

# Limeng (Momo) Xie

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## Education

### University of Georgia (UGA)

Phd student in Plant Biology, GPA 3.96

- Advisor: Dr. Alexander Bucksch, Computational Plant Science Lab

Athens, GA

2018 - Present

### Texas A&M University (TAMU)

Master in Horticultural Science, GPA 3.81

- Certificate in Applied Statistics
- Thesis: SNP Discovery and Mapping QTLs Associated with Root Traits and Morphological Traits in Tomato

College Station, TX

2014 - 2016

### China Agricultural University (CAU)

Bachelor in Agronomy, GPA 3.65

- Thesis: Evaluation of Methane Production in Anaerobic Reactor with Sweet Potato Vine and Dairy Manure

Beijing, China

2009 - 2014

### Saga University

Exchange Student

- Major in Plant Science and Japanese

Kyushu, Japan

2011 - 2012

## Publications

**Xie, L.**, Burrridge, J., Klepp, N., Miller, J., Lynch, J.P., Bucksch, A., Phenotypic spectrum: uncovering root architecture diversity in common bean (*Phaseolus vulgaris* L.) *In prep*

Delory, B.M., Hernandez-Soriano, M.C., Wacker, T.S., Dimitrova, A., Ding, Y., Greeley, L.A., Ng, J.L.P., Mesa-Marín, J., **Xie, L.**, Zheng, C. and York, L.M., 2022. A snapshot of the root phenotyping landscape in 2021. *bioRxiv*.

**Xie, L.**, Klein, P., Crosby, K., & Jifon, J. (2019). A Genotyping-by-sequencing Single Nucleotide Polymorphism-based Map and Genetic Analysis of Root Traits in an Interspecific Tomato Population, *Journal of the American Society for Horticultural Science* 144(6), 394-404.

## Presentations

2022 **Xie, L.**, Burrridge, J., Lynch, J.P., Bucksch, A., **North America Plant Phenotyping Network**, *Oral*: "Phenotypic Spectrum: Uncovering Root Architecture Diversity in Common Bean (*Phaseolus vulgaris* L.)", Athens, GA

2021 **Xie, L.**, Burrridge, J., Lynch, J.P., Bucksch, A., **ASA, CSSA, SSSA International Annual Meeting**, *Poster*: "Phenotypic Spectrum: Uncovering Root Architecture Diversity in Common Bean (*Phaseolus vulgaris* L.)", Salt Lake City, UT

2021 Kim, C., **Xie, L.**, Bucksch, A., Seymore, L., Van Iersel, M., **American Society of Horticultural Science Annual Meeting**, *Poster*: "Quantification of Canopy Size Using Automated Chlorophyll Fluorescence Image Analysis", Denver, CO

2019 **Xie, L.**, Bucksch, A., **International Plant Phenotyping Symposium**, *Poster*: "The shape of plants revealed: A shape theoretic perspective on statistics of trait measurements", Nanjing, China

2019 **Xie, L.**, Burrridge, J., Klepp, N., Miller, J., Chutoe, C., Saengwilai, P., Lynch, J.P., Bucksch, A., **Crops Conference**, *Poster*: "The Phenotypic Spectrum: Identifying Whole Root Architecture Types in Genotypes of Common Bean (*Phaseolus vulgaris* L.)", Huntsville, AL

2018 **Xie, L.**, Liu, S., Bucksch, A., **Plant Center Fall Retreat**, *Poster*: "Extracting Traits from 3D Models of Maize Root System Architecture", Unicoi State Park, GA

2017 **Xie, L.**, Klein, P., Crosby, K., & Jifon, J., **American Society of Horticultural Science Annual Meeting**, *Talk*: "Mapping Novel QTLs Associated with Root Morphological Traits in an Interspecific Tomato Population", Waikoloa, HI

## Awards

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2022 Georgia Education Board Fellowship, UGA  
2022 Gerald O Mott Award, Crop Science Society of America  
2022 Best Fast-Forward Talk at North America Plant Phenotyping Network  
2021 Best Poster Award UGA Phenomics Symposium, UGA  
2021 Georgia Education Board Fellowship  
2020 Palfrey Travel Award, Department of Plant Biology, UGA  
2020 Travel Scholarship for Root Short Course, University of Florida  
2016 Outstanding Graduate Student Award, Texas Plant Protection Association  
2013 Third Prize Scholarship for Academic Excellence, CAU  
2012 Japan Student Service Scholarship, Japan Student Service Organization  
2011 Third Prize Scholarship for Academic Excellence, CAU  
2010 Second Prize Scholarship for Academic Excellence, CAU  
2010 National Scholarship for Encouragement, Ministry of Education in China  
2010 Merit Undergraduate Student Award, CAU

## Research Experience

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### Bayer

*North America Breeding Intern*

Chesterfield, MO  
2022 May - Present

- Developed a root phenotyping platform for cotton
- Identified root traits that improve cotton performance in drought from control environment to field scale
- Presented findings to stakeholders across teams

### Computational Plant Science Lab, UGA

*Graduate Research Assistant*

Athens, GA  
2018 - Present

- Current project: The phenotypic spectrum: quantifying the diversity of root architecture in common bean
- Rotation projects: Developed an image processing pipeline to automatically extract root traits from 3D models of maize root system
- Rotation projects: Identified potential genetic regions with insulators in Bladderwort by analyzing a public RNA-seq database
- Rotation projects: Explored genetic variation of volatile content among 150 tomato accessions (wild, semi-domesticated, domesticated)

### Vegetable Breeding Lab, TAMU

*Lab Technician*

College Station, TX  
2017

- Conducted all daily operations including plant, fertilize, trellis, prune, IPM, supplies and asset acquisition to complete short term and long breeding goals over 7 greenhouses and acre-size field
- Established greenhouse trials of grafted tomatoes to study yield performance in relation to various rootstock and scion combinations
- Screened pepper hybrids for thrip resistance and performed hybrid testing at multiple locations across Texas
- Crossed pepper, tomato, melon and squash to produce hybrid seed

### Vegetable Breeding Lab, TAMU

*Graduate Research Assistant*

College Station, TX  
2014-2016

- Measure morphological root traits using the WinRhizo software
- Extracted, purified, and quantified tomato DNA for GBS library
- Constructed linkage map for mapping population using R/qtl, AsMap, and Joinmap
- Mapped 29 QTLs for 12 root and shoot traits using R/qtl, WinQTLCartographer, MapQTL and QTLNetworks

### Biomass Engineering Lab, CAU

*Undergraduate Research Assistant*

Beijing, China  
2012-2014

- Reutilized agricultural waste, e.g. dairy manure and sweetpotato vine, into clean and renewable energy
- Evaluated the volatile fat acid of effluent using HPLC
- Observed dairy manure and sweetpotato vine at a ratio of 2:8 could have as stable methane production

## Teaching & Mentoring

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## University of Georgia

Teaching Assistant

Athens, GA

2019 Fall

- Concepts in Biology (BIOL1103), 70 students
- Presented lectures for 3 lab session during semester
- Lead field trip and graded assigned homework for class
- Achieved overall student approval rating of 4.38 on 5 point scale

## University of Georgia

Mentor

Athens, GA

2020-2022

- Sydney Page, CURO Project: Discovery of micronutrients content of different root architecture types in Common Bean
- Joslyn Mcklveen, CURO Project: Analysis the effect of temperature and humidity on plant development on a newly-developed mesocosm system
- Lilly Adams, REU Project: Developing a new image processing pipeline to extract root trait of Arabidopsis and identifying candidate genes for root traits from GWAS

## Texas A&M University

Mentor

College Station, TX

May 2017 - Dec 2017

- Trained 8 undergraduates for pepper and tomato breeding

## Agricultural Extension

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### Center for Chinese Agricultural Policy (CCAP)

Intern

Beijing, China

Aug 2011

- Participated the Farmer Field School Promotion Project led by CCAP, Ministry of Agriculture, and Rand Corporation (US)
- Investigated application of pesticides and fertilizers in tomato productions in Hubei Province
- Surveyed farmers in three villages and analyzed the questionnaire data

### China Agricultural University

Co-leader, Summer Field Program

Beijing, China

June 2011

- Investigated the overuse of additives in the daylily industry in Qidong County
- Surveyed with local farmers and small business owners (>200 people)
- Presented results to the local government and appeared on the local media
- Organized a workshop introducing alternative methods to preserve daylily for farmers
- Won the Excellent Investigators Team Award

## Leadership Activities

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2021 Ambassador of International Society of Root Research | Responsible for promoting and advocating root research at the social media platform

2021 Panelist Speaker of Women in STEM for Outreach Activities in Athens-Clarke County High School

2021 Judge for Senior Section of 73rd Georgia Science & Engineering Fair

2020 Judge Lead for Junior Section of 72nd Georgia Science & Engineering Fair

2019 Judge for Senior Section of 71st Georgia Science & Engineering Fair

2019 Executive Board Member of Chinese Genomics Online Meet-up | Responsible for inviting guest speakers and technical support for live stream

2018 Volunteer in March for Science at Washington, DC

2015 Secretary, Texas A&M Horticulture Graduate Student Council

2015 Volunteer, Texas A&M Plant Breeding Symposium

## Professional Affiliations

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Member, Crop Science Society of America, Agronomy Society of America, American Society of Agronomy

Member, North America Plant Phenotyping Network

Member, American Association for Advancement of Science

Member, American Society of Horticultural Science

## Skills

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**Bioinformatics:** NGS (GBS, RNA-Seq), Reads Alignment (Bowtie, GSNAP), SNP Calling (Tophat, VCF Tools, SamTools), Gene Expression Analysis (Cufflinks)

**Quantitative and Population Genetics:** Polygenetic Tree, QTL mapping, Marker Assistant Selection, Clustering, Principle Component Analysis

**Computer and Data Sciences:** Linux/Unix, Python (Pandas, Numpy, OpenCV, Sci-py, Jupyter Notebooks), R (R/ctl, ggplot2, Rmarkdown, Tidyverse), SQL (MariaDB, Dbeaver), Github

**Language Skills:** Chinese (Native), English (Fluent), Japanese (Basic)