



UPDATE ON THE CURRENT FMD GLOBAL SITUATION

Anna Ludi & Donald King

Acknowledgements: Valerie Mioulet, Nick Knowles, Ginette Wilsden, Andrew Shaw, Nick Lyons, Mehreen Azhar, Hannah Baker, Antonello Di Nardo, Bob Statham, Lissie Henry, Jemma Wadsworth, Clare Browning, Britta Wood, Alison Morris, Abid Bin-Tarif, Ashley Gray, Beth Johns, Mark Henstock, Hayley Hicks, David Paton, Dexter Wiseman, Julie Maryan, Sarah Belgrave



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



Oie
FMD Reference Laboratory

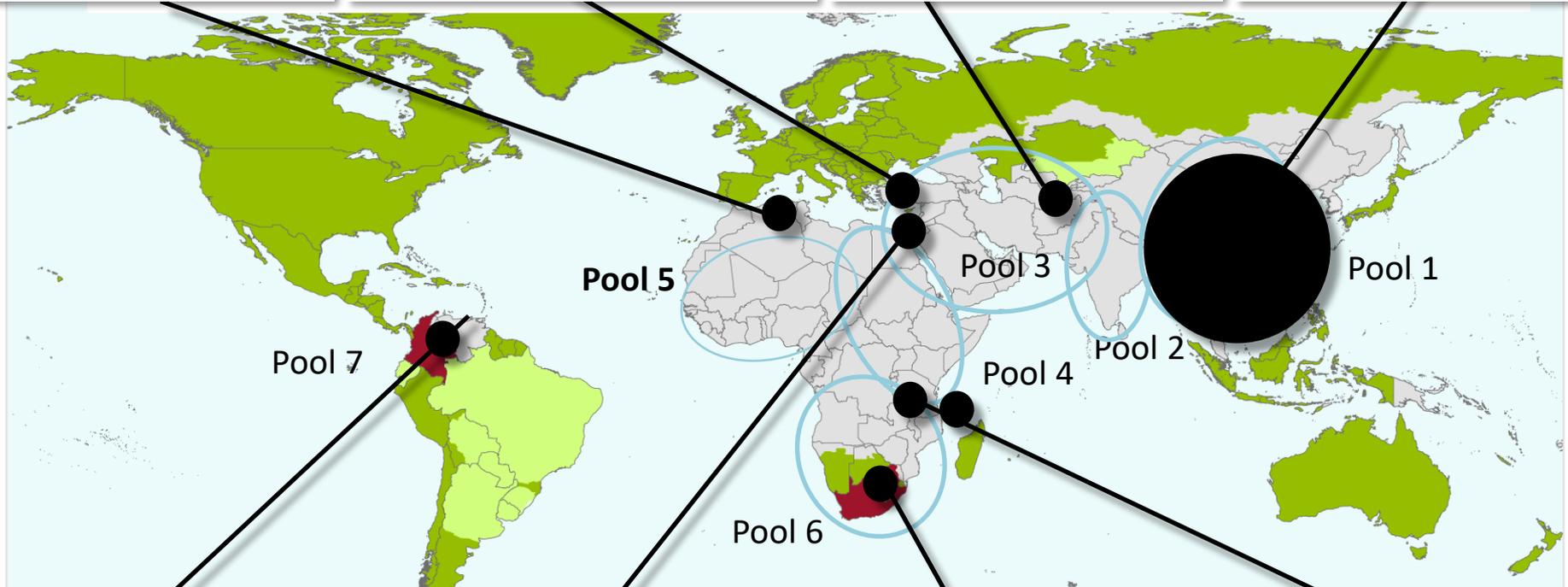
Global headline events (2017-2019)

North Africa
A/AFRICA in 2017
O/EA-3 in 2018/19

Turkey
O/ME-SA/PanAsia-2^{QOM-15}
A/ASIA/G-VII

Pakistan
O/ME-SA/Ind-2001e
Ag O/PanAsia-2

Southeast and East Asia
O/ME-SA/Ind-2001e



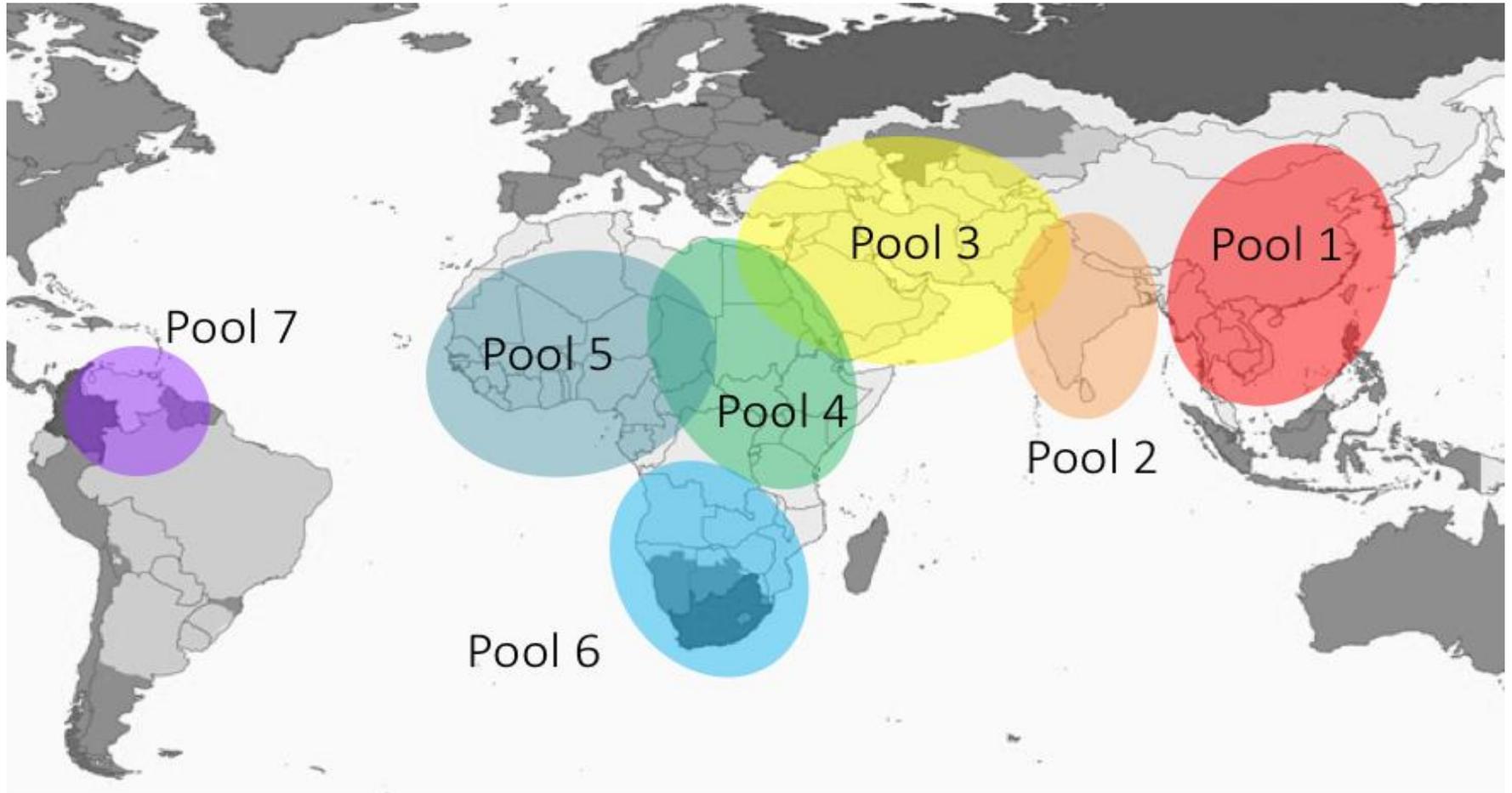
Colombia
Serotype O
2018: 8 new outbreaks
Links to Venezuela

East Mediterranean
O/ME-SA/PanAsia-2^{QOM-15}
O/EA-3
A/ASIA/G-VII
Serotype SAT 2

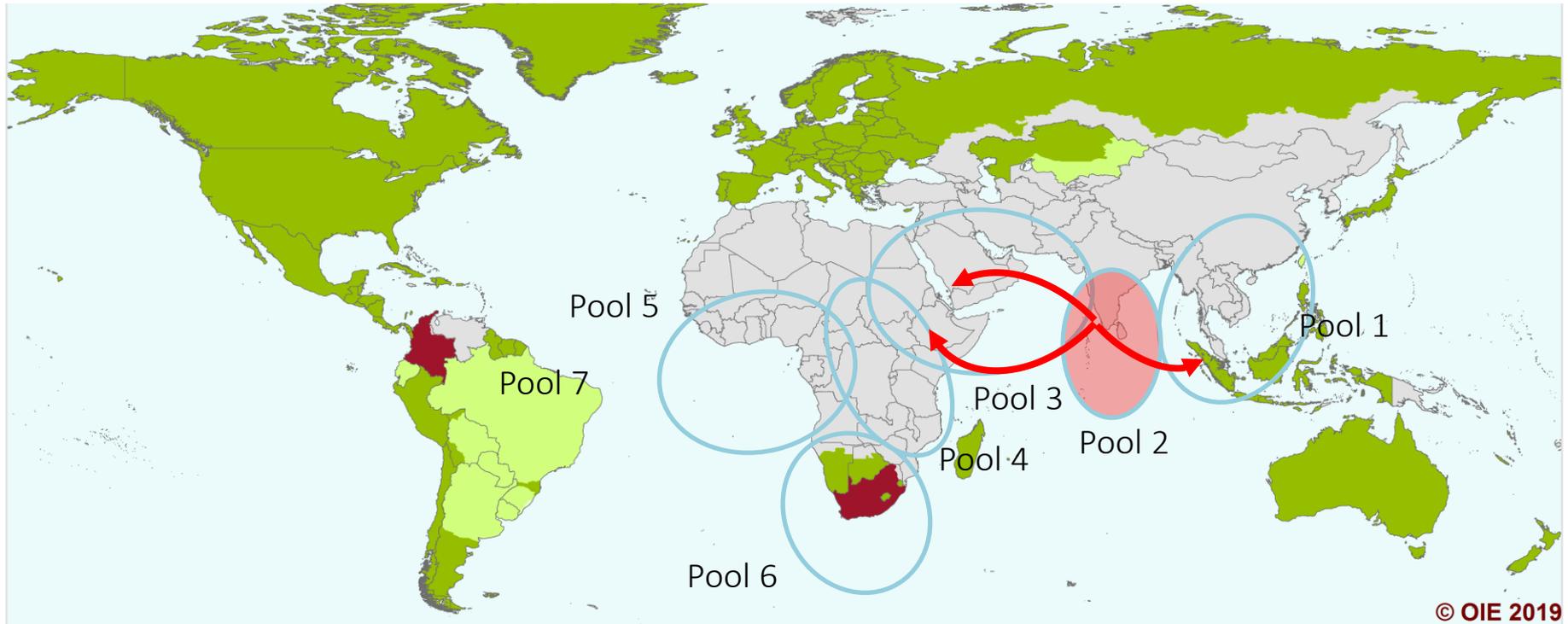
South Africa (Limpopo)
Serotype SAT 2
Initially within the protection zone
Jan 2019: spill-over into surv. zone
leading to suspended status

Central Zambia
Comoros
O/EA-2

Virus movement from South Asia



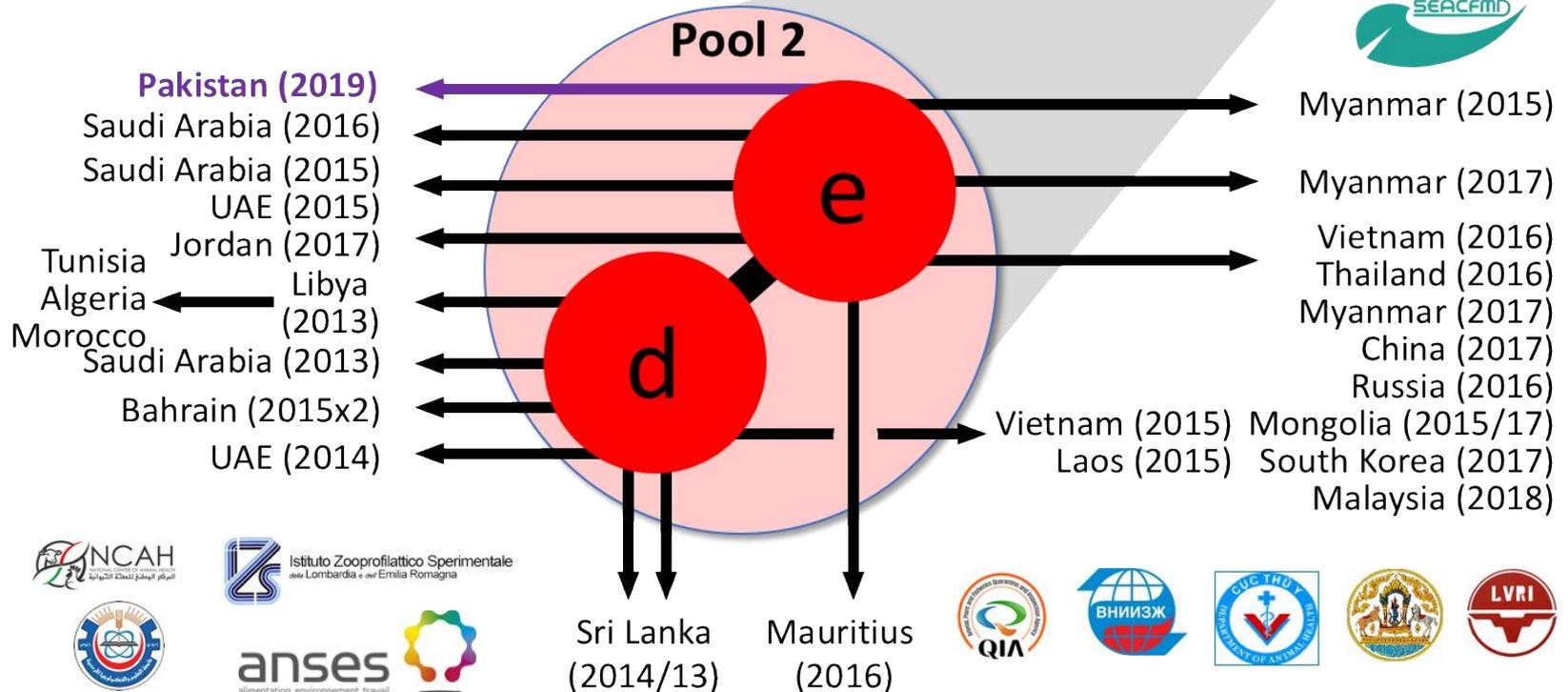
Recent “trans-pool” spread from Pool 2



- Spread of FMD viruses endemic from Pool 2 (India, Bangladesh, Nepal, Bhutan)
- 2015: **A/ASIA/G-VII** into West Eurasia (Iran, Turkey, Saudi Arabia, Armenia and Israel)
- 2017: **serotype Asia 1** into Myanmar

Further expansion of the O/ME-SA/Ind-2001 lineage from pool 2

First detection in a West Eurasian hub-country with potential for onward spread

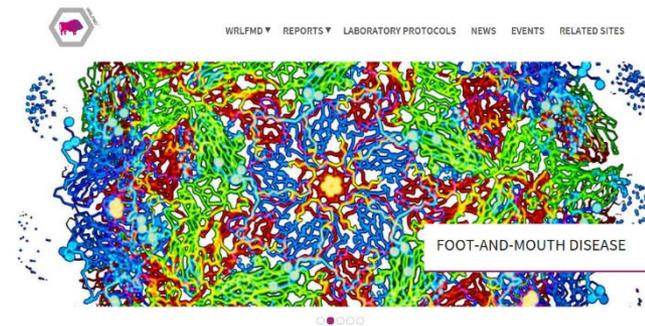


Reports and information

- New website (wrlfmd.org) launched in November 2018
- In addition to *Genotyping reports*, now contains *Vaccine matching* and *Serotyping reports*
- Other data sources:
 - EuFMD Monthly report
 - Quarterly WRLFMD report

Tools for FMDV sequences

- Priority for the FMD community
- FMDVTools:
<https://mallorn.pirbright.ac.uk>



Welcome



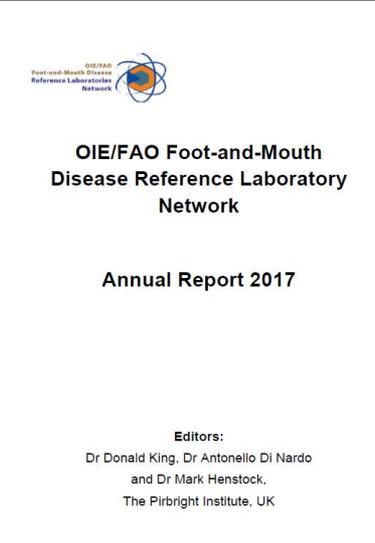
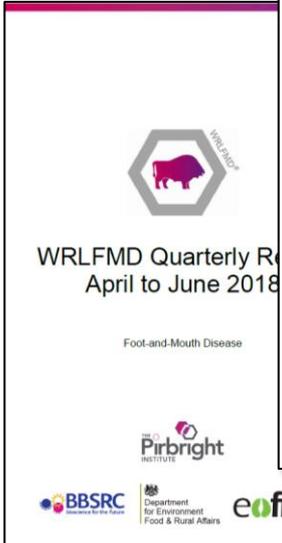
The Pirbright Institute is designated as the World Reference Laboratory for Foot-and-Mouth Disease by the Food and Agriculture Organization (FAO) of the United Nations and as a reference laboratory for FMD by the Office International des Epizooties (OIE).

Country FMD Reports



Details of samples tested for FMD at WRLFMD from around the world.

Country Reports >



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

Annual Report 2017

Editors:
Dr Donald King, Dr Antonello Di Nardo
and Dr Mark Henstock,
The Pirbright Institute, UK



University
of Glasgow



Are we there yet?

The challenges of deploying field tests for the rapid diagnosis of transboundary diseases

Anna Ludi, **Donald King**
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Co-authors: Veronica L. Fowler, Bryony Armson, Emma L.A. Howson, Kasia Bankowska, Graham L. Freimanis, David J. King, Tiziana Lembo, Andrew Shaw, Sarah Cleaveland, Christopher J. Kasanga



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FMD Reference Laboratory

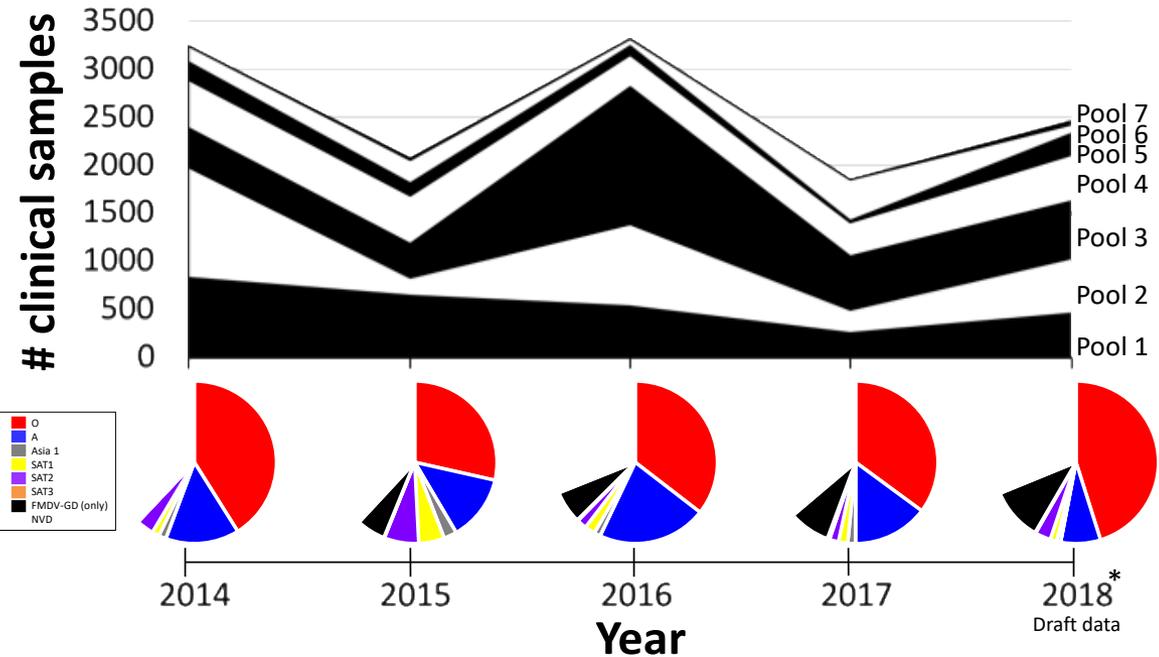
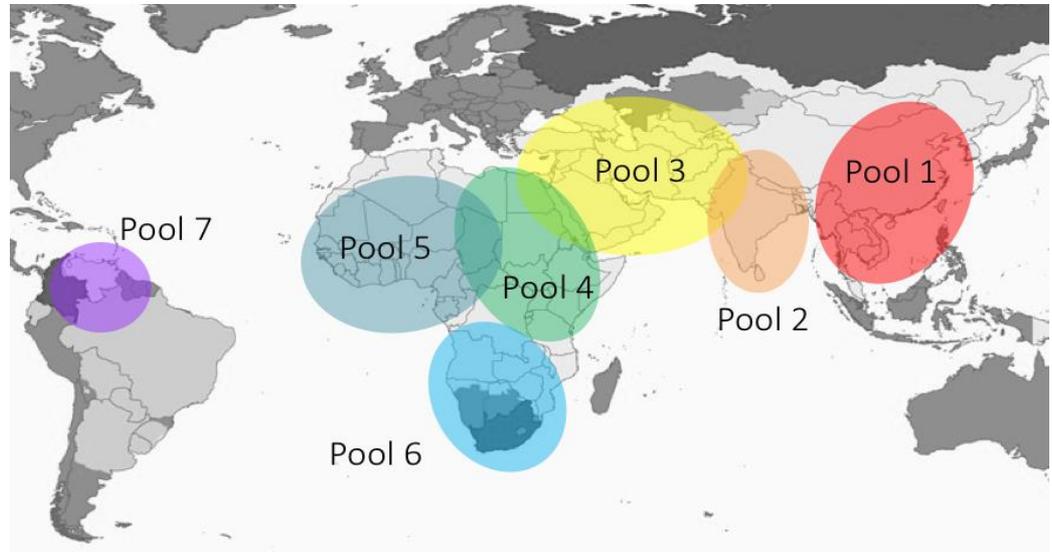


The Pirbright Institute receives strategic funding from BBSRC.

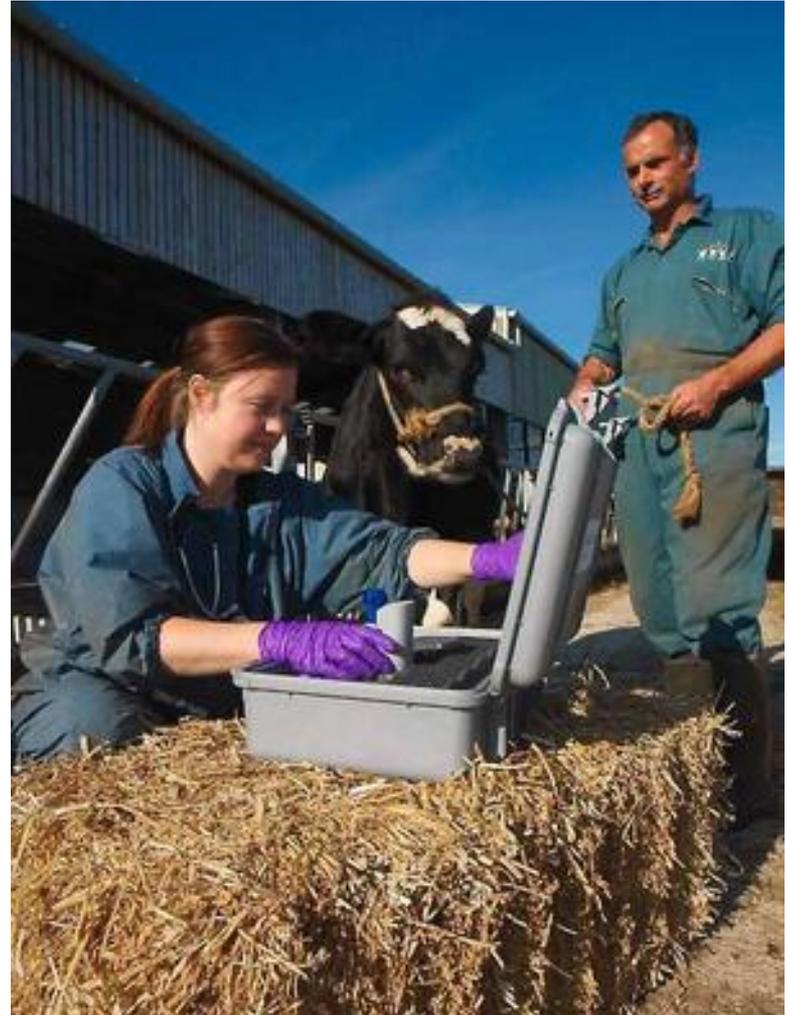
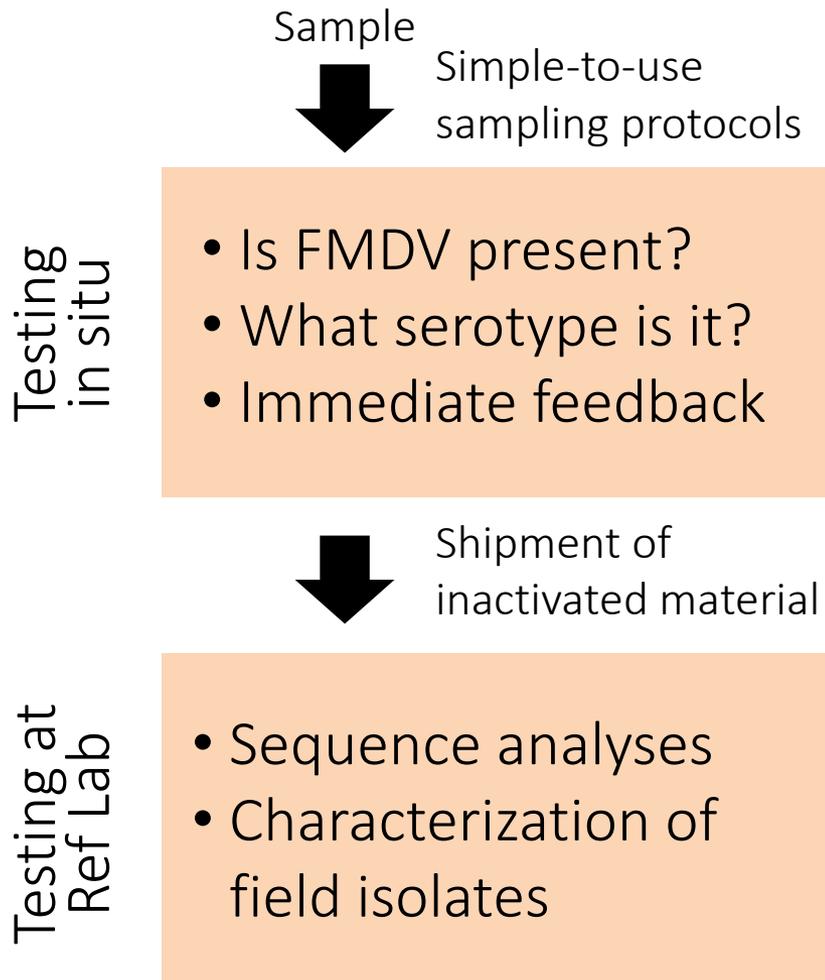
www.pirbright.ac.uk

Samples tested by the OIE/FAO FMD Laboratory Network

- 2000-3500 samples tested annually
- Data used to define relative importance of different FMD virus lineages in each Pool
- Surveillance gaps in Pool 5 (W. Africa) and Pool 6 (S. Africa)
- Reports available: <http://www.foot-and-mouth.org/>



Imagining a new diagnostic pipeline



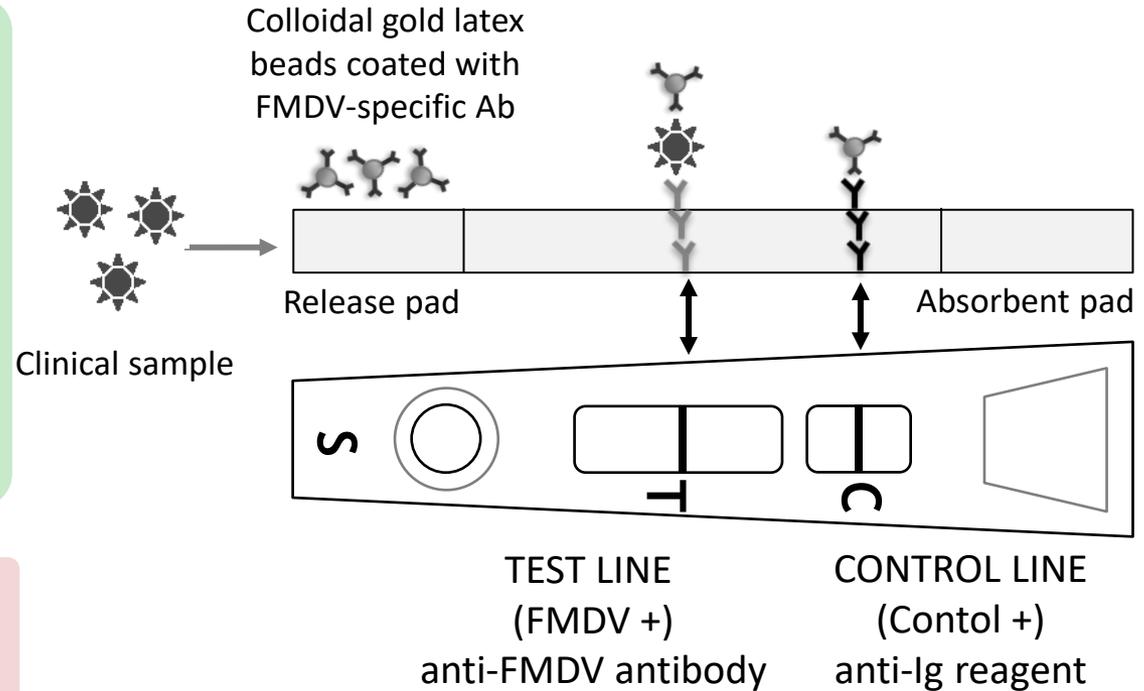
Antigen-lateral flow device



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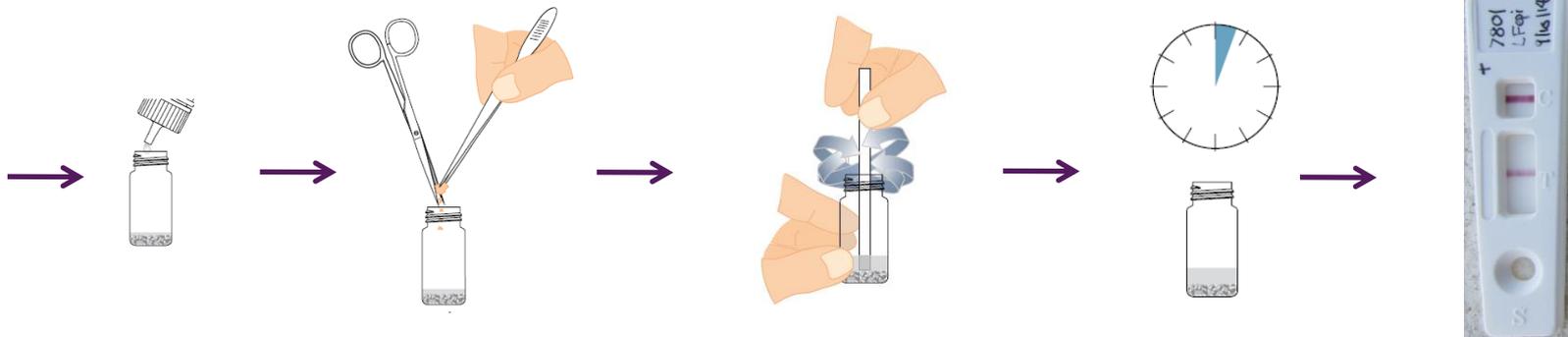
- ✓ Simple to use
- ✓ Rapid (~10 mins)
- ✓ Disposable
- ✓ Highly portable
- ✓ Inexpensive
- ✓ Commercially available
- ✓ Recognizes all 7 serotypes



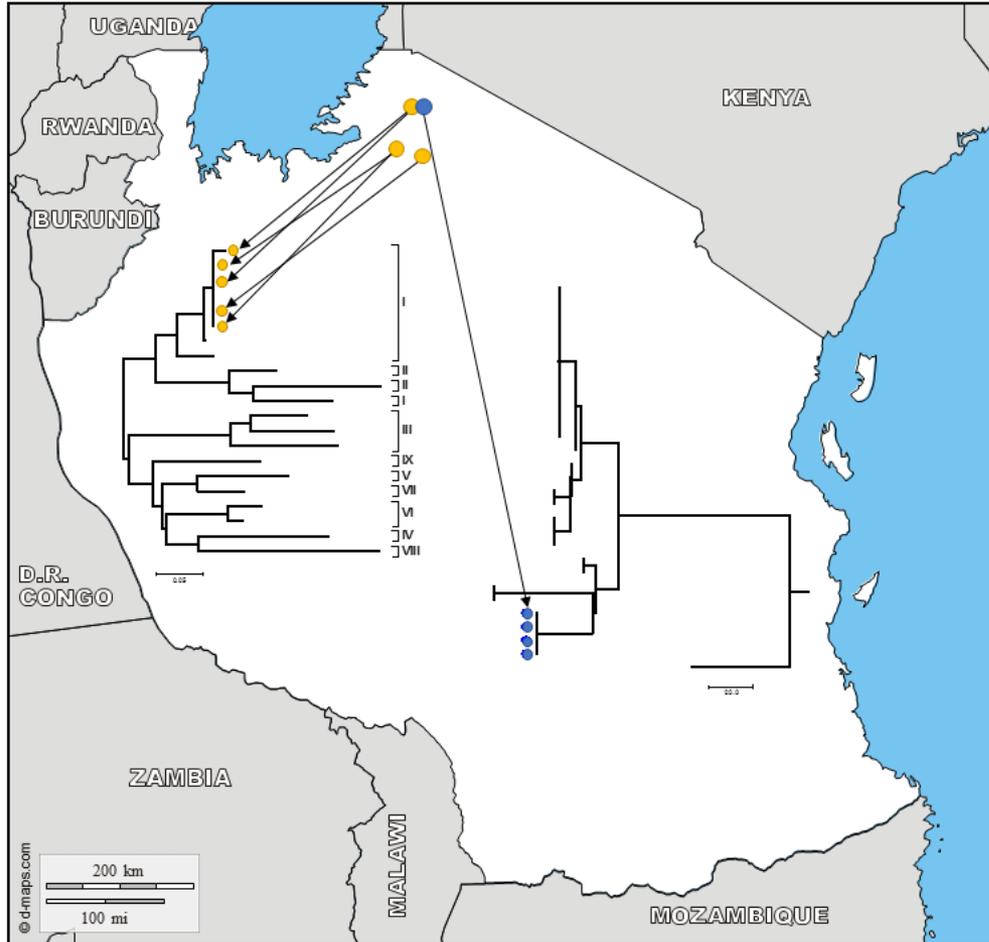
- Sensitivity (similar to AgELISA)
- Limited sample types



Ruptured lesion



Antigen-lateral flow device



Fowler et al. The Pirbright Institute

Transboundary and Emerging Diseases

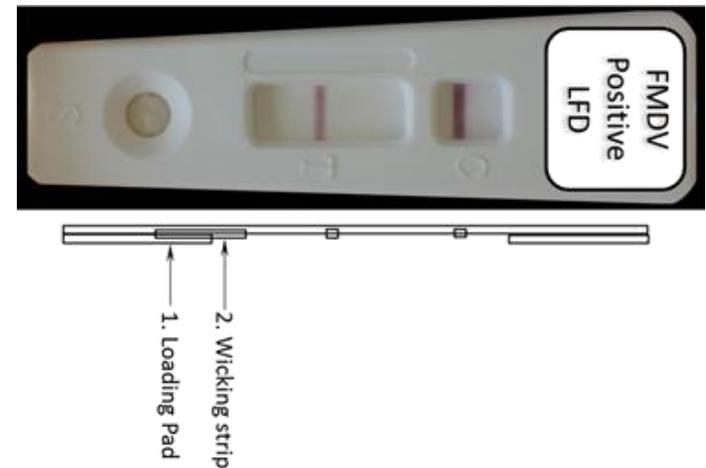
ORIGINAL ARTICLE | Full Access

Safe and cost-effective protocol for shipment of samples from Foot-and-Mouth Disease suspected cases for laboratory diagnostic

A. Romey, A. Relmy, K. Goma, E. Laloy, S. Zientara, S. Blaise-Boisseau, L. Bakkali Kassimi

anses
alimentation, environnement, travail

Store and transport samples



Mobile rRT-PCR

- ✓ Sensitive
- ✓ Use of accredited assays
 - Established technology
- ✓ Battery operated
 - No need for mains
- ✓ Getting quicker
 - > 1 hour 30 (rRT-PCR)
- ✓ Lyophilised reagents
- ✓ Serotyping possible

- Cost
- Bio-containment

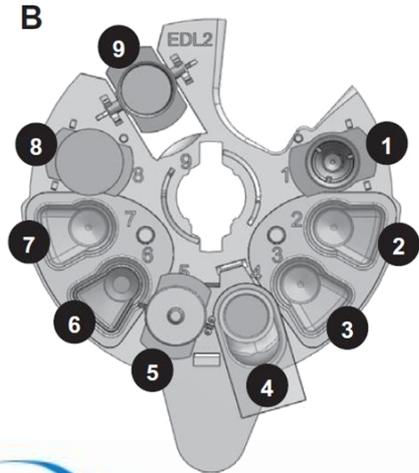
1)



2)



Tetracore®



enigmadiagnostics

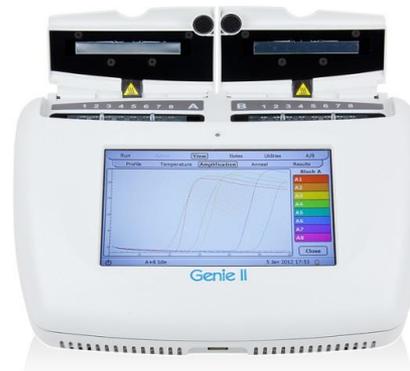


Isothermal alternatives

- ✓ Simplified machinery
- ✓ Sensitive
- ✓ Battery operated
- ✓ Rapid
 - 10 minutes RPA
 - 30 minutes LAMP
- ✓ Lyophilised reagents
- ✓ LAMP – crude samples

- Serotyping difficult
- Bio-containment

OptiGene 

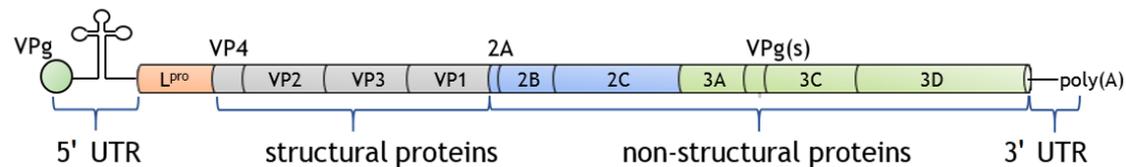
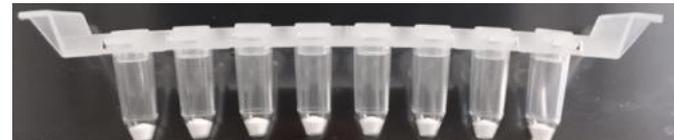


LAMP

TwistDx



RPA



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David Paton

