

Research Interests

Biology of *Populus*, bioenergy research, plant-microbe interactions, and ecosystem genomics. Current research focuses on discovery and characterization of genes involved in plant cell wall biosynthesis through bioinformatics, association studies, cisgenics and mapping; elucidating plant-microbe co-expression networks; synthetic genomics of CAM (Crassulacean Acid Metabolism) plants; and genomics and ecological adaptation of *Sphagnum*.

Qualifications/Skills:

- Tissue culture, nucleic acid isolation, PCR, Sanger sequencing, sample preparation, fluorescence, carbohydrate analysis, phenotypic measurements, sectioning, field and greenhouse experience;
 - Database searches, technical document preparation and editing, data analysis, ordering, budgeting, presentation, training and project and lab management.
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Professional Experience

2008-present Technical Staff, Plant Systems Biology Group, Biosciences Division, Oak Ridge National Laboratory, Oak Ridge TN

- Conduct primary lab and computer-based research, analyze data and contribute to reports and manuscripts leading to 30+ peer review publications
- Coordinate sample collection, inventory and processing for large field and greenhouse-based projects (100,000+ samples)
- Developed and maintain Plant Systems Biology Group SharePoint site, Endnote bibliographic databases for projects and reference lists for manuscripts, white papers and internal use
- Communicate with internal and external, national and international collaborators
- Manage labs and projects, provide interface for LIMS, train and mentor interns. Initiate Material Transfer Agreements and Purchase Orders

2001-2007 Research Associate II, Plant Molecular Ecology, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge TN

1998-2001 Research Associate I, Plant Physiology & Biotechnology, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge TN

Education

University of Tennessee/MS in Information Sciences/2007

University of Georgia/MS in Botany/1993

University of Florida/BS in Botany/1988

Recent Publications/Publications in Progress

- Timm CM, Pelletier DA, Jawdy SS, **Gunter** LE, Henning JA, Engle N, Aufrecht J, Gee E, Nookaew I, Yang Z, Lu T, Tschaplinski TJ, Doktycz MJ, Tuskan GA and Weston DJ. **2016**. Two poplar-associated bacterial isolates induce additive favorable responses in a constructed plant-microbiome system. *Front. Plant Sci.* 7:497. [doi: 10.3389/fpls.2016.00497](https://doi.org/10.3389/fpls.2016.00497).
- Bryan AC, Jawdy S, **Gunter** L, Gjersing E, Sykes R, Hinchee MAW, Winkeler KA, Collins CM, Engle N, Tschaplinski TJ, Yang X, Tuskan GA, Muchero W and Chen J-G. **2016**. Knockdown of a laccase in *Populus deltoides* confers altered cell wall chemistry and increased sugar release. *Plant Biotechnol. J.*, [doi:10.1111/pbi.12560](https://doi.org/10.1111/pbi.12560).
- Scaling nitrogen and carbon interactions: what are the consequences of biological buffering? Weston DJ, Rogers A, Tschaplinski TJ, **Gunter** LE *et al.* **2015**. *Ecology and evolution*, Volume 5, Issue 14, July 2015, pp 2839–2850. [doi:10.1002/ece3.1565](https://doi.org/10.1002/ece3.1565).
- Muchero W, Guo J, DiFazio SP, Chen JG, Ranjan P, Slavov GT, **Gunter** LE, Jawdy SS, Bryan AC, Sykes R, Ziebell A, Kláp T J, Porth I, Skyba O, Unda F, El-Kassaby YA, Douglas CJ, Mansfield SD, Martin J, Schackwitz W, Evans LM, Czarnecki O, Tuskan GA. **2015**. High-resolution genetic mapping of allelic variants associated with cell wall chemistry in *Populus*. *BMC Genomics* 16(1):24. [doi:10.1186/s12864-015-1215-z](https://doi.org/10.1186/s12864-015-1215-z).
- Evans LM, Slavov GT, Rodgers-Melnick E, Martin J, Ranjan P, Muchero W, Brunner AM, Schackwitz W, **Gunter** LE, Chen JG Tuskan GA, DiFazio SP. **2014**. Population genomics of the model tree *Populus trichocarpa* identifies signatures of selection and adaptive trait associations. *Nature Genetics* August 25, 2014. <http://dx.doi.org/10.1038/ng.3075>.
- Shakya M, Gottel N, Castro Gonzalez H, Yang Z, **Gunter** LE, Labbe JL, Muchero W, Bonito G, Vilgalys R, Tuskan GA, Podar M, Schadt CW. **2013**. A multifactor analysis of fungal and bacterial community structure of the root microbiome of mature *Populus deltoides* trees. *PLoS ONE* 8 (10): e76382. [doi:10.1371/journal.pone.0076382](https://doi.org/10.1371/journal.pone.0076382).
- Martin MZ, **Gunter** LE, Jawdy SS, Wullschleger SD, Wheeler CS, Jha A. Genetic improvement sustainable production and scalable small microenterprise of *Jatropha* as a biodiesel feedstock. **2013**. *BIOREMEDIATION & BIODEGRADATION* S4:002. [doi: 10.4172/2155-6199.S4-002](https://doi.org/10.4172/2155-6199.S4-002).
- Geraldes A, Hannemann J, Grassa C, Farzaneh N, Porth I, McKown A, Skyba O, Li E, Mike F, Friedmann M, Wasteneys G, Guy R, El-Kassaby Y, Mansfield S, Cronk Q, Ehling J, Douglas C, DiFazio SP, Slavov G, Ranjan P, Muchero W, **Gunter** LE, Wymore A, Tuskan GA, Martin J, Schackwitz W, Pennacchio C, Rokhsar D. **2013**. A 34K SNP genotyping array for *Populus trichocarpa*: design application to the study of natural populations and transferability to other *Populus* species. *MOLECULAR ECOLOGY RESOURCES* 13(2):306-323. [doi: 10.1111/1755-0998.12056](https://doi.org/10.1111/1755-0998.12056).
- Muchero W, Sewell MM, **Gunter** LE, Tschaplinski TJ, Yin TM, DiFazio SP, Tuskan GA. Genome anchored QTLs for biomass productivity in Hybrid *Populus*: Heterosis and detection across Contrasting Environments. **2013**. *PLoS ONE* 8(1):e54468. [doi: 10.1371/journal.pone.0054468](https://doi.org/10.1371/journal.pone.0054468).
- Karve AA, Weston DJ, Jawdy SS, Gunter LE, Allen SM, Yang XH, Tuskan GA, Wullschleger SD. Initial characterization of shade avoidance response suggests functional diversity between *Populus* phytochrome B genes. **2012**. *NEW PHYTOLOGIST* 196(3):726-37. doi: 10.1111/j.1469-8137.2012.04288.x.
- Slavov GT DiFazio SP Martin J Schackwitz W Muchero W Rodgers-Melnick E Lipphardt MF Pennacchio CP Hellsten U Pennacchio LA **Gunter** LE Ranjan P Vining K Pomraning KR Wilhelm LJ Pellegrini M Mockler TC Freitag M Geraldes A El Kassaby YA Mansfield SD Cronk QCB Douglas CJ Strauss SH Rokhsar D Tuskan GA. **2012**. Genome resequencing reveals multiscale geographic structure and extensive linkage disequilibrium in the forest tree *Populus trichocarpa*. **2012**. *NEW PHYTOLOGIST* 196(3):713-25. [doi 10.1111/j.1469-8137.2012.04258.x](https://doi.org/10.1111/j.1469-8137.2012.04258.x).
- Hsu CY, Adams JP, Kim H: No K, Ma C, Strauss SH, Drnevich J: Vandervelde L, Ellis JD, Rice BM, Wickett N, **Gunter** LE, Tuskan GA, Brunner AM, Page GP, Barakat A, Carlson JE, dePamphilis C, Luthe DS, Yuceer C. **2011**. FT Duplication Coordinates Reproductive and Vegetative Growth in Perennial Poplar. *PNAS* 108(26):10756-61. [doi: 10.1073/pnas.1104713108](https://doi.org/10.1073/pnas.1104713108).