World Organisation for Animal Health

Rebecca Strong - - UNITED_KINGDOM

# WOAH Reference Laboratory Reports Activities 2025

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## LABORATORY INFORMATION

| | |
|---|---|
| ***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:** | Bovine viral diarrhoea |
| ***Address of laboratory:** | Animal and Plant Health Agency (APHA), Woodham Lane, Addlestone, KT15 3NB |
| ***Tel:** | 07869000212 |
| ***E-mail address:** | Amin.Asfor@apha.gov.uk |
| **Website:** | http://apha.defra.gov.uk/apha-scientific/services/biological-reagents/bvd.htm |
| ***Name (including Title) of Head of Laboratory (Responsible Official):** | Dr Amin Asfor (Head of the BVDV reference laboratory) |
| ***Name (including Title and Position) of WOAH Reference Expert:** | Dr Rebecca Strong (WOAH reference Expert) |
| ***Which of the following defines your laboratory? Check all that apply:** | Governmental Research agency |

## TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

| Diagnostic Test | Indicated in WOAH Manual (Yes/No) | Total number of test performed last year | |
|---|---|---|---|
| Indirect diagnostic tests | | Nationally | Internationally |
| SNT for bovine virus diarrhoea Ab | Yes | 158 | 0 |
| ELISA for bovine virus diarrhoea/mucosal disease Ab (IDEXX) | Yes | 2251 | 14 |
| Direct diagnostic tests | | Nationally | Internationally |
| Bovine viral diarrhoea (Erns) Ag antigen ELISA for ear notch tissue samples | Yes | 4 | 0 |
| ELISA for BVD (Erns) antigen - cattle > 30 days old | Yes | 2304 | 0 |
| Real time PCR for BVD virus in pooled blood samples (up to 10) - pool result only | Yes | 15 | 0 |
| Real Time PCR for BVD Virus in Bulk Milk Samples (up to 300 contributors) | Yes | 63 | 0 |
| PCR for BVD virus in tissue or serum | Yes | 1626 | 0 |
| Virus isolation for bovine virus diarrhoea from semen | Yes | 78 | 0 |

## TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

Yes

| Type of reagent available | Related diagnostic test | Produced/ provide | Amount supplied nationally (ml, mg) | Amount supplied internationally (ml, mg) | No. of recipient WOAH Member Countries | Country of recipients |
|---|---|---|---|---|---|---|
| Serum | BVDV diagnostics | BVDV +ve serum | 4 | 0 | 1 | UNITED KINGDOM, |
| Pestivirus - BVDV mAb WB103 | BVDV diagnostics | mAb WB103 | 0 | 4 | 1 | SPAIN, |
| Pestivirus - BVDV mAb WB160 | BVDV diagnostics | mAb WB1BVDV diagnostics60 | 18 | 0 | 3 | CHINESE TAIPEI, FRANCE, ITALY, |
| Pestivirus - BVDV mAb WB112 | BVDV diagnostics | mAb WB112 | 0 | 33 | 3 | CHINA (PEOPLE'S REP. OF), THE NETHERLANDS, UNITED STATES OF AMERICA, |
| Pestivirus - BVDV mAb WB103/10 | BVDV diagnostics | mAb WB103/10 | 0 | 14 | 8 | AUSTRALIA, DENMARK, FRANCE, GERMANY, ITALY, JAPAN, THE NETHERLANDS, |
| Pestivirus - BVDV mAb WB162 | BVDV diagnostics | mAb WB162 | 0 | 15 | 4 | CHINESE TAIPEI, FRANCE, KOREA (REP. OF), SWITZERLAND, |
| Pestivirus - BVDV mAb WB210 | BVDV diagnostics | mAb WB210 | 0 | 27 | 6 | CHINA (PEOPLE'S REP. OF), CHINESE TAIPEI, FRANCE, IRELAND, KOREA (REP. OF), SWITZERLAND, THE NETHERLANDS, |
| Pestivirus - BVDV mAb WB215 | BVDV diagnostics | mAb WB215 | 0 | 3 | 1 | FRANCE, |
| Pestivirus - BVDV/BD mAb WS363 | BVDV diagnostics | mAb WS363 | 0 | 10 | 2 | FRANCE, ITALY, |
| Pestivirus Fr - mAb WS433 | BVDV diagnostics | mAb WS433 | 0 | 2 | 1 | BELGIUM, |
| Pestivirus - BD mAb WS538 | BVDV diagnostics | BD mAb WS538 | 0 | 1 | 1 | CHINESE TAIPEI, |
| Pestivirus - BVDV mAb mix | BVDV diagnostics | mAb mix | 0 | 5 | 3 | SWITZERLAND, THE NETHERLANDS, UNITED KINGDOM, |
| Pestivirus - BVDV mAb WB166 | BVDV diagnostics | mAb WB166 | 0 | 3 | 2 | CHINESE TAIPEI, SWITZERLAND, |
| Pestivirus - BVDV mAb WB214 | BVDV diagnostics | mAb WB214 | 0 | 1 | 1 | CHINESE TAIPEI, |
| WB103 mAb/HRP conjugate | BVDV diagnostics | WB103 mAb/HRP | 0 | 2 | 1 | UNITED STATES OF AMERICA, |
| Generic HRPo-labelled Mab | BVDV diagnostics | Generic HRPo-labelled Mab | 0 | 27 | 1 | GERMANY, |
| Custom MAB Product | BVDV diagnostics | Custom MAB | 0 | 12 | 1 | IRELAND, |

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

# TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

No

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

Yes

| Name of the new test or diagnostic method developed | Description and References (Publication, website, etc.) |
|---|---|
| Validate the IDEXX3 Antibody kit using SNT as a reference | In progress for publication |

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

# TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAH Members?

No

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

Yes

| Name of the WOAH Member Country receiving a technical consultancy | Purpose | How the advice was provided |
|---|---|---|
| SWEDEN | Advice on solving a problem related to the immun-peroxidase test (IPX) use for virus isolation analyses for BVDV | Via email |
| CANADA | The use of our expertise in differentiating between pestiviruses infection using the differential serum neutralisation test. | via email |

# TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?

Yes

| Title of the study | Duration | Purpose of the study | Partners (Institutions) | WOAH Member Countries involved other than your country |
|---|---|---|---|---|
| Interpreting and optimising bulk milk testing for BVD and IBR considering numerical test outcomes | 14 month 1st 0ctober to 30th of Novmber 2025 | 1. Develop a BLCM method to analyse numerical test outcomes from multiple diagnostic tests 2. Compare the test performance of routine bulk milk diagnostics for BVD and IBR 3. Develop tools to optimise test performance for country-specific requirements 4. Develop a dashboard for test result interpretation that provides the probability of infection given the numerical test outcome. | Arianna Comin (SVA) Viktor Ahlberg (SVA) Matt Denwood (UCPH) Guy Kouokam (ANSES) Stephen Valas (ANSES) Eduardo de Freitas Costa (WBVR) Michel Counotte (WBVR) Aldo Dekker (WBVR) Akbar Dastjerdi (APHA) Amin Asfor (APHA) Mark Arnold (APHA) Adriana Diaz Alvarado (APHA) Bertel Strandbygaard and Louise Lohse (SSI) | DENMARK FRANCE SWEDEN THE NETHERLANDS |

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

# TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

Yes

| If the answer is yes, please provide details of the data collected: |
|---|
| - International collaboration to collect milk samples to understand the epidemiological status of BVD in cattle (ongoing)<br>- Testing serum samples from sheep and goats to look at the role of sheep and goats on inter species transmission of BVDV (the analysis is ongoing) |

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

No

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

*1*

*Comin A, Ahlberg V, de Freitas Costa E, Arnold M, Asfor A, Kouokam G, Valas S, Dastjerdi A, Denwood M. Inter-laboratory evaluation of serological tests using Bayesian latent class models: A case study for bovine viral diarrhoea. Prev Vet Med. 2025 Dec;245:106659. doi: 10.1016/j.prevetmed.2025.106659. Epub 2025 Aug 13. PMID: 40840199.*

b) International conferences:

*3*

- *Manjegowda, T., Crooke, H., & Asfor, A. (2025). Improved bioluminescent immunoassay for rapid detection of replicating pestiviruses in vitro. Presented at the 3rd International Conference of the World Society for Virology (WSV 2025), Kuala Lumpur, Malaysia.*
- *Kouokam G, Ahlberg V, Denwood M, de Freitas Costa E, Counotte M, Arnold M, Dastjerdi A, Valas S, Dekker A, Comin A, Asfor A. A multi-country evaluation of ELISA kits for Bovine Viral Diarrhoea Virus antibody detection. In: Proceedings of the ESVV 2025 Conference; 2025; Portorož, Slovenia. Poster presentation.*
- *Mannan S, Konold T, Steinbach F, Crooke H, Asfor A. Interspecies transmission of Border disease virus from a persistently infected calf. In: Proceedings of the ESVV 2025 Conference; 2025; Portorož, Slovenia. Poster presentation.*

c) National conferences:

*3*

- *Mannan S, Konold T, Steinbach F, Crooke H, Asfor A. Interspecies transmission of Border disease virus from a persistently infected calf. Presented at: School of Veterinary Medicine Research Symposium 2025; 2025. Oral presentation.*
- *Manjegowda T, Crooke H, Asfor A. Improved bioluminescent immunoassay for rapid detection of replicating pestiviruses in vitro. Presented at: Doctoral College, University of Surrey Research Showcase 2025; Oral presentation.*
- *Kouokam G, Ahlberg V, Denwood M, de Freitas Costa E, Counotte M, Arnold M, Dastjerdi A, Valas S, Dekker A, Comin A, Asfor A. A multi-country evaluation of ELISA kits for Bovine Viral Diarrhoea Virus antibody detection. In: Proceedings of the School of Veterinary Medicine Research Symposium, University of Surrey, UK; 2025.*

d) Other (Provide website address or link to appropriate information):

*1*

*Link: APHA Science Blog*
*https://aphascience.blog.gov.uk/author/amin-asfor/*
*https://aphascience.blog.gov.uk/2025/09/22/bovine-viral-diarrhoea/*
*Focus:*
- *Highlights Dr. Asfor's leadership at the UK National Reference Laboratory for BVDV.*
- *Discusses the challenges of BVDV, especially its silent spread through persistently infected animals.*
- *Explores the economic and health impacts on cattle herds.*
- *Outlines ongoing scientific efforts to control and eradicate BVDV*

# TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?

No

# TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

**Rebecca Strong - - UNITED_KINGDOM**

| Quality management system adopted | Certificate scan (PDF, JPG, PNG format) | |
|---|---|---|
| ISO17025 | UKAS Certificate | UKAS Certificate Dec 25.pdf |
| ISO 9001 | Iso 9001 Certificate | ISO 9001 Certificate.pdf |

19. Is your quality management system accredited?

Yes

| Test for which your laboratory is accredited | Accreditation body |
|---|---|
| Bovine viral diarrhoea - virus isolation from semen | UKAS |
| Bovine viral diarrhoea (Erns) antigen - cattle > 30 days old | UKAS |
| Bovine viral diarrhoea (Erns) antigen ELISA for ear notch tissue samples | UKAS |
| Bovine viral diarrhoea antibodies in bulk milk | UKAS |

20. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

Yes

APHA maintains a complete and functioning laboratory biological risk management system, which ensures that the laboratory is in compliance with applicable local, national (UK Health and Safety Executive), regional, and international standards and requirements for biosafety and laboratory biosecurity.

# TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

No

# TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?

Yes

24. Are you a member of a network of WOAH Reference Laboratories designated for the same pathogen?

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

| Purpose of the proficiency test: | Role of your Reference Laboratory (organiser/ participant) | No. participating Laboratories | Participating WOAH Ref. Labs/ organising WOAH Ref Lab |
|---|---|---|---|
| BVD Ag ELISA & PCR | organiser | 32 | New Zealand, UK, Denmark, Ireland, Portugal, Sweden, Estonia and Switzerland. |
| BVD milk | Organiser | 25 | New Zealand, UK, Denmark, Ireland, Portugal, Sweden, Estonia and Switzerland. |
| BVD serum | Organiser | 44 | Ireland, UK, South Africa, Denmark, Estonia, Cyprus, Portugal, Spain, Belgium, Sweden, Greece, Switzerland, Frace, Austria, Czech Republic, Serbia, India, Slovenia and New Zealand |
| BVD milk PCR | organiser | 12 | UK, Portugal, UAE and Italy |
| BVD Ear ELISA | Organiser | 19 | Serbia, New Zealand, South Africa, UK, Ireland, UAE, Switzerland, France and Portugal. |

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

Yes

| Title of the project or contract | Scope | Name(s) of relevant WOAH Reference Laboratories |
|---|---|---|

| | | |
|---|---|---|
| Assessment of the correlation between the commercially available BVDV Ab tests and the gold standard SNT | Compare the ELISA test results and the SNT for BVDV1, Differential SNT (BVDV and BDV) | National Reference Laboratory ANSES-France (ongoing) |
| Biosensor nanoparticles-based point-of-care detection of animals persistently infected with pestiviruses (BioPesti) November 2024 to March 2027 | - To develop a pan pestiviruses diagnostic tools that can recognise all recently emerged variants of pestiviruses in livestock and wild animals 2 - .To develop a species-specific toolbox that can differentiate between different species of pestiviruses that can cross-infect bovine, ovine, and porcine species of animals. - To Identify the risk factors influencing diagnosis and management of pestiviruses in livestock in Egypt. - To assess the cost-effectiveness of the new diagnostic tool and the willingness to pay by different stakeholders. - Capacity building and knowledge transfer through the development of strong links between established international research laboratories, | Animal and Plant Health Agency (APHA) a recognised reference laboratory for the World Organisation of Animal Health (WOAH) , Royal Holloway University of London (RHUL), Cairo University (CU) and the Animal Reproduction Research Institute (ARRI). |

# TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen during the past 2 years?

Yes

| Purpose for inter-laboratory test comparisons1 | Role of your reference laboratory (organizer/participant) | No. participating laboratories | Name of the test | WOAH Member Countries |
|---|---|---|---|---|
| Compare the proficiency of total Ab ELISA kits from different laboratories in Bulk tank Milk | Participant (finished Nov 2025) | 5 | SVANOVIR BVDV-Ab ELISA | DENMARK, FRANCE, SWEDEN, THE NETHERLANDS, UNITED KINGDOM, |

# TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOAH?

No

29. Additional comments regarding your report:

No

*N/A*