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Education

10/2015-5/2016 Joint Ph.D. Infectious Diseases, Yale School of Medicine, Yale University, New Haven, United States.

9/2011-9/2015 Ph.D. Zoology, Institute of Zoology, Chinese Academy of Sciences, Beijing, China.

9/2007-8/2011 B.S. Plant Protection, College of Plant Protection, Henan Agricultural University, Zhengzhou, China.

Research Experience:

2/2021 – Present Chinese Academy of Sciences, Beijing, China

Principal Investigator in Institute of Zoology

10/2019 – 1/2021 University of California, San Diego, United States

Postdoctoral Fellow in Division of Biological Sciences, laboratory of Dr. Omar S. Akbari.

Project: Genetic basis of mosquito olfaction and behavior using genome engineering technologies.

8/2016 – 10/2019 Harvard University, Cambridge, United States

Postdoctoral Fellow in Rowland Institute, laboratory of Dr. Robert M. Brucker.

Project: Experimental testing microbe function: pesticides metabolism and speciation.

9/2015 – 5/2016 Yale University, New Haven, United States

Joint Ph.D. student in Infection of Disease, laboratory of Dr. Erol Fikrig.

Project: Exploring proteins that facilitate *Plasmodium* transmission from mosquito to mammal.

6/2011 – 9/2015 Chinese Academy of Sciences, Beijing, China

Ph.D. student in Institute of Zoology, laboratory of Dr. Da-Wei Huang.

Project: Functions of phage to endosymbiont and insect host.

Research Areas:

Evolutionary Biology; Entomology; Microbiology; Genetic engineering; Genomics;

Publications (#co-first, *co-corresponding):

In English

To be published

14. Rong-Er Zheng#, Qi-Qi Wang#, **Guan-Hong Wang***. Holobiont manipulation to

combat vector-borne disease. (submitted to **The ISME Journal** in July 2022).

Publications:

13. **Guan-Hong Wang***, Jie Du, Chenyi Chu, Mukund Madhav, Grant L. Hughes, Jackson Champer* 2022. Symbionts and gene drive: two strategies to combat vector-borne disease. **Trends in Genetics** 38:708-23.

12. **Wang, G.-H.***, and R. M. Brucker*. An optimized method for *Nasonia* germ-free rearing. 2022. **Scientific Reports** 12:219

11. **Wang, G.-H.#**, Stephanie Gamez#, Robyn Raban#, John Marshall, Luke Alphey, Ming Li, Jason Rasgon, Omar S. Akbari*. 2021. Combating mosquito-borne pathogens using genetic control technologies. **Nature Communications** 12, 4388.

10. **Wang G-H**, Dittmer J, Douglas B, Huang L, Brucker RM*. 2021. Coadaptation between host genome and microbiome under long-term xenobiotic-induced selection. **Science Advances** 7, eabd4473.

9. **Wang, G.-H.**, B. M. Berdy, O. Velasquez, N. Jovanovic, S. Alkhalifa, K. P. C. Minbiole, and R. M. Brucker*. 2020. Changes in Microbiome Confer Multigenerational Host Resistance after Sub-toxic Pesticide Exposure. **Cell Host & Microbe** 27:213-224.e217.

8. **Wang, G.-H.**, and R. M. Brucker*. 2019a. Genome sequence of *Enterococcus faecalis* NVIT04, isolated from *Nasonia vitripennis*. **Microbiology Resource Announcements** 8:e01156-01118.

7. **Wang, G.-H.**, and R. M. Brucker*. 2019b. Genome sequence of *Providencia rettgeri* NVIT03, isolated from *Nasonia vitripennis*. **Microbiology Resource Announcements** 8:e01157-01118.

6. Huan Li, Tongtong Li, Xiangzhen Li*, **Guanhong Wang**, Qiang Lin and Jiapeng Qu*. 2018. Gut microbiota in Tibetan herdsman reflects the degree of urbanization. **Frontiers in Microbiology** 9:1745.

5. **Guan-Hong Wang***, Bao-Fa Sun, Tuan-Lin Xiong, Yan-Kun Wang, Jin-Hua Xiao*, Da-Wei Huang*. 2016. Bacteriophage WO can mediate horizontal gene transfer in endosymbiotic *Wolbachia* genomes. **Frontiers in Microbiology** 7:1867.

4. **Guan-Hong Wang**, Ling-Yi Jia, Jin-Hua Xiao*, Da-Wei Huang*. 2016. Discovery of a novel *Wolbachia* supergroup in cave spider species and the lateral transfer of phage WO among distant hosts. **Infection, Genetics and Evolution** 41 (2016) 1–7.

3. **Guan-Hong Wang**, Jin-Hua Xiao*, Li-Ming Niu, Guang-Chang Ma, and Da-Wei Huang*. 2014. Large proportion of genes in a cryptic WO prophage genome are actively transcribing in an insect species with sex-specific patterns: involvement in *Wolbachia* biology and reproductive manipulation? **BMC Genomics** 15:893.

2. **G.-H. Wang**, J.-H. Xiao*, T.-L. Xiong, Z. Li, R. W. Murphy, and D.-W. Huang*. 2013. High-Efficiency Thermal Asymmetric Interlaced PCR (hiTAIL-PCR) for determination of a highly degenerated prophage WO genome in a *Wolbachia* strain infecting a fig wasp species. **Applied and Environmental Microbiology** 79:7476-7481.

1. Xiao, Jin-Hua[#]; Yue, Zhen[#]; Jia, Ling-Yi[#]; Yang, Xin-Hua[#]; Niu, Li-Hua[#]; Wang, Zhuo[#]; Zhang, Peng[#]; Sun, Bao-Fa; He, Shun-Min; Li, Zi; Xiong, Tuan-Lin; Xin, Wen; Gu, Hai-Feng; Wang, Bo; Werren, John H.; Murphy, Robert W.; Wheeler, David; Niu, Li-Ming; Ma, Guang-Chang; Tang, Ting; Bian, Sheng-Nan; Wang, Ning-Xin; Yang, Chun-Yan; Wang, Nan; Fu, Yue-Guan; Li, Wen-Zhu; Yi, Soojin V.; Yang, Xing-Yu; Zhou, Qing; Lu, Chang-Xin; Xu, Chun-Yan; He, LiJuan; Yu, Li-Li; Chen, Ming; Zheng, Yuan; Wang, Shao-Wei; Zhao, Shuang; Li, Yan-Hong; Yu, Yang-Yang; Qian, Xiao-Ju; Cai, Yue; Bian, Lian-Le; Zhang, Shu; Wang, Jun-Yi; Yin, Ye; Xiao, Hui; **Wang, Guan-Hong**; Yu, Hui; Wu, Wen-Shan; Cook, James M.*; Wang, Jun*; Huang, Da-Wei*. 2013. Obligate mutualism within a host drives the extreme specialization of a fig wasp genome. **Genome Biology** 14:R141.

In Chinese

2. Na Zhang, Man Zhao, Guan-Hong Wang*. 2022. Research progress on microorganism against pest and disease. **Journal of Plant Protection** 49(1):220-230.

1. Wei-Hua Li, He Jiang, Guan-Hong Wang*. 2022. The progress in prevention and control of mosquito based on microorganism and gene editing. **Journal of Plant Protection** 49(1): 231-239.

Patent

1. Robert M. Brucker and **Guan-Hong Wang**. 2019. "Bacterial Probiotic to Detoxify Herbicides and Insecticides" (U.S. Patent No.: US 2019/0321417 A1). Equal inventorship.

Selected Presentations:

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Enthusiasm Research Institute, online, China.

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Science Summit Lecture Hall, online, China.

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Ecological and Nature Conservation Institute, Chinese Academy of Forestry, online, China.

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Henan Agricultural University, online, China.

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Anhui Normal University, online, China.

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Microecology, online, China.

Guan-Hong Wang, 2022. Function exploiting of insect microbiota and vector insect control. Tobacco research institute of Chinese academy of agricultural sciences, online, China.

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. China Agricultural University, Beijing, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. Institute of plant protection, Chinese Academy of Agricultural Sciences, Beijing, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Beijing Normal University, Beijing, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. Sun Yat sen University, Guangzhou, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. South China Agricultural University, Guangzhou, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. Institute of Zoology, Guangdong Academy of Sciences, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. Institute of bioengineering, Guangdong Academy of Sciences, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Huazhong Agricultural University, Wuhan, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Central China Normal University, Wuhan, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Hubei University, Wuhan, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. The 8th National Symposium on microbial genomics, Wuhan, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota.

Hebei University, Baoding, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function and structural stability regulation of insect microbiota. Hebei Agricultural University, Baoding, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Hebei Normal University, Shijiazhuang, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Can microbes accelerate host species differentiation? The 17th National Symposium on insect fauna classification and the 5th Symposium on pollinators, Tianjin, Beijing, China (Invited talk).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. National Postdoctoral Forum on plant protection, Hohhot, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Inner Mongolia Agricultural University, Hohhot, China (Invited talk, full travel support).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. 2021 National Symposium on biological pest control, Shenyang, China (Invited talk).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. 2021 academic annual meeting of the Chinese entomological society, Xi'an, China (Key note speaker).

Guan-Hong Wang, 2021. Function exploiting of insect microbiota and vector insect control. Shaanxi Normal University, Xi'an, China (Invited talk).

Guan-Hong Wang, Robert M. Brucker 2019. Functional microbiota in chemical toxicity resistance and genotype selection to their host. University of Pennsylvania, Philadelphia, United States (Invited talk, full travel support).

Guan-Hong Wang, Robert M. Brucker 2019. Functional microbiota in chemical toxicity resistance and genotype selection to their host. University of Chicago, Chicago, United States (Invited talk, full travel support).

Guan-Hong Wang, Robert M. Brucker 2019. Functional microbiota in chemical toxicity resistance and genotype selection to their host. Carnegie Institution for Science, Maryland, United States (Invited talk, full travel support).

Guan-Hong Wang, Robert M. Brucker 2019. Functional microbiota in chemical toxicity resistance and genotype selection to their host. University of Georgia, Athens, United States (Invited talk, full travel support).

Guan-Hong Wang, Robert M. Brucker 2019. Long-term experimental test microbiota can be a selection unit to host genotype. Ecological and Evolutionary Genomics Conference, Manchester, United States (Poster).

Guan-Hong Wang, Robert M. Brucker 2019. Long-term experimental test microbiota can be a selection unit to host genotype. Annual MIT-Harvard Microbiome Symposium, Manchester, United States (Invited poster).

Guan-Hong Wang, Robert M. Brucker 2018. Long-term exposure to pesticides changes function of microbiome, accelerating selection on host populations. American Society for Microbiology Conference, Atlanta, United States (Poster).

Guan-Hong Wang, Robert M. Brucker 2017. Long-term exposure to pesticides changes function of microbiome, accelerating selection on host populations. Harvard FAS Postdoc Research Symposium, Boston, United States (Poster).

Guan-Hong Wang, Robert M. Brucker 2017. Long-term exposure to pesticides changes function of microbiome, accelerating selection on host populations. Multi-omics for Microbiomes – EMSL Integration Conference, Pasco, United States (Poster).

Guan-Hong Wang, Jin-Hua Xiao, Da-Wei Huang 2016. Phage function in symbiont and insect host. Harvard University, Boston, United States (Invited talk, full travel support).

Guan-Hong Wang, Tyler Schleicher, Jing Yang, Erol Fikrig 2016. A mosquito protein facilitates *Plasmodium* sporozoite survival in the vertebrate host. Yale School of Public Health, New Haven, United States (Invited talk, full travel support).

Guan-Hong Wang, Jin-Hua Xiao, Da-Wei Huang 2014. Sex-specific transcription of large proportion of genes in the only cryptic WO prophage genome in a fig wasp species. 8th International *Wolbachia* Conference, Innsbruck, Austria (Talk).

Guan-Hong Wang, Jin-Hua Xiao, Da-Wei Huang 2014. Bacteriophage, an important genetic vector player in the intracellular arena. The 3rd Session of the National Virology Graduate Forum, Wuhan, China (Talk).

Guan-Hong Wang, Jin-Hua Xiao, Da-Wei Huang 2014. Role of phage WO to *Wolbachia*, and even insect host. Graduate Forum, Beijing, China (Poster).

Honors & Awards:

- 2021 The 10th Youth Science and technology award, The Entomological Society of China
- 2018 ASM Microbe Travel Award (\$500), American Society for Microbiology
- 2016 Excellent Students Awards, University of Chinese Academy of Sciences
- 2015 Scholarship of Joint Ph.D. Training Program in Yale University (\$12000)
- 2015 Excellent Students Awards, University of Chinese Academy of Sciences
- 2014 National Scholarship for Graduate Students (\$5000)

- 2014 The National Virology Graduate Forum Awards (\$200), Wuhan Institute of Virology, University of Chinese Academy of Sciences
- 2014 Excellent Students Awards, University of Chinese Academy of Sciences
- 2014 Youth Science and Technology Outstanding Paper, Beijing Entomological Society

Selected Grants Awarded**Peer Reviewer:**

Trends in Biotechnology, Trends in Cell Biology, BMC Ecology and Evolution, Development Genes and Evolution, Microbial Ecology, Insect Science, Insects, Life, Frontiers in Microbiology, Frontiers in Genetics, Tropical Medicine and Infectious Disease, Pollutants, Journal of Animal Ecology, PLOS ONE, JoVE,

Editorial Board:

Frontiers in Immunology (2022-), Frontiers in Microbiology (2022-), iMeta (2021-), Pesticide Science and Pest Control (2022-), Acta Microbiologica Sinica (2021-), Journal of Plant Protection (2021-), Microbiology China (2022-)

Mentorship:

As of July 2022, the wanglab.com.cn consists of: One Laboratory Manager (He Jiang) ---- Five Postdoctoral Scholar (Yan-Jun Liu, Ph.D.; Qiqi Wang, Ph.D.; Dan-Dan Wang, Ph.D.; Run-Biao Wu, Ph.D.; Xiang-Guang Chen, Ph.D.); ----Three Graduate Students (Rong-Er Zheng B.S.; Ying Li B.S.; Jian-Qiu Cheng B.S.; Zheng-Yu Zhu B.S.; Jia-Hui Wu B.S. ; Xi Guo B.S. ;).

For an updated list of active lab members (<http://www.wanglab.com.cn/About.aspx?ClassID=29>).

In addition to the active members, we have ~5 alumni consisting of former Postdocs, Students, visiting scientists, lab techs etc.

Membership:

American Society for Microbiology (2018-2019)
Beijing Pesticide Society (2021-)
The Entomological Society of China (2021-)
Beijing Entomological Society (2021-)
International Society of Zoological Sciences (2022-)