Meng Wu

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EDUCATION

Indiana University, Bloomington, IN   *August 2014 - present*

Ph.D. in Evolutionary Biology (Bioinformatics minor); GPA: 4.0; Advisor: Leonie Moyle

Miami University, Oxford, OH   *June 2013 - August 2014*

M.S. in Biology; GPA: 3.9; Advisor: Richard Moore

Sichuan Agricultural University, China   *May 2010 - June 2012*

B.S. in Plant Sciences; GPA: 3.5; Advisor: Dengcai Liu

WORK EXPERIENCE

Genentech, *San Francisco, CA* – **Computational Biology Intern**   *May 2018 - August 2018*

- Worked closely with the NGS bioinformatics team and got hands on experience exploring and managing a variety of NGS data from Oxford Nanopore, Illumina (RNA-Seq, PE & HI-C), 10X Genomics, and Bionano (optical mapping)
- Developed a bioinformatic pipeline to automate *de-novo* assembly and annotation of genomes

Indiana University, *Bloomington, IN* – **Associate Instructor**   *August 2014 - present*

- Planned and conducted lab sections for the courses "Evolutionary Genetics" and "Biology Lab"

Miami University, *Oxford, OH* – **Associate Instructor**   *August 2012 - December 2012*

- Planned and conducted lab sections for the courses "Biotechnology" and "Evolution"

RESEARCH EXPERIENCE

Indiana University, *Bloomington, IN* **- Research Projects in Evolutionary Genomics**   *August 2014 - present*

- Infer sex-determination region(s) with sex-specific variants and sex-biased gene expression in two recently evolved dioecious species in *Solanum* using RNA-seq data and DNA-seq data from male or female populations
- *De novo* assembled and annotated the genomes of several plant species (in *Solanum* and *Jaltomata*) using PacBio and Illumina data, and conducted comparative genomic analyses
- Assembled transcriptomes of 14 species in the plant genus *Jaltomata*, generated phylogenetic relationship, inferred trait evolution, and identified candidate genes associated with novel trait evolution
- Quantified transcriptional activity of transposable elements in wild tomato species using RNA-seq data
- Identified copy number variation of retrogenes in Arabidopsis population using Illumina reads

Miami University, *Oxford, OH* **- Research Projects in Population Genetics**   *June 2013 - August 2014*

- Sequenced the lycopene beta cyclase locus and its flanking regions in wild populations of red/yellow-fleshed papaya and cultivars, and inferred the origin of allele in red-fleshed papaya using population genetic analyses
- Sequenced the coding sequences of sex-linked genes in wild populations of papayas, and performed population genetic analyses to investigate the degradation evolution of genes in the young Y chromosome

Sichuan Agricultural University, *China* **- Research Projects in Genome Evolution**   *May 2010 - June 2012*

- Investigated genome compositions of the synthetic wheat-rye allopolyploids through sequencing and cytogenetic approach (FISH and GISH)

TECHNICAL SKILLS

- Five-year experience in using Python, R and the related packages or libraries such as biopython, bioconductor, SciPy, NumPy, Pandas, Skit-learn, Matplotlib, ggplot2
- Proficiency in shell scripting in Linux environment, pipeline development and version control using GitHub

- Sufficient knowledge of algorithms in choosing efficient bioinformatics software and designing my own scripts
- Familiar with various bioinformatics software and pipelines, including:
  1) Variant calling: BWA, SAMtools, BEDtools, VCFtools, Picard, GATK
  2) RNA-seq analyses: STAR, HISAT, Trinity, StringTie, FeatureCounts, EdgeR, DESeq2
  3) Sequence clustering and alignment: MCL, CD-HIT, PRANK, MAFFT, MUSCLE, BioEdit
  4) Genome assembly: MaSuRCA, CANU, Supernova, Jellyfish, PILON, DBG2OLC, BUSCO
  5) Genome annotation: MAKER, AHRD, RepeatMasker, RepeatModeler, InterProScan, DIAMOND
  6) Comparative genomic analyses: PAML, RAxML, MrBayes, CAFÉ, MEGA, DnaSP

PUBLICATIONS

Wu M, Kostyun JL, Moyle LC. (*minor revision*). Genome sequence of Jaltomata addresses rapid reproductive trait evolution and enhances comparative genomics in the hyper-diverse Solanaceae. *Genome Biology and Evolution*.

Wu M, Kostyun JL, Hahn MW, Moyle LC. 2018. Dissecting the basis of novel trait evolution in a radiation with widespread phylogenetic discordance. *Molecular Ecology*, 27:3301-3316.

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 triticale 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 (***co-1st authorship**).

CONFERENCES/WORKSHOPS

"The Plant and Animal Genome XXVI Conference", San Diego   *January 2018*
　　Sequencing and *de novo* assembly of the genome of *Jaltomata sinuosa*, a species in the sister clade
　　to *Solanum* and *Capsicum*. [Poster]
"The Annual Meeting of the Society for Molecular Biology and Evolution", Austin   *July 2017*
　　Inferring phenotypic trait evolution and contributing loci in a recent radiation with widespread phylogenetic
　　discordance. [Poster]
"The Midwest Ecology and Evolution Conference", Dayton   *March 2014*
　　The evolutionary tempo of sex chromosome degradation in *Carica papaya*. [Talk]
"The Annual Meeting of the Botanical Society of America", New Orleans   *July 2013*
　　The investigation on protein evolution of Y chromosome in *Carica papaya*. [Poster]

AWARDS AND HONORS

"Genetics Section Student Poster Award", Botanical Society of America, 2013
"Academic Challenge Research Grant", $2000, Miami University, 2013
"Heimsch Award", Outstanding Graduate Student, $900, Miami University, 2012