

CURRICULUM VITAE-Professor Rishikesh P. Bhalerao

Personal information

Birth date 16-12-1964

Affiliation Umeå Plant Science Centre, Department of Forest Genetics and Plant Physiology, SLU, SE-90 183 Umeå, rishi.bhalerao@slu.se, phone: +46 (0)90 7868488

Marital status Married, two children

Citizenship

Swedish Citizen

Education and academic degrees

1993 PhD in Plant Molecular Biology, Umeå University, Umeå, Sweden

2001 Docent, SLU, Umeå, Sweden

2004 Professor, SLU, Umeå, Sweden

Current position

2004- Professor, SLU, Umeå, Sweden

Earlier employments

1988-1993 PhD student, Umeå University, Umeå, Sweden

1994-1996 Postdoctoral Fellow, Max Planck Institute, Köln, Germany

1997-1998 Postdoctoral Fellow, SLU, Umeå, Sweden

1999-2001 Assistant professor SLU, Umeå, Sweden

2002-2004 Associate professor (Docent), SLU, Umeå, Sweden

2004- Professor, SLU, Umeå, Sweden

Co-supervision of graduate students

1999-2003 Jarmo Schrader

Supervision of graduate students

2004- Lars Resman, Madeleine Englund

2005- Anna Petterle

2007- Anna Karlberg

2011- Szymon Tylewicz, Kristoffer Jonsson

Supervision of postdoctoral fellows

2000-2005 Dr. Ana Espinosa-Ruis, Dr. Sangeeta Saxena, Dr. Richard Moyle, Dr. Julien Schmidt

2005-2008 Dr. Jaesung Oh, Dr. Nathalie Druart, Dr. Zsolt Bereczky,

2007-2009 Dr. Errin Johnson, Dr. Wim Reidt

2008- Dr. Delphine Gendre, Dr. Yohann Boutté, Dr. Gergely Molnar

2010- Dr. Cho-Chun Huang

Supervision of research engineer

2006- Ingela Sandström

Research areas

Plant Developmental Biology

1. Regulation of cell elongation in plants and role of vesicular trafficking
2. Regulation of environmental control of seasonal growth in trees

External funding (last 5 years)

- 2009-2011 Swedish Research Council (Vetenskapsrådet)
2009-2011 FORMAS
2010-2012 FORMAS-Future Crops
2008-2011 European Union FP6
2011-2012 Kempe postdoctoral fellowship to Dr. Huang/host RPB
2012-2016 Swedish Research Council (Vetenskapsrådet) (2.4 Million SEK)
2013-2018 European Union FP7 (Watbio) (5 Million SEK)
2013-2018 Wallenberg foundation (5 million SEK)

Commissions of trust

- 2003- Reviewer assignments for 13 journals including Nature Biotechnology, Cell Research, PLoS Genetics, Current Biology, Proc. Natl. Acad. Sci. USA, Development, The Plant Cell, The Plant Journal, Plant Physiology, Plant Molecular Biology, The New Phytologist, Journal of Experimental Botany, Plant Cell & Environment.
- 2003- Reviewer assignments for 5 research councils BBSRC (U.K.), ERA-NET (Europe), NSERC (Canada), NSF (USA), NWO (The Netherlands), Vetenskapsrådet, FORMAS
- 2003- Member of the Scientific advisory board, Swetree Technologies
- 2006-2008 Member of the editorial advisory board, The Plant Journal
- 2009- Associate editor for the journal Plant Cell and Environment

Entrepreneurial activities

- 2002- Member of Woodheads AB

Prizes and awards

- 2003 Promising young researcher, Kung Skytteanska Samfundet
- 2006-2011 Excellence Grant awarded by SLU (12 million SEK)

LIST OF PUBLICATIONS (2006-2016)– Prof. Rishikesh P. Bhalerao (total 79)

- Singh R., Svystun T., AlDahmash B., Jönsson AM and Bhalerao R (2016) Photoperiodic and temperature mediated control of phenology in trees—a molecular perspective. **New Phytologist (accepted)**
- Wattelet-Boyer V., Brocard L., Jonsson K., Mongrand S., Raikhel N., Bhalerao R., Moreau P., and Boutté Y. (2016) The length of acyl-chains of sphingolipids drives apical sorting of the auxin carrier PIN2 at a subdomain of *trans*-Golgi Network. **Nature Commun (in press)**
- Dietrich D et al (2016) Abscisic acid controls root hydrotropism via a cortex-specific growth regulatory mechanism. **Nature Plants (in revision)**
- Immanen J., Nieminen K., Smolander OP., Kojima M., Alonso Serra J., Koskinen P., Zhang J., Elo A., Mähönen AP., Street N., Bhalerao RP., Paulin L., Auvinen P., Sakakibara H., and Helariutta Y (2016) Cytokinin and auxin display distinct but interconnected distribution and signaling profiles to stimulate cambial activity. *Curr Biol* 16: 30550-4
- Baral A and Bhalerao RP (2016) Exploring exocytosis using chemical genomics . **Proc Natl Acad Sci (in press)**
- Randall RS., Miyashima S., Blomster T., Zhang J., Elo A., Karlberg A., Immanen J., Nieminen K., Lee JY., Kakimoto T., Blajicka K., Melnyk CW., Alcasabas A., Forzani C., Matsumoto-Kitano M., Mähönen AP., Bhalerao R., Dewitte W., Helariutta Y. and Murray JA (2015) AINTEGUMENTA and the D-type cyclin CYCD3;1 regulate root secondary growth and respond to cytokinins. **Biol Open** 4:1229-36
- Grimberg Å., Carlsson A.S., Marttila S., Bhalerao R and Hofvander P (2015) Transcriptional transitions in *Nicotiana benthamiana* leaves upon induction of oil synthesis by WRINKLED1 homologs from diverse species and tissues. **BMC Plant Biology** 15: 1471-1480
- Tylewicz S., Tsuji H., Miskolczi P., Petterle A., Azeez A., Jonsson K., Shimamoto K and **Bhalerao RP** (2015) Dual role of tree florigen activation complex component FD in photoperiodic growth control and adaptive response pathways. **Proceedings National Academy Sciences U.S.A.** 112: 3140-3145
- Gendre, D., Jonsson, K., Boutté, Y and Bhalerao, R.P (2015) Journey to the cell surface—the central role of the *trans*-Golgi network in plants. **Protoplasma** 252: 385-398
- Marín-de la Rosa N., Pfeiffer A., Hill K., Locascio A., Bhalerao R.P., Miskolczi P., Grønlund A.L., Wanchoo-Kohli A., Thomas S.G., Bennett M.J., Lohmann J.U., Blázquez M.A and Alabadí, D (2015) Genome Wide Binding Site Analysis Reveals Transcriptional Coactivation of Cytokinin-Responsive Genes by DELLA Proteins. **PLoS Genetics** 11: e1005337
- Eklund D.M., Ishizaki K., Flores-Sandoval E., Kikuchi S., Takebayashi Y., Tsukamoto S., Hirakawa Y., Nonomura M., Kato H., Kouno M., Bhalerao R.P., Lagercrantz U., Kasahara H., Kohchi T and Bowman, J.L. (2015) Auxin produced by the indole-3-pyruvic acid pathway regulates development and gemmae dormancy in the liverwort *Marchantia polymorpha*. **Plant Cell** 27: 1650-1669
- Marín-de La Rosa N., Sotillo B., Miskolczi P., Gibbs D.J., Vicente J., Carbonero P., Oñate-Sánchez L., Holdsworth M.J., Bhalerao R., Alabadí D and Blázquez, M.A (2014) Large-scale identification of gibberellin-related transcription factors defines group VII ETHYLENE RESPONSE FACTORS as functional DELLA partners. **Plant Physiology** 166: 1022-1032
- Legué V., Rigal A and Bhalerao, R.P. (2014) Adventitious root formation in tree species: Involvement of transcription factors. **Physiologia Plantarum** 151: 192-198

- Bhalerao R.P and Fischer U (2014) Auxin gradients across wood - instructive or incidental? *Physiologia Plantarum* 151: 43-51
- Azeez A., Miskolci P., Tylewicz S and Bhalerao RP (2014) A tree ortholog of APETALA1 mediates photoperiodic control of seasonal growth. *Current Biology* 24: 717-724
- Petterle A., Karlberg A and Bhalerao RP (2013) Daylength mediated control of seasonal growth patterns in perennial trees. *Current Opinion in Plant Biology* 16:301-306
- Boutté Y., Jönsson K., McFarlane HE., Johnson E., Gendre D., Swarup R., Friml J., Samuels L., Robert S and Bhalerao RP (2013) ECHIDNA-mediated post-golgi Trafficking of Auxin Carriers for Differential Cell Elongation in *Arabidopsis*. *Proceedings National Academy Sciences U.S.A.* 110:16259-16264.
- Gendre D., Macfarlane H., Johnson E., Mouille G., Sjödin A., Oh J., Levesque-Tremblay G., Watanabe Y., Samuels L and Bhalerao RP (2013) Trans-Golgi Network localised ECH/YIP4 complex is required for the secretion of cell wall polysaccharides in *Arabidopsis thaliana*. *Plant Cell* 25:2633-2646.
- Nystedt B., Street N., et al (2013) The Norway spruce genome sequence and conifer genome evolution. *Nature* 497: 579-584
- Duan L., Dietrich D., Ng CH., Chan PM., Bhalerao R., Bennett MJ and Dinneny JR (2013) Endodermal ABA Signaling Promotes Lateral Root Quiescence during Salt Stress in *Arabidopsis* Seedlings. *Plant Cell* 25: 324-341
- Kaewthai N., Gendre D., Eklöf J., Ibatullin F., Ezcurra I., Bhalerao R and Brummer H (2013) Group III-A *XTH* genes of *Arabidopsis thaliana* encode predominant xyloglucan endohydrolases that are dispensable for normal growth. *Plant Physiology*. 161:440-454
- Rigal A., Yordanov Y., Perrone I., Karlberg A., Tisserant E., Bellini C., Busov V., Martin F., Kohler A., Bhalerao R and Legue V (2012) The Populus AINTEGUMENTA LIKE 1 homeotic transcription factor PtAIL1 controls the formation of adventitious root primordia. *Plant Physiology*. 160:1996-2006
- Karlberg A., Bako L., Bhalerao RP (2011) Short day mediated cessation of growth requires the downregulation of AINTEGUMENTALIKE1 transcription factor in hybrid aspen. *PLoS GENETICS* 11: 1002361
- Gendre D., Oh J., Boutté Y., Best JG., Samuels L., Nilsson R., Uemura T., Marchant A., Bennett MJ., Grebe M., Bhalerao RP (2011) Conserved Arabidopsis ECHIDNA protein mediates trans-Golgi-network trafficking and cell elongation. *Proceedings National Academy Sciences U.S.A.* 108, 8048-8053
- Baba K., Karlberg A., Schmidt J., Schrader J., Hvidsten T., Bako L and Bhalerao RP (2011) Activity-dormancy transition in the cambial meristem involves stage specific modulation of auxin response in Hybrid Aspen. *Proceedings National Academy Sciences U.S.A.* 108, 3418-3423
- Resman L., Howe G., Jonsen D, Englund M., Druart N., Schrader J., Antti H., Skinner J., Sjödin A., Chen T., Bhalerao RP (2010) Components acting downstream of short day perception regulate differential cessation of cambial activity and associated responses in early and late clones of hybrid poplar. *Plant Physiology* 154, 1294-303
- Felten J., Kohler A., Morin E., Bhalerao RP., Palme K., Martin F., Ditengou FA Legué V. (2009) The ectomycorrhizal fungus *Laccaria bicolor* stimulates lateral root formation in poplar and *Arabidopsis* through auxin transport and signaling. *Plant Physiology* 151, 1991-2005.
- Ubeda-Tomás S., Federici F., Casimiro I., Beemster GT., Bhalerao R., Swarup R., Doerner P., Haseloff J., Bennett MJ (2009) Gibberellin signaling in the endodermis controls *Arabidopsis* root meristem size. *Current Biology* 19, 1194-9.
- Grönlund A., Bhalerao RP., Karlsson J (2009) Modular gene expression in Poplar:a multilayer network approach. *New Phytologist* 181, 315-22.

- Nieminen K., Immanen J., Laxell M., Kauppinen L., Tarkowski P., Dolezal K., Tähtiharju S., Elo A., Decourteix M., Ljung K., Bhalerao R., Keinonen K., Albert VA and Helariutta Y (2008) Cytokinin signaling regulates cambial development in poplar. *Proceedings National Academy Sciences U.S.A.* 105, 20032-20037.
- Benhamed M., Martin-Magniette ML., Taconnat L., Bitton F., Servet C., De Clercq R., De Meyer B., Buyschaert C., Rombauts S., Villarroel R., Aubourg S., Beynon J., Bhalerao RP., Coupland G., Gruissem W., Menke FL., Weisshaar B., Renou JP., Zhou DX, and Hilson P (2008) Genome-scale Arabidopsis promoter array identifies targets of the histone acetyltransferase GCN5. *Plant Journal* 56: 493-504.
- Nilsson J., Karlberg A., Antii H., Lopez-Vernaza M., Mellerowicz E., Rechenmann C., Sandberg G., Bhalerao RP (2008) Molecular dissection of the role of auxin in wood formation in hybrid Aspen. *Plant Cell* 20: 843-855
- Ubeda-Thomas S., Swarup R., Coates J., Swarup K., Laplaze L., Beemster G., Hedden P., Bhalerao R and Bennett M (2008) Root growth in Arabidopsis requires gibberellin/DELLA signaling in endodermis. *Nature Cell Biology* 10, 625-628
- Grönlund A., Bhalerao RP., Karlsson J (2009) Modular gene expression in Poplar: a multilayer network approach. *New Phytologist* 181, 315-22.
- Nieminen K., Immanen J., Laxell M., Kauppinen L., Tarkowski P., Dolezal K., Tähtiharju S., Elo A., Decourteix M., Ljung K., Bhalerao R., Keinonen K., Albert VA and Helariutta Y (2008) Cytokinin signaling regulates cambial development in poplar. *Proceedings National Academy Sciences U.S.A.* 105, 20032-20037.
- Benhamed M., Martin-Magniette ML., Taconnat L., Bitton F., Servet C., De Clercq R., De Meyer B., Buyschaert C., Rombauts S., Villarroel R., Aubourg S., Beynon J., Bhalerao RP., Coupland G., Gruissem W., Menke FL., Weisshaar B., Renou JP., Zhou DX, and Hilson P (2008) Genome-scale Arabidopsis promoter array identifies targets of the histone acetyltransferase GCN5. *Plant Journal* 56: 493-504.
- Nilsson J., Karlberg A., Antii H., Lopez-Vernaza M., Mellerowicz E., Rechenmann C., Sandberg G., Bhalerao RP (2008) Molecular dissection of the role of auxin in wood formation in hybrid Aspen. *Plant Cell* 20: 843-855
- *Ubeda-Thomas S., Swarup R., Coates J., Swarup K., Laplaze L., Beemster G., Hedden P., Bhalerao R and Bennett M (2008) Root growth in Arabidopsis requires gibberellin/DELLA signaling in endodermis. *Nature Cell Biology* 10, 625-628
(co-corresponding author)
- Ruttink T., Arend M., Morreel K., Storme V., Rombauts S., Fromm J., Bhalerao RP., Boerjan W., Rohde A (2007) A molecular timetable for apical bud formation and dormancy induction in poplar. *Plant Cell* 8, 2370-2390
- Swarup R., Perry P., Hagenbeek D., Van Der Straeten D., Beemster GT., Sandberg G., Bhalerao R., Ljung K., Bennett MJ (2007) Ethylene Upregulates Auxin Biosynthesis in Arabidopsis Seedlings to Enhance Inhibition of Root Cell Elongation. *Plant Cell* 7, 2186-2196
- Druart N., Johansson A., Baba K., Schrader J., Sjödin A., Bhalerao RR., Resman L., Trygg J., Moritz T., Bhalerao RP (2007) Environmental and hormonal regulation of the activity-dormancy cycle in the cambial meristem involves stage specific modulation of transcriptional and metabolic networks. *Plant Journal* 50: 557-573
- Tuskan et al (2006) The genome of black cottonwood, *Populus trichocarpa* (Torr. & Gray). *Science* 313, 1596-604
- Benedict C., Skinner JS., Meng R., Chang Y., Bhalerao R., Huner N., Finn CE., Chen TH and Hurry V (2006) The CBF1-dependent low temperature signaling pathway, regulon and increase in freezing tolerance are conserved in poplar spp. *Plant Cell and Environment* 7, 1259-1272

- Swarup R., Kramer EM., Perry P., Knox K., Leyser HM., Haseloff J., Beemster GT., Bhalerao R., Bennett MJ (2005) Root gravitropism requires lateral root cap and epidermal cells for transport and response to a mobile auxin signal. *Nature Cell Biology* 11, 1057-1065
- Wirta V., Holmberg A., Lukacs M., Nilsson P., Hilson P., Uhlen M., Bhalerao RP., Lundeberg J (2005) Assembly of a gene sequence tag microarray by reversible biotin-streptavidin capture for transcript analysis of Arabidopsis thaliana. *BMC Biotechnology* 5: 5
- Karpinska B., Karlsson M., Srivastava M., Stenberg A., Schrader J., Sterky F., Bhalerao RP., Wingsle G (2004) MYB transcription factors are differentially expressed and regulated during secondary vascular tissue development in hybrid aspen. *Plant Molecular Biology* 10, 255-270
- Schrader J., Moyle R., Bhalerao RR., Hertzberg M., Lundeberg J., Nilsson P Bhalerao RP (2004) Cambial meristem dormancy in trees involves extensive remodelling of the transcriptome. *Plant Journal* 40, 173-187
- Sterky F et al (2004) A Populus expressed sequence tag resource for plant functional Genomics. *Proceedings National Academy Sciences U.S.A.* 101, 13951-13956
- Hilson P et al (2004) Versatile gene-specific sequence tags for Arabidopsis functional genomics: Transcript profiling and reverse genetics applications. *Genome Research* 10B, 2176-2189
- Espinosa-Ruis A., Saxena S., Schmidt J., Mellerowicz E., Mikolski P., Bako LBhalerao RP (2004) Differential stage specific regulation of cyclin dependent kinases during cambial dormancy in hybrid aspen. *Plant Journal* 38, 603-615
- Andersson A., Keskitalo J., Bhalerao R., Sjödin A., Sterky F., Wissel K., Bhalerao RP., Gustafsson P., Karlsson J., Lundeberg J., Moyle R., Nilsson O., Sandberg G., Sundberg B., Tandre K., Uhlen M., Jansson S., Nilsson P (2004) A transcriptional timetable of autumn senescence. *Genome Biology* 5, R24 (67)
- Baba K., Schmidt J., Espinosa-Ruis A., Villarejo A., Shiina T., Gardstrom P., Sane A., Bhalerao RP (2004) Characterization of a rpoT;2 mutant of Arabidopsis. *Plant Journal* 38, 38-48
- Schrader J., Baba K., May ST., Palme K., Bennett M., Bhalerao RP and Sandberg G., (2003) Polar auxin transport in the wood-forming tissues of hybrid aspen is under simultaneous control of developmental and environmental signals. *Proceedings National Academy Sciences U.S.A.* 100, 10096-10101