

Lee Ellen Gunter

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Education

M.S.	2007	Information Science	University of Tennessee
M.S.	1993	Botany	University of Georgia
B.S.	1988	Botany	University of Florida

Current Activities

Biology of *Populus*, Bioenergy, ecosystem genomics. Current research focuses on discovery and characterization of genes involved in plant cell wall biosynthesis through bioinformatics, association studies and mapping; phytochrome response and crown architecture in *Populus*; and heat stress response.

Research Interests

Systems biology, comparative genomics, Bioenergy crops.

Research Experience

2010-present	Research Associate, Plant Systems Biology, Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, TN
2001-2010	Research Associate, Plant Systems Biology, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN
1998-2001	Research Assistant, Plant Molecular Biology, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN
1994-1998	Postmaster's Research Assistant, Environmental Sciences Division, Oak Ridge National Laboratory. U.S. Department of Energy Laboratory Cooperative Postgraduate Research Training Program, Oak Ridge, TN
1988-1990	Research Assistant, Department of Molecular Biology, Vanderbilt University, Nashville, TN
1986-1988	Laboratory Assistant, Entomology Unit, U.S. Department of Agriculture/Agricultural Research Service, Gainesville, FL

Computer Technologies

Microsoft Word, Excel, OneNote, PowerPoint, EndNote, SAS JMP, BioEdit, Sequencher, BLAST, Nautilus. MapMan, some experience with emacs editor, basic UNIX commands.

Laboratory Specialties

DNA extraction, PCR, cloning, sequencing, genotyping, plant tissue culture.

Publications

- Yin TM, X Zhang, LE **Gunter**, P Ranjan, R Sykes, M Davis, SD Wullschleger, GA Tuskan. 2010. Differential detection of genetic loci underlying stem and root lignin content in *Populus*. PLoS GENETICS (in submission).
- Yang X, TJ Tschaplinski, GB Hurst, SS Jawdy, PE Abraham, PK Lankford, RM Adams, MB Shah, RL Hettich, UC Kalluri, LE **Gunter**, C Pennacchio, GA Tuskan. 2010. Enrichment for small proteins from large genomics data set generated by next-generation sequencing platform. NATURE BIOTECHNOLOGY (in submission).
- Weston DJ, AA Karve, LE **Gunter**, SS Jawdy, X Yang, SM Allen, SD Wullschleger. 2010. Comparative genomics of the heat stress response in plants. PLANT CELL AND ENVIRONMENT (in revision)
- Voelker S, B Lachenbruch, FC Meinzer, M Jourdes C Ki, AM Patten, LB Davin, NG Lewis, GA Tuskan, LE **Gunter**, SR Decker, MJ Selig, R Sykes, ME Himmel, P Kitin, O Shevchenko, SH Strauss. Antisense down-regulation of 4CL expression alters lignification, tree growth and saccharification potential of field-grown poplar. PLANT PHYSIOLOGY (in review).
- Baba JS, J Ramachandran, LE **Gunter**, GA Tuskan. 2010. Aspen annual ring discrimination based on 1st order analysis of 2-D X-ray microCT tree core images. CANADIAN JOURNAL OF FOREST RESEARCH-REVUE CANADIENNE DE RECHERCHE FORESTIERE (in press).
- Islam-Faridi MN, CD Nelson, SP DiFazio, LE **Gunter**, and GA Tuskan Cytogenetic analysis of *Populus trichocarpa*— ribosomal DNA, telomere repeat sequence, and marker-selected BACs. 2009. CYTOGENETICS & GENOME RESEARCH 125: 74-80. DOI: 10.1159/000218749.
- Yin TM, XY Zhang, LE **Gunter**, SX Li, SD Wullschleger, MR Huang and GA Tuskan. 2009. Microsatellite primer resource for *Populus* developed from the mapped sequence scaffolds of the Nisqually-1 genome. NEW PHYTOLOGIST 181:498-503. DOI: 10.1111/j.1469-8137.2008.02663.x.
- Yang X, U Kalluri, TM Yin, SS Jawdy, LE **Gunter**, T J Tschaplinski, DJ Weston, P Ranjan, GA Tuskan 2008. F-box gene family is expanded in herbaceous annual plants *Arabidopsis* and rice relative to woody perennial plant *Populus*. PLANT PHYSIOLOGY 148 (3): 1189-1200
- Weston DJ, LE **Gunter**, A Rogers, SD Wullschleger. 2008. Connecting Genes, Signaling Networks, and Molecular Signatures to Environmental Stress Phenotypes in Plants BMC SYSTEMS BIOLOGY 2:16. <http://www.biomedcentral.com/1752-0509/2/16>.
- Ralph SG, HJE Chun, D Cooper, R Kirkpatrick, N Kolosova, LE **Gunter**, GA Tuskan, CJ Douglas, RA Holt, SJM Jones, MA Marra, J Bohlmann. 2008. Analysis of 4,664 high-quality sequence-finished poplar full-length cDNA clones and their utility for the discovery of genes responding to insect feeding. BMC GENOMICS 9:57. <http://www.biomedcentral.com/1471-2164/9/57>
- Yin TM, SP DiFazio, LE **Gunter**, XY Zhang, MM Swell, S Woolbright, GJ Allan, CT Kelleher, CJ Douglas, GA Tuskan. 2008. Genome structure and emerging evidence of an incipient sex chromosome in *Populus* GENOME RESEARCH 18: 422-430.

- Islam-Faridi MN, LE **Gunter**, SD DiFazio, GA Tuskan, CD Nelson. 2007. Cytogenetic localization of ribosomal DNAs in poplar using linkage group specific BACs. CHROMOSOME RESEARCH 15 :17-18, Suppl. 2.
- Lin Juan, LE **Gunter**, S Harding, RF Kopp, RP McCord, C.-J Tsai, GA Tuskan, LB Smart. 2007. Development of AFLP and RAPD markers linked to a locus associated with twisted growth in corkscrew willow (*Salix matsudana* 'Tortuosa') TREE PHYSIOLOGY 27:1575-1583.
- Tuskan GA, SP DiFazio, S Jansson et al. The genome of black cottonwood, *Populus trichocarpa* (Torr. & Gray). SCIENCE, 313 (5793): 1596-1604 SEP 15 2006.
- Wullschleger SD, TM Yin, SP DiFazio, TJ Tschaplinski, LE **Gunter**, MF Davis, GA Tuskan. 2005. Phenotypic variation in growth and biomass distribution for two advanced- generation pedigrees of hybrid poplar (*Populus* spp.) CANADIAN JOURNAL OF FOREST RESEARCH-REVUE CANADIENNE DE RECHERCHE FORESTIERE 35 (8): 1779-1789.
- Yin TM, SP DiFazio, LE **Gunter**, SS Jawdy, W Boerjan, GA Tuskan. 2004 Genetic and physical mapping of *Melampsora* rust resistance genes in *Populus* and characterization of linkage disequilibrium and flanking genomic sequence. NEW PHYTOLOGIST 164(1):95-105.
- Yin TM, SP DiFazio, LE **Gunter**, SS Jawdy, W Boerjan, D Riemenschneider, GA Tuskan.. 2004. Large-scale heterospecific segregation distortion in *Populus* revealed by a dense genetic map. THEORETICAL AND APPLIED GENETICS 109 (3): 451-463.
- Tuskan GA, LE **Gunter**, ZK Yang, TM Yin, MM Sewell, SP DiFazio. 2004. Characterization of microsatellites revealed by genomic sequencing of *Populus trichocarpa*. CANADIAN JOURNAL OF FOREST RESEARCH-REVUE CANADIENNE DE RECHERCHE FORESTIERE 34 (1): 85-93.
- Stirling B, ZK Yang, LE **Gunter**, GA Tuskan, HD Bradshaw, Jr. 2003. Comparative sequence analysis between orthologous regions of the *Arabidopsis* and *Populus* genomes reveals substantial synteny and microcollinearity. CANADIAN JOURNAL OF FOREST RESEARCH-REVUE CANADIENNE DE RECHERCHE FORESTIERE 33 (11): 2245-2251.
- Gunter** LE, AS Black, S Ratnayeke, S, GA Tuskan, SD Wullschleger. 2003. Assessment of genetic similarity among 'Alamo' Switchgrass seed lots using RAPD markers. SEED SCIENCE AND TECHNOLOGY 31 (3): 681-689.
- Gunter** LE., RF Kopp, RP McCord, GA Tuskan. 2003. Analysis of sex-linked, sequence-characterized amplified region markers in *Salix eriocephala* CANADIAN JOURNAL OF FOREST RESEARCH-REVUE CANADIENNE DE RECHERCHE FORESTIERE 33 (9):1785-1790.
- Gunter** LE, GT Roberts, K Lee, FW Larimer, GA Tuskan. 2003. SCAR Markers linked to sex determination in basket willow (*Salix viminalis* L.). JOURNAL OF HEREDITY 94(2): 185-189.
- Gunter** LE, RJ Norby, CA Gunderson and GA Tuskan. 2000. Genetic variation and spatial structure in sugar maple (*Acer saccharum* Marsh.) and implications for predicted global-scale environmental change. GLOBAL CHANGE BIOLOGY 6 (3): 335-344.
- Stevens MT, MG Turner, GA Tuskan, WH Romme, LE **Gunter**, DM Waller. 1999. Genetic variation in postfire aspen seedlings in Yellowstone National Park. MOLECULAR ECOLOGY 8:1769-1780.

Gunter L, J Tuskan, S Wullschleger. 1996. Switchgrass molecular markers research. ENERGY CROPS FORUM. Summer 1996.

Gunter LE, GA Tuskan, and SD Wullschleger. 1996. Genetic diversity of Switchgrass cultivars revealed by randomly amplified polymorphic DNA (RAPD) markers. CROP SCIENCE 36:1017-1022.

Gunter LE, G Kochert, DE Giannasi. 1994. Phylogenetic relationships of the Juglandaceae. PLANT SYSTEMATICS AND EVOLUTION 192:11-29.

Feng Y, LE **Gunter**, EL Organ, and DR Cavener. 1991. Translation initiation in *Drosophila melanogaster* is reduced upstream of the AUG initiator codon. MOLECULAR AND CELLULAR BIOLOGY 11(4):2149-2153.

Posters and Presentations

Karve AA, DJ Weston, SS Jawdy, LE **Gunter**, GA Tuskan, SD Wullschleger. 2010. Expression and characterization of Phytochrome gene family members from *Populus trichocarpa*. AMERICAN SOCIETY OF PLANT BIOLOGY, Ontario, Canada, August 04, 2010.

Gunter LE, X Yang S Jawdy, Z Moore, S Chang, M Hinchee, M Davis, U Kalluri, T Tschaplinski, G Tuskan. 2010. Establishment and evaluation of transgenic *Populus* in the context of cell wall modification. BESC SCIENCE RETREAT, Crowne Plaza Hotel and Expo Center, Asheville, North Carolina, June 20-23, 2010.

Chang SJ, K Winkeler, C Collins, R Thomas, J Johnson, L Wood, W Rottmann, L **Gunter**, J Tuskan. M Hinchee. 2009. *Populus deltoides* transformation to identify genes that contribute to recalcitrance in conversion of lignocellulosics to bioethanol. IN VITRO CELLULAR & DEVELOPMENTAL BIOLOGY-ANIMAL, 45: S80-S81 Suppl. S SPR 2009.

Gunter L, X Yang, U Kalluri, G Tuskan. 2008. BESC Populus Workshop: Homolog identification, manual curation, phylogenetics and management of transgenic plants. BESC SCIENCE RETREAT, Townsend, Tennessee, February 20, 2008.

Gunter L. 2008. Transformation pipeline and gene discovery in Populus. BESC SCIENCE RETREAT, Chattanooga, Tennessee, December 1-3, 2008.

Yang X, UC Kalluri, SS Jawdy, LE **Gunter**, TM Yin, TJ Tschaplinski, DJ Weston, SD Wullschleger, P Ranjan, GA Tuskan. 2008. Comparative Analysis Of F-Box Proteins In Arabidopsis, Poplar And Rice Suggests Differential Proteolytic Pathway Mediated Through F-Box Protein Between Woody Perennial And Herbaceous Annual Plants. PLANT & ANIMAL GENOMES XVI CONFERENCE, January 12-16, 2008, Town & Country Convention Center, San Diego, CA.

Wullschleger SD, A Rogers, CR Kuske, CW Schadt, TJ Tschaplinski, SM Barns, DJ Weston, LE Heady, LE **Gunter**, NL Engle. 2007. Integration of systems biology and ecology: A mesocosm-scale study designed to span the gene-ecosystem continuum. ESA/SER JOINT MEETING, August 5-10, 2007, San Jose McEnery Convention Center, San Jose, CA.

Islam-Faridi MN, L **Gunter**, S DiFazio, GA. Tuskan, CD Nelson. 2007. Cytogenetic localization of

- ribosomal DNA in poplar using linkage group specific BACs. 16TH INTERNATIONAL CHROMOSOME CONFERENCE, August 24-29, 2007, Congress Holland BV, The Netherlands.
- Islam-Faridi NM, MA Majid , LE **Gunter**, SP DiFazio, CD Nelson , GA Tuskan. 2007. Chromosome Assignment Of The rDNA Genes in Poplar Using Fluorescence in situ Hybridization. PLANT & ANIMAL GENOMES XV CONFERENCE, January 13-17, 2007, Town & Country Convention Center, San Diego, CA
- Yin TM, SP DiFazio, LE **Gunter**, MM Sewell, SS Jawdy, SD Wullschleger, TJ Tschaplinski, GA Tuskan. 2004. An integrated platform for comparative mapping and genome assembly in poplars: the perennial plant model system. 12TH NEW PHYTOLOGIST SYMPOSIUM: Functional genomics of environmental adaptation in *Populus*, October 10-13, 2004, Gatlinburg, Tennessee, USA.
- Tuskan GA., SD Wullschleger, SP DiFazio, LE **Gunter**, ME Schuster, ML Land, FW Larimer, K Ritland, JL Boore, and DS Rokhsar. 2003. The *Populus* chloroplast genome: a comparison of genome structure and organization. PLANT & ANIMAL GENOME XI CONFERENCE, Workshop: Forest Trees, January 11-15, 2003, Town & Country Convention Center, San Diego, CA.
- Juan L, LE **Gunter**, RF Kopp, GA Tuskan, and LB Smart. 2002. Identification of Molecular Markers Linked to the *tortuosa* Gene in Corkscrew Willow. Plant Biology Meeting. AMERICAN SOCIETY OF PLANT BIOLOGY, August 3-7, 2002, Denver, CO.
- Juan L, LE **Gunter**, RF Kopp, GA Tuskan, and LB Smart. Identification of Molecular Markers Linked to the *tortuosa* Gene in Corkscrew Willow. Spring 2002 Meeting of the NORTHEASTERN SECTION OF THE AMERICAN SOCIETY OF PLANT BIOLOGY. May 3-4, 2002 Wellesley College Science Center, Wellesley, MA
- Nghiem NP, BH Davison GA Tuskan LE **Gunter** CL Cheng, SR Drescher. 2002. The effect of lignin contents and S/G ratio in *Populus* on the release of fermentable sugars during dilute acid hydrolysis. 24TH SYMPOSIUM ON BIOTECHNOLOGY FOR FUELS AND CHEMICALS, April 28 - May 1, 2002, Gatlinburg, TN.
- Gunter** LE. 2001. Microsatellite Marker Development in Switchgrass. DOE/ORNL/BIOENERGY FEEDSTOCK DEVELOPMENT PROGRAM HERBACEOUS ENERGY CROP AND SHORT ROTATION WOODY CROP SUBCONTRACTOR'S WORKSHOP. Memphis, TN, November 6-9, 2001.
- Gunter** LE, GA Tuskan and RF. Kopp. 2001. Interspecific Testing of Gender-Associated Scar Markers in *Salix*. PLANT AND ANIMAL GENOME IX CONFERENCE, San Diego, CA USA, Town & Country Hotel, January 13-17, 2001.
- Gunter** LE. 2000. Microsatellite Marker Development in Switchgrass. DOE/ORNL/BIOENERGY FEEDSTOCK DEVELOPMENT PROGRAM HERBACEOUS RESEARCH CONTRACTOR'S WORKSHOP. Atlanta, GA, December 12-13, 2000.
- Gunter** LE, GA Tuskan, SD Wullschleger. 1999. Assessment of genetic variation at the DNA level among 'Alamo' seed sources. CROP SCIENCE SOCIETY OF AMERICA 1999 ANNUAL MEETING, Salt Lake City, UT, October 31-November 4, 1999.

- Gunter** LE, AS Black, S Ratnayeke, GA Tuskan and SD Wullschleger. 1999. Assessment of genetic variation among 'Alamo' Switchgrass seed sources using RAPD markers-an update. DOE/ORNL/BIOENERGY FEEDSTOCK DEVELOPMENT PROGRAM RESEARCH CONTRACTOR'S WORKSHOP. Alexandria, MN, October 12-15, 1999.
- Gunter** LE. 1999. Marker based analysis of plant populations: Applications to biomass feedstock. ESD ADVISORY COMMITTEE. Oak Ridge, TN, June 14-17, 1999.
- Gunter** LE, GA Tuskan, SD Wullschleger. 1998. Assessment of genetic variation at the DNA level among 'Alamo' seed sources. OFFICE OF FUELS DEVELOPMENT MEETING. Oak Ridge, TN, December 8-9, 1998.
- Gunter** LE, GA Tuskan, SD Wullschleger. 1998. Assessment of genetic variation at the DNA level among 'Alamo' seed sources. DOE/ORNL/BIOENERGY FEEDSTOCK DEVELOPMENT PROGRAM HERBACEOUS RESEARCH CONTRACTOR'S WORKSHOP. Atlanta, GA, August 31, 1998.
- Gunter** LE, GT Roberts, KL Lee, GA Tuskan. 1998. RAPD and SCAR markers linked to femaleness in *Salix viminalis* L. FRONTIERS OF FOREST BIOLOGY: 1998 JOINT MEETING OF THE NORTH AMERICAN BIOLOGY WORKSHOP (NAFB) AND WESTERN FOREST GENETICS ASSOCIATION (WFGA) PROGRAM AND ABSTRACTS. University of Victoria, Victoria, British Columbia, June 21-26, 1998. Abstract ID: 51.
- Gunter** LE, GT Roberts, KL Lee, FW Larimer, GA Tuskan. 1998. RAPD and SCAR markers linked to femaleness in *Salix viminalis* L. PLANT AND ANIMAL GENOME VI CONFERENCE: San Diego, CA, January 18-22, 1998.
- Gunter** LE, SD Wullschleger, GA Tuskan, CM Taliaferro AA Hopkins. 1996. Characterization of Switchgrass accessions using RAPD markers and morphological descriptor data. 1996. CROP SCIENCE SOCIETY OF AMERICA 1996 ANNUAL MEETING. Indianapolis, IN, November 3-8, 1996.
- Gunter** LE, RJ Norby, GA Tuskan. 1996. Temperature adjustments in sugar maple: Genetic characterization of populations from 3 geographic seed sources. 1996. ECOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING. Providence, RI, August 10-14, 1996.
- Gunter** LE, GA Tuskan, SD Wullschleger. 1995. Quantification of genetic variability in Switchgrass populations using RAPD markers. 1995. CROP SCIENCE SOCIETY OF AMERICA 1995 ANNUAL MEETING. St. Louis, MO, October 29-November 3, 1995.
- Gunter** LE, G Kochert, DE Giannasi. 1994. Phylogenetic Relationships of the Walnut Family. FOREST BIODIVERSITY IN A CHANGING ENVIRONMENT: NORTH AMERICAN FOREST BIOLOGY WORKSHOP. Louisiana State University, Baton Rouge, LA, June 14-16, 1994.