

OIE Collaborating Centres Reports Activities

Activities in 2021

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Title of collaborating centre:	Diagnosis of Animal Diseases in the Americas
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Name of writer:	Dr. Karl Hochstein Associate Director, National Veterinary Services Laboratories USDA, APHIS, VS, DB

ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

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

Disease control	
Title of activity	Scope
Aujesky's Disease [Pseudorabies (PRV)] Reference Materials produced and/or provided	Diagnostic materials produced and/or provided to OIE member countries included: positive control serum for virus neutralization and virus neutralization test panels.
Anthrax Reference Materials produced and provided	Diagnostic materials produced and provided to OIE member countries included: gamma phage reagent for anthrax for use in the gamma phage lysis diagnostic test.
Leptospirosis Reference Materials produced and provided	Diagnostic materials provided to OIE member countries included: reference cultures and positive and negative control sera for the MAT, multivalent fluorescent antibody conjugate, and leptospira medium for MAT and FA testing.
Bluetongue virus (BTV) Reference Materials produced and provided	Diagnostic materials produced and provided supplied to OIE member countries included: BT antisera used for ELISA/AGID diagnostic test; BT strong positive antisera used in both ELISA and AGID diagnostic tests; and BT proficiency panels for ELISA/AGID tests.
Contagious Equine Metritis (CEM) Reference Materials produced	Diagnostic materials produced for OIE member countries included: Modified Timoney-Shin agar, Eugon agar with 10% chocolate horse blood and culture control isolates for use in identification protocols; and CEM high positive control sera for use in CF testing.
Epizootiological data collection	<p>Collected epidemiologic data on horses and samples tested for import purposes and number of positive identifications within the country; disseminated epidemiologic data on import horses and sample testing numbers.</p> <p>Collected epizootiological data relevant to international disease control for BTV, EEE, EIA, and VSV. Disseminated epizootiological data that had been processed and analysed for AI, NDV, and VSV.</p>
Highly Pathogenic Avian Influenza and Low Pathogenic Avian Influenza (Poultry) Reference Materials produced and provided	Diagnostic materials for avian influenza produced and/or supplied to OIE member countries included: Reference antigen and antisera for HI (H1-H16 tests), AGID reagents, real-time PCR positive amplification controls for matrix, H5, H7, real time PCR positive extraction control, real-time PCR negative extraction control, and real time PCR and AGID proficiency test panels.

Newcastle Disease Reference Materials produced and provided	Diagnostic materials for Newcastle Disease produced and/or supplied to OIE member countries included: real-time PCR positive amplification and extraction controls as well as positive antigen and antisera for HI tests and proficiency test panels.
Equine Infectious Anemia (EIA) Reference Materials produced and provided	Diagnostic materials produced and/or supplied to OIE member countries included: weak positive and negative antiserum for AGID, ELISA and cELISA tests as well as serology proficiency test panels for AGID, ELISA and cELISA.
Swine Influenza virus (SIV) Reference Materials provided	Diagnostic materials provided to OIE member countries included: antigen for HI tests, PCR positive control, SIV antiserum and isolates from SIV surveillance; and proficiency panels for PCR tests.
Vesicular Stomatitis (VSV) Reference Materials produced and provided	Diagnostic materials produced and/or provided to OIE member countries included: antiserum for multiple diagnostic tests, VS viruses for VN testing, and proficiency panels for the VN tests.
Training, capacity building	
Title of activity	Scope
Aujesky's Disease [Pseudorabies (PRV)] inter-laboratory test comparisons	Participating Laboratories: 38
Aujesky's Disease [Pseudorabies (PRV)] interim operator approvals	Participating Laboratories: 7
Influenza A inter-laboratory test comparisons	Participating Laboratories: 105
Bluetongue virus inter-laboratory test comparisons	Participating Laboratories: 46
Bluetongue virus interim operator approvals	Participating Laboratories: 4
Contagious Equine Metritis proficiency testing by National Veterinary Services Laboratories / Animal and Plant Health Agency (APHA) quality assurance unit (Vetqas)	Participating Laboratories: Unknown
National EIA Laboratory Approval program and international requests for proficiency panels for the Americas	Participating Laboratories: 395
Vesicular stomatitis inter-laboratory test comparisons	Participating Laboratories: 9
Newcastle disease inter-laboratory test comparisons	Participating Laboratories: 58
Swine Influenza virus inter-laboratory test comparisons	Participating Laboratories: 59
Organized a Rinderpest PPR Real time RT-PCR proficiency test for newly trained agency staff.	Participating Laboratories: 1 Laboratory Participants: 5
Participated in proficiency testing for FMD from Pirbright and PANAFTOSA	Participating Laboratories: Unknown NVSL Laboratory Participants: 1
Diagnosis, biotechnology and laboratory	
Title of activity	Scope

Diagnostic activities for Aujeszky's Disease [Pseudorabies (PRV)]	Indirect diagnostic test methods: gB ELISA, gI ELISA, VN. Indirect diagnostic tests performed: 516 Nationally, 192 Internationally. Direct diagnostic test methods: VI. Direct diagnostic tests performed: 11 Nationally, 5 Internationally.
Diagnostic activities for Anthrax	Indirect diagnostic test methods: None. Direct diagnostic test method: Bacteriological culture. Direct diagnostic tests performed: 8 Nationally, 4 Internationally.
Diagnostic activities for Leptospirosis	Indirect diagnostic test methods: None. Direct diagnostic test method: microscopic agglutination test, FA, isolation and identification, PCR, and whole genome sequencing. Direct diagnostic tests performed: 1919 Nationally, 42 Internationally.
Diagnostic activities for Avian Influenza	Indirect diagnostic test methods: AGID, HI antibody subtype identification (H1-16), and Neuraminidase-inhibition antibody subtype identification (N1-9) Indirect diagnostic tests performed: 16,879 Nationally, 0 Internationally. Direct diagnostic test methods: Real-time PCR tests (IAV, subtyping), virus isolation, molecular pathotype (Sanger), in vivo pathotype, and whole genome sequencing Direct diagnostic tests performed: 11,857 Nationally, 15 Internationally
Diagnostic activities for Bluetongue virus (BTV)	Indirect diagnostic test methods: AGID, ELISA/cELISA, and Virus Neutralization Indirect diagnostic tests performed: 864 Nationally, 132 Internationally Direct diagnostic test methods: Virus Isolation, rRT-PCR, PCR, and Serotyping (Sanger) Direct diagnostic tests performed: 2057 Nationally, 2 Internationally.
Diagnostic activities for Contagious Equine Metritis (CEM)	Indirect diagnostic test method: CF. Indirect diagnostic tests performed: 1351 Nationally, 218 Internationally. Direct diagnostic tests performed: identification of the agent, Real-time PCR, genomic sequencing. Direct diagnostic tests performed: 1099 Nationally, 25 Internationally.
Diagnostic activities for Eastern equine encephalomyelitis (EEE), Venezuelan equine encephalomyelitis (VEE), and Western equine encephalomyelitis (WEE)	Indirect diagnostic test methods: CF, HI, IgM ELISA, plaque reduction neutralization. Indirect diagnostic tests performed: 2677 Nationally, 134 Internationally. Direct diagnostic test methods: PCR. Direct diagnostic tests performed: 18 Nationally, 0 Internationally.

Diagnostic activities for Equine Infectious Anemia (EIA)	Indirect diagnostic test methods: AGID, ELISA/cELISA, and Immunoblot. Indirect diagnostic tests performed: 5291 Nationally, 21,560 Internationally. Direct diagnostic test methods: None.
Diagnostic activities for Newcastle Disease	Indirect diagnostic test methods: HI antibody identification (APMV-1). Indirect diagnostic tests performed: 229 Nationally, 0 Internationally. Direct diagnostic test methods: Real-time PCR tests (APMV-1, vNDV), APMV-1 (positive/total samples), molecular pathotype (Sanger), in vivo pathotype (ICP), and whole genome sequencing (count by isolate) Direct diagnostic tests performed: 6271 Nationally, 3 Internationally.
Diagnostic activities for Swine Influenza virus (SIV)	Indirect diagnostic test methods: HI. Indirect diagnostic tests performed: 0 Direct diagnostic test methods: PCR, Virus Isolation, Sequencing, and Repository Propagation. Direct diagnostic tests performed: 910 Nationally, 0 Internationally.
Diagnostic activities for Vesicular Stomatitis (VSV)	Indirect diagnostic test methods: cELISA (IND-1 & NJ), CF (IND-1 & NJ), and VN (IND-1 & NJ). Indirect diagnostic tests performed: 4100 Nationally, 176 Internationally. Direct diagnostic test methods: Virus Isolation and PCR. Direct diagnostic tests performed: 585 Nationally, 0 Internationally.
Diagnostic activities for West Nile Virus (WNV)	Indirect diagnostic test methods: IgM ELISA, plaque reduction neutralization, and virus neutralization. Indirect diagnostic tests performed: 1340 Nationally, 78 Internationally. Direct diagnostic test methods: RT-PCR. Direct diagnostic tests performed: 14 Nationally, 0 Internationally.
Diagnostic activities for Rinderpest	Direct diagnostic test methods: rRT-PCR. Direct diagnostic tests performed: 10 Nationally, 2 Internationally.
Diagnostic activities for Foot and Mouth Disease	Indirect diagnostic test methods: ELISA (NSP, 3ABC), VIAA (AGID), Ag ELISA (VI), and virus neutralization. Indirect diagnostic tests performed: 559 Nationally, 0 Internationally. Direct diagnostic test methods: IBRS-2 cell culture, lamb kidney cell culture, real-time RT-PCR, and genomic sequencing. Direct diagnostic tests performed: 1738 Nationally, 0 Internationally.

ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

Proposal title	Scope/Content	Applicable area
Inactivation method of PPRV for viral RNA extraction	Examined and validated PPRV inactivation after treated by different chemical and physical methods	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines

ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations

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

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Leptospirosis Reference Center - The Netherlands	The Netherlands	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Serotyping of leptospire with monoclonal antibodies.
USDA ARS National Poultry Center Southeast Poultry Research Laboratory	United States	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Studies in Poultry Transmission, Airborne Spread and Mitigation Tools for Avian Influenza and Newcastle Disease in the USA
OIE Reference Laboratories for Animal Influenza	OFFLU	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	Genetic characterizations of zoonotic influenza viruses and data contributions for the twice-yearly World Health Organization Vaccine Composition Consultations.

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

No

ToR: To place expert consultants at the disposal of the OIE.**5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?**

No

ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries**6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?**

Yes

- a) Technical visits: 4
- b) Seminars: 3
- c) Hands-on training courses: 1
- 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	Annual Contagious Equine Metritis training course for laboratory personnel in the United States. All personnel at laboratories in the US that perform CEM culture must attend this training. Training is available for international participants on a by request basis. No international requests were received in 2021.	United States	22
a	Provided instruction on sample collection and media preparation for Avian Influenza testing.	Argentina	
a	Provided PCR troubleshooting for Avian Influenza and Newcastle Disease testing.	Barbados	
a	Provided instruction on testing and characterization for Newcastle Disease testing.	Belize	
a	Provided assistance with instrument set up and PCR troubleshooting for Avian Influenza testing.	Dominican Republic	

b	Presentation on the FAO/OIE Rinderpest Holding Facility (RHF) at the Foreign Animal Disease Diagnostic Laboratory during the December 2021 RHF Network Meeting	Various	
b	Presentation on the FAO/OIE Rinderpest Holding Facility (RHF) at the Foreign Animal Disease Diagnostic Laboratory during the May 2021 RHF Network Meeting	Various	
b	Foot and Mouth Disease Reference Laboratory Network Meeting	Various	

ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

No

ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 26

1. Hemagglutination Assay for Influenza Virus. Killian ML. Methods Mol Biol. 2020;2123:3-10. doi: 10.1007/978-1-0716-0346-8_1.PMID: 32170676

2. Best practices for performance of real-time PCR assays in veterinary diagnostic laboratories. Toohey-Kurth KL, Mulrooney DM, Hinkley S, Lea Killian M, Pedersen JC, Bounpheng MA, Pogranichniy R, Bolin S, Maes R, Tallmadge RL, Goodman LB, Crossley BM. J Vet Diagn Invest. 2020 Nov;32(6):815-825. doi: 10.1177/1040638720962076. Epub 2020 Sep 30.PMID: 32996402

3. Next-generation sequencing capacity and capabilities within the National Animal Health Laboratory Network. Harris B, Hicks J, Prarat M, Sanchez S, Crossley B. J Vet Diagn Invest. 2021 Mar;33(2):248-252. doi: 10.1177/1040638720937015. Epub 2020 Jul 1.PMID: 32608345

4. Review of Vesicular Stomatitis in the United States with Focus on 2019 and 2020 Outbreaks. Pelzel-McCluskey A, Christensen B, Humphreys J, Bertram M, Keener R, Ewing R, Cohnstaedt LW, Tell R, Peters DPC, Rodriguez L. Pathogens. 2021 Aug 6;10(8):993. doi: 10.3390/pathogens10080993.PMID: 34451457

5. Detection of Influenza A Antibodies in Avian Samples by ELISA. Spackman E, Killian ML. Methods Mol Biol. 2020;2123:177-193. doi: 10.1007/978-1-0716-0346-8_14.PMID: 32170689

6. Avian Influenza Virus Sample Types, Collection, and Handling. Killian ML. Methods Mol Biol. 2020;2123:113-121. doi: 10.1007/978-1-0716-0346-8_9.PMID: 32170684

7. Clinical Indicators of Moribundity in Swine Experimentally Inoculated with African Swine Fever Virus. Hershey BJ, Hagart JL, Havas KA. *J Am Assoc Lab Anim Sci.* 2021 Jan 1;60(1):96-102. doi: 10.30802/AALAS-JAALAS-20-000032. Epub 2020 Nov 16. PMID: 33198851
8. Estimating epidemiological parameters using diagnostic testing data from low pathogenicity avian influenza infected turkey houses. Bonney PJ, Malladi S, Ssematimba A, Spackman E, Torchetti MK, Culhane M, Cardona CJ. *Sci Rep.* 2021 Jan 15;11(1):1602. doi: 10.1038/s41598-021-81254-z. PMID: 33452377
9. Coding-Complete Genome Sequence of Avian orthoavulavirus 16, Isolated from Emperor Goose (*Anser canagicus*) Feces, Alaska, USA. Reeves AB, Killian ML, Tanner ME, Lagassé BJ, Ramey AM, Stalknecht DE, Poulson RL. *Microbiol Resour Announc.* 2021 Jan 7;10(1):e01275-20. doi: 10.1128/MRA.01275-20. PMID: 33414353
10. Avian Influenza Virus Isolation, Propagation, and Titration in Embryonated Chicken Eggs. Spackman E, Killian ML. *Methods Mol Biol.* 2020;2123:149-164. doi: 10.1007/978-1-0716-0346-8_12. PMID: 32170687
11. Agar Gel Immunodiffusion Assay to Detect Antibodies to Type A Influenza Virus. Jenson TA. *Methods Mol Biol.* 2020;2123:165-175. doi: 10.1007/978-1-0716-0346-8_13. PMID: 32170688
12. H7N6 low pathogenic avian influenza outbreak in commercial turkey farms in Chile caused by a native South American Lineage. Mathieu C, Gonzalez A, Garcia A, Johow M, Badia C, Jara C, Nuñez P, Neira V, Montiel NA, Killian ML, Brito BP. *Transbound Emerg Dis.* 2021 Jan;68(1):2-12. doi: 10.1111/tbed.13166. Epub 2019 Apr 4. PMID: 30945819
13. Validation of a binary ethylenimine (BEI) inactivation procedure for biosafety treatment of foot-and-mouth disease viruses (FMDV), vesicular stomatitis viruses (VSV), and swine vesicular disease virus (SVDV). Wu P, Rodríguez YY, Hershey BJ, Tadassa Y, Dodd KA, Jia W. *Vet Microbiol.* 2021 Jan;252:108928. doi: 10.1016/j.vetmic.2020.108928. Epub 2020 Nov 16. PMID: 33248402
14. H7N1 Low Pathogenicity Avian Influenza Viruses in Poultry in the United States During 2018. Lee DH, Killian ML, Deliberto TJ, Wan XF, Lei L, Swayne DE, Torchetti MK. *Avian Dis.* 2021 Mar;65(1):59-62. doi: 10.1637/aviandiseases-D-20-00088. PMID: 34339123
15. Genomic Evidence for Sequestration of Influenza A Virus Lineages in Sea Duck Host Species. McBride DS, Lauterbach SE, Li YT, Smith GJD, Killian ML, Nolting JM, Su YCF, Bowman AS. *Viruses.* 2021 Jan 24;13(2):172. doi: 10.3390/v13020172. PMID: 33498851
16. Nanopore sequencing as a rapid tool for identification and pathotyping of avian influenza A viruses. Crossley BM, Rejmanek D, Baroch J, Stanton JB, Young KT, Killian ML, Torchetti MK, Hietala SK. *J Vet Diagn Invest.* 2021 Mar;33(2):253-260. doi: 10.1177/1040638720984114. Epub 2021 Feb 6. PMID: 33550926
17. Phylogeographic analysis of foot-and-mouth disease virus serotype O dispersal and associated drivers in East Africa. Munsey A, Mwiine FN, Ochwo S, Velazquez-Salinas L, Ahmed Z, Maree F, Rodriguez LL, Rieder E, Perez A, Dellicour S, VanderWaal K. *Mol Ecol.* 2021 Aug;30(15):3815-3825. doi: 10.1111/mec.15991. Epub 2021 Jun 10. PMID: 34008868
18. Exposure and Carriage of Pathogenic *Leptospira* in Livestock in St. Croix, U.S. Virgin Islands. Cranford HM, Taylor M, Browne AS, Alt DP, Anderson T, Hamond C, Hornsby RL, LeCount K, Schlater L, Stuber T, De Wilde L, Burke-France VJ, Ellis EM, Nally JE, Bradford B. *Trop Med Infect Dis.* 2021 May 24;6(2):85. doi: 10.3390/tropicalmed6020085. PMID: 34073665
19. The Pathobiology of H7N3 Low and High Pathogenicity Avian Influenza Viruses from the United States Outbreak in 2020 Differs between Turkeys and Chickens. Criado MF, Leyson CM, Youk S, DeBlois S, Olivier T, Killian ML, Torchetti ML, Parris DJ, Spackman E, Kapczynski DR, Suarez DL, Swayne DE, Pantin-Jackwood MJ. *Viruses.* 2021 Sep 16;13(9):1851. doi: 10.3390/v13091851. PMID: 34578433
20. Virus Adaptation Following Experimental Infection of Chickens with a Domestic Duck Low Pathogenic Avian Influenza Isolate from the 2017 USA H7N9 Outbreak Identifies Polymorphic Mutations in Multiple Gene Segments. Chrzastek K, Segovia K, Torchetti M, Killian ML, Pantin-Jackwood M, Kapczynski DR. *Viruses.* 2021 Jun 18;13(6):1166. doi: 10.3390/v13061166. PMID: 34207098
21. octoFLUshow: an Interactive Tool Describing Spatial and Temporal Trends in the Genetic Diversity of Influenza A Virus in U.S. Swine. Arendsee ZW, Chang J, Hufnagel DE, Markin A, Janas-Martindale A, Vincent AL, Anderson TK.

Microbiol Resour Announc. 2021 Dec 16;10(50):e0108121. doi: 10.1128/MRA.01081-21. Epub 2021 Dec 16.PMID: 34913720

22. Mongooses (*Urva auropunctata*) as reservoir hosts of *Leptospira* species in the United States Virgin Islands, 2019-2020. Cranford HM, Browne AS, LeCount K, Anderson T, Hamond C, Schlater L, Stuber T, Burke-France VJ, Taylor M, Harrison CJ, Matias KY, Medley A, Rossow J, Wiese N, Jankelunas L, de Wilde L, Mehalick M, Blanchard GL, Garcia KR, McKinley AS, Lombard CD, Angeli NF, Horner D, Kelley T, Worthington DJ, Valiulis J, Bradford B, Berentsen A, Salzer JS, Galloway R, Schafer JJ, Bisgard K, Roth J, Ellis BR, Ellis EM, Nally JE. *PLoS Negl Trop Dis*. 2021 Nov 15;15(11):e0009859. doi: 10.1371/journal.pntd.0009859. eCollection 2021 Nov.PMID: 34780473

23. Emergence and molecular characterization of pigeon Paramyxovirus-1 in non-native Eurasian collared doves (*Streptopelia decaocto*) in California, USA. Rogers KH, Mete A, Ip HS, Torchetti MK, Killian ML, Crossley B. *Infect Genet Evol*. 2021 Jul;91:104809. doi: 10.1016/j.meegid.2021.104809. Epub 2021 Mar 13.PMID: 33727141

24. The pathogenicity and transmission of live bird market H2N2 avian influenza viruses in chickens, Pekin ducks, and guinea fowl. Mo J, Youk S, Pantin-Jackwood MJ, Suarez DL, Lee DH, Killian ML, Bergeson NH, Spackman E. *Vet Microbiol*. 2021 Sep;260:109180. doi: 10.1016/j.vetmic.2021.109180. Epub 2021 Jul 7.PMID: 34271303 Free article.

25. Identical Viral Genetic Sequence Found in Black Flies (*Simulium bivittatum*) and the Equine Index Case of the 2006 U.S. Vesicular Stomatitis Outbreak. Drolet BS, Reeves WK, Bennett KE, Pauszek SJ, Bertram MR, Rodriguez LL. *Pathogens*. 2021 Jul 23;10(8):929. doi: 10.3390/pathogens10080929.PMID: 34451394

26. Investigation of the 2018 thick-billed murre (*Uria lomvia*) die-off on St. Lawrence Island rules out food shortage as the cause. Will A, Thiebot JB, Ip HS, Shooqgwruk P, Annogiyuk M, Takahashi A, Shearn-Bochsler V, Killian ML, Torchetti M, Kitaysky A. *Deep Sea Res 2 Top Stud Oceanogr*. 2020 Dec;181-182:104879. doi: 10.1016/j.dsr2.2020.104879. Epub 2020 Sep 24.PMID: 33716412

b) International conferences: 3

1. May 2021: Rinderpest Holding Facility Network Meeting; Speaker/presenter on FAO/OIE Rinderpest Holding Facility at the NVSL's Foreign Animal Disease Diagnostic Laboratory.
2. December 2021: Rinderpest Holding Facility Network Meeting; Speaker/presenter on FAO/OIE Rinderpest Holding Facility at the NVSL's Foreign Animal Disease Diagnostic Laboratory.
3. November 2021: OIE/FAO FMD Diagnostics Reference Laboratory Network Meeting.

c) National conferences: 3

1. February 2021: Live Bird Market Working Group Meeting
2. September 2021: National Poultry Improvement Plan (NPIP) Workshop
3. October 2021: United States Animal Health Association and American Association of Veterinary Laboratory Diagnosticians Annual Meeting

d) Other

(Provide website address or link to appropriate information): 10

1. USDA APHIS Avian Influenza:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/ai>
2. USDA APHIS Newcastle Disease:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/virulent-newcastle/vnd>
3. USDA APHIS Bluetongue:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/bluetongue-disease-info>
4. USDA APHIS Foot and Mouth Disease:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/fmd>
5. USDA APHIS Contagious Equine Metritis:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/cem/contagious-equine-metritis>
6. USDA APHIS Swine Influenza Virus:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information/influenza-a-virus>
7. USDA Eastern, Western, and Venezuelan Equine Encephalitis:
<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/eee-wee-vee/equine-encephalitis>
6. USDA Equine Infectious Anemia:

7.

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/eia/equine-infectious-anemia>

8. USDA APHIS Pseudorabies Virus:

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information/swine-pseudorabies/swine-pseudorabies>

9. USDA Vesicular Stomatitis:

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/vesicular-stomatitis-info>

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/vsv/vesicular-stomatitis>

10. USDA West Nile Virus:

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/wnv/west-nile-virus>

9. Additional comments regarding your report:

A range of planned activities had to be cancelled, delayed, or converted to virtual methods due to the continued COVID-19 global pandemic. We remain hopeful that 2022 will afford us the opportunity to make up for some of these cancellations and delays.