

LI WANG

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EDUCATION

Institute of Botany, Chinese Academy of Sciences, Beijing, China 2011

PhD Plant Evolution

Thesis: Phylogeny, diversification and phylogeography of the derived fern genus *Lepisorus*

Wuhan University, Wuhan, Hubei Province, China 2006

BS Biotechnology

PROFESSIONAL EXPERIENCE

Iowa State University April 2014 - present

Postdoctoral Research Associate on Bioinformatics

- Principal Investigator: Dr. Matt Hufford
- Investigated demography and its effect on mutation load in maize and teosinte using high-depth whole genome re-sequencing data
- Exploring parallel adaptation to highland environments in maize populations
- Conducting comparative genomic analyses of four de-novo assembled genomes of maize landraces
- Mentoring graduate students in molecular and bioinformatic techniques

Iowa State University April 2014 - December 2015

Postdoctoral Research Associate on Bioinformatics

- Principal Investigator: Dr. Andrew Severin
- Provided services at Genomic Informatics Center
- Detected selection during soybean improvement

Texas Tech University February 2012 - March 2014

Postdoctoral Research Associate on Bioinformatics

- Studied gene expression and co-expression network differences resulting from latitude adaptation in balsam poplar with transcriptome data
- Evaluated gene expression pattern and enriched pathways owing to sex dimorphism in dioecious poplars
- Assessed DNA and protein evolutionary rates and detected signatures of selection
- Mentored graduate students in molecular and bioinformatic techniques

Institute of Botany, Chinese Academy of Sciences June 2007 - July 2011

Research Assistant

- Investigated phylogeny, phylogeography, polyploidization and reticulate evolution in ferns
- Mentored multiple graduate students in experimental and analyses techniques

Goettingen University, Germany February 2009 - November 2010

Research Assistant

- Examined phylogeny, phylogeography, polyploidization and reticulate evolution in ferns

Natural History Museum, London, UK
Research Assistant

December 2009, April 2010

- Inspected phylogeny, phylogeography, polyploidization and reticulate evolution in ferns

Institute of Hydrobiology, Chinese Academy of Sciences
Undergraduate Research

June 2005 - December 2005

- Collected data of fish diversity to determine the effect of constructing the three gorges dam on Yangtze River

SKILLS

Scripting languages

- Proficient in Unix scripting/bash, python, perl, R, markdown and latex

Software proficiencies

- **Assembly:** Trinity, Falcon, MaSuRCA, Platanus, GenomeScope, Redundans
- **Annotation:** GeneMark, Augustus, Busco, CEGMA, Repeatmasker, BLAST, Trinotate, Blobtools
- **Aligners:** Bowtie, BWA, Gmap, Gsnap, Hisat2
- **Transcriptomics:** Trinity, Rsem, edgeR, WGCNA, mapMan
- **Comparative genomics:** GATK, Bedtools, vcftools, PLINK, TASSEL, MEGA
- **Machine learning:** scikit learn (regression, clustering algorithms)
- **Population genomics:** PopGenome, ANGSD, NGSadmix, MSMC, PSMC, fastSimcoal, ms
- **Phylogenetics:** Mafft, ClustalW, Muscle, RaxML, Phagon
- **Visualization:** Circos, Cytoscape, Photoshop
- **Other:** Seqtk, Aspera, Bamtools, Bioawk, Cdbfasta, Fastqc, Gawk, Jellyfish, Picard Tools, Samtools, SRA-Toolkit, Tabix, Trimmomatic, Sickel, Vcftools, BLAT, Emboss etc

Lab proficiencies

- DNA and RNA extraction, bioNano, PCR, clone etc.

CODING ACCOMPLISHMENTS

Publicly available pipelines and scripts

- https://github.com/HuffordLab/Wang_et_al_Demography – computational pipeline for demography and its effect on mutation in maize
- <https://github.com/ISUgenomics/commonscripts> – Common genomic analyses

AWARDS AND HONORS

2011

- DEAN Award in Chinese Academy of Sciences, Beijing, China

2011

- The excellent graduate student in Chinese Academy of Sciences, Beijing, China

2010-2011

- BHPB-GUCAS Scholarship for excellent Ph.D. candidates, Beijing, China; \$2,000

2010

- The second prize for giving talks at students' symposium in Natural History Museum, London, UK

2008 - 2010

- DAAD-CAS Joint Scholarship Program – *1,000 Euro per month for two years*, Goettingen, Germany

2009 - 2010

- Merit Student by the Graduate University of Chinese Academy of Sciences, Beijing, China

CONFERENCE PARTICIPATION

Oral Presentation

- **Li Wang**, Harald Schneider, Xianchun Zhang. (July 2011). The rise of the Himalaya enforced the diversification of SE Asian ferns by altering the monsoon regimes. International Botany Conference, Melbourne, Australia
- **Li Wang**, Harald Schneider, Qiaoping Xiang, Xianchun Zhang. (November 2010). Phylogeography of the alpine fern *Lepisorus clathratus* on "the roof of the world". The Fifth Asian Fern Symposium, Shenzhen, China
- **Li Wang**, Xianchun Zhang. (December 2008). Phylogeny of the paleotropical fern genus *Lepisorus* (Polypodiaceae, Polypodiopsida) inferred from four chloroplast genome regions. Symposium on Academic study of Chinese ferns, Shenzhen, China

Poster Presentation

- **Li Wang**, Emily Josephs, Lucas M. Roberts. Timothy Mathes Beissinger, Jeffrey Ross-Ibarra, Matthew Hufford. (March 2017). Detection of Convergent Highland Adaptation in maize landrace populations. 59th maize genetic conference, St. Luis, Missouri, USA
- **Li Wang**, Timothy Mathes Beissinger, Jeffrey Ross-Ibarra, Matthew Hufford. (March 2016). Evolution of maize during post-domestication expansion across the Americas. 58th maize genetic conference, Jacksonville, Florida, USA
- **Li Wang**, Timothy Mathes Beissinger, Jeffrey Ross-Ibarra, Matthew Hufford. (March 2015). Inference of Maize Population History during Migration to Highland Habitats. 57th maize genetic conference, St. Charles, Illinois, USA
- **Li Wang**, Timothy Mathes Beissinger, Jeffrey Ross-Ibarra, Matthew Hufford. (January 2015). Inference of Maize Population History during Migration to Highland Habitats. Plant and Animal Genome Conference, San Diego, CA, USA
- **Li Wang**, Matt Olson. (June 2013). Timing for success: expression phenotype and local adaptation related to latitude in the boreal forest tree. Evolution, Snowbird, Utah, USA

Attended

- July 2009, Niche Evolution Conference, Zurich, Switzerland
- August 2009, Systematics 2009, Leiden, Netherlands
- May 2006, Symposium on Academic study of Chinese ferns, Shangri-La, China

LEADERSHIP SKILLS

Social activity manager of Postdoctoral Association at Iowa State University

Participated in the Self-expression and Leadership Program at Landmark (<http://www.landmarkworldwide.com/>)

Will take a leadership program for women scientists on a three-week expedition to Antarctica in February 2018

PUBLICATIONS

Published

- **Li Wang**, Timothy Mathes Beissinger, Anne Lorant, Claudia Ross-Ibarra, Jeffrey Ross-Ibarra, Matthew Hufford. 2017. The interplay of demography and selection during maize domestication and expansion. **bioRxiv**. doi: <https://doi.org/10.1101/114579>.
- Timothy Beissinger, **Li Wang**, Kate Crosby, Arun Durvasula, Matthew B Hufford, Jeffrey Ross-Ibarra. 2016. Recent demography drives changes in linked selection across the maize genome. **Nature plants** 2: 16084.
- **Li Wang**, Peter Tiffin, Matthew Olson. 2014. Timing for success: expression phenotype and local adaptation related to latitude in the boreal forest tree, *Populus balsamifera*. **Tree Genetics and Genomes**. DOI: 10.1007/s11295-014-0731-3.
- Harald Schneider, Lijuan He, Jeannine Marquardt, **Li Wang**, Jochen Heinrichs, Sabine Hennequin, Xianchun Zhang. 2013. Exploring the origin of the latitudinal diversity gradient: contrasting the sister fern genera *Phegopteris* and *Pseudophegopteris*. **Journal of Systematics and Evolution** 51: 61-70.
- Xianchun Zhang, Ran Wei, Hongmei Liu, Lijuan He, **Li Wang**, Gangming Zhang. 2013. Phylogeny and classification of the extant lycopphytes and ferns from China. **Chinese Bulletin of Botany** 48: 119-137.
- **Li Wang**, Harald Schneider, Xianchun Zhang, Qiaoping Xiang. 2012. The rise of the Himalaya enforced the diversification of SE Asian ferns by altering the monsoon regimes. **BMC Plant Biology** 12:210. DOI: 10.1186/1471-2229-12-210.
- **Li Wang**, Harald Schneider, Zhiqiang Wu, Lijuan He, Xianchun Zhang, Qiaoping Xiang. 2012. Indehiscent sporangia enable the accumulation of local fern diversity at the Qinghai-Tibetan Plateau. **BMC Evolutionary Biology** 12:158. DOI:10.1186/1471-2148-12-158.
- **Li Wang**, Zhiqiang Wu, Nadia Bystriakova, Stephen W. Ansell, Qiaoping Xiang, Jochen Heinrichs, Harald Schneider, Xianchun Zhang. 2011. Phylogeography of the alpine fern *Lepisorus clathratus* on “the roof of the world”. **PloS One** 6: e25896. DOI: 10.1371/journal.pone.0025896.
- **Li Wang**, Xinping Qi, Qiaoping Xiang, Jochen Heinrichs, Harald Schneider, Xianchun Zhang. 2010. Phylogeny of the paleotropical fern genus *Lepisorus* (Polypodiaceae, Polypodiopsida) inferred from four chloroplast genome regions. **Molecular Phylogenetics and Evolution** 54: 211-225.
- **Li Wang**, Zhiqiang Wu, Qiaoping Xiang, Jochen Heinrichs, Harald Schneider, Xianchun Zhang. 2010. A molecular phylogeny and a revised classification of tribe Lepisoreae (Polypodiaceae) based on an analysis of four plastid DNA regions. **Botanical Journal of the Linnean Society** 162: 28-38.
- Hongmei Liu, **Li Wang**, Hui Zeng, Xianchun Zhang. 2008. Advances in the studies of lycopphytes and monilophytes with reference to systematic arrangement of families distributed in China. **Journal of Systematics and Evolution** 46: 808-829.
- Xianchun Zhang, **Li Wang**, Xinping Qi. 2008. Additions to the pteridophyte flora of Xizang (IV). **Newsletter of Himalayan Botany** 41: 20-27.
- **Li Wang**, Xianchun Zhang. 2007. Pteridophyta. in Zhenyu Li, Lei Shi (editors), **Flora of Emei Mountain**. Beijing Science and Technology Press, Beijing, pp. 153-224.
- **Li Wang**, Xianchun Zhang. 2007. Chinese aquatic ferns. **China Nature** 138: 54-55.

In Preparation

- Purushottam R. Lomate, Veena Dewangan, Neha S. Mahajan, Yashwant Kumar, Abhijeet Kulkarni, **Li Wang**, Smita Saxena, Vidya S. Gupta, and Ashok P. Giri. 2017. Integrated transcriptomic and proteomic analyses revealed the participation of endogenous protease inhibitors in the regulation of protease gene expression in *Helicoverpa armigera* (**submitted**)
- Garrett M. Janzen, **Li Wang**, Matthew B. Hufford. Review: Adaptive Introgression Expanded the Genetic Base of Crops during post-Domestication Spread. (**Expected 2017**)
- Brian Sanderson, **Li Wang**, Peter Tiffin, Zhi-qiang Wu, Matthew S. Olson. Males and females of *Populus balsamifera* differ primarily in the expression of energy-related genes. (**Expected 2017**)

RESEARCH FIELD WORK

Nov 2015

Mexican Central Plateau, Mexico

- Collected teosinte hybrid populations
- Team work with collaborators from both University of California Davis and Mexican national laboratory of genomics for biodiversity

Jun-Jul 2012

Alaska, US

- Collected leaves for RNA extraction in the common garden for balsam poplar at University of Alaska, Fairbanks
- Cooperated with researchers in University of Alaska, Fairbanks

Jul 2010

Altai Mountains, Russia

- Studied fern biodiversity in the region of Altai Mountains
- Worked jointly with Russian collaborators

Jun 2010

Alps, Switzerland and France

- Explored fern biodiversity in the Alps and collected populations of several fern species
- Worked closely with collaborators from Natural History Museum, UK

Nov 2008

Tropical and subtropical regions, China

- Examined fern biodiversity in Hainan and Guangdong Province
- Worked together with researchers from Zhongshan University, China

May 2008

Central Inner Mongolia, China

- Collected populations of *Lepisorus clathratus* in the northern desert region of China

Dec 2007

Southeast of Yunnan, China

- Investigated plant biodiversity at border of China and Vietnam
- Discovered several new species
- Collaborated with researches from Kunming Botanical Garden, China

Oct 2007

The Himalayas and Tibetan Plateau, China

- Investigated fern biodiversity at southeast of Tibet as a member of expedition team organized by World Wildlife Foundation
- Collaborated with many researches from different discipline

Aug 2007

Hengduan Mountains, China

- Explored fern biodiversity

May 2005

The three Gorges region, China

- Studied fish biodiversity
- Cooperated with local fishermen and administrative officers

REFERENCES

Dr. Matt Hufford

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Ecology, Evolution, & Organismal Biology
Iowa State University
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Genome Informatics Facility
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