**The 11th Annual Meeting of the OIE/FAO FMD Reference Laboratories Network**
30th of November - 2nd of December 2016
ANSES, Maisons-Alfort, Paris, France


**Closed Session [30th November 2016]**

The day was opened with a welcome address from the Director of Maisons-Alfort Animal Health Laboratory, Dr Pascal Boireau. The achievements of ANSES were highlighted followed by a tour of the new high-containment laboratory that will house work with FMD.

**Adoption of agenda and opening of the meeting, Dr Don King**
The **website (www.foot-and-mouth.org) has been updated.**
Action 1: [ALL PARTNERS]: Please check that the contact information and web-links for your laboratory is correct. Also please feedback any improvements or suggestions for additional content that could be included on the website.

**Memorandum of Understanding (MoU), Dr Don King**
Following on from a teleconference earlier in the year, there is now agreement from 14/15 Institutions regarding the content of the MoU, that includes requests from individual partners regarding the sharing of vaccine seed strains. The document is now being prepared for signatures (by institutional directors, or Heads of Business). Discussions covered the MoU and the process of collecting signatures (these will be moved to an appendix in the document).
Action 2: [ALL PARTNERS]: Please send any updates to the signatory list ASAP.
Action 3: [WRLFMD, TPI]: The final MoU will be sent around in January/February for signatures.

**Nagoya Protocol (https://www.cbd.int/abs/), Dr Don King**
The Nagoya protocol ensures benefit-sharing when genetic resources leave a country, and has potential to impact upon work undertaken by FMD Reference Laboratories (for diagnostics and associated research activities). Possible activities included under Nagoya include:

- Publication of data using field samples at meetings and in journals

- Use of field isolates and antisera to generate reagents and kits
- Distribution of field material and FMDV isolates to third party laboratories
- Provision of field isolates to vaccine companies

Not all countries have currently ratified the protocol which only covers samples collected after 2014. Once a "benefit" is identified, a national contact (in the source country) must be contacted; however, it is unclear at this point who these people are for each of the countries.

There was a general lack of awareness among the Network partners about Nagoya – (only TPI and ANSES were actively considering the impacts of this protocol). Furthermore, currently there is no guidance from OIE or FAO about how reference laboratories should respond to these new rules.
Action 4 [ALL Partners]: Please discuss Nagoya with your business administration department and provide feedback to the network about whether the protocol is likely to impact upon your work, and whether you have any practical solutions to accommodate Nagoya.
Action 5 [FAO/OIE]: Provide feedback to the Network regarding the view of OIE and FAO on Nagoya.
Action 6 [ALL PARTNERS]: The network will put together a document highlighting the views of the group.

**Update of the OIE FMD Diagnostic Manual, Dr Rossana Allende**
Rossana provided a short update to summarise work that is being undertaken to review and revise the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. Earlier in 2016, OIE contacted OIE experts to ask for a review of the following points:

- Include a table of what diagnostic tests are used and for what scenario
- Define what post vaccination sera is and who will prepare these reagents
- Reduce the number of references in the FMD Chapter to <30

It is anticipated that these changes will be included in a new version of the chapter (to be ratified at the 2017 OIE General Session). This new version appears to dispense with the defined tests that could be used for international trade (previously denoted by blue text in the chapter).
Action 6 [OIE]: Dr Min Kyung Park to seek clarification from the OIE about "prescribed tests" and whether the new version of the chapter will accommodate a wider use of tests for international trade purposes (according to the table).
Action 7 [ALL OIE PARTNERS]: Please provide any additional feedback to Dr Rossana Allende by the middle of January 2017.
After this initial draft (for 2017), it was also suggested that further (more comprehensive) revision of the chapter would be requested for 2018.
Action 8 [OIE]: Network partners requested that the OIE provide as much early-warning as possible regarding future requests to review the FMD chapter. Ideally, this would be discussed at this forum – to ensure a coordinated response across all of the OIE experts.

**OIE Terrestrial Animal Health Code [Chapter 8.8], Dr Kris De Clercq**
The proposed changes to the OIE Code changes discussed in this presentation have not yet been approved or implemented. The changes will take approximately two years to be approved. The changes include clarification for country or zone free FMD areas in case of vaccination and no-vaccination. The OIE will stress the need to effectively implement and supervise FMD control programs, specifically where vaccination is practiced. The recovery of free status, importation of vaccinated animals and the establishment of temporary preventive zones have also been updated for review.

**OIE activities to support FMD control and eradication, Dr Min Kyung Park**
The OIE has designated a new reference laboratory: Animal and Plant Quarantine Agency, Republic of Korea. By the end of 2017 all OIE reference laboratories must have a quality management system such as ISO 17025.

The Northern part of Russia was granted a FMD free zone without vaccination although this has now been suspended (due to the recent FMD outbreak in October 2016). Mauritius status was also suspended. Kazakhstan, Mongolia and Thailand have had their FMD control programs endorsed.

The tender for South East Asia vaccine bank will continue. Initial steps are also underway to establish a vaccine bank in North Africa.

Serotype C recommendations from the Network meeting in 2015 have been presented to the *ad hoc* science committee and the scientific commission.

**Global FMD Control Strategy & Ref Lab Network, Dr Samia Metwally**

The post-vaccination monitoring guidelines with input provided by Network partners are now completed and have been recently published (http://www.fao.org/3/a-i5975e.pdf). Dr Metwally provided an overview of the Global FMD Control Strategy (version 2) and the Progressive Control Pathway (PCP). There are fifteen regional roadmaps; however, there is a surveillance gap in pools 3, 4 and 5 which have no OIE or FAO reference laboratories. Currently on the list for possible reference laboratories are: Middle East (UAE/EGY), West Eurasia (Turkey/Iran), West Africa (Senegal/Ghana/Nigeria) and East Africa (Kenya/Ethiopia). The FAO would like to invite more participation from the Network at these regional road map meetings. There is also a call for global FMD experts – please register interest and expertise at FAO-FMD@fao.org and OIE-FMD@oie.int.

**EuFMD: an update on online activities, Dr Kees van Maanen**

There are currently 2000 members signed-up for e-learning. The PCP e-learning module is now available. There is also a "knowledge bank" of resources and guidelines. The focus is currently on pool 3, 4 and 5.

Workplan for 2017 was discussed (outlined separately)

**Regional Reports [1st December 2016]**

**Global Overview, Dr Don King (WRLFMD, Pirbright)**

This presentation highlighted the results for samples tested recently at WRLFMD, Pirbright (www.wrlfmd.org) and reviewed the current global FMD status. Continuing on from the theme from last year's meeting, the main message of the talk was that there appears to be an upsurge in long-distance trans-pool movements of FMD virus from Pools 1 and 2 (recent high-profile examples O/ME-SA/Ind-2001d and A/ASIA/G-VII). In Europe, the greatest concerns relate to the emergence of the A/ASIA/G-VII lineage that has spread to the margins of Anatolian Turkey (close to the FMD-free [with vaccination] zone in Thrace) since i*n vitro* and *in vivo* data indicates that vaccines (containing A-SAU-95 or A-Iran-05-like viruses) supplied by Merial and MSD are unlikely to provide protection. Further cattle studies to evaluate A22 and A-May-97 are planned for December 2016 at CVI-Lelystad.

**Pool 1: South East Asia, RRLSEA (Packchong), Dr Wilai Linchongsubongkoch**

Samples (n=255) collected in Thailand and Myanmar were tested; additional samples (n=47) from Lao PDR were all negative. The genome results were as following:

- Thailand (n=72) O/SEA/Mya-98, O/ME-SA/Ind2001d and A/Asia/Sea-97
- Lao (n=2) O/ME-SA/Ind-2001d (samples from 2015)
- Myanmar (n=7) O/SEA/Mya-98, O/ME-SA/Ind2001d

Vaccine matching were carried out using the locally produced vaccines: O/189/87 appears to match the new emerging O/ME-SA/Ind2001d [although data is still urgently required to support the use of this vaccine against this emerging lineage in the field], A/Sakolnakorn/97 continues to show a good a match while A/Lopburi/2012 has a decreased match against serotype A viruses in the region. An inter-laboratory proficiency testing scheme (PTS) was organised (17 regional participants).

**Pool 1: East Asia and China, LVRI, Dr Yanmin Li**

In 2016 samples were received from China (n=23) of which fourteen were serotype O (remainder negative). In order to support active surveillance in northeast and southeast China, approx. 4000 oropharyngeal and tissue sample were collected and tested by real-time RT-PCR. These samples collected from apparently healthy animals (without clinical signs) yielded serotype O (O/CATHAY, O/SEA/Mya-98) and serotype A (A/ASIA/Sea-97) sequences. These are the first confirmed reports of O/CATHAY in mainland China. Approximately, 6000 sera were also tested by LPBE and 3ABC ELISA in these parts of the country.

The locally vaccines produced are:

- Serotype A Recombinant vaccine Re-A/WH/09
- Serotype O O/China99 and O/Mya98/BY/2010
- Serotype Asia 1 Asia 1/JSL/06

A PTS assessing real-time RT-PCR was distributed to 31 regional laboratories and all laboratories provided satisfactory results. National and international training was carried out including Myanmar. The lab provided both antibody kits (LPBE O, A and Asia 1) and antigen kits (multi-RT-PCR and real-time PCR).

**Pool 1: Korea and East Asia, Animal and Plant Quarantine Agency (QIA), Dr Jong-hyeon Park**

During 2016, outbreaks in South Korea have occurred (due to the O/SEA/Mya-98 lineage). Up to March 2016, 21 farms in the west of the country were affected by FMD and sequence data indicates that the causative virus strain is a unique sub-clade of O/SEA/Mya-98. Additional farms (147 pig holdings and 11 cattle farms) were NSP positive in the same area of the country indicating that FMD virus may be circulating more widely. International vaccine available are O1 Manisa+O 3039. Since November 2016, additional vaccines (O Campos, O Primosky) have been deployed for emergency purposes because of limited supply of other vaccines. Post-vaccination monitoring in cattle and fattening pigs indicates

good results with structural protein O ELISAs showing a 95% and 65% protection level. The laboratory currently organises two national PTS twice a year (n=6). There is a collaborative network with RRLSEA and other regional partners.

**Pools 1 and 3: Russia, ARRIAH, Dr Dmitry Lozovoy**

Over the last twelve months, samples have been tested from Armenia (A/ASIA/G-VII, n=4), Russia (n=108), Kazakhstan (n=16) and Mongolia (A/Sea-97, n=5). New vaccine strains (A/Armenia/16 and A/Mongolia/16) have been prepared to meet the challenges of these FMD virus lineages that are circulating in the region. The recent Asia 1 FMD cases that have occurred in Russia (October 2016) is due to a FMD virus that is phylogenetically closely related to Asia 1/Shamir/89 (with 12 nt substitutions); and an official investigation is ongoing to understand the source of these outbreaks. Other recent outbreaks in the east of Russia (close to the Chinese border) have been characterized as belonging to the O/ME-SA/Ind2001d lineage; which is yet another example of the long distance spread of this lineage. A PTS was organised for Armenia, Azerbaijan, Belarus, Moldavia, Tajikistan and Kyrgyzstan.

**Pool 2: India, PD-FMDV, Dr Jitendra Biswal**

This presentation reviewed the latest situation for FMD in India. Samples (n=672) have been collected and tested in 2015/16 from different regions in the country. These are dominated by the O/ME-SA/Ind2001d lineage – comprising 244/252 positive samples. Serotype A/G-VII (18) has split into two genetic sub-lineages and only the VP3-59 deletion group is now seen in the country. Serotype Asia 1 grouped into lineage C is restricted to the Northern region of India. The vaccine strains used in the region are: O/IND/R2/1975, A/IND/40/2000 and Asia 1/IND/63/1972. In order to address, antigenic variability within serotype A, three new candidate vaccine strains (strain-1, strain-2 and strain-3) are being evaluated; it is proposed that the most promising of these (strain 1) will move into vaccine production shortly.

Action A: Current data provided from PD-FMD is based on April-April financial year – secretariat requested that this is adjusted to the calendar year for the Network annual report

**Pool 3: Turkey and Pool 3, ŞAP Institute, Dr Fuat Ozyoruk**

Over one thousand samples (1128) collected within Turkey have been tested during 2016. Real-time RT-PCR and typing RT-PCR assays have been used to detect serotypes O (n=399) and A (n=444 [emerging A/ASIA/G-VII lineage]), while an additional 74 samples were only positive on pan-serotypic FMDV assays. The current circulating strains are: A/ASIA/G-VII$^{BAN-12}$ and O/ME-SA/PanAsia-2$^{QOM-15}$; no A/ASIA/IRN-05 samples or serotypes Asia 1 has been detected in 2016. This presentation also provided an overview of the FMD virus lineages that are circulating more widely in Pool 3; where notably no FMD cases due to the O/ME-SA/Ind-2001d lineage have been detected in countries to the north of the Arabian Gulf. In response to the A/ASIA/G-VII outbreaks, a new vaccine was manufactured and is now being used in Turkish Thrace (vaccine coverage >90% in large ruminants [2x year] and small ruminants [1x year]) – this vaccine is also now being used in private farms in Saudi Arabia.

**North Africa, IZSLER, Dr Santina Grazioli**

No clinical samples or sera were sent to Brescia in 2016. Therefore, the work presented described the results of full-genome sequencing studies for samples collected from the O/ME-SA/Ind-2001 outbreaks in North Africa in 2014 and 2015. These data support a logical spread of FMD virus from Libya (in 2013) to Morocco (in 2015), and highlight two independent introductions of the virus from Tunisia into Algeria. A PTS was organised for ten Balkan countries for RT-PCR and ELISA. IZSLER has sold 1116 ELISA kits to 38 countries, which is a 35% increase since 2015. A new antigen ELISA kit comprises a single kit format that includes serotypes O, A, Asia 1, C, SAT 1 and SAT 2. The validation work carried out by the WRLFMD shows an increased sensitivity and specificity as compared to the polyclonal ELISA.

**West Africa and Mauritius, ANSES, Dr Labib Bakkali Kassimi**

Dr Bakkali Kassimi provided an overview of the situation in West Africa; highlighting data presented at the recent 1st Regional Roadmap meeting Lomé, Togo. For Pool 5 (West Africa), there has been a modest increase in the number of samples received since 2013; however there are still gaps in our understanding of FMD epidemiology in the region. Serological data presented on behalf of the FMD Laboratory in Senegal, provides evidence for the circulation of serotypes O and A in central and western parts of the country and Serotype SAT 2 in the south. Twenty seven percent of the samples were positive for NSP. The remainder of the talk covered the recent FMD outbreaks that have occurred in Mauritius (July 2016). Diagnostic results from ANSES (VI, Ag-ELISA, pan-serotypic RT-PCR and type-specific RT-PCRs) showed that the causative FMD virus was serotype O – subsequently confirmed by sequence analyses at ANSES and WRLFMD showing that this was yet another example of an unexpected movement of the O/ME-SA/Ind-2001d lineage. The epidemiological links to other countries where the O/ME-SA-Ind-2001d is circulating is being investigated.

**Pool 4: East Africa, Embakasi, Kenya, Dr Abraham Sangula**

Diagnostics results for samples (n=79) collected in Kenya were presented; highlighting the circulation of serotypes O (n=5), A (n=20), SAT 1 (n=25), SAT 2 (n=1). These data indicate that serotypes A and SAT 1 are increasing in the country. VP1 sequencing and vaccine matching studies are still underway and the topotype/lineage are not known at this time. The current local vaccine strains are SAT 1 T155/71 (NWZ), SAT 2 K52/84 (IV), A K5/80 (G1) and O K77/78 (EA1).

**Pool 4 East Africa, NAHDIC, Ethiopia, Dr Daniel Gizaw**

Results for 165 samples collected in Ethiopia were presented. This work is supported by WRLFMD (via an on-going OIE Twinning Project). Antigen ELISA detected serotypes O (n=69), A (n=24), SAT 1 (n=8) and SAT 2 (n=33). Sequencing carried out at WRL detected the following lineages: O/EA-4, SAT 2/VII$^{Alx-12}$ and A/Africa/G-IV. Surveillance in small ruminants (11,939 sera) suggests that 7.4% are positive for FMDV. In addition to internationally supplied vaccines, locally produced vaccines for serotypes A, O and SAT 2 are available from the National Veterinary Institute.

**Pool 5 West Africa, NVRI, Vom Nigeria, Dr Hussani Ularamu and, CODA-CERVA, Dr Kris De Clercq**

Four FMD virus serotypes circulate in West Africa (O, A, SAT 1 and SAT 2). Work at NVRI, Vom is supported by an on-going OIE Twinning project with CODA-CERVA. During 2016, a genetically distinct SAT 1 FMD virus lineage was detected (and sequenced) in samples collected from Nigeria, for the first time this serotype has been detected (anywhere in West Africa) since 1981. Additional samples tested during 2016 comprised serotypes O (n=12) and A (n=2). Interestingly, these data suggest that mixed infections (samples where different FMDV serotypes) have been observed – also seen recently in Ethiopia. NVRI is developing new vaccines strains (A Nig07/13, O Nig03/14, and SAT 2 Nig03/12) for use in the country. Additional data presented by CODA-CERVA reported a collaboration with BVI (Botswana) which resulted in three full genome sequences of a SAT 1, SAT 2 and O FMDV (published and available in GenBank).

**Pool 4-6: Sub Saharan Africa, OVI, Dr Francois Maree**

Results for samples tested in 2016 were presented: Mauritius (n=61), Mozambique (n=70), Namibia (n=1), Swaziland (n=142), UAE (n=1) and Zimbabwe (n=68). Sequence results for SAT 2/MOZ/1/2016 characterised the FMD virus as belonging to topotype 1, appearing to be a continuation of the 2014 outbreak. The FMD virus causing the SAT 3 outbreak in South Africa (control zone in Limpopo) was similar to SAT 3/KNP/1/08. Dr Maree also provided an overview of research activities at OVI, including work to understand FMDV persistence and transmission in buffalo in KNP.

**Pool 4-6: Sub Saharan Africa, BVI-RRLSSA, Dr George Matlho**

During 2016, BVI tested samples collected from Malawi (SAT 1 Topotype 1 virus pool 6), Mauritius (Serotype O/ME-SA/Ind-2001d) and Zimbabwe (SAT 2 Topotype 2 virus pool 6). Samples were also

received from Botswana (n=6), Benin (n=22), DR Congo (n=3) and Zambia (n=10); however, no virus was detected. Vaccine matching work was undertaken at BVI providing evidence that SAT105 and SAT109 is matched to the field strains circulating in Malawi, SAT251 and SAT2035 is matched to the SAT 2 viruses in Zimbabwe, and O-Manisa is matched to the O/ME-SA/Ind-2001 virus recovered from Mauritius.

**Pool 7: South America, PANAFTOSA, Dr Rosanna Allende**

FMDV was detected during retrospective analysis of samples collected in 2013 from FMD outbreaks in Venezuela. These were characterised as serotype A, genetically most closely related to earlier FMD viruses recovered from Venezuela [these samples represent the most recent FMD outbreaks anywhere in South America]. Collaborative programs are in place with Venezuela and post vaccination monitoring is currently underway for the border region (~4000 samples have been collected for LPBE testing – serotypes O and A). PANAFTOSA organised a PTS (FMDV and vesicular stomatitis virus) for antigen ELISA and 13 laboratories participated. All South America and Panama countries also have collaborative program with FMDV regional antigen bank and are in the process of updating the minimum standards for biorisk management in laboratories handling FMDV.

**Pool 7: South America, SENASA , Dr Andrea Pedemonte**

No clinical samples from FMD suspect cases have been received at SENASA for testing. Argentina has five FMD-free (without vaccination) zones recognised. Serological surveillance has been undertaken to (i) define vaccine-induced population immunity, and (ii) demonstrate the absence of FMD virus circulation. During 2016, 40,326 serum samples have been tested for these purposes.

**Update from NCFAD, Winnipeg, Dr Charles Nfon**

Five hundred suspect vesicular disease samples (from 33 different submissions) from pigs have been submitted for testing. Of these, 144 (29%), were found to be positive for Seneca Valley virus (SVV). Serological data (cELISA) for 299 samples also provided evidence for SVV circulation in 30% of samples. Validated diagnostic tests for SVV available at NCFAD include: real-time RT-PCR (2C), cELISA and VNT. This talk also summarised *in vivo* vaccine evaluation studies performed recently in Canada (as part of collaborative projects with CSIRO, Australia). Results suggest that $O_1$ Manisa can protect sheep from challenge with O/SKR/2010 (O/SEA/Mya-98 lineage). Similarly, A22 IRQ appears to be effective against A/VIT/15/2012 (A/ASIA/Sea-97 lineage) challenge in sheep: high potency vaccine protected 83% (5 of 6 sheep) at 4dpv. Lastly, Asia 1 Shamir vaccine appears to be protective against Asia 1 PAK/19/2014: 4 of 5 sheep challenge at 4dpv were protective. Studies were also carried out in pigs comparing both monovalent and bivalent vaccines in serotype A vaccines (A/May-97 and A22 IRQ). The bivalent appears to be more protective although statistically it may not be significant due to the small sample size.

**Update from USA, NVSL-STAT-VS-APHIS-USDA, Dr Consuelo Carrillo**

As part of on-going surveillance, FMD suspect cases (n=451) were investigated. None were positive for FMDV; however, an increasing number have been found to be positive for SVV. Primers used for SVV diagnosis have recently been updated to accommodate recent field samples. In addition to SVV, the meeting discussed whether these vesicular disease cases could be caused by another agent.

**Acknowledgements:** The OIE and FAO were thanked for providing financial support for delegates to travel to the meeting, and the European Commission were acknowledged for providing support (via EuFMD) to WRLFMD. This meeting was kindly hosted by ANSES, Maisons-Alfort, and the hospitality of Drs Labib Bakkali Kassimi and Stephan Zientara was very much appreciated by the delegates. Thanks also go to Sarah Belgrave and Julie Maryan who provided assistance to organize this meeting at WRLFMD

**Specific Topics [2nd December 2016]**

**Introduction – Virus Neutralisation Test Protocols FMDV and VSV, Dr Rossana Allende**

The virus neutralisation test described in the OIE Diagnostic Manual for VSV recommends a virus titre of 1000 $TCID_{50}$/25uL (20,000 $TCID_{50}$/mL virus-sera mixture). However, the FMD specific chapter recommends 100 $TCID_{50}$/50uL (1000 $TCID_{50}$/mL virus-sera mixture). The VSV protocol generates fewer false positive results (than a matching protocol that uses 100 $TCID_{50}$), particularly for pig sera, and the corresponding impact on analytical sensitivity is not considered important since serum titres are very high after infection with VSV.

Action B [WRLFMD]: to provide data from on-going studies to compare 100 vs 1000 virus dose for VSV VNT and link with work that has already been done as part of the PT for European NRLs for Equine Viral Diseases (at next meeting?)

Action C [ALL PARTNERS]: to explore the possibility to generate and supply appropriate reference sera for calibration of VNTs. This could include both FMDV and VSV as well as pig and cattle sera.

**Harmonisation of methods, Dr Anna Ludi**

This presentation reviewed work previously undertaken by the Network to compare vaccine matching results, and attempts to harmonise these tests in different laboratories. When presenting $r_1$-values multiple data from the same lineage should be used, since individual $r_1$-values are not robust. It is also recommended that background information on the sera should also be included in the reports (i.e., vaccine potency used to generate the BVS).

Action D - the cut-off of 0.3 currently used in the VNT vaccine matching reports needs to be reviewed. This includes looking at the robustness of the value especially closer to the cut-off. Whether uncertainly and variability could be shown on the report should also be investigated.

**Vaccine Quality Control, Aldo Dekker**

This presentation reflected on the reasons for vaccine failure, and systems that can be employed to assess the performance of vaccines and evaluate their efficacy. An important point made was that the costs of disease control can be even higher when an ineffective vaccine is used, compared to when no vaccination at all is employed. Studies have shown that there is good relationship between antibody level and protection; however, no reference sera is available for standardisation of serological tests and support is needed from international laboratories to help harmonise these tests. This is particularly important for vaccines used in Africa and Asia.

**Vaccine Antigen Prioritisation Tools (PRAGMATIST), Dr Don King**

In order to more clearly define the criteria used to define the current vaccine antigen recommendations, a new tool has been generated by WRLFMD and EuFMD. This comprises an antigen risk score (how likely is a strain to enter your region and how frequently does it circulate) and a coverage score (how good do the vaccines protect?). The goal is to make this tool available shortly.

Action E [ALL PARTNERS]: Please contact WRLFMD, if you have data to put into this table. WRLFMD will e-mail draft in 2017 for comment and there may be follow-up webinars to help populate the table.
Action F: [Drs Maree and Matlho]: To collect information on what vaccines are available and what data is available to show how they work in Pools 4 and 5.

**FMDV Sequences Network initiatives, databases and local tools, Dr Don King**

The nomenclature group is now on the web (details available at www.foot-and-mouth.org). If you have questions on nomenclature please e-mail this group. This presentation introduced a new tool (FMDVTools – beta testing version: https://mallorn.pirbright.ac.uk/FMDV) to draw phylogenetic trees, annotate sequences and identify FMD viral strains.

Action G [ALL PARTNERS]: Contact WRLFMD if you have any suggestions to improve the current FMDVTools content or website.

Action H [WRLFMD]: Will send out an e-mail when FMDVTools (version 1) is fully available. It is anticipated that this will be accessible from the Network Website (www.foot-and-mouth.org).

***Draft Work Plan for 2017***

1: Continue activities of the OIE/FAO FMD Laboratory Network:

- With assistance from OIE and FAO, the network will obtain and analyse samples from under-sampled endemic pools
- Network partners will provide a central resource of expertise and advice regarding FMD control, vaccines and diagnostics
- The network will continue to explore (and support) tools for real-time sharing of Laboratory data generated within the Network
  - FMDV Tools – made available during 2017 via the Network Website and feedback from Partners regarding new content and modules that could be developed [**WRLFMD**]
- Core OIE and FAO Network partners to consider the organization of the network and opportunities to make it a more inclusive network to maximize data collected from the field

2: Continue the work of the Network Working Groups

- Virus nomenclature and sequence Nomenclature
- FMD vaccines and recommendations for vaccine matching (non-FMD-free countries)
  - Publish study describing inter-laboratory study for r-values **[LVRI/CODA-CERVA]**
  - Investigate simple-to-use practical advice and tools that accommodate the PVM guidelines
  - Vaccine matching tests should clearly define the source and nature of antisera raised for vaccine-matching work
  - Reference sera of approximately 1L (already available from WRLFMD for limited set of vaccine antigens) – collate a list of what is currently available and look to expand availability of reagents for other vaccine producers **[WRLFMD]**–used for **harmonization** and **calibration**
  - Explore opportunities to harmonize vaccine viruses used in vaccine matching tests in different laboratories
  - **Vaccine matching** - revisit basis for 0.3 cut-off in the VM test and interpretation of results from in-vitro vaccine matching tests
  - There is a need to investigate the vaccine selection in pigs for Southeast Asia in order to decrease the rapid spread of outbreaks. What is the recommended schedule for vaccination?, and under what circumstance is it recommended to develop a new vaccine?
  - Collate data for sub-Saharan Africa for available vaccines **[BVI/OVI]** – list data that supports the use of these vaccines against different virus lineages strains (Serotype/Topotype level)

3: Communication:

- WRLFMD to coordinate the preparation of an Annual Report
  Agreed timelines for preparation of 2016 report: - Network partners to provide feedback on pools they work closely with. Network members to provide an update to WRLFMD for report (include data for November and December 2016)
  - Final summaries: January 2017
  - Draft Report: February 2017
  - Report Published: March 2017
- WRLFMD to organise an Annual meeting (location to be agreed after discussion with OIE and FAO) – will be at the end of the year. Agreed that (where possible) this should be hosted by a member lab of the network
- Proposal to enhance real-time exchange of data between partners, possibly in each of the pools – communicate new virus strains in real-time or other information; or quarterly conference call; (calendar to have specific times to write/edit for each lab). However, this will not require another report. – (**PANAFTOSA to organize in June/July 2017**).

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