World Organisation for Animal Health

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WOAH Collaborative Centre Reports Activities 2024

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CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Laboratory Capacity Building
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***Name Director of Institute (Responsible Official):**	Dr Debbie Eagles
***Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):**	Dr Dwane O'Brien, Deputy Director Australian Centre for Disease Preparedness
***Name of the writer:**	Dwane O'Brien

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
		Biosafety workshops were conducted at

Training, capacity building (true)	Biosafety workshops (supported by the Australian Department of Foreign Affairs and Trade [DFAT] and the USA Defence Threat Reduction Agency (DTRA)	ACDP for 14 participants from countries across SE Asia. The attending country participants included laboratory quality assurance personnel, biorisk/biosafety managers, laboratory leaders and technical laboratory staff. The workshop consisted of both lectures and practical instruction conducted within the high containment area of the ACDP.
Diagnosis, biotechnology and laboratory (true)	EID surveillance (supported by the Australian Government Department of Foreign Affairs and Trade)	Surveillance of wildlife and livestock in high-risk locations (e.g. wet markets) and for EID's such as coronaviruses and influenza A viruses. Projects have been delivered in Cambodia, Indonesia, Laos and Philippines.
Training, capacity building (true)	Australia Indonesia Health Security Program – Lab strengthening Component (supported by DFAT and managed by Cardno)	Priority laboratory diagnostic capacity-building activities for Indonesia, including Lumpy Skin Disease, ASF/CSF, FMD exclusion testing, and general laboratory QA and Biosafety.
Diagnosis, biotechnology and laboratory (true)	Provision of technical support to the Regional Animal Health Office No. 6 (RAHO-6) Laboratory, Ho Chi Minh City, Vietnam, under the WOAH supported twinning project (also supported by the Australian Government Department of Foreign Affairs and Trade)	ACDP is providing technical support to RAHO-6 under a WOAH twinning project. This will support RAHO-6 in its efforts towards an application to be a future WOAH Reference laboratory for selected swine diseases, including African Swine Fever (ASF)
Training, capacity building (true)	Provision of technical support to Disease Investigation Centre Wates (DIC Wates) Indonesia, as part of twinning arrangements supported by the Australian Department of Foreign Affairs and Trade (DFAT)	ACDP is providing technical support to DIC Wates laboratory under twinning arrangements
Training, capacity building (true)	Provision of technical support to the National Animal Health and Food Testing Laboratory (NAFTL) in Port Moresby Papua New Guinea in collaboration with the National Agriculture, Quarantine and Inspection Authority (NAQIA) and supported by the Australian High Commission	ACDP will build diagnostic capability, particularly in PCR testing, support the development of field diagnostics and strengthen disease surveillance. Other priority diseases of livestock have also been a focus. This project has been extended from its initial terrestrial focus and is covering aquatic laboratory capability development now as well.
		A project to improve diagnostic capability in the animal health sector in

Training, capacity building (true)	Pacific networked diagnostics (supported by the Australian Government Department of Foreign Affairs and Trade)	Pacific Island Countries and Territories (PICTs) through practical and sustainable field diagnostics for endemic diseases that can improve animal production and build capacity for surveillance for emerging infectious diseases (EIDs)
Diagnosis, biotechnology and laboratory (true)	The provision of Proficiency Testing.	As a proficiency testing provider to more than 25 regional laboratories, ACDP is supporting the development of increased diagnostic capability. All PT reports are provided to the sponsors and to each participating laboratory and their respective central line management, allowing a regular assessment of laboratory performance and implementation of quality assurance, and the ability to seek technical assistance as required.

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Improved laboratory quality assurance systems	Provide advice and support to laboratories wanting to establish or improve laboratory quality assurance systems such as those provided through ISO 17025:2017 General requirements for the competence of testing and calibration laboratories, ISO9001:2015, ISO 17043:2023 Conformity assessment — General requirements for the competence of proficiency testing providers.	Laboratory Expertise

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

No

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose

BSL4ZNet	Global	América Asia y el Pacífico Europa	BSL4ZNet is a network of government-mandated organisations with national-level responsibility for protecting animal health by working together to enhance knowledge, competency and capacity to meet current and future high containment needs, including for new and emerging diseases.
OFFLU	Global	África América Asia y el Pacífico Europa Oriente Medio	Coordination of the science underpinning the management and control of influenza in animals.
5RD Global Biodefense Network	Global	América Asia y el Pacífico Europa	The Five Research and Development (5RD) Global Biodefense Network (GBDN) is a forum for 5RD members to maintain dialogue on various topics regarding biological hazards, emphasising hazard assessment, characterisation, and biosecurity issues for COVID-19 and other emerging diseases.
The Asia Pacific Consortium of Veterinary Epidemiology (APCOVE)	Asia Pacific	Asia y el Pacífico	The collaboration centre supports APCOVE by supporting APCOVE Fellow placements.
The ASEAN Laboratory Technical Advisory Group (labtag)	Asia and Pacific	Asia y el Pacífico	To support through provision of technical advice
BioPrevail	Global	África América Asia y el Pacífico Europa Oriente Medio	BioPrevail is a Health Security Innovation Initiative for Sustainable Laboratories.

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Global African Swine Fever Disease Research Alliance	Global	Africa Americas Asia and Pacific Europe Middle East	To establish and sustain global research partnerships that will generate scientific knowledge and tools to contribute to the successful prevention, control and, where feasible, eradication of ASF
WOAH Aquatic Animal Health Standards Commission	Global	Africa Americas Asia and Pacific Europe Middle East	Collaboration is needed to ensure that the aquatic animal health code and manual of diagnostic tests for aquatic animals reflect current scientific information.
Global Foot-and-Mouth Disease Research Alliance	Global	Africa Americas Asia and Pacific Europe Middle East	A coordinated global alliance of scientists producing evidence and innovation that enables the progressive control and eradication of FMD.
European virus Archive - Global (EVAg)	Global	Africa Americas Asia and Pacific Europe Middle East	A coordinated global network that mobilises expertise in virology to amplify, characterise, standardise, authenticate, distribute, track, and collect viruses and derived products.
Research Centre for Biology (RCB), at BRIN (Badan Riset dan Inovasi Nasional; National Research and Innovation	Indonesia	Asia and Pacific	Supporting regional EID surveillance at wildlife and animal-human-wildlife interfaces in Indonesia under

Agency Indonesia)			a wildlife market surveillance program.
Pacific Heads of Veterinary and Animal Production services (PHOVAPS)	Pacific	Asia and Pacific	Support on laboratory and diagnostics through the provision of technical support.

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

Name of expert	Kind of consultancy	Subject
Dr Trevor Drew	Invited participant/technical advice	WOAH SCAD meeting
Dr Caitlin Holley	Invited participant	WOAH Lab Twinning Evaluation Workshop
Dr Trevor Drew	Invited participant	WOAH Regional Meeting for Reference Centres, Asia Pacific
Dr Mark Ford	Invited participant/technical advice	WOAH Sub-Regional Workshop on Emergency Management
Dr Wilna Vosloo	Invited participant/technical advice	27th WOAH Sub-Commission for FMD in South East Asia
Dr Mark Ford	Invited participant/technical advice	WOAH Regional Workshop on Lab Exercises for Equine Diseases
Dr Stacey Lynch and Dr Caitlin Holley	Invited participant/technical advice	WOAH Regional Workshop on Vector Borne Diseases

Dr Nick Moody	Invited participant/technical advice	WOAH Regional Workshop on Preparedness Aquatic Animals
Dr David Williams	Invited participant/technical advice	4th WOAH ASF Coordination Meeting for Soth East Asia
Dr Kim Halpin	Invited participant/technical advice	WOAH Horse Movement meeting
Dr Debbie Eagles	Invited participant/technical advice	WOAH General Assembly
Dr Dwane O'Brien	Invited participant/technical advice	WOAH Regional Meeting for Reference Centres, Asia Pacific and the WOAH National Focal Points Meeting

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes

Specific details on the activities delivered and the participants are provided in section 1 and section 8

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 130

b) Seminars : 0

c) Hands-on training courses: 331

d) Internships (>1 month) : 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
C	Biorisk Management - risk management and chemical safety refresher training	Indonesia	23

C	Quality Assurance - Quality Management System	Indonesia	15
C	Bioinformatics training – data analysis and programming	Indonesia	12
A	Tissue Culture Support	Indonesia	6
C	Preparation of quality assured material for monitoring of diagnostic assays within a single laboratory	Indonesia	29
C	Preparation of quality assured material for monitoring of diagnostic assays for a network of laboratories	Indonesia	22
A	Biorisk Management	USA, Malaysia	40
C	Biorisk Management and Quality Assurance	Indonesia	38
C	Test validation and verification	Vietnam	19
C	Real time PCR training and SOP guidance	Fiji	9
C	FMD Preparedness – development of sample collection and laboratory workflows	Indonesia	20
	Delivery of FMD Luminar Flow	Indonesia	20

C	Device validation training		
A	Preparation of quality assured LSD material for ELISA and PCR	Indonesia	16
A	Molecular diagnostic testing	Papua New Guinea	10
C	Biorisk Management - risk management and chemical safety refresher training	Papua New Guinea	31
A	Diagnostic testing and development of SOPs	Papua New Guinea	15
A	Tissue Culture support	Vietnam	15
C	Quality Assurance	Papua New Guinea	25
C	Preparation of quality assured material for monitoring of diagnostic assays within a single laboratory (AIV and LSD)	Indonesia	12
A	Biorisk Management	Papua New Guinea	28
C	Laboratory practices and diagnostic testing	Papua New Guinea	4
C	Laboratory practices and diagnostic testing	Timor Leste	3

C	Strengthening diagnostic networks and surveillance systems	Samoa, Cook Islands, Fiji, Guam, Kiribati, PNG, Tonga, Vanuatu	11
C	Introduction to Biorisk Management	Fiji, Indonesia, Vietnam, Philippines, Malaysia	12
C	Introduction to Biorisk Management	Samoa, Vanuatu, Cambodia, Vietnam, Philippines	12
C	Introduction to Biorisk Management	Timor Leste	1
C	Biorisk Management -Leadership	Indonesia, Thailand, Cambodia, Vietnam, Laos, Malaysia	10
C	Biorisk Management and Quality Assurance	Vietnam	2

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

No

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

41

1. Wilson T, Green M, Dunn V, Cummins D, Neave M. 2024. Characterisation of a mesophilic Aeromonas salmonicida and the development of a PCR to differentiate atypical and typical strains. J. Fish Dis. https://doi.org/10.1111/jfd.14028.

2. Turek I, Wong A, Domingo G, Vannini C, Bracale M, Irving H, Gehring C. 2024. Moonlighting crypto-enzymes and domains as ancient and versatile signaling devices. Int. J. Mol. Sci. https://doi.org/10.3390/ijms25179535.

3. Ahmed W, Liu Y, Smith W, Ingall W, Belby M, Bivins A, Bertsch P, Williams DT, Richards K, Simpson S. 2024. The effect of diurnal temperature fluctuations on the decay of Japanese encephalitis and Murray Valley encephalitis virus RNA seeded in piggery wastewater.

Sci. Total Environ. https://doi.org/10.1016/j.scitotenv.2024.172593.
4. Spinard E, Dinhobl M, Erdelyan C, O'Dwyer J, Fenster J, Birtley H, Tesler N, Calvelage S, Leijon M, Steinaa L, et al. 2024. A standardized pipeline for assembly and annotation of African swine fever virus genome. Viruses. https://doi.org/10.3390/v16081293.
5. Davis SK, Jia F, Wright QG, Islam MT, Bean A, Layton D, Williams DT, Lynch SE. 2024. Defining correlates of protection for mammalian livestock vaccines against high-priority viral diseases. Front. Immunol. https://doi.org/10.3389/fimmu.2024.1397780.
6. Ahmed W, Liu Y, Smith W, Ingall W, Belby M, Bivins A, Bertsch P, Williams DT, Richards K, Simpson S. 2024. Leveraging wastewater surveillance to detect viral diseases in livestock settings. Sci. Total Environ. https://doi.org/10.1016/j.scitotenv.2024.172593.
7. Williams D, Blome S, Mettenleiter T. 2024. African swine fever: advances and challenges. WOAH Sci. Tech. Rev. Retrospective: special edition for WOAH's centenary. http://hdl.handle.net/102.100.100/658462?index=1.
8. Klein MJ, Jackson SA, Suen WW, Payne J, Beveridge D, Hargreaves M, Gillies D, Wang J, Blasdell KR, Dunn M, et al. 2024. Australian Culex annulirostris mosquitoes are competent vectors for Japanese encephalitis virus genotype IV. Emerg. Microbes Infect. 13:2429628. https://doi.org/10.1080/22221751.2024.2429628.
9. Edwards SJ, Luczo JM. 2024. Zoonotic negative-sense RNA viruses. Front. Vet. Sci. Editorial.
10. Donnelly CM, Stewart M, Roby JA, Sundaramoorthy V, Forwood JK. 2024. Structural determination of the Australian bat lyssavirus nucleoprotein and phosphoprotein complex. Viruses. https://doi.org/10.3390/v16010033.
11. Pedrera M, McLean RK, Medfai L, Thakur N, Todd S, Marsh G, Bailey D, Donofrio G, Muramatsu H, Pardi N, et al. 2024. Evaluation of the immunogenicity of an mRNA vectored Nipah virus vaccine candidate in pigs. Viruses. https://doi.org/10.3389/fimmu.2024.1384417.
12. Madhav M, Blasdell KR, Trewin B, Paradkar PN, López-Denman AJ. 2024. Culex-transmitted diseases: mechanisms, impact, and future control strategies using Wolbachia. Viruses. https://doi.org/10.3390/v16071134.
13. Javed N, Paradkar PN, Bhatti A. 2024. An overview of technologies available to monitor behaviours of mosquitoes. Acta Trop. https://doi.org/10.1016/j.actatropica.2024.107347.
14. Luczo JM, Spackman E. 2024. Epitopes in the HA and NA of H5 and H7 avian influenza viruses that are important for antigenic drift. FEMS Microbiol. Rev. https://doi.org/10.1093/femsre/fuae014.
15. Samad MA, Hossen A, Karim MR, Uddin ASMA, Roy D, Shithi KN, Akter MN, Das TK, Selleck PW, Bulach DM, et al. 2024. Complete genome sequence of a lumpy skin disease virus isolate from a 2021 outbreak in Bangladesh. Microbiol. Res. Announc. https://doi.org/10.1128/mra.00667-24.
16. Mee PT, Buultjens AH, Oliver J, Brown K, Crowder JC, Porter JL, Hobbs EC, Judd LM, Taiaroa G, Puttharak N, et al. 2024. Mosquitoes provide a transmission route between possums and humans for Buruli ulcer in southeastern Australia. Nat. Portfolio. https://doi.org/10.1038/s41564-023-01553-1.
17. Wille M, Broz I, Cherrington T, Crawley A, Farrugia B, Ford M, Frost M, Grimsey J, Kirkland PD, Latimore S, et al. 2024. Contrasting dynamics of two incursions of low-pathogenicity avian influenza virus into Australia. Virus Evol. https://doi.org/10.1093/ve/veae076.
18. Seeyo KB, Choonnasard A, Chottikamporn J, Singkleebut S, Ngamsomsak P, Suanpat K, Balasubramanian NS, Vosloo W, Fukai K. 2024. Evaluation of six commercial NSP ELISA assays for foot and mouth disease virus in Thailand. Nat. Res. https://doi.org/10.1038/s41598-024-75793-4.
19. Javed N, López-Denman AJ, Paradkar PN, Bhatti A. 2024. Flight traits of dengue-infected Aedes aegypti mosquitoes. Comput. Biol. Med. https://doi.org/10.1016/j.compbiomed.2024.108178.
20. Widdicombe M, Coff L, Nowak BF, Ramsland PA, Bott NJ. 2024. Understanding the host response of farmed fish to blood flukes (Trematoda: Aporocotylidae) for developing new treatment strategies. Fish Shellfish Immunol. https://doi.org/10.1016/j.fsi.2024.109613.
21. Sinclair JE, Vedelago C, Ryan FJ, Carney M, Redd MA, Lynn MA, Grubor-Bauk B, Cao Y, Henders AK, Chew KY, et al. 2024. Post-acute sequelae of SARS-CoV-2 cardiovascular symptoms are associated with trace-level cytokines that affect cardiomyocyte function. Nat. Portfolio. https://doi.org/10.1038/s41564-024-01838-z.
22. Hannon C, Sarker S, Suen WW, Bielefeldt-Ohmann H. 2024. DNA virome in cardiac tissue from green sea turtles (Chelonia mydas) with myocarditis. Viruses. https://doi.org/10.3390/v16071053.
23. Lou J, Deng Q, Zhang X, Bell CC, Das AB, Bediaga NG, Zlatic CO, Johanson TM, Allan RS, Griffin MDW, et al. 2024. Heterochromatin protein 1 alpha (HP1α) undergoes a monomer to dimer transition that opens and compacts live cell genome architecture. Nucleic Acids Res. https://doi.org/10.1093/nar/gkae720.
24. Blanch-Lázaro B, Chamings A, Ribot RFH, Bhatta TR, Berg ML, Alexandersen S, Bennett ATD. 2024. Beak and feather disease virus (BFDV) persists in tissues of asymptomatic wild crimson rosellas. Commun. Biol. https://doi.org/10.1038/s42003-024-06652-1.
25. Thia JA, Endersby-Harshman N, Collier S, Nassar MS, Tawfik EA, Alfageeh MB, Elfekih S, Hoffmann AA. 2024. Mitochondrial DNA

variation in Aedes aegypti mosquitoes from Jeddah, Saudi Arabia. J. Med. Entomol. https://doi.org/10.1093/jme/tjad131.
26. Bunting MD, Godahewa GI, McPherson NO, Robertson LJ, Gierus L, Piltz SG, Edwards O, Tizard M, Thomas PQ. 2024. Investigating the potential of X chromosome shredding for mouse genetic biocontrol. Nat. Res. https://doi.org/10.1038/s41598-024-63706-4.
27. Morris J, Mann R, Perera AS, Frampton R, Malipatil M, Norng S, Yen A, Smith G, Rodoni B. 2024. Candidatus Liberibacter brunswickensis colonization has no effect on the early development of Solanum melongena. Nat. Res. https://doi.org/10.1038/s41598-024-66352-y.
28. Kardena IM, Adi AAAM, Astawa INM, Oka IBM, Sahibzada S, Bruce M, O'Dea M. 2024. Seroconversion, genotyping, and potential mosquito vector identification of Japanese encephalitis virus in pig sentinel settings in Bali, Indonesia. Vet. World. https://doi.org/10.14202/vetworld.2024.89-98.
29. McNabb L, Durr PA, Lunt R, Barr J, Adams TE, Pearce L, Poon LLM, Perera RAM, Demissie GF, Bowden TR. 2024. Development and preliminary validation of a MERS-CoV ELISA for serological testing of camels and alpacas. J. Virol. Methods. https://doi.org/10.1016/j.jviromet.2024.114923.
30. Carey KJ, Smith I, Barr J, Caruso S, Au GG, Hartley CA, Bailey KE, Perriam W, Broder CC, Gilkerson JR. 2024. Foals of mares vaccinated for Hendra virus have a suboptimal response to HeV vaccination. Vet. Microbiol. https://doi.org/10.1016/j.vetmic.2024.110167.
31. Webb RJ, Roberts AA, Rush C, Skerratt LF, Tizard ML, Berger L. 2024. Small interfering RNA-mediated messenger RNA knockdown in the amphibian pathogen Batrachochytrium dendrobatidis. J. Basic Microbiol. https://doi.org/10.1002/jobm.202400081.
32. Luczo JM, Edwards SJ, Ardipradja K, Suen WW, Au GG, Marsh GA, Godde N, Rootes CL, Bingham J, Sundaramoorthy V. 2024. SARS-CoV and SARS-CoV-2 display limited neuronal infection and lack the ability to transmit within synaptically connected axons in stem cell-derived human neurons. J. Neurovirol. https://doi.org/10.1007/s13365-023-01187-3.
33. Valenza LD, Bishop T, Cramieri S, Wang J, Ploeg RJ. 2024. Pteropox infection in a juvenile grey-headed flying fox (Pteropus poliocephalus). Aust. Vet. J. https://doi.org/10.1111/avj.13316.
34. Javed N, López-Denman AJ, Paradkar PN, Bhatti A. 2024. FlightTrackAI: a robust convolutional neural network-based tool for tracking the flight behaviour of Aedes aegypti mosquitoes. R. Soc. Open Sci. https://doi.org/10.1098/rsos.240923.
35. Giannotta MM, Smith I, Michie M, Blasdell K, Dunn M, Nicholls J, Heath ACG, Rodriguez J, Gofton AW. 2024. Molecular characterisation of Australasian Ixodiphagus reveals unexpected diversity and a potential novel host switch. Int. J. Parasitol. https://doi.org/10.1016/j.ijpara.2024.09.001.
36. Javed N, López-Denman AJ, Paradkar PN, Bhatti A. 2024. LarvaeCountAI: a robust convolutional neural network-based tool for accurately counting the larvae of Culex annulirostris mosquitoes. Acta Trop. https://doi.org/10.1016/j.actatropica.2024.107468.
37. Pawęska JT, Storm N, Jansen van Vuren P, Markotter W, Kemp A. 2024. Attempted transmission of Marburg virus by bat-associated fleas (Thaumapsylla breviceps breviceps) to the Egyptian rousette bat (Rousettus aegyptiacus). Viruses. https://doi.org/10.3390/v16081197.
38. Sett S, Kress WJ, Halewood M, Nicholson D, Nuñez-Vega G, Faggionato D, Rouard M, Jaspars M, da Silva M, Prat C, et al. 2024. Harmonize rules for digital sequence information benefit-sharing across UN frameworks. Nat. Commun. https://doi.org/10.1038/s41467-024-52994-z.
39. Jansen van Vuren P, Parry RH, Pawęska JT. 2024. Detection of Dengue Virus 1 and mammalian orthoreovirus 3, with novel reassortments, in a South African family returning from Thailand, 2017. Viruses. https://doi.org/10.3390/v16081274.
40. Ahmed KA, Yeap HL, Coppin CW, Liu JW, Pandey G, Taylor PW, Lee SF, Oakeshott JG. 2024. Seminal fluid proteins in the Queensland fruit fly: tissue origins, effects of mating and comparative genomics. Insect Biochem. Mol. Biol. https://doi.org/10.1016/j.ibmb.2024.104247.
41. Lim C, Dandrieux JRS, Ploeg R, Nowell CJ, Firestone SM, Mansfield CS. 2024. Evaluation of Ki-67, goblet cell, and MUC2 mucin RNA expression in dogs with lymphoplasmacytic and granulomatous colitis. Vet. Immunol. Immunopathol. https://doi.org/10.1016/j.vetimm.2024.110740.

b) International conferences:
6
1. Mohr, Peter. Surveillance of imported prawns for DIV1, CMNV and EHP. Conference Presentation.

2. Vella, Jayne. Chicken housing & enrichment at WAHF. Conference Poster.

3. Manohar, Meg. Commensally delivered recombinant immunity against zoonotic bacteria in chickens. Conference Presentation.

4. Ahmed, Asif. Chromosome level genome of Bluetongue virus vector, Culicoides brevitarsis. Conference Presentation.

5. Talbot, Aimee. Enhancing thermal stability of live virus vaccine using metal-organic frameworks. Conference Presentation.

6. Moody, Nick. WOAH ad Hoc Group on tilapia lake virus. Conference Presentation.

c) National conferences:
23
1. Munyanduki, Henry. Relative contribution to transmission of lumpy skin disease virus (LSDV) by different hematophagous insects. Conference Presentation.

2. Nazareth, Lynn. Using advanced microscopy to elucidate influenza infection through the olfactory system. Conference Presentation.

3. Davis, Kayla. The symbiotic relationship between vets and techs at ACDP. Conference Presentation.

4. Le Lay, Callum. RNA virus metagenomics. Conference Presentation.

5. Le Lay, Callum. It's an RNA virus world. Conference Presentation.

6. Thomas, Jesse. Whole genome sequencing of Australian IBDV to inform development of diagnostic qPCR tests. Conference Presentation.

7. McMahon, Amy. Virus neutralisation tests and their cytopathic effects. Conference Presentation.

8. Dollak, Tash. Welfare wins! Prioritising a culture of care. Conference Presentation.

9. Wang, Jianning. Detection of a Hendra virus genotype 1 variant in a flying fox, Australia. Conference Presentation.

10. Stanley, Meg. Working at high biocontainment – A beginner's perspective. Conference Presentation.

11. Allen, Teegan. Buruli ulcer: Safety in preparedness. Conference Presentation.

12. Luczo, Jasmina. Antigenic characterisation of H7 highly pathogenic avian influenza virus under immunological pressure. Conference Presentation.

13. Luczo, Jasmina. Development of ex vivo models of nasal epithelia to elucidate the mechanism of Bordetella bronchiseptica-mediated blockade of influenza virus replication in the nasal cavity. Conference Presentation.

14. Nazareth, Lynn. Development of ex vivo models of nasal epithelia to elucidate the mechanism of Bordetella bronchiseptica-mediated blockade of influenza virus replication in the nasal cavity. Conference Presentation.

15. Grimsey, Jo. H7 HPAI outbreak at bench level. Conference Presentation.

16. Blanch Lazaro, Berta. Bringing ex-vivo models to wildlife health research. Conference Presentation.

17. Le Lay, Callum. 12th Australasian Virology Society Meeting 2024. Conference Presentation.

18. Morgan, Brodie. A Quail-ity idea. Conference Presentation.

19. Luczo, Jasmina. Ecology and diversity of avian paramyxovirus 1, the causative agent of Newcastle disease, in Australian wild birds. Conference Presentation.

20. Alexander, Marina. Design of a longitudinal trial for Johne's disease test validation in dairy calves and heifers. Conference Presentation.

21. Azuar, Armira. Next-gen mRNA technologies for animal vaccines. Conference Presentation.

22. Farr, Ryan. microRNA biomarkers for improved detection of infectious diseases. Conference Presentation.

23. Islam, Zahir. Nanopore direct RNA sequencing enables the detection of post-transcriptional modifications of mRNA in host cells linked to viral infection. Conference Presentation.

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

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
Significant further development of training materials and programs particularly in relation to Biosafety and Biorisk training.

12. Additional comments regarding your report:
NA