World Organisation for Animal Health

Kim Halpin - - AUSTRALIA

WOAH Reference Laboratory Reports Activities 2024

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Hendra and Nipah virus diseases
***Address of laboratory:**	5 Portarlington Road, East Geelong, Australia
***Tel:**	+61-3 52 27 00 00
***E-mail address:**	hal306@csiro.au
Website:	
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr Debbie Eagles
***Name (including Title and Position) of WOAH Reference Expert:**	Dr Kim Halpin
***Which of the following defines your laboratory? Check all that apply:**	Governmental

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
Hendra cELISA	Yes	202	0
Hendra DIVA ELISA	No	32	0
Nipah iELISA	Yes	55	0
Hendra SNT	Yes	239	1

Nipah SNT	Yes	6	0
Direct diagnostic tests		Nationally	Internationally
HeV real time PCR	No	569	52
NiV real time PCR	Yes	4	0
virus isolation	Yes	39	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
Live Nipah virus	PCR and Diagnostic Assay Development	produced and provided	1mL	0	1	AUSTRALIA,
Inactivated Hendra virus	PCR and Diagnostic Assay Development	produced and provided	0	1.5 mL	5	CZECH REPUBLIC, GERMANY, KOREA (DEM. PEOPLE'S. REP. OF), THE NETHERLANDS, UNITED ARAB EMIRATES,
Inactivated Nipah virus	PCR and Diagnostic Assay Development	produced and provided	0	3.5 mL	5	CZECH REPUBLIC, GERMANY, KOREA (DEM. PEOPLE'S. REP. OF), THE NETHERLANDS, UNITED ARAB EMIRATES,
Hendra antiserum	Diagnostic assay development	produced and provided	0	1.5 mL	1	FRANCE,
Nipah antiserum	Diagnostic assay development	produced and provided	0	1.5 mL	1	FRANCE,
Hendra ELISA Network Quality Control	ELISA	produced and provided	6.5 mL	0	1	AUSTRALIA,
Hendra PCR Network Quality Control	PCR	produced and provided	10 mL	0	1	AUSTRALIA,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

No

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?

No

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

No

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

No

TOR4: DIAGNOSTIC TESTING FACILITIES

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

Yes

Name of WOAH Member Country seeking assistance	Date	Which diagnostic test used	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
NEW ZEALAND	2024-08-14	Hendra virus real time PCR	7	0
NEW ZEALAND	2024-08-14	Nipah virus real time PCR	6	0

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
THAILAND	Provide advice and attend WOAH International Horse Movement Meeting which was hosted by Thailand and attended by many countries	Meeting participant and speaker
JAPAN	Provide advice and attend WOAH Regional Workshop on Lab Exercises for Equine Diseases Meeting which was hosted by Japan and attended by many countries	Meeting participant and speaker

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

No

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?

No

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:

3

Carey KJ, Smith I, Barr J, Caruso S, Au GG, Hartley CA, Bailey KE, Perriam W, Broder CC, Gilkerson JR., Foals of mares vaccinated for Hendra virus have a suboptimal response to HeV vaccination, Veterinary Microbiology, doi: 10.1016/j.vetmic.2024.110167

Moore KA, Mehr AJ, Ostrowsky JT, Ulrich AK, Moua NM, Fay PC, Hart PJ, Golding JP, Benassi V, Preziosi MP, Broder CC, de Wit E, Formenty PBH, Freiberg AN, Gurley ES, Halpin K, Luby SP et al. Measures to prevent and treat Nipah virus disease: research priorities for 2024-29. Lancet Infect Dis. doi: 10.1016/S1473-3099(24)00262-7.

Pedrera M, McLean RK, Medfai L, Thakur N, Todd S, Marsh G, Bailey D, Donofrio G, Muramatsu H, Pardi N, Weissman D, Graham SP., Evaluation of the immunogenicity of an mRNA vectored Nipah virus vaccine candidate in pigs., Viruses, doi: 10.3389/fimmu.2024.1384417

b) International conferences:

12

Wang, Jianning et al. (2024) Detection of a Hendra virus genotype 1 variant in a flying fox, Australia. Hendra@30 Henipavirus International Conference, 8-11 December, 2024

Shawn Todd, Vicky Boyd, Jennifer Barr, Sarah J. Edwards, Amy Burroughs, Gary Crameri, Ina Smith, Michelle Baker & Glenn A. Marsh (2024) Bat sampling using traditional methods and new technologies. Hendra@30 Henipavirus International Conference, 8-11 December, 2024

Victoria Boyd, Jianning Wang, Anjana Karawita, Shawn Todd, Matthew Bruce, Rachel Layton, Sarah Riddell, Grace Taylor, Sarah Caruso, Christopher Broder, Richard Ploeg, Gough Au, Anthony W Purcell, Michelle L. Baker (2024) Serological Dynamics in Captive Flying Foxes: Insights from Natural and Experimental Hendra Virus Infections. Hendra@30 Henipavirus International Conference, 8-11 December, 2024

Sinéad M. Williams, Sarah J. Edwards, Elizabeth Pharo, Meaghan Heyward, Sarah Jackson, Shawn Todd, Kyle Catalan, Glenn M. Marsh. Henipavirus infection of a human airway epithelium model Hendra@30 Henipavirus International Conference, 8-11 December, 2024

Jennifer Barr, Sarah Caruso, Sarah J. Edwards, Shawn Todd, Ina Smith, Mary Tachedjian, Gary Crameri, Lin-Fa Wang and Glenn A. Marsh. Salt Gully virus: a novel henipavirus isolated from Australian pteropus bats. Hendra@30 Henipavirus International Conference, 8-11 December, 2024

Victoria Boyd, Jianning Wang, Anjana Karawita, Shawn Todd, Rachel Layton, Sarah Riddell, Grace Taylor, Sarah Caruso, Christopher Broder, Richard Ploeg, Gough Au, Anthony W Purcell, Michelle L. Baker. Natural Hendra virus infection of captive flying foxes. Hendra@30 Henipavirus International Conference, 8-11 December, 2024

Yu Cong, Bapi Pahar, Claudia Calcagno, Jeffrey Solomon, Saurabh Dixit, Sanae Lembirik, Shawn Hirsch, Lirong Peng, Venkatesh Mani, Monika Mehta, Vincent Munster, and Michael R. Holbrook. Discriminating disease outcomes in nonhuman primates exposed to Malaysia

or Bangladesh isolates of Nipah virus. Hendra@30 Henipavirus International Conference, 8-11 December, 2024
Wen Shi Lee, Ellie Reilly, Robyn Esterbauer, Andrew Kelly, Danielle E Anderson, Glenn Marsh, Jennifer Juno, Stephen J Kent, Adam K Wheatley. Human neutralising monoclonal antibodies against Hendra and Nipah viruses. Hendra@30 Henipavirus International Conference, 8-11 December, 2024
Leanne McNabb, Antonio Di Rubbo, Jennifer Barr, Amy McMahon, Ezana Woube, Tim Bowden, Kalpana Agnihotri, Axel Colling, Nagendrakumar Singanallur Balasubramanian and Kim Halpin. Development of Hendra virus diagnostic serology assays at ACDP. Hendra@30 Henipavirus International Conference, 8-11 December, 2024
Kalpana Agnihotri, Amy McMahon, Leanne McNabb, Jianning Wang, Brenda van der Heide, Anthony Keyburn, Kim Halpin. The Hendra virus nucleocapsid protein as a frontline diagnostic tool to confirm infections. Hendra@30 Henipavirus International Conference, 8-11 December, 2024
Melanie Tripp, Sarah J. Edwards, Cassandra David, Stephen Rawlinson, Kim Halpin, Glenn A. Marsh, Gregory W. Moseley. Investigating functional diversity of the Hendra virus genotypes. Hendra@30 Henipavirus International Conference, 8-11 December, 2024
Emily R. Dowling, Sarah J. Edwards, Vinod Sundaramoorthy, Matthew McKenzie, Glenn A. Marsh. Characterising the P gene products of Australian henipaviruses and their role in pathogenesis. Hendra@30 Henipavirus International Conference, 8-11 December, 2024

c) National conferences:

1
Melanie Tripp, Sarah J. Edwards, Cassandra David, Stephen Rawlinson, Kim Halpin, Glenn A. Marsh, Gregory W. Moseley. Investigating functional diversity of the Hendra virus genotypes. Australian Virology Society Meeting, Creswick, Victoria, 2-5 December 2024.

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

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 1

b) Seminars : 0

c) Hands-on training courses: 1

d) Internships (>1 month) 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	INDONESIA	23
C	INDONESIA	15

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

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Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
Integrated Management System (IMS) covering: ISO 9001:2015 ISO 14001:2015 ISO 17025:2017 ISO 17043:2010	pdf	BSI ISO14001 EMS 605098 - 001 (1).pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
AAHL has a certified Quality Management System (ISO 9001) and is accredited (ISO 17025) for the following scope of works which supports delivery to Nipah and Hendra Reference Laboratory designation Australian Animal Health Laboratory - Accredited Organisation (Site No. 13539) - NATA	NATA / ILAC

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

Yes

The laboratory has a dedicated Biorisk Management Group (18 Members) who provide specialist advice, monitor and improve Biosafety, Biosecurity and Biocontainment activities and perform annual testing and validation on Biocontainment systems. The team uses a biorisk management approach aligned with ISO 35001 to implement a system of managing biosafety and biosecurity across a wide array of biological hazards. The Biorisk Management Group develop and implement standard operating procedures and institutional policies that set the framework for the handling of biological materials across ACDP and provide ultimate assurance that the laboratory activities pose negligible danger to Australia's agriculture or public health. Policies and procedures are contained in the annually reviewed ACDP Biorisk Manual consisting of various sections as follows. • Section 1 Administration • Section 2 PC2 Procedures and Policies • Section 3 PC3 Procedures and Policies • Section 4 PC4 Procedures and Policies • Section 5 Large Animal Facility (LAF) Procedures and Policies • Section 6 Personnel and Procedural Controls • Section 7 Transport and Storage of Biological Material • Section 8 Movement of Material, Equipment and Waste • Section 9 Engineering Procedures and Polices • Section 10 Microbiological Incident Response Procedures and Policies The ACDP biological risk management system has clear and unequivocal commitment by laboratory management, who ensure that roles, responsibilities, resources and authorities related to biological risk management are defined, documented, and communicated to those who manage, perform, and verify work associated with biological agents and toxins in the laboratory. The Biorisk Management Team are audited over 3 days every 6 months by an external security assessment team to provide an independent review of elements affecting ACDP's microbiological and physical security operations and to advise CSIRO senior executive management of any areas of concern or risk. Biosafety and biosecurity operations are also audited frequently by Australia's regulatory agencies, the Department of Agriculture, Fisheries and Forestry (DAFF), the Office of the Gene Technology Regulator (OGTR) and the Security Sensitive Biological Agents Regulatory Scheme (SSBA).

TOR9: SCIENTIFIC MEETINGS

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

Yes

National/ International	Title of event	Co-organiser	Date	location	No. Participants

International	Hendra@30 Henipavirus International Conference	CEPI	2024-12-07	Geelong	150

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?

Not applicable (only WOAH Reference Laboratory designated for the disease

24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?

Not applicable (only WOAH Reference Laboratory designated for the disease

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?

Not applicable (Only WOAH Reference Laboratory designated for the disease)

n/a

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?

Not applicable (only WOAH Reference Laboratory designated for the disease

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
Molecular PCR detection of Hendra as part of the Laboratories Emergency Animal Disease Diagnosis and Response (LEADDR) Network	Organiser and Participant	9	HeV PCR	AUSTRALIA,
Detection of Hendra antibodies using an ELISA commercial kit as part of the Laboratories Emergency Animal Disease Diagnosis and Response (LEADDR) Network	Organiser and Participant	5	HeV ELISA	AUSTRALIA,

TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
attend meeting	Thailand	International horse movement

29. Additional comments regarding your report:

No