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 Experiences

Associate Clinical Professor
  Section leader of Molecular Diagnostic   July 2022 – Present
Veterinary Research & Diagnostic lab, Department of Pathobiology and Population Medicine, College of Veterinary Medicine, Mississippi State University, Pearl, MS
  Diagnostic:
- In charge of daily molecular diagnostic services for poultry, mammalian, and aquatic animal
- Supervise three technicians
- Set up and validate new molecular tests based on the request of veterinarians or economic importance
- Optimize 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

  Whole Genome Sequencing:
- Application of whole genome sequencing on identification of bacterial and viral pathogens
- Participate FDA and USDA antimicrobial resistance projects

  Test Comparison:
- Perform inter-laboratory comparison with Salisbury Animal Health Diagnostic Lab, MD on IBV and ILT every two years
- Participate FDA ICE comparison on SARS-CoV-2

  Teaching and Training:
- Teach seven lectures of course Agents of Infectious Disease (CVM5903) for 2nd year DVM students

Assistant Clinical Professor
  Section leader of Molecular Diagnostic   Oct 2014 – June 2022
Veterinary Research & Diagnostic lab, Department of Pathobiology and Population Medicine, College of Veterinary Medicine, Mississippi State University, Pearl, MS
  Diagnostic:
- In charge of daily molecular diagnostic services for poultry, mammalian, and aquatic animal and supervise three technicians
- Set up and validate new molecular tests based on the request
- Optimize 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
- 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
- Working on 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 validation of MGMS duplex PCR test kit for Idexx 2015
- Participate validation of MGMS duplex PCR test kit for Thermofisher Scientific 2016

Teaching and Training:
- Teach seven lectures of 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

Volunteer   May 4, 2015 - May 25, 2015
 National Animal Health Laboratory Network Deployment to Veterinary Diagnostic Laboratory, College of Veterinary Medicine, University of Minnesota, St Paul, MN
- Deploy to Veterinary Diagnostic Laboratory of University Minnesota to perform avian influenza surveillance tests on avian influenza outbreak

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 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 on molecular, poultry virology and serology section
- 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
- Working on ELIA, 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 persisted 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 Membership
- 2008, 2013-Present: Member of American Association of Veterinary Laboratory Diagnosticians (AAVLD)
- 2010: Member of Conference of Research Workers in Animal Diseases (CRAWD)
- 2014-Present: Member of Molecular Diagnostic Committee
- 2016 - Present: General Member of Methods Technical Working Group (MTWG), National Animal Health Laboratory Network
- 2017-Present: Member of Virology Committee of AAVLD
- 2017- Present: Faculty Senate – Representative of Mississippi Veterinary Research & Diagnostic Laboratory within Division of Agriculture, Forestry, and Veterinary Medicine, Mississippi State University
- 2019-Present: Committee Member of Next Generation Sequencing Subgroup of NALHN Methods Technical Working Group
- 2019-Present: Committee Member of Second Vendor Validation
- Subgroup of NAHLN Methods Technical Working Group
- 2020 - Present: Core Member of Methods Technical Working Group, National Animal Health Laboratory Network

Award
- Rosalind and Rodney Foil Teamwork Award for Covid-19 Testing Laboratory, DAFVM, MSU, 2021
- Best poster award of AAVLD meeting in San Diego, CA 10/2009
- "Recognition of achievement" award in College Day of CVM, MSU, Starkville, MS 10/2009

Certificates and Training
- Certificate of Computational Biology, The James Worth Bagley College of Engineering, Mississippi State University 2011
- Certificate of Training (ELISA Fundamental Sample Management), Live via Idexx Laboratories 2013
- Certificate of Mycoplasma Diagnostic, National Poultry Improvement Plan 2015
- Next Generation Sequencing Training Workshop (Bionumerics), Applied Maths, Austin, Texas Oct 20th - 21st, 2016
- Next Generation Sequencing: Application in Veterinary Diagnostic Laboratories, AAVLD

Annual Meeting, San Diego, CA Oct 12, 2017
- Basic Bioinformatics for Developing and Monitoring PCR Assays, AAVLD Annual Meeting, Kansas City, MO Oct 18, 2018
- Nanopore Introduction Workshop and Data Analysis Review, New York, US April 18 - 19, 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
- Getting Started with NGS (Next Generation Sequencing) Workshop, AAVLD Annual Meeting, Providence RI Oct 24th, 2019
- Bacteriology Mini-Symposium, AST-The Devil's in the Details. Oct 25th, 2019
- No-nonsense bacterial NGS – How any laboratory can access this technology. AAVLD annual meeting, Oct 7th, 2020

Other Activities

- MS Board of Animal Health Alert – provide data support for the outbreak of Canine Distemper Virus in Spring 2017 by monitor and compare 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 May 30, 2017, and American Veterinary Medical Association news at 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

- 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.
- Yan L, Mackey R, Zhang C, Baugnman S, Banda A, Pace L. Application and Comparison of iSeq100 and MinION Sequencing in Identifying Avian Infectious Bronchitis Virus. America Association of Veterinary Laboratory Diagnosticians 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. America Association of Veterinary Laboratory Diagnosticians 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. America Association of Veterinary Laboratory Diagnosticians meeting, Providence, RI Oct 23-28, 2019
- Yan L, Mackey R, Zhang C, Banda A, Pace L. Application of iSeq on Genotyping Avian Infectious Bronchitis Virus. 1st Annual Veterinary Diagnostics Conference, Shanghai, China June 2 - 4, 2019
- Yan L, Zhang Y, Wilkes RP, Baughman B, Pace L, Zhang C, Anis E. Outbreak of Canine Distemper Virus in Mississippi. Annual America Association of Veterinary Laboratory Diagnosticians 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 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. AAAP 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.

- 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. ISVEE Meeting, Merida, Yucatan, Mexico Nov 2015.
- 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. American Association of Avian Pathologists Scientific, Boston, MA July 2015. (Presentation)
- 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)
- 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. 151th Annual Meeting of the American Veterinary Medical Association. 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. American Association of Avian Pathologists. Chicago, IL 2013. (Presentation)
- Zhang M, Yan L, Zhang S. Streptococcus anginosus, what do we know? Annual America Association of Veterinary Laboratory Diagnosticians Meeting. Minneapolis, MN 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 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. Annual America Association of Veterinary Laboratory Diagnosticians meeting. Minneapolis, MN 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. Mississippi Veterinary Medical Association. Starkville, MS 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. Annual America Association of Veterinary Laboratory Diagnosticians meeting, San Diego, CA 2009
- 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 diarrhea virus (BVDV)-status in Mississippi herds. Conference of Research Workers in Animal Diseases meeting, Chicago, IL 2009
- 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

- Mitchell PK, Wang L, et al. Yan L, et al. 2022. Multi-laboratory evaluation of the Illumina iSeq platform for whole genome sequencing of Salmonella, Escherichia coli and Listeria. Microb Genom. 8(2): 000717
- Anis E, Needle DB, Stevens B, **Yan L**, Wilkes RP. 2020. Genetic characteristic of Canine Distemper Viruses circulating in wildlife in the United States. J Zoo Wildl Med. 50(5): 790-797
- **Yan L**, Toohey-Kurth KL, Crossley BM, Bai J, Glaser AL, Tallmadge RL, Goodman LB. 2019. Inhibition monitoring in veterinary molecular testing. J Vet Diagn Invest. 32(6): 758-766
- **Yan L**, Pace L, Baughman B, Wilson F, Zhang S, Zhang M. 2016. Failed detection of Bovine

Viral Diarrhea 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 section system-1. Avian Dis 53(3):396-404
- Kong Q, **Yan L**, Su J. Approaches of determining NEm and factors affecting NEm of Holstein. 2006. Chinese Journal of Animal Science. 42 (23): 41-44

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

- **AP21VSD&B000C033**
  USDA/APHIS National Animal Health Laboratory Network $250, 000
  Co-PI: Lifang Yan NAHLN Level 1: MS 2021

- **AP20VSD&B000C018**
  Farm Bill $15, 000
  Principal Investigator: Lifang Yan   07/2020 – 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

- **1U18FD007500-01**
  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 for Evonik

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