

# Curriculum Vitae

## Personal Information

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**Name:** Fan JIANG                      **Gender:** Female  
**Degree:** PHD                                      **Major:** Plant Quarantine  
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## Education and Work Experience

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### Education

**China Agricultural University (CAU), Beijing, China**                      Sep. 2010 ~ Jun. 2015  
Major: Plant Quarantine and Agricultural Ecological Health  
Degree: Ph.D. of Agronomy  
**China Agricultural University (CAU), Beijing, China**                      Sep. 2006 ~ Jun. 2010  
Major: Plant Protection  
Degree: Bachelor of Agronomy

### Work Experience

**Chinese Academy of Inspection and Quarantine**                      Jan. 2018 up to now  
Associate Research Fellow  
Research Fields: identification and invasion mechanisms of alien invasive species, especially for *Bactrocera* spp.  
**International Atomic Energy Agency (IAEA)**                      Jan. 2016 ~ Jan. 2017  
Intern  
Research Fields: genotyping of five *Bactrocera* species and two *Zeugodacus* species from 30 strains  
**Chinese Academy of Inspection and Quarantine**                      Jul. 2015 ~ Dec. 2017  
Assistant Research Fellow  
Research Fields: identification and invasion mechanisms of alien invasive species, especially for *Bactrocera* spp.

### Academic Experience

*International Standard Research on Quality Control and Grading of Agricultural and foods products*

- National Key Research and Development Programme of China (2021YFF0601900), 12/2021-11/2015;
- Responsible for the fundamental research on detection and quarantine treatment of *Bactrocera corrceta*, which will be a technical storage for the future international standard.

### ***Detection Technologies and Kits Developments Based on DNA Barcoding of Toxic Organisms***

- National Key Research and Development Programme of China (2019YFC1604704), **12/2019-12/2022**;
- Responsible for the detection technology research and development of poisonous mushroom (*Amanita* spp.) and fish (*Takifugu* spp.) based on nanopore sequencing, digital PCR and microfluidic dynamic array.

### ***Intelligent Identification System Development on Alien Invasive Species***

- National Key Research and Development Programme of China (2016YFF0203205), **07/2016-12/2020**;
- **Project Leader.** Responsible for research and application on one-time and efficient detection of alien diseases and pests based on the next-generation sequencing (Illumina platform); developing an intelligent identification system which has the ability to get identification results from up to thousands of species in one test within in two hours.

### ***Genome and Comparative Genomics of *Bactrocera dorsalis****

- Basic Scientific Research Foundation of the Chinese Academy of Inspection and Quarantine (2018JK008), **01/2018-12/2020**;
- **Project Leader.** Responsible for obtaining a high-quality chromosome-level genome of *Bactrocera dorsalis* with PacBio, Illumina and HiC technologies; providing insights into the genetic basis of the invasiveness and diversity of *B. dorsalis*, explaining its rapid adaptation and expansion.

### ***Multi-objective Molecular Identification of Economically Important Fruit Flies Potentially Distributed in Beijing***

- Beijing Natural Science Foundation (6174052), **01/2017-12/2018**;
- **Project Leader.** Responsible for the mitochondrial genome of Tephritidae spp. (*Anastrepha ludens*, *A. obliqua*, *Bactrocera arceae*, *B. carambolae*, *B. caudata*, *B. correcta*, *B. dorsalis*, *B. hochii*, *B. latifrons*, *B. melastomatos*, *B. minax*, *B. oleae*, *B. tryoni*, *B. tsuneonis*, *B. umbrosa*, *B. zonata*, *Zeugodacus cucurbitae*, *Z. diaphora*, *Z. scutellata*, *Z. tau*, *Carpomya vesuviana*, *Ceratitis capitata*, *Dacus bivittatus*, *D. ciliatus*, *D. longicornis*, *Rhagoletis pomonella* and *Procecidochares utilis*) sequencing and mitochondrial genome phylogeny analyses; developing the primers for Tephritidae species based on PCR, qPCR and microfluidic dynamic array.

### ***Quarantine Identification and Evolution of Fruit Flies***

- Basic Scientific Research Foundation of the Chinese Academy of Inspection and Quarantine (2016JK003), **01/2016-12/2017**;
- **Project Leader.** Responsible for the mitochondrial genome of *Bactrocera* spp. sequencing and mitochondrial genome phylogeny analyses; developing the primers for *Bactrocera* species based on PCR and qPCR.

### ***Quarantine Pest DNA Barcoding Database Construction and New Barcoding Techniques***

### ***Development***

- National Science and Technology Support Program of China (2012BAK11B01), **01/2012-12/2015**;
- Responsible for data analysis and rapid identification techniques of economically important Tephritidae spp.: analyzing of barcode success for the 73 economically important *Bactrocera* species; comparing three kinds of techniques: species-specific primers, real-time PCR and digital PCR for possibilities of quarantine application in ports on 27 Tephritidae species (*Anastrepha ludens*, *A. obliqua*, *Bactrocera albistrigata*, *B. correcta*, *B. carambolae*, *B. dorsalis*, *B. latifrons*, *B. rubigina*, *B. tryoni*, *B. tuberculata*, *B. umbrosa*, *B. zonata*, *B. oleae*, *B. minax*, *B. tsuneonis*, *B. bezziana*, *B. cilifera*, *B. cucurbitae*, *B. scutellata*, *B. tau*, *Carpomya vesuviana*, *Ceratitis capitata*, *C. cosyra*, *C. rosa*, *Dacus bivittatus*, *Rhagoletis cerasi* and *R. pomonella*); participating in the development of DNA barcode data management system.

### ***Key techniques research of building and sharing digital specimen of intercepted organism at port***

- National Quality Supervision, Inspection and Quarantine Public Welfare Industry Research Project of China (201310075), **04/2013-11/2014**
- Responsible for sample collection, identification, digitization, electronization, informatization and standardization.

### ***Rapid Identification Methods for Quarantine Pests from Taiwan Entry Fruits***

- Special Scientific Research Fund in Agricultural Public Welfare of China (200903034), **01/2009-12/2013**;
- Responsible for rapid identification for fruit flies based on species-specific primer.

### ***Quarantine Identification of Fruit Fly based on DNA barcoding***

- Introduce International Advanced Agriculture Technology Project funded by Ministry of Agriculture (2009-Z41), **01/2009-12/2010**;
- Responsible for economically important fruit flies collection, identification and barcode sequencing using Sanger sequencing.

## **Specialties**

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### **Morphological and molecular identification of Tephritidae.**

- **Morphology:** familiar with the morphological characteristics on *Anastrepha*, *Bactrocera*, *Ceratitis*, *Dacus* and *Rhagoletis* genera; and most economically important *Bactrocera* species.
- **Molecular:** familiar with kinds of molecular detection technologies, such as sequences analyses, primer design, PCR, qPCR, digital PCR, gene chip, LAMP, RPA, next-generation sequencing (Illumina, PacBio and Nanopore); familiar with bioinformatics analysis.

## Honors and Awards

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- **The second prize of Scientific and Technological Progress Award in Guangdong Province**, “Key quarantine technologies and application of important diseases and insect pests of import and export fruits”, 2022
- **The third prize of Science and Technology Award in China Society of Plant Protection**, “Key quarantine technologies and application of important diseases and insect pests of import and export fruits”, 2021
- **The Excellent Doctoral dissertation in CAU**, “Technique System for Molecular Identification of Quarantine Fruit Flies in China”, 2015
- **The First Prize of the National Doctoral Forum of Plant Protection**, 2014
- **Special Scholarship funded by Monsanto Company**, 2013
- **CAU Scholarship for Outstanding Research**, 2011
- **National Scholarship**, 2007;2014

## Other Information

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### *The National Doctoral Forum of Plant Protection*

- National conference, Chongqing, China, **Sep. 11~13, 2014**;
- Invited oral presentation: DNA Barcoding for Fruit Flies (Diptera: Tephritidae)

### *The 7<sup>th</sup> International Symposium on Molecular Insect Science*

- International conference, Amsterdam, The Netherlands, **Jul. 13~16, 2014**;
- Post presentation: Review on Molecular Identification of Fruit Flies (Diptera: Tephritidae)

### *The 5<sup>th</sup> International Barcode of Life Conference*

- International conference, Kunming, China, **Oct. 27~31, 2013**;
- Oral presentation: Existence of Species Complex Largely Reduced Barcoding Success for Invasive Species of Tephritidae: A Case Study in *Bactrocera* spp.

### *Padjadjaran University*

- Visiting student, Bandung, Indonesia, **Feb. 27~Mar. 10, 2013**;
- Oral presentation: Study in China Agricultural University;
- Learned to identify *Bactrocera dorsalis* complex based on morphology and collected fruit fly samples.

### *The 2nd International Symposium of TEAM (Tephritid Workers of Europe Africa and the Middle East)*

- International conference, Crete, Greece, **Jul. 3~6, 2012**;
- 1 of 2 Chinese representatives in this conference;
- Post presentation: Identification of Two Species of *Tetradacus* (Diptera: Tephritidae: *Bactrocera*) based on Morphological Characteristics and Species-Specific PCR

## Personal Statement

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I am familiar with the morphological characteristics of *Anastrepha*, *Bactrocera*, *Ceratitis*, *Dacus* and *Rhagoletis* genera, especially familiar with most economically important *Bactrocera* species. For *B. zonata*, I know its morphology well and can discriminate it from its allied species (*B. correcta*, *B. tuberculata*).

I am familiar with kinds of molecular detection technologies and bioinformatics analysis. I have developed species-specific primers and probe of *B. zonata*, and analyzed barcoding success of 73 *Bactrocera* species.

I also study on the new molecular detection technologies, such as next-generation sequencing or isothermal amplification, I have the ability to develop novel diagnostic methods.

## Publications and Papers

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### Papers

**F. Jiang**, L. Liang, J. Wang, S.F. Zhu\*. Chromosome-level genome assembly of *Bactrocera dorsalis* reveals its adaptation and invasion mechanisms. *Communications Biology*, 2022, 5:25. (IF: 6.268)

Y.F. Deng <sup>1</sup>, **F. Jiang** <sup>1</sup>, F. Hu, L. Liang, Y.J. Wang\*. Transcriptome analysis reveals molecular strategies of *Bactrocera dorsalis* (Hendel) larvae in response to anoxia. *Journal of Asia-Pacific Entomology*, 2021, 24: 975-982. (IF: 1.303)

**F. Jiang**, L. Liang, Z.H. Li, Y.X. Yu, J. Wang, Y.P. Wu, S.F. Zhu\*. A conserved motif within cox2 allows broad detection of economically important fruit flies (Diptera: Tephritidae). *Scientific Reports*, 2018, 8: 2077. (IF: 5.228)

**F. Jiang**, W. Fu, A.R. Clarke, M.K. Schutze, A. Susanto, S.F. Zhu\*, Z.H. Li\*. A high-throughput detection method for invasive fruit fly (Diptera: Tephritidae) species based on microfluidic dynamic array. *Molecular Ecology Resources*, 2016, 16: 1378-1388. (IF: 7.049)

**F. Jiang**, X.B. Pan, X.K. Li, Y.X. Yu, J.H. Zhang, H.S. Jiang, L.D. Dou, S.F. Zhu\*. The first complete mitochondrial genome of *Dacus longicornis* (Diptera: Tephritidae) using next-generation sequencing and mitochondrial genome phylogeny of Dacini tribe. *Scientific Reports*, 2016, 6: 36426. (IF: 5.228)

**F. Jiang**, Q. Jin, L. Liang, A.B. Zhang \*, Z.H. Li\*. Existence of species complex largely reduced barcoding success for invasive species of Tephritidae: a case study in *Bactrocera* spp.. *Molecular Ecology Resources*, 2014, 14: 1114-1128. (IF: 7.049)

**F. Jiang**, Z.H. Li\*, J.J. Wu, F.X. Wang, H.L. Xiong. A rapid diagnostic tool for two species of *Tetradacus* (Diptera: Tephritidae: *Bactrocera*) based on species-specific PCR. *Journal of Applied Entomology*, 2014, 138: 418-422. (IF: 1.827)

**F. Jiang**, Z.H. Li\*, Y.L. Deng, J.J. Wu, R.S. Liu, B. Nopparat. Rapid diagnosis of the economically important fruit fly, *Bactrocera correcta* (Diptera: Tephritidae) based on a species-specific barcoding cytochrome oxidase I marker. *Bulletin of Entomological Research*, 2013, 103: 363-371. (IF: 1.987)

C.N. Wang, **F. Jiang**, S.F. Zhu\*. Complex small RNA-mediated regulatory networks between

- viruses/viroids/satellites and host plants. *Virus Research*, 2022, 311: 198704. (IF: 3.303)
- J.Y. He, K. Chen, **F. Jiang**, X.B. Pan\*. Host shifts in economically significant fruit flies (Diptera: Tephritidae) with high degree of polyphagy. *Ecology and Evolution*, 2021, 11:13692–13701. (IF: 2.912)
- Y. Zhang, S.Q. Feng, L. Fekrat, **F. Jiang**, M. Khathutshelo, Z.H. Li\*. The first two complete mitochondrial genome of *Dacus bivittatus* and *Dacus ciliatus* (Diptera: Tephritidae) by next-generation sequencing and implications for the higher phylogeny of Tephritidae. *International Journal of Biological Macromolecules*, 2019, 140: 469-476. (IF: 4.97)
- L. Zheng, Y. Zhang, W. Yang, Y. Zeng, **F. Jiang**, Y. Qin, J. Zhang, Z. Jiang, W. Hu, D. Guo, J. Wan, Z. Zhao, L. Liu, Z.H. Li\*. New species-specific primers for molecular diagnosis of *Bactrocera minax* and *Bactrocera tsuneonis* (Diptera: Tephritidae) in China based on DNA barcodes. *Insects*, 2019, 10: 447. (IF: 2.37)
- Y.L. Xia, J.H. Huang, **F. Jiang**, J.Y. He, X.B. Pan, X.J. Lin, H.Q. Hu, G.C. Fan, S.F. Zhu, B.H. Hou, G.C. Ouyang\*. The effectiveness of fruit bagging and culling for risk mitigation of fruit flies affecting citrus in China: a preliminary report. *Florida Entomologist*, 2019, 102 (1): 79-84. (IF: 1.052)
- Y.Y. Zeng, G.V.P. Reddy, Z.H. Li, Y.J. Qin, Y.N. Wang, X.B. Pan, **F. Jiang**, F. Gao, Z.H. Zhao\*. Global distribution and invasion pattern of oriental fruit fly, *Bactrocera dorsalis* (Diptera: Tephritidae). *Journal of Applied Entomology*, 2019, 143 (3): 165-176. (IF: 1.95)
- Y. Zhang, S.Q. Feng, Y.Y. Zeng, H. Ning, L.J. Liu, Z.H. Zhao, **F. Jiang**, Z.H. Li\*. The first complete mitochondrial genome of *Bactrocera tsuneonis* (Miyake) (Diptera: Tephritidae) by next-generation sequencing and its phylogenetic implications. *International Journal of Biological Macromolecules*, 2018, 118: 1229-1237. (IF: 3.909)
- Z.H. Zhao, B.Y. Cui, Z.H. Li\*, **F. Jiang**, Q.Q. Yang, Z. Kučerová, V. Stejskal, G. Opit, Y. Cao, F.J. Li. The establishment of species-specific primers for the molecular identification of ten stored-product psocids based on ITS2 rDNA. *Scientific Reports*, 2016, 6: 21022. (IF: 5.228)
- Y.J. Wang, Z.H. Li\*, S.F. Zhang, Z. Varadínová, **F. Jiang**, Z. Kučerová, Y. Cao. DNA barcoding for five common storage species of *Cryptolestes* (Coleoptera: Laemophloeidae). *Bulletin of Entomological Research*, 2014, 104: 671-678. (IF: 1.987)
- F. Jiang** and Z.H. Li. Review on Molecular Identification of Fruit Flies (Diptera: Tephritidae). *The 7th International Symposium on Molecular Insect Science*. 2014. [abstract]
- K. Matodzi, **F. Jiang**, M. Mudzwiri and Z.H. Li. Molecular identification of Tephritidae larvae from South Africa based on DNA barcoding. *The 2<sup>nd</sup> International Congress on Biological Invasions*. 2013. [abstract]
- F. Jiang**, Z.H. Li\*, L. Liang, S.F. Zhu. Research progress in mitochondrial genomes of Tephritidae insect. *Plant Quarantine*, 2016, 30 (3): 12-17. [in Chinese]
- F. Jiang**, J.Q. Liu, Z.H. Li, J.J. Wu and S. Zhao. Molecular identification of fruit fly larvae by DNA barcodes. *Plant Protection*, 2011, 37(4): 150-153. [in Chinese]

- W.Q. Liu, **F. Jiang**, L. Li, C. Chen, L.D. Sun, J.D. Geng, M. Zheng, L. Liang. Rapid identification of *Rhagoletis cerasi* (L.) by TaqMan probe real-time fluorescent quantitative PCR. *Plant Quarantine*, 2022, 36(3): 39-45. [in Chinese]
- P.S. Sun, **F. Jiang**, X.L. Zhang, J.Q. Zhang, X.B. Pan, Z.H. Li. Invasion risk assessment of the Mediterranean fruit fly *Ceratitis capitata* into China. *Journal of Plant Protection*, 2017, 44 (3): 436-444. [in Chinese]
- Z.H. Li, **F. Jiang**, X.L. Ma, Y. Fang, Z.Z. Sun, Y.J. Qin, Q.L. Wang. Review on prevention and control techniques of Tephritidae invasion. *Plant Quarantine*, 2013, 27(2): 1-10. [in Chinese]
- L. Liang, W. Jiang, H. Yu, **F. Jiang**, Z.H. Li, D. Yang\*. Identification of Chinese *Bactrocera* species through DNA Barcoding (Diptera, Tephritidae). *Acta Zootaxonomica Sinica*, 2011, 36 (4): 925-932. [in Chinese]
- R.J. Yong, Z.H. Li, H. Chen, Y.J. Wang, Q.Q. Yang, J.T. Hu, **F. Jiang**. TaqMan probes Real-time PCR for the molecular identification of three species of *Diabrotica*. *Plant Quarantine*, 2017, 31 (5): 38-43. [in Chinese]
- M.L. Yang, Z.H. Li\*, **F. Jiang**, B. Nopparat, R.C. Xiong and Y. Cao. Molecular identification of *Euzophera pyriella* Yang based on DNA barcoding. *Plant Quarantine*, 2013, 27(4): 54-57. [in Chinese]
- J.X. Shi, C.N. Wang, J.X. Zhou, **F. Jiang**, S.F. Zhu, Z.H. Li. Research advances in vertical transmission of plant viruses in vector insects. *Journal of Plant Protection*, 2022, 49(2): 439-449. [in Chinese]

## Patents

- Z.H. Li, **F. Jiang**, J.J. Wu, X.N. Hu, H.J. Liu, Y.J. Gu. A kit for the Tephritidae identification and the species-specific primers. ZL 201110430703.4
- Z.H. Li, **F. Jiang**, S.F. Zhu, W. Fu. A microfluidic dynamic array for Tephritidae identification. ZL 201510219803.0
- F. Jiang**, S.F. Zhu, X.B. Pan, Y.X. Yu, J.H. Zhang, P. Zhou. A method for multi-objective and rapid identification of quarantine Tephritidae. ZL 201610815264.1
- Q. Jin, **F. Jiang**, F.F. Wang, Z.H. Zhang, X.W. Wang, X.H. Wang. An algorithm for insect species delimitation. ZL 202010331676.4
- J.X. Shi, **F. Jiang**, S.F. Zhu. A pair of specific primers, kit and method for *Takifugu* identification. ZL 202011385690.9
- Y.X. Yu, P. Zhou, J.H. Zhang, L.D. Dou, N.Z. Chen, **F. Jiang**. An attractant for *Dendroctonus* genera. ZL 201510729334.7
- F. Jiang**, Z.Q. Tian, S.F. Zhu, Y.J. Zhang. A method for multi-objective and rapid identification of *Bactrocera* species. 201811041329.7
- F. Jiang**, S.F. Zhu, Y.J. Zhang. A system and method for species identification based on high-throughput sequencing. 202010098248.1
- C.G. Wang, **F. Jiang**, Y.P. Zhang, C.N. Wang, Y.J. Zhang. An assembly method for low depth

siRNA sequences of virus. 202010004702.2

W.Q. Liu, C. Chen, **F. Jiang**, L. Li, J.D. Geng, M. Zheng, Z.W. Liu, D.L. Yang, X. Wang. A pair of species-specific primers and probe for *Rhagoletis cerasi*. 202010924705.8

**F. Jiang**, C.N. Wang, S.F. Zhu. A multiple amplification kit and method for pathogenic microorganism based on high-throughput sequencing. 202110658131.9

Y. Zhang, **F. Jiang**, S.F. Zhu, J.X. Shi, C.N. Wang. A pair of specific primers, kit and method for *Amanita* identification. 202111279445.4

## **Publications**

Z.H. Li, H.C. Yang, Z.R. Shen (Chief Editor). Introduction to Animal and plant Quarantine (Second Version). Beijing: China Agricultural University Press, 2020.10. (Editorial board member) I wrote the chapter of molecular identification technologies.

S.F. Zhu (Chief Editor). Plant Quarantine. Beijing: Science Press, 2019. (Editorial board member) I wrote the chapter of molecular identification technologies.

Q.Y. Weng, Q.H. Chen, M.S. You. Rapid detection of fruit and vegetable diseases and insects in Taiwan. Beijing: China Agriculture Press, 2016. (Editorial board member) I wrote Chapter 15: rapid detection of *Bactrocera latifrons*.

## **Software Copyrights**

Alien Invasive Species Identification System V1.0, 2020SR0448738

Alien Invasive Bacteria Identification System V1.0, 2019SR0026695

Alien Invasive Fungus Identification System V1.0, 2019SR0422699

Tephritidae Barcoding Identification System V1.0, 2011SRBJ0406

## **Standards**

**F. Jiang**, Y.J. Zhang, J. Chen, Q.Y. Yue, D.Y. Qiu. Specification of nucleic acid extraction used for high-throughput detection of pathogenic microorganisms. GB/T 40458-2021 [government standard]

W.Q. Liu, C. Chen, **F. Jiang**, W.J. Zhao, L. Li, F. Liang, Y.H. Zhang, D.L. Yang, W.M. Liu, M. Zhen, J.D. Geng, B.S. Chen, S.H. Chen, X. Wang. Detection and identification of *Rhagoletis cerasi* (Linnaeus). 20202641-T-469 [government standard]

J.J. Wu, Y.X. Yu, Z. Zhang, M.T. Wu, N.Z. Chen, H. Xu, R.R. He, H.J. Liu, **F. Jiang**, S.F. Li, L. Lin, P. Chen, J. Hu, H.X. Yang, X.B. Pan, C.L. Lai. Methods for trapping fruit flies (Tephritidae) with attractants. GB/T 36828-2018 [government standard]

Y. Chen, **F. Jiang**, Y. Huang, N.Z. Chen. Detection and identification of *Eurytoma laricis* Yano and *Eurytoma plotnikovi* Nikolskaya. SN/T 2471-2019 [professional standard]