



Aizhen Guo is a senior Professor in the Department of Preventive Veterinary Medicine, College of Veterinary Medicine; a research member in the State Key Laboratory of Agricultural Microbiology at Huazhong Agricultural University (HZAU), an adjunct Professor of Murdoch University, Australia; one of the national talents in agricultural scientific research and leading director in outstanding innovation team of bovine diseases control; one of the biosafety responsible persons for the Animal Biosafety level 3 laboratory of HZAU. In the past five years, she has been awarded over 20 grants such as Special Fund for Agro-scientific Research in the Public Interest, “973” project, the general program and International Joint Cooperation Major Program from National Natural Science Foundation of China, etc; published 84 peer reviewed papers including 35 in SCI cited journals, edited and co-edited 16 books like “Bovine Tuberculosis”;

awarded 8 national invention patents; made up 3 national technique standards and 7 provincial standards; obtained 2 licenses for new veterinary drugs (Classs B); Her achievements about “Novel diagnostic reagents for human and animal tuberculosis” were awarded the two 2nd prize by provincial government and one 1st prize by Wuhan government. She extended her techniques and knowledge in bovine disease control by transferring her products to biological product enterprises and hosting national congress for 8 times, and over 30 training workshops.

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Education Background

Postdoctoral fellow: Jan.2002-Feb. 2003, July 2004-June 2005, a postdoc fellow at Department of Pathobiology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, USA.

Ph. D. 1995-1998, majoring in veterinary microbiology and immunology, at College of Veterinary Medicine, Nanjing Agricultural University, Nanjing, China.

M.Sc. 1985-1988, majoring in veterinary pathobiology at College of Veterinary Medicine, Nanjing Agricultural University, Nanjing, China.

Bachelor degree 1981-1985, at College of Veterinary Medicine and Animal Science, Hunan Agricultural University, Hunan, China.

Experience

Feb. 2003-present, working as a Professor in animal infectious diseases and public health, advisor for graduate students for both M.Sc and Ph. D in College of Veterinary Medicine, Huazhong Agricultural University, China,

1999-2002, working as an associate professor in veterinary microbiology and immunology, advisor of graduate students for M. Sc in College of Veterinary Medicine, Nanjing Agricultural University, Nanjing, China.

1998-1999, working as an assistant professor in College of Veterinary Medicine, Nanjing Agricultural University, Nanjing, China, teaching and researching in the area of veterinary microbiology and immunology.

1989-1995, working as an assistant professor in Nanjing Institute of Dairy Science, Nanjing, China, doing research and management in disease control of dairy cows and milk quality control.

Concurrent Academic

Vice director of International Joint research and Training Center for Veterinary Epidemiology

Member of Committee of Animal Epidemic Disease Control, Ministry of Agriculture, China

Director of Laboratory of Beef Cattle/Yak Disease Control, China Agricultural Research System (Beef cattle/yak) , Ministry of Agriculture, China

Vice director of Animal Health Branch in Dairy Association of China

The executive board member in Branch Society of Animal Infectious Diseases, China Society of Animal Science and Veterinary Medicine

Member of National Expert Committee for Evaluation on Animal Epidemic Disease Eradication

Areas of Research Interests/ Research

Projects Areas of Research Interests/ Research Projects

Her current research interested in basic and applied research on bovine infectious diseases and zoonosis. The main areas are involved in epidemiology and etiology, pathogenesis and immunology, development of novel vaccines and diagnostic techniques. The pathogens currently focused on are those responsible for respiratory and gastrointestinal diseases such as *Mycobacterium bovis*, *Mycoplasma bovis*, *Salmonella*, Bovine infectious rhinotracheitis virus, and Bovine viral diarrhea virus, etc.

Currently, there are over 10 research projects supporting from Chinese government funding agencies in progress.

Main publications:

1. Jin Chao, Qingjie Peng, Jianqing Zhao, Xiaojie Zhu, Juncheng Ruan, Siyi Lu, Ruiming Hu, Jiakui Li, Xi Chen, Huanchun Chen, Zhen F. Fu, Ling Zhao, Ming Zhou*, Aizhen Guo*. Different rabies outbreaks on two beef cattle farms in the same province of China: Diagnosis, virus characterization and epidemiological analysis. *Transbound Emerg Dis*. 2020;00:1–13.
2. Zhu X F, Baranowski E, Dong Y Q, Li X X, Hao Z Y, Zhao G, Zhang H, Lu D K, Rasheed M A, Chen Y Y, Hu C M, Chen H C, Sagné E, Citti C, Guo A Z*. An emerging role for cyclic dinucleotide phosphodiesterase and nanoRNase activities in *Mycoplasma bovis*: securing survival in cell culture. *PLOS Pathogens*. 2020 Jun 29;16(6):e1008661.
3. Wang, J.; Zhu, X.; Peng, Y.; Zhu, T.; Liu, H.; Zhu, Y.; Xiong, X.; Chen, X.; Hu, C.; Chen, H.; Chen, Y*.; Guo, A*. *Mycobacterium tuberculosis* YrbE3A Promotes Host Innate Immune Response by Targeting NF- κ B/JNK Signaling. *Microorganisms*, 2020, 8, 584.
4. Xifang Zhu , Yaqi Dong , Eric Baranowski , Xixi Li , Gang Zhao , Zhiyu Hao , Hui Zhang , Yingyu Chen , Changmin Hu , Huanchun Chen, Christine Citti and Aizhen Guo *. Mbov_0503 Encodes a Novel Cytoadhesin that Facilitates *Mycoplasma bovis* Interaction with Tight Junctions. *Microorganisms* ,2020 Jan 23;8(2):164.
5. Sohail Raza, Farzana Shahin, Wenjun Zhai, Hanxiong Li, Gualtiero Alvisi , Kui Yang*, Xi Chen, Yingyu Chen, Jianguo Chen, Changmin Hu, Huanchun Chen and Aizhen Guo*. Ivermectin Inhibits Bovine Herpesvirus 1 DNA Polymerase Nuclear Import and Interferes with Viral Replication. *Microorganisms*, 2020, 8(3):409
6. Zhu Y, Xiao Y, Kong D, Liu H, Chen X, Chen Y, Zhu T, Peng Y, Zhai W, Hu C, Chen H, Suo Lang SZ, Guo A*, Niu J*. Down-Regulation of miR-378d Increased Rab10 Expression to Help Clearance of *Mycobacterium tuberculosis* in Macrophages. *Front Cell Infect Microbiol*. 2020, 10:108
7. Liu H, Xiong X, Zhai W, Zhu T, Zhu X, Zhu Y, Peng Y, Zhang Y, Wang J, Chen H, Chen Y, Guo A*.

- Upregulation of Cytokines and Differentiation of Th17 and Treg by Dendritic Cells: Central Role of Prostaglandin E2 Induced by *Mycobacterium bovis*. *Microorganisms*, 2020, 8(2), pii: E195
8. Qiao Hongxing, Zhang Xiaojing, Shi Hongtao, Song Yuzhen, Bian Chuanzhou, Guo Aizhen*. Assessment of the physicochemical properties and bacterial composition of *Lactobacillus plantarum* and *Enterococcus faecium*-fermented *Astragalus membranaceus* using single molecule, real-time sequencing technology. *SCIENTIFIC REPORTS*. 2018,8:11862.
 9. Xi Chen, Jing Huang, Hongmei Zhu, Yongpeng Guo, Farhan Anwar Khan, Harish Menghwar, Gang Zhao, Aizhen Guo*. P27 (MBOV_RS03440) is a novel fibronectin binding adhesin of *Mycoplasma bovis*. *International Journal of Medical Microbiology*. 308 (2018) 848–857.
 10. Ren Ningning, Jinli Jingfang, Chen Yingyu*, Zhou Xia, Wang Jieru, Ge Pan, Farhan Anwar Khan, Zhang Li, Hu Changmin, Ian D. Robertson, Chen Huanchun, Guo Aizhen*. Identification of new diagnostic biomarkers for *Mycobacterium tuberculosis* and the potential application in the serodiagnosis of human tuberculosis. *Microbial Biotechnology* 2018,11(5):893-904.
 11. Jieru Wang, Xiaojie Zhu, Xuekai Xiong, Pan Ge, Han Liu, Ningning Ren, Farhan Anwar Khan, Xia Zhou, Li Zhang, Xu Yuan, Xi Chen, Yingyu Chen, Changmin Hu, Ian D. Robertson, Huanchun Chen and Aizhen Guo. Identification of potential urine proteins and microRNA biomarkers for the diagnosis of pulmonary tuberculosis patients. *Emerging Microbes & Infections*. (2018) 7:63
 12. Farzana Shahin, Sohail Raza, Kui Yang, Changmin Hu, Yingyu Chen, Huanchun Chen, Aizhen Guo?. Bovine herpesvirus 1 tegument protein UL21 plays critical roles in viral secondary envelopment and cell-to-cell spreading, *Oncotarget*, 2017,8(55): 94462-94480.
 13. Farhan Anwar Khan, Gang Zhao, Yusi Guo, Muhammad Faisal, Jin Chao, Xi Chen, Chenfei He, Harish Menghwar, Rahim Dad, Muhammad Zubair, Changmin Hu, Yingyu Chen, Huanchun Chen, Zhang Rui, Aizhen Guo?. Proteomics identification and characterization of MbovP730 as a potential DIVA antigen of *Mycoplasma bovis*, *Oncotarget*, 2017,1: 1-15.
 14. Xuekai Xiong, Rui Wang, Dachuan Deng, Yingyu Chen, Han Liu, Tianqi Wang, Jieru Wang, Xiaojie Zhu, Xifang Zhu, Yongqiang Zhu, Xinyan Lu, Huanchun Chen, Huajun Zheng, Aizhen Guo. Comparative Genomics of a Bovine *Mycobacterium tuberculosis* Isolate and Other Strains Reveals Its Potential Mechanism of Bovine Adaptation. *Frontiers in Microbiology*, 12, 2017, doi:10.3389/fmicb.2017.02500.
 15. Menghwar H, He C, Zhang H, Zhao G, Zhu X, Khan FA, Faisal M, Rasheed MA, Zubair M, Memon AM, Ridley A, Robertson ID, Chen Y, Guo A*. Genotype distribution of Chinese *Mycoplasma bovis* isolates and their evolutionary relationship to strains from other countries. *Microb Pathog*. 2017, 111: 108-117.
 16. Flahou B, Rossi M, Bakker J, Langermans JA, Heuvelman E, Solnick JV, Martin ME, O'Rourke J, Ngoan LD, Hoa NX, Nakamura M, Øverby A, Matsui H, Ota H, Matsumoto T, Foss DL, Kopta LA, Omotosho O, Franciosini MP, Casagrande Proietti P, Guo A, Liu H, Borilova G, Bracarense AP, Lindén SK, De Bruyckere S, Zhang G, De Witte C, Smet A, Pasmans F, Ducatelle R, Corander J, Haesebrouck F. Evidence for a primate origin of zoonotic *Helicobacter suis* colonizing domesticated pigs. *ISME J*. 2017 Sep 8.
 17. Xia Miaomiao, Lia Zheng, Chen Yingyu, Xiang Yuqiang, Yang Li, Zhao Xiangwei, Guo Aizhen, Chen Huanchun, Tan Chen*, Hu Yonggang*. Protein self-assembly via Zr⁴⁺ ions on spore-based microspheres for immunoassays. *Sensors and Actuators B: Chemical*. 2018, 254:166-176.
 18. Rasheed MA, Qi J, Zhu X, Chenfei H, Menghwar H, Khan FA, Zhao G, Zubair M, Hu C, Chen Y, Chen H, Guo A. Comparative Genomics of *Mycoplasma bovis* Strains Reveals That Decreased Virulence with Increasing Passages Might Correlate with Potential Virulence-Related Factors. *Front Cell Infect Microbiol*. 2017, 7: 177.
 19. Zhao G, Zhang H, Chen X, Zhu X, Guo Y, He C, Anwar Khan F, Chen Y, Hu C, Chen H, Guo A. *Mycoplasma bovis* NADH oxidase functions as both a NADH oxidizing and O₂ reducing enzyme and an adhesin. *Sci Rep*. 2017, 7(1): 44.
 20. Chen Y, Wang J, Ge P, Cao D, Miao B, Robertson I, Zhou X, Zhang L, Chen H, Guo A. Tissue inhibitor of metalloproteinases 1, a novel biomarker of tuberculosis. *Mol Med Rep*. 2017, 15(1): 483-487.
 21. Lai JL, Liu YH, Liu C, Qi MP, Liu RN, Zhu XF, Zhou QG, Chen YY, Guo AZ, Hu CM. Indirubin Inhibits LPS-Induced Inflammation via TLR4 Abrogation Mediated by the NF-κB and MAPK Signaling Pathways.

- Inflammation. 2017, 40(1):1-12.
22. Khan FA, Faisal M, Chao J, Liu K, Chen X, Zhao G, Menghwar H, Zhang H, Zhu X, Rasheed MA, He C, Hu C, Chen Y, Baranowski E, Chen H, Guo A. Immunoproteomic identification of MbovP579, a promising diagnostic biomarker for serological detection of Mycoplasma bovis infection. *Oncotarget*. 2016, 7(26): 39376-39395.
 23. Zhang H, Zhao G, Guo Y, Menghwar H, Chen Y, Chen H, Guo A. Mycoplasma bovis MBOV_RS02825 encodes a putative virulence-related nuclease. *Int J Mol Sci*, 2016, 17(1): 628.
 24. Raza S, Deng M, Shahin F, Yang K, Hu C, Chen Y, Chen H, Guo A. A bovine herpesvirus 1 pUL51 deletion mutant shows impaired viral growth in vitro and reduced virulence in rabbits. *Oncotarget*. 2016, 7(11):12235-12253.
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 26. Han X, Khan FA, Zhu X, Zhang R, Mustafa R, Hu C, Chen Y, Chen H, Guo A. Establishment of an antibody avidity test to differentiate vaccinated cattle from those naturally infected with Mycoplasma bovis. *Vet J*. 2015, 203(1): 79-84.
 27. Zhang R, Han XX, Mustafa R, Qi JJ, Chen X, Hu CM, Chen YY, Chen HC, Guo AZ. Attenuated Mycoplasma bovis strains provide protection against virulent infection in calves. *Vaccine*, 2014, 32(25):3107-3114.
 28. Chen Y, Wu J, Tu L, Xiong X, Hu X, Huang J, Xu Z, Zhang X, Hu C, Hu X, Guo A, Wang Y, Chen H. ¹H-NMR spectroscopy revealed abnormal serum metabolic profile of cattle infected with Mycobacterium tuberculosis. *PlosOne*, 2013, 8(9): e74507.
 29. Zhang X, Li S, Luo Y, Chen Y* , Cheng S, Zhang G, Hu C, Chen H, Guo A*. Mycobacterium bovis and BCG induce different patterns of cytokine and chemokine production in dendritic cells and differentiation patterns in CD4+ T cells. *Microbiology-SGM*. 2013, 159(Pt2): 366-379.
 30. Qi J, Guo A, Cui P, Chen Y, Mustafa R, Ba X, Hu C, Bai Z, Chen X, Shi L, Chen H. Comparative Genomic Plasticity Analysis of Mycoplasma bovis HB0801 (Chinese Isolate). *PLoS One*. 2012, 7(5): e38239.
 31. Zhang M, Fu S, Deng M, Xie Q, Xu H, Liu Z, Hu C, Chen H, Guo A*. Attenuation of bovine herpesvirus type 1 by deletion of its glycoprotein G and tk genes and protection against virulent viral challenge. *Vaccine*. 2011, 29(48): 8943-8950.
 32. Cao S, Guo A*, Wu G, Liu Z, Chen W, Feng C, Zhang CC, Chen H. Residue histidine 669 is essential for the catalytic activity of Bacillus anthracis lethal factor. *Journal of Bacteriology*. 2010, 192(21): 5799-805.
 33. Cao S, Guo A, Liu Z, Tan Y, Wu G, Zhang C, Zhao Y, Chen H. Investigation of new dominant-negative inhibitors of anthrax protective antigen mutants for use in therapy and vaccination. *Infect Immun*. 2009, 77(10): 4679-4687.
 34. Chen Y, Chao Y, Deng Q, Liu T, Xiang J, Chen J, Zhou J, Zhan Z, Kuang Y, Cai H, Chen H, Guo A. Potential challenges to the Stop TB Plan for humans in China; cattle maintain M. bovis and M. tuberculosis. *Tuberculosis (Edinb)*. 2009, 89(1): 95-100.

Honors And Awards

The 6th contribution award of All-China Federation of Returned Overseas Chinese, 2016

Granted the State Council Special Allowance, 2016

National Distinguished Scholars in Agricultural Scientific Research and Technical Innovative Team of bovine disease control, 2015

