"RAPIDIA-FIELD"
(Rapid Field Diagnostics and Screening in Veterinary Medicine)

Project objectives and achievements

Martin Beer, Scientific Coordinator

Diagnosis of animal diseases

FRIEDRICH-LOEFFLER-INSTITUT
FLI
Bundesforschungsinstitut für Tiergesundheit
Federal Research Institute for Animal Health

???

Detection of abnormalities

- Fever
- Reduced feed intake
- Huddling
- Depression

39,8°C

30

23,6°C
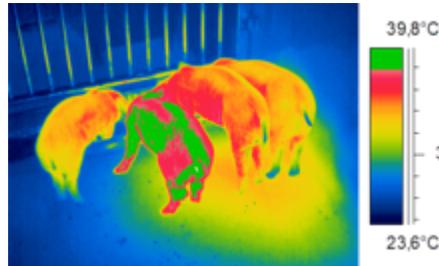
- Influenza
- Classical swine fever
- African swine fever
- ...

Sampling & Transport

BIO-BOTTLE

Testing in the field – „Pen-site"

FMDV Ag
Date
ID
C
SP
NSP
S
A-3021p

Use of reference techniques

Testing in basic laboratories

- Shipment
- Sample processing
- Testing
- Storage
- Remit to reference laboratory

Development and implementation of reliable and robust diagnostic tools as a prerequisite for the efficient and succesful control of animal diseases
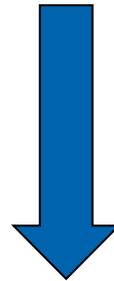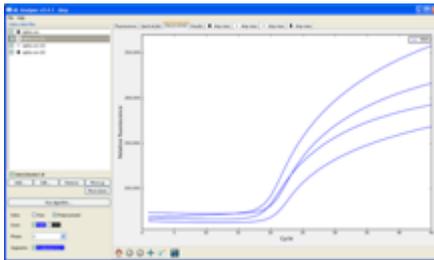
Wherever possible:
(validated) commercial products

KBBE.2011.1.3-02:

Development of field test for rapid screening of pathologies as well as simple laboratory test in animals

Collaborative project: 12 partners*
Duration: 42 month
Budget: 4.3 M€ (3 M€ EU contribution)
Coordinator: INGENASA (Paloma Rueda)
Scientific Coordinator: FLI (Martin Beer)

*8 countries, 7 European public institutions, 5 companies

WP2: Real-time monitoring livestock on line

Early warning –
non-invasive health monitoring

- Most infectious diseases will be accompanied by alterations of body temperature, behaviour, and feed intake

- These parameters can be used as sensitive indicators for the detection of abnormalities

- Computer-aided online systems are the method of choice for industrialized holdings

- Non-invasive thermography could be applied also to backyard settings

- **RAPIDIA achievements: design and validation of the RTMS-ON system (real-time monitoring system online)**

- **Assays: Temperature and motion monitoring or radio-frequency identification**
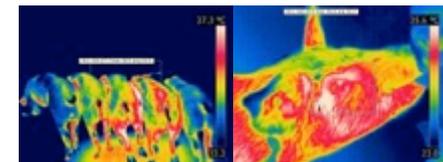
Real-time monitoring system online

- The technique is intended to detect the early stages of infeciton in sentinel animals by measuring physical or physiological changes through *in-vivo* sensors.
- The information is then remotely transmitted in real-time and an alert is issued when a certain threshold is reached

> less invasive than continous sampling

> real-time transmission of data

> High sensitivity to detect early changes such as increased temperature, reduced water consumption, and decrease in motion

M. Martínez-Avilés et al.

Real-time Monitoring System Online

1. Pig
2. Thermometer
3. Accelerometer
4. Water flow sensor
5. RFID
6. Cable

Fig. 1. Schematic diagramme of the Real-Time Monit

Transboundary and Emerging Diseases

Transboundary and Emerging Diseases

ORIGINAL ARTICLE

Early Detection of Infection in Pigs through an Online Monitoring System

M. Martínez-Avilés, E. Fernández-Carrión, J. M. López García-Baones and J. M. Sánchez-Vizcaíno

Visavet Centre and Animal Health Department, Faculty of Veterinary Sciences, Complutense University of Madrid, Madrid, Spain

Detection of motion upon ASFV infection

FRIEDRICH-LOEFFLER-INSTITUT
FLI
Bundesforschungsinstitut für Tiergesundheit
Federal Research Institute for Animal Health

WEBCAM
Zone Trigger
Motion Detection Software

19/04/2015

55 counts

$\overline{X}$= 72.4 mov/min

20/04/2015

51 counts
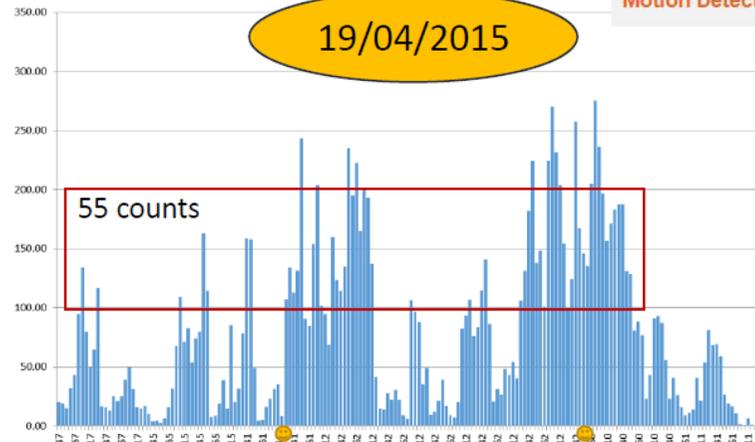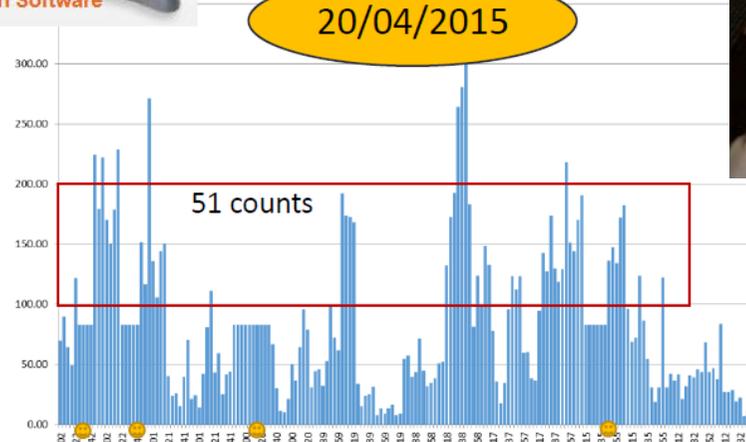
$\overline{X}$= 82.9 mov/min

Infection
21/04/15

D2
23/04/2015 $\overline{X}$= 50.7 mov/min

26 counts

D3
24/04/2015

$\overline{X}$= 39.7 mov/min

10 counts
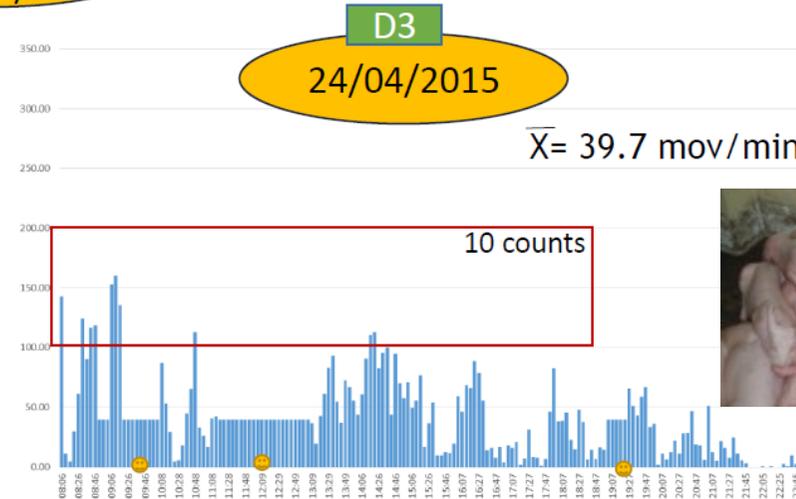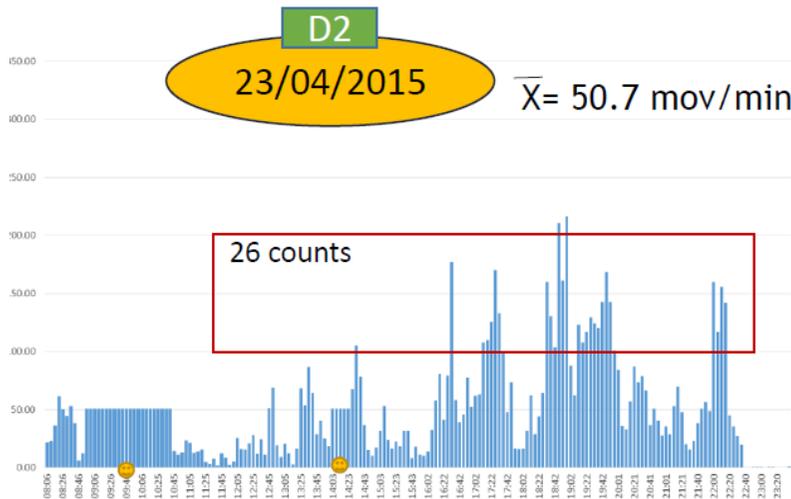
WP3: Collection and preparation of samples

Early detection – alternative samples

- the

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- or

- e

- downstream applications

Letter to the Editor

Alternative sampling strategies for passive classical and African swine fever surveillance in wild boar – Extension towards African swine fever virus antibody detection

Sandra Blome, Katja V. Goller, Anja Petrov, Carolin Dräger, Jana Pietschmann, Martin Beer

Experiments

- Three different swabs were tested as „blood swabs"
  - COPAN cotton swabs, COPAN FLOQSwabs, Genotubes
- Blood samples from experimentally infected animals (ASFV/CSFV)
- Storage as dry swabs for at least for 24 h
- Immersion or fragment testing
- Nucleic acid extraction (manual/automated); one extraction for both diseases
- ASFV and CSFV specific PCR
- Comparison with EDTA blood samples of the same animal
- Additional tests with genotubes

Immersion/Viral Kit
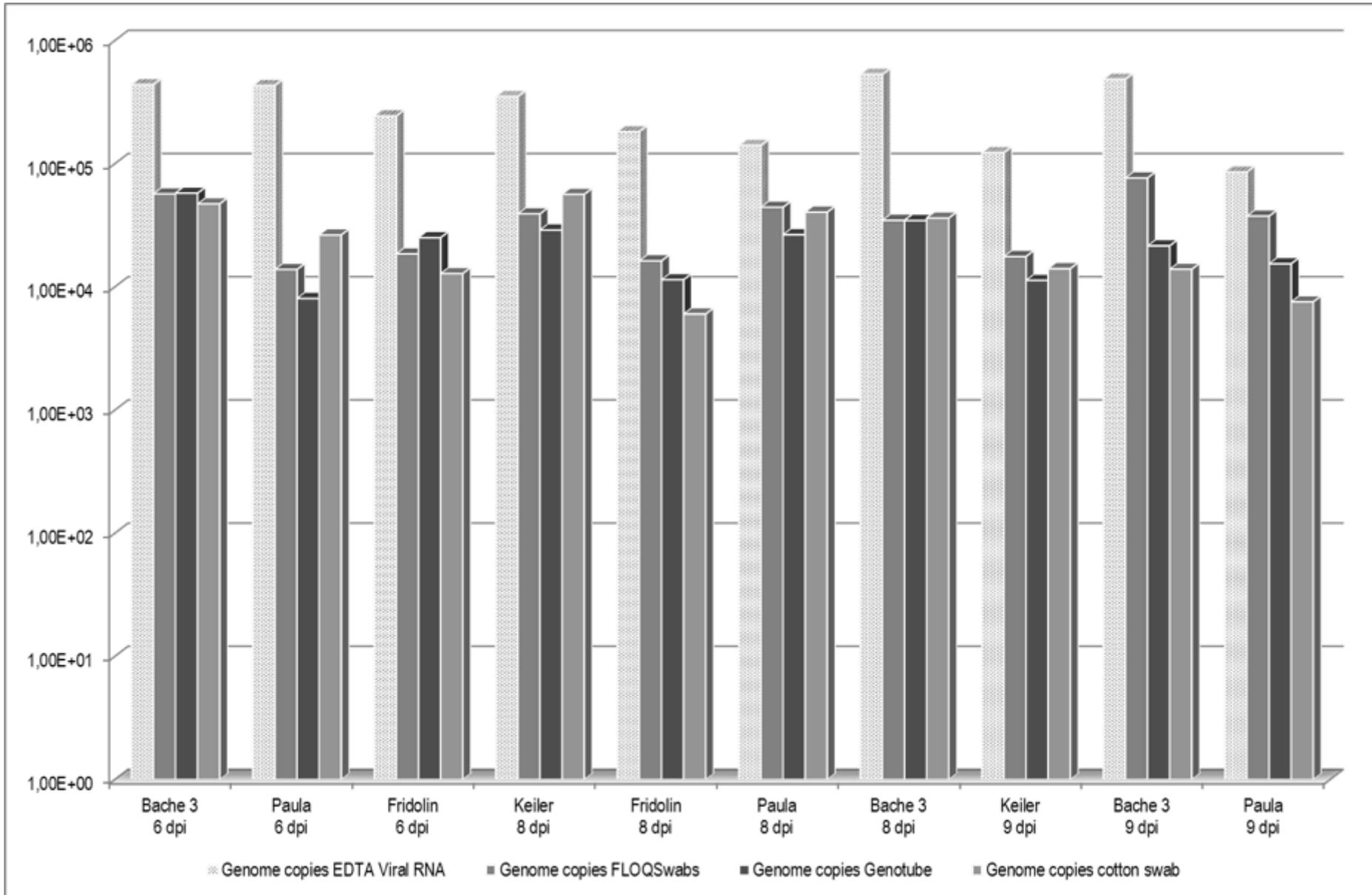
Results

- ASFV and CSFV were reliably detected in blood swabs
- Immersion in lysis buffer and extraction from swab pieces worked well (the latter allows retesting)
- Manual and automated extraction methods could be used
- Genotubes had advantages in terms of cutting and storage

Animal	Inoculum	D.1	D.35
365	CSFV "CSF1047", gt 2.1	26.91	28.19
366	CSFV "CSF1047", gt 2.1	24.27	27.73
367	CSFV "CSF1047", gt 2.1	32.24	31.38
368	CSFV "CSF1047", gt 2.1	26.31	28.61
76	CSFV "CSF1045", gt 2.3	28.22	30.04

- **Swabs could be used for passive swine fever surveillance in wild boar!**
- Suitability for other diseases should be tested

Pre-assay processing of samples

- Easy to handle processing steps are crucial for the acceptance of downstream applications

- Use of techniques that can be used directly on the sample matrix (e.g. direct PCRs for blood, tissues, swabs)

- Safe immobilization and storage of diagnostic analytes (e.g. forensic swabs, FTA cards)

- Combination of methods to rational work-flows

- Evaluation of these techniques using well characterized reference samples

- RAPIDIA achievements: Workflows for swab sampling with subsequent direct PCR and detection of PCR products on NALF, optimization of deep-sequencing from FTA cards and filter paper
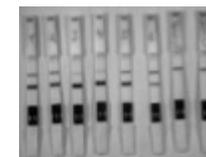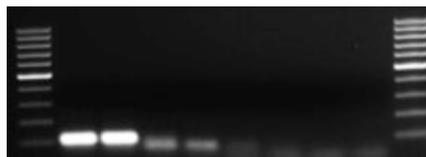
PCR without extraction

Direct PCR & NALF detection

ASFV from Genotubes after 11 months of storage
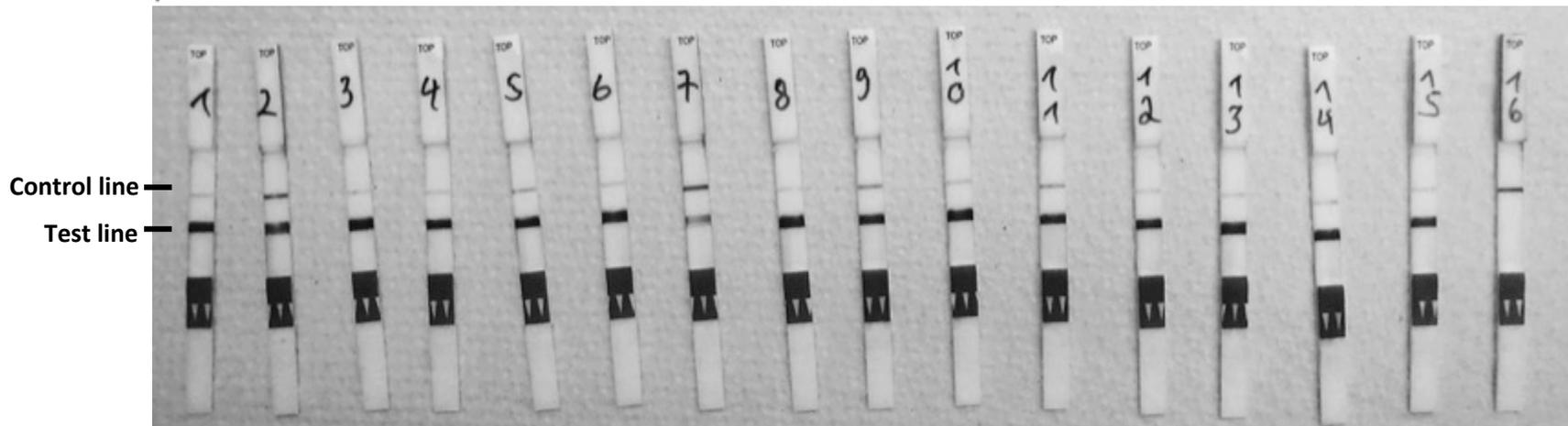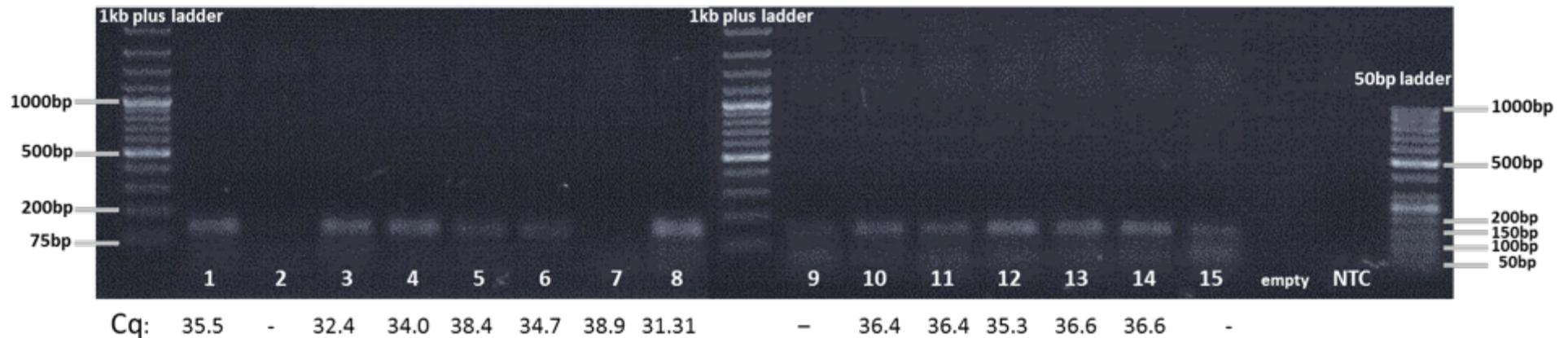
Virtual Database for references and sample materials

http://rapidia.eu/app/search.php

WP4: Antibody detecttion in the field

WP5: Pathogen detection in the field

Pen-site Applications

- Test technologies such as lateral flow devices (LFDs) or certain genome amplification techniques can be transferred to the point of care

- Support decision-making – „data-based suspicion"

- Investigation of disease syndromes with multiplex approaches

- Antibody detection using lateral flow devices

- Pathogen detection through the use of portable PCR, isothermal amplification technology (e.g. LAMP), and adpated LFD technology

- **RAPIDIA achievements: e.g. ENIGMA FL and AMPLite validation, duplex antibody LFDs (ASFV/CSFV; AHSV/EIAV)**

Lateral Flow Devices

Detection of antibodies directly in the field

INGENASA: CSFV/ASFV antibody detection

TEST PROCEDURE one-step assay

SAMPLES
- Plasma
- Serum
- Whole blood
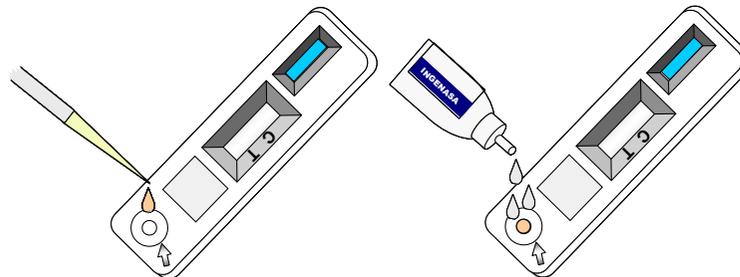
Add 10 μl of sample on the round window

Add 3-4 drops of running buffer

NEGATIVE   CSFV POSITIVE   ASFV POSITIVE

→ good sensitivity and specificity

Molecular detection methods for FMDV in the field portable qPCR-device

(Source: ENIGMA, UK)

Molecular detection methods for FMDV in the field

Portable rRT-PCR platform (Enigma Field Laboratory - FL)

- _____s have developed a mobile unit which can perform RNA extraction and _____d ready' down reagents for detection of FMDV.
- _____ge containing lyophilised reagents
- Battery operated or compatible with mains and vehicle auxiliary
- No specialist user required
- _____t' reporting system
- _____
- _____ample at a time

- **RED:** FMDV POSITIVE
- **AMBER**: RETEST
- **GREEN**: FMDV NEGATIVE

Validation of Enigma FL for the detection of FMDV:

- using **spiked epithelium** dilution series

- using **archival field samples**

- **field validation** in Kenya (FAO) and Tanzania (SUA/UoG)

- Results compared to gold-standard real-time RT-PCR

   (where possible)

RAPIDIA FMD PCR 0056
Result: Positive

Grn:Continue

University of Glasgow

eofmd
european commission for the
control of foot-and-mouth disease

Food and Agriculture Organization
of the United Nations

www.pirbright.ac.uk

RT-LAMP-LFD Closed system (isothermal amplification and direct detection!)

To develop and perform initial validation of closed RT-LAMP device (AMPlite) for detection of FMDV at the pen-side

What is the AMPlite?

- Closed system to minimise technical input required for assay and to minimise cross-contamination.

- Inexpensive heating block with disposable consumables.

- FMDV RT-LAMP assay was modified to incorporate a isothermal mastermix produced by Optigene.

- Performance of assay and device was compared against rRT-PCR and real time RT-LAMP/ RT-LAMP-LFD.

WP6: Antibodies detection in small field labs

WP7: Pathogen detection in small field lab

Simple laboratory assays

- Front-line laboratories are often ideally located but may lack infrastructure

- Manageable tools are needed that work under limited conditions

- Antibody detection through multiplex „comb" LFD devices, Quick ELISA formats, and low density microarray technology

- Pathogen detection e.g. through the use of isothermal amplification methods, multiplex antigen ELISA, DNA Chip systems, and AlphaLISA

- Multiplexing allows simultaneous detection of disease or species related clusters

- **RAPIDIA achievements: Validation of ENIGMA ML assays (FMDV, ASFV/CSFV), design of microarrays for antibody detection, LAMP, RPA**

Fully automatized qPCR

Cartridge based ENIGMA® ML (MiniLab)

- **automated nucleic acid extraction**
- subsequent **real-time PCR and printout of the results** ('POSITIVE/NEGATIVE')
- **easy-to-use** and operators do **not require specialist training**
- **freeze-dried assays:** no cooling of the cartridge required and implementation in arid or tropical areas is feasible
- Can **process six samples**
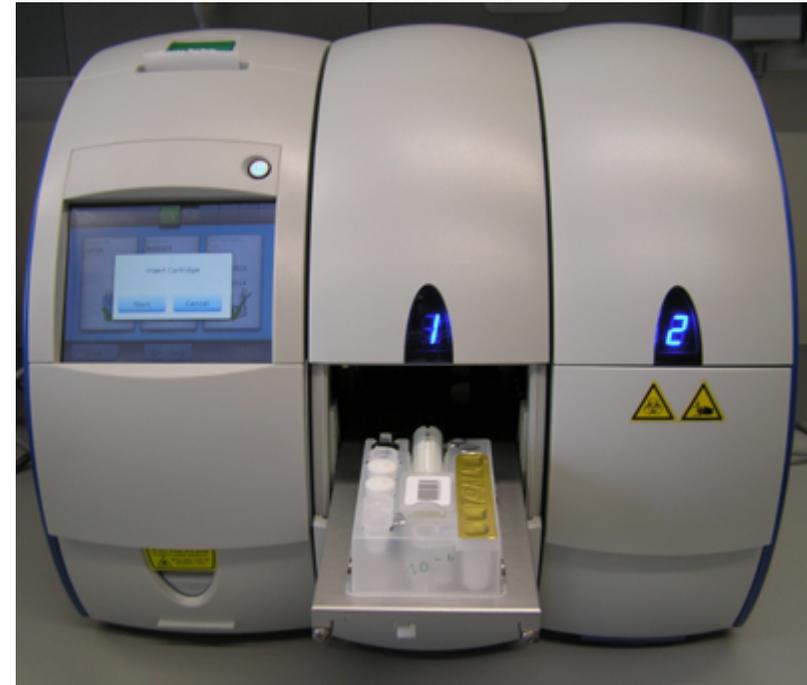
ENIGMA® ML

Why multiplex ASFV and CSFV ?

Clinical symptoms

Challenges

Similar for both diseases:
e.g. vomiting, diarrhoea (sometimes bloody), reddening or darkening of the skin (ears and snout), gummed-up eyes, laboured breathing and coughing, weakness and unwillingness to stand

CSFV   ASFV

⬇   ⬇

Small RNA virus   Large DNA virus

⬇   ⬇

RNA isolation   DNA isolation

⬇   ⬇

RT reaction required   No RT reaction required
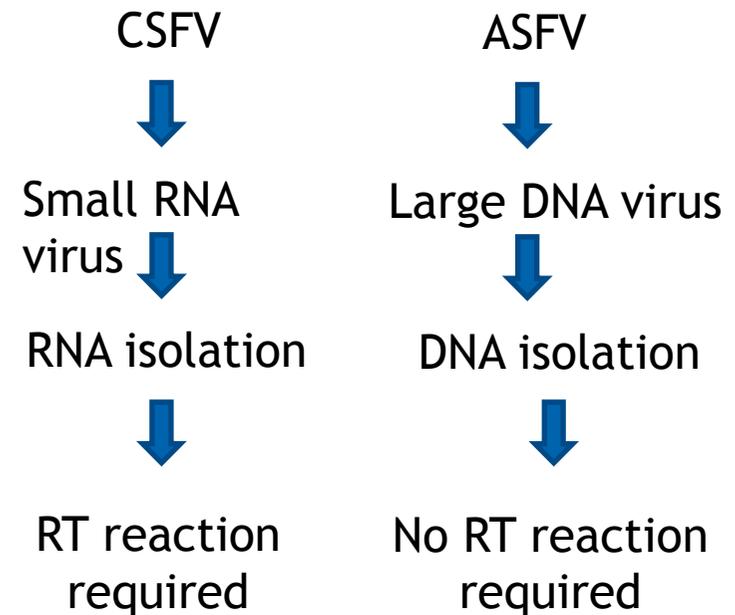
Validation of Enigma® ML for the detection of ASFV

10 fold blood dilution series from strains of genotype I, II and X

Genotype I0	Enigma Printout	PCR manual extraction	Genotype II	Enigma Printout	PCR manual extraction	Genotype X	Enigma Printout	PCR manual extraction
Sardinia 1	pos	25.8	Lithuania 1	pos	22.2	Kenya 1	pos	25.5
Sardinia 2	pos	28.5	Lithuania 2	pos	25.4	Kenya 2	pos	28.7
Sardinia 3	pos	31.8	Lithuania 3	pos	29.3	Kenya 3	pos	31.4
Sardinia 4	pos	34.9	Lithuania 4	pos	31.9	Kenya 4	pos	35.0
Sardinia 5	neg	40.4	Lithuania 5	pos	36.5	Kenya 5	neg	38.3
Sardinia 6	neg	neg	Lithuania 6	neg	40.6	Kenya 6	neg	40.3
Sardinia 7	neg	neg	Lithuania 7	neg	neg	Kenya 7	neg	neg
Sardinia 8	neg	neg	Lithuania 8	neg	neg	Kenya 8	neg	neg
Sardinia 9	neg	neg	Lithuania 9	neg	neg	Kenya 9	neg	neg
Sardinia 10	neg	neg	Lithuania 10	neg	neg	Kenya 10	neg	neg
Sardinia neg	neg	neg	Lithuania neg	neg	neg	Kenya neg	neg	neg

→ detection of positive samples with cq values up to approximately 36-37; no false positives

→ diseased animals would be detected during acute infection: fit-for-purpose

Reference techniques and Standardization

- Confirmatory tests and special test applications
  - Molecular epidemiology
  - DIVA strategies
  - Pathotyping
  - Adaptation of techniques
- **Next generation sequencing**
- Luminex approaches
- Assessment of performance characteristics and validation
- Evaluation of new tests under defined laboratory and field conditions
- Commercialization → ready-to-use products
- **RAPIDIA achievements: Optimized NGS workflows for different settings, evaluation of new test systems towards commercialization**
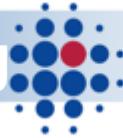
→ **different technologies and machines**

→ **enormous sequencing capacity**

→ **analysis of a whole range of sequence populations**

→ **Next-generation sequencing (NGS) allows metagenome analysis**

NGS: general information

Advantages of NGS compared to conventional Sanger sequencing

Sanger sequencing:

- **Sequence knowledge** needed (PCR based)
- Sequencing of **short genome fragments** (~1000bp)
- Only **one consensus sequence** is generated
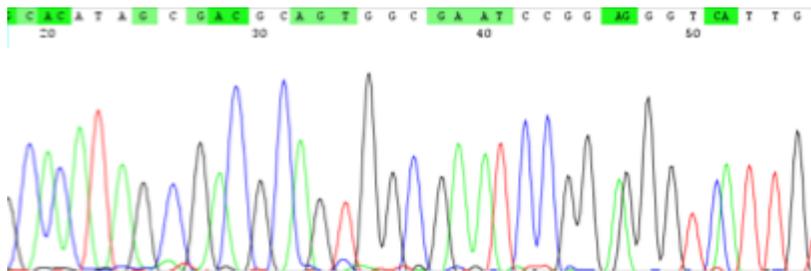
NGS:

- **No sequence knowledge** needed
- Sequencing of **full genomes** by assembly of overlapping sequences (50bp- ~20kb)
- **Deep sequencing** can be conducted to identify variants
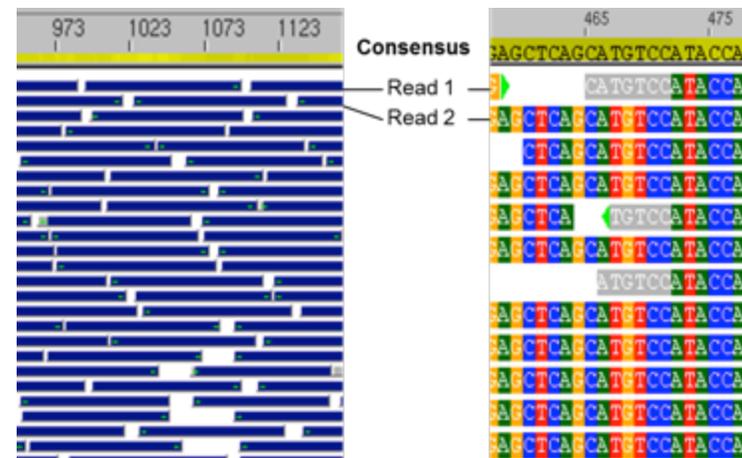
Examples

- Detection of Schmallenberg virus and further classification of SBV within the Simbu serogroup

  ➡ **Detection of unexpected novel diseases by NGS & metagenomics**

- Detection of the coexistence of three distinct genome variants within highly virulent BVDV-2 isolates

  ➡ **Detection of viral variants responsible for increased virulence**

- In detail molecular evolutionary studies of CSFV type 2 sequences from outbreaks in wild boar from France

  ➡ **Suitability of NGS to obtain deeper molecular epidemiological knowledge**

- Full-genome sequencing identified a tandem repeat insertion in Russian ASFV isolates

Diagnostic storyboards
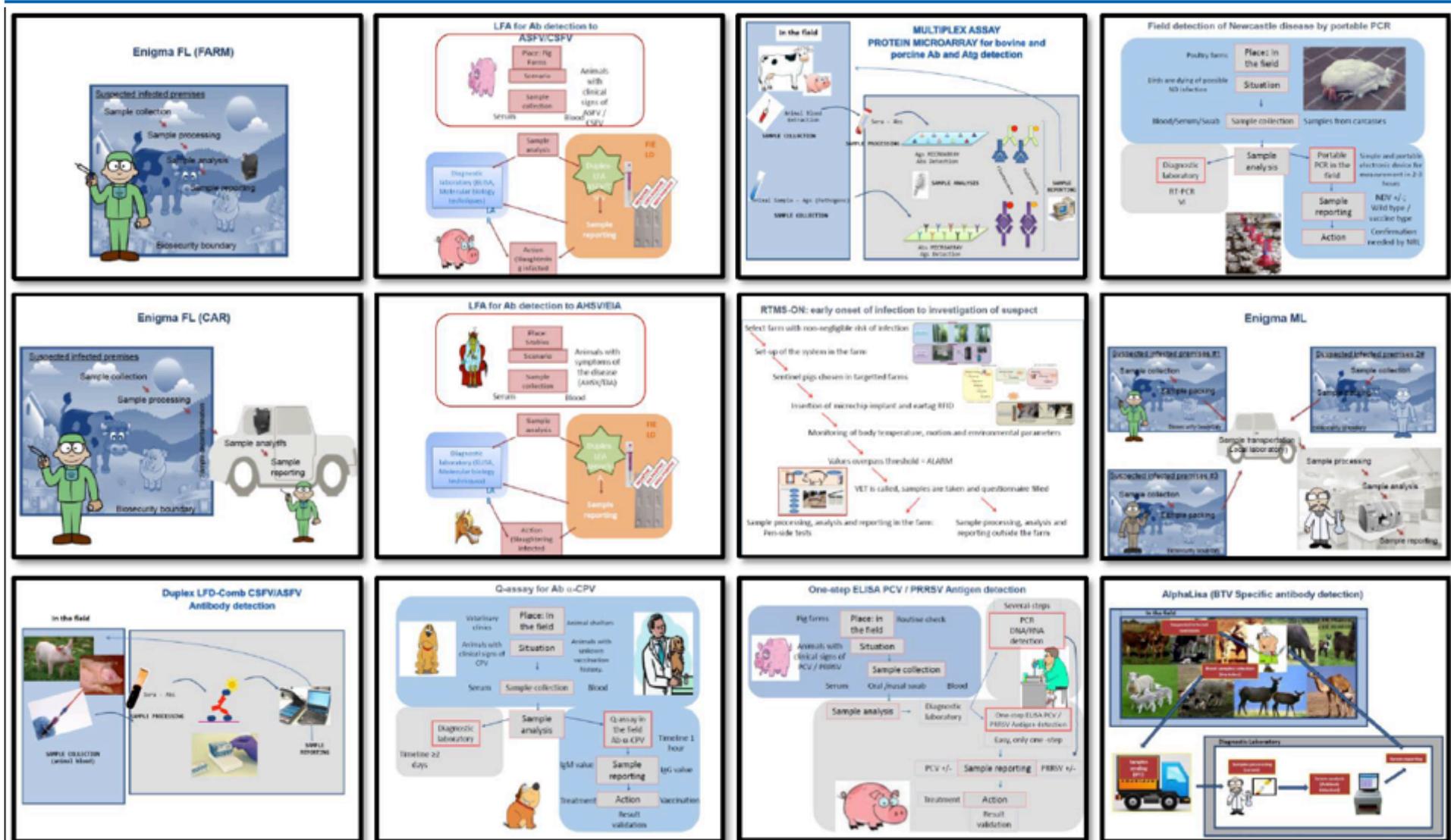
Creating simple storyboards permits visual narration and understanding of scenario flow (story components).

PART 4: Results ASFV FNG

○ **Sardinia (LFD Prionics):**

- 57 wild boar samples (37 positive; 20 negative)
  - 1 false neg and 1 false pos in comparison with ELISA and immunoblot (= 1,7%)
  - 56/57 samples correctly identified (96,5%)
  - Se = 36/37 = 97,3%
  - Sp = 19/20 = 95,0%

- 41 pig samples (20 positive; 21 negative)
  - 1 false pos in comparison with immunoblot (= 2,4%)
  - 40/41 samples correctly identified (97,6%)
 - Se = 20/20 = 100%
  - Sp = 20/21 = 95,2%

PUBLICATIONS

ARTICLES

- Early detection of infection in pigs through an online monitoring system
- Molecular Approaches to Recognize Relevant and Emerging Infectious Diseases in Animals
- Tandem Repeat Insertion in African Swine Fever Virus, Russia, 2012
- Development of a Microsphere-based Immunoassay for Serological Detection of African Horse Sickness Virus and Comparison with Other Diagnostic Techniqu
- Development of a loop-mediated isothermal amplification assaycombined with a lateral flow dipstick for rapid and simple detectionof classical swine fever virus in the field
- Recovery of Viral RNA and Infectious Foot-and-Mouth Disease Virus from Positive Lateral-Flow Devices
- Preliminary Validation of Direct Detection of Foot-And-Mouth Disease Virus within Clinical Samples Using Reverse Transcription Lo Amplification Coupled with a Simple Lateral Flow Device for Detection
- Rovac is the possible ancestor of the Russian lapinized vaccinesLK-VNIVViM and CS strains but not the Chinese strain (C-strain)vacci feverWeiguang
- Alternative sampling strategies for passive classical and African swine fever surveillance in wild boar
- Development and validation of rapid magnetic particle based extraction protocols
- Mixed triple: allied viruses in unique recent isolates of highly virulent type 2 bovine viral diarrhea virus detected by deep sequencin
- Assessment of Preparation of Samples Under the Field Conditions and a Portable Real-Time RT-PCR Assay for the Rapid On-Site De Virus
- Development of a loop-mediated isothermal amplification assay combined with a lateral flow dipstick for rapid and simple detecti virus in the field
- False-Positive Results in Metagenomic Virus Discovery: A Strong Case for Follow-Up Diagnosis
- Mixed Triples: allied viruses in unique isolates of recent highly virulent type 2 bovine viral diarrhea virus (BVDV-2) detected by dee

21 peer-reviewed publications

60 communications in 23 different countries

COMMUNICATIONS

2014

1. Yang X et al. (2014). A simple and rapid duplex LFD-Comb assay to detect antibodies to CSFV and ASFV. EAVLD conference. Pisa, Italy. (Poster)
2. Fowler VL et al. (2014). Realising the potential of penside testing for foot-and-mouth disease. Invited guest talk, Kingston University. November 19th 2014.
3. Fowler VL et al (2014) . Development and evaluation of multiplex reverse transcription loop mediated isothermal amplification assays combined with lateral-flow visualisation for the discrimination of FMD from other vesicular diseases. Open Session of the European Commission for the Control of Foot-and-Mouth Disease Where science and policy meet: FMD RISK MANAGEMENT in a world of changing disease landscapes 29-31 October 2014, Cavtat, Croatia.
4. Martínez Avilés M., Fernández Carrión E., Bernal-Orozco I., Rivera B., Mazariegos M., Sánchez-Vizcaíno J.M. (2014). Early detection of transboundary animal diseases with a real-time monitoring system online. 8th Annual Epizone Meeting, Copenhaguen, Denmark.
5. Sanchez-Matamoros A., Beck C., Kukielka D., Lecollinet S., Blaise-Boisseau S., Garnier A., Rueda P., Zientara S., Sánchez-Vizcaíno J.M. (2014) Diagnostic technique for serological detection of African horse sickness virus: Luminex Technology. 8th Annual Epizone Meeting, Copenhaguen, Denmark.
6. Petrov A, Schotte U, Pietschmann J, Dräger C, Beer M, Anheyer-Behmenburg H, Goller KV, Blome S (2014). Alternative Beprobungsstrategien: Molekularer Nachweis Afrikanischer und Klassischer Schweinepest bei Fallwild -Eignung von Tupferproben. 33rd AVID-Tagung, Kloster Banz, Bad Staffelstein, Germany, September.
7. Petrov A (2014). Alternative sampling strategies in wild boar: The use of swabs for passive classical and African swine fever surveillance in wild boar. Workshop on laboratory diagnosis of ASF and CSF, 2-3 June 2014 at CISA INIA in Valdeolmos, Spain.
8. Goller KV (2014). RAPIDIA-Field: Rapid Field Diagnostics and Screening in Veterinary Medicine. Seminar and introduction of RAPIDIA-Field methods at the International Livestock Research Institute (ILRI), Nairobi, Kenya, Feburary.
9. Goller KV (2013). Possible methods for disease identification in the KAZA region developed in the RAPIDIA field project. 2nd KAZA workshop, Johannesburg, South Africa, December.
10. King D. P., Armson B., Mioulet V., Madi M. and Fowler V. (2014). Simple field tools for the diagnosis of livestock diseases: is this an achievable goal? 9th Conference of Rapid Methods Europe, Noordwijkerhout, The Netherlands, April.
11. King D.P. (2014). New Tools to Detect and Monitor the Spread of Viral Diseases of Livestock? I European Animal and Plant Symposium, Amsterdam. 25 February.
12. Sánchez-Vizcaíno, JM (2014). Conferencia internacional PESTE PORCINA AFRICANA. SZIE Faculty of Veterinary Science, Budapest, 5 March.
13. Giménez-Lirola, L., Mur, L., A.Mogler, M., Lizano, S., K.Gppdell, C., Sánchez-Vizcaíno, JM., DL (Hank) Harris, Zimmeman, J. (2014). RNA particles: A novel application for efficient development of FAD serologic assays. AASV 45th annual meeting. 1-4 March, Dallas, Texas, p227.
14. Sánchez-Vizcaíno, JM (2014). "Enfermedades exóticas: riesgo de entrada de la PPA". XVI Jornadas de porcino de la UAB y AVPC. Universitat Autónoma de Barcelona. 29-31 January.
15. Belák, S.: Recent trends and developments in molecular diagnostic virology and infection biology. Seminar and Scientific Meeting, Animal Health Laboratory Investigation and Diagnostic Centres, Upper Hutt New Zealand, 25 February 2014. Invited speaker.
16. Belák, S.: Recent trends and developments in molecular diagnostic virology and infection biology. Report from the OIE Collaborating Centre for the Biotechnology-based Diagnosis of Infectious Diseases in Veterinary Medicine. Seminar and Scientific Meeting, Australian Animal Health Laboratory, Geelong, Australia, 7 March 2014. Invited speaker.
17. Belák, S.: New tendencies and recent developments in molecular diagnostic virology and infection biology. Recent results of the OIE Collaborating Centre for the Biotechnology-based Diagnosis of Infectious Diseases in Veterinary Medicine. Seminar and Scientific Meeting, Australian Animal Health Laboratory, CAFHS, ___, Australia, 10 March 2014. Invited speaker
18. ___ approaches, achievements and developments in the molecular diagnosis of infectious diseases. Seminar and discussions at EICMP, Dubai, United ___ 13 March 2014. Invited speaker.
19. ___: New viruses in veterinary medicine, detected by metagenomic approaches. Seminar and Scientific Meeting, Australian Animal Health Laboratory, Geelong, Australia, 11 March 2014. .Invited speaker.
20. Petrov A, Schotte U, Pietschmann J, Dräger C, Beer M, Anheyer-Behmenburg H, Goller KV, Blome S (2014). Alternative sampling strategies for passive classical and African swine fever surveillance in wild boar. 8th Annual EPIZONE meeting, Copenhagen, Denmark. (Poster)
21. Sastre P., Pérez T., Tapia I., Sánchez-Matamoros A., Sánchez-Vizcaíno J.M., Rueda P., Sanz A. (2014). New diagnostic tools for African Horse Sickness and Equine Infectious Anemia viruses control. 8th Annual Epizone Meeting, Copenhaguen, Denmark. (Poster)

2013

Dissemination leaflet

RAPIDIA-FIELD

Rapid Field Diagnostics and Screening in Veterinary Medicine

Funded by EU FP7 - Grant agreement no 289364

Table of contents

RAPIDIA WORKSHOP, Tuesday, 20/05/14, MADRID

Around 40 participants

WORKSHOP
MADRID, SPAIN MAY 20TH 2014
PARTICIPANTS

INSTITUTION	NAME
OIE	Barbara Freischem (Executive Director, International Federation for Animal Health (IFAH))
OIE reference lab for AHSV (Spain)	Montserrat Agüero García (Technical Director, Laboratorio de Sanidad Animal, MAGRAMA) Manuel Durán Ferrer Rubén Villalba Martínez
OIE reference lab for AHSV (UK)	Javier Castillo-Olivares (OIE designated expert on African horse sickness)
OIE reference lab for ASFV (Spain)	Represented by partner of the consortium (UCM-VISAVET)
OIE/EU/FAO World Reference Laboratory for FMDV (UK)	Represented by partner of the consortium (PIR)
OIE/EU Reference Laboratory for SVD (UK)	Represented by partner of the consortium (PIR)
CVO Hungary	Ábonyi Tamás (Director of the Veterinary Diagnostic Directorate (VDD) of the National Food Chain Safety Office (NFCSO))
CVO Ireland	Donal Sammin (Director of the Department of Agriculture Food and Marine Veterinary Laboratories)
CVO Spain	Luis Romero González (Chief of Epidemiology Department, MAGRAMA)
CVO UK	Simon Hall (Veterinary Director of our Animal Health Veterinary Laboratories Agency)
EU producers (COPA-COGECA)	Miguel Ángel Higuera (ASAJA, ES), Vice-chair of the Copa-Cogeca Animal Health and Welfare Working Party
European reference lab for ASFV	Marisa Arias (Technical Director, CISA-INIA)
Plataforma Vet+i	Pablo Hervás Calle (Technical Secretary Vet+i)
EMVD	Belén Barreiro (Vicepresident)
Members of Advisory Board	
Cornell University	Alfonso Torres (Professor & Associate Dean for Public Policy College of Veterinary Medicine)
Iowa State University	Jeffrey Zimmerman (Professor of Veterinary diagnostic laboratory)
Scientific Officer	Luis Vivas-Alegre

PROGRAMME
Work Packages Overview

Time	Topic	Speaker
09:00–09:15	Welcome and introductory remarks	Prof. Pedro Lorenzo Dean of Veterinary Faculty Prof. J. M. Sánchez-Vizcaíno VISAVET-UCM
09:15–09:30	RAPIDIA-FIELD AT A GLANCE	Dr. Paloma Rueda INGENASA
09:30–09:45	Scientific introduction	Prof. Martin Beer FLI
09:45–10:05	WP2. Real – time monitoring livestock on line	Prof. J. M Sánchez-Vizcaíno VISAVET-UCM
10:05–10:25	WP3. Collection and preparation of samples	Dr. Veronica Fowler PIR
10:25–10:45	WP4. Antibody detection in the field	Dr. Patricia Sastre INGENASA
COFFEE BREAK		
11:15–11:35	WP5. Pathogen detection in the field	Prof. Sándor Belak SVA
11:35–11:55	WP6. Antibody detection in small labs	Dr. Alex Rüber PRIONICS
11:55–12:15	WP7. Pathogen detection in small labs	Dr. Sandra Blome FLI
12:15–12:35	WP8. Confirmation and reference techniques	Dr. Katja Goller FLI
12:35–12:55	WP9. Standardization; Field-Net-Group	Dr. Frank Koenen CODA-CERVA
LUNCH		
14:00–15:00	WP10. Dissemination (including exhibition of potential products)	Prof. J. M Sánchez-Vizcaíno VISAVET-UCM
15:00–15:30	Scientific Officer Presentation	Dr. Luis Vivas-Alegre
15:30–16:00	Guest presentation	Dr. Barbara Freischem OIE
COFFE BREAK		
16:15–17:15	FINAL DISCUSSION	
21:00	JOINT DINNER AT ALCARAVEA RESTAURANT	

RAPIDIA-FIELD Consortium

1. Inmunología y Genética Aplicada SA (INGENASA, Spain)
2. Friedrich-Loeffler-Institut (FLI, Germany)
3. PRIONICS (Switzerland)
4. PROPHYL (Hungary)
5. Instituto Nacional de Técnica Aeroespacial, Centro de Astrobiología (INTA-CSIC, Spain)
6. The Pirbright Institute (PIR, United Kingdom)
7. Agence Nationale de Sécurité Sanitaire de l'Alimentation de l'Environnement et du Travail (ANSES, France)
8. Universidad Complutense (VISAVET-UCM, Spain)
9. CODA-CERVA, (Belgium)
10. The National Veterinary Institute (SVA, Sweden)
11. IDEXX SWITZERLAND AG (Switzerland)
12. ENIGMA DIAGNOSTICS LIMITED (United Kingdom)

Thanks for your attention!