

TIMOTHY J. TSCHAPLINSKI

Distinguished Research & Development Staff
Metabolomics and Bioconversion Group Leader
Biosciences Division

Oak Ridge National Laboratory, Oak Ridge, TN 37831-6341
(865) 574-4597; FAX (865) 241-1555

Email: tschaplinstj@ornl.gov

Webpage: <https://www.ornl.gov/staff-profile/timothy-j-tschaplinski>

ORCID ID: [0000-0002-9540-6622](https://orcid.org/0000-0002-9540-6622)

Google Scholar: <http://scholar.google.com/citations?user=qLSYcUEAAAAJ&hl=en>

Google Scholar H-Index: 50

RESEARCH INTERESTS

Plant molecular physiologist experienced in biochemistry, specifically the application of mass spectrometry to research problems in genomics, bioenergy crop production, environmental stress physiology, and plant-microbe signaling. Current research includes metabolomics for phenotypic characterization of genetically-modified *Populus*, *Arabidopsis*, *Eucalyptus*, *Castanea*, switchgrass, and numerous bioenergy-relevant microbial species. Research targets include the application of genomic tools for the accelerated domestication of *Populus* to increase drought tolerance and biomass productivity on marginal sites, and to manipulate bioproduct formation. Most recent activities include characterizing the molecular basis of plant-microbe (bacterial and fungal) symbiotic relationships in contrast with pathogenic relationships.

POSITIONS

- 2007-present **Distinguished Research Staff**, Biosciences Division
Oak Ridge National Laboratory, Oak Ridge, TN
- 2017-present **Faculty Member** of the Bredesen Center for Interdisciplinary Research and Graduate Education, University of Tennessee, Knoxville, TN
- 2004-present **Adjunct Faculty**, UT-ORNL Genome Science & Technology Graduate School
University of Tennessee, Knoxville, TN
- 2003-present **Adjunct Professor**, Department of Plant Sciences
University of Tennessee, Knoxville, TN
- 2002-2006 **Senior Scientist**, Environmental Sciences Division,
Oak Ridge National Laboratory, Oak Ridge, TN
- 1995-1997 **Adjunct Professor**, Institute of Agriculture
University of Tennessee, Knoxville, TN
- 1990-2002 **Research Staff**, Environmental Sciences Division, ORNL, Oak Ridge, TN
- 1989-1990 **ASG Postdoctoral Research Associate**, Environmental Sciences Division
Oak Ridge National Laboratory, Oak Ridge, TN
- 1987-1989 **ORAU Postdoctoral Research Associate**, Environmental Sciences Division
Oak Ridge National Laboratory, Oak Ridge, TN
- 1986 **Lecturer**, Tree Physiology, University of Toronto, Toronto, Canada

EDUCATION

- 1982-87 **Ph.D. Forestry** - University of Toronto, Toronto, Ontario, Canada
- 1980-82 **M.Sc. Forestry** - University of Toronto, Toronto, Ontario, Canada
- 1976-80 **B.Sc. Biology** - Carleton University, Ottawa, Ontario, Canada

PUBLICATIONS - 162 total

Taoa, J., K. Rajana, B. Ownley, K. Gwinn, D. D'Souza, N. Moustaid-Moussa, T.J. Tschaplinski, and N. Labbé. 2019. Natural variability and antioxidant properties of commercially cultivated switchgrass extractives. *Industrial Crops and Products* (accepted)

Labbé, J., W. Muchero, O. Czarnecki, J. Wang, X. Wang, A.C. Bryan, K. Zheng, Y. Yang, S.S. Jawdy, L.E. Gunter, W. Schackwitz, J. Martin, F. Le Tacon, T. Li, Z. Zhang, P. Ranjan, X. Yang, D.A. Jacobson, T.J. Tschaplinski, J. Schmutz, J-G. Chen, and G.A. Tuskan. 2019. Mediation of plant-mycorrhizal interaction by a lectin receptor-like kinase. *Nature Plant* (accepted)

Veach, A.M., R. Morris, D.Z. Yip, Z.K. Yang, N.L. Engle, M.A. Cregger, T.J. Tschaplinski, and C.W. Schadt. 2019. Rhizosphere microbiomes diverge among *Populus trichocarpa* plant-host chemotypes, but it depends on soil origin. *Microbiome* 7:76 <https://doi.org/10.1186/s40168-019-0668-8>

Xie, H., N.L. Engle, S. Venketachalam, C.G. Yoo, J. Barros, M. Lecoultre, N. Howard, G. Li, L. Sun, A.C. Srivastava, S. Pattathil, Y. Pu, M.G. Hahn, A.J. Ragauskas, R.S. Nelson, R.A. Dixon, T.J. Tschaplinski, E.B. Blancaflor, and Y. Tang. 2019. Combining loss of function of folypolyglutamate synthetase1 and caffeoyl-coA 3-O-methyltransferase1 for lignin reduction and improved saccharification efficiency in *Arabidopsis thaliana*. *Biotech. for Biofuels* 12:108 <https://doi.org/10.1186/s13068-019-1446-3>

Weighill, D.A, P. Jones, C.R. Bleker, P. Ranjan, M. Shah, N. Zhao, M.Z. Martin, S.P. DiFazio, D. Macaya-Sanz, J. Schmutz, A. Sreedasyam, T.J. Tschaplinski, G.A. Tuskan, D.A. Jacobson. 2019. Multi-phenotype association decomposition: Unraveling complex gene-phenotype relationships. *Front. Genet.* 10:417 <https://doi.org/10.3389/fgene.2019.00417>

Barros-Rios, J. L. Escamilla-Trevino, L. Song, X. Rao, J.C. Serrani-Yarce, M.D. Palacios, N.L. Engle, T.J. Tschaplinski, F. Choudhury, B. Venables, R. Mittler, and R.A. Dixon. 2019. 4-Coumarate 3-hydroxylase in the lignin biosynthesis pathway is a cytosolic ascorbate peroxidase. *Nature Communications* 10, Article number: 1994 (2019) <https://www.nature.com/articles/s41467-019-10082-7#Sec25>

Ray, P., P.E. Abraham, Y. Guo, R.J. Giannone, N.L. Engle, Z.K. Yang, D. Jacobson, R.L. Hettich, T.J. Tschaplinski, and K.D. Craven. 2019. Scavenging organic nitrogen and remodeling lipid metabolism are key survival strategies adopted by the endophytic fungi, *Serendipita vermifera* and *Serendipita bescii* to alleviate nitrogen and phosphorous starvation in vitro. *Environmental Microbiology Reports*. <https://doi.org/10.1111/1758-2229.12757>

Chhetri, H.B., D. Macaya-Sanz, D. Kainer, A.K. Biswal, J.-G. Chen, C. Collins, L.M. Evans, K. Hunt, S.S. Mohanty, T. Rosenstiel, D. Ryno, K. Winkeler, X. Yang, D. Jacobson, D. Mohnen, W. Muchero, S.H. Strauss, T.J. Tschaplinski, G.A. Tuskan, S.P. DiFazio. 2019. Multi-trait genome-wide association analysis of *Populus trichocarpa* identifies key polymorphisms controlling morphological and physiological traits. *New Phytologist* First published: 07 March 2019; <https://doi.org/10.1111/nph.15777>

Tuskan, G.A., W. Muchero, T.J. Tschaplinski, and A.J. Ragauskas. 2019. Population-level approaches reveal novel aspects of lignin biosynthesis, content, composition and structure. *Current Opinions in Plant Biotechnol.* 56:250–257. <https://doi.org/10.1016/j.copbio.2019.02.017>

Tschaplinski, T.J., P.E. Abraham, S.S. Jawdy, L.E. Gunter, M.Z. Martin, N.L. Engle, X. Yang, and G.A. Tuskan. 2019. The nature of the progression of drought stress drives differential metabolomic responses in *Populus deltoides*. *Ann. Bot.* xx:1-10
<https://doi.org/10.1093/aob/mcz002>

Garcia, B.J., J.L. Labbé, P. Jones, P.E. Abraham, I. Hodge, S. Climer S.S. Jawdy, L.E. Gunter, G.A. Tuskan, X. Yang, T.J. Tschaplinski, and D.A. Jacobson. 2018. Phytobiome and transcriptional adaptation of *Populus deltoides* to acute progressive drought and cyclic drought. *Phytobiome J.* 4 December 2018 <https://doi.org/10.1094/PBIOMES-04-18-0021-R>.

Zhang, J., M. Li, A.C. Bryan, C.G. Yoo, W. Rottmann, K.A. Winkeler, C.M. Collins, V. Singan, E.A. Lindquist, S.S. Jawdy, L.E. Gunter, N.L. Engle, X. Yang, K. Barry, T.J. Tschaplinski, J. Schmutz, Y. Pu, A.J. Ragauskas, G.A. Tuskan, W. Muchero, and J.-G. Chen. Overexpression of a serine hydroxymethyltransferase increases biomass production and reduces recalcitrance in the bioenergy crop *Populus*. 2019, 3, 195. *Sustainable Energy & Fuels*
<https://doi.org/10.1039/c8se00471d>

Clifton-Brown, J., A. Harfouche, M.D. Casler, H.D. Jones, W.J. Macalpine, D. Murphy-Bokern, L. B. Smart, A. Adler, C. Ashman, D. Awty-Carroll, C. Bastien, S. Bopper, V. Botnari, M. Brancourt-Hulmel, Z. Chen, L.V. Clark, S. Cosentino, S. Dalton, C. Davey, O. Dolstra, I. Donnison, R. Flavell, J. Greef, S. Hanley, A. Hastings, M. Hertzberg, Tsai-Wen Hsu, L. Huang, A. Iurato, E. Jensen, X. Jin, U. Jørgensen, A. Kiesel, D.-S. Kim, J. Liu, J.P. McCalmont, B.G. McMahon, M. Mos, P. Robson, E.J. Sacks, A. Sandu, G. Scalici, K. Schwarz, D. Scordia, R. Shafiei, I. Shield, G. Slavov, B.J. Stanton, K. Swaminathan, G. Taylor, A.F. Torres, L.M. Trindade, T. Tschaplinski, G. Tuskan, T. Yamada, C.Y. Yu, R.F. Zalesny, J. Zong, and I. Lewandowski. Breeding progress and preparedness for mass-scale deployment of perennial lignocellulosic biomass crops switchgrass, miscanthus, willow, and poplar. *Global Change Biology-Bioenergy* First published: 19 September 2018 <https://doi.org/10.1111/gcbb.12566>

Meng, X., J. Zhang, T.J. Tschaplinski, G.A. Tuskan, J.-G. Chen, and W. Muchero. 2018. Regulation of lignin biosynthesis and its role in growth-defense tradeoffs. *Frontiers in Plant Sci.* 9:1427 <https://doi.org/10.3389/fpls.2018.01427>

Faraji, M., L.L. Fonseca, L. Escamilla-Treviño, J. Barros-Rios, N.L. Engle, Z.K. Yang, T.J. Tschaplinski, R.A. Dixon, and E.O. Voit. 2018. A dynamical model of lignin biosynthesis in *Brachypodium distachyon*. *Biotech. for Biofuels* 11:253. <https://doi.org/10.1186/s13068-018-1241-6>

Cecchini, N.M, S. Roychoudhry, D.J. Speed, K. Steffes, A. Tambe, K. Zodrow, K. Konstantinoff, H.W. Jung, N.L. Engle, T.J. Tschaplinski, and J.T. Greenberg. 2018. Underground azelaic acid-conferred resistance to *Pseudomonas syringae* in *Arabidopsis*. *Molecular Plant-Microbe Interactions* 32:86-94 <https://dx.doi.org/10.1094/MPMI-07-18-0185-R>

Yin, H., H.-B. Guo, D. Weston, A.M. Borland, P. Ranjan, P.E. Abraham, J. M. Wachira, G.A. Tuskan, T.J. Tschaplinski, S.D. Wullschleger, H. Guo, R. Hettich, A. Visel, S. Gross, Z. Wang, X. Yang. 2018. Diel rewiring and positive selection of ancient plant proteins enabled evolution of CAM photosynthesis. *BMC Genomics* 19:588 <https://doi.org/10.1186/s12864-018-4964-7>

Veach, A.M., D. Yip, N.L. Engle, A. Bible, J. Morrell-Falvey, T.J. Tschaplinski, U.C. Kalluri, C.W. Schadt. 2018. Modification of plant cell wall chemistry impacts plant metabolites and bacterial

community composition in field-grown *Populus* PdKOR1 RNAi plants. *Plant Soil* 429:349-361. <https://doi.org/10.1007/s11104-018-3692-8>

Zhang, J., Y. Yang, K. Zheng, M. Xie, K. Feng, S.S. Jawdy, L.E. Gunter, P. Ranjan, V.R. Singan, N. Engle, E. Lindquist, K. Barry, J. Schmutz, N. Zhao, T.J. Tschaplinski, J. LeBoldus, G.A. Tuskan, J.-G. Chen & W. Muchero. 2018. Genome-wide association studies and expression-based quantitative trait loci analyses reveal roles of HCT2 in caffeoylquinic acid biosynthesis and its regulation by defense-responsive transcription factors in *Populus*. *New Phytol.* 11 July 2018 <https://doi.org/10.1111/nph.15297>

Yao, L., H. Yang, C.G. Yoo, Y. Pu, X. Meng, W. Muchero, G. Tuskan, T. Tschaplinski, A.J. Ragauskas. 2018. Understanding the influences of different pretreatments on recalcitrance of *Populus* clones. *Bioresource Tech.* 265:75-81. <https://doi.org/10.1016/j.biortech.2018.05.057>

Xie, M., W. Muchero, A.C. Bryan, K. Yee, H.-B. Guo, J. Zhang, T.J. Tschaplinski, V.R. Singan, E. Lindquist, R.S. Payyavula, J. Barros-Rios, R. Dixon, N. Engle, R.W. Sykes, M. Davis, S. S. Jawdy, L.E. Gunter, O. Thompson, S.P. DiFazio, L.M. Evans, K. Winkler, C. Collins, J. Schmutz, H. Guo, U. Kalluri, M. Rodriguez, K. Feng, J.-G. Chen, and G.A. Tuskan. 2018. A 5-enolpyruvylshikimate 3-phosphate synthase functions as a transcriptional repressor in *Populus*. *The Plant Cell* 30:1645-1660. <https://doi.org/10.1105/tpc.18.00168>

Liu, D., K.J. Palla, R. Hua, R.C. Moseley, C. Mendoza, M. Chen, P.E. Abraham, J.L. Labbé, U.C. Kalluri, T.J. Tschaplinski, J.C. Cushman, A.M. Borland, G.A. Tuskan, Xiaohan Yang. 2018. Review: Perspectives on the basic and applied aspects of crassulacean acid metabolism (CAM) research. *Plant Science* 274:394-401. <https://doi.org/10.1016/j.plantsci.2018.06.012>

Weighill, D., P. Jones, M. Shah, P. Ranjan, W. Muchero, J. Schmutz, A. Sreedasyam, D. Macaya-Sanz, R. Sykes, N. Zhao, M.Z. Martin, S. DiFazio, T.J. Tschaplinski, G. Tuskan, and D. Jacobson. 2018. Pleiotropic and epistatic network-based discovery: Integrated networks for target gene discovery. *Front. Energy Res.*, 11 May 2018 <https://doi.org/10.3389/fenrg.2018.00030>

Sander, K., D. Chung, D. Hyatt, J. Westpheling, D.M. Klingeman, M. Rodriguez Jr., N.L. Engle, T.J. Tschaplinski, B.H. Davison, and S.D. Brown. 2018. Rex in *Caldicellulosiruptor bescii*: novel regulon members and its effect on the production of ethanol and overflow metabolites. *MicrobiologyOpen* 2018:e639. <https://doi.org/10.1002/mbo3.639>

Song, Y., D.A. Johnson, R. Peng, D.K. Hensley, P.V. Bonnesen, L. Liang, J. Huang, F. Yang, F. Zhang, R. Qiao, T. J. Tschaplinski, N.L. Engle, Z. Wu, D.A. Cullen, H.M. Meyer III, B.G. Sumpter, and A.J. Rondinone. 2018. A physical catalyst for the electrolysis of nitrogen to ammonia. *Sci. Adv.* 4:e1700336 <https://doi.org/10.1126/sciadv.1700336>

Whitham, J.M., Moon, J.-W., Rodriguez Jr., M., Engle, N.L., Klingeman, D.M, Rydzak, T, Abel, M.M., Tschaplinski, T.J., Guss, A.M., and S.D. Brown. 2018. *Clostridium thermocellum* LL1210 pH homeostasis mechanisms informed by transcriptomics and metabolomics. *Biotech. for Biofuels* 11:98 <https://doi.org/10.1186/s13068-018-1095-y>

Ragauskas, A., O'Neill, H.M., and T.J. Tschaplinski. 2018. Characterization strategies for lignocellulosic biomass. *Biofuels Digest* website (<http://www.biofuelsdigest.com/bdigest/2018/03/01/its-entirely-about-character-the-digests-2018-multi-slide-guide-to-characterizing-lignocellulosic-biomass>).

Abraham, P.E., B. Garcia, L.E. Gunter, S.S. Jawdy, D.A. Jacobson, N.L. Engle, X. Yang, R.L. Hettich, G.A. Tuskan, and T.J. Tschaplinski. 2018. Quantitative proteome profile of water-deficit stress responses in *Populus deltoides* leaves. Plos One 13(2): e0190019.

<https://doi.org/10.1371/journal.pone.0190019>

Faraji, M., L.L. Fonseca, L. Escamilla-Trevino, J. Barros-Rios, N.L. Engle, Z.K. Yang; T.J. Tschaplinski, R. A. Dixon, and E.O. Voit. 2018. Mathematical models of lignin biosynthesis. Biotech. for Biofuels. 11:34. <https://doi.org/10.1186/s13068-018-1028-9>

Timm, C., K. Carter, A. Carrell, S.-R. Jun, S. Jawdy, J. Velez, L. Gunter, Z. Yang, I. Nookaew, N. Engle, T.-Y. Lu, C. Schadt, T. Tschaplinski, M. Doktycz, G. Tuskan, D. Pelletier, and D. Weston. 2018. Abiotic stresses shift belowground *Populus*-associated bacteria towards a core stress microbiome. mSystems 3:e00070-17. <https://doi.org/10.1128/mSystems.00070-17>

Yang, Y., C.G. Yoo, K.A. Winkeler, C.M. Collins, M.A.W. Hinchee, S. Jawdy, L. Gunter, N. Engle, Y. Pu, X. Yang, T.J. Tschaplinski, A.J. Ragauskas, G.A. Tuskan, and J.-G. Chen. 2018. Overexpression of a Domain of Unknown Function 231-containing protein increases O-xylan acetylation and cellulose biosynthesis in *Populus*. Biotech. for Biofuels 10:311.

<https://doi.org/10.1186/s13068-017-0998-3>

Yang, X., R. Hu, H. Yin, J. Jenkins, S. Shu, H. Tang, D. Liu, D.A. Weighill, W.C. Yim, J. Ha, K. Heyduk, D.M. Goodstein, H.-B. Guo, R.C. Moseley, E. Fitzek, S. Jawdy, Z. Zhang, M. Xie, J. Hartwell, J. Grimwood, P.E. Abraham, R. Mewalal, J.D. Beltrán, S.F. Boxall, L.V. Dever, K.J. Palla, R. Albion, T. Garcia, J.A. Mayer, S.D. Lim, C. M. Wai, P. Peluso, R. Van Buren, H.C. De Paoli, A.M. Borland, H. Guo, J.-G. Chen, W. Muchero, Y. Yin, D.A. Jacobson, T.J. Tschaplinski, R.L. Hettich, R. Ming, K. Winter, J.H. Leebens-Mack, J.A.C. Smith, J.C. Cushman, J. Schmutz, and G.A. Tuskan. 2017. The *Kalanchoë* genome provides insights into convergent evolution and building blocks of crassulacean acid metabolism. Nature Communications 8:1899.

<https://doi.org/10.1038/s41467-017-01491-7>

Sander, K., K.G. Asano, D. Bhandari, G.J. Van Berkel, S.D. Brown, B. Davison, and T.J. Tschaplinski*. 2017. Targeted redox and energy cofactor metabolomics in *Clostridium thermocellum* and *Thermoanaerobacterium saccharolyticum*. Biotech. for Biofuels. 10:270.

<https://doi.org/10.1186/s13068-017-0960-4>

Macaya-Sanz, D., J.-G. Chen, U.C. Kalluri, W. Muchero, T.J. Tschaplinski, L.E. Gunter, S.J. Simon, A.K. Biswal, A.C. Bryan, R. Payyavula, M. Xie, Y. Yang, J. Zhang, D. Mohnen, G.A. Tuskan, and S.P. DiFazio. 2017. Agronomic performance of *Populus deltoides* trees engineered for biofuel production. Biotech. for Biofuels 10:253. <https://doi.org/10.1186/s13068-017-0934-6>

Martin, M., D. Glasgow, T.J. Tschaplinski, G.A. Tuskan, L.E. Gunter, and D.J. Weston. 2017. Correlating laser-induced breakdown spectroscopy (LIBS) with neutron activation analysis (NAA) to determine the elemental concentration in the ionome of the *Populus trichocarpa* leaf. Spectra Chimica Acta B: Atomic Spectroscopy 138:46-53

<https://doi.org/10.1016/j.sab.2017.10.008>

Yoo, C.G., Y. Yang, X. Meng, W. Muchero, K.L. Yee, O.A. Thompson, M. Rodriguez Jr., G. Bali, N.L. Engle, E. Lindquist, V. Singan, J. Schmutz, S.P. DiFazio, T.J. Tschaplinski, G.A. Tuskan, J.-G. Chen, B. Davison, Y. Pu, and A.J. Ragauskas. 2017. Insights of biomass recalcitrance in

Populus trichocarpa natural variants for biomass conversion. Green Chemistry 19: 5467-5478. <https://doi.org/10.1039/C7GC02219K>

Li, M., Y. Pu, T.J. Tschaplinski, and A.J. Ragauskas. 2017. 31P NMR characterization of triclin and its structurally similar flavonoids. ChemistrySelect 2(12):3557–3561. <https://doi.org/10.1002/slct.201700735>

Verbeke, T.J., R.J. Giannone, D.M. Klingeman, N.L. Engle, T. Rydzak, A.M. Guss, T.J. Tschaplinski, S.D. Brown, R.L. Hettich, and J.G. Elkins. 2017. Pentose sugars inhibit metabolism and increase expression of an AgrD-type cyclic pentapeptide in *Clostridium thermocellum*. Scientific Reports 7:43355. <https://doi.org/10.1038/srep43355>

Li, M., Y. Pu, C.G. Yoo, E. Gjersing, S.R. Decker, C. Doepcke, T.J. Tschaplinski, N.L. Engle, R.W. Sykes, M.F. Davis, H.L. Baxter, M. Mazarei, C.N.J. Stewart, Jr., A.J. Ragauskas. 2017. Study of traits and recalcitrance reduction of field-grown COMT down-regulated switchgrass. Biotech. for Biofuels 10:12. <https://doi.org/10.1186/s13068-016-0695-7>

Vélez, J.M., T.J. Tschaplinski, R. Vilgalys, C.W. Schadt, J.L. Labbé, G. Bonito, K. Hameed, N. Engle, C.E. Hamilton. 2017. Characterization of a novel, ubiquitous fungal endophyte from the rhizosphere and root endosphere of *Populus* trees. Fungal Ecol. 27:78-86. <https://doi.org/10.1016/j.funeco.2017.03.001>

Uehling J, Gryganskyi A, Hameed K, Tschaplinski T, Misztal PK, Wu S, Desirò A, Vande Pol N, Du Z, Zienkiewicz A, Zienkiewicz K, Morin E, Tisserant E, Splivallo R, Hainaut M, Henrissat B, Ohm R, Kuo A, Yan J, Lipzen A, Nolan M, LaButti K, Barry K, Goldstein AH, Labbé J, Schadt C, Tuskan G, Grigoriev I, Martin F, Vilgalys R, Bonito G. 2017. Comparative genomics of *Mortierella elongata* and its bacterial endosymbiont *Mycoavidus cysteinexigens*. Environmental Microbiology: 19(8): 2964–2983 <https://doi.org/10.1111/1462-2920.13669>

Dash, M., Y.S. Yordanov, T. Georgieva, T.J. Tschaplinski, E. Yordanova, and V. Busov. 2017. Poplar PtabZIP1-like enhances lateral root formation and biomass growth under drought stress. The Plant Journal 89 (4): 692-705. <https://doi.org/10.1111/tpj.13413>

Poudel, S., R.J. Giannone, M. Rodriguez Jr, B. Raman, M. Z. Martin, N.L. Engle, I. Nookaew, S.D. Brown, T.J. Tschaplinski, D. Ussery, and R.L. Hettich. 2017. Integrated proteomics/metabolomics reveals the details of metabolic adaptation of *Clostridium thermocellum* ATCC-27405 grown on switchgrass. Biotechnol. for Biofuels 10:14. <https://doi.org/10.1186/s13068-016-0697-5>

Meng, X., Pu, Y., Yoo, C.G., Li, M., Bali, G., Park, D.-Y., Gjersing, E., Davis, M.F., Muchero, W., Tuskan, G.A., Tschaplinski, T.J., and Arthur J. Ragauskas. 2017. An in-depth understanding of biomass recalcitrance using natural poplar variants as the feedstock. ChemSusChem 10:139-150. <https://doi.org/10.1002/cssc.201601303>

Abraham, P., H. Yin, A.M. Borland, D. Weighill, S.D. Lim, H. Cestari De Paoli, N.L. Engle, R. Agh, D.J. Weston, S.D. Wullschleger, T. Tschaplinski, D. Jacobson, J.C. Cushman, R.L. Hettich, G.A. Tuskan, X. Yang. 2016. Transcript, protein and metabolite temporal dynamics in the CAM plant *Agave*. Nature Plant 2: Article number 16178 DOI: 10.1038/nplants.2016.178

Kalluri UC, Payyavula RS, Labbé JL, Engle N, Bali G, Jawdy SS, Sykes RW, Davis M, Ragauskas A, Tuskan GA, and TJ Tschaplinski. 2016. Down-regulation of KORRIGAN-like

endo- β -1,4-glucanase genes impacts carbon partitioning, mycorrhizal colonization and biomass production in *Populus*. *Front. Plant Sci.* 7:1455. doi: 10.3389/fpls.2016.01455

Sun, Q., R. Khunsupat, N.C. Gallego, N. Labbé, J.J. Bozell, T.G. Rials, G.A. Tuskan, T.J. Tschaplinski, A.K. Naskar, and A.J. Ragauskas. 2016. Study of poplar organosolv lignin after melt rheology treatment as carbon fiber precursors. *Green Chemistry* 18: 5015-5024
DOI: 10.1039/C6GC00977H

Lin, J, Mazarei, M., Zhou, N., Hatcher, C., Wuddineh, W., Rudis, M., Tschaplinski, T., Pantalone, V., Arelli, P., Hewezi, T., Chen, F. Stewart, N. 2016. Transgenic soybean overexpressing GmSAMT1 exhibits resistance to multiple-HG types of soybean cyst nematode *Heterodera glycines*. *Plant Biotechnology J.* 14:2100-2109. doi.org/10.1111/pbi.12566

Timm, C.M., D.A. Pelletier, S.S. Jawdy, L.E. Gunter, J.A. Henning, N. Engle, J. Aufrecht, E. Gee, I. Nookaew, Z. Yang, T.-Y. Lu, T.J. Tschaplinski, M.J. Doktycz, G.A. Tuskan, and D.J. Weston. 2016. Two poplar-associated bacterial isolates induce additive favorable responses in a constructed plant-microbiome system. *Frontiers in Plant Science* 7: 497.
doi.org/10.3389/fpls.2016.00497

Bible, A.N., S.J. Fletcher, D.A. Pelletier, C.W. Schadt, S.S. Jawdy, D.J. Weston, N.L. Engle, T.J. Tschaplinski, R. Masyuko, S. Polisetti, P.W. Bohn, T.A. Coutinho, M.J. Doktycz, and J.L. Morrell-Falvey. 2016. A carotenoid-deficient mutant in *Pantoea* sp. YR343, a bacteria isolated from the rhizosphere of *Populus deltoides*, is defective in root colonization. *Frontiers in Microbiology* 7:491. doi.org/10.3389/fmicb.2016.00491

Bryan, A., W. Muchero, S. Jawdy, L. Gunter, E. Gjersing, R. Sykes, N. Engle, T.J. Tschaplinski, X. Yang, G.A. Tuskan, J.-G. Chen. 2016. Knockdown of a laccase in *Populus deltoides* confers altered cell wall chemistry and increased sugar release. *Plant Biotechnol. J.* pp. 1-11. DOI: 10.1111/pbi.12560

Dumitrache, A., H. Akinosho, M. Rodriguez Jr., X. Meng, C. Geun Yoo, J. Natzke, N.L. Engle, R.W. Sykes, T.J. Tschaplinski, W. Muchero, A. Ragauskas, B.H. Davison, S.D. Brown. 2016. Consolidated bioprocessing of *Populus* using *Clostridium (Ruminiclostridium) thermocellum*: A case study on the impact of lignin composition and structure. *Biotechnol. for Biofuels* 9:31 DOI 10.1186/s13068-016-0445-x

ORNL Patent # 2525.2 - Key gene regulating cell wall biosynthesis and recalcitrance in *Populus*, Gene Y – US9206436 B2, Published December 8, 2015

Weston D.J., A. Rogers, T.J. Tschaplinski, L.E. Gunter, S.A. Jawdy, N.L. Engle, G.A. Tuskan, and S.D. Wullschleger. 2015. Scaling nitrogen and carbon interactions: what are the consequences of biological buffering? *Ecology and Evolution* 5(14):2839–2850 doi: 10.1002/ece3.1565

Currie, D.H., B. Raman, C.M. Gowen, T.J. Tschaplinski, M.L. Land, S.D. Brown, S.F. Covalla, D.M. Klingeman, Z.K. Yang, N.L. Engle, C.M. Johnson, M. Rodriguez, A.J. Shaw, W.R. Kenealy, L.R. Lynd, S.S. Fong, J.R. Mielenz, B.H. Davison, D.A. Hogsett, and C.D. Herring. 2015. Genome-scale resources for *Thermoanaerobacterium saccharolyticum*. *BMC Sys Bio* 9:30 doi:10.1186/s12918-015-0159-x

Rempe, C.S., K.P. Burris, H.L. Woo, B. Goodrich, D. Koessler Gosnell, T.J. Tschaplinski, and

C.N. Stewart, Jr 2015. Computational ranking of yerba mate small molecules based on their predicted contribution to antibacterial activity against methicillin-resistant *Staphylococcus aureus*. Plos One 10(5):e0123925. DOI: 10.1371/journal.pone.0123925

Cecchini, N.M, H.W. Jung, N.L. Engle, T.J. Tschaplinski, and J.T. Greenberg. 2015. ALD1 regulates basal immune components and early inducible defense responses in Arabidopsis. Molecular Plant-Microbe Interactions 28(4):455-66. doi: 10.1094/MPMI-06-14-0187-R

Zhao, Q., Y. Zeng, Y. Yin, Y. Pu, L.A. Jackson, N.L. Engle, M.Z. Martin, T.J. Tschaplinski, S.-Y. Ding, A.J. Ragauskas, and R.A. Dixon. 2015. Pinoreosin reductase 1 impacts lignin distribution during secondary cell wall biosynthesis in Arabidopsis. Phytochemistry 112:170-178
DOI:10.1016/j.phytochem.2014.07.008

Trajano, H.L., S. Pattathil, B.A. Tomkins, T.J. Tschaplinski, M.G. Hahn, G.J. Van Berkel, C.E. Wyman. 2015. Xylan hydrolysis in *Populus trichocarpa* x *P. deltoides* and model substrates during hydrothermal pretreatment. Bioresource Tech. 179: 202-210
doi: <http://dx.doi.org/10.1016/j.biortech.2014.11.090>

Payyavula R.S., T.J. Tschaplinski, S. S. Jawdy, R.W. Sykes, G.A. Tuskan, and U.C. Kalluri. 2014. Metabolic profiling reveals altered sugar and secondary metabolism in response to UGPase overexpression in *Populus*. BMC Plant Biology 14:265 doi:10.1186/s12870-014-0265-8

Clarkson, S.M., S.D. Hamilton-Brehm, R.J. Giannone, N.L. Engle, T.J. Tschaplinski, R.L. Hettich, and J.G. Elkins. 2014. A comparative multidimensional LC-MS proteomic analysis reveals mechanisms for furan aldehyde detoxification in *Thermoanaerobacter pseudethanolicus* 39E. Biotech. for Biofuels 7:165 doi: 10.1186/s13068-014-0165-z

Holwerda, E.K., P. Thorne, D.G. Olson, D. Amador-Noguez, N.L. Engle, T.J. Tschaplinski, J.P. van Dijken, and L.R. Lynd. 2014. The exometabolome of *Clostridium thermocellum* reveals overflow metabolism at high cellulose loading. Biotech. for Biofuels 7:155 doi:10.1186/s13068-0140155-1

Kapuscinski, K.L., J. M. Farrell, S.V. Stehman, G.L. Boyer, D.D. Fernando, M.A. Teece, T.J. Tschaplinski. 2014. Selective herbivory by an invasive Cyprinid, the rudd *Scardinius erythrophthalmus*. Freshwater Biol. 59:2315-2327 doi:10.1111/fwb.12433

Newhouse, A.E., L.D. Polin-McGuigan, K.A. Baier, K.E.R. Valletta, W.H. Rottmann, T.J. Tschaplinski, C.A. Maynard, and W.A. Powell. 2014. Transgenic American chestnuts show enhanced blight resistance and transmit the trait to T1 progeny. Plant Science 228:88-97. DOI (10.1016/j.plantsci.2014.04.004)

Myburg, A.M., D. Grattapaglia, G.A. Tuskan, U. Hellsten, R.D. Hayes, J. Grimwood, J. Jenkins, E. Lindquist, H. Tice, D. Bauer, D.M. Goodstein, I. Dubchak, A. Poliakov, E. Mizrachi, A.R.K. Kullán, I. van Jaarsveld, S.G. Hussey, D. Pinard, K. van der Merwe, P. Singh, O.B. Silva-Junior, R.C. Togawa, M.R. Pappas, D.A. Faria, C.P. Sansaloni, C.D. Petroli, X. Yang, P. Ranjan, T.J. Tschaplinski, ... (and 51 others). 2014. The genome of *Eucalyptus grandis*. Nature: 510:356-362.

Ragauskas, A.J., G.T. Beckham, M.J. Bidy, R. Chandra, F. Chen, M.F. Davis, B.H. Davison, R.A. Dixon, P. Gilna, M. Keller, P. Langan, A.K. Naskar, J.N. Saddler, T.J. Tschaplinski, G.A.

Tuskan, and C.E. Wyman. 2014. Lignin valorization: Improving lignin processing in the biorefinery. *Science* 344(6185):709. DOI:10.1126/science.1246843

Tschaplinski, T.J., J.M. Plett, N.L. Engle, A. Deveau, K.C. Cushman, M.Z. Martin, M.J. Doktycz, G.A. Tuskan, A. Brun, A. Kohler, F. Martin. 2014. *Populus trichocarpa* and *Populus deltoides* exhibit different metabolomic responses to colonization by the symbiotic fungus *Laccaria bicolor*. *Molecular Plant-Microbe Interactions* 27:546–556. <http://dx.doi.org/10.1094/MPMI-09-13-0286-R>

Borland, A.M., J. Hartwell, D.J. Weston, K.A. Schlauch, T.J. Tschaplinski, G.A. Tuskan, X. Yang and J. C. Cushman. 2014. Engineering crassulacean acid metabolism to improve water-use efficiency. *Trends in Plant Sci.* 19(5): 327-338. <http://dx.doi.org/10.1016/j.tplants.2014.01.006>

Yin, H., C.J. Chen, J. Yang, D.J. Weston, J.-G. Chen, W. Muchero, N. Ye, T.J. Tschaplinski, S.D. Wullschleger, Z.-M. Cheng, G.A. Tuskan, and X. Yang. 2014. Functional genomics of drought tolerance in bioenergy crops. *Critical Reviews in Plant Sci.* 33:205-224. DOI: 10.1080/07352689.2014.870417

Li, Y., T. Xu, T.J. Tschaplinski, N.L. Engle, Y. Yang, D.E. Graham, Z. He, and J. Zhou. 2014. Improvement of cellulose catabolism in *Clostridium cellulolyticum* by sporulation abolishment and carbon alleviation. *Biotechnol. for Biofuels* 7:1-13 doi:10.1186/1754-6834-7-25

Wilson, CM, M. Rodriguez Jr, C.M. Johnson, S.L. Martin, T. Ming Chu, R.D. Wolfinger, L.J. Hauser, M.M. Land, D.M. Klingeman, A.J. Ragauskas, T.J. Tschaplinski, J.R. Mielenz and S.D. Brown. 2013. Global transcriptome analysis of *Clostridium thermocellum* ATCC 27405 during growth on dilute acid pretreated *Populus* and switchgrass. *Biotechnol. for Biofuels* 6:179

Linville J.L., M. Rodriguez, Jr., M. Land, M.H. Syed, N.L. Engle, T.J. Tschaplinski, J.R. Mielenz, C.D. Cox. 2013. Industrial Robustness: Understanding the mechanism of tolerance for the *Populus* hydrolysate-tolerant mutant strain of *Clostridium thermocellum*. *Plos One* 8(10): e78829. doi:10.1371/journal.pone.0078829

Zhao N., Yao J.Z., Chaiprasongsuk M., Li G.L., Guan J., Tschaplinski T.J., Guo H., Chen F. 2013. Molecular and biochemical characterization of the jasmonic acid methyltransferase gene from black cottonwood (*Populus trichocarpa*). *Phytochemistry* 94: 74-81. <http://dx.doi.org/10.1016/j.phytochem.2013.06.014>

Trajano, H.L., N.L. Engle, M. Foston, A.J. Ragauskas, T.J. Tschaplinski, and C.E. Wyman. 2013. The fate of lignin during hydrothermal pretreatment. *Biotechnol. for Biofuels* 6:110 DOI:10.1186/1754-6834-6-110

Kataeva, I., M. Foston, S.-J. Yang, S. Pattathil, A.K. Biswal, F.L. Poole II, M. Basen, A.M. Rhaesa, T.P. Thomas, P. Azadi, V. Olman, T.D. Saffold, K.E. Mohler, D.L. Lewis, C. Doepcke, Y.N. Zeng, T.J. Tschaplinski, W.S. York, M. Davis, D. Mohnen, Y. Xu, R.M. Kelly, A. Ragauskas, S.Y. Ding, R.M. Kelly, M.G. Hahn, and M.W.W. Adams. 2013. Carbohydrate and lignin are simultaneously solubilized from unpretreated switchgrass by microbial action at high temperature. *Energy and Environ. Sci.* 6: 2186-2895

Yang, S., C. Pan, T.J. Tschaplinski, G.B. Hurst, N.L. Engle, W. Zhou, P. Dam, Y. Xu, L.T. Dice, B.H. Davison, and S.D. Brown. 2013. Systems biology analysis of *Zymomonas mobilis* ZM4 ethanol stress response. *PloS One* 9(6): e101305

- Trupiano D., Y. Yordanov, S. Regan, R. Meilan, T.J. Tschaplinski, G.S. Scippa, and V. Busov. 2013. Identification, characterization of an AP2/ERF transcription factor that promotes adventitious, lateral root formation in *Populus*. *Planta* 238:271-281
- van der Veen, D., J. Lo, S.D. Brown, C.M. Johnsson, T.J. Tschaplinski, M.Z. Martin, N.L. Engle, R.A. van den Berg, A.D. Argyros, N.C. Caiazza, A. M. Guss, and L.R. Lynd. 2013. Characterization of *Clostridium thermocellum* strains with disrupted fermentation end-product pathways. *J Ind Microbiol Biotechnol* 40:725–734 44196 DOI 10.1007/s10295-013-1275-5
- Patel, D., M. Basu, S. Hayes, I. Majláth, F.M. Hetherington, T.J. Tschaplinski, K.A. Franklin. 2013. Temperature-dependent shade avoidance strategy involves the receptor-like kinase ERECTA. *Plant J* 73:980-92. doi: 10.1111/tj.12088. Epub 2012 Dec 31
- Shen, H., C.R. Poovaiah, A. Ziebell, T.J. Tschaplinski, S. Pattathil, E. Gjersing, N.L. Engle, R. Katahira, Y. Pu, R. Sykes, F. Chen, A.J. Ragauskas, J.R. Mielenz, M.G. Hahn, M. Davis, N. Stewart Jr., R.A. Dixon. 2013. Enhanced characteristics of genetically modified switchgrass (*Panicum virgatum* L.) for high ethanol production. *Biotechnol. Biofuels* 6:71 doi: 10.1186/1754-6834-6-71
- Ye, C.-Y., T. Li, H. Yin, D.J. Weston, G.A. Tuskan, T.J. Tschaplinski, and X. Yang. 2013. Evolutionary analyses of non-family genes in plants. *Plant J.* 73(5):788-97. doi: 10.1111/tj.12073
- Muchero, W., M.M. Sewell, R. Priya, L.E. Gunter, T.J. Tschaplinski, T.-M. Yin, and G.A. Tuskan. 2013. Genome anchored QTLs for biomass productivity in hybrid *Populus* grown under contrasting environments. *PLoS One* 8(1): e54468. <https://doi.org/10.1371/journal.pone.0054468>
- Kridelbaugh, D.M., Nelson, J.C., Engle, N.L., Tschaplinski, T.J., Graham, D.E. 2013. Nitrogen and sulfur requirements for *Clostridium thermocellum* and *Caldicellulosiruptor bescii* on cellulosic substrates in minimal nutrient media. *Bioresource Technology* 130:125-135.
- Páez, A., P.M. Páez, M.E. González, J.A. Urdaneta, D. Ringelberg, and T.J. Tschaplinski. 2013. The effect of light on fatty acid concentrations of purslane (*Portulaca oleracea* L.): A promising plant for decreasing serum cholesterol levels | Efecto de la luz en la concentración de ácidos grasos de la verdolaga (*Portulaca oleracea* L.) Planta prometedor para disminuir el colesterol sérico. *Rev. Fac. Agron. (LUZ)* 30:441-453.
- Yee, K.L., M. Rodriguez Jr., T.J. Tschaplinski, N.L. Engle, M.Z. Martin, C. Fu, Z.-Y. Wang, S.D. Hamilton-Brehm, and J.R. Mielenz. 2012. Evaluation of the bioconversion of genetically modified switchgrass using simultaneous saccharification and fermentation and a consolidated bioprocessing approach. *Biotechnol. Biofuels* 5:81. doi: 10.1186/1754-6834-5-81
- Tschaplinski, T.J., R.F. Standaert, N.L. Engle, M.Z. Martin, A.K. Sangha, J.M. Parks, J.C. Smith, R. Samuel, N. Jiang, Y. Pu, A.J. Ragauskas, C.Y. Hamilton, C. Fu, Z.-Y. Wang, B.H. Davison, R.A. Dixon, and J.R. Mielenz. 2012. Down-regulation of the caffeic acid O-methyltransferase gene in switchgrass reveals a novel monolignol analog. *Biotechnol. for Biofuels* 5:71. doi: 10.1186/1754-6834-5-71

ORNL Patent # 1933.1 - Plant Pathogen Resistance – US8318786 B2, Published November 27, 2012 - Licensed by Sci Protek, Inc., Visalia, CA

Yang, S., R.J. Giannone, L. Dice, Z.K. Yang, N.L. Engle, T.J. Tschaplinski, R.L. Hettich, and S.D. Brown. 2012. *Clostridium thermocellum* ATCC27405 transcriptomic, metabolomic and proteomic profiles after ethanol stress. BMC Genomics 13:336.

Weston, D., D.A. Pelletier, J.L. Morrell-Falvey, T.J. Tschaplinski, S. Jawdy, T.-Y. Lu, S.M. Allen, A.A. Karve, S.J. Melton, M.Z. Martin, C.W. Schadt, J. Chen, X. Yang, M.J. Doktycz, G.A. Tuskan. 2012. *Pseudomonas fluorescens* induces strain-dependent and strain-independent responses in defense networks, primary metabolism and photosynthesis. Molecular Plant-Microbe Interactions 25:765-778. (doi.org/10.1094/MPMI-09-11-0253)

Tuskan, G.A., J. Chen, S. DiFazio, P. Faivre-Rampant, M. Gudet, A. Harfouche, V. Jorge, J.L. Labbe, R. Priya, M. Sabatti, G. Slavov, N. Street, T.J. Tschaplinski, and T.-M. Yin. 2012. The obscure events contributing to the evolution of an incipient sex chromosome in *Populus* – A retrospective working hypothesis. Tree Genetics and Genomes (doi: 10.1007/s11295-012-0495-6)

Li, Y., T.J. Tschaplinski, N.L. Engle, C.Y. Hamilton, M. Rodriguez Jr., J.C. Liao, C.W. Schadt, A.M. Guss, Y. Yang, and D.E. Graham. 2012. Combined inactivation of the *Clostridium cellulolyticum* lactate and malate dehydrogenase genes substantially increases ethanol yield from cellulose and switchgrass fermentations. Biotechnol. Biofuels 5:2 (doi:10.1186/1754-6834-5-2)

Ellis, L.D., E.K. Holwerda, D. Hogsett, S. Rogers, X. Shao, T.J. Tschaplinski, P. Thorne, L.R. Lynd. 2012. Closing the carbon balance for fermentation by *Clostridium thermocellum* (ATCC 27405). Bioresource Tech. 103:293-299.

Yang, X., T. Li, D. Weston, A.A. Karve, J.L. Labbe, L.E. Gunter, P. Sukumar, A.M. Borland, J. Chen, S.D. Wullschleger, T.J. Tschaplinski, and G.A. Tuskan. 2011. Innovative biological solutions to challenges in sustainable biofuels production. In Biofuel Production-Recent Developments and Prospects, Marco Aurélio dos Santos Bernardes (Ed.), ISBN: 978-953-307-478-8, InTech, Available from: <http://www.intechopen.com/articles/show/title/innovative-biological-solutions-to-challenges-in-sustainable-biofuels-production>

Yang, X., T.J. Tschaplinski, G.B. Hurst, S. Jawdy, P.E. Abraham, P.K. Lankford, R.M. Adams, M.B. Shah, R.L. Hettich, U. Kalluri, L. Gunter, C. Pennacchio, and G.A. Tuskan. 2011. Discovery and annotation of small proteins using genomics, proteomics, and computational approaches. Genome Research 21:634-641 (doi:10.1101/gr.109280.110)

Ye, C.-Y., T. Li, G.A. Tuskan, T.J. Tschaplinski, and X. Yang. 2011. Comparative analysis of GT14/GT14-like gene family in *Arabidopsis*, *Oryza*, *Populus*, *Sorghum* and *Vitis*. Plant Science 104:387-397.

van Dyk, M., A.R.K. Kullán, E. Mizrahi, C.A. Hefer, L. Jansen van Rensburg, T.J. Tschaplinski, K.C. Cushman, N.E. Engle, G.A. Tuskan, N. Jones, A. Kanzler, A.A. Myburg. 2011. Genetic dissection of transcript, metabolite, growth and wood property traits in an F2 pseudo-backcross pedigree of *Eucalyptus grandis* x *E. urophylla*. BMC Proceedings 5(Suppl 7): O7.

Zhao, N., J. Guan, J.-L. Ferrer, N. Engle, M. Chern, P. Ronald, T.J. Tschaplinski, and F. Chen. 2010. Biosynthesis and emission of insect-induced methyl salicylate and methyl benzoate from rice. *Plant Physiology and Biochemistry* 48:279-287.

Pechanova, O., C.-H. Hsu, J.P. Adams, J.P., T. Pechan, L. Vandervelde, J. Drnevich, S. Jawdy, A. Adeli, J.C. Suttle, A.M. Lawrence, T.J. Tschaplinski, A. Séguin, and C. Yuceer. 2010. Apoplast proteome reveals that extracellular matrix contributes to multi-stress response in poplar. *BMC Genomics* 11:674 (doi:10.1186/1471-2164-11-674).

Yang, X., Y. Chu-Yu, Z.-M. Cheng, T.J. Tschaplinski, S.D. Wulschleger, W. Yin, X. Xia, and G.A. Tuskan. 2010. Genomic aspects of research involving polyploidy plants. *Plant Cell, Tissue and Organ Culture* Published online 10.1007/s11240-010-9826-1.

Yang, X., U. C. Kalluri, S.P. DiFazio, S.D. Wulschleger, T.J. Tschaplinski, Z.-M. Cheng, and G.A. Tuskan. 2009. Poplar genomics: State of the science. *Critical Reviews in Plant Sci.* 28:375-392.

Chen, F., C.-J. Liu, T.J. Tschaplinski, and N. Zhao. 2009. Genomics of secondary metabolism in *Populus*: Interactions with biotic and abiotic environments. *Critical Reviews in Plant Sci.* 28:285-308.

Yang, S.-J., I. Kataeva, S.D. Hamilton-Brehm, N.L. Engle, T.J. Tschaplinski, C. Doepcke, M. Davis, J. Westpheling, and M.W.W. Adams. 2009. Efficient degradation of lignocellulosic plant biomass without pretreatment by the 9 thermophilic anaerobe, *Anaerocellum thermophilum* DSM 6725. *Appl. Environ. Microbiol.* 75:4762-4769.

Jung, H.W., T.J. Tschaplinski, L. Wang, J. Glazebrook, and J.T. Greenberg. 2009. Priming in systemic plant immunity. *Science* 324:89-91.

Zhao, N., J. Guan, F. Forouhar, T. J. Tschaplinski, Z.-M. Cheng, L. Tong, and F. Chen. 2009. Two poplar methyl salicylate esterases display comparable biochemical properties but divergent expression patterns. *Phytochemistry* 70:32-39.

Yang, X., S. Jawdy, T.J. Tschaplinski, and G.A. Tuskan. 2009. Genome-wide identification of lineage-specific genes in *Arabidopsis*, *Oryza* and *Populus*. *Genomics* 93:473-480.

Yang, S., T.J. Tschaplinski, N.L. Engle, S.L. Carroll, S.L. Martin, B.H. Davison, A.V. Palumbo, and S.D. Brown. 2009. Transcriptomic and metabolomic profiling of *Zymomonas mobilis* oxygen stress responses. *BMC Genomics* 10:34 (online)

Yang, X., U.C. Kalluri, S. Jawdy, L.E. Gunter, T.-M. Yin, T.J. Tschaplinski, D. Weston, P. Ranjan, and G.A. Tuskan. 2008. The F-Box Gene Family Is Expanded in Herbaceous Annual Plants Relative to Woody Perennial Plants. *Plant Physiology* 148:1189-1200.

Morse, A.M., T.J. Tschaplinski, C. Dervinis, P.M. Pijut, E.A. Schmelz, W. Day, and J.M. Davis. 2007. Salicylate and catechol levels are maintained in nahG transgenic poplar. *Phytochemistry* 68:2043-2052.

Yang, X., G.A. Tuskan, T.J. Tschaplinski, and Z.M. Cheng. 2007. Third-codon transversion rate-based Nymphaea basal angiosperm phylogeny—concordance with developmental evidence. *Nature Precedings* doi:10.1038/npre.2007.320.1

- Davison, B.H., A.J. Ragauskas, R. Templer, T.J. Tschaplinski, and J.R. Mielenz. 2006. Measuring the Efficiency of Biomass Energy – Response. *Science* 312:1744-1745.
- Ragauskas, A.J., C.K. Williams, B.H. Davison, G. Britovsek, J. Cairney, C.A. Eckert, J. Frederick, J.P. Hallett, D. Leak, C.L. Liotta, J.R. Mielenz, R. Murphy, R. Templer, and T. Tschaplinski. 2006. The path forward for biofuels and biomaterials. *Science* 27:484-489.
- Tsai, C.-J., S.A. Harding, T.J. Tschaplinski, R.L. Lindroth, and Y. Yuan. 2006. Genome-wide analysis of the structural genes regulating defense phenylpropanoid metabolism in *Populus*. *New Phytol.* 172:47-62.
- Busov, V., Meilan, R., Pearce, D., Rood, S., Ma, C., Tschaplinski, T., and S. Strauss. 2006. Transgenic modification of *gai* or *rgl1* causes dwarfing and alters gibberellins, root growth, and metabolite profiles in *Populus*. *Planta* 224:288-299.
- Norby, R.J., S.D. Wullschleger, P.J. Hanson, C.A. Gunderson, T.J. Tschaplinski and J. D. Jastrow. 2006. CO₂ enrichment of a deciduous forest: The Oak Ridge FACE Experiment. pp. 231-251. *In* Nösberger J., Long S.P., Norby R.J., Stitt M., Hendrey G.R., Blum H. (eds.) *Managed ecosystems and CO₂: Case Studies, Processes and Perspectives*. Ecological Studies, Vol. 187. Springer, Berlin. 459 p.
- Davis, M.F., G.A. Tuskan, M.M. Payne, T.J. Tschaplinski and R. Meilan. 2006. Assessment of *Populus* wood chemistry following the introduction of a Bt toxin gene. *Tree Physiol.* 26:557-564.
- Tschaplinski, T., G.A. Tuskan, M.M. Sewell, G.M. Gebre, D.E. Todd and C.D. Pendley. 2006. Phenotypic variation and QTL identification for osmotic potential in an interspecific hybrid inbred F₂ poplar pedigree growing under contrasting environments. *Tree Physiol.* 26:595-604.
- Wullschleger, S.D., T.M. Yin, S.P. DiFazio, T.J. Tschaplinski, L.E. Gunter, M.F. Davis, and G.A. Tuskan. 2005. Phenotypic variation in growth and biomass distribution for two advanced-generation pedigrees of hybrid poplar. *Can. J. For. Res.* 35:1779-1789.
- Hanson, P.J., S.D. Wullschleger, R.J. Norby, T.J. Tschaplinski and C.A. Gunderson. 2005. Importance of changing CO₂, temperature, precipitation, and ozone on carbon and water cycles of an upland-oak forest: Incorporating experimental results into model simulations. *Global Change Biol.* 11:1402-1423.
- Tschaplinski, T.J. and P.J. Hanson. 2003. Dormant season nonstructural carbohydrate storage. *In* P.J. Hanson and S.D. Wullschleger (eds.). *North American Temperate Deciduous Forest Response to Changing Precipitation Regimes*. Springer, New York, pp. 67-84.
- Tschaplinski, T.J. and G.M. Gebre. 2003. Leaf water potential, osmotic potential, and solute potential of several hardwood species as affected by manipulation of throughfall precipitation in an upland oak forest. *In* P.J. Hanson and S.D. Wullschleger (eds.). *North American Temperate Deciduous Forest Response to Changing Precipitation Regimes*. Springer, New York, pp. 121-139.
- Hanson, P.J., N.T. Edwards, T.J. Tschaplinski, S.D. Wullschleger and J.D. Joslin. 2002. Estimating the net primary and net ecosystem production of a southeastern upland *Quercus*

forest from an 8-year biometric record. *In* P.J. Hanson and S.D. Wullschleger (eds.). North American Temperate Deciduous Forest Response to Changing Precipitation Regimes. Springer, New York, pp. 378-395.

Edwards, N.T., T.J. Tschaplinski and R.J. Norby. 2002. Stem respiration increases in CO₂-enriched sweetgum trees. *New Phytol.* 155:239-248.

Wullschleger, S.D., T.J. Tschaplinski, and R.J. Norby. 2002. Plant water relations at elevated CO₂ – Implications for water-limited environments. *Plant, Cell and Environ.* 25:319-331.

Gebre, G.M., and T.J. Tschaplinski. 2002. Solute accumulation of chestnut oak and dogwood leaves in response to throughfall manipulation of an upland oak forest. *Tree Physiol.* 22:251-260.

Norby, R.J., P.J. Hanson, E.G. O'Neill, T.J. Tschaplinski, J.F. Weltzin, R.T. Hansen, W. Cheng, S.D. Wullschleger, C.A. Gunderson, N.T. Edwards, and D.W. Johnson. 2002. Net primary productivity of a CO₂-enriched deciduous forest and the implications for carbon storage. *Ecol. Appl.* 12:1261-1266.

Paez, A., G.M. Gebre, M.E. Gonzalez, and T.J. Tschaplinski. 2000. Growth, soluble carbohydrates, and aloin concentration of *Aloe vera* plants exposed to three irradiance levels. *Environ. and Exp. Bot.* 44:133-139.

Tschaplinski, T.J., G.A. Tuskan, G.M. Gebre, and D.E. Todd. 1998. Drought resistance of two hybrid *Populus* clones grown under irrigation in large-scale plantations. *Tree Physiol.* 18:653-658.

Gebre, G.M., T.J. Tschaplinski, G.A. Tuskan, and D.E. Todd. 1998. Clonal and seasonal differences in leaf osmotic potentials and organic solutes of five hybrid poplar clones grown under field conditions. *Tree Physiol.* 18:645-652.

Tschaplinski, T.J., G.M. Gebre, and T.L. Shirshac. 1998. Osmotic potential of several hardwood species as affected by throughfall manipulation of an upland oak forest during a dry year. *Tree Physiol.* 18:291-298.

Gebre, G.M., T.J. Tschaplinski, and T.L. Shirshac. 1998. Water relations of several hardwood species in response to throughfall manipulation in an upland oak forest during a wet year. *Tree Physiol.* 18:299-305.

Wullschleger, S.D., P.J. Hanson, and T.J. Tschaplinski. 1998. Whole-plant water flux in understory red maple exposed to altered precipitation regimes. *Tree Physiol.* 18:71-79.

Páez, A., M.E. González, J.A. Urdaneta, D. Paredes, D. Tissue, and T. Tschaplinski. 1998. Índices de crecimiento y formación de compuestos orgánicos en *Barleria lupulina* sometida a dos condiciones de luminosidad. *Rev. Fac. Agron. (LUZ)* 15:515-525.

Blake, T.J., J. Sperry, T.J. Tschaplinski, and S.S. Wang. 1996. Water relations. *In* Stettler, R.F., H.D. Bradshaw, P.E. Heilman, and T.M. Hinckley (eds.). *Biology of Populus and its implications for management and conservation. Part II. Chapter 16.* Natural Sciences and Research Council of Canada, Ottawa, Canada, pp. 401-422. ISBN: 9780660165066

Land Jr., S.B., A.W. Ezell, S.H. Schoenholtz, G.A. Tuskan, T.J. Tschaplinski, M. Stine, H.D.

- Bradshaw, R.C. Kellison, and J. Portwood. 1996. Intensive culture of cottonwood and hybrid poplar. Proc. 35th LSU Forestry Symposium, Baton Rouge, LA, pp. 167-189.
- Tschaplinski, T.J., D.B. Stewart, and R.J. Norby. 1995. Interactions between drought and elevated CO₂ on osmotic adjustment and solute concentrations of tree seedlings. *New Phytol.* 131:169-177.
- Tschaplinski, T.J., G.M. Gebre, J.E. Dahl, G.T. Roberts, and G.A. Tuskan. 1995. Growth and solute adjustment of calli of *Populus* clones cultured on nutrient media containing polyethylene glycol. *Can. J. For. Res.* 25:1425-1433.
- Tschaplinski, T.J., and T.J. Blake. 1995. Growth and carbohydrate status of coppice shoots of hybrid poplar following shoot pruning. *Tree Physiol.* 15:333-338.
- Tschaplinski, T.J., D.B. Stewart, P.J. Hanson, and R.J. Norby. 1995. Interactions between water stress and elevated CO₂ on growth and gas exchange of seedlings of three deciduous tree species. *New Phytol.* 129:63-71.
- Tschaplinski, T.J., and L.L. Wright. 1994. Woody plant research of the biofuels feedstock development program. *Biologue* 12:32-35.
- Tschaplinski, T.J., G.A. Tuskan, and C.A. Gunderson. 1994. Water-stress tolerance of black cottonwood and eastern cottonwood clones and four of their hybrid progeny. I. Growth, water relations and gas exchange. *Can. J. For. Res.* 24:364-371.
- Tschaplinski, T.J., and G.A. Tuskan. 1994. Water-stress tolerance of black cottonwood and eastern cottonwood clones and four of their hybrid progeny. II. Metabolites and inorganic ions that constitute osmotic adjustment. *Can. J. For. Res.* 24:681-687.
- Van Miegroet, H., R.J. Norby, and T.J. Tschaplinski. 1994. Nitrogen fertilization strategies in a short-rotation sycamore plantation. *For. Ecol. and Manage.* 64:13-24.
- Tschaplinski, T.J., and T.J. Blake. 1994. Carbohydrate mobilization following shoot defoliation and decapitation in hybrid poplar. *Tree Physiol.* 14:141-151.
- Tschaplinski, T.J., R.J. Norby, and S.D. Wullschlegel. 1993. Responses of loblolly pine seedlings to elevated CO₂ and fluctuating water supply. *Tree Physiol.* 13:283-296.
- Tschaplinski, T.J., and R.J. Norby. 1993. Physiological indicators of nitrogen response in short rotation sycamore plantations. II. Nitrogen metabolism. *Can. J. Bot.* 71:841-847.
- Marland, G., V. Dale, R. Graham, R. Luxmoore, S. Marland, S. McLaughlin, R. Norby, W. M. Post, T. Tschaplinski, J. Tuskan, and L. Wright. 1993. Forest management for fixing and sequestering carbon. Proceedings of the Second U.S./Japan Workshop on Global Change Research: Environmental Response Technologies (Mitigation and Adaptation). Honolulu, Hawaii, U.S.A., Feb. 1-3, 1993. pp. 265-269.
- D'Surney, S.J., T.J. Tschaplinski, N.T. Edwards, and L.R. Shugart. 1993. Biological responses of two soybean cultivars exposed to enhanced UVB radiation. *Environ. and Exp. Bot.* 33:1-10.
- Blake, T.J., and T.J. Tschaplinski. 1992. Water relations. *In* P.C. Mitchell, L. Sennerby-Forsse,

and T. M. Hinckley (eds.). *Ecophysiology of Short Rotation Forest Crops*, Chapter 3. Springer, Amsterdam. pp. 66-94. ISBN: 9781851668489

Koppenaar, R.S., T.J. Tschaplinski, and S.J. Colombo. 1992. Carbohydrate accumulation and turgor maintenance in seedling shoots and roots of two boreal forest conifers subjected to water stress. *Can. J. Bot.* 69:2522-2528.

Tschaplinski, T.J., and R.J. Norby. 1991. Physiological indicators of nitrogen response in short rotation sycamore plantations. I. CO₂ assimilation, photosynthetic pigments, and soluble carbohydrates. *Physiol. Plant.* 82:117-126.

Grossnickle, S.C., J.T. Arnott, J.E. Major, and T.J. Tschaplinski. 1991. Influence of dormancy induction treatments on western hemlock seedlings. I. Seedling development and stock quality assessment. *Can. J. For. Sci.* 21:164-174.

Tschaplinski, T. J., D. W. Johnson, R. J. Norby, and D. E. Todd. 1991. Biomass and soil nitrogen relationships of a one-year-old sycamore plantation. *Soil Sci. Am. J.* 55:841-847.

McCarthy, J.F., and T.J. Tschaplinski. 1991. Biological markers in animals and plants to establish exposure to, and effects of, atmospheric toxicants. In T. J. Moser, J. R. Baker, and D. T. Tingey (eds.). *Ecological Exposure and Effects of Airborne Toxic Chemicals: An Overview*. U.S. Environmental Protection Agency, Corvallis, OR. Report No. 600/3-91/001, pp. 107-127.

Tschaplinski, T.J., and T.J. Blake. 1989. Water relations, photosynthetic capacity, and root/shoot partitioning of photosynthate as determinants of productivity in hybrid poplar. *Can. J. Bot.* 67:1689-1697.

Tschaplinski, T.J., and T.J. Blake. 1989. Correlation between early root production, carbohydrate metabolism, and biomass production in hybrid poplar. *Can. J. Bot.* 67:2168-2174.

Tschaplinski, T.J., and T.J. Blake. 1989. Water stress tolerance and late-season organic solute accumulation in hybrid poplar. *Can. J. Bot.* 67:1681-1688.

Tschaplinski, T.J., and T.J. Blake. 1989. Photosynthetic reinvigoration of leaves following shoot decapitation, and accelerated growth of coppice shoots. *Physiol. Plant.* 75:157-165.

Tschaplinski, T.J., and T.J. Blake. 1989. The role of sink demand in carbon partitioning and photosynthetic reinvigoration following shoot decapitation. *Physiol. Plant.* 75:166-173.

Blake, T.J., and T.J. Tschaplinski. 1986. The role of water relations and photosynthesis in the early reinvigoration of decapitated poplar hybrids. *Physiol. Plant.* 68:287-293.

Tschaplinski, T.J., and T.J. Blake. 1985. Effects of root restriction on growth correlations, water relations, and senescence of alder seedlings. *Physiol. Plant.* 64:167-176.

Blake, T.J., T.J. Tschaplinski, and A. Eastham. 1984. Stomatal control of water use efficiency in poplar clones and hybrids. *Can. J. Bot.* 62:1344-1351.

THESES

- Ph.D. Physiological correlatives of vigorous growth in hybrid poplar.
 M.Sc.F. The effects of root restriction on growth, water relations and senescence of European alder (*Alnus glutinosa* Gaertn.) seedlings.
 B.Sc. The age composition of a collection of rabid and non-rabid Big Brown Bats (*Eptesicus fuscus*) as determined by dental annuli.

PROFESSIONAL SOCIETIES/ACTIVITIES

DOE-ARPA-E Phytosequestration Workshop (2015)
 DOE-ARPA-E- Transportation Energy Resources from Renewable Agriculture (TERRA)-
 Workshop participant and Review Panel Member (2014)
 Current Metabolomics - Editorial Board (2012 - present)
 ORNL Invention Disclosure Review Committee – (2008-2011)
 DOE Genomic Science and Technology for Energy and the Environment Review – Microbial
 and Plant Processes for Bioenergy Reviewer (2010)
 DOE-EREE High-Yield Scenario Workshop – Woody Energy Crops Participant (2009)
 DOE 30x30 Workshop on Biomass Energy – Woody Crop Development panel member (2006)
 Southeast Regional Biomass Consortium – Lead of Woody Crop Development (2006)
 International Poplar Genome Consortium – Coordinator of the Metabolic Characterization and
 Metabolomics section of the Science Plan for post-genome sequencing research (2002)
 Environmental and Experimental Botany – Editorial Board (2002 – present)
 Tree Physiology – Editorial Review Board (1994 – present)
 Bioactive Natural Products Consortium – University of Tennessee – member (2002 – 2004)
 National Science Foundation – Major Research Instruments Panel (1998)
 US DOE rep. to the International Energy Agency Ecophysiology Working Group (1989-1993)
 International Society for Molecular Plant-Microbe Interactions – member/participant
 American Society of Plant Biologists – member/participant
 Canadian Society of Plant Physiologists – member/participant

SCHOLARSHIPS

1985 Canadian Forestry Service Scholar Scholarship
 1984 Natural Sciences & Engineering Research Council
 Postgraduate Scholarship – Forestry Special
 1983 Natural Sciences and Engineering Research Council
 Postgraduate Scholarship
 1982 Natural Sciences and Engineering Research Council
 Postgraduate Scholarship
 1982 Edward Elsworth Johnson Postgraduate Forestry Fellowship
 1981 University of Toronto Open Master's Fellowship
 1980 Canadian National Sportsmen's Fellowship
 1980 Natural Sciences and Engineering Research Council - Summer Research Award