Global Foot and Mouth Disease Research Alliance (GFRA): current actions and future perspective.

Fighting foot-and-mouth disease together

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Mission

Establish and sustain global research partnerships to generate scientific knowledge and discover the tools to successfully prevent, control and eradicate FMD
Vision of GFRA

A coordinated global alliance of scientists producing evidence and innovation that enables the progressive control and eradication of FMD

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History

- 2003. GFRA is first established with five founder members: Institute for Animal Health, Pirbright Laboratory (UK); Plum Island Animal Disease Center (USA); Australian Animal Health Laboratory; National Center for Foreign Animal Disease (Canada); and International Livestock Research Institute (Kenya).

- 2004. Inaugural GFRA meeting is held at U.S. Department of Agriculture, Washington, DC.

- 2006. Meeting is held in Agra, India, to explore the needs of countries in FMD-endemic settings.

- January 2007. Funding by the United Kingdom Government (DEFRA) to IAH under GFRA umbrella to carry out collaborative research with the Plum Island Animal Disease Center.

- May 2008. Experts meet at the Plum Island Animal Disease Center to develop a strategic plan to expand the Alliance and make GFRA more inclusive and relevant to countries combating FMD worldwide.
October 2008. First open GFRA meeting is held at the EUFMD Conference, Erice, Sicily

May 2009. The Second open GFRA meeting is held at the EPIZONE Conference, Antalya, Turkey

September 2009: Wellcome Trust funds GFRA partners IAH-UK, PIADC-USA, OVI-SA, Intervet-NL to improve FMD vaccine production

January 2010, Third GFRA open meeting on Pathogenesis at the Institute of Animal Health, UK

June 2011, Fourth GFRA open meeting, at the Disconvac – Meeting: FMD Cross protection, B. Aires, Argentina

As of February 2012 - The GFRA is constituted by 35 institutions, public and private, distributed in five continents
Membership

Any organization interested in enabling the GFRA vision and mission is encouraged to join the alliance. There are three membership options:

1. **GFRA member.** FMD research organization that has signed the GFRA MoU
2. **GFRA collaborator.** Organization that collaborates on a research project with a GFRA member
3. **GFRA associate.** Organization that benefits, shares or supports the GFRA mission

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Strategic Goals of GFRA

- **Goal 1.** Facilitate research collaborations and serve as a communication gateway for the global FMD research community
- **Goal 2.** Conduct strategic research to better understand FMD
- **Goal 3.** Development of the next generation of control measures and strategies for their application
- **Goal 4.** Determine social and economic impacts of the new generation of improved FMD control
- **Goal 5.** Provide evidence to inform development of policies for safe trade of animals and animal products in FMD-endemic areas

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Global Foot-and-Mouth Disease Research Alliance (GFRA)

Report: October 2011
Update of Research Activities

GFRA Website: http://www.ars.usda.gov/gfra/

FAO-EUFMD
Research Activities Worldwide
GFRA Website: http://www.ars.usda.gov/gfra/
Purpose of the report

- This 2011 update report reflects current (2011) activities performed towards the first two goals of the GFRA:
  
  1. facilitate research collaborations and serve as a communication gateway for the global FMD research community and
  2. conduct strategic research to better understand FMD.

It is envisaged that the report will be used to identify the gaps in strategic collaborations and research in support of the progressive control and eradication of FMD.
PURPOSE OF THE REPORT

1. BACKGROUND AND INTRODUCTION TO THE REPORT

2. DIAGNOSTICS AND VACCINE QUALITY CONTROL
   2.1 Developing new diagnostics tests and reagents
   2.2 Harmonization of diagnostic tests
   2.3 Vaccine quality control

3. EPIDEMIOLOGY
   3.1 Models
   3.2 Transmission
   3.3 Sequencing and phylogenetic analysis of FMD viruses

4. PATHOGENESIS

5. IMMUNOLOGY
   5.1 Early immune response
   5.2 Duration of immunity and cross-reaction between serotypes

6. VACCINE EFFICACY AND NEW GENERATION VACCINES
   6.1 Vaccine efficacy
   6.2 New antigens
   6.3 Cross-Protection and Vaccine Matching

7. MOLECULAR BIOLOGY OF THE INFECTION
   7.1 Replication of the virus
   7.2 Structural Studies

Research Activities Worldwide
GFRA Website: http://www.ars.usda.gov/gfra/
GFRA Collaborations

- **ARS-PIADC / IAH Pirbright-UK**
  - Interaction between Ad5-FMD vector and bovine dendritic cells
  - Stabilization of FMDV capsid
- **ARS-PIADC /INTA-Arg.**
  - Developing predictive tools for prevention of FMD
  - Understanding Local and Systemic Protective Responses Against FMDV Infection in Cattle: A Genomics Approach
- **CVI-NL / DTU-DK / ISS –IT / ANSES FR**
  - Development of multiplex FMD diagnostics
- **ARS-PIADC /Department of Animal Heath – Viet Nam/ AAHL-CSIRO - Australia**
  - Molecular Epidemiology, Surveillance and Predictive Tools for FMD Control In Vietnam
Collaborations cont

- IAH Pirbright / ARC-OVI / SANParks / KNP
  - Role of African buffalo in FMDV maintenance
- IAH Pirbright / ARS-PIADC / ARC-OVI / Oxford U / Intervet
  - Structurally modified master seed viruses to enhance conventional foot-and-mouth disease virus vaccine production
- ARS-PIADC / ICAR – India
  - Effective Molecular Vaccines Against Foot-and-Mouth Disease
- IAH-UK/ ARC-OVI / Glasgow U / India Immunologicals
  - Vaccine Matching for East and Southern Africa
  - Improved vaccine adjuvants
- ARS-PIADC / NARC, NVL Pakistan/ UC-Davis/ FAO
  - Real Time Data Analysis /FMD Control in Pakistan.
Fifth GFRA Scientific Meeting: Surveillance, Epidemiology, Vaccination and Control of FMD
April 17-19, 2012
Hosted by the ARC-OVI, Hazyview, Kruger National Park, South Africa

• **Goal:**
  - To share the latest knowledge on FMD virus ecology, to improve vaccine efficacy and vaccine matching within the GFRA.

• **Program content:**
  1. FMDV-wildlife interaction and pathogenesis
  2. Epidemiology and control in different regions of the globe
  3. Vaccine efficacy
  4. New and current approaches to vaccine matching

• **Participants:** GFRA and non-GFRA members involved or interested in the topics mentioned.
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