

Lifang Yan

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Education

- Postdoctoral Research Associate** May 2013
Poultry Research and Diagnostic Lab, College of Veterinary Medicine, Mississippi State University, Mississippi State, MS
- Ph.D. in Veterinary Medical Science** May 2012
College of Veterinary Medicine, Mississippi State University, Mississippi State, MS
- M.S. in Animal Nutrition** July 2006
College of Animal Science and Technology, China Agricultural University, Beijing, China
- B.S. in Animal Science** July 2004
College of Animal Science and Technology, Shanxi Agricultural University, Shanxi, China

Professional Experience

Assistant Clinical Professor Oct 2014 – Present
Mississippi Veterinary Research & Diagnostic Laboratory, Mississippi State University, Pearl, MS

- Section leader of Molecular Diagnostic
- Diagnostic:
 - In charge of daily operation of molecular diagnostic including poultry and mammalian, and supervise two technicians
 - Set up and validate new molecular procedures based on the request of veterinary clients and optimize the current procedures to improve the sensitivity and specificity
 - Prepare and review SOPs, and train personnel on new tests
 - Maintain proficiency status for AI, APMV-1, SIV, CSF, FMD, Johne's
 - Testing SARS-CoV2 from animals
 - MVRDL is a CLIA certified lab, and we participate in the testing of human SARS-CoV2
- Whole genome sequencing:
 - Application of whole genome sequencing for identification of bacterial and viral pathogens
 - APHIS-VS NAHLN Pilot project Year 3 and Year 4
 - Comparison of Oxford Nanopore Sequencing with Conventional PCR Sequencing in Avian Infectious Bronchitis Virus (IBV) and Avian Reovirus
 - United front to develop harmonized next generation sequencing (NGS) training and procedures to increase the capabilities and capacity of NAHLN laboratories in response to antimicrobial resistance (AMR).
 - Development of a harmonized method for sequencing *Listeria monocytogenes* on iSeq
 - Evaluation of the iSeq Platform for *E. coli* Pathotyping
- Test Comparison:
 - Perform inter-laboratory comparison with Salisbury Animal Health Diagnostic Lab, MD on IBV and ILT
 - Participated in inter-laboratory comparison with other 19 diagnostic labs on detection of *tritrichomonas* using real time PCR test (2016)
 - Participated the Inter-laboratory comparison exercise (ICE) and ICE2 to identify SARS-CoV2 caused by coronavirus disease 2019 (COVID-19) in 2020

and 2021, respectively.

- Working on FDA-Vet-LIRN blinded method test on *Campylobacter jejuni* PCR with Dr. Sara D, Lawhon, Sep 2021.
- Validation Service for commercial companies:
 - Participate in validation of MGMS duplex PCR test kit for Idexx in 2015
 - Participate in validation of MGMS duplex PCR test kit for Thermofisher Scientific in 2016
- Teaching and Training:
 - Teach seven lectures in course Agents of Infectious Disease (CVM5903) for 2nd year DVM students
 - Train new personnel, visitor scholars Ana Eugenia Marandino Peregalli and Gonzalo Tomas from Uruguay and Gustavo Perdoncini from Brazil
 - Participate the tours of summer research and 4H students

Teaching and Training

- Teach seven lectures in course Agents of Infectious Disease (CVM5903) for 2nd year DVM students
- Train new personnel, visitor scholars like Ana Eugenia Marandino Peregalli and Gonzalo Tomas from Uruguay and Gustavo Perdoncini from Brazil
- Participate the tours of summer research and 4H students

Clinical Instructor

Aug 2013 - Sep 2014

Mississippi Veterinary Research & Diagnostic lab, Mississippi State University

- Prepare, review, and update SOPs
- Maintain proficiency status of molecular tests
- Set up and validate new molecular procedure, and optimize current procedures
- Participate in inter-laboratory comparison with other 20 labs on detection of Equine Herpes Virus 1 using real time PCR and conventional PCR (2013)
- Perform tests on molecular biology, serology, and poultry virology
- Train new personnel in molecular diagnostic section
- Evaluation of the eye drop application of an infectious bronchitis virus vaccine
- Identify the variation of *Gallibacterium* sp. from local isolates within the past few years
- Training short time visit scholar from Brazil (Gustavo Perdoncini, March 2014 on *Pasteurella multocida* molecular characterization project)

Postdoctoral Research Associate

Oct 2012 - May 2013

Mississippi Veterinary Research & Diagnostic lab, Mississippi State University

- Set up and validate new molecular procedure and optimize current procedures
- Perform tests in molecular, poultry virology and serology sections
- Perform virus isolation using chicken embryonated eggs (IV, NDV, BDV) and chicken embryo liver and kidney cells (reovirus, adenovirus, ILT etc), then confirm using PCR and sequencing

Student Worker

Dec 2011 - Oct 2012

Poultry Veterinary Research & Diagnostic Lab, Mississippi State University, Pearl, MS

- Perform virus isolation using chicken embryonated eggs (IV, NDV, BDV) and chicken embryo liver and kidney cells (reovirus, adenovirus, ILT etc), then confirm using PCR and sequencing
- Work on ELISA, hemagglutination assay, neuraminidase assay in poultry serology section
- Quantify antibody level of vaccinated birds using hemagglutination inhibition
- Titrate avian vaccines and compare vaccine stabilizers and dilution times on chicken embryonated eggs

- Train vet and pre-vet students in poultry virology lab

Graduate Associate

Jan 2007 - Dec 2011

Mississippi Veterinary Research & Diagnostic Lab, Mississippi State University

- Develop a testing scheme by combining real time RT-PCR and antigen capture ELISA for the detection of animals persistently infected with BVDV
- Isolation and characterization of BVDV2 clinical isolates associated with severe hemorrhagic diseases.
- Comparing the phylogenetic analysis of BVDV by using different regions

Professional Service

- National Animal Health Laboratory Network
 - 2020 – Present: Core Member of Methods Technical Working Group, National Animal Health Laboratory Network
 - 2019-Present: Committee Member of Second Vendor Validation, Subgroup of NAHLN Methods Technical Working Group
 - 2019-Present: Committee Member of Next Generation Sequencing Subgroup of NALHN Methods Technical Working Group
 - 2016 - Present: General Member of Methods Technical Working Group (MTWG), National Animal Health Laboratory Network
 - 5/04/ 2015 – 05/25/2015: Volunteered to be deployed Veterinary Diagnostic Laboratory of University Minnesota to perform avian influenza surveillance tests on avian influenza outbreak by National Animal Health Laboratory Network.
- American Association of Veterinary Laboratory Diagnosticians (AAVLD)
 - 2017-Present: Member of Virology Committee
 - 2014-Present: Member of Molecular Diagnostic Committee
 - 2008, 2013-Present: Member of American Association of Veterinary Laboratory Diagnostician
- Mississippi State University
 - 2017- Present: Faculty Senate – Representative of Mississippi Veterinary Research & Diagnostic Laboratory within Division of Agriculture, Forestry, and Veterinary Medicine
- 2010: Member of Conference of Research Workers in Animal Diseases (CRAWD)

Awards

- Rosalind and Rodney Foil Teamwork Award for Covid-19 Testing Laboratory, DAFVM, MSU, 2021
- “Recognition of achievement” award in College Day of CVM, MSU, Starkville, MS 10/2009
- Yan L, Zhang S, Pace L, Wilson F, Zhang M. Application of a Real-Time Reverse Transcriptase Polymerase Chain Reaction and an Antigen Capture Enzyme-Linked Immunosorbent Assay to detect animals infected with Bovine Viral Diarrhea Virus. Won the Best poster award at Annual American Association of Veterinary Laboratory Diagnosticians Meeting in San Diego, CA 10/2009

Certificate and Training

- No-nonsense bacterial NGS – How any laboratory can access this technology. AAVLD annual meeting, Oct 7th, 2020
- Bacteriology Mini-Symposium, AST-The Devil’s in the Details. AAVLD annual

- meeting, Oct 25th, 2019
- Getting Started with NGS (Next Generation Sequencing) Workshop, AAVLD Annual Meeting, Providence RI Oct 24th, 2019
- Certificate of Biomek FXp, NXp, b4000; Introduction and Method Programming for Software 4.1, Beckman Coulter Life Science, Beckman Coulter Indianapolis IN Aug 20 - 22, 2019
- Nanopore Introduction Workshop and Data Analysis Review, New York, US April 18 - 19, 2019
- Basic Bioinformatics for Developing and Monitoring PCR Assays, AAVLD Annual Meeting, Kansas City, MO Oct 18, 2018
- Next Generation Sequencing: Application in Veterinary Diagnostic Laboratories, AAVLD Annual Meeting, San Diego, CA Oct 12, 2017
- Next Generation Sequencing Training Workshop (Bionumerics), Applied Maths, Austin, Texas Oct 20th - 21st, 2016
- Certificate of Mycoplasma Diagnostic, National Poultry Improvement Plan 2015
- Certificate of Training (ELISA Fundamental Sample Management), Live via Idexx Laboratories 2013
- Certificate of Computational Biology, The James Worth Bagley College of Engineering, Mississippi State University 2011

Other Activities

- MS Board of Animal Health Alert – provide data support for the outbreak of Canine Distemper Virus in Spring 2017 by monitoring and comparing CDV positive cases for past four and half years. MS Board of Animal Health Alert was posted into facebook.com and Mississippi Veterinary Medical Association. It was mentioned by local news Picayune Item Newspaper on May 30, 2017, and American Veterinary Medical Association news on May 31, 2017.
- Participate Mississippi Science Festival at the Mississippi Children's Museum – explain and show the chicken embryos from Day 1 to Day 21 Oct 1, 2016

Conference Proceedings

- International Conferences
 - Huston CL, Cain JM, Austin FW, Doler T, Banda A, Pace LW, Walters K, Bailey RH, **Yan L**, Smith DR. Factors affecting culture and PCR test performance for *Tritrichomonas foetus*. International Symposium of Veterinary Epidemiology and Economics Meeting, Merida, Yucatan, Mexico Nov 2015.
 - Alvarado I, Banda A, **Yan L**, Chukwulobe O, Wilson F. T153 Protection of Ma5, DE07 and GA08 Live IBV vaccines against a highly pathogenic GA08 field isolates in broilers. International Poultry Scientific Forum Atlanta GO. Jan 2015. (Presentation)
 - **Yan L**. Operation and standards of veterinary diagnostic laboratory. Invited talk at Shanxi Agricultural University, Shanxi, China. Dec 2014. (Invited talk)
 - **Yan L**, Zhang S, Pace LW, Wan H, Zhang M. Application of RRT-PCR and ACE on ear notch and serum samples to monitor bovine viral diarrhoea virus (BVDV)-status in Mississippi herds. Conference of Research Workers in Animal Diseases meeting, Chicago, IL 2009
- National Conferences
 - **Yan L**, Mackey R, Zhang C, Baughman S, Banda A, Pace L. Application and Comparison of iSeq100 and MinION Sequencing in Identifying Avian Infectious Bronchitis Virus. AAVLD annual meeting, Providence, RI Oct 23-

28, 2019

- Mackey R, Zhang C, Zhang M, Pace L, **Yan L**. Whole Genome Sequencing of BVDV-2 Isolates using Illumina iSeq100 and MinION Technologies. AAVLD annual meeting, Providence, RI Oct 23-28, 2019
- Zhang C, Mackey R, Pulido M, Thornton J, Banda A, **Yan L**. Confirmation of *Avibacterium Paragallinarum* by Next Generation Sequencing. AAVLD annual meeting, Providence, RI Oct 23-28, 2019
- **Yan L**, Zhang Y, Wilkes RP, Baughman B, Pace L, Zhang C, Anis E. Outbreak of Canine Distemper Virus in Mississippi. AAVLD annual meeting, San Diego, CA 2017
- Hockaday JK, Banda A, Thornton JK, **Yan L**, Zhang C, Pulido-Landinez M. Comparison of three conventional PCR methods to detect and genotype *Gallibacterium anis* isolates. AAVLD annual meeting. San Diego, CA Oct 12-18, 2017
- Banda A, Baughman S, Hockaday J, **Yan L**, Zhang C, Chukwulobe O, Pulido M, Wilson F. Genetic characterization of Chicken Astroviruses isolated in Southern United States. American Association of Avian Pathologists (AAAP) annual meeting. Indianapolis, IN July 21-25, 2017
- Banda A, Stayer PA, Riley EG, French D, **Yan L**, Zhang C. Virological and molecular characterization of chicken astrovirus associated with reduction in hatchability, poor chick quality and “white chick disease”. AAAP. San Antonio. TX. Aug 5-9, 2016.
- Banda A, Pulido M, Thornton J, **Yan L**, Baughman S. Compatibility studies of respiratory and intestinal vaccines. Poultry Health Summit. Merck Animal Health. Nashville, TN. May 23-25, 2016.
- Banda A, Cookson K, Cummings T, Wilson F, Maschek K, Hill M, **Yan L**. Evaluation of the protection against a GA08-like infectious bronchitis field isolate in broiler chickens vaccinated with combinations of Massachusetts, Holland, Arkansas DPI or GA08 serotypes. AAAP annual meeting, Boston, MA July 2015. (Presentation)
- Banda A, Mackey R, Baughman B, **Yan L**, Zhang Y. Review of virological cases submitted to the poultry research and diagnostic laboratory from 2008 to 2013. American Veterinary Medical Association annual meeting. Denver CO. July 2014. (Presentation)
- Banda A, Mackey R, **Yan L**, Zhang C, Chukwulobe O, Tabor T, and Wilson F. Viruses isolated from Broilers with joint problems. AAAP. Chicago, IL. July 2013. (Presentation)
- Zhang M, **Yan L**, Zhang S. Streptococcus anginosus, what do we know? AAVLD annual Meeting. Minneapolis, MN. Oct 2010.
- **Yan L**, Baughman B, Pace L, Zhang S, Zhang M. Antigenic variations associated with poor performance of direct fluorescent antibody test to detect bovine viral diarrhea virus (BVDV) II antigen in fresh tissues. Conference of Research Workers in Animal Diseases meeting, Chicago, IL. Dec 2010.
- Zhang M, Baughman B, **Yan L**, Pace L, Zhang S. Failed detection of bovine viral diarrhea virus (BVDV) II antigen in fresh tissues by direct FA. AAVLD annual meeting. Minneapolis, MN. Oct 2010.
- **Yan L**, Zhang S, Pace L, Wilson F, Zhang M. Application of a Real-time Reverse transcriptase polymerase chain reaction and an antigen capture enzyme-linked immunosorbent assay to detect animals infected with bovine viral diarrhea virus. AAVLD annual meeting. San Diego, CA 2009.

- In State Conference or Research Activity
 - **Yan L**, Zhang S, Pace L, Wilson F, Zhang M. Application of a Real-time Reverse transcriptase polymerase chain reaction and an antigen capture enzyme-linked immunosorbent assay to detect animals infected with bovine viral diarrhoea virus. Mississippi Veterinary Medical Association. Starkville, MS 2010.
 - **Yan L**, Zhang M. Application of real time RT-PCR and antigen capture ELISA to screen BVDV persistently infected animals in Exposed herds. Research day of CVM. Starkville, MS. 2008

Peer Reviewed Publications

- Alvarez S, Goodman L, Ailam Lim, Brianna S, Ruth HN, Aulik N, **Yan L**, Shen Z, Sanchez S. Optimized conditions for listeria, Salmonella and E. coli whole genome sequencing pathogens using Illumina iSeq platform and pipeline analysis. In Review.
- Mitchell P, Wang L, **Yan L**, Goodman L et al. Multi-laboratory evaluation of the Illumina iSeq platform for whole genome sequencing of Salmonella, Escherichia coli, and Listeria. Microbial Genomics. In Print.
- Anis E, Needle DB, Brian S, **Yan L**, Wilkes RP. Genetic characteristic of Canine Distemper Viruses circulating in wildlife in the United States. J Zoo Wildl Med. 2020, 50(4): 790-797
- **Yan L**, Toohey-Kurth K, Crossley BM, Bai J, Glaser AL, Tallmadge RL, Goodman LB. Inhibition monitoring in veterinary molecular testing. J Vet Diagn Invest. 2020. 32(6): 758-766
- **Yan L**, Pace L, Baughman B, Wilson F, Zhang S, Zhang M. 2016. Failed detection of Bovine Viral Diarrhoea Virus 2 subgenotype a (BVDV-2a) by direct fluorescent antibody test on tissue samples due to reduced reactivity of field isolates to raw anti-BVD antibody. J Vet Diagn Invest. 28(2): 150-157
- **Yan L**, Zhang S, Pace L, Wilson F, Wan H, Zhang MZ. 2011. A combination scheme of real time RT-PCR and antigen captured ELISA screens the BVDV infected animals. J Vet Diagn Invest 23(1): 16-25
- Zhang M, **Yan L**, Zhu G, Holifield M, Todd D, Zhang S. 2013. Isolation and characterization of *Streptococcus troglodytidis* sp. nov., from a foot abscess of a chimpanzee (*Pan troglodytes*). Int J Syst Evol Microbiol. 63(Pt 2): 449-453
- Aldwairi TA, **Yan L**, Weerasinghe KS, Perkins AD. 2012. Comparison of miRNA target prediction algorithm using computational methods. 4th International Conference on Bioinformatics and Computational Biology. Las Vegas, Nevada
- Baughman B, Zhang S, Jin L, Pace LW, Cooley J, **Yan L**, Zhang M. 2011. Diagnosis of deerpox virus infection in a white-tailed deer (*Odocoileus virginianus*) fawn. J Vet Diagn Invest. 23(5): 965-970
- Li S, Zhang MZ, **Yan L**, Lillehoj H, Pace LW, Zhang S. 2009. Induction of CXC chemokine messenger-RNA expression in chicken oviduct epithelial cells by *Salmonella enterica* serovar enteritidis via the type three secretion system-1. Avian Dis 53(3):396-404

External Support

AP21VSD&B000C072

USDA/APHIS National Animal Health Laboratory Network	\$281, 200
Co-PI: Lifang Yan	09/01/2021 – 08/31/2022
NAHLN Level 1: MS 2021 – Infrastructure II	

AP21VSD&B000C033

USDA/APHIS National Animal Health Laboratory Network \$250, 000
 Co-PI: Lifang Yan 06/01/2021 – 05/31/2022
 NAHLN Level 1: MS 2021

AP20VSD&B000C018 Farm Bill \$15, 400

Principal Investigator: Lifang Yan 1/2020 – 02/28/2022
 United front to develop harmonized NGS training and procedures to increase the capabilities and capacity of NAHLN laboratories in response to antimicrobial resistance (AMR)

1U18FD006866-01 Food and Drug Administration

Collaborator: Lifang Yan 09/05/2019 – 08/31/2020
 Development of a harmonized method for sequencing *Listeria monocytogenes* on iSeq

1U18FD006709-01 Food and Drug Administration \$34, 328

Principal Investigator: Lifang Yan 08/05/2019 – 07/31/2020
 Application of gel imaging system to increase efficiency when determine the presence of PCR amplification of bacterial pathogens in Vet-LIRN sample analysis

1U18FD006714-01 Food and Drug Administration

Collaborator: Lifang Yan 08/05/2019 – 07/31/2020
 Evaluation of the iSeq platform for *E. coli* pathotyping

1018447 USDA National Institute of Food and Agriculture (NIFA) \$10, 000

Principal Investigator: Lifang Yan 11/28/2018 – 09/30/2020
 Comparison of Oxford Nanopore Sequencing with Conventional PCR Sequencing in Avian Infectious Bronchitis Virus (IBV) and Avian Reovirus

Pending Grant

Food and Drug Administration \$60, 000
 Principal Investigator: Lifang Yan 01/01/2022 – 12/31/2022
 Application of automatic extraction platform KingFisher Apex on Viral and bacterial pathogen to increase the capacity in Vet-LIRN sample analysis

Completed Commercial Projects

8/1/2018 – 12/31/2018

Detect *Clostridium perfringens* from avian fecal samples and monitor the changes of *Clostridium perfringens* from day 1 to day 14 of each flock (weekends excluded), total 96 flocks and 992 samples were tested, which generate revenue ~\$29000

12/1/2018 – 2/1/2019

Detect *Salmonella* from avian fecal samples and monitor the changes of salmonella from day 1 to day 14 of each flock (weekends excluded), total 96 flocks and 500 samples were tested, which generate revenue ~\$19000

06/01/2019- 09/31/2019

Salmonella isolation and identification by bacteriological methods compared with Evonik flock monitoring workflow ScreenFlox