



# GF-TADs

GLOBAL FRAMEWORK FOR THE  
PROGRESSIVE CONTROL OF  
TRANSBOUNDARY ANIMAL DISEASES



Food and Agriculture  
Organization of the  
United Nations



WORLD ORGANISATION  
FOR ANIMAL HEALTH

## PPR GLOBAL RESEARCH AND EXPERTISE NETWORK (PPR-GREN) INAUGURAL MEETING. VIENNA (AUSTRIA), 17-19 APRIL 2108



**Draft Final Communiqué**

## **BACKGROUND**

Since its initial identification in Côte d'Ivoire in the 1942, PPR has spread at an alarming rate with now more than 70 countries throughout Africa, Asia, Europe and Middle East being infected. Consequently, today, over 80 percent of the world's sheep and goat populations are at risk. PPR causes annual economic losses of up to USD 2.1 billion, but the costs extend beyond monetary considerations. PPR adversely affects biodiversity, livelihoods, food security, and employment, including for women and youth, and exacerbates poverty and malnutrition. In vulnerable countries and regions with high small ruminant smallholder populations, the loss of livestock can induce social and economic instability, contribute to the breakdown of civil society, provoke social conflict and in the worst case, participate in the emergence of criminality and terrorism. Mongolia reported its first-ever PPR outbreaks in sheep and goats in September 2016. In December 2016 the disease spilled over to wild antelope species killing more than 50% of the Saiga antelope population, a critically endangered species according to IUCN<sup>1</sup>.

Small ruminants are the primary livestock resource of 300 million poor rural families throughout the globe. For livestock keeping households, sheep and goats are: (i) a source of regular income; (ii) a means to capitalize savings; (iii) and a safety net during times of hardship. Selling animals or their products provides the necessary resources to access food, as well as educational and social services. Food products derived from sheep and goats are an essential part of the diet for many people around the world and contribute to overcoming malnutrition. Sheep and goat milk and meat are of high nutritional value and provide high-quality protein, vitamins and minerals critical for cognitive development and physical strength. Furthermore, small ruminants are moveable assets that can be easily relocated in times of climatic stress or volatile security situations.

PPR Global Control and Eradication Strategy (GCES) was endorsed in April 2015 with the vision of a PPR-free world by 2030. Furthermore, the membership of the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE), through governing body resolutions of both organizations confirmed their commitment to this initiative. To further advance towards the eradication of PPR, in March 2016, FAO and OIE established the Joint PPR Secretariat to support countries and drive the PPR eradication effort. An initial PPR Global Eradication Programme (PPR GEP) for 2017-2021 was developed and launched by FAO and OIE in October 2016.

The PPR GEP governance includes, in addition to the FAO/OIE Secretariat and the Advisory committee that were established in April 2016 and June 2017 respectively, a PPR Global Research and Expertise Network (PPR GREN) to be established with the objective to build strong partnerships between researchers and technical bodies, regional organizations and well-recognized experts and development partners in line with the recommendations of the electronic conference organized by FAO and OIE in 2014.

FAO and OIE, through their joint PPR Secretariat, organized in collaboration with the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, the inaugural meeting of the PPR-GREN in Vienna (Austria) from 17 to 19 April 2018.

This first meeting brought together representatives from FAO and OIE PPR Reference Laboratories, Research institutes, National Veterinary Research Institutes in developing countries, wildlife conservation and civil society organizations, vaccine manufacturers, regional economic communities, PPR experts, AU-PANVAC, Joint FAO/IAEA Division, FAO and OIE. The list of participants is attached in annex 3.

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<sup>1</sup> International Union for Conservation of Nature

The meeting was officially opened by:

- **Dr Meera Venkatesh**, acting Deputy Director General for Nuclear Sciences and Applications, IAEA
- **Dr Matthew Stone**, Deputy Director General of the OIE, International Standards and Science
- **Dr Berhe Tekola**, Director of Animal Production and Health Division, FAO.

The closing ceremony was chaired by **Dr Liang Qu**, Director, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (AGE).

The proceedings of the three-day meeting enabled the participants to address the following topics:

- Update on the PPR GEP implementation
- Terms of reference and Rules of Procedure of PPR GREN
- Update on IAEA Laboratory Network, IGAD and ECOWAS regional laboratory & epidemiology networks and Asia laboratory network
- AU-PANVAC activities on diagnostic assays development for PPR control in Africa
- PPR research and development and PPR PT testing
- Widening the scope of PPR diagnostic: adaptation and development to target non-typical hosts and field situations
- Tools (epidemiology and DIVA vaccines) for PPR eradication
- Research at ILRI in support of PPR-GEP
- Monitoring wildlife PPR: progress and challenges
- LVIF<sup>2</sup> and PPR vaccine research
- GALVmed's contribution to PPR vaccine improvements
- Development of a stable liquid formulation of the PPR vaccine
- Development and application of LFA device as dual function test for PPR diagnosis (antigen & antibodies detection) and molecular epidemiology
- Outcomes of the GREN e-conference (2014)
- Dissecting the zoonotic potential of non-human morbilliviruses.

Summary of presentations are attached in Annex 2.

During Group Sessions, participants discussed (i) Priority research needs within the strategic framework of PPR-GEP; (ii) Investing in PPR Research to support PPR GREN; (iii) Thematic areas of GREN; and (iv) Main challenges in PPR vaccine production, quality and delivery.

## **MEETING OUTCOMES**

Following fruitful discussions, the participants in the meeting agreed on the following:

### **1. PPR GREN Terms of reference**

The meeting adopted the ToR attached in annex 1.

PPR GREN is established as a forum for scientific and technical consultations to foster a science-based and innovative debate on PPR. In this regard, PPR GREN shall:

1. Serve as a communication and technology sharing gateway for the PPR GEP to coordinate inclusive field collaboration across the PPR-GEP community;

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<sup>2</sup> Livestock Vaccine Innovation Fund (LVIF)

2. Identify and prioritize research opportunities within the strategic needs of the PPR-GEP, in collaboration with relevant stakeholders;
3. Build strong partnerships between research institutions, academia, national, regional and international organisations and laboratories, and well-recognised experts, the private sector and development partners;
4. Play important advocacy and science translation roles for policy-makers and donors at national, regional and international levels;
5. Promote strategic, gender responsive, and multi-disciplinary research to better understand PPR epidemiology including at the livestock/wildlife interface;
6. Disseminate new knowledge about the causal virus and the disease, together with improved control measures to significantly accelerate the progressive control and eradication of PPR, including thermo-tolerant vaccines, DIVA vaccines and diagnostic assays, or combined vaccines against several diseases;
7. Encourage more research in socio-economics, incentives for community participation, and vaccine delivery systems in the context of control and eradication of PPR;
8. Contribute to capacity building on improved understanding of PPR issues, including a focus on national capability (including participatory epidemiology), through existing evidence and/or generation of new knowledge;
9. Act as technical adviser for PPR-GEP Secretariat and PPR Advisory Committee.

## 2. PPR GREN Bureau

The meeting elected the following bureau:

- Chair: **Adama Diallo**, CIRAD, Dakar - Senegal
- Members:
  - **Amanda Fine**, Wildlife Conservation Society (WCS), Hanoi - Vietnam
  - **Jeremy Salt**, GALVmed, Edinburgh - UK
  - **Hamid R. Varshovi**, Razi Institute, Iran
  - **Barbara Wieland**, International Livestock Research Institute (ILRI), Addis Ababa – Ethiopia.

## 3. PPR GREN Thematic Areas

Considering the scope of GREN work, the meeting agreed on the following thematic areas to inform control and eradication:

- PPR epidemiology including socio-economic factors and the livestock-wildlife interface
- PPR Diagnostic
- PPR vaccines and delivery
- Outreach, advocacy and communication, in order to facilitate awareness raising, resource mobilization, and both local and national participation in the PPR GEP.

#### 4. Priority research needs within the strategic framework of PPR-GEP

The meeting agreed on the following areas:

##### 4.1. Epidemiology, ecology and socio-economy

Key areas to be considered are as follows:

- Ecology of PPR in mixed species, multiple lineage/virulence virus in complex ecosystems where virus is likely to persist
- Socio-economic-ecology of livestock smallholder communities (Drivers for small livestock movement; Understanding socioecological systems; Identifying attitudes as risk factors; Tangible and intangible costs of PPR and PPR control on households)
- Research on moving barriers to eradication
- Country assessments before interventions. How to implement epidemiological – ecological assessment at country level
- Benefits of eradication (poverty reduction, biodiversity conservation, small cycle stock shortest route to removing childhood stunting), ease public burden, establish metrics.

##### 4.2. Laboratory Diagnostic

Validated diagnostic tools exist already, however improvement, cost effectiveness, and new development should be considered as follows:

- Revise and develop Diagnostic Pipelines/Algorithms
- Harmonized SOPs and guidelines for outbreak investigation, sero-monitoring and diagnostic tests
- Identify and validate diagnostic tests required for other species
- Refine protocols for pooling samples
- Molecular standards, controls and references
- Support the implementation of partner technology, e.g. smartphone reporting
- Continued research on the basic biology of PPRV that may influence diagnosis technologies.

Furthermore, considering that several laboratories are currently working on the improvement of sensitivity/specificity of available diagnostic tests in particular in considering the animal species of the test samples and development of new tests and considering the need for standardizing those tests, the meeting recommended that the PPR GEP Secretariat in collaboration with PPR GREN bureau convene an expert meeting to exchange views on research on PPR diagnostic tests.

##### 4.3. PPR vaccine research, production, quality and delivery

There is sufficient vaccine production capacity to meet the needs of the PPR GEP. However, there is a need of research on the following areas:

- DIVA vaccines and companion tests for differentiation between infected and vaccinated animals
- Known profile of the vaccine strain
- Multivalent vaccines
- Recombinant vaccines
- Increase PPR vaccine production yield
- Thermotolerant PPR vaccines and stabilizer

- "Best practices for implementation of vaccination programs to achieve PPRV eradication. This would include frequency of vaccination (duration of immunity, need for annual revaccination), vaccine strains used (cross protection of different vaccines against the four lineages of PPRV), identify appropriate age groups, identification of vaccinated and non-vaccinated populations, surveillance to assure seroconversion to the vaccine, surveillance to assure absence of PPRV exposure (antibody) and / or virus (antigen)".

4.4. Outreach, advocacy and communication, in order to facilitate awareness raising, resource mobilization, and both local and national participation in the PPR GEP.

There is a need to take action and pursue research in the following areas:

- Translation of research findings into narrative and policy
- Research on the socio-economic impact of vaccination and increased acceptance of vaccine by farmers
- Understanding barriers faced by governments in implementing national strategies for PPR control and eradication.

## **5. PPR-GREN Opportunities**

### **5.1. Funding:**

The following funding opportunities were identified:

- Global Challenge Research Fund (GCRF), UK
- International Development Research Centre – Canada (IDRC) specifically upcoming call on gender balance and access to vaccines
- The Audacious funds TED<sup>3</sup> platform
- African Union Research Fund
- Resource partners,
- Foundations

### **5.2. Data collection, sharing and analysis coordinated by GREN**

- Grey literature on PPR control and eradication, studies done at national level → collation, development of narrative
- PPR special edition in OIE Scientific and Technical Review
- Relevant FAO, OIE and other website –
- Country reports
- ICT platforms
- Endemic settings – knowledge community.

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<sup>3</sup> Technology Entertainment Design

## **6. Other recommendations**

The participants in the meeting agreed to consider the PPR vaccine producers group under the umbrella of GREN. They also agreed to organise the next GREN meeting in June 2019.

### **Acknowledgment**

FAO and OIE thank all the participants for contributing their time and efforts to this meeting, especially those who attended the meeting at their own institution's expenses. All the participants in this PPR GREN meeting are grateful to FAO, OIE, and IAEA for the support extended to them during the preparation and the conduct of the event.

## Annex 1

### Terms of Reference

#### I. BACKGROUND

Following the successful global eradication of rinderpest in 2011, global consensus has been reached on the need to eradicate *Peste des petits ruminants* (PPR). The FAO and OIE held an electronic conference from 3 February to 7 March 2014 on the “establishment of a PPR Global Research and Expertise Network (PPR-GREN)” to support the development of a PPR Global Control and Eradication Strategy (PPR GCES).

The PPR Global Control and Eradication Strategy (PPR GCES) was endorsed in April 2015, during the international conference on PPR held in Abidjan, Côte d’Ivoire with the vision for global freedom by 2030. To further advance towards the accomplishment of this goal, in March 2016, FAO and OIE established the Joint Secretariat to guide the PPR eradication effort. This global action was driven by strong evidence that PPR undermines the important role played by sheep and goats in improving rural livelihoods.

To implement the global strategy, an initial PPR Global Eradication Programme (PPR GEP) for 2017-2021 was developed through an inclusive and peer-reviewed drafting process and launched by FAO and OIE in October 2016.

To support the PPR GEP implementation, a PPR Global Research and Expertise Network (PPR GREN) has been established. The roles, functions, composition and modus operandi of the PPR GREN are detailed as below.

#### II. PPR-GREN VISION AND GOAL

PPR-GREN is driven by the **vision** to enable research and expertise by networking in support of the global elimination of PPR.

PPR-GREN **goal** is to promote and initiate an integrated, comprehensive research and expertise network that capitalizes upon synergies to eliminate the threat posed by small ruminant diseases (with a special focus on PPR) to protect biodiversity, and improve the livelihoods, food security and health of people nationally, regionally and globally.

#### III. ROLES AND FUNCTIONS

The PPR GREN is a **forum** for scientific and technical consultations to foster a science-based and innovative debate on PPR. The PPR GREN shall:

- Serve as a communication and technology sharing gateway for the PPR GEP to coordinate inclusive field collaboration across the PPR GEP community;
- Identify and prioritize research opportunities within the strategic needs of the PPR-GEP, in collaboration with relevant stakeholders;
- Build strong partnerships between research institutions, academia, national, regional and international organisations and laboratories, and well-recognised experts, the private sector and development partners;
- Play important advocacy and science translation roles for policy-makers and donors at national, regional and international levels;



- Promote strategic, gender responsive, and multi-disciplinary research to better understand PPR epidemiology including at the livestock/wildlife interface;
- Disseminate new knowledge about the causal virus and the disease, together with improved control measures to significantly accelerate the progressive control and eradication of PPR, including thermo-tolerant vaccines, DIVA vaccines and diagnostic assays, or combined vaccines against several diseases;
- Encourage more research in socio-economics, incentives for community participation, and vaccine delivery systems in the context of control and eradication of PPR;
- Contribute to capacity building on improved understanding of PPR issues, including a focus on national capability (including participatory epidemiology), through existing evidence and/or generation of new knowledge;
- Act as technical adviser for PPR GEP Secretariat and PPR Advisory Committee.

#### IV. MEMBERSHIP AND RULES OF PROCEDURE

Participation in the PPR GREN is on a voluntary basis. Members of the PPR-GREN could be individuals or institutions sharing PPR-GREN's vision and participating in its actions.

PPR GREN members agree to participate and engage actively in the PPR GEP as a dynamic and inclusive platform for evidence-based policy dialogue, knowledge exchange, and joint action at global, regional and national levels, supporting the achievement of PPR eradication.

The PPR-GREN will maintain a global perspective to operate through a number of regional or sub-regional groups.

The PPR-GREN structure includes:

- A **Bureau**, composed of five individuals including a Chairperson elected during the inaugural meeting of the PPR GREN for a period of two years, renewable once. The **Chairperson** of the Bureau must be a recognized international researcher with relevant publications in peer reviewed journals with experience in animal health, awareness of the roles and responsibilities of OIE and FAO, and familiarity with the global PPR situation. The membership of the bureau should provide sufficient regional representation.
- **PPR Thematic Areas:** the role of these groups is to improve vaccines, diagnostic tools and epidemiologic methods, and to bring up other PPR relevant topics. Learning from rinderpest, in addition to the above, any effective control/eradication programme for PPR needs much greater understanding of the way the hosts of the virus (primarily sheep/goats, but also considering wildlife and PPR dynamics in mixed species systems) are breed, raised, moved, traded, and interact. It is critical to fully understand the epidemiology of the virus in these hosts production systems, and ecosystems, as well as the socio-economic factors impacting implementation of control measures. The creation of specialist/technical groups can be done by recommendations of the Bureau with approval by FAO and OIE Management following consultation with the PPR Secretariat.
- **Global network of PPR GREN members.**

The PPR GREN will meet at least once a year (face to face meeting). Alternatively the Chairperson in consultation with the rest of the Bureau can call through the PPR Secretariat for tele/video conference or Skype if needed. Quorum for meetings will be attendance by a simple majority of PPR GREN members. The PPR GREN reaches recommendations by consensus. That consensus is summarized by the Chairperson at the end of each meeting and recorded in summary proceedings for the meeting. Between meetings, the Chairperson acts as a key contact point for the PPR Secretariat.

The Chairperson will be invited to participate in the PPR Advisory Committee meetings.

The PPR Secretariat will provide administrative and logistic support to the PPR GREN. The PPR GREN is not expected to fund research.

## Annex 2

### Summary of presentations

#### **CIRAD - Widening the scope of PPR diagnostic: adaptation and development to target neglected host species and field situations**

Arnaud Bataille<sup>1</sup>, Olivier Kwiatek<sup>1</sup>, Fabien Donnet<sup>2</sup>, Kevin Martin<sup>2</sup>, Salima Belfkhi<sup>1</sup>, Lucile Mounier<sup>1</sup>, Mathieu Laffont<sup>2</sup>, Loïc Comtet<sup>2</sup>, Geneviève Libeau<sup>1</sup>

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<sup>2</sup> IDvet, 34790 Grabels, France

Peste des Petits Ruminants (PPR) is a highly contagious and devastating viral disease affecting sheep, goats, and a large number of species within the order Artiodactyla. Robust commercial serological and virological diagnostic kits are available to detect PPR infection, but they were mainly developed for domestic small ruminants (goat and sheep) and for high quality, invasive samples sometimes hard to obtain in the field. New tools are needed to detect PPR infection in often neglected hosts (e.g. camels, wildlife) and in complex field situations.

Here we present adaptation of existing methods and new diagnostic tools to resolve some of these issues. A first issue is that invasive sampling is not always possible. In some regions, farmers are reluctant to have their animals handled and tested for PPR infection. As well, in the case of wildlife survey, animal capture is very costly and demands complicated logistics. Detection of PPR virus in non-invasive samples (feces) can be extremely useful in such cases. We adapted methods of RNA extraction, RT-PCR, RT-QPCR and antigen capture ELISA to detect PPR viral particles or genetic material from fecal samples. The methods were validated with samples collected during an infection experiment, showing that virus particles can be detected in fecal samples from 4 days post infection (dpi) until at least 14 dpi. Our protocol was then used with fecal samples obtained in the field in Tanzania in 2015, and compared to results obtained from ocular swab samples taken from the same animals. Sensitivity of RT-QPCR from fecal samples was similar to RT-QPCR and lateral flow device (LFD) on ocular swab samples. Another issue is that existing LFD tests used in the field do not allow for direct confirmation by PCR. Here we present a new rapid penside test, produced and distributed by IDvet, and that can be performed without any lab or specific equipment. This test is as sensitive as the antigen capture ELISA test. Once dried, positive strips can be stored and used later on for confirmation by RT-QPCR or RT-PCR. Lastly, we also tackled the issue of PPR antibody detection from camelid sera, usually suboptimal because of their particular antibody structure. Here we show that simple modification of the protocol of a commercially available competitive ELISA for PPR antibody detection (IDvet, France) increases the sensitivity of the test on camelid serum.

These tools will be extremely useful to unravel important questions that still remain about PPR epidemiology, notably the role of atypical host in PPR transmission dynamics.

#### **GALVmed**

GALVmed is a not-for-profit organisation funded by the Bill & Melinda Gates Foundation and UKAid. Our remit is to serve the smallholder farmer in sub-Saharan Africa and S Asia through addressing perceived market failures in the delivery of veterinary medicines. The disease areas in which we work are seen as having the greatest impact on livelihoods. PPR is one such disease that affects sheep and goats in the geographies in which we work. GALVmed has funded work on improvements to existing PPR vaccines, the investigation of elimination of the lyophilisation step in production, establishing thermotolerance criteria

for PPR vaccines and the development of combination vaccines that include coverage of other important infectious diseases of small ruminants in Developing countries.

## ILRI

*Better lives through livestock* –the International Livestock Research Institute (ILRI) works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock. ILRI is a CGIAR research centre – part of a global research partnership for a food-secure future.

Control of PPR is in line with ILRI’s mission and over the years, PPR research has been conducted through various projects, including activities supported through the CGIAR research program on LIVESTOCK. Most recently, epidemiological studies, socio-economics of PPR and its control, use of participatory tools, access to veterinary services to ensure appropriate vaccination coverage, and gender, have gained momentum. In parallel, ILRI is engaged with partners to provide backstopping for production of thermo-tolerant vaccine and has facilitated comparison of different protocols with the aim to define which vaccine is best suited in a given context. Further, improvement and validation of diagnostic assays are areas of continued research. ILRI’s ongoing and upcoming research focuses on remote areas that are likely to become remaining pockets of infection as they may be more difficult to be reached through control programs, and through that may jeopardise control efforts overall. Accordingly, key activities are socio-economic and epidemiological modelling to inform control strategies and testing efficacy of novel vaccine deployment models in these areas.

## IDRC

The International Development Research Centre (IDRC) is a crown corporation which funds research in developing countries to promote growth, reduce poverty, and drive large-scale positive change. It does this through one of its multiple partnership, the Livestock Vaccine Innovation Fund which is a five-and-a-half year, CA\$57 million partnership between the Bill & Melinda Gates Foundation, Global Affairs Canada and Canada’s International Development Research Centre. It focuses on those animal diseases posing the greatest risk to poor livestock keepers in Sub-Saharan Africa, South and Southeast Asia, targeting transboundary diseases to achieve lasting regional impact.

Bringing together vaccine researchers, manufacturers and distributors, the fund accelerates the discovery of new vaccines and the improvement of existing solutions. Its priorities include:

- Accelerate the development of new vaccines against neglected livestock diseases by supporting innovation and leading-edge research
- Increase the efficacy, marketability and use of existing livestock vaccines
- Foster effective partnerships between vaccine researchers and public and private sector actors to more efficiently develop, register, commercialize, and deploy livestock vaccines.

IDRC and LVIF have supported the work of multiple projects on multivalent vaccines including PPR as well as develop CCPV vaccines to be co-administered with the PPR vaccine.

## **The outcome of the successful 2014 FAO/OIE e-conference on the proposal for establishing the PPR GREN – Dr Paul Rossiter**

In 2014 the FAO/OIE GF-TADS Working Group for PPR held an electronic conference on the “establishment of a PPR Global Research and Expertise Network (PPR-GREN)” to support the development of a global strategy for the progressive control of PPR. The e-conference was carried out entirely by email and had 307 subscribers of whom 89 submitted over 300 contributions to the conference.

The wide range of participants, from renowned research scientists and international and national programme managers to newly qualified veterinarians and research students, all eagerly supported the proposed network. The potential for detailed discussion on a wide range of PPR related topics was clearly displayed during the first session of the conference when contributors listed what they saw as opportunities and weaknesses about PPR control. Four main themes for inclusion in the network were proposed: (1) Justification for the global progressive control of PPR; (2) Coordination and implementation of a global strategy (the final strategy to be developed and elaborated by the “OIE-FAO GF-TADS Working Group on PPR” using input from PPR-GREN); (3) Disease surveillance and epidemiology; (4) Immunity and vaccination. In addition, it was accepted that improved laboratory technology, epidemiology and socio-economics, which were seen to be core subjects, should cross-cut the four main themes. A table listing the more than 70 sub-themes/topics that were raised and discussed during the conference was included in the e-conference report.

The concept of including other important diseases of small ruminants in an overall programme of disease control with PPR was largely supported. However, the selection of these other diseases should be made at a regional or national level, and the interventions chosen should not interfere with the primary purpose of progressively controlling PPR to eradication.

Contributors confirmed that PPR-GREN should be operated by FAO and OIE; that it should be primarily a forum for technical consultation and discussion by both laboratory and field workers; that it might require regional and sub-regional networks under a global PPR-GREN; and that it should be moderated.

A strong feature throughout the meeting was the wide and diverse interaction between senior scientists in reference laboratories and less experienced workers in much smaller provincial or college laboratories, and between laboratory researchers and field operatives. Whilst the inaugural emphasis is largely laboratory based the network aims to include field workers and programme managers who, by reporting what they are experiencing in the field, including clinical signs and pathology, and their successes and difficulties in achieving control, will stimulate discussion and sharing of the best methods for disease surveillance and immunization in the field. By harnessing and guiding this widespread enthusiasm to share knowledge about PPR, GREN can be the tool to effectively promote and harmonize the global effort against the virus making the 2030 target for its elimination even more feasible.

## **AU-PANVAC**

AU-PANVAC is specialised office of the African Union Commission. Based on its missions “To promote the use of Good Quality Vaccines and Diagnostic Reagents for the control and eradication of animal diseases in Africa” has worked to produced several reagents and tests for PPR diagnosis. During the PPR-GREN meeting held in Vienna, AU-PANVAC presented data on:

- The blocking Enzyme-Linked Immunosorbent Assay (bELISA) test is designed for the detection of IgG class antibodies against Peste des Petits Ruminants Virus (PPRV) in sheep and goat serum. The assay uses a monoclonal antibody (MAb C4F3) against antigen of inactivated PPRV from virus-

infected vero cells. This mab C4F3 has shown very good competition between sheep or goat PPR positive sera. The bELISA is able to detect sero-conversion in animal infected or vaccinated with PPRV. The assay is highly sensitive and specific, highly repeatable and reproducible.

- The PPR virus Antigen ImmunoCapture ELISA (PPR-Ag-ICE) developed to aid in the detection of Peste des Petits Ruminants viral (PPRV) antigen. The PPR-Ag-ICE is based on monoclonal antibodies targeting different epitopes on the nucleoprotein. A monoclonal antibody to specifically capture the PPRV nucleoprotein (supernatant prepared from tissue samples or infected cells) and a second monoclonal antibody (the detecting antibody conjugated with HRP) will detect the bound nucleoprotein (N) protein in the wells. The PPR-Ag-ICE is intended to differentiate PPR vaccine and wild strains.

AU-PANVAC has also presentation the technical support delivered to African Union Members States on PPR diagnosis and virus characterization.

### **Dalan Bailey, The Pirbright Institute - Dissecting the zoonotic potential of non-human morbilliviruses**

Morbilliviruses infect a broad range of mammalian hosts including ruminants, carnivores and humans. The recent eradication of rinderpest virus (RPV), as well as active campaigns for measles virus (MeV) and *Peste des petits ruminants* (PPRV), have raised significant concerns that other morbilliviruses may emerge in so-called 'vacated ecological niches'. Seeking to assess the host-range of atypical morbilliviruses my team is examining the role of receptor usage and antibody neutralisation in virus entry. Using a structure-guided approach, as well as quantitative receptor usage assays, we are examining at the molecular level, the genetic determinants of host-range. This research is especially important for PPRV as recent publications have begun to shed light on infection in wildlife and other agriculturally relevant ruminants. Our research might support the development of next generation vaccines to prevent viral emergence in these new hosts post-eradication.