

Jeekin Lau

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Education

TEXAS A&M UNIVERSITY, COLLEGE STATION, TX 77843

Ph.D. Horticultural Sciences. May 2021. GPA 4.0.

- Dissertation Title: *Genetic analysis and QTL discovery in tetraploid garden roses: A study of disease and horticultural traits*. Advisors: Dr. David Byrne and Dr. Patricia Klein.

AUBURN UNIVERSITY, AUBURN, AL 36849

Masters of Science in Horticulture. Summer 2015. GPA 4.0.

- Thesis Title: *Investigating uses for industrial sweetpotato in addition to ethanol production to establish industrial sweetpotato as a sustainable crop in the Southeastern United States*.
Advisor: Dr. Wheeler G. Foshee.

Bachelor of Science in Horticulture, Fruit and Vegetable Production Science Track. 2013. GPA 4.0.

Experience

TEXAS A&M UNIVERSITY, COLLEGE STATION, TX 77840

Graduate Research Assistant, Department of Horticultural Sciences. Fall 2015-present.

- Determining rose ploidy level via root tip squashes and light microscopy.
- Rose pollinations, propagation, and establishing field research plots for phenotyping.
- Tissue collection and DNA extraction of Rose.
- Phenotyping roses for disease resistance (black spot, cercospora leaf spot, powdery mildew, and rose rosette disease) along with horticultural traits (flower intensity, defoliation, flower characteristics, architecture traits).
- Tetraploid genotype calling using R package: fitPoly (Voorrips et al., 2011)
- Tetraploid Linkage mapping using: polymapR (Bourke et al., 2018) and MAPpoly (Mollinari and Garcia, 2019).
- QTL mapping using TetraploidSNPMap (Hackett et al., 2017) and QTLpoly (Pereira et al., 2020).
- GWAS with GWASpoly (Rosyara et al., 2016) and GAPIT (Lipka et al., 2012)
- Diploid mapping using polymapR.
- Coding custom scripts in R for genotype data format changes for use in different software.
- Some experience with python as it is also an object oriented language.
- Experience data wrangling genotypic datasets with both GBS and SNP-chip origins.
- Teaching assistant for Temperate Fruit and Nut Production (HORT 319) and Tropical Horticulture (HORT 423).

AUBURN UNIVERSITY, AUBURN, AL 36849

Graduate Research Assistant, Department of Horticulture. Summer 2013- Summer 2015.

- Teaching Postharvest Biology and Technology (HORT 5140). Summer 2014.
- Teaching Assistant for Vegetable Production (HORT 2030), Pesticide Management (HORT 4000), and Sustainable Vegetable Production (HORT 5130).
- Setting up and maintaining field experiments for pesticide efficacy.
- Collecting data and statistical analysis (insect adult, egg, and larvae counts, harvest data, pesticide residue).

Student Worker, Plant Science Research Center (12,800 sq. ft greenhouse facility). 2010-2013.

- Watering, fertilizing, and general maintenance of studies conducted at facility.
- Cleaning, fixing, and general maintenance of greenhouse facilities and equipment.
- Scouting and spraying for insects and diseases on studies conducted at facility.

Proofreader, Department of Computer Science and Software Engineering. 2013.

- Proofread publications for Dr. Xiao Qin and his students.

Student Athlete Tutor, Athletic Department. 2011-2012.

- Vegetable Production HORT 2030 and Food for Thought HORT 2050.

Honors

Texas A&M Department of Horticultural Sciences Graduate Research Assistantship 2015-2021.

Texas A&M Department of Horticultural Sciences Strategic Graduate Fellowship 2019-2020. \$1,000.

Texas A&M Department of Horticultural Sciences Graduate ASHS Travel Grant 2018. \$500.

The Louise B. Belsterling Foundation Scholarship 2017-2019. \$12,000.

TAMU Horticulture First year Excellence Fellowship 2015-2016. \$9000.

Hoyt Adair Memorial Graduate Award in Horticulture. 2014.

Auburn University Horticulture Graduate Research Assistantship and Tuition Fellowship. 2013-2015.

B.S. with Summa Cum Laude. 2013.

Auburn University Dean's List 2009-2013.

Auburn Agriculture Alumni Fall Roundup Scholarship. 2012-2013.

Auburn University Leadership Scholarship. 2009-2013.

Spirit of Auburn University Scholarship. 2009-2013.

Lee County Farmers Federation Scholarship. 2009-2013.

Bernard Ward Scholarship. 2009-2013.

Horticultural Endowment Fund for Program Enhancement. 2011-2012.

Phi Kappa Phi Outstanding Freshman Student Award. 2010.

Campus Club 1st Ladies Scholarship. 2010.

Horticulture Nursery Scholarship. 2009-2010.

Relevant Courses

Graduate

- Biochemistry I
- Experimental Methods in Horticulture
- Experimental Statistics 1
- Nutritional Requirements of Horticultural Plants
- Plant Nematology
- Plant Virology
- Principles of Molecular Genetics
- Genetics
- Applied Physiology of Horticultural Crops
- Root Biology
- Plant Breeding 1
- Plant Breeding 2
- Experimental Designs in Agriculture
- Science of Foods for Health
- Molecular Quantitative Genetics and Plant Breeding
- Plant-Associated Microbes

Undergraduate

- Organic Chemistry 1 & 2
- General Chemistry 1 & 2
- Economic Entomology
- General Plant Pathology
- Pesticide Management in Horticulture
- Postharvest Biology and Technology
- Small Fruit and Pecan Culture
- Sustainable Vegetable Production
- Statistics for Biology and Health Sciences

Professional Memberships

- American Society of Horticultural Sciences. 2016-present.

Technical Expertise

- Operation of tractor and three-point hitch implements.
 - Rototiller, bushhog, bed-former and mulch layer, and boom-sprayer.
- Brookfield CT3 Texture Analyzer.
- Atago PAL-1 Pocket Refractometer.
- Westover Model RHB-32ATC handheld Brix Refractometer.
- Leica Mark II Plus ABBE Refractometer.
- SPAD meter.
- EC/pH meter.

- LiCor Li3100 area meter.
- HPLC, GC-MS, LC-MS.
 - Used for looking at pesticide residue.
 - Used to estimate fuel ethanol yield from fermentation of sweetpotato.
- Nematode soil extraction via Baermann funnel method and Sugar centrifugation method.
- Chromosome counts from root tip squashes using light microscopy.
- Rose tissue collection for DNA extractions.
- Fieldbook app for phenotypic data collection.
- Coding in R for genotypic data changes between different software input formats.
- List of genomic tools used and have familiarity with:
 - fitPoly, polymapR 1.0.19, GAPIT 3.0, TASSEL 5.0, TetraploidSNPMap, flexQTL, JoinMap5, KGD, PLINK 1.9, Structure 2.3.4, MAPpoly, QTLpoly, GWASpoly.

Volunteer Work / Outreach

- Chemical use in homeowner gardens talk at City of Opelika Community Garden. 2014.
- Judge at FFA State level competition for Alabama. 2014.

Publications

Refereed articles for which reprints are available

- Byrne, D.H., P. Klein, M. Yan, E.L. Young, **J. Lau**, et al. 2018. Challenges of Breeding Rose Rosette-resistant Roses. HortScience 53(5): 604–608. doi: 10.21273/HORTSCI12553-17.
- Murphy, J.F., T. Morawo, T. Monday, **J. Lau**, W. Foshee, and H. Fadamiro. 2016. Biologic formulations but not an inter-row living ground cover of rye reduced incidence of tomato spotted wilt virus in tomato. International Journal of Vegetable Science. 22(4):364-375.
- Pek, Z., L. Helyes L., G. Gyulai, W.G. Foshee, H.G. Daood, **J. Lau**, Sz. Vinogradov, W. Goff, and L. Waters. 2016. Molecular Profiling – Fruit Carotenoids Components of Six American Heirloom Tomatoes (*Solanum lycopersicum*). J Forensic Biomed 07(130). doi: 10.4172/2090-2697.1000130.

Non-refereed articles for which reprints are available

- **Lau, J.**, E.L. Young, N.A. Anderson, and D.H. Byrne. 2019. Field Book: use in phenotypic data collection in rose breeding. Acta Hort. (1232): 47–50. doi: 10.17660/ActaHortic.2019.1232.8.
- **Lau, J.**, S. Liang, X. Wu, M. Yan, P.E. Klein, and D.H. Byrne. 2019. Heritability of flower size and heat stress in diploid roses. Acta Hort. (1232): 51–56. doi: 10.17660/ActaHortic.2019.1232.9.
- Kang, S., M. Yan, E.L. Roundey, **J. Lau**, H.B. Pemberton, C. Bishop, K. Ong, P.E. Klein, and D.H. Byrne. 2019. Resistance of garden roses to cercospora leaf spot. Acta Hort. (1232): 221–226. doi: 10.17660/ActaHortic.2019.1232.32.

Book Chapters

- Foshee, W.G., **J. Lau**, J.L. Sibley, and G. Gyulai. 2015. Pecan (*Carya illinoensis* Wang.; K. Koch) - Breeding in the southern United States. In: Gyulai G (Ed.) Plant Genetics,

Biotechnology, and Forestry 1st Edition. University Textbook. St István University Press, Godollo, Hungary. Chapter 16, pp. 87-89. ISBN: 978-963-269-580-8.

- Foshee, W.G., G. Gyulai, **J. Lau**, H.G. Daood, L. Waters Jr., W. D. Goff, L. Helyes, and Z. Pék. 2015. Molecular metabolomics – Tomato carotenoids (*Solanum lycopersicum*). In: Gyulai G (Ed.) Plant Genetics, Biotechnology, and Forestry 1st Edition. University Textbook. St István University Press, Godollo, Hungary. Chapter 8, pp. 45-52. ISBN: 978-963-269-580-8.
- Foshee, W.G., **J. Lau**, J.L. Sibley, and G. Gyulai. 2017. Pecan (*Carya illinoensis* Wang.; K. Koch) - Breeding in the southern United States. In: Gyulai G (Ed.) Plant Genetics, Biotechnology, and Forestry 2nd Edition. University Textbook. St István University Press, Godollo, Hungary. Chapter 16, pp. 91-93. ISBN: 978-963-269-580-8.
- Foshee, W.G., G. Gyulai, **J. Lau**, H.G. Daood, L. Waters Jr., W. D. Goff, L. Helyes, and Z. Pék. 2017. Molecular metabolomics – Tomato carotenoids (*Solanum lycopersicum*). In: Gyulai G (Ed.) Plant Genetics, Biotechnology, and Forestry 2nd Edition. University Textbook. St István University Press, Godollo, Hungary. Chapter 8, pp. 43-49. ISBN: 978-963-269-580-8.

Refereed Articles in Progress

- **Lau, J.**, H.K. Gill., E.L. Young, O. Riera-Lizarazu, P.E. Klein, and D.H. Byrne. Mapping Disease Resistance in Two Segmental Allopolyploid Rose Populations in an Attempt Develop Markers for Marker Assisted Selection for Accelerated Breeding.
- **Lau, J.**, E.L. Young, O. Riera-Lizarazu, P.E. Klein, and D.H. Byrne. Mapping Horticultural Traits in Two Segmental Allopolyploid Rose Populations in an Attempt Develop Markers for Marker Assisted Selection for Accelerated Breeding.

Presentations

Oral Presentations

- **Lau, J.**, E.L. Young, S. Kang, S. Noya, and D.H. Byrne. 2018. Using interactive 3D models generated by R/Plotly to answer questions within a breeding program. Washington D.C. ASHS National meeting presentation. August 3, 2018.
- **Lau, J.**, E.L. Roundey, N. Anderson, and D. H. Byrne. Fieldbook app: Use in data collection in rose breeding. Oral presentation at the International Rose Symposium. Angers, France. August 3-7, 2017.
- **Lau, J.**, W. Foshee, and T. Monday. 2016. Potential of Industrial Sweetpotato As Livestock Feed in the Southeastern United States. ASHS National Meeting.
- Byrne, D.H., W. Xu, Y. Shi, E.L. Young, **J. Lau**, S. Kang, J. Jung, J. Landivar, and S. Oh. 2018. Rapid phenotyping for rose breeding. Washington D.C. ASHS National meeting presentation. August 1, 2018.
- Kang, S., E.L. Young, **J. Lau**, B. Pemberton, C. Bishop, P. Klein, and D.H. Byrne. 2018. Evaluation of cercospora leaf spot severity on garden roses in Texas. Washington D.C. ASHS National meeting presentation. August 1, 2018.
- Klein, P., **J. Lau**, E.L. Young, S. Kang, and D.H. Byrne. 2018. Molecular maps and markers for roses. Presentation at the RRD review. Held in Crossville, TN in collaboration with the University of TN. Oct. 22-24, 2018.

- Pemberton, B., S. Kang, E.L. Young, **J. Lau**, S. Noyan, N. Anderson, and D.H. Byrne. 2018. Foliage disease resistance in Texas: Trials in College Station and Overton. Presentation at the RRD review. Held in Crossville, TN in collaboration with the University of TN. Oct. 22-24, 2018.
- Young, E.L., **J. Lau**, S. Kang, N. Anderson, and D.H. Byrne. 2018. Population development and genetic analysis. Presentation at the RRD review. Held in Crossville, TN in collaboration with the University of TN. Oct. 22-24, 2018.
- Young, E.L., **J. Lau**, S. Kang, M. Yan, P. Klein, and D.H. Byrne. Comparison of linkage maps for diploid *Rosa*. 2018. Washington D.C. ASHS National meeting presentation. August 3, 2018.
- Kang, S., M. Yan, P. Klein, E.L. Roundey, **J. Lau**, H.B. Pemberton, C. Bishop, K. Ong, and D.H. Byrne. 2017. Resistance to garden roses to cercospora leaf spot. Oral presentation at the International Rose Symposium. Angers, France. August 3-7, 2017.
- Pemberton, H.B., D.H. Byrne, **J. Lau**, E.L. Roundey, C. Bishop, and N. Anderson. Field evaluation of species and modern garden roses for black spot and landscape performance in Texas. Poster presentation at the International Rose Symposium. Angers, France. August 3-7, 2017.
- Byrne, D.H., P. Klein, M. Yan, E.L. Roundey, and **J. Lau**. 2016. Is breeding the answer? How long will it take? The challenges of Rose Rosette Disease (RRD): An Update of the combating RRD SCRI project. Oral presentation for the American Society of Horticultural Sciences meetings in Atlanta, August, 2016.
- Byrne, D.H., **J. Lau**, E.L. Roundey, and N. Anderson. 2016. Foliage disease resistance of rose germplasm. National Combating RRD Review, McKinney, TX. Nov 10-11, 2016.
- Roundey, E.L., **J. Lau**, N. Anderson, and D.H. Byrne. 2016. Population development for the genetic analysis of RRD resistance. National Combating RRD Review, McKinney, TX. Nov 10-11, 2016.
- Byrne, D.H., E.L. Roundey, **J. Lau**, and N. Anderson. 2016. Time required for breeding RRD resistant rose cultivars. National Combating RRD Review, McKinney, TX. Nov 10-11, 2016.

Poster Presentations

- **Lau, J.**, E.L. Young, N. Patterson, P. E. Klein, O. Riera-Lizarazu, D. Byrne. Genetic Characterization of Two Autotetraploid Rose. Plant Breeding Symposium Poster Competition. College Station, TX. February, 20, 2020.
- **Lau, J.**, E.L. Young, N. Patterson, P. E. Klein, O. Riera-Lizarazu, D. Byrne. Genetic Characterization of Two Tetraploid Rose Bi-Parental Mapping Populations. PAG XXVIII. San Diego, CA. January 11-15, 2020.
- Mapping Populations **Lau, J.**, S. Liang, X. Wu, M. Yan, P. Klein., E.L. Young, E. van de Weg, and D.H. Byrne. 2018. Heritability of flower size and heat stress in diploid roses. Washington D.C. ASHS National meeting poster.
- **Lau, J.**, S. Liang, X. Wu, M. Yan, P. Klein, E.L. Roundey, and D.H. Byrne. 2017. Heritability of flower size and heat stress in diploid roses. Poster presentation at the International Rose Symposium. Angers, France. August 3-7, 2017.

- Young, E.L., **J. Lau**, J. Bai, W. Xu, J. Corser, and D.H. Byrne. 2018. Ploidy determination of rose cultivars and progeny of interploidy crosses. Washington D.C. ASHS National meeting poster. August 2, 2018.
- Byrne, D., E.L. Young, **J. Lau**, T. Evans, D. Novick, K. Ong, M. Shires, J. Olson, and M. Windham. 2018. The search for resistance to Rose Rosette Disease. Washington D.C. ASHS National meeting poster. August 2, 2018.
- Pemberton, H.B., E.L. Young, **J. Lau**, S. Kang, d. Zlesak, C. Bishop, N. Anderson, and D.H. Byrne. 2018. Evaluation of garden rose species, cultivars, and breeding populations for disease resistance and landscape performance in Texas. Washington D.C. ASHS National meeting poster. August 2, 2018.
- Pemberton, H.B., D.H. Byrne, **J. Lau**, E.L. Roundey, C. Bishop, and N. Anderson. 2017. Field evaluation of species and modern garden roses for black spot and landscape performance in Texas. Poster presentation at the International Rose Symposium. Angers, France. August 3-7, 2017.

Grants

- Foshee, W.G., **J. Lau**, and T.A. Monday. Evaluation of Pepino dulce (*Solanum muricatum*) for high tunnel production in Alabama. Alabama Fruit and Vegetable Association. 2015 & 2016. Both years requested \$2,500. Both years granted \$1000.
- **Lau, J.**, Assessing the nutritional value of fresh industrial sweetpotato and sweetpotato fermentation by-product for potential incorporation into livestock feed rations. Southern Sustainable Agriculture Research & Education Graduate Student Grants program. 2014. \$11,000. Not funded.
- Monday, T.A., **J. Lau**, and W. G. Foshee. Investigation of three essential oils for controlling troublesome pests in strawberry. North American Strawberry Growers Association. 2015. \$5,534. Not Funded.

References

Dr. David Byrne
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