

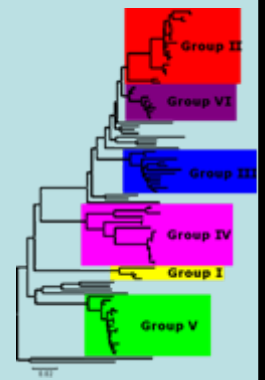


Overview of WRL FMD



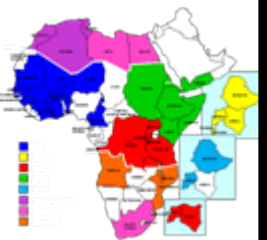
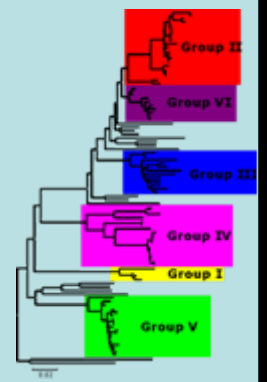
David Paton

- Historical perspective
- Principal activities
- FMD threats
- Needs/prospects



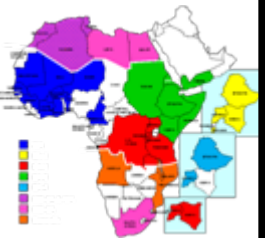
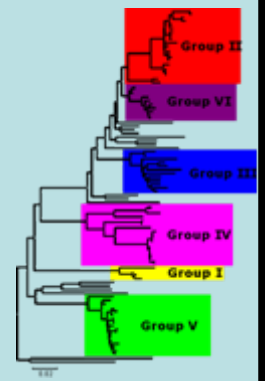
Historical Perspective

- FMD - a long recognised vesicular disease
- Most countries have been affected by FMD
- EUFMD established 1954 and WRLFMD established 1958 at which time
 - Regular epidemics in Europe and recent N American outbreaks
 - Types O, A, C ubiquitous
 - Lab diagnosis based on CFT, mice, tongue cultures
 - Cross-immunity tests in g-pigs and cattle



The World Reference Laboratory for FMD: a review of 33 years of activity (1958-1991)

N.P. Ferris and A.I. Donaldson

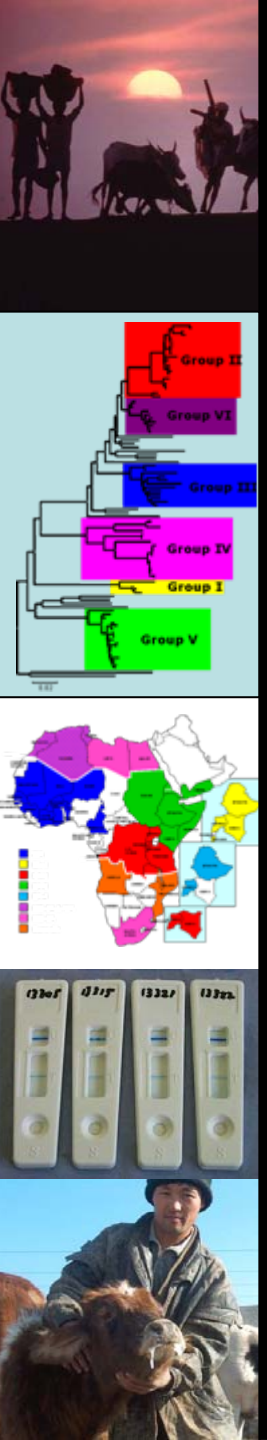


Briefing information on the
occasion of the 50th Anniversary
of the

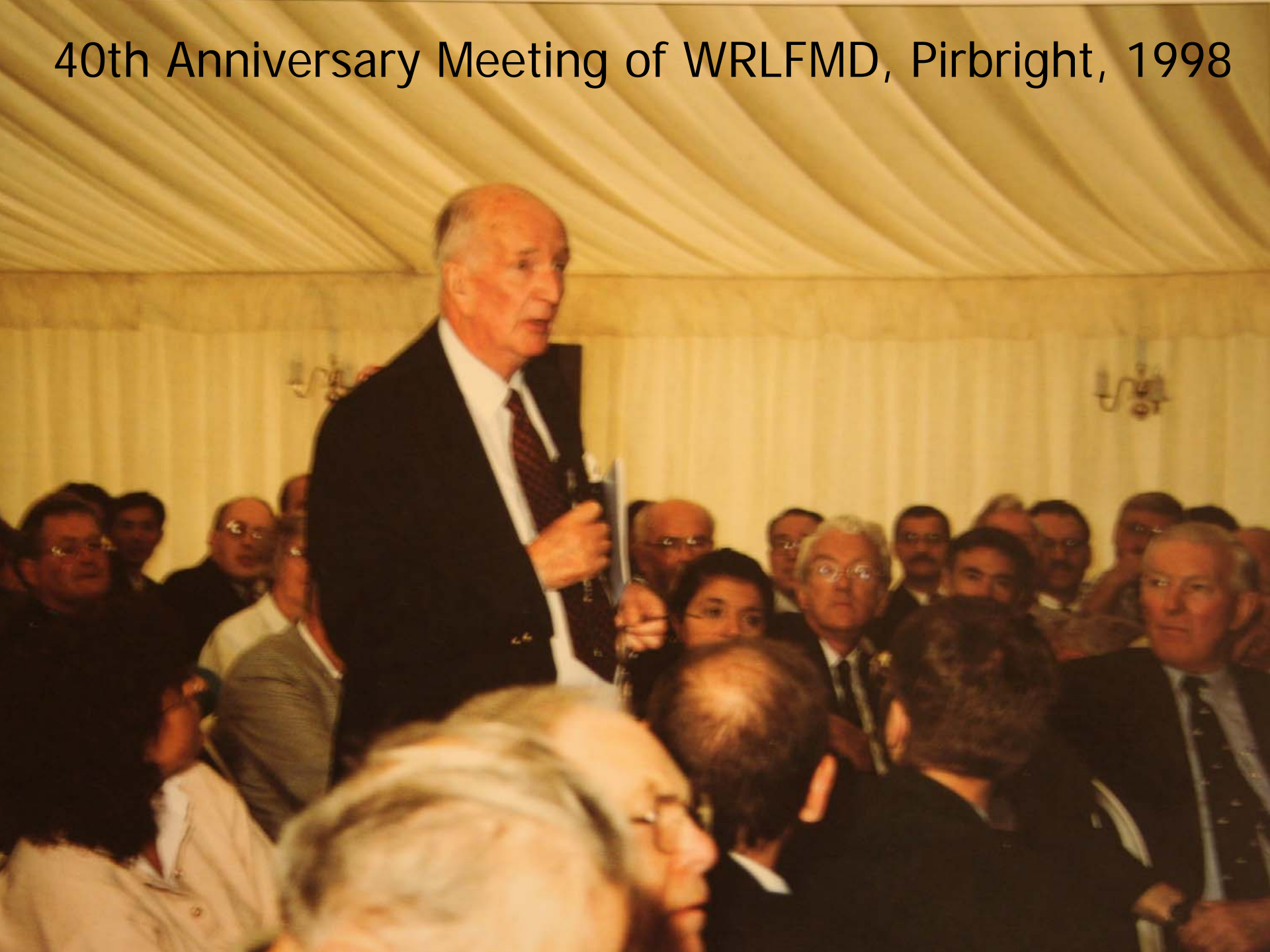
EUROPEAN COMMISSION FOR
THE CONTROL OF FMD
(EUFMD)

ACTIVITIES & ACHIEVEMENTS

1954-2004



40th Anniversary Meeting of WRLFMD, Pirbright, 1998

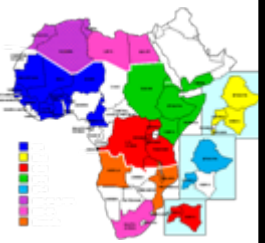
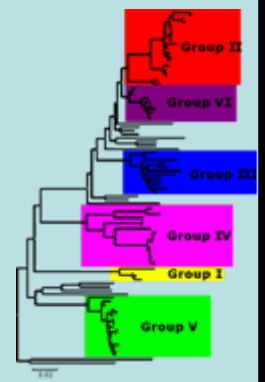


THE RESEARCH INSTITUTE, PIRBRIGHT AS THE WRL FOR FMD

- 1949** At a joint OIE/FAO meeting the Dutch delegate proposed that the Research Institute, Pirbright, should be an International Reference Centre for FMD
- 1950** Dr I A Galloway, Director, informed OIE and FAO that the UK Government would support the proposal provided adequate international funds were made available
- 1958** Pirbright designated by FAO as the WRL for FMD
- 1960** Designation by OIE

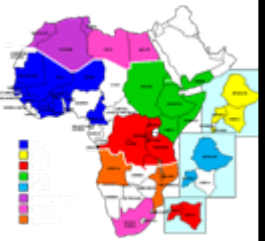
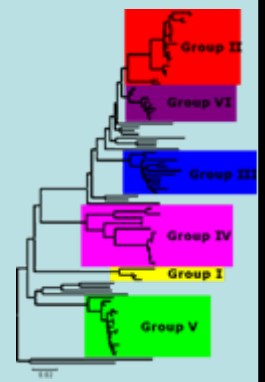
Principal Activities of WRLFMD

- ❑ Referral diagnosis and reference laboratory coordination
- ❑ Recognition of threats and vaccine selection
- ❑ Test improvement, validation, quality assurance, reagent supply and training
- ❑ Consultancy and research priorities



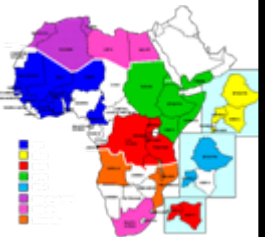
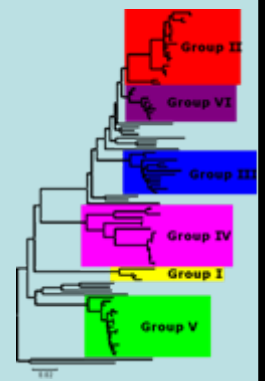
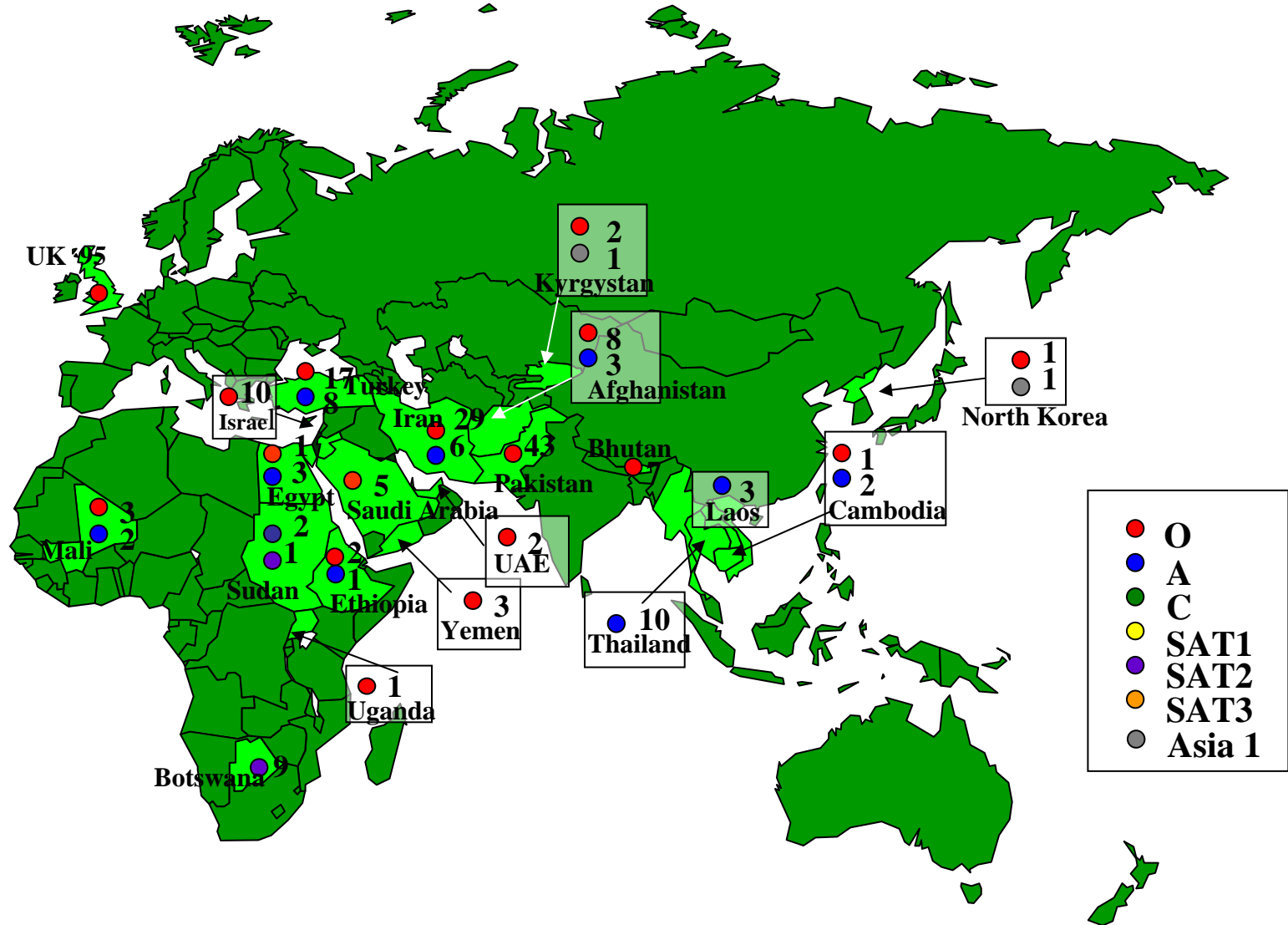
Notable events of last decade

- ❑ International collaborations
- ❑ Developments in molecular typing
- ❑ Implementation of PCR diagnosis
- ❑ UK FMD outbreaks: 2001 and 2007



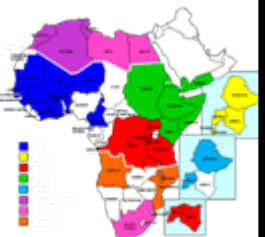
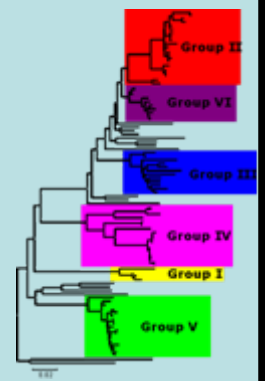
Referral Diagnosis

FMD Viruses and Serotypes Isolated at the WRLFMD During 2007 – by Country

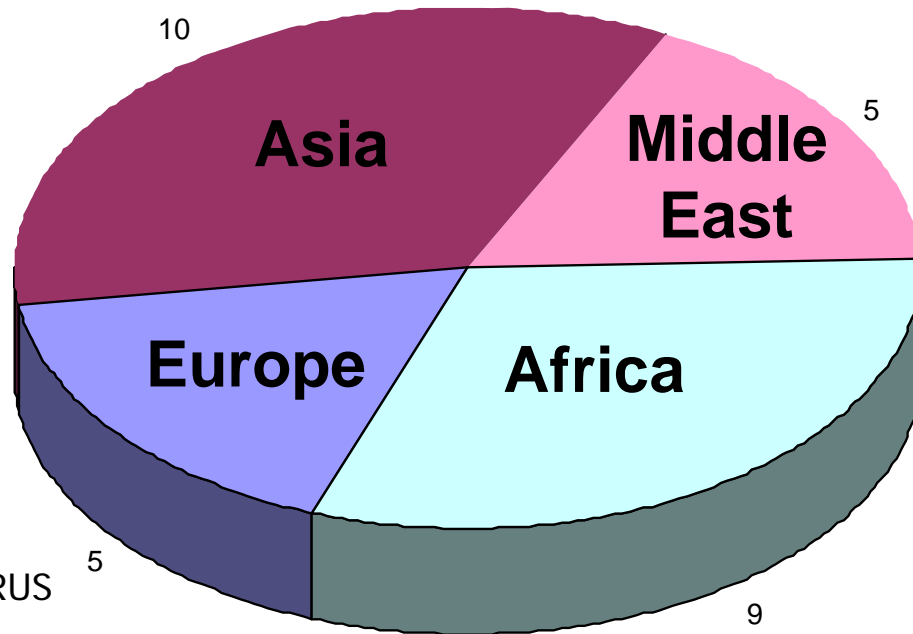




WRL: 807 samples received during 2007 30 countries



AFGHANISTAN
 BHUTAN
 CAMBODIA [4]
 KYRGYZSTAN
 LAOS [3]
 PAKISTAN
 THAILAND [12]
 VIETNAM [2]
 MALAYSIA [9]
 NORTH KOREA

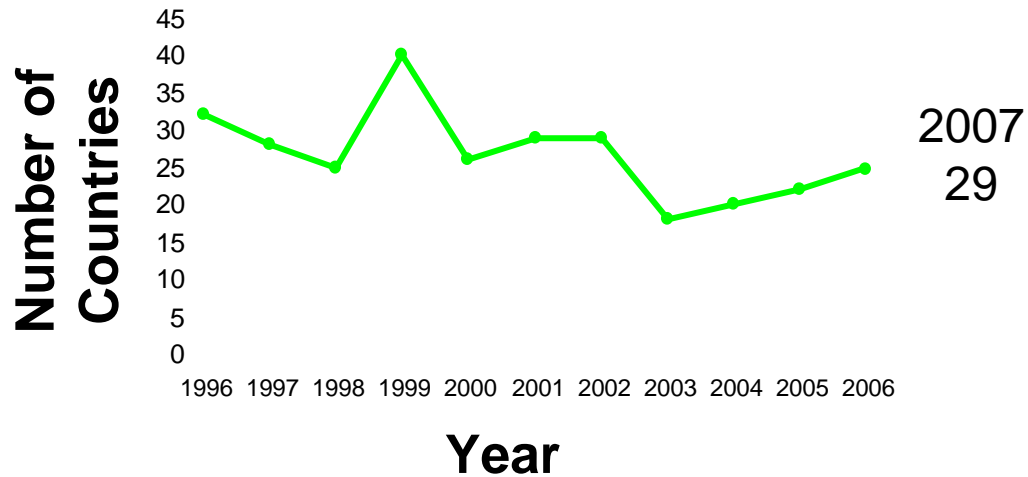
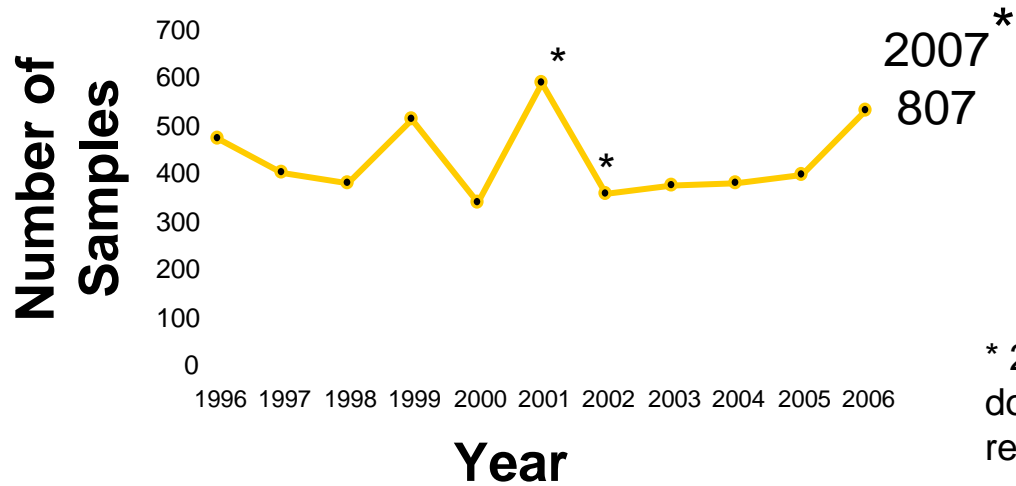
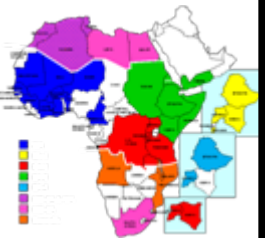
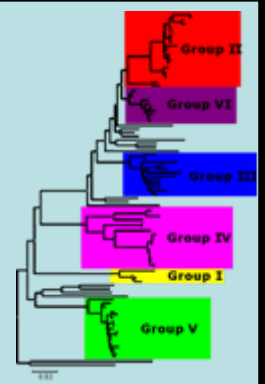


IRAN
 ISRAEL
 YEMEN
 SAUDI ARABIA
 UAE

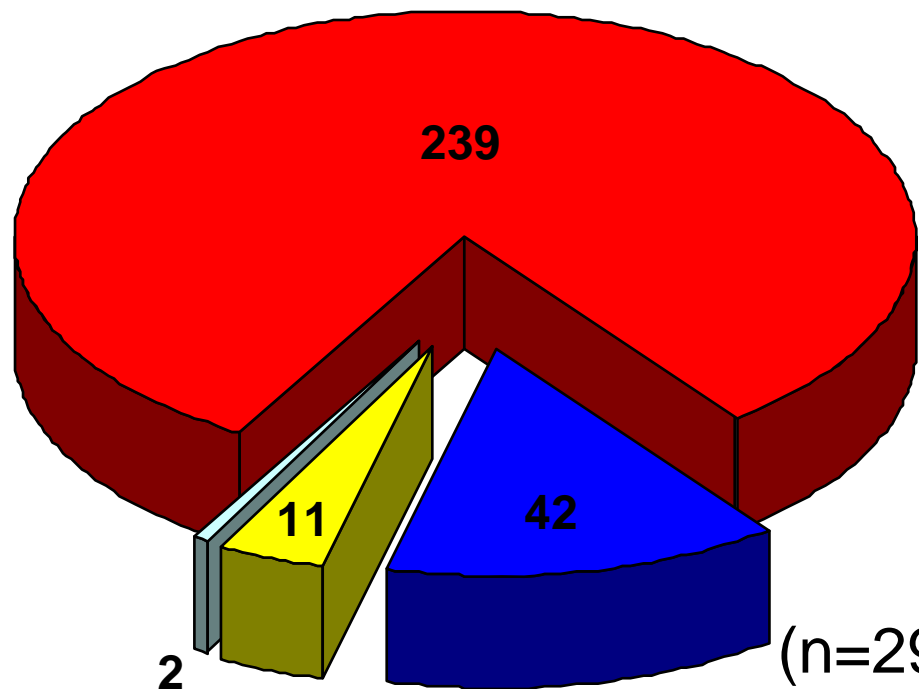
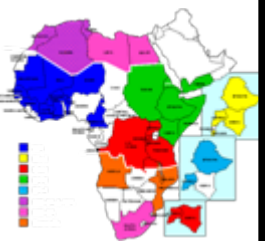
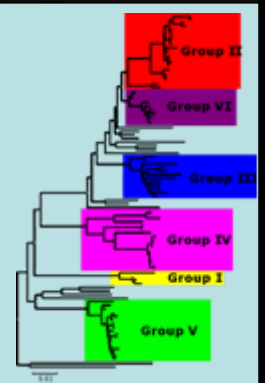
CYPRUS
 ITALY
 MALTA
 PORTUGAL
 TURKEY
 UK

BOTSWANA
 EGYPT
 ETHIOPIA
 MALI
 SUDAN
 NAMIBIA
 SUDAN
 UGANDA
 ZAMBIA

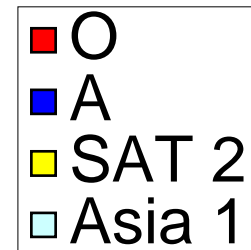
Samples received to WRLFMD: trends



WRLFMD: FMD Viruses isolated during 2007



Serotype:



(n=294 viruses isolated*)

(n=163 viruses sequenced*)

(n=72 field isolates characterised antigenically)

* Includes viruses associated with UK outbreak in 2007

Annual OIE/FAO FMD Reference Laboratory Network Report

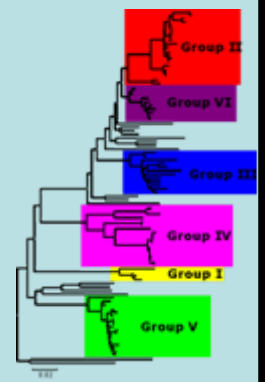
January – December 2007

FAO World Reference Laboratory and OIE Reference Laboratory for FMD (WRLFMD or WRL), Institute for Animal Health, Pirbright, UK: Nigel Ferris, Nick Knowles, Yanmin Li, Bob Statham, Don King, David Paton

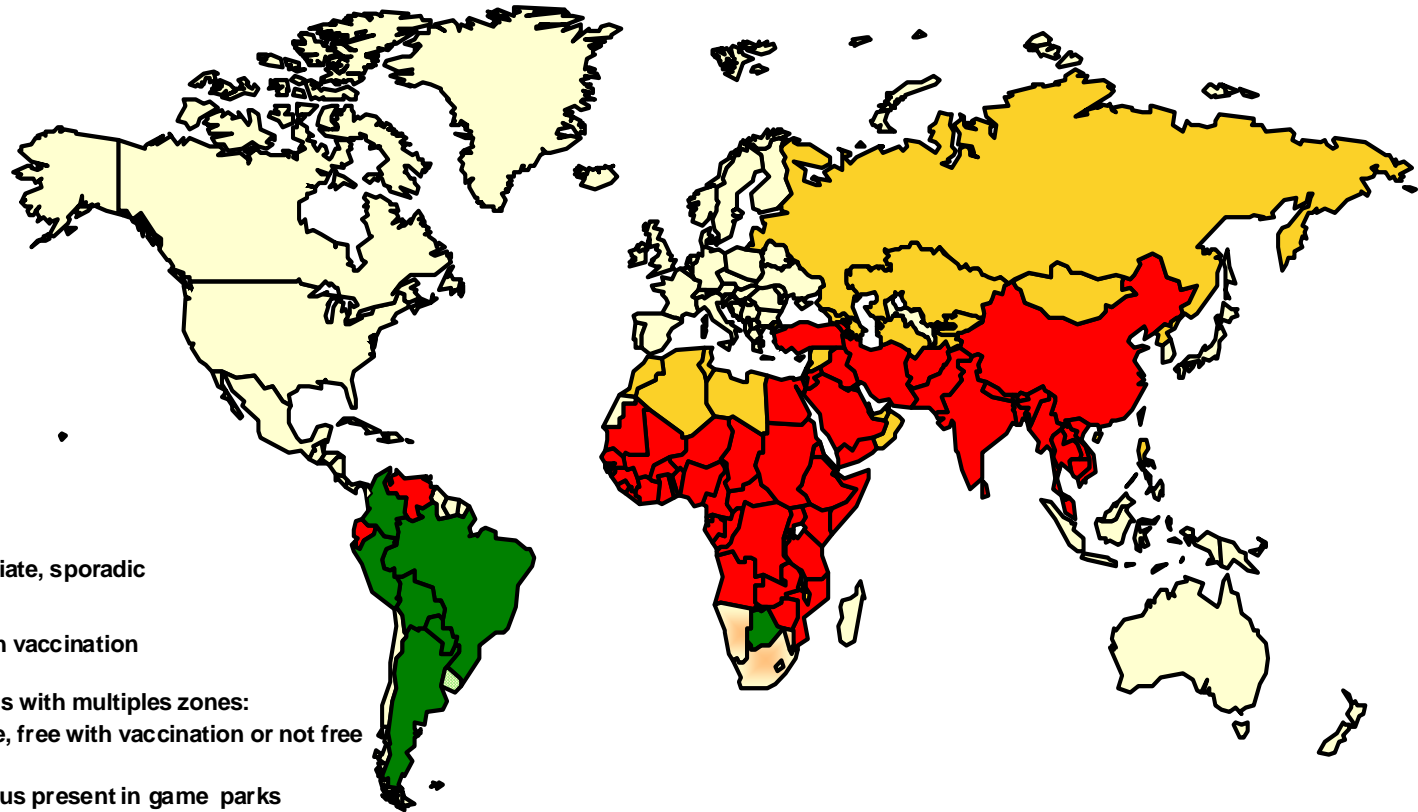
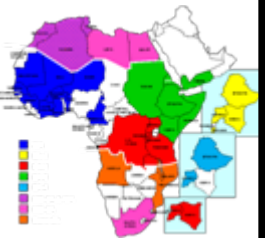
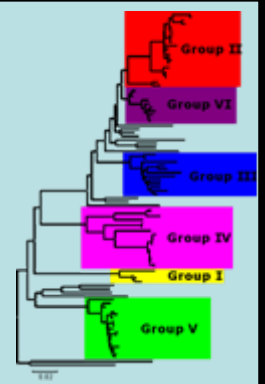
Centro Panamericano de Fiebre Aftosa-PAHO/WHO (PANAFTOSA) and OIE Reference Laboratory for FMD, and FAO Reference Laboratory for FMD, Rio de Janeiro, Brazil: Ingrid Bergmann, Viviana Malirat

Federal Governmental Institute, Centre for Animal Health (FGI ARRIAH) and OIE Reference Laboratory for FMD, Vladimir, Russia: Valery Zakharov, Vladimir Borisov, Aleksey Scherbakov, Svetlana Kremenchugskaya

OIE Regional Reference Laboratory for the Sub-Saharan continent, Gaborone, Botswana: Mr Elliot Fana, Gaolathe Thobokwe, George Matlho



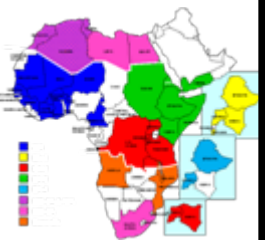
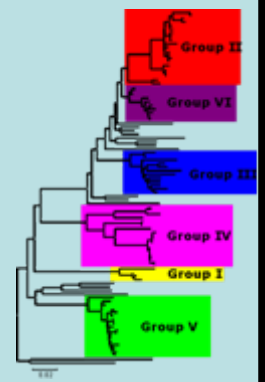
Conjectured Status of FMD 2007



-  Endemic
-  Intermediate, sporadic
-  Free with vaccination
-  Countries with multiples zones:
FMD-free, free with vaccination or not free
-  Free. Virus present in game parks
-  Free

Summary of Key Recent Events (2006 - 2008)

- Spread of a new **O PanAsia**-lineage throughout the Middle East
- Spread of **A-Iran-05** from Iran into Saudi Arabia, Turkey (including Thrace), Jordan and Pakistan
- Spread of **African type A** virus into Egypt
- Outbreaks of **Asia-1** in China and spread to North Korea (in January 2007)
- Outbreaks of **SAT2** in Southern Africa (Botswana, Namibia, Zambia) – October 2007
- Recurrence of **type O** FMD in Argentina and Brazil in 2006 and continued outbreaks of **O and A** in Venezuela and Ecuador
- **European FMD** outbreaks (United Kingdom and Cyprus)



Serotype O: PanAsia II lineage

Recent outbreaks caused by this strain

Middle East countries affected during 2006-8

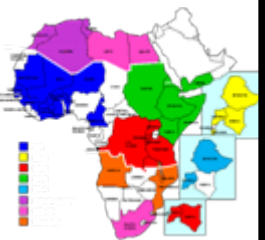
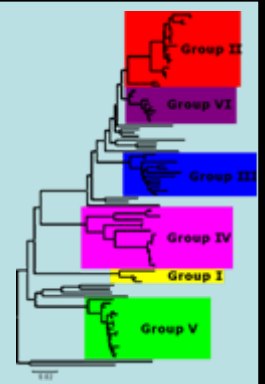
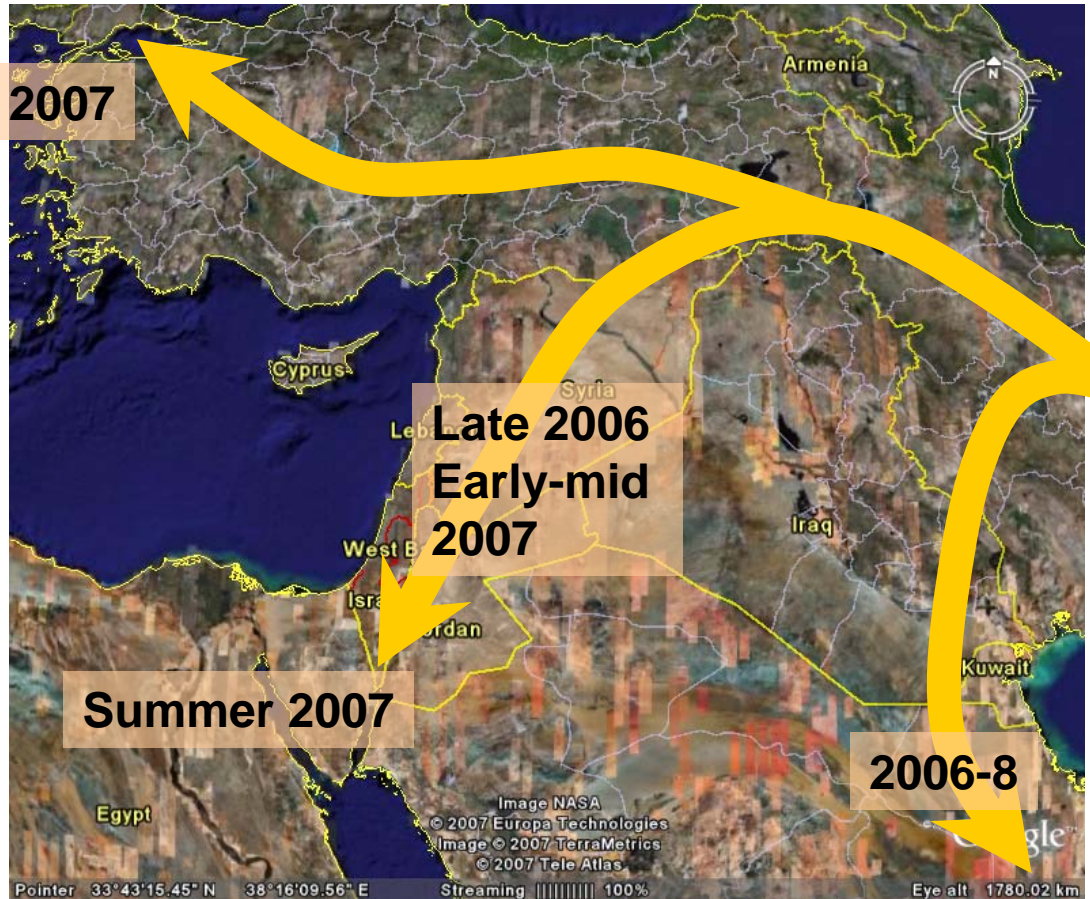
- Iran
- Turkey
- Saudi Arabia
- UAE
- Lebanon
- Israel
- Jordan
- Palestine AT
- Egypt
- Bahrain

Jan 2007

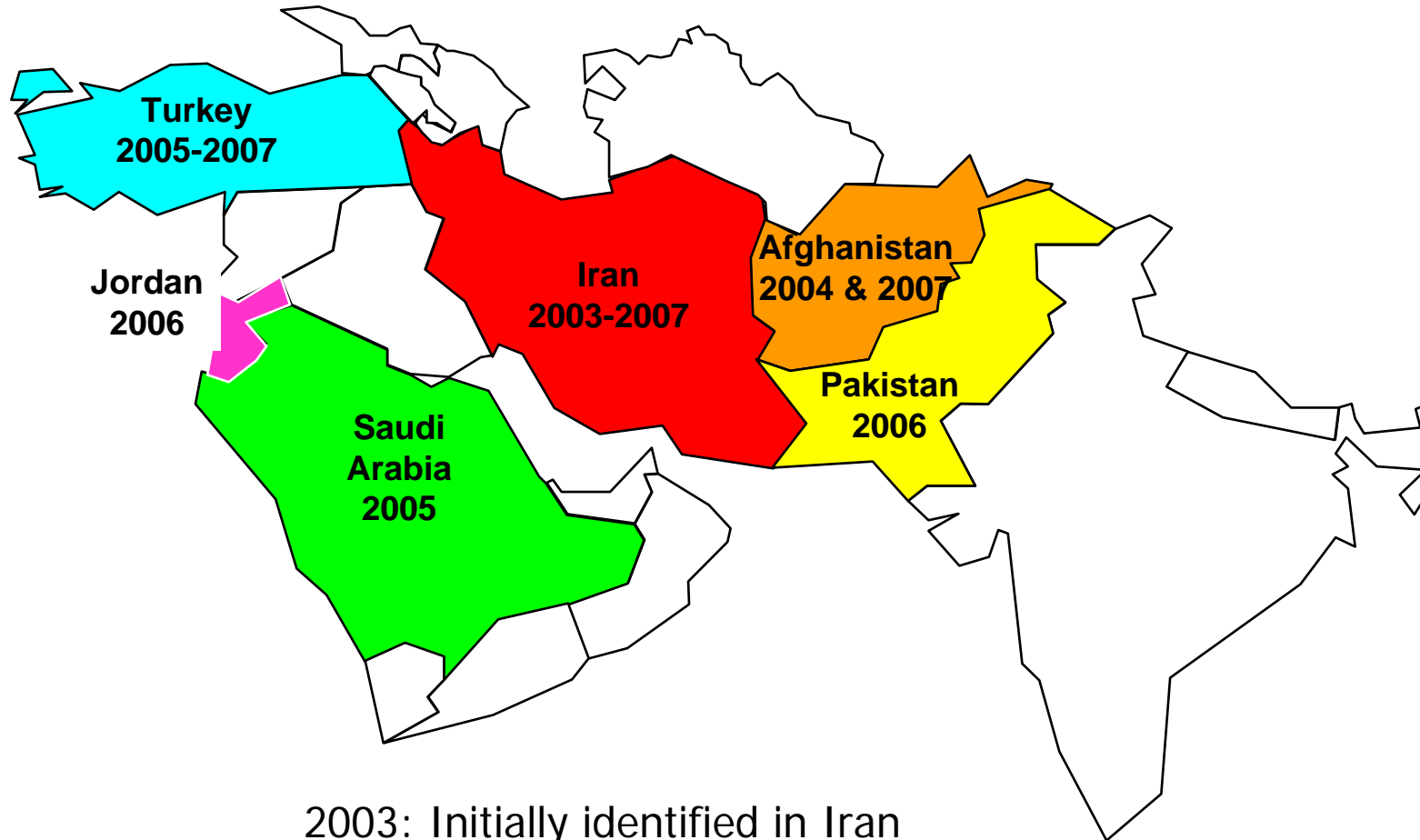
Late 2006
Early-mid
2007

Summer 2007

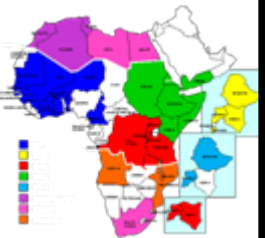
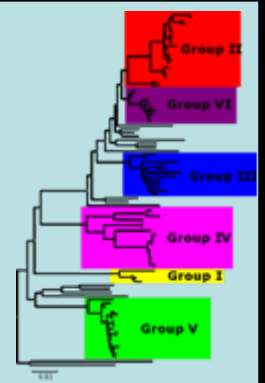
2006-8



Serotype A Iran05 lineage



2003: Initially identified in Iran
2004: Afghanistan
2005: Saudi Arabia and Turkey
2006: Jordan and Pakistan
2007: European Thrace (Turkey)



Vaccine recommendations (antigen banks)

HIGH PRIORITY

O Manisa
O BFS or Campos
A24 Cruzeiro
Asia 1 Shamir
A Iran 1996
↑ A22 Iraq
SAT 2 Saudi Arabia (or equivalent)

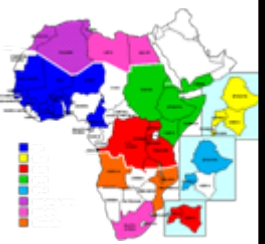
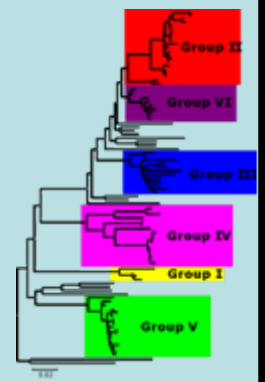
MEDIUM PRIORITY

↑ A Eritrea
SAT 2 Zimbabwe
A Iran 87 or A Saudi Arabia 23/86 (or equivalent)
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)
A Iran 1999

LOW PRIORITY

A15 Bangkok related strain
A87 Argentina related strain
C Noville
SAT 2 Kenya
SAT 1 Kenya
SAT 3 Zimbabwe
A Kenya

Within category: not in order of importance



The FAO World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD) presents...



The Foot-and-Mouth Disease Home Page

at the Institute for Animal Health

The Institute for Animal Health (Pirbright Laboratory) 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 \(OIE\)](#)

Navigation
FMD BioPortal
Ref Lab Reports
FMDV Serotyping
FMDV Genotyping
F&M Disease
FMD Diagnosis
FMD Vaccine Manuf.
FMD Labs
FMD Agencies
FMD Meetings
OIE FMD Links
Related Sites

[> Molecular Epidemiology/Genotyping Reports](#)
[> FMDV Sequences](#)

[FMD-CSF Coordination Action site](#)
[OIE Disease Information](#)
[The 2001 Outbreak in the United Kingdom: DEFRA FMD Page](#)
[Info on FMD in Taiwan \(NIAH, Japan\)](#)

[Institute for Animal Health \(IAH\)](#)
[IAH Virus Pages](#)
[Picornaviruses](#)

OIE Disease Information
WAHID Interface
Summary of Immediate notifications and Follow-ups
Weekly Disease Information

Webmaster: [Nick Knowles](#)

Training courses at IAH-Pirbright on the **Diagnosis of Transboundary Animal Diseases** are planned for Spring 2008. For further information [click here](#) or contact [Dr Chris Oura](#)



ReLaIS

Information about the activities of the WRL e.g. proceedings of meetings, presentations given by various members, summaries and overviews.

Information about the activities of the CRL (CRL website).

General Information and Resources

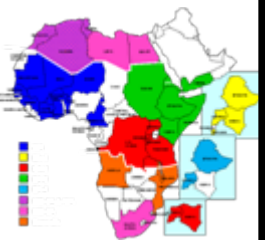
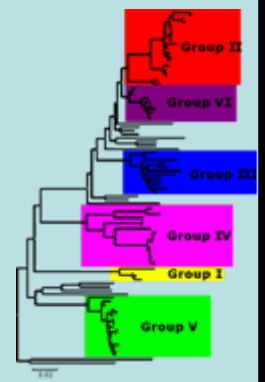
The screenshot shows the ReLaIS website interface. At the top, there is a navigation bar with links for HOME, ABOUT US, NEWS, WORLD LAB, and COMMUNITY LAB. Below this is a secondary navigation bar with links for admin, My Folder, Preferences, Undo, and Log out. The main content area features a 'NAVIGATION' sidebar with links to Home, About us, News, Events, Changes, World ref lab, Newsfeeds, Members, News archive, Aggregated FMD news, Aggregated News manager, Community ref lab, and About Foot-and-mouth. The main content area displays an article titled 'About Foot-and-mouth' with a sub-heading 'Impact and prevention.' and a section 'The Disease - A brief overview'. A search bar is visible at the top right of the main content area. A calendar for March 2007 is shown on the right side. The bottom of the page includes a 'RECENT CHANGES' section and a 'Resources' section with links to 'General disease information.' and 'AVIS.'

Search Database
(Real Time)
Mapping and
visualisation tool

Access to sequence
database and
phylogenetic analysis
tool for members

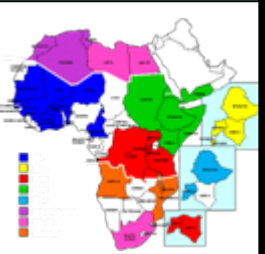
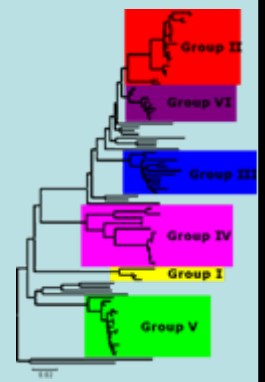
Current Situation

- In recent years - there has been little change in the global distribution of FMD
- But, new variants of FMDV have arisen/emerged unpredictably
- Vaccine recommendations have been revised (2006) to take account of isolates characterised from recent outbreaks in Egypt and the Middle East

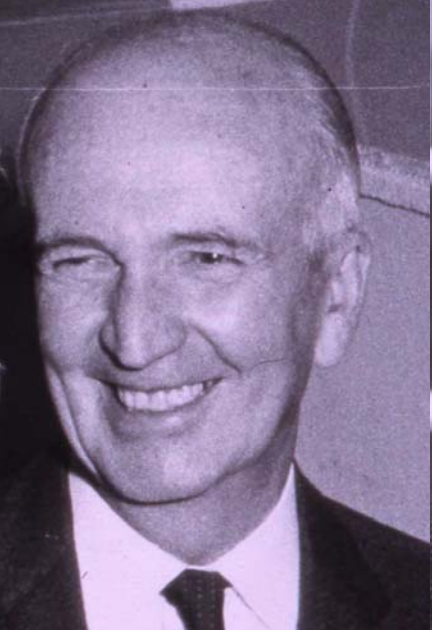


In Future

- ❑ Monitoring circulating strains of FMDV (through reference labs) continues to play an important role in the control of the disease
- ❑ Growing requirement for QA
- ❑ Research into
 - ❑ New diagnostics, vaccine selection methods and vaccines
 - ❑ Understanding dynamics of FMDV persistence, evolution and spread
- ❑ New rules on trade, including commodity based trade
- ❑ Further social, political and economic changes e.g. economic prosperity, transboundary wildlife parks



Heads Of WRLFMD, 1958-2008



Brooksby 1958-64



Davie 1965-69



Darbyshire 1969-72



Pereira 1973-79



Hedger 1979-84



Donaldson 1985-89



Kitching 1989-01



Paton 2001-08