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Education and Training

Oak Ridge National Laboratory, TN	PostDoc Research Associate		2006
Michigan Technological University, MI	Forest Molecular Genetics & Biotechnology Ph.D.	Ph.D.	2003
University of Hyderabad, India	Plant Sciences	M.S.	1999
Osmania University, India	Microbiology, Botany & Chemistry	B.S.	1997

Professional Experience

2017- present: Bredesen Center Faculty, UTK-ORNL, TN
2006 – present: Staff Scientist, Biosciences Division, Oak Ridge National Laboratory (ORNL)
2010 – 2011: Science Coordinator, DOE BioEnergy Science Center (BESC)

Awards and Honors:

- Knoxville YWCA Women in Science and Technology Award, 2008; ORNL Director's Award for Outstanding Team Accomplishment, Significant Event Awards, ORNL, 2007 and 2010; ORNL Director's R &D Best Poster Award, 2009; 2007; ORNL/UT-Battelle Awards Night Winner, Category: Scientific Research Team, 2007. **Graduate School Honors**: Graduate Research Fellowship, Michigan Technological University (MTU), 2003, ASPB and GSC-MTU Competitive travel awards, 2002. Graduate Student Council Representative, MTU, 1999-2000.

Synergistic Activities*:*

- **Scientific Community Leadership and Contributor Roles**: Workshop participant and report contributor, DOE Workshop on Molecular to Mesoscale Technologies 2016-2017. ASPB- Plantae interview video series-featured plant scientist, 2017. CBI-LeMay America Car Museum "powering the future" learning lab consultant, 2018. Session Leader, Gordon Research Conference on Plant Metabolic Engineering, Engineering Cell Walls session, Waterville Valley, New Hampshire, July 2015. Steering Committee Member, 4th Pan-American Congress on Plants and Bioenergy, 2013-2014. Session Leader, 'Cell wall Architecture and Display', Gordon Research Conference on Cellulosomes, Cellulases and Other Carbohydrate Modifying Enzymes, July 2009. Steering Committee member, International Conference on Nanotechnology for Forest Product Industry, June 2008-09. Session Chair, 'Plant Nanotechnology', International Conference on Nanotechnology for Forest Product Industry, June 2008. Participant, DOE Workshop on JGI Strategic Planning for the Genomic Sciences, May 2012 and DOE Knowledgebase Systems Development Workshop, June 2010. Organizer, BESC workshop on LIMS and Bioinformatics, BESC Science Retreats 2010-2011.
- **Management/Advisory Roles**: Advisory Board Member, Center for Advanced Bioenergy & Bioproducts Innovation, 2018-Present; Advisory Board Member, School of Forest Resources and Environmental Science, Michigan Technological University. 2013-2018. Science Coordinator, DOE BioEnergy Science Center, 2010-2011. Board member, Friends of the Van Pelt Library, MTU, 2001-2002.

- **ORNL Leadership and Contributor Roles:** Science Contributor, ORNL EESD Directorate Traveling Exhibit (Trailer) project, 2013-2014; ORNL LDRD proposal review committee member 2014; Steering Committee member, ORNL Division Directors' Roundtable, 2014; Lead Organizer, First ORNL BESD-NScD cross-Directorate Science Speed Networking Event; Lead author, BESD -NScD Business Plan, 2011, Directorate representative, SEED proposal review committee, 2008-2010. ORNL postdoc association ORPA research symposium judge, 2011, "Ask-a-Scientist" role at ORNL/CBI Booth at National Bioenergy Day, 2017. ORNL Reddit AMA "Biofuels", 2017.
- **Reviewer Roles: Journals;** Plant Physiology, New Phytologist, Biotechnology for Biofuels, BMC Evolutionary Biology, BMC Plant Biology, BMC Genomics, DNA Research, Tree Physiology, Molecular Biology Reports and Phytochemistry. **Proposals;** DOE-USDA Feedstock genomics, DOE-SCGR, DOE SBIR, USDA SBIR, NSF PGPR and ORNL LDRD programs. **Annotator;** International Poplar Genome and International Brachypodium genome projects.
- **Mentoring:** seven Post-Doctoral researchers, (2007-present); Twelve masters and undergraduate level students in HERE and SULI programs, (2005-present); Tennessee Governor's Academy mentor (two high school students, 2010); Mentor to National DOE SERCh student competition third prize winner (2009); DOE-STEM Role Model Workshop (2017); ORNL Traveling Educational Exhibit Volunteer (2018).
- **Membership.** ASPB and AAAS.

Publications

- Veach AM, Yip D, Engle NL, Bible A, Morrell-Falvey J, Tschaplinski TJ, **Kalluri UC***, Schadt CW*. Modification of plant cell wall chemistry impacts metabolome and microbiome composition in Populus PdKOR1 RNAi plants. Plant and Soil. 2018. https://doi.org/10.1007/s11104-018-3692-8 *Senior corresponding authors

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

- Liu D, Palla K, Hu R, Moseley R, Mendoza C, Chen M, Abraham P, Labbé J, **Kalluri U**, Tschaplinski T, Cushman J, Borland A, Tuskan G and Yang X. (2018) Perspectives on the basic and applied aspects of crassulacean acid metabolism (CAM) research. Plant Science. 274: 394-401.

- Sawada D, **Kalluri U**, O'Neill H, Urban V, Langan P, Davison B, Pingali SV. Better enzymatic digestion of tension wood correlates to structure and morphology and structure conducive for better enzymatic digestion. Biotechnology for Biofuels. 2018. 16;11:44.

- Macaya-Sanz D, Chen JG, **Kalluri UC**, Muchero W, Tschaplinski TJ, Gunter LE, Simon SJ, Biswal AK, Bryan AC, Payyavula R, Xie M, Yang Y, Zhang J, Mohnen D, Tuskan GA, DiFazio SP. Agronomic performance of Populus deltoides trees engineered for biofuel production. Biotechnol Biofuels. 2017. Nov 30;10:253.

- U.S. DOE. 2017. Technologies for Characterizing Molecular and Cellular Systems Relevant to Bioenergy and Environment, DOE/SC-0189, U.S. Department of Energy Office of Science. *co-author

- **Kalluri UC**, Payyavula R, Labbé J, Engle N, Bali G, Jawdy S, Sykes R, Ragauskas A, Tuskan G and Tschaplinski T. (2016) Down-regulation of KORRIGAN-like endo-β-1,4-glucanase genes impacts carbon partitioning, mycorrhizal colonization and biomass production in Populus. Frontiers in Plant Science. Oct 4;7:1455 doi: 10.3389/fpls.2016.01455.

- Bali G, Khunsupata R, Akinosho H, Payyavula RS, Samuel R, Tuskan GA, **Kalluri UC**, and Ragauskas AJ. (2016) Characterization of cellulose structure of Populus plants modified in candidate cellulose biosynthesis genes. Bioenergy and Biomass. 94: 146–154.

- Tolbert A, Ma T, **Kalluri U**, Ragauskas A. (2016) Determining the Syringyl/Guaiacyl Lignin Ratio in the Vessel and Fiber Cell Walls of Transgenic Populus Plants. Energy & Fuels Article. DOI: 10.1021/acs.energyfuels.6b00560.

- Davern S.M., McKnight T.E., Standaert R.F., **Kalluri U.C.**, Jelenska J., Greenberg J., and Mirzadeh. (2016) Carbon Nanofiber Arrays: A Novel Tool for Microdelivery of Biomolecules to Plants. PLoS ONE 11(4): e0153621.

- Vandavasi VG, Putnam DK, Zhang Q, Petridis L, Heller WT, Nixon BT, Haigler CH, **Kalluri U**, Coates L, Langan P, Smith JC, Meiler J, O'Neill H. (2016) Structural Studies of Plant CESA Support Eighteen CESAs in the Plant CSC. Biophysical Journal. 110: 27A.

- Gopal Vandavasi V, Putnam DK, Zhang Q, Petridis L, Heller WT, Nixon BT, Haigler CH, **Kalluri U**, Coates L, Langan P, Smith JC, Meiler J, O'Neill H. A. (2016) Structural Study of CESA1 catalytic domain of Arabidopsis thaliana Cellulose Synthesis Complex: Evidence for CESA trimers. Plant Physiology. 170: 123-135. [**Cover Image].**

- Davison BH, Brandt CC, Guss AM, **Kalluri UC**, Palumbo AV, Stouder RL, Webb EG. (2015) The impact of biotechnological advances on the future of US bioenergy. Biofuels, Bioproducts & Biorefining-BIOFPR **9**: 454-467.

- **Kalluri UC**, Yin H, Yang X and Davison BH. (2014) Systems and synthetic biology approaches to alter plant cell walls and reduce biomass recalcitrance. Plant Biotechnology Journal. 12: 1207-1216.

- Raja S Payyavula RS, Tschaplinski TJ, Jawdy SS, Sykes RW, Tuskan GA and **Kalluri UC**. (2014) Metabolic profiling reveals altered sugar and secondary metabolism in response to UGPase overexpression in Populus. BMC Plant Biology. 14:265

- Abraham P, Giannone R, Adams R, **Kalluri U**, Tuskan G, Hettich R. (2013) Putting the Pieces Together: High-performance LC-MS/MS Provides Network-, Pathway-, and Protein-level Perspectives in Populus. Molecular & Cellular Proteomics. 12, 106-119. [**Cover Image].**

- Poornima Sukumar P, Legue V, Vayssieres A, Martin F, Tuskan G, **Kalluri U.** (2012) Involvement of Auxin Pathways in Modulating Root Architecture During Beneficial Plant-Microorganism Interactions. Plant, Cell and Environment. doi: 10.1111/pce.12036.

- Jung S, Foston M, **Kalluri U**, Tuskan G and Ragauskas A. (2012) 3D Chemical Image using TOF-SIMS Revealing the Biopolymer Component Spatial and Lateral Distributions in Biomass. Angewandte Chemie. 51: 12005 –12008.

- Guo J, Morrell-Falvey J, Labbé J, Muchero W, **Kalluri U**, Tuskan G, Chen J-G. (2012) Highly Efficient Isolation of Populus Mesophyll Protoplasts and Its Application in Transient Expression Assays. PLoS ONE e44908.

- Abraham P, Adams R, Giannone R, **Kalluri U**, Ranjan P, Erickson B, Shah M, Tuskan G, Hettich R. (2012) Defining the boundaries and characterizing the landscape of functional genome expression in vascular tissues of Populus using shotgun proteomics. J Proteome Res. 11: 449-460.

- Foston M, Hubbell C, Samuel R, Jung S, Fan H, Ding S-Y, Zeng Y, Jawdy S, Davis M, Sykes R, Gjersing E, Tuskan G, **Kalluri U** and Ragauskas A. (2011) Chemical, ultrastructural and supramolecular analysis of tension wood in Populus tremula x alba as a model substrate for reduced recalcitrance. Energy Environ. Sci.. 4, 4962-4971.

- Pu Y, Kosa M, **Kalluri UC**, Tuskan GA, Ragauskas AJ. (2011) Challenges of the utilization of wood polymers: how can they be overcome? Appl Microbiol Biotechnol. 2011 Sep;91(6):1525-36.

- Yang X, Ye CY, Bisaria A, Tuskan GA, **Kalluri UC**. (2011) Identification of candidate genes in Arabidopsis and Populus cell wall biosynthesis using text-mining, co-expression network analysis and comparative genomics. Plant Sci. 181:675-87.

- Gleason S. G., Paquit V.C., Bilheux H. Z., Willis K. J., Deleon A. M., McNutt W. M. and **Kalluri U. C**. (2011) "X-ray and Neutron Imaging for Plant Systems Biology Investigations", IEEE Proceedings (Future of Instrumentation International Workshop)

- Paquit VC, Gleason SG. and **Kalluri UC.** (2011) Monitoring plant growth using high resolution micro-CT images", Proceedings of Image Processing: Machine Vision Applications IV (SPIE Electronic Imaging Symposium), 7877-33, January 2011.

- Yang X, Tschaplinski T, Hurst G, Jawdy S, Abraham P, Lankford P, Adams R, Shah M, Hettich R, Lindquist E, **Kalluri U**, Gunter L, Pennacchio C & Tuskan G. (2011) Discovery of small proteins using genomics, proteomics and computational approaches. Genome Research. 21: 634–641.
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- **Kalluri U.C** and Keller M. (2010) Bioenergy Research: A new paradigm in multidisciplinary research. Journal of the Royal Society Interface. 7 (51):1391-1401.

- Tetard L., Passian A., Farahi R. H., **Kalluri U. C.**, Davison B. H., Thundat T. (2010). Spectroscopy and atomic force microscopy of biomass. Ultramicroscopy. *doi:10.1016/j.ultramic.2010.02.035*, 2010.

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- Yang X, **Kalluri U.C,** DiFazio S.P, Wullschleger S. D., Tschaplinski T. J., Cheng Z-M, and Tuskan G. A. (2009) Populus genomics: State of the science" Critical Rev in Plant Sci. 28(5): 285- 308.

- **Kalluri U.C.,** Basu M.M., Jawdy S.S., and Tuskan G.A. (2010) Auxin Signaling and Response Mechanisms and Roles in Plant Growth and Development. In Joshi, C.P., and S.P. DiFazio (eds). Genetics, Genomics and Breeding of Crop Plants: Poplar. Science Publishers, Enfield, NH.

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- **Kalluri UC,** DiFazio SP, Brunner AM and Tuskan GA (2007). Genome-wide analysis of Aux/IAA and ARF gene families in Populus trichocarpa. BMC Plant Biol. 6;7(1):59, [**Highly Accessed**]

- Filichkin SA, DiFazio SP, Brunner AM, Davis JM, Yang ZK, **Kalluri UC**, Arias RS, Etherington E, Tuskan GA, Strauss SH (2007). Efficiency of gene silencing in Arabidopsis: direct inverted repeats vs. transitive RNAi vectors. Plant Biotechnol J. 5(5):615-26.

- Tuskan GA, Difazio S, Jansson S, Bohlmann J, Grigoriev I, Hellsten U, … **Kalluri U**, .. Rokhsar D. (100 author consortium). (2006) The genome of black cottonwood, Populus trichocarpa (Torr. & Gray). Science. 15;313(5793):1596-604 [**Cover Image].**

- C.P. Joshi, S. Bhandari, P. Ranjan, **U. C. Kalluri**, X. Liang, T. Fujino, and A. Samuga. (2004) Genomics of cellulose biosynthesis in poplars. New Phytologist 164: 53-61.

- **U.C. Kalluri** and C.P. Joshi (2004) Differential expression of two cellulose synthase genes associated with primary wall and secondary wall development in aspen trees. Planta 220: 47-55.

- **U.C. Kalluri** and C.P. Joshi (2003) Isolation and Characterization of a New, Full-Length Cellulose Synthase cDNA from Developing Xylem of Aspen Trees. Journal of Experimental Botany 54: 2187-2188.

Patents and Invention Disclosures

- Two utility patent applications, ID 3142 and 3146, Genes Impacting Biomass Formation and Recalcitrance in Populus. 2016.
- U.S. Patent No. 8,815,780 "Platform for Immobilization and Observation of Subcellular Processes". Issued in 2014.
- Seven Invention Disclosures (ID #s 201403408, 201403409, 201403410, 201403411, 201403412, 201403413, 201403414, "Genes A-G Impacting Biomass Properties in Populus", 2014.