



## FMD in East Africa:

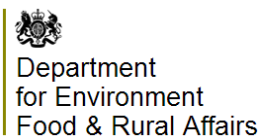
What we know and what we don't know

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# The Pirbright Institute

- “Not-for profit” research institute
- UK and International Reference Centre for livestock viral diseases (including: FMD, BT, PPR, ASF, AHS, Capripox, Marek’s Disease)
- Work on behalf of OIE, FAO, EuFMD and EU



- High-containment Level 3+ Laboratory
- Commissioned 2015



# OIE/FAO FMD Laboratory Network

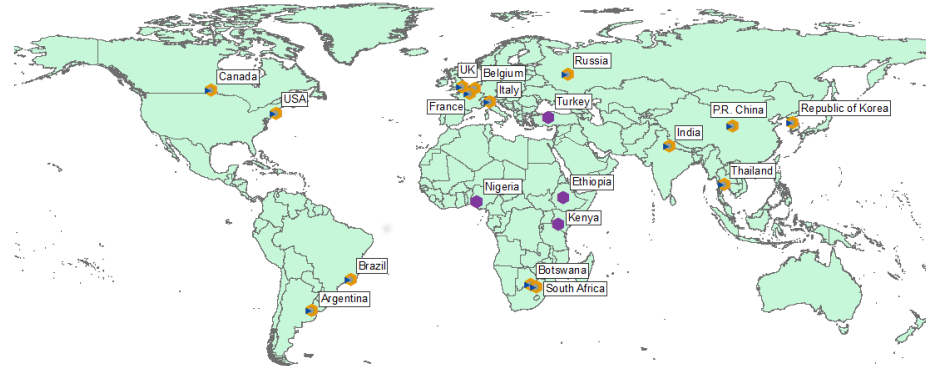
OIE/FAO  
Foot-and-Mouth Disease  
Reference Laboratories  
Network



Goals:

- **Global surveillance and changing patterns in risk pathways**
- **Harmonised and improved lab capacity**

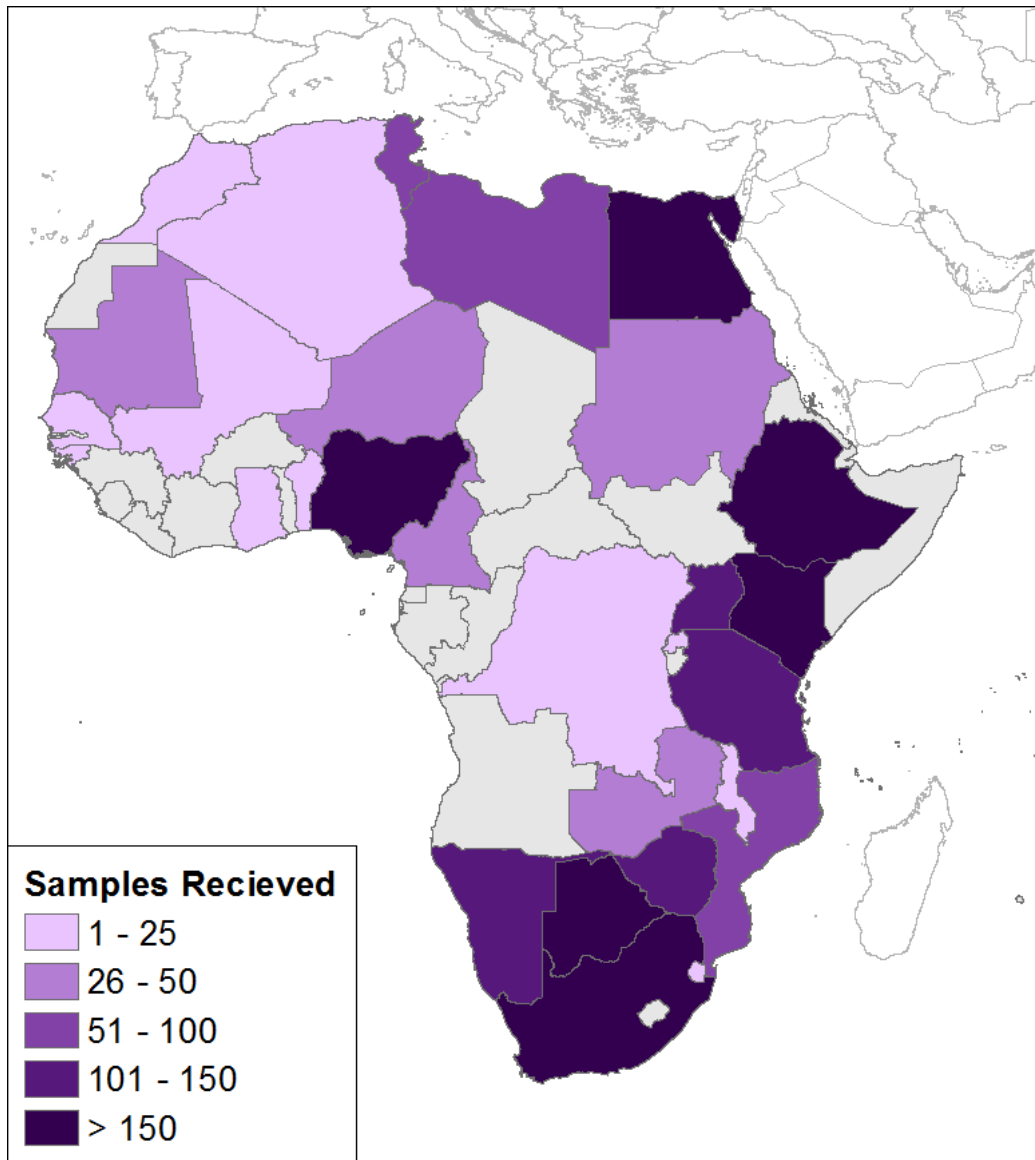
Core Network Members and affiliates:



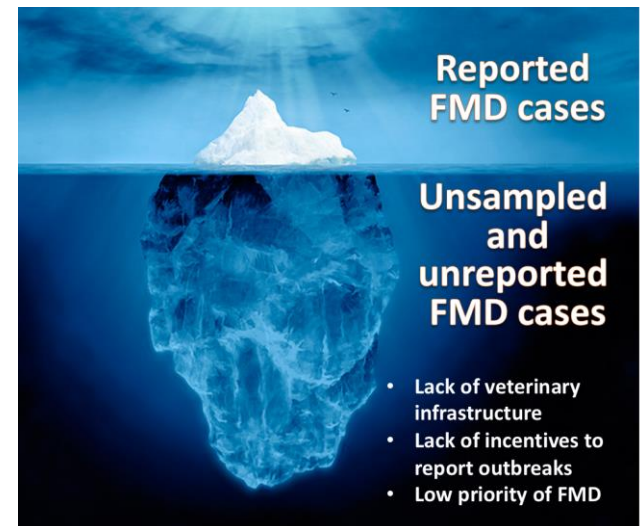
Pretoria – November 2017

[www.pirbright.ac.uk](http://www.pirbright.ac.uk)

# Gaps in FMD surveillance?

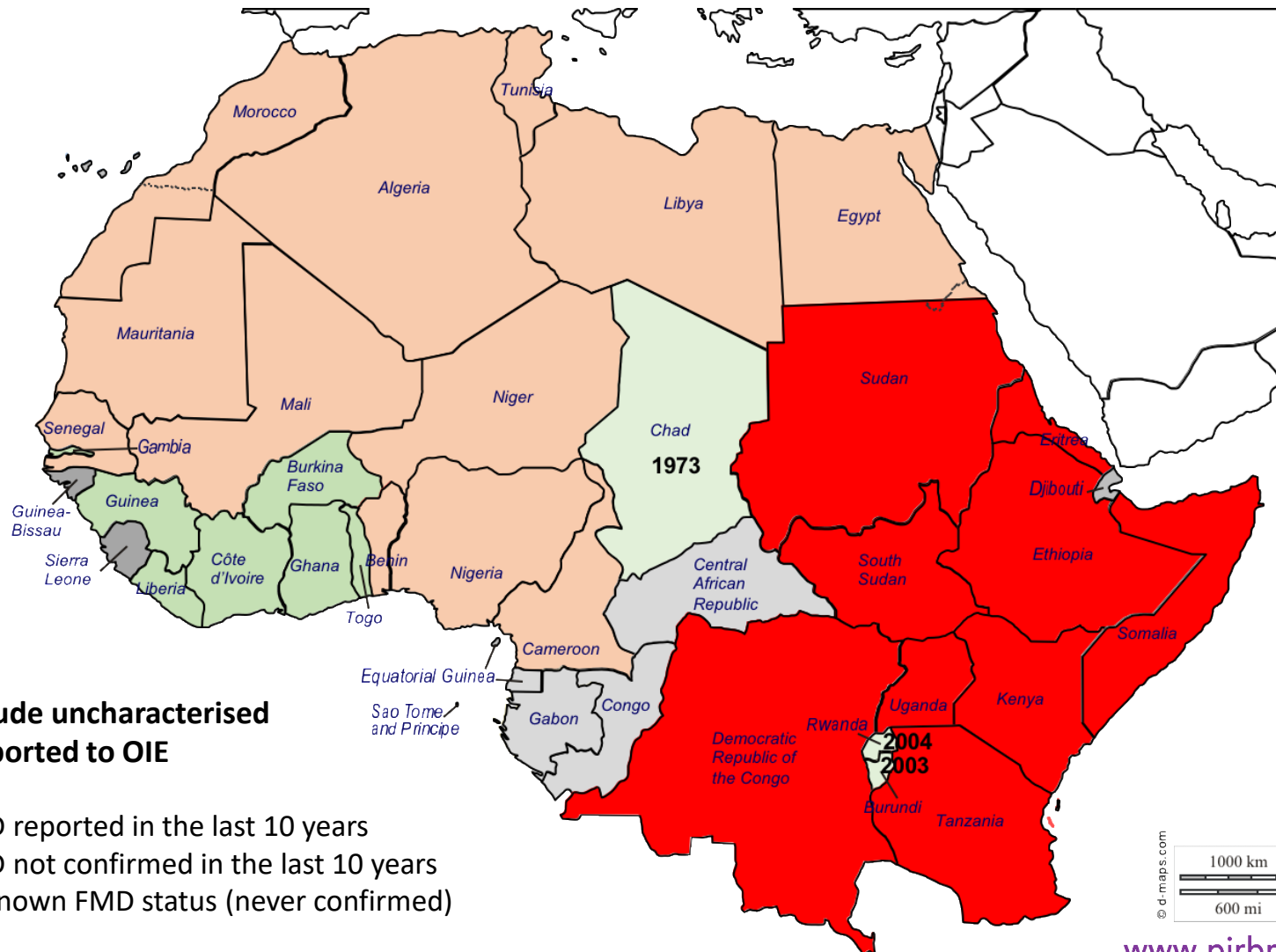


- Data from OIE/FAO Network (2013-17)
- Network and affiliate laboratories)
- Low levels of sample submission (or local reporting) from some countries in West, Central and East Africa



## East Africa considered to be endemic for FMD

- Serotypes O, A and SAT 2, SAT 1 (and SAT 3 – mainly wildlife?)
- Serotype C not detected since 2004 (Kenya)



Does not include uncharacterised outbreaks reported to OIE

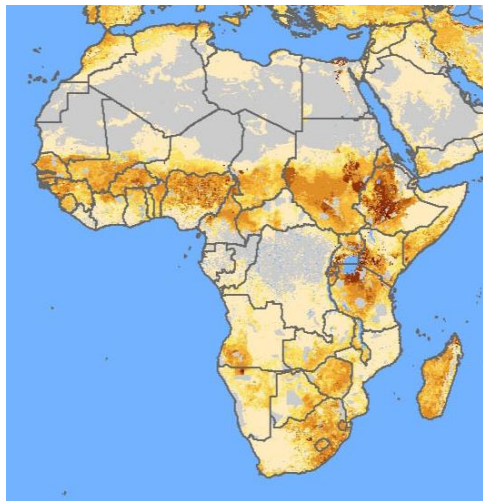
# Why do we sequence FMDV?.....



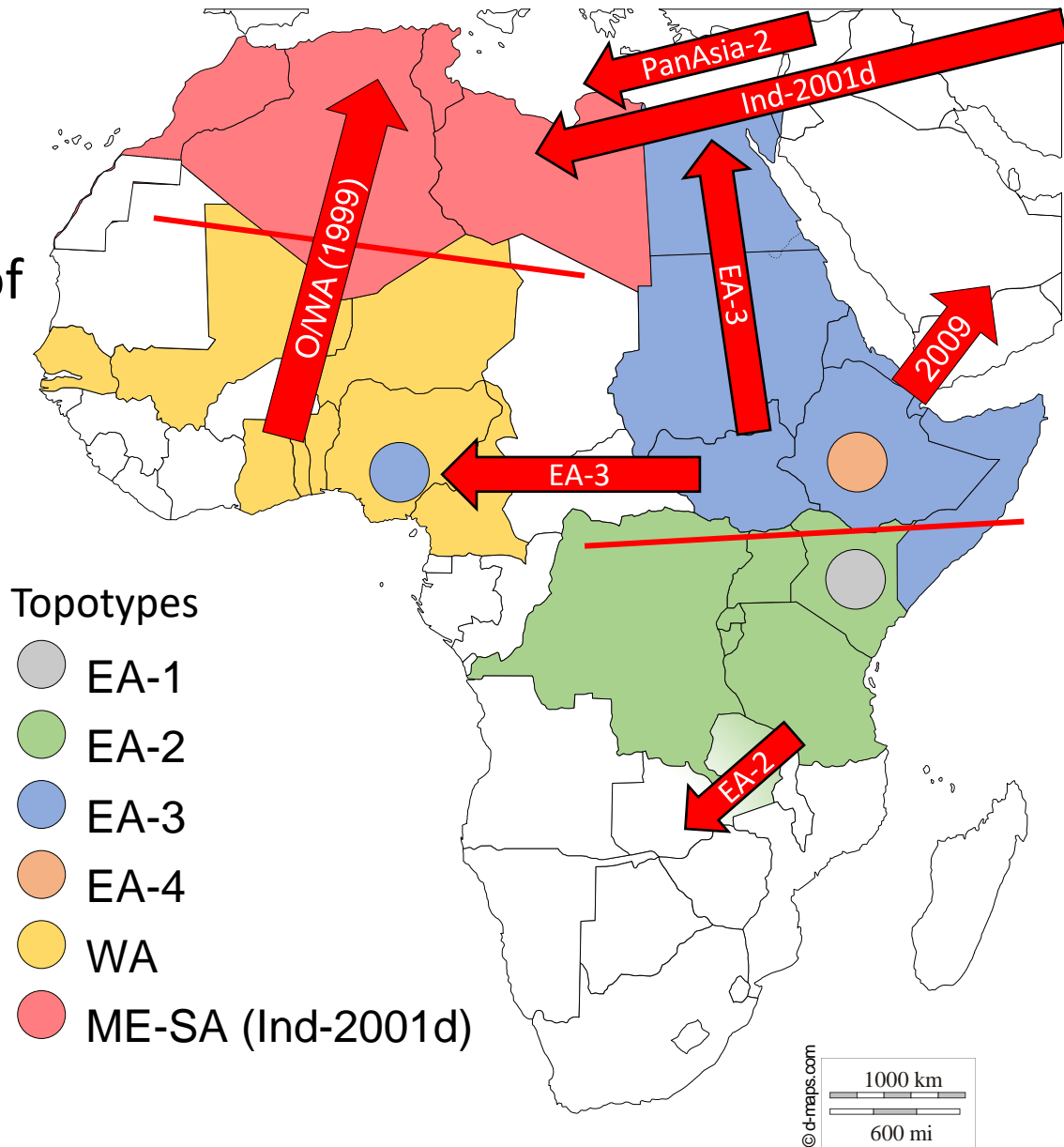
- Multiple virus serotypes/topotypes/strains
- Monitoring global patterns of virus distribution
  - Tracing sources of outbreaks
  - Early recognition of the emergence of new lineages

# Serotype O

- Multiple virus topotypes
- Two distinct lineages of FMD viruses in East Africa
- Connections between East – West Africa

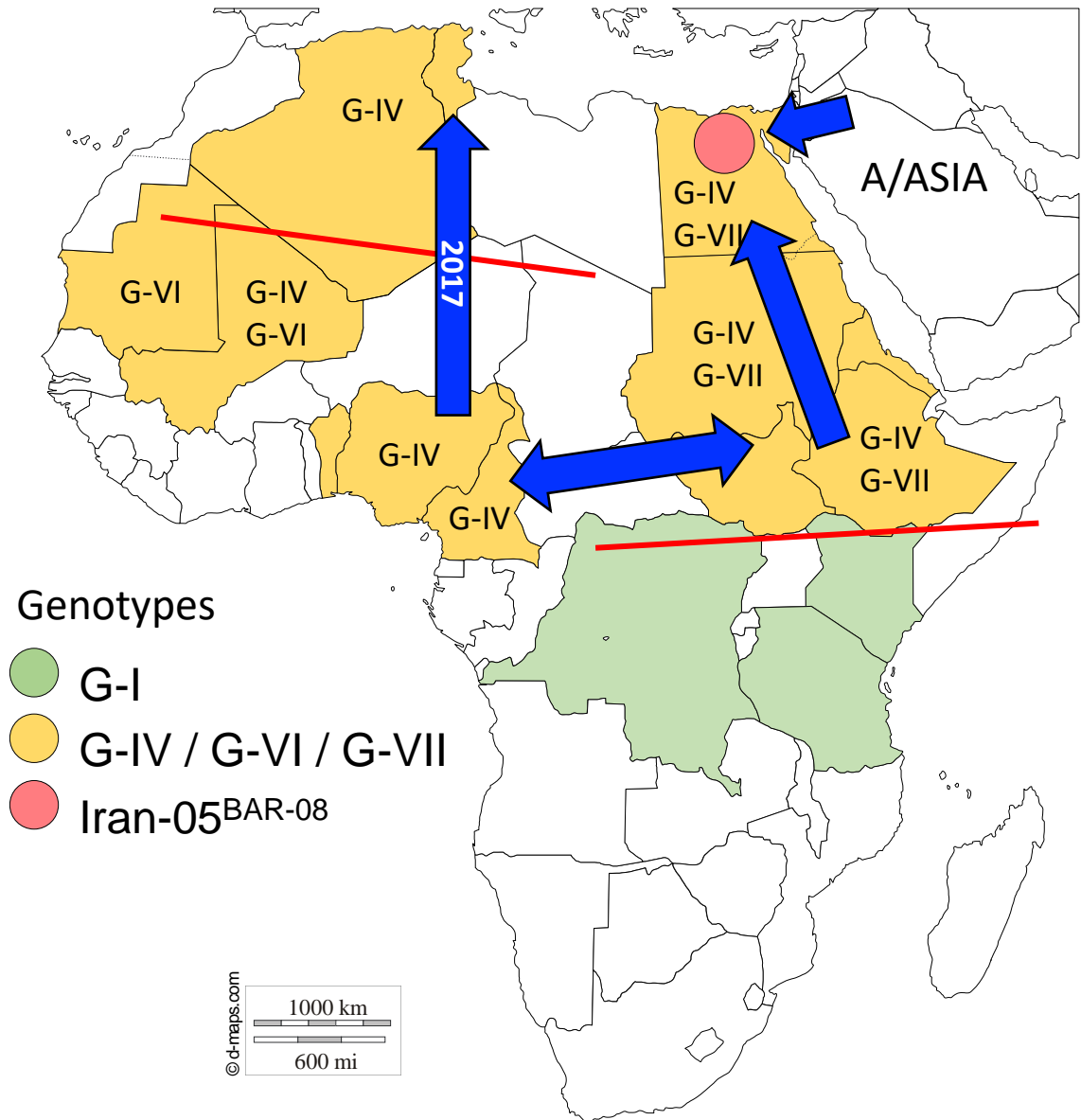


Cattle density map



# Serotype A

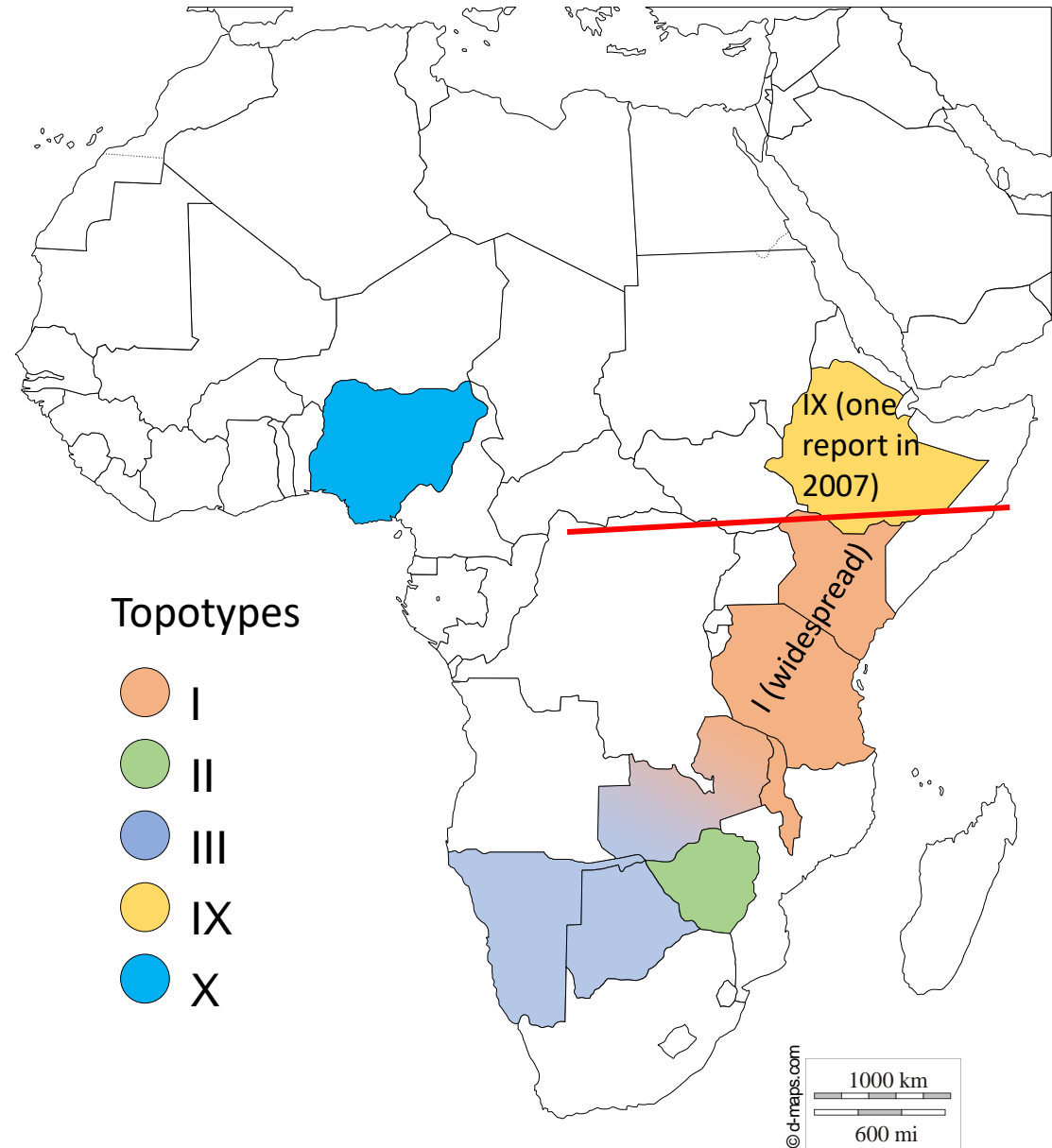
- Single AFRICA topotype, but different genotypes
- East Africa viruses have previously caused outbreaks in north Africa (Egypt 2006)
- Recent spread of A/AFRICA/G-IV into North Africa





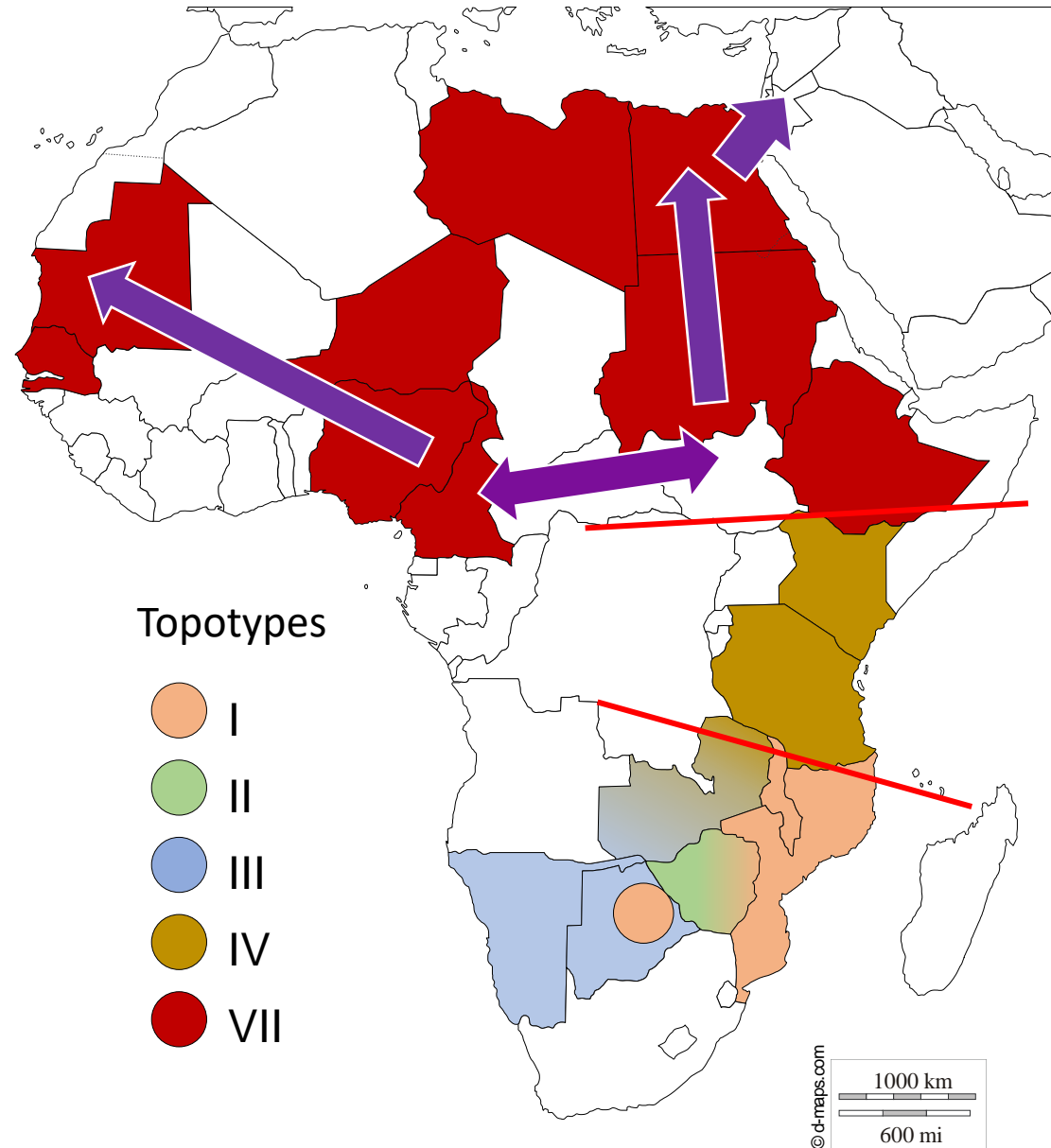
# Serotype SAT 1

- Topotype IX – limited spread with only small number of reports in Ethiopia (last reported in 2007)
- In contrast to widespread cases due to topotype I in Kenya and Tanzania
- New topotype X (recently described) restricted to Nigeria

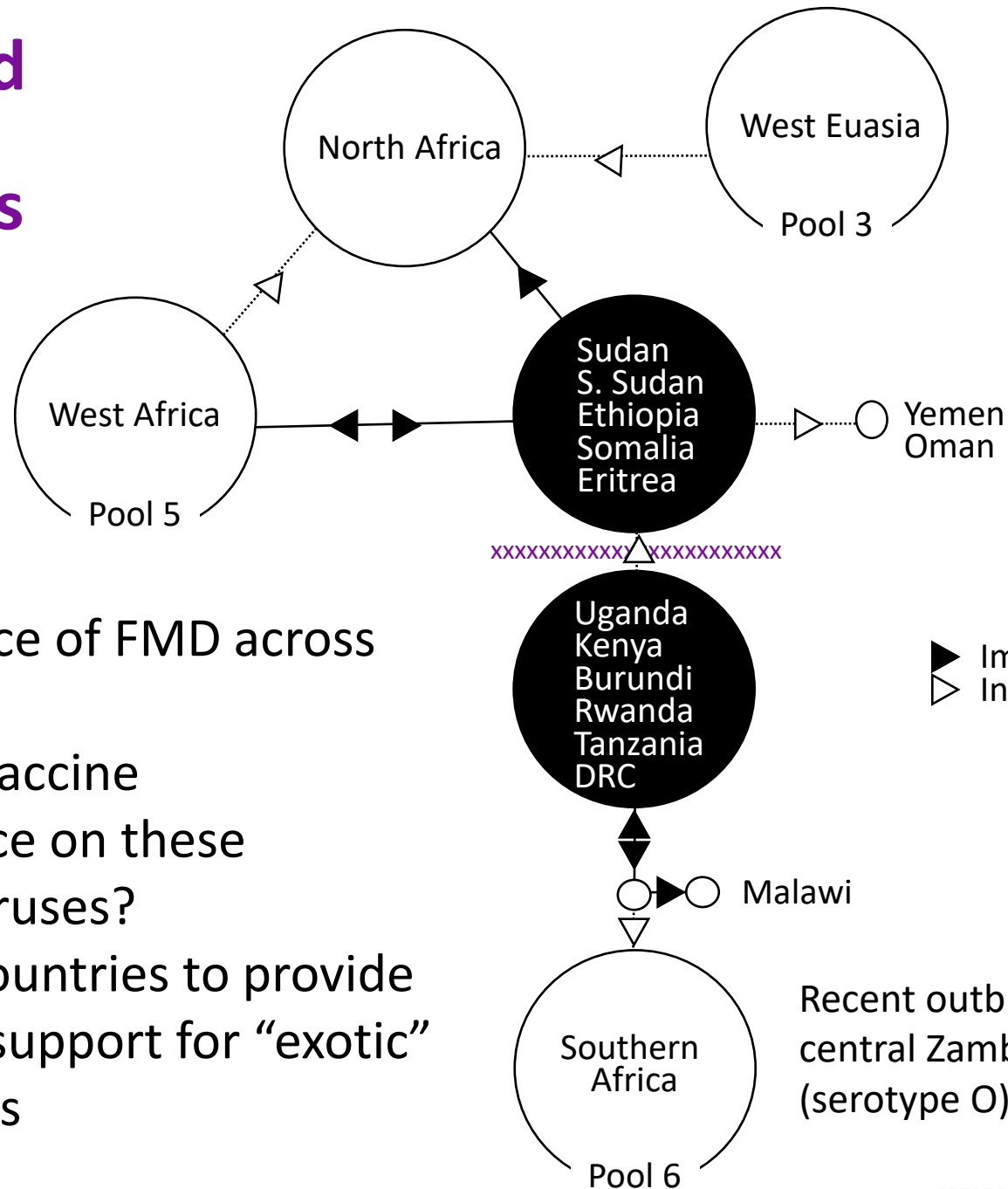


# Serotype SAT 2

- Topotype VII is widespread responsible for incursions into Egypt/Libya (2012) and Oman (2015)
- Frequently reported outbreaks in Southern Africa caused by distinct viral lineages



# Conjectured regional connections



- Maintenance of FMD across the region
- Impact of vaccine performance on these different viruses?
- Ability of countries to provide diagnostic support for “exotic” FMD viruses

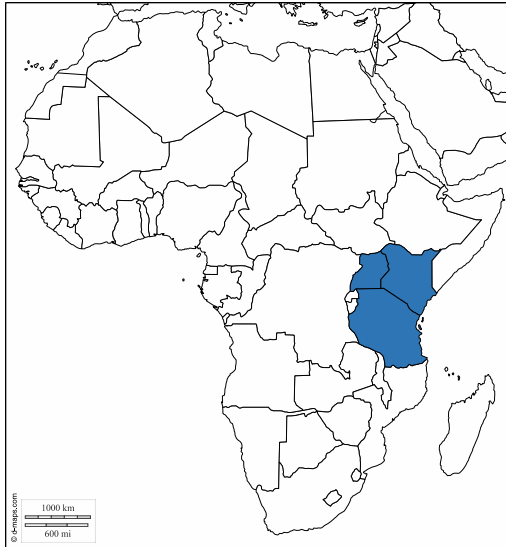
# Role of FMD reference laboratories to help fill gaps

- Factors underpinning the epidemiology of FMD in East Africa are not well understood
- Which FMD serotypes/topotype circulate in each of the countries?
- Priorities:
  - **Understanding the challenges:** Knowledge about how each of the FMD viral lineages are maintained in the region or are introduced from countries outside of the region
  - **Tools for FMD Control:** Robust evidence for the selection and use of vaccines in the region: are effective vaccine available for the strains that circulate in the region?
- Importance of the sample collection from FMD outbreaks in the field
  - To feed real-time lab data back to FMD control programmes

**WRLFMD and the OIE/FAO Lab Network welcome sample submissions from member states**

- Testing is free of charge
- Support from EuFMD for sample shipments
- Contact: [donald.king@pirbright.ac.uk](mailto:donald.king@pirbright.ac.uk)

# Serotype-specific RT-PCR assays tailored for East Africa

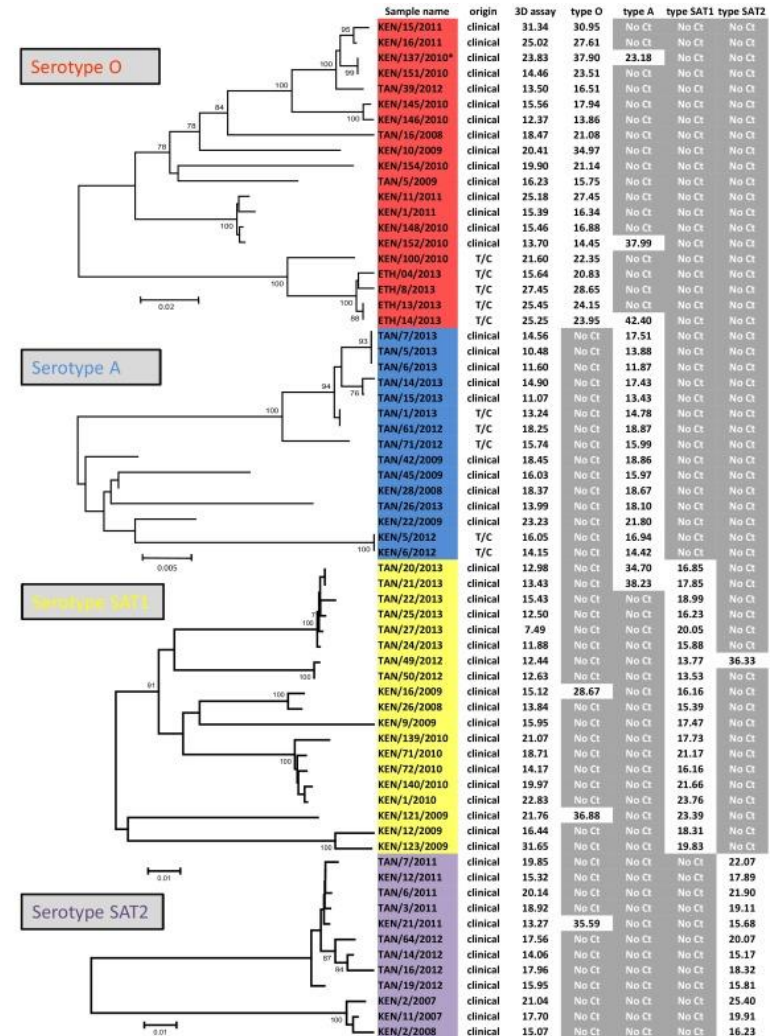


- O/EA-2 and O/EA-4
- A/AFRICA/G-I
- SAT1/I (NWZ)
- SAT2/IV



FAST Awards

- Rapid indication of new virus introductions to the endemic areas.
- Tests can be performed in the country
- Rapid feedback to outbreak control authorities.



# Reports:

[www.wrlfmd.org](http://www.wrlfmd.org)

## Acknowledgements

- Support for the WRLFMD and research projects
- Collaborating FMD Reference Laboratories and field teams
- Partners within the OIE/FAO FMD Lab Network



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Food & Rural Affairs



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