

Raja S. Payyavula

Oak Ridge National Laboratory

Oak Ridge, TN, USA

E-mail: rajasekhar78@yahoo.com; payyavulars@ornl.gov

Phone: (509)7812155

EDUCATION

- Ph. D.** Michigan Tech University, Houghton, MI, USA (Aug, 2009)
Major: Forest Molecular Genetics and Biotechnology
- M. S.** Alabama A&M University, Normal, AL, USA (July, 2003)
Major: Plant Science
- B. S.** Acharya N.G. Ranga Agricultural University, Mahanandi, AP, India (July, 2000)
Major: Agricultural Sciences

RESEARCH EXPERIENCE

- Present** Postdoctoral research associate, ORNL, Oak Ridge, TN
Project: Elucidation of regulatory elements in cellulose synthesis in *Populus*.
- 2009 - 2012** Postdoctoral research associate, USDA-WSU, Prosser, WA.
Project: Transgenic approaches to enhance phytonutrients in potato.
- The project is aimed to increase phytonutrients and appearance of tuber by manipulating the expression of genes involved in chlorogenic acid and anthocyanin synthesis such as HQT, DFR and transcription factors such as MYB and basic Helix loop helix.
- 2005 - 2009** Graduate research assistant, MTU, Houghton, MI.
Project: Understanding the molecular basis of carbon partitioning to biomass and host defense (secondary metabolites)
- To advance our knowledge on Sucrose transporter function in *Populus*, transgenic plants with RNAi-suppressed SUT4 expression were characterized.
 - Designed and executed several precursor feeding studies using cell culture system to elucidate phenolic glycoside biosynthesis.
- 2003 - 2005** Graduate research assistant, Auburn University, Auburn, AL.
Project: Elucidation of Scarecrow gene function in *Arabidopsis* root development.

- The importance of Scarecrow gene in endodermis development has been studied using paraffin and plastic sections and light and fluorescence microscopy.

2002 - 2003

Graduate research assistant, Alabama A&M University, Normal, AL.

Project: Role of Plant Activators in Enhancing Disease Resistance and Yield of Tomato and Canola

- The effect of application of two activators, Messenger[®] and Actigard[™] on yield and disease resistance in tomato and canola was evaluated.

TEACHING EXPERIENCE

2003 – 2005

Graduate teaching Assistant, Biological science Dept, Auburn Univ, Auburn, AL

PUBLICATIONS

- U.R. Bishnoi, **R.S. Payyavula** and S. Kumar (2004). Enhancing disease resistance and yield in tomato and canola with plant activators. **Res on Crops** 5 (2&3): 268-273
- **R.S. Payyavula**, B.A. Babst, M.P. Nelson, S.A. Harding and C.-J. Tsai (2009). Glycosylation-mediated phenylpropanoid partitioning in *Populus tremuloides* cell cultures. **BMC Plant Biology** 9:151
- **R.S. Payyavula**, K.H.C. Tay, C.-J. Tsai and S.A. Harding (2011). The sucrose transporter family in Populus: the importance of a tonoplast PtaSUT4 to biomass and carbon partitioning. **The Plant Journal** 65, 757–770
- **R.S. Payyavula**, D.A. Navarre, J.C. Kuhl, A. Pantoja, S.S. Pillai and R.Shakya (2012). Differential effects of environment on potato phenylpropanoid and carotenoid expression. **BMC Plant Biology** 12:19
- D.A. Navarre, **R.S. Payyavula**, R. Shakya, R.N Knowles, and S.S. Pillai (2012). Developmental effects on phenylpropanoid metabolism in potato tubers. Submitted (**Plant Cell Physiology**, MS ID : PCP-2011-E-00355)

PRESENTATIONS

- **R.S Payyavula** (2010). Comparison of secondary metabolite content in potatoes grown in Alaska or the Southern United States, presented at the 94th Annual meeting of the Potato Association of America, in Corvallis, OR (Aug 15-19)

CONFERENCE PROCEEDINGS

- S.A. Harding, C. Frost, **R.S. Payyavula**, K. Tay and C-J. Tsai (2011). Partial suppression of a strongly expressed tonoplast sucrose transporter affects water use and carbon partitioning in *Populus*. BMC Proceedings, 5:P111
- C-J. Tsai, W. Guo, B. Babst, B. Nyamdari, Y. Yuan, **R.S. Payyavula**, H-Y. Chen, X. Liangjiao, K. Tay, V. Michelizzi, and S.A. Harding (2011). Salicylate metabolism in *Populus*. BMC Proceedings, 5:19

POSTERS

- **R.S. Payyavula** and D.A. Navarre: Silencing of hydroxycinnamoyl-CoA quinate transferase alters phenylpropanoid metabolism in potato. Society of In vitro biology, Bellevue, WA (June 3-7, 2012)
- C-J. Tsai, C. An, **R.S. Payyavula**, and S.A. Harding: Phenylpropanoid networking in *Populus*. In Vitro Cellular & Developmental Biology meeting, Charleston, SC (June 6 - 10, 2009)
- **R.S. Payyavula**, S.A. Harding and C-J. Tsai. Salicin metabolism: Understanding salicin synthesis and transport by precursor feeding and gene expression studies. In Vitro Cellular & Developmental Biology meeting, Tucson, AZ (June 14 -18, 2008)
- K. Yuan, **R.S. Payyavula**, and J Wysocka-Diller. Interactions between sugar and phytohormone signaling pathways during seed germination and seedling development. International Conference on Arabidopsis Research, Madison, WI (Jun 15 -19, 2005)
- **R.S. Payyavula** and J. Wysocka-Diller. Genetic screen to identify components of SCARECROW-controlled pathways in *Arabidopsis thaliana*. (16th International Conference on Arabidopsis Research, Madison, WI (Jun 15 -19, 2005)
- **R.S. Payyavula** and U.R. Bishnoi. Effect of plant activators on disease resistance and yield in tomato and canola. (Proceedings of the 4th International crop Science congress. Brisbane, Australia. (Sep 26 - Oct 1, 2004)

EDITRIAL SERVICES

- Potato Association of America
- Journal of Plant Studies

AWARDS

- “Travel grant award” for poster presentation held in Tucson, AZ on 14th Jun, 2008
- “Merit Award” for a poster presented at the 3rd Biotech research Centre forum, MTU, on 28th Feb, 2007
- “Graduate research assistantship” from School of Forest Resources and Environmental Science, Michigan Tech Univ. (2005-2008), from Dept of Biological sciences, Auburn Univ. (2003-2005) and from Dept. of Plant & Soil Science, Alabama A&M Univ. (2002-2003)
- “Rural agricultural work experience program award” from Acharya N.G. Ranga Agricultural University during 1999-2000.