

CONTRIBUTORS

CONTRIBUTORS AND PROFESSIONAL ADDRESS AT TIME OF WRITING

The chapters in the Terrestrial Manual are prepared by invited contributors (WOAH Reference Experts, where possible). In accordance with WOAHA standard procedure, all chapters are circulated to WOAHA Members for comment. The WOAHA Biological Standards Commission and the Consultant Editor then modify the text to take account of comments received, and the text is circulated a second time as the final version that will be presented for adoption by the World Assembly of Delegates to WOAHA at the General Session in May of each year. The Terrestrial Manual is thus deemed to be a WOAHA Standard that has come into being by international agreement. For this reason, the names of the contributors are not shown on individual chapters but are listed below. The Biological Standards Commission greatly appreciates the work of the following contributors (address at the time of writing):

1.1.1. Management of veterinary diagnostic laboratories	Dr T. Drew (retired) Australia.
1.1.2. Collection, submission and storage of diagnostic specimens	WOAH <i>ad hoc</i> Group on Biosafety and Biosecurity in Veterinary Laboratories
1.1.3. Transport of biological materials	WOAH <i>ad hoc</i> Group on Transport of Biological Materials
1.1.4. Biosafety and biosecurity: standard for managing biological risk in the veterinary laboratory and animal facilities	WOAH <i>ad hoc</i> Group on Biosafety and Biosecurity in Veterinary Laboratories
1.1.5. Quality management in veterinary testing laboratories	Dr A. Colling & Dr L. Trinidad Australian Centre for Disease Preparedness, CSIRO, Geelong, Victoria, Australia.
1.1.6. Validation of diagnostic assays for infectious diseases of terrestrial animals	Dr A. Colling Australian Centre for Disease Preparedness, CSIRO, Geelong, Victoria, Australia. Dr I. Gardner (retired) Canada
1.1.7. Standards for high throughput sequencing, bioinformatics and computational genomics ¹	Dr S. Belak (retired) & Dr F. Granberg Swedish University of Agricultural Sciences, Department of Biomedical Sciences and Veterinary Public Health, Uppsala, Sweden.
1.1.8. Principles of veterinary vaccine production	WOAH Collaborating Centre for Veterinary Medicinal Products, Anses Fougères, France

1 This chapter was updated by consensus of the WOAHA *ad hoc* Group on High Throughput Sequencing, Bioinformatics and Computational Genomics.

- 1.1.9. Tests for sterility and freedom from contamination of biological materials intended for veterinary use
- Dr A. Colling & Dr K. Newberry**
Australian Centre for Disease Preparedness, CSIRO, Geelong, Victoria, Australia.
- 1.1.10. Vaccine banks
- Dr A.-E. Füssel (retired)**
Belgium.
- Dr D. Mackay (retired)**
UK.
- Dr P.V. Barnett (retired)**
UK.
- 2.1.1. Laboratory methodologies for bacterial antimicrobial susceptibility testing
- Dr D. White**
US Food and Drug Administration, Center for Veterinary Medicine, Office of Research, Laurel, Maryland, USA.
- 2.1.2. Biotechnology advances in the diagnosis of infectious diseases
- Dr S. Belak (retired)²**
Sweden.
- 2.1.3. Managing biorisk: examples of aligning risk management strategies with assessed biorisks
- WOAH *ad hoc* Group on Biosafety and Biosecurity in Veterinary Laboratories**
- 2.2.1. Development and optimisation of antibody detection assays
- 2.2.2. Development and optimisation of antigen detection assays
- 2.2.3. Development and optimisation of nucleic acid detection assays
- 2.2.4. Measurement uncertainty
- 2.2.5. Statistical approaches to validation
- 2.2.6. Selection and use of reference samples and panels
- 2.2.7*. Validation of diagnostic tests for infectious diseases applicable to wildlife
- 2.2.8. Comparability of assays after changes in a validated test method
- Dr L. Cabuang, Dr K. Newberry & Dr A. Colling**
Australian Centre for Disease Preparedness, CSIRO, Geelong, Victoria, Australia.
- WOAH *ad hoc* Group on Validation of Diagnostic Assays**
- *WOAH *ad hoc* Group on Validation of Diagnostic Tests for Wildlife**
- 2.3.1. The application of biotechnology to the development of veterinary vaccines
- Dr A.A. Potter, Dr V. Gerdts, Dr G. Mutwiri, Dr S. Tikoo & De S. van Drunen Littel-van den Hurk**
Vaccine and Infectious Disease Organization, Saskatoon, Canada.
- 2.3.2. The role of official bodies in the international regulation of veterinary biologicals
- Dr J.-P. Orand (retired) and Dr C. Lambert**
Agence Nationale du Médicament Vétérinaire, Anses Fougères, France.
- Dr B. Rippke (retired)**
USA.
- Dr T. Tsutsui**
National Institute of Animal Health, Division of Viral Disease and Epidemiology, National Institute of Animal Health, Ibaraki, Japan.

2 This chapter was updated by consensus of an Expert Consultation

- 2.3.3. *Minimum requirements for the organisation and management of a vaccine manufacturing facility*
- 2.3.4. *Minimum requirements for the production and quality control of vaccines* **WOAH Collaborating Centre for Veterinary Medicinal Products, Anses Fougères, France**
- 2.3.5. *Minimum requirements for aseptic production in vaccine manufacture*
- 3.1.1. *Anthrax* **Dr K. Amoako**
Canadian Food Inspection Agency, National Centre for Animal Disease (NCAD), Lethbridge Laboratory, Alberta, Canada.
- Dr G. Harvey**
USDA, APHIS, National Veterinary Services Laboratories, Ames, Iowa, USA.
- 3.1.2. *Aujeszky's disease (infection with Aujeszky's disease virus)* **Dr A. Jestin & Dr M.F. Le Potier**
Anses-Ploufragan, Laboratoire d'études et de recherches avicoles et porcines, Ploufragan, France.
- Dr W. Loeffen**
Wageningen Bioveterinary Research, Lelystad, The Netherlands.
- Dr S.L. Swenson (formerly)**
USDA, APHIS, National Veterinary Services Laboratories, Ames, Iowa, USA.
- 3.1.3. *Bluetongue (infection with bluetongue virus)*³ **Dr Debbie Eagles**
Australian Centre for Disease Preparedness, CSIRO, Geelong, Victoria, Australia.
- 3.1.4. *Brucellosis (infection with Brucella abortus, B. melitensis and B. suis)*⁴ **Dr A. Whatmore**
APHA Weybridge, New Haw, Addlestone, Surrey, Weybridge, UK.
- 3.1.5. *Crimean–Congo haemorrhagic fever* **Dr J.C. Manuguerra**
Institut Pasteur, Paris, France.
- 3.1.6. *Echinococcosis (infection with Echinococcus granulosus and with E. multilocularis virus)* **Dr G. Masala**
Istituto Zooprofilattico Sperimentale (IZS) of Sardinia, Sassari, Italy.
- Dr M. Donadeu & Dr M. Lightowlers**
Faculty of Veterinary and Agricultural Sciences, The University of Melbourne, Werribee, Australia.
- 3.1.7. *Epizootic haemorrhagic disease (infection with epizootic haemorrhagic disease virus)* **Dr S. Zientara & Dr C. Sailleau**
Laboratoire de santé animale de Maisons-Alfort, Maisons-Alfort, France.
- 3.1.8. *Foot and mouth disease (infection with foot and mouth disease virus)*⁵ **Dr D.J. King**
The Pirbright Institute, Ash Road, Woking, Surrey, UK.

3 This chapter was updated by consensus of all WOA Reference Laboratories for bluetongue.

4 This chapter was updated by consensus of all WOA Reference Laboratories for brucellosis.

5 This chapter was updated by consensus of all WOA Reference Laboratories for foot and mouth disease.

- 3.1.9. *Heartwater*
Dr N. Vachiéry & Dr I. Marcelino
UMR CIRAD-INRA 117 ASTRE, Campus International de Baillarguet, Montpellier, France.
- 3.1.10. *Japanese encephalitis*
Dr D.-K. Yang
Animal and Plant Quarantine Agency, Gyeongsangbuk-do, Korea (Rep. of).
- 3.1.11. *Leishmaniosis*
Dr F. Vitale
Istituto Zooprofilattico Sperimentale della Sicilia, National Reference Centre for Leishmaniasis, Palermo, Italy.
- 3.1.12. *Leptospirosis*⁶
Dr J. Petrakovsky
Laboratorio de Leptospirosis, Dirección General de Laboratorios y Control Técnico, Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA), Martínez, Pcia de Buenos Aires, Argentina.
- 3.1.13. *Mammalian tuberculosis (infection with Mycobacterium tuberculosis complex)*
WOAH *Ad hoc* Group on Replacement of the International Standard Bovine Tuberculin
Dr S. Sanchez
The University of Georgia, Athens, GA 30602, USA.
- 3.1.14. *Nagana: infections with salivarian trypanosomoses (excluding Trypanosoma evansi and T. equiperdum)*⁷
Dr M. Desquesnes
UMR177-Intertryp (CIRAD-IRD), CIRAD-bios, Campus international de Baillarguet, Montpellier, France.
- 3.1.15. *New World screwworm (Cochliomyia hominivorax) and Old World screwworm (Chrysomya bezziana)*
Dr J. Welch
COPEG (Panama–US Commission for the Eradication and Prevention of NWS), Panama, Panama.
Dr M.J.R. Hall
Department of Entomology, The Natural History Museum, Cromwell Road, London, UK.
- 3.1.16. *Nipah and Hendra virus diseases*
Dr K. Halpin
Australian Centre for Disease Preparedness, CSIRO, Geelong, Victoria, Australia.
- 3.1.17. *Paratuberculosis (Johne's disease)*⁸
Dr Bernardo Alonso
DILAB (Dirección de Laboratorios y Control Técnico), Servicio Nacional de Sanidad y Calidad, Agroalimentaria (SENASA), Martínez, Prov. de Buenos Aires, Argentina.

6 This chapter was updated by consensus of all WOA Reference Laboratories for leptospirosis.

7 This chapter was updated by consensus of the following WOA experts on trypanosomes: Dr L. Touratier (deceased), Prof. N. Inoue, Prof. Ph. Büscher, Dr K. Suganuma, Dr M. Gonzatti.

8 This chapter was updated by consensus of all WOA Reference Laboratories for paratuberculosis.

- 3.1.18. Q fever
- Dr E. Rousset & Dr K. Sidi-Boumedine**
Anses Sophia Antipolis, Laboratoire d'Études et de Recherches sur les Petits Ruminants et les Abeilles, Sophia Antipolis Cedex, France.
- Dr B. Kadra & Dr B. Kupcsulik**
Ceva-Phylaxia Co. Ltd, Budapest, Hungary.
- 3.1.19. Rabies (infection with rabies virus and other lyssaviruses)⁹
- Dr T. Müller**
Institute of Molecular Virology and Cell Biology, Friedrich-Loeffler Institut, Federal Research Institute for Animal Health, Insel Riems, Germany.
- 3.1.20. Rift Valley fever (infection with Rift Valley fever virus)¹⁰
- Dr C. Cetre-Sossah**
Campus international de Baillarguet, Montpellier, France.
- Dr B.A. Lubisi**
Onderstepoort Veterinary Institute, Agricultural Research Council, Onderstepoort, South Africa.
- 3.1.21. Rinderpest (infection with rinderpest virus)
- Dr G. Libeau (retired)**
France.
- Dr M. Baron (retired)**
UK.
- Dr K. Yoshida**
National Institute of Animal Health (NIAH), National Agriculture and Food Research Organization, Tokyo, Japan.
- 3.1.22. Surra in all species (Trypanosoma evansi infection)¹¹
- Dr M. Desquesnes**
UMR177-Intertryp (CIRAD-IRD), CIRAD-bios, Campus international de Baillarguet, Montpellier, France.
- 3.1.23. Trichinellosis (infection with Trichinella spp.)
- Dr B. Scandrett**
Canadian Food Inspection Agency, Centre for Foodborne & Animal Parasitology, Saskatoon, Saskatchewan, Canada.
- Dr M.A. Gomez Morales**
Istituto Superiore di Sanita, Laboratorio di Parasitologia, Roma, Italy
- 3.1.24. Tularemia
- Dr T.E. Rocke**
USGS National Wildlife Health Center, Wisconsin, USA.
- Dr M. Gyuranecz**
Laboratory of Zoonotic Bacteriology and Mycoplasmaology, Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary.

⁹ This chapter was updated by consensus of all WOA Reference Laboratories for rabies.

¹⁰ This chapter was updated by consensus of the WOA *ad hoc* Group on Rift Valley fever.

¹¹ This chapter was updated by consensus of the WOA *ad hoc* Group on Diagnostic Tests for Trypanosomoses.

3.1.25. Vesicular stomatitis

Dr E.M. Pituco

PANAFTOSA, Rio de Janeiro, Brazil.

Dr M.K. Torchetti

USDA, APHIS, National Veterinary Services Laboratories, Ames, Iowa, USA.

3.1.26. West Nile fever

Dr F. Monaco

Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale", Teramo, Italy.

Dr T. Sturgill

USDA, APHIS, National Veterinary Services Laboratories, Ames, Iowa, USA.

*Introductory note on bee diseases***Dr M.-P. Chauzat**

Anses Sophia Antipolis, Bee Pathology Unit, Sophia Antipolis, France.

3.2.1. Acarapisosis of honey bees (infestation of honey bees with *Acarapis woodi*)**Dr R. Hall**

Diagnostic and Surveillance Services, Biosecurity New Zealand, Ministry for Primary Industries, Upper Hutt, New Zealand.

3.2.2. American foulbrood of honey bees (infection of honey bees with *Paenibacillus larvae*)**Dr K. Sidi-Boumedine**

Anses Sophia Antipolis, Bee Pathology Unit, Sophia Antipolis, France.

3.2.3. European foulbrood of honey bees (infection of honey bees with *Melissococcus plutonius*)**Dr M.-P. Chauzat, Dr S. Franco, Dr V. Duquesne & Dr M.-P. Rivière**

Anses Sophia Antipolis, Bee Pathology Unit, Sophia Antipolis, France.

3.2.4. Infestation with *Aethina tumida* (small hive beetle)3.2.5. Infestation with *Tropilaelaps* spp.3.2.6. Varroosis of honey bees (infestation of honey bees with *Varroa* spp.)**Dr M.O. Schäfer**

National Reference Laboratory for Bee Diseases, Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Insel Riems, Germany.

3.3.1. Avian chlamydiosis

Dr C. Schnee

Institute of Molecular Pathogenesis, Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Jena, Germany.

Prof. D. Vanrompay

Laboratory for Immunology and Animal Biotechnology, Department of Animal Production, Faculty of Bioscience Engineering, Ghent University, Coupure Links, Ghent, Belgium.

Dr K. Laroucau

Anses Maisons-Alfort, Animal Health Laboratory Bacterial Zoonoses Unit, Maisons-Alfort, France.

3.3.2. Avian infectious bronchitis

Dr J.J. (Sjaak) de Wit

Department R&D, GD Animal Health, Deventer, The Netherlands.

Dr P. Britton

The Pirbright Institute, Compton Laboratory, Newbury, Berkshire, UK.

- 3.3.3. *Avian infectious laryngotracheitis*
- Dr A.H. Noormohammadi & Dr J. Devlin**
Faculty of Veterinary Science, The University of Melbourne, Werribee, Victoria, Australia.
- 3.3.4. *Avian influenza (including infection with high pathogenicity avian influenza viruses)*¹²
- Dr D. Swayne (retired)**
USA.
- Prof. I. Brown**
APHA Weybridge, New Haw, Addlestone, Surrey, Weybridge, UK.
- 3.3.5. *Avian mycoplasmosis (Mycoplasma gallisepticum, M. synoviae)*
- Dr S. Catania**
Mycoplasma Unit, Istituto Zooprofilattico Sperimentale delle Venezie, Verona, Italy
- Dr Evelin Lobo Rivero (formerly)**
MYCOLAB Laboratorio para diagnóstico de micoplasmas, Centro Nacional de Sanidad Agropecuaria, San José de las Lajas, Provincia Mayabeque, Cuba.
- 3.3.6. *Duck virus hepatitis*
- Dr S. Stoute**
California Animal Health and Food Safety Laboratory System, University of California, Davis, California, USA.
- 3.3.7. *Fowl typhoid and Pullorum disease*
- Dr R. Davies (retired)**
UK.
- 3.3.8. *Infectious bursal disease (Gumboro disease)*
- Dr N. Eterradossi**
Anses, Laboratoire de Ploufragan-Plouzané, Laboratoire d'études et de recherches avicoles, porcines et piscicoles, Ploufragan-Plouzané, France.
- Dr Y. Saif**
Food Animal Health Research Program, Ohio Agricultural Research and Development Center, Ohio State University, Wooster, Ohio, USA.
- 3.3.9. *Marek's disease*
- Dr Y. Yao & Dr V. Nair (retired)**
The Pirbright Institute, Ash Road, Woking, Surrey, UK.
- Dr J.R. Dunn**
US National Poultry Research Center, USDA-ARS Southeast Poultry Research Laboratory, Athens, Georgia, USA.
- 3.3.10. *Newcastle disease (infection with Newcastle disease virus)*¹³
- Dr D. Swayne (retired)**
USA.
- Prof. I. Brown**
APHA Weybridge, New Haw, Addlestone, Surrey, Weybridge, UK.

¹² This chapter was updated by consensus of all WOA Reference Laboratories for avian influenza.

¹³ This chapter was updated by consensus of all WOA Reference Laboratories for Newcastle disease.

- 3.3.11. *Turkey rhinotracheitis (avian metapneumovirus)*
- Dr N. Eterradossi & Dr P. Brown**
Anses, Laboratoire de Ploufragan-Plouzané, Laboratoire d'études et de recherches avicoles, porcines et piscicoles, Ploufragan-Plouzané, France.
- 3.4.1. *Bovine anaplasmosis*
- Dr S.M. Noh**
Animal Disease Research Unit, USDA-ARS, Washington State University, Pullman, WA 99164, USA.
- Dr J.J. Mosqueda Gualito**
Centro Nacional de Servicios de Constatación en Salud Animal (CENAPA), Morelos, Mexico.
- 3.4.2. *Bovine babesiosis*
- Prof. N. Yokoyama**
National Research Center for Protozoan Disease Obihiro University of Agriculture and Veterinary Medicine, Hokkaido, Japan.
- Dr J.J. Mosqueda Gualito**
Centro Nacional de Servicios de Constatación en Salud Animal (CENAPA), Morelos, Mexico.
- 3.4.3. *Bovine cysticercosis*
- See chapter 3.10.3.
- 3.4.4. *Bovine genital campylobacteriosis*
- Prof. J.A. Wagenaar & Dr L. van der Graaf-van Blois**
Department of Infectious Diseases and Immunology, Faculty of Veterinary Medicine, Utrecht University, Utrecht, The Netherlands.
- 3.4.5. *Bovine spongiform encephalopathy*¹⁴
- Prof. T. Seuberlich**
NeuroCentre, Department of Clinical Research and Veterinary Public Health, Division of Experimental Clinical Research, University of Bern, Bern, Switzerland.
- 3.4.6. *Bovine tuberculosis*
- See Chapter 3.1.13. Mammalian tuberculosis (infection with *Mycobacterium tuberculosis* complex)
- 3.4.7. *Bovine viral diarrhoea*¹⁵
- Dr P. Kirkland**
Elizabeth Macarthur Agriculture Institute (EMAI), Virology Laboratory, Menangle, Camden, New South Wales, Australia.
- 3.4.8. *Contagious bovine pleuropneumonia (infection with *Mycoplasma mycoides subsp. mycoides*)*¹⁶
- Dr F. Thiaucourt (retired)**
France.

¹⁴ This chapter was updated by consensus of all WOA Reference Laboratories for bovine spongiform encephalopathy.

¹⁵ This chapter was updated by consensus of all WOA Reference Laboratories for bovine viral diarrhoea.

¹⁶ This chapter was updated by consensus of all WOA Reference Laboratories for contagious bovine pleuropneumonia.

3.4.9. *Enzootic bovine leukosis***Prof. T.W. Vahlenkamp**

Institute of Virology, Centre for Infectious Diseases, Faculty of Veterinary Medicine, Leipzig University, Leipzig, Germany.

Dr B. Choudhury

APHA Weybridge, New Haw, Addlestone, Surrey, UK.

Dr J. Kuzmak

National Veterinary Research Institute, Pulawy, Poland.

3.4.10. *Haemorrhagic septicaemia (Pasteurella multocida serotypes 6:b and 6:e)***Dr S.B. Shivachandra**

ICAR-National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Karnataka, India.

3.4.11. *Infectious bovine rhinotracheitis/ infectious pustular vulvovaginitis***Dr M. Beer**

Institute of Diagnostic Virology, Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Insel Riems, Germany.

Dr A. Dastjerdi

APHA Weybridge, New Haw, Addlestone, Surrey, UK.

3.4.12. *Lumpy skin disease***Dr N. De Regge**

Exotic and vector-borne diseases, Sciensano, Groeselenberg 99, 1180 Brussels, Belgium.

3.4.13. *Theileriosis in cattle (infection with Theileria annulata, T. orientalis and T. parva)***Dr P. Toye**

Animal Health and Genetics, International Livestock Research Institute, Nairobi, Kenya.

Dr D. Geysen

Institute of Tropical Medicine, Department of Animal Health, Antwerp, Belgium.

3.4.14. *Trichomonosis***Dr E. Authie (formerly)**

Laboratoire National de Contrôle des Reproducteurs, Maisons-Alfort, France.

Prof. A. Lew-Tabor

The University of Queensland, St. Lucia, Brisbane Queensland, Australia.

Prof. I. Diallo

Biosecurity Sciences Laboratory, Health and Food Sciences Precinct, Brisbane, Queensland, Australia.

3.5.1. *Camelpox***Dr U. Wernery, Dr K. Kamal-Aldin, Mrs S. Joseph & Mrs A. Riya Thomas**

Central Veterinary Research Laboratory, Dubai, United Arab Emirates.

2.5.2. *Middle East respiratory syndrome (infection of dromedary camels with MERS-CoV)***WOAH *ad hoc* Group on Middle East Respiratory Syndrome Coronavirus (MERS-Cov)**

- 3.6.1. *African horse sickness*
(infection with *African horse sickness virus*)
- Prof. J.M. Sánchez-Vizcaíno**
Centro de Vigilancia Sanitaria Veterinaria,
Facultad de Veterinaria, Universidad
Complutense de Madrid, Madrid, Spain.
- Dr M. Agüero Garcia**
Laboratorio Central de Veterinaria, Algete
(Madrid), Spain.
- Dr J. Baron Castillo-Olivares**
The Pirbright Institute, Ash Road, Woking, Surrey,
UK.
- 3.6.2. *Contagious equine metritis*
- Dr I. Mawhinney**
APHA Bury St Edmunds, Suffolk, UK
- Dr M.M. Erdman**
USDA, APHIS, National Veterinary Services
Laboratories, Ames, Iowa, USA.
- 3.6.3. *Dourine in horses* (*Trypanosoma equiperdum*
infection)¹⁷
- Prof. Ph. Büscher (retired)**
Belgium.
- 3.6.4. *Equine encephalomyelitis*
(*Eastern, Western and Venezuelan*)
- Dr T. Sturgill**
USDA, APHIS, National Veterinary Services
Laboratories, Ames, Iowa, USA.
- 3.6.5. *Equine infectious anaemia*
- Dr E.N. Ostlund (retired)**
USA.
- Dr J. Zhou**
Laboratory of Equine Infectious Anemia
Harbin Veterinary Research Institute of Chinese
Academy of Agricultural Sciences Harbin, China
(People's Rep. of).
- Dr K. Murakami**
National Institute of Animal Health, Viral Disease
Section, Ibaraki, Japan.
- 3.6.6. *Equine influenza (infection with equine influenza*
virus)¹⁸
- Prof. A. Cullinane**
Irish Equine Centre, Johnstown, Naas, Co. Kildare,
Ireland.
- 3.6.7. *Equine piroplasmiasis*
- Prof. N. Yokoyama**
National Research Center for Protozoan Disease
Obihiro University of Agriculture and Veterinary
Medicine, Hokkaido Japan.
- 3.6.8. *Equine rhinopneumonitis*
(infection with *Varicellovirus equidalpha1*)¹⁹
- Prof. A. Cullinane**
Irish Equine Centre, Johnstown, Naas, Co. Kildare,
Ireland.

17 This chapter was updated by consensus of the following WOA experts on trypanosomes: Dr M.I. Gonzatti, Dr I. Pascucci, Dr L. Touratier (deceased), Dr M. Desquesnes, Dr A. Schnauffer, Dr K. Suganuma, Dr N. Inoue, Dr N. Van Reet, Dr N. Ledesma, Dr L. Hébert.

18 This chapter was updated by consensus of all WOA Reference Laboratories for equine influenza.

19 This chapter was updated by consensus of all WOA Reference Laboratories for equine rhinopneumonitis.

- 3.6.9. *Equine viral arteritis (infection with equine arteritis virus)*
- Dr P.J. Timoney (retired)**
USA.
- Dr T. Drew (retired) & Prof. F. Steinbach**
APHA Weybridge, New Haw, Addlestone,
Surrey, UK.
- 3.6.10. *Glanders and melioidosis*
- Dr H. Neubauer**
Institute of Bacterial Infections and Zoonoses,
Friedrich-Loeffler Institut, Federal Research
Institute for Animal Health, Jena, Germany.
- Prof. U. Wernery**
Central Veterinary Research Laboratory, Dubai,
United Arab Emirates.
- 3.7.1. *Myxomatosis*
- 3.7.2. *Rabbit haemorrhagic disease*
- Dr A. Lavazza, Dr L. Capucci (retired) &
Dr P. Cavadini**
Istituto Zooprofilattico Sperimentale della
Lombardia e dell'Emilia Romagna, Brescia, Italy.
- 3.8.1. *Border disease*
- Dr P. Kirkland**
Elizabeth Macarthur Agriculture Institute (EMAI),
Virology Laboratory, Camden, New South Wales,
Australia.
- 3.8.2. *Caprine arthritis/encephalitis & Maedi-visna*
- Dr D. Knowles (retired) & Dr L.M. Herrmann**
USDA-ARS, Animal Disease Research Unit,
Washington State University, Pullman,
Washington, USA.
- 3.8.3. *Contagious agalactia*
- Dr R. Ayling (retired)**
UK.
- Dr G. Loria**
Istituto Zooprofilattico Sperimentale della Sicilia
(IZSSi), Palermo, Italy.
- 3.8.4. *Contagious caprine pleuropneumonia*
- Dr F. Thiaucourt (retired)**
France.
- 3.8.5. *Enzootic abortion of ewes (ovine chlamydiosis)
(infection with Chlamydophila abortus)*
- Dr C. Schnee**
Institute of Molecular Pathogenesis, Friedrich-
Loeffler-Institut, Federal Research Institute for
Animal Health, Jena, Germany.
- Dr N. Borel**
Institute for Veterinary Pathology, Vetsuisse
Faculty, University of Zurich, Zurich, Switzerland.
- Dr K. Laroucau**
Anses Maisons-Alfort, Animal Health Laboratory
Bacterial Zoonoses Unit, Maisons-Alfort, France.
- 3.8.6. *Nairobi sheep disease*
- See chapter 3.10.1.

- 3.8.7. *Ovine epididymitis (Brucella ovis)*²⁰ **Dr B. Garin-Bastuji (retired)**
France.
- Dr J.M. Blasco**
Centro de Investigación y Tecnología
Agroalimentaria de Aragón, Zaragoza, Spain.
- 3.8.8. *Peste des petits ruminants (infection with small ruminant morbillivirus)*²¹ **Dr M. Baron (retired)**
UK.
- 3.8.9. *Salmonellosis (S. abortusovis)* See chapter 3.10.3.
- 3.8.10. *Scrapie*²² **Dr J. Spiropoulos**
APHA Weybridge, New Haw, Addlestone,
Surrey, UK.
- 3.8.11. *Sheep pox and goat pox*²³ **Dr B.A. Lubisi**
Onderstepoort Veterinary Institute, Agricultural
Research Council, Onderstepoort, South Africa.
- 3.8.12. *Theileriosis in sheep and goats (infection with Theileria lestoquardi, T. luwenshuni and T. uilenbergi)* **Dr A. Torina (retired)**
Italy.
- 3.9.1. *African swine fever* **Dr C.A.L. Oura (formerly)**
The Pirbright Institute, Ash Road, Woking,
Surrey, UK.
- Dr M. Arias**
Centro de Investigación en Sanidad Animal (CISA-
INIA), Madrid, Spain.
- 3.9.2. *Classical swine fever (infection with classical swine fever virus)*²⁴ **Prof. P. Becher**
Department of Infectious Diseases, Institute of
Virology, University of Veterinary Medicine of
Hannover, Hannover, Germany.
- 3.9.3. *Influenza A viruses of swine*²⁵ **Prof. I. Brown**
APHA Weybridge, New Haw, Addlestone,
Surrey, Weybridge, UK.
- 3.9.4. *Nipah virus encephalitis* See chapter 3.1.16.
- 3.9.5. *Porcine cysticercosis (infection with Taenia solium)* See chapter 3.10.2.

20 This chapter was updated by consensus of all WOA Reference Laboratories for brucellosis and other experts.

21 This chapter was updated by consensus of all WOA Reference Laboratories for peste des petits ruminants.

22 This chapter was updated by consensus of all WOA Reference Laboratories for scrapie.

23 This chapter was updated by consensus of all WOA Reference Laboratories for sheep pox and goat pox.

24 This chapter was updated by consensus of the WOA *ad hoc* Group on Classical Swine Fever (vaccine section) and of all WOA Reference Laboratories for classical swine fever (diagnostic section).

25 This chapter was updated by consensus of all WOA Reference Laboratories for swine influenza.

- 3.9.6. *Porcine reproductive and respiratory syndrome*²⁶
- Prof. Z. Pejsak & Dr K. Podgórska**
National Veterinary Research Institute, Pulawy, Poland.
- Dr K. Tian**
Veterinary Diagnostic Laboratory, China Animal Disease Control Center, Beijing, China (People's Rep. of).
- 3.9.7. *Swine vesicular disease*
- Dr D. King**
The Pirbright Institute, Ash Road, Woking, Surrey, UK.
- Dr E. Brocchi,**
Istituto Zooprofilattico Sperimentale della e dell'Emilia Romagna (IZSLER), Brescia, Italy.
- 3.9.8. *Transmissible gastroenteritis*
- Dr L.J. Saif**
The Ohio State University, Ohio Agricultural Research and Development Center, Food Animal Health Research Program, Wooster, Ohio, USA.
- 3.10.1. *Bunyaviral diseases of animals (excluding Rift Valley fever and Crimean–Congo haemorrhagic fever)*
- Dr B.A. Lubisi**
Onderstepoort Veterinary Institute, Agricultural Research Council, Onderstepoort, South Africa.
- Dr M. Beer & K. Wernike**
Institute of Diagnostic Virology, Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Insel Riems, Germany.
- Dr M. Baron (retired)**
UK.
- Dr P. Kirkland**
Elizabeth Macarthur Agriculture Institute (EMAI), Virology Laboratory, Menangle, Camden, New South Wales, Australia.
- 3.10.2. *Cysticercosis*
- Prof. P. Dorny & Prof. S. Gabriël**
Department of Veterinary Public Health and Food Safety, Faculty of Veterinary Medicine, Ghent University, Merelbeke, Belgium
- 3.10.3. *Salmonellosis*²⁷
- Dr R. Davies (retired)**
UK.
- 3.10.4. *Verocytotoxigenic Escherichia coli*
- Dr F.A. Clifton-Hadley**
APHA Weybridge, New Haw, Addlestone, Surrey, UK.
- 3.10.5. *Zoonoses transmissible from non-human primates*
- Dr S. Edwards (retired)**
UK.
- Dr T. Brooks**
Rare & Imported Pathogens Laboratory, Public Health England, Porton Down, Salisbury, UK

26 This chapter was updated with help from: Nicolas Ruggli (The Institute of Virology and Immunology, Mittelhäusern, Switzerland); Tomasz Stajejek (Warsaw University of Life Sciences, Warsaw, Poland).

27 This chapter was updated by consensus of all WOA Reference Laboratories for salmonellosis.

