



WRLFMD Global update

October 2014

Donald King

donald.king@pirbright.ac.uk

WRLFMD Team: Valerie Mioulet, Nick Knowles, Anna Ludi, Ginette Wilsden, Bryony Armson, Pip Hamblin, Kasia Bachanek-Bankowska, Kelly Adams, Jemma Wadsworth, Begoña Valdazo-González, Britta Wood, Barsha Thapa, Bob Statham, Abid Bin-Tarif, Ashley Gray, Trish Ryder, Sarah Belgrave



Department
for Environment
Food & Rural Affairs



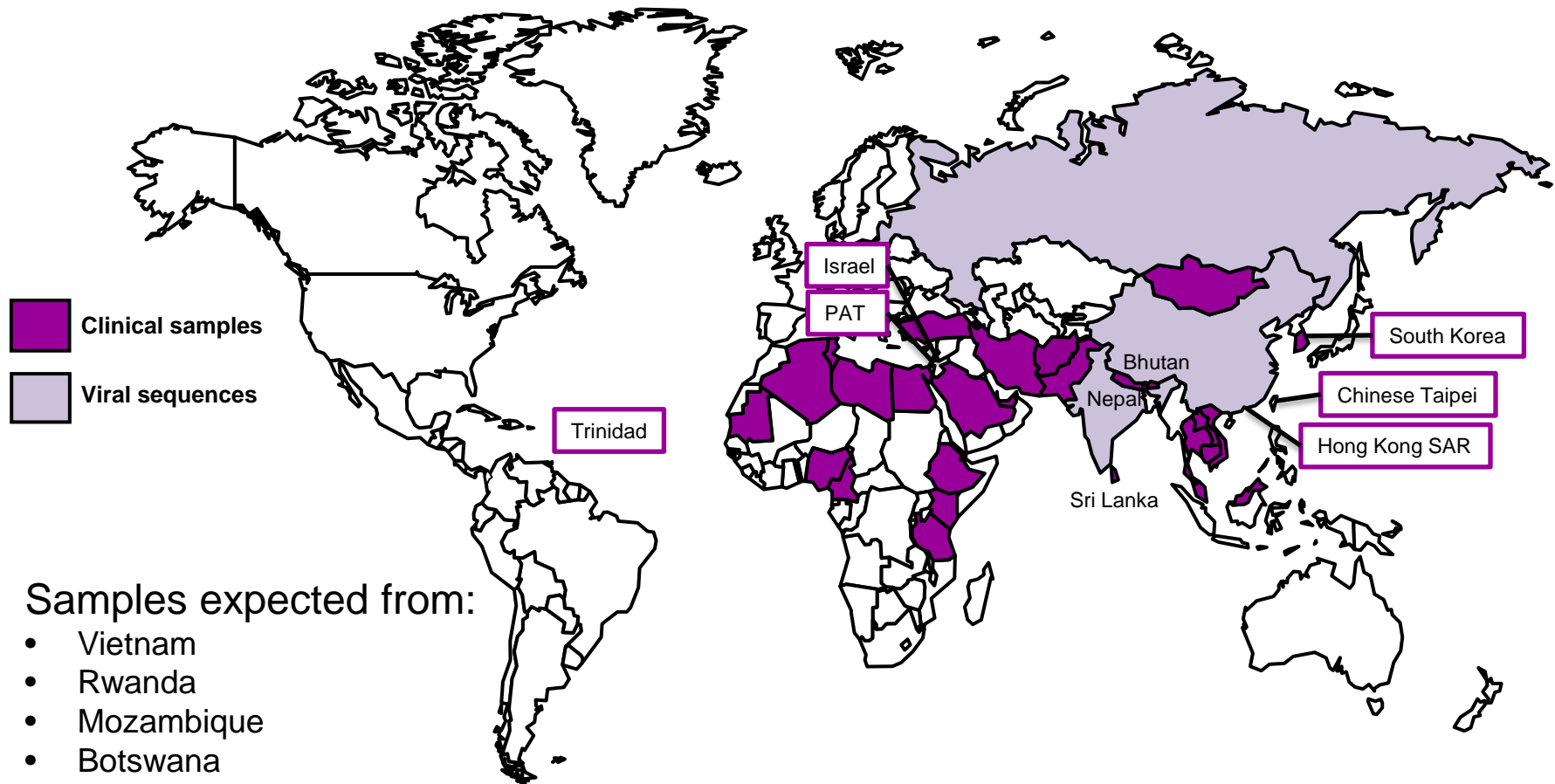
FMD and SVD
Reference Laboratories



Recent submissions to WRLFMD Pirbright

January 2013 – October 2014

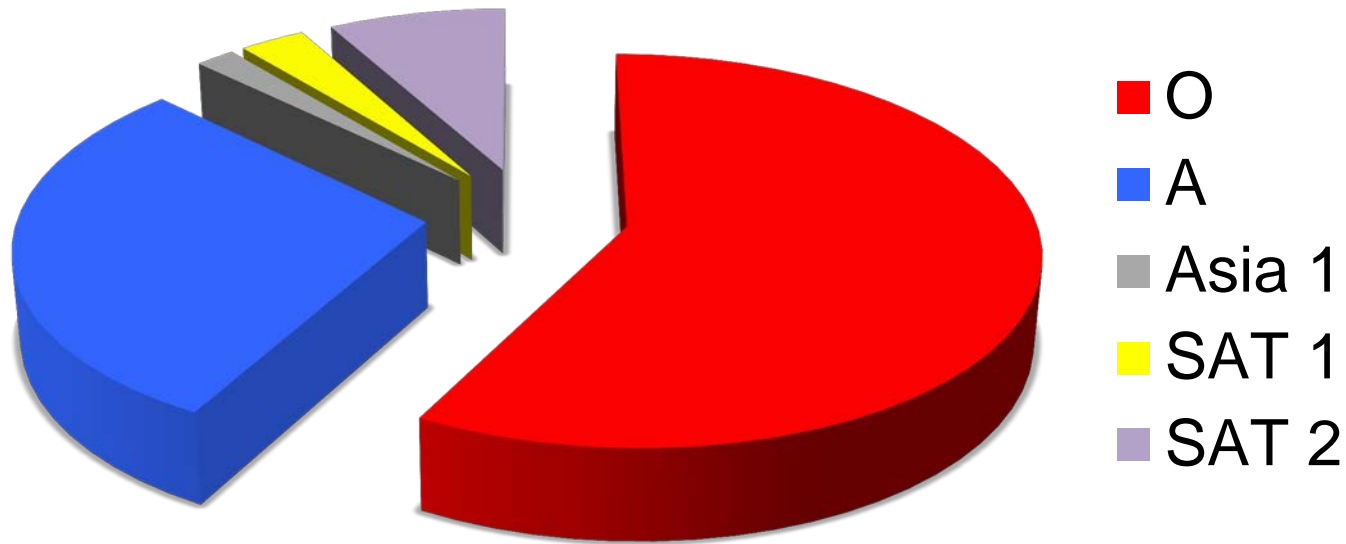
24 countries have submitted samples during 2014



Reports for these samples can be found at www.wrlfmd.org

Serotypes recovered

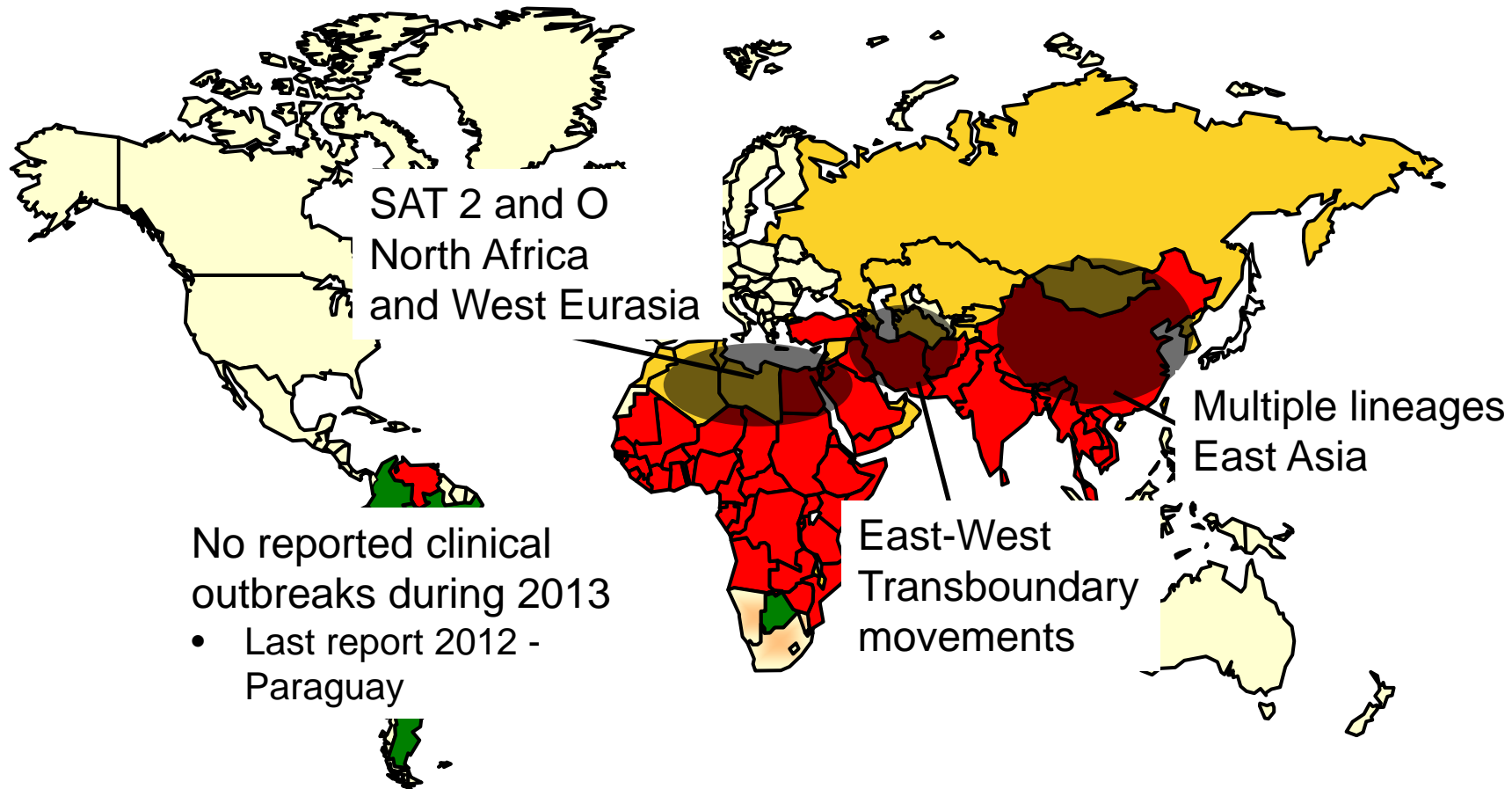
- During 2014: 544 samples generating 335 Isolates
- Additional 37 samples positive by rRT-PCR



- No serotype C since 2004
- Serotype-specific rRT-PCR assays have been used recently for VI negative samples from Tanzania

Summary of recent events 2010-2014:

Changing patterns and threats



New O/ME-SA/Ind-2001 outbreaks in Tunisia

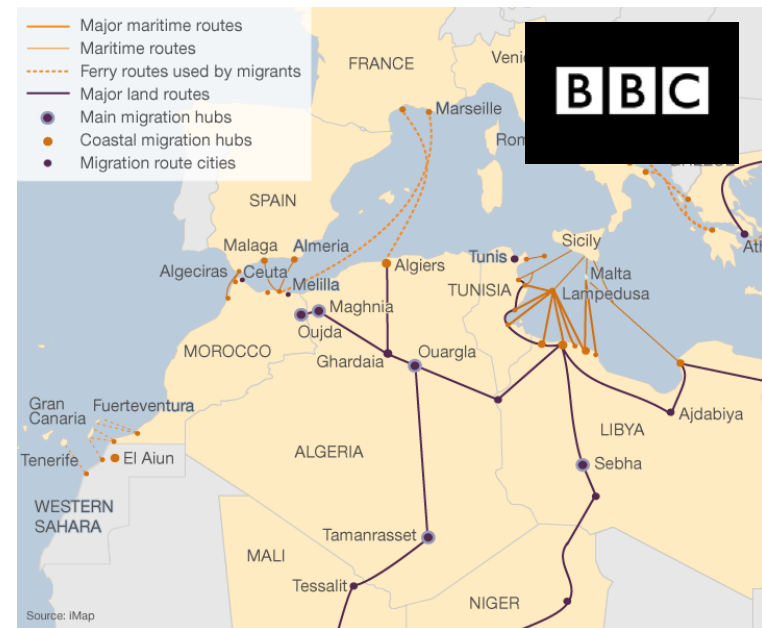
- Reported to OIE 29/04/14
- Previously FMD-free with vaccination
- FMD clinical cases in cattle
- Source: “illegal movement of animals”
- Testing performed at: Tunisian Veterinary Research Institute (IRVT)
- Testing undertaken in partnership with IZSLER, Italy



Source: OIE

Tunisia and Algeria

-
- Phylogenetic tree showing relationships between various O/EHEC strains. The tree is rooted on the left and branches to the right. Bootstrap values are shown at the nodes: 91 and 99. Strains are labeled with their accession numbers and dates. Two strains are highlighted with red diamonds: O/1628-1468/Algeria/2014 (IZSLER) and O/1631-FA001/Algeria/2014 (IZSLER).
- O/1628-1468/Algeria/2014 (IZSLER)
 - O/TUN/1031/2014* (IZSLER)
 - O/1631-FA001/Algeria/2014 (IZSLER)
 - O/TUN/1054/2014* (IZSLER)
 - O/LIB/12/2013
 - O/LIB/11/2013
 - O/LIB/1/2013
 - O/LIB/4/2013
 - O/LIB/13/2013
 - O/LIB/5/2013
 - O/LIB/17/2013
 - O/LIB/7/2013



www.pirbright.ac.uk

Vaccine matching for O/ME-SA/Ind-2001

22 field isolates

	Vaccine strain				
Field Isolate	O-3039	O Manisa	O BFS	O/TAW/98	O/TUR/5/09
LIB 1/2013			nd		
LIB 7/2013			nd		
LIB 17/2013					
LIB 22/2013			nd		
NEP 13/2012		borderline	nd		
NEP 6/2012	borderline		nd		
NEP 21/2012			nd		
NEP 6/2013			nd	borderline	
NEP 18/2013			nd		
NEP 1/2014					
NEP 6/2014			nd		
SAU 1/2013			nd		
SAU 4/2013			nd		
SAU 6/2013			nd		
SAU 7/2013			nd		
SAU 1/2014	borderline		nd		
SRL 1/2013			nd		
SRL 1/2014		borderline	nd		
UAE 1/2014		borderline	borderline		
UAE 2/2014		borderline	nd		
ALG 1/2014	borderline			borderline	
TUN 1/2014	borderline			borderline	

in-vivo potency test for O/ME-SA/Ind 2001

Is this now a priority?

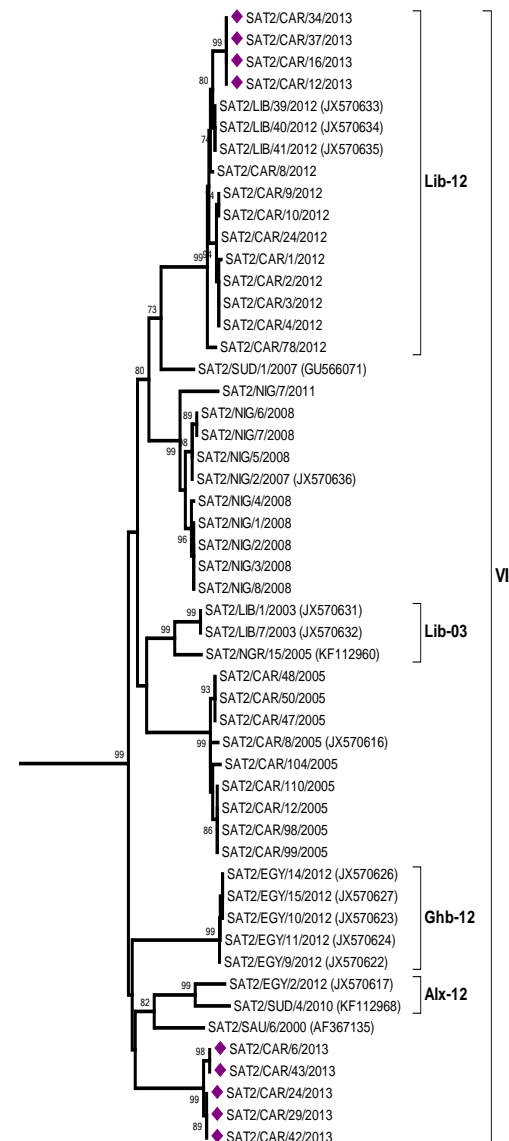
- O-3039 being used in North Africa
- Uncertainty about the cross-protection of O/Manisa and O/BFS
- Experiment could be scheduled for early 2015 (at Lelystad or Pirbright)
- Could be funded through EU-RL contribution for 2015?
- Format to be discussed and agreed
 - Vaccine strain
 - End-point



Pool 5:

Recent samples collected from West Africa

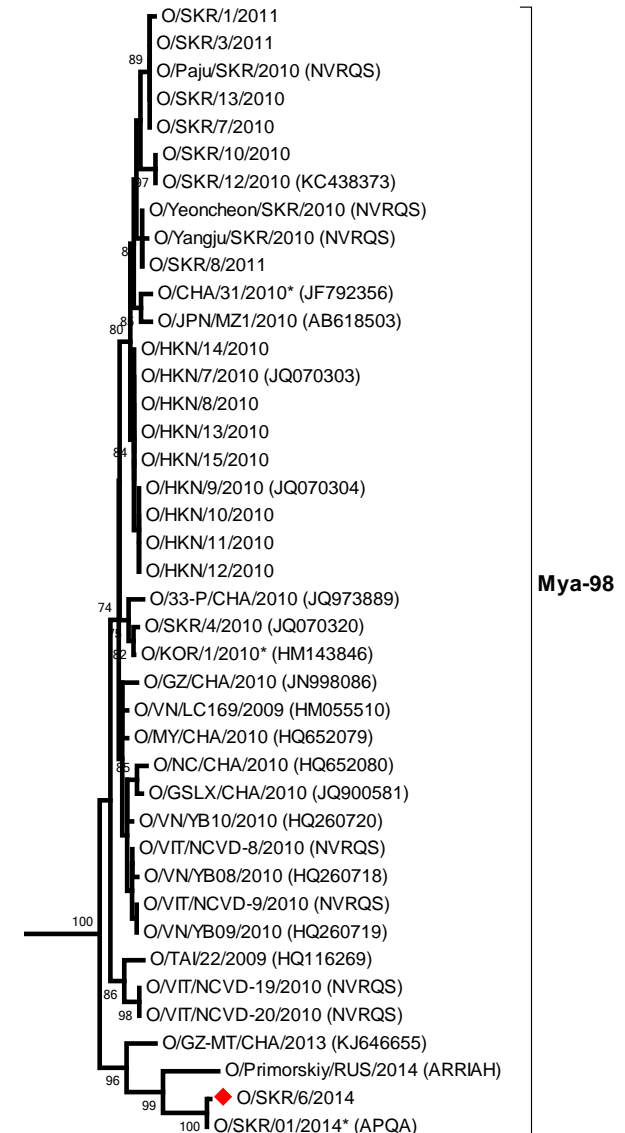
- Sampling in West Africa identified as a gap at the OIE/FAO FMD Lab Network meeting
- Samples submitted during 2014:
 - Cameroon (46 samples)
 - Nigeria (42 samples: shipment funded by WRLFMD)
- Viruses detected
 - Serotype O (EA-3 and WA topotypes)
 - Serotype A (AFRICA topotype: G-IV)
 - Serotype SAT 2 – topotype VII: related to FMD outbreaks in North Africa during 2012



Pool1 : O/SEA/Mya-98 in East Asia

Recent detection in South Korea

- New FMDV outbreaks in South Korea
- Reported to OIE on 24/07/2014
- Cases in pigs
- FMD virus closely related to recent outbreaks in the Eastern part of the Russian Federation
- Appears to be a separate introduction into South Korea from cases in 2010-11



Revised vaccine bank recommendations?

	Vaccine strain (for each category are not listed in order of Importance)
High Priority	<p>O Manisa</p> <p>O PanAsia-2 (or equivalent)</p> <p>O BFS or Campos</p> <p>A24 Cruzeiro</p> <p>Asia 1 Shamir</p> <p>A Iran-05 (or A TUR 06)</p> <p>A22 Iraq</p> <p>SAT 2 Saudi Arabia (or equivalent i.e. SAT 2 Eritrea)</p>
Medium Priority	<p>A Eritrea</p> <p>SAT 2 Zimbabwe</p> <p>SAT 1 South Africa</p> <p>A Malaysia 97 (or Thai equivalent such as A/NPT/TAI/86)</p> <p>A Argentina 2001</p> <p>O Taiwan 97 (pig-adapted strain or Philippine equivalent)</p>
Low priority	<p>A Iran '96</p> <p>A Iran '99</p> <p>A Iran 87 or A Saudi Arabia 23/86 (or equivalent)</p> <p>A15 Bangkok related strain</p> <p>A87 Argentina related strain</p> <p>C Noville</p> <p>SAT 2 Kenya</p> <p>SAT 1 Kenya</p> <p>SAT 3 Zimbabwe</p> <p>A Kenya</p>

Summary of training and missions

- FMD Diagnostic training course held in May 2014
 - Participants from Ireland, South Africa, Botswana, Nigeria (funded by WRLFMD), New Zealand, Argentina and Israel
- Proficiency testing scheme for 2013 has been concluded
 - Summary of results will be presented at EuFMD meeting in Croatia
- Proficiency testing scheme for 2014 is underway
- Proposal for an OIE twinning with Ethiopia is being drafted (Pool 4)

Research update

- MiSeq – next generation sequencing platform
 - BMC Genomics: development of a new sequencing protocol for FMDV complete genomes
- RT-LAMP
 - PLoS ONE: Evaluation of simple formats for FMD virus detection
 - Testing in field conditions in Tanzania
- Use of Lateral-flow devices for sample transport?
 - PLoS ONE: recovery of FMD viruses by electroporation from LFDs
- Type-specific rRT-PCRs for East Africa
 - Funded by EuFMD
 - Use for VI negative samples and probangs

New tools for sequence data exchange: OpenFMD (FAO) and OIE initiative

- Annotated and curated database
- Proposed data exchange with Reference Labs
- Will be discussed at OIE Global meeting in Korea
- Work underway at Pirbright to improve local database that will interact with these systems



<input checked="" type="checkbox"/> PD283/2010	A	Bassas da India	cattle	2010	
<input type="checkbox"/> PD286/2010	A	Bassas da India	cattle	2010	
<input checked="" type="checkbox"/> O/CHA/31/2010	O	China/India	swine	22.02.10	
<input checked="" type="checkbox"/> O/CHA/7/2011	O	China/India	cattle	29.03.11	
<input type="checkbox"/> PD 155/2010	Asia 1	Bassas da India	cattle	02.02.10	
<input checked="" type="checkbox"/> PD 509/2010	Asia 1	Bassas da India	cattle	07.07.10	
<input checked="" type="checkbox"/> PD 18/2011	Asia 1	Bassas da India	cattle	12.2010	
<input type="checkbox"/> O/BY/CHA/2010	O	China/India	swine	03.2010	
<input checked="" type="checkbox"/> O/GZ/CHA/2010	O	China/India	cattle	03.2010	
<input type="checkbox"/> R1	O	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R2	O	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R3	O	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R4	A	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R5	A	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R6	A	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R7	A	Bassas da India	cattle	26.03.11	
<input type="checkbox"/> R8	A	Bassas da India	cattle	26.03.11	

Total Items: 169(Showing Items: 20)
Selected Items: 7

Page Size: 20

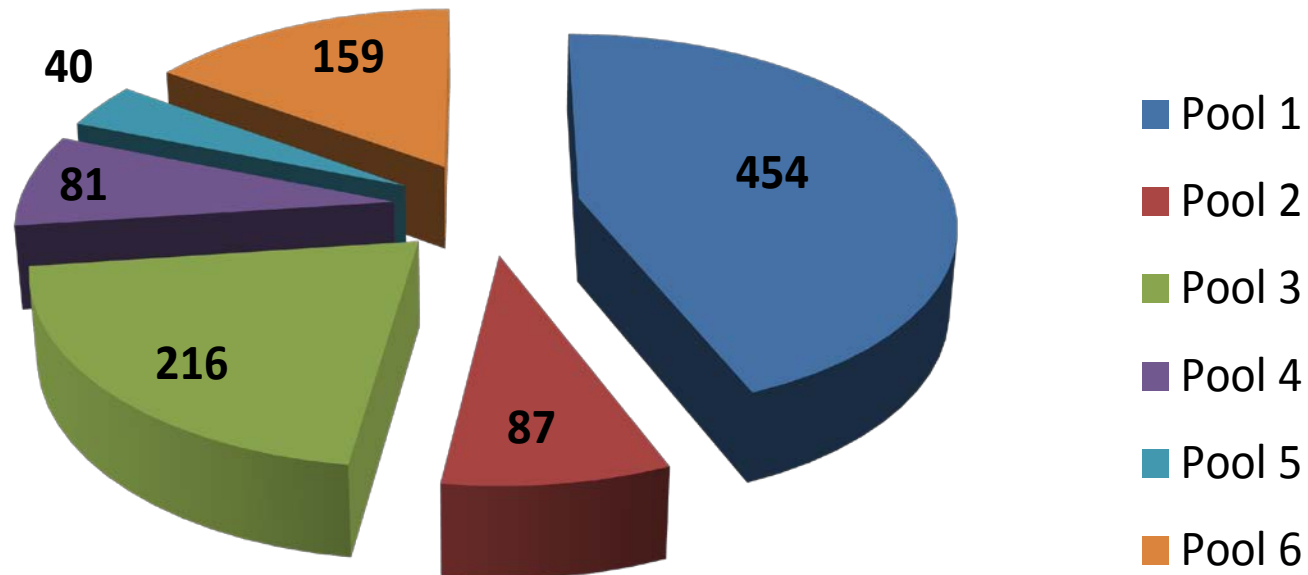
download fasta download Excel googleMap View Mult. Seq. Align. uniq sequences

Enhanced global surveillance

Via the OIE/FAO FMD Lab Network

1037 samples tested during 2013

Distributed across 6/7 endemic pools



Contact donald.king@pirbright.ac.uk

for .pdf copies of annual report for network (2103)

- **2014 Meeting in Brescia (Italy) 26/27 November**

Acknowledgements

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

Photos courtesy of HDR Architecture, Inc.; © 2104 James Brittain



Department
for Environment
Food & Rural Affairs



European Commission
for the control of FMD

Vaccine bank recommendations

	Vaccine strain (for each category are not listed in order of Importance)
High Priority	<ul style="list-style-type: none"> O Manisa O PanAsia-2 (or equivalent) O BFS or Campos A24 Cruzeiro Asia 1 Shamir A Iran-05 (or A TUR 06) A22 Iraq SAT 2 Saudi Arabia (or equivalent i.e. SAT 2 Eritrea)
Medium Priority	<ul style="list-style-type: none"> A Eritrea SAT 2 Zimbabwe SAT 1 South Africa A Malaysia 97 (or Thai equivalent such as A/NPT/TAI/86) A Argentina 2001 O Taiwan 97 (pig-adapted strain or Philippine equivalent)
Low priority	<ul style="list-style-type: none"> A Iran '96 A Iran '99 A Iran 87 or A Saudi Arabia 23/86 (or equivalent) A15 Bangkok related strain A87 Argentina related strain C Noville SAT 2 Kenya SAT 1 Kenya SAT 3 Zimbabwe A Kenya

