

EDUCATION

Ph.D. in Evolutionary Genetics (minor: Bioinformatics), 2014~, Indiana University, USA (GPA 4.0)

M.S. in Biology, 2012~2014, Miami University, USA (GPA 3.9)

B.S. in Plant Sciences, 2008~2012, Sichuan Agricultural University, China (GPA 3.5)

RESEARCH PROJECT

03/2017~01/2018

Genome assembly

assembled the genome of *Jaltomata sinuosa* using PacBio and Illumina reads, annotated repeats and genes, conducted comparative analyses (gene family dynamics and gene molecular evolution) with other Solanaceae species [[Project Scripts](#)]

06/2015~02/2017

Phylogenomic study

assembled transcriptomes of 14 *Jaltomata* species (closely related plant taxon of tomato), generated phylogenetic relationship, inferred trait evolution, and identify candidate genes associated with morphological trait diversification [[Project Scripts](#)]

08/2014~05/2015

TE expression

quantified transcriptional activity of transposable elements in wild tomatoes using RNA-seq, and investigated their expression relationship with surrounding genes

06/2013~08/2014

Origin of red-fleshed papaya

sequenced the lycopene beta cyclase locus and its up/down-stream flanking regions in wild populations of red/yellow-fleshed papaya and cultivars, performed population genetic analyses to reveal the origin of allele in red-fleshed papaya

08/2012~08/2013

Sex chromosome evolution

performed comparative and population genetic analyses on the X/Y-linked genes on papaya sex chromosomes to suggest the degradation evolution of Y-linked genes

05/2010~06/2012

Wheat-rye allopolyploids

investigated genome compositions of synthetic wheat-rye allopolyploids using molecular (PCR and sequencing) and cytogenetic approach (FISH and GISH)

COMPUTATIONAL SKILLS

- Four-year experience in Python and R, including using related packages or libraries such as biopython, bioconductor, SciPy, NumPy, pandas, skit-learn, Matplotlib
- Proficiency in shell scripting in Linux environment and pipeline development
- Ability to use relational database management system, such as SQLite
- Familiar with various bioinformatics software and pipelines, including:
 - 1) Reads processing and mapping: Trimmomatic, Scythe, FastQC, BWA, STAR
 - 2) Variant calling: SAMtools, BEDtools, VCFtools, GATK
 - 3) Gene expression analyses: FeatureCounts, EdgeR, DESeq2
 - 4) Sequence clustering and alignment: MCL, CD-HIT, PRANK, MAFFT, MUSCLE
 - 5) Genome/transcriptome assembly: Trinity, MaSuRCA, DBG2OLC, BUSCO
 - 6) Functional annotations: MAKER, AHRD, RepeatMasker,

PUBLICATIONS

Wu M, Kostyun JL, Hahn MW, Moyle LC. (in press) Dissecting the basis of novel trait evolution in a radiation with widespread phylogenetic discordance. *Molecular Ecology*, BioRxiv 201376.

Wu M, Lewis J, Moore RC. 2017. A wild origin of the loss-of-function lycopene beta cyclase (CYC-b) allele in cultivated, red-fleshed papaya (*Carica papaya*). *American Journal of Botany* 104:1-11.

Wu M and Moore RC. 2015. The evolutionary tempo of sex chromosome degradation in *Carica papaya*. *Journal of Molecular Evolution* 80:265-277.

Lappin FM, Medert CM, Hawkins K, Mardonovich S, **Wu M**, Moore RC. 2015. A polymorphic pseudoautosomal boundary in the *Carica papaya* sex chromosomes. *Molecular Genetics and Genomics* 290:1511-1522.

Hao M, Luo J, Zhang L, Yuan Z, Yang Y, **Wu M**, Chen W, Zheng Y, Zhang H, Liu D. 2013. Production of hexaploid triticales by a synthetic hexaploid wheat-rye hybrid method. *Euphytica* 193:347-357.

Tang Z*, **Wu M***, Zhang H, Yan B, Tan F, Zhang H, Fu S, Ren Z. 2012. Loss of parental coding sequences in early generation of wheat-rye allopolyploid. *International Journal of Plant Sciences* 173:1-6.

CONFERENCES

01/2018

"The Plant and Animal Genome XXVI Conference", San Diego
Sequencing and de novo assembly of the genome of *Jaltomata sinuosa*, a species in the sister clade to *Solanum* and *Capsicum*. [Poster]

07/2017

"The Annual Meeting of the Society for Molecular Biology and Evolution", Austin
Inferring phenotypic trait evolution and contributing loci in a recent radiation with widespread phylogenetic discordance. [Poster]

03/2014

"The Midwest Ecology and Evolution Conference", Dayton
The evolutionary tempo of sex chromosome degradation in *Carica papaya*. **[Talk]**

07/2013

"The Annual Meeting of the Botanical Society of America", New Orleans
The investigation on protein evolution of Y chromosome in *Carica papaya*. [Poster]

AWARDS

"Heimsch Award", Outstanding Graduate Student, \$900, Dept. of Biology, Miami University, 2012

"Genetics Section Student Poster Award", Botanical Society of America, 2013

"Academic Challenge Research Grant", \$2000, Dept. of Biology, Miami University, 2013

GRADUATE ASSISTANSHIPS

01/2015~01/2018

Teaching "Evolutionary Genetics" and "Biology Lab", Indiana University

01/2013~05/2014

Teaching "Biotechnology" and "Evolution", Miami University

08/2012~12/2012

Research assistant, Herbarium of Miami University