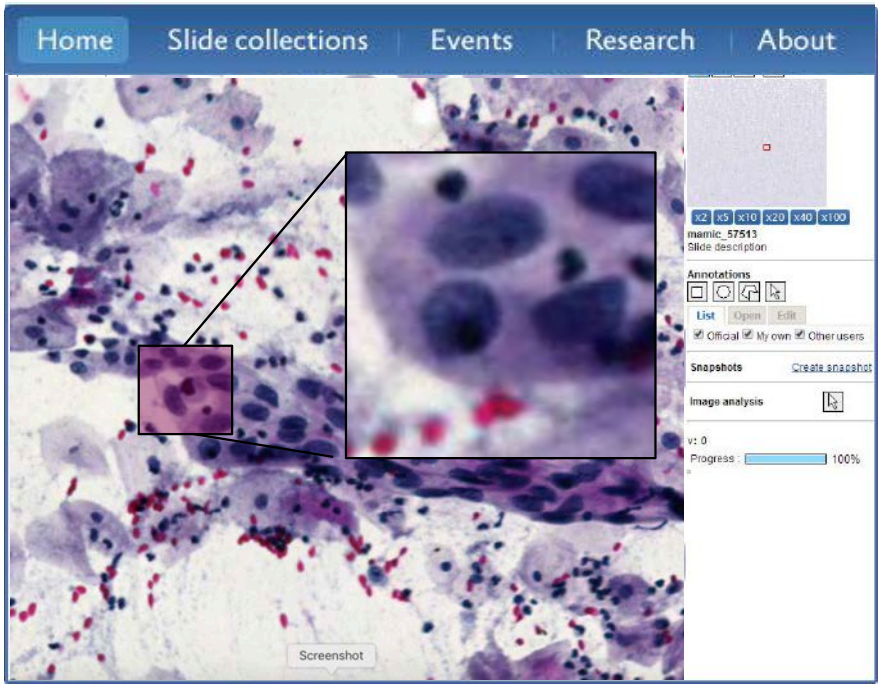
AI of particular interest where there is a lack of experts

Example of Applied Artificial Intelligence

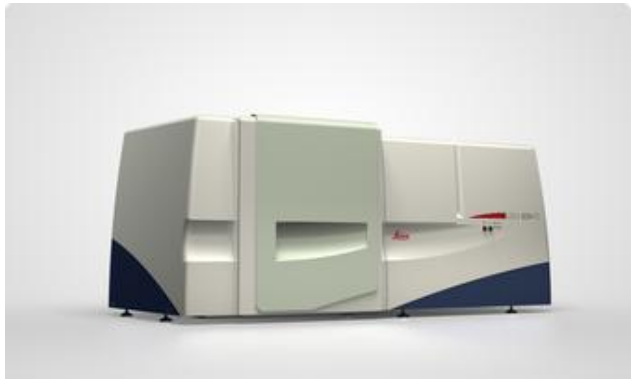
Digital screening for cervical cancer with mobile microscopy and AI at the point-of-care

Digital pathology and cytology
– the whole sample scanned at high magnification





But…
Current instruments for digital microscopy imaging



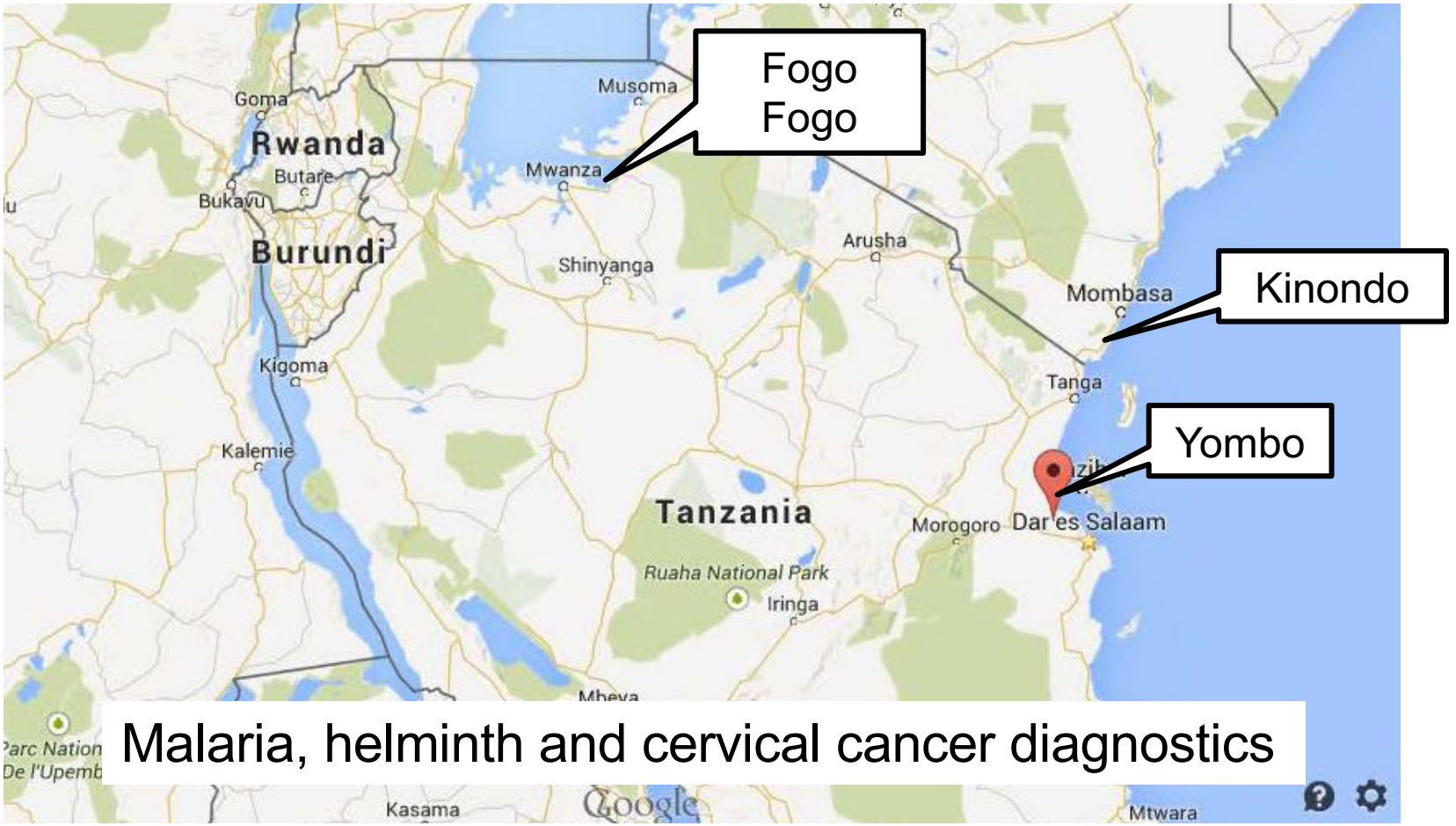
...are expensive instruments
not suitable for point-of-care

...not feasible for resource-poor settings

Mobile digital microscope (MoMic) Prototype

Holmström et al. PLoS ONE 2015; 10: e0144688

Field studies in Kenya and Tanzania, 2016-2023

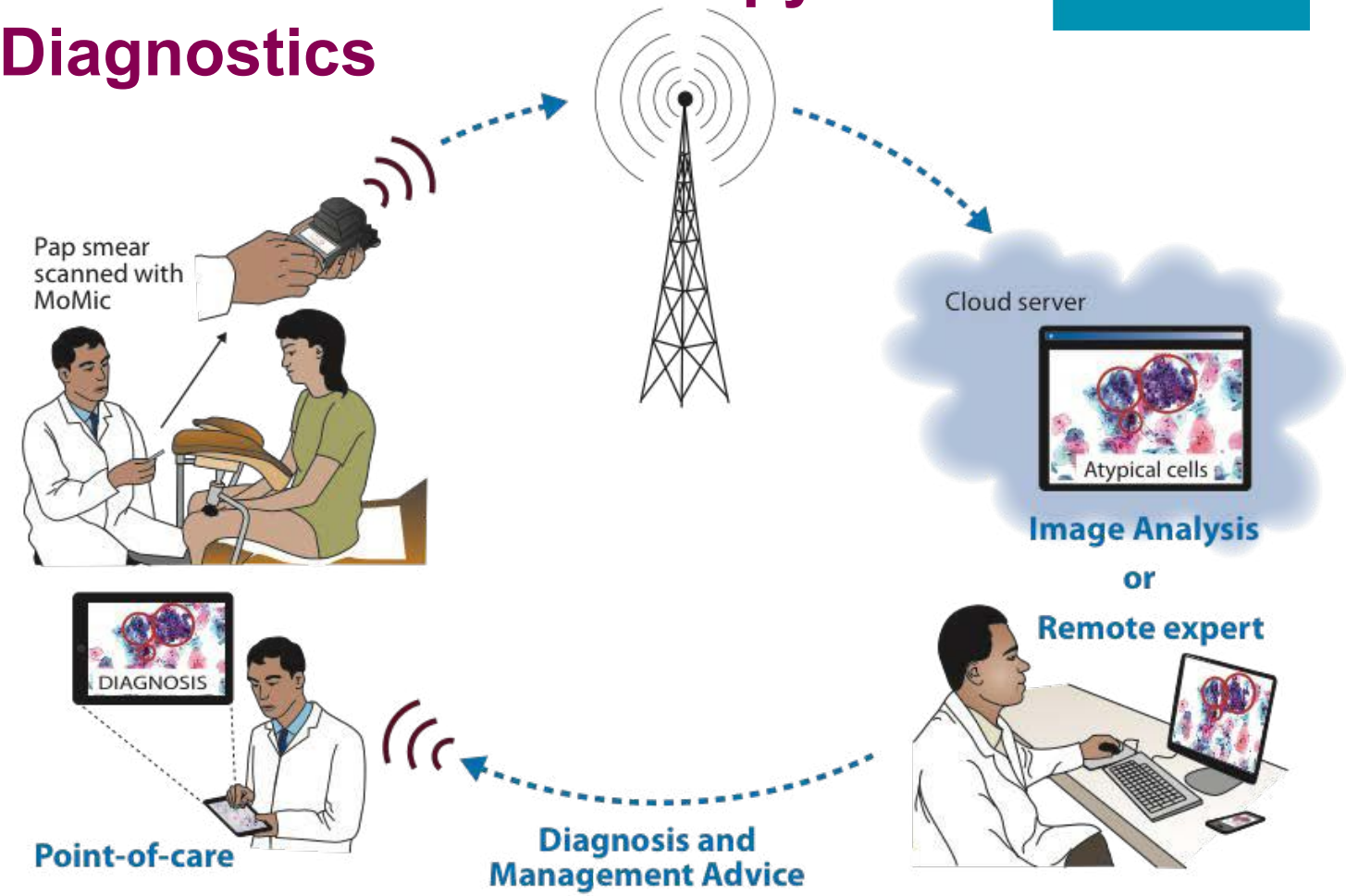


Supported by Swedish Research Council and Erling Persson Foundation

Field study on digital screening of cervical cancer at Kinondo Kwetu Medical Center in Kenya

Harrison Kaingu

Point-of-Care Mobile Microscopy and Digital Diagnostics

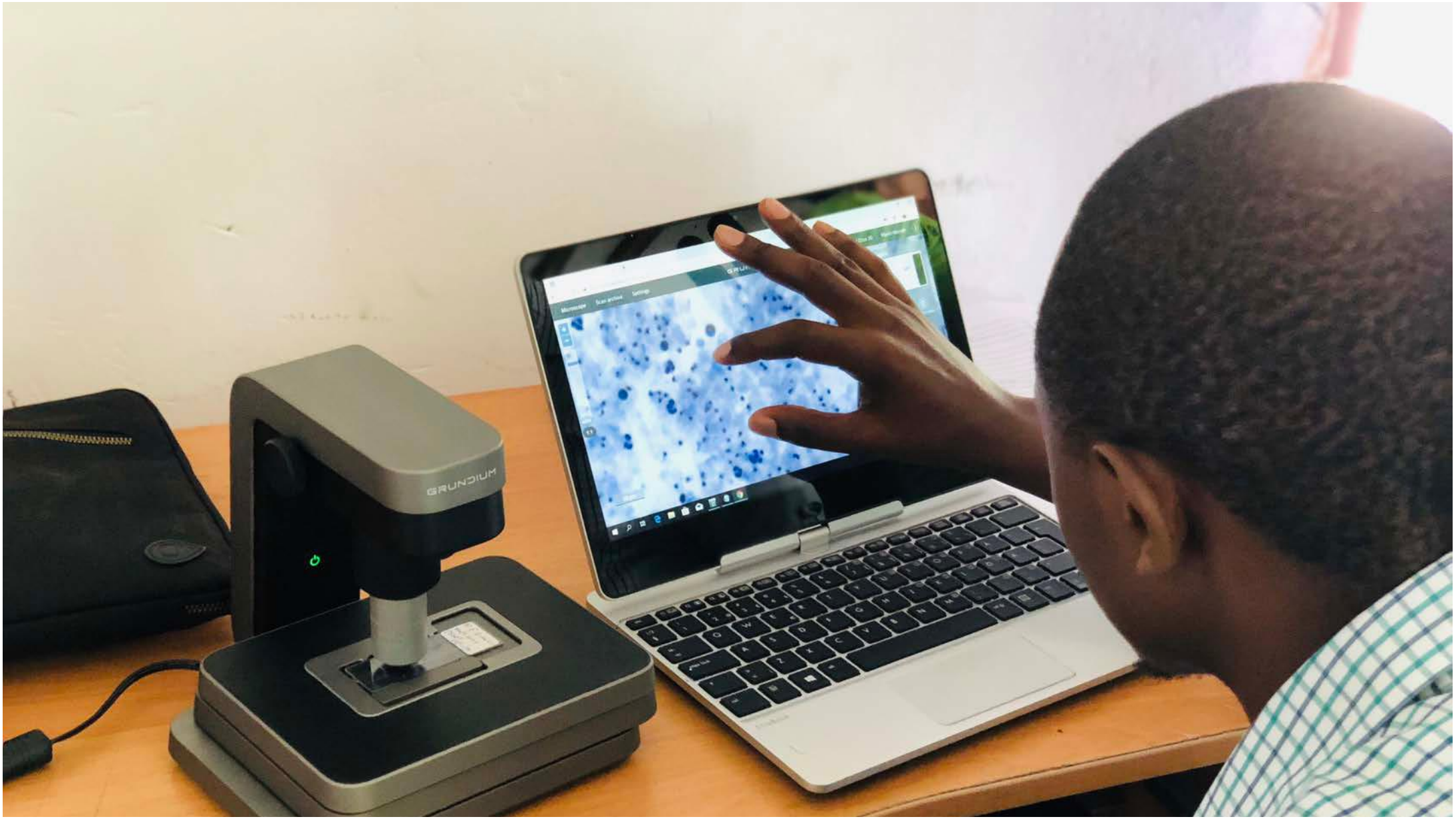


”Digital MoMic lab” at Kinondo Kwetu Medical Center

Nurses Carolyne and Priscillah

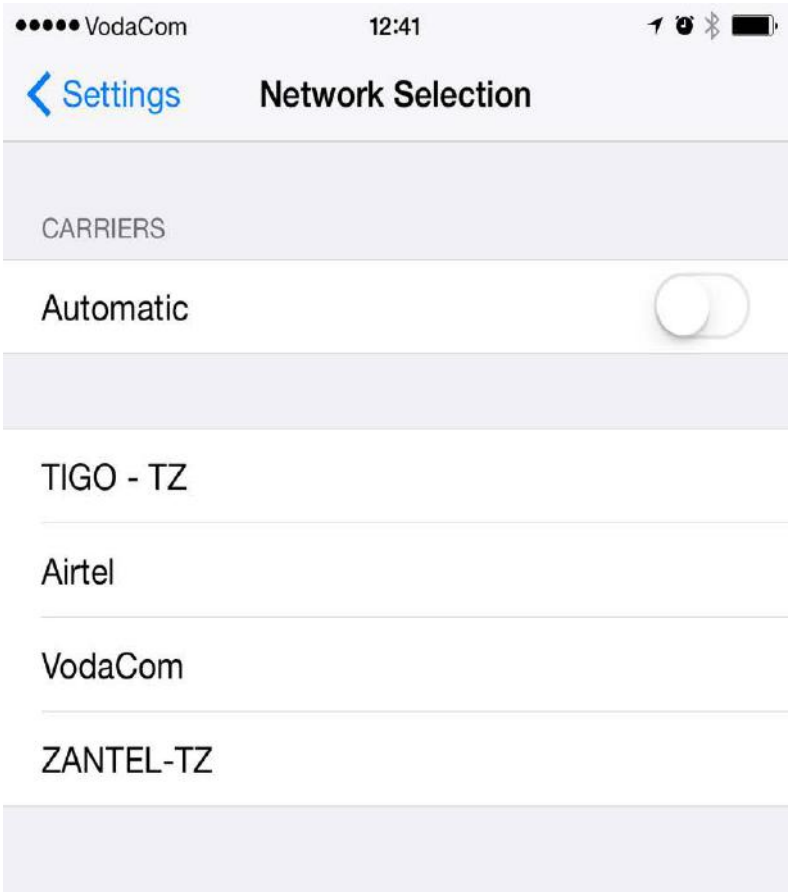
Laboratory technician Felix with equipment for staining

Slide scanner and uploading of digital slides over 3G/4G network

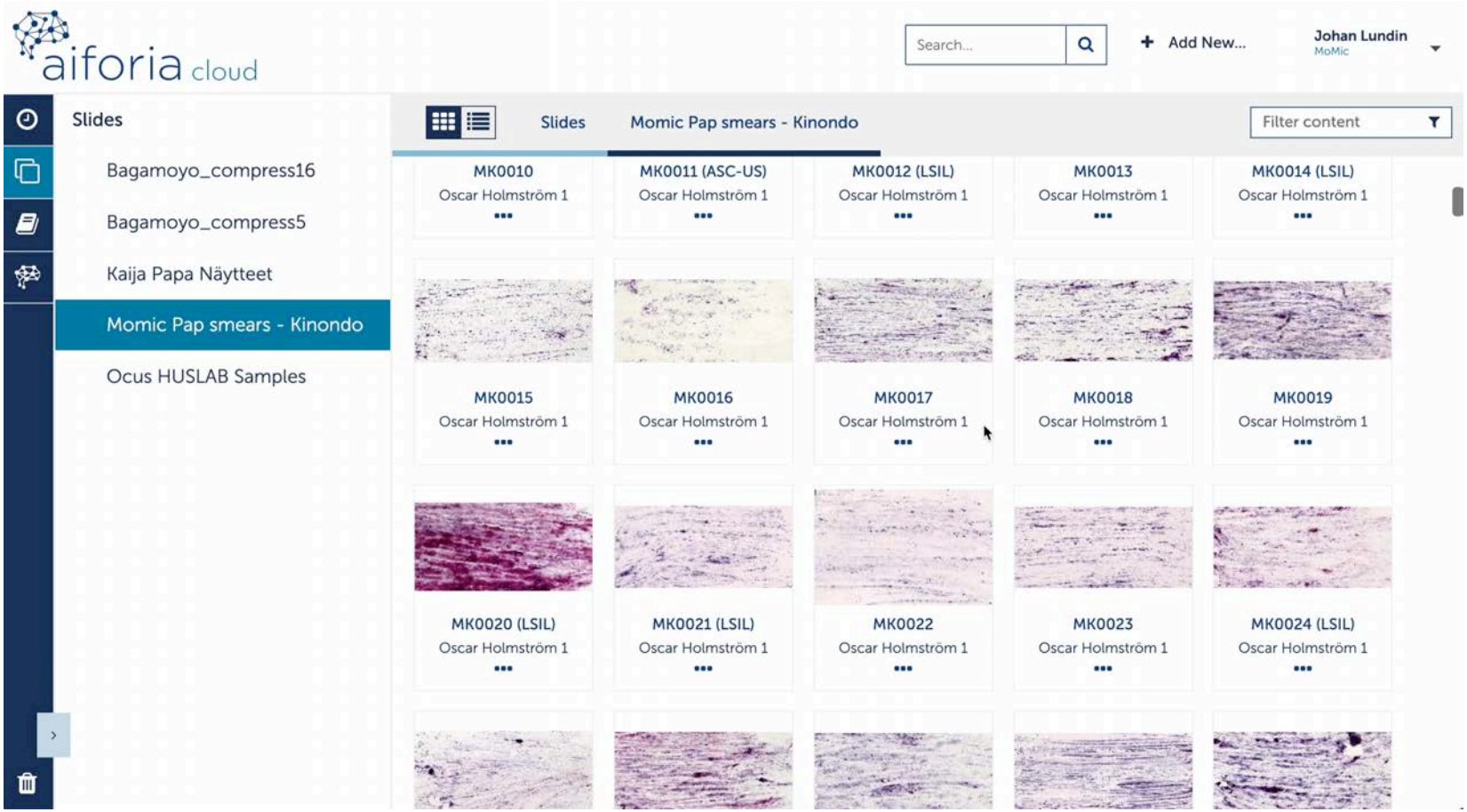

GRUNDIUM

Slide scanning

Mobile network coverage in rural East Africa



Current Status of the MoMic Cervical Cancer Screening



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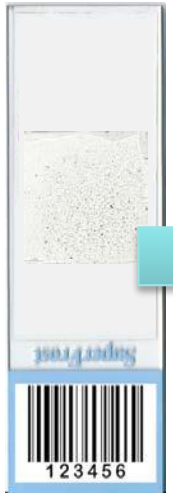
Temporary lab at Fogo Fogo Primary School, Tanzania

FIMM PhD Student Oscar Holmström

Digital Mobile AI-supported Diagnostics

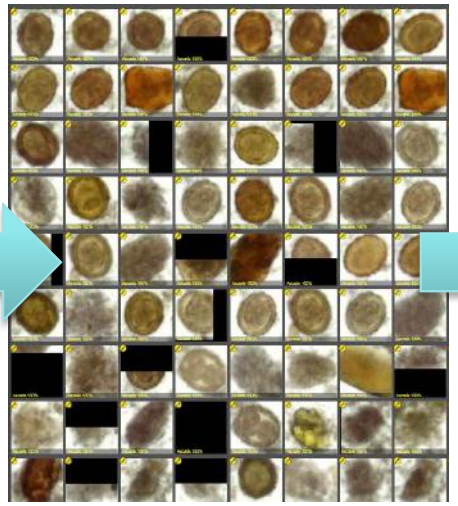
- Example of application to neglected tropical diseases for better access to diagnostics
- Assisted detection of helminth eggs in stool samples

Oscar Holmström

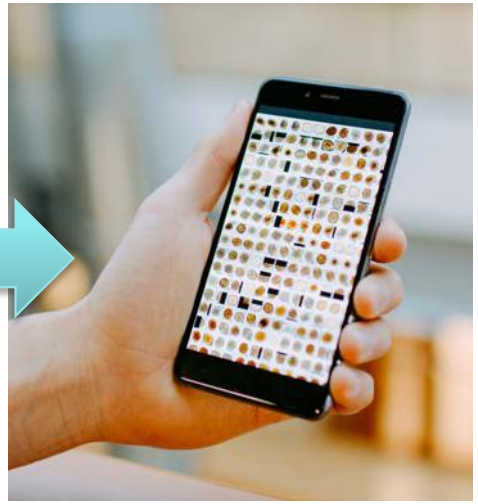


Stool sample

Scan with mobile microscope



Apply AI to find parasites



View results on smartphone

Global Health Action 2017; 10:1337325.

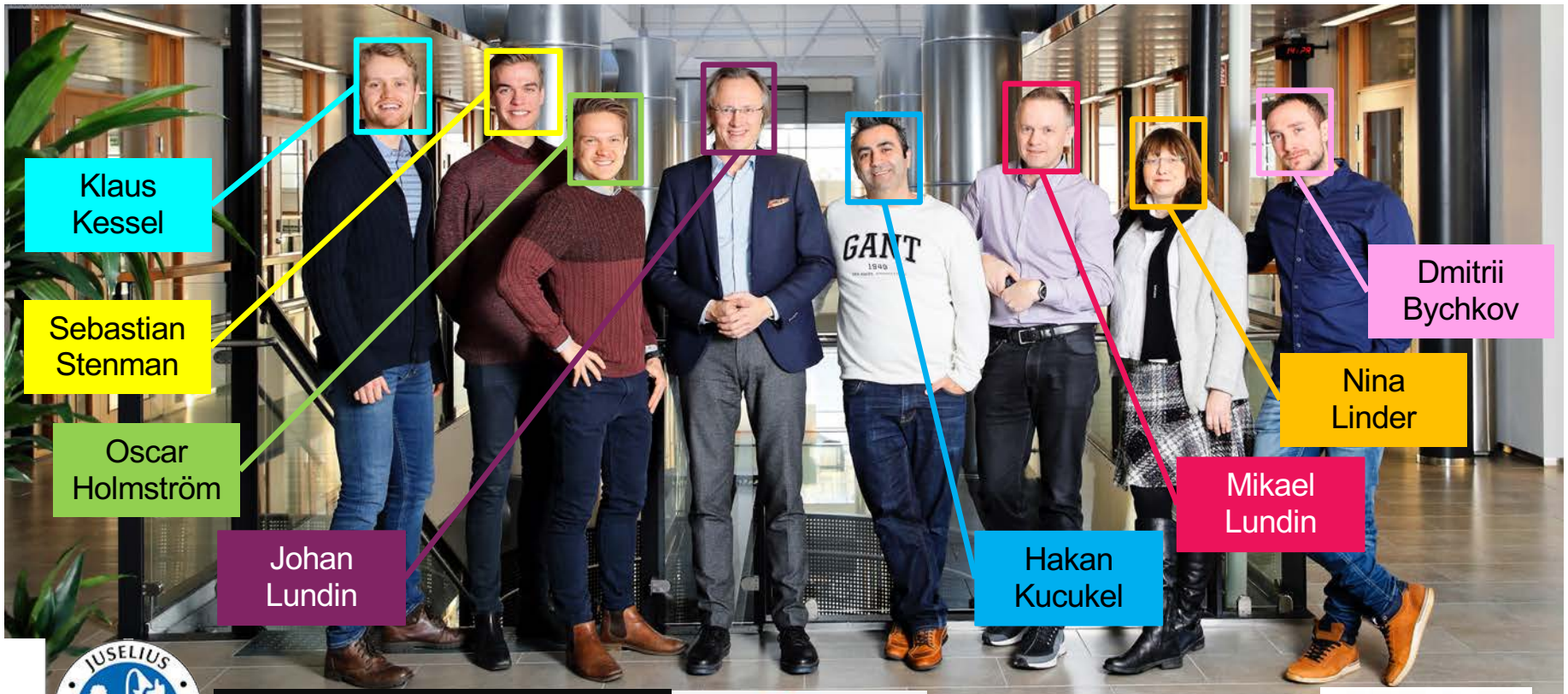
Mobile microscopy – Nordic – East-African link

Stockholm, Sweden

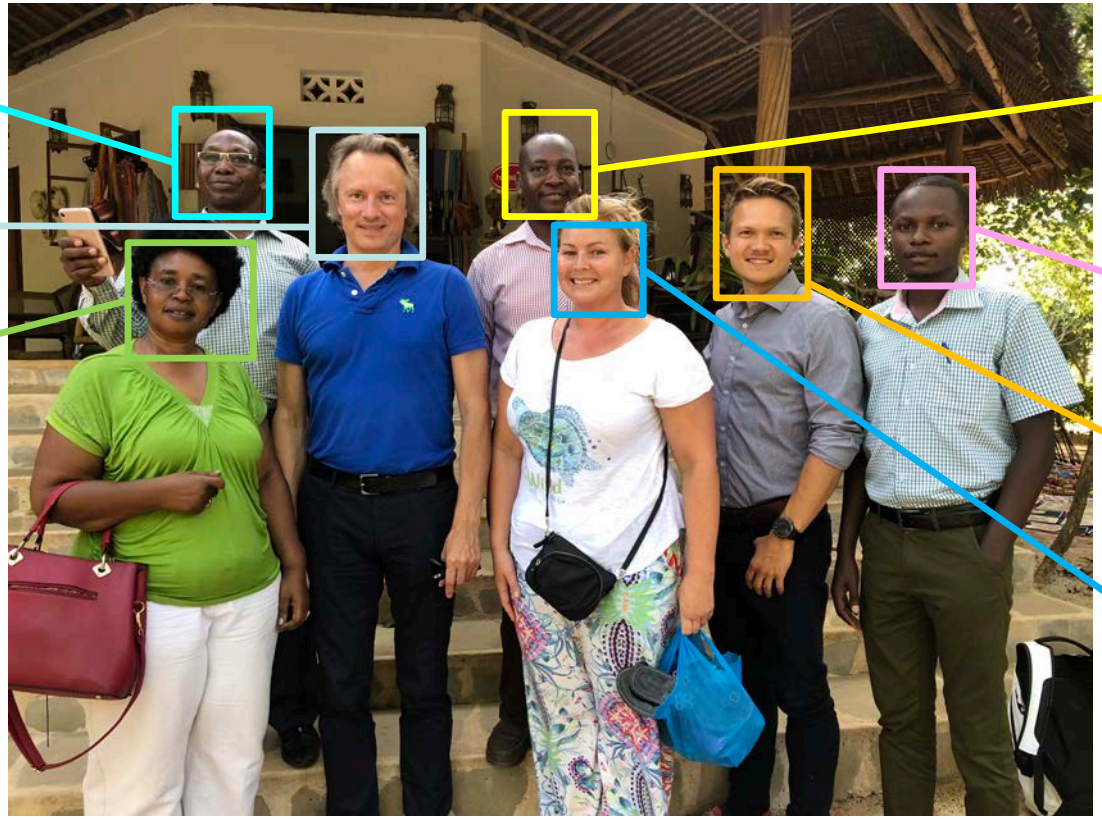
Conclusions

- Training of diagnostic algorithms are facilitated by advances in machine learning and artificial intelligence
- Mobile technologies allow diagnostics to be performed in resource-limited settings and at the point-of-care
- AI-based assistants and technology-related innovations are likely to improve access to cancer diagnostics

Lundin Group, FIMM



MoMic Team in Kenya



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KINONDO KWETU
KENYA

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Thank you!