

## **Chandrashekhar P. Joshi, Ph. D.**

Professor of Plant Molecular Genetics &  
Director, Biotechnology Research Center  
School of Forest Resources and Environmental Science  
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### **Current Research Interests:**

- **Molecular genetics and Genomics of lignin and cellulose synthesis in trees**
- **Genetic improvements of lignocellulosic products for paper and biofuel industries**
- **Molecular basis and bioinformatics of tree growth and wood development**

### **Education:**

Ph. D. (Biochemistry), University of Poona, India, 1982  
M. Sc. (Botany), First rank, University of Poona, India, 1977  
B. Sc. (Botany), First rank, University of Poona, India, 1975

### **Professional Experience:**

2008-present Professor, Michigan Tech University, Houghton, MI  
2007-present Director, Biotechnology Research Center, Michigan Tech University  
2004-2009 Director, SFRES graduate programs, Michigan Tech University  
2004-2008 Associate Professor, Michigan Tech University  
1999-2004 Assistant Professor, Michigan Tech University  
1996-1999 Research Assistant Professor, Michigan Tech University  
1990-1996 Research Scientist, Texas Tech University, Lubbock, TX  
1988-1990 Research Associate, Ohio State University, Columbus, OH  
1985-1988 Senior Scientist, National Chemical Laboratory, Pune, India  
1983-1985 Visiting Scientist, Max Planck Institute for Plant Breeding, Cologne, Germany  
1980-1983 Scientist, National Chemical Laboratory, Pune, India  
1979-1980 Graduate Student, National Chemical Laboratory, Pune, India  
1977-1979 Lecturer in Botany, S.P. College, Pune, India

### **Memberships, Fellowships and Honors:**

1. Recipient of National Science Foundation's CAREER award (\$741,877; 2003-2010).
2. Inductee of Academy of Teaching Excellence, Michigan Tech, 2004.
3. Distinguished Teaching Award Finalist, Assistant Professor Category, MTU, 2004.
4. Director of Biotechnology Research Center, Michigan Tech, 2007-present
5. Director of Graduate Programs, School of Forest Resources and Environmental Science. 2004-2009

6. Co-Inventor of two issued US patents and two pending US patents in the field of cellulose biosynthesis in forest trees. Several international patents pending.
7. Currently I am a major advisor of two Ph. D. graduate students.
8. Major advisor/co-advisor of five graduated Ph. D. students (Shiv Thammannagowda, 2007, Priya Ranjan 2005, Anita Samuga 2003, Udaya Kalluri, 2003, and C. Tsao, 1998).
9. Major advisor of five graduated M.S. students (Rajesh Chavli 2001, Zihao Wang 2003, Asha Lakkavaram, 2006; Voo S, 2006; Saida J, 2008)
10. Member of 47 graduate student committees at Michigan Tech University
11. Ad hoc Reviewer of >35 manuscripts in >19 International Journals during last 5 years
12. Ad hoc Reviewer for >90 grant proposals for National and International agencies
13. Served as a member on 5 proposal review panels: NSF Panel member: Metabolic biochemistry, 2005; DOE Panel member: Energy Biosciences 2006; NSF Panel member: Metabolic Biochemistry, 2006 and 2007. USDA-NRI panel 2008.
14. German Academic Exchange Visiting Scientist Fellowship (DAAD) to Max Planck Institute for Plant Breeding, Cologne, Germany, 1983-1985
15. Late (Mrs.) S.S. Patil Prize for obtaining first rank in M.Sc. (Botany) class, 1977
16. Principal S.V. Shevade Prize for obtaining first rank in B.Sc. (Botany) class, 1975
17. Member of American Association for Advancement of Sciences (AAAS)
18. Member of American Society of Plant Biologists (ASPB)
19. Member of Biotechnology Research Center and Ecosystem Science Center, Michigan Technological University
20. Included in Who's Who in America, Science and Engineering 5th edition, 2000
21. Included in Who's Who in Sciences and Higher Education, 2004
22. Established a new Ph.D. in Forest Molecular Genetics and Biotechnology program, Michigan Tech University (2001) and helped creating MS in Forest Molecular Genetics and Biotechnology program (2004)
23. Lead MTU PI on successful transatlantic graduate program in forest resources
24. Science fair judge for school grades 4-9 (2000-2003, 2005-2008), United Way volunteer (1998-2002), graduate student Poster competition judge at Michigan Tech (1999-2001, 2004, 2005, 2007)
25. Faculty advisor to Indian Student Association, Michigan Tech (1997-1998)

## **My Contributions to Undergraduate, Graduate and Postgraduate Education**

### **Teaching Experience:**

January 2009 to April 2009: Effective Grantsmanship, FW5850, Michigan Tech  
 January 2009 to April 2009: Advanced Genomics, FW4500/BL4100, Michigan Tech  
 September 2008 to December 2008: Introduction to Genomics (BL/FW3300), Michigan Tech  
 January 2008 to April 2008: Tools of Bioinformatics, FW4089/5089, Michigan Tech  
 January 2008 to April 2008: Effective Grantsmanship, FW5850, Michigan Tech  
 September 2007 to December 2007: Introduction to Genomics (BL/FW3300), Michigan Tech  
 September 2006 to December 2006: Effective Grantsmanship FW5850, Michigan Tech  
 September 2006 to December 2006: Introduction to Genomics (BL/FW3300) Michigan Tech  
 January 2006 to April 2006: Tools of Bioinformatics, FW5089, Michigan Tech  
 August 2005 to December 2005: Effective Grantsmanship FW5850, Michigan Tech University  
 August 2004 to December 2004: Effective Grantsmanship FW5850, Michigan Tech University  
 August 2004 to December 2004: Introduction to Genomics BL3300, Michigan Tech University  
 January to May 2004: Bioinformatics (FW4089/5089) Michigan Tech University

August to December 2003: Introduction to Genomics (BL3300) Michigan Tech University  
January 2003 to May 2003: Plant Bioinformatics (FW4089) Michigan Tech University  
August 2002 to December 2002: Introduction to Genomics (BL3300) Michigan Tech University  
January 2002 to May 2002: Tools of bioinformatics (FW5089) Michigan Tech University  
January 2002 to May 2002: Genome (FW5510) Michigan Tech University  
September 2001 to December 2001: Introduction to Genomics (BL3300) Michigan Tech  
January 2001 to May 2001: Plant Molecular Genetics (FW5510) at Michigan Tech University  
January 2001 to May 2001: Plant Bioinformatics (FW4089) at Michigan Tech University  
March 2000 to May 2000: Molecular genetics of trees (FW567) at Michigan Tech University  
March 2000 to May 2000: Molecular Genetic Ecology (FW450A) at Michigan Tech University  
March 2000 to May 2000: Bioinformatics and Biomolecular Modeling (FW450B) Michigan Tech  
March 1999 to May 1999: Molecular genetics of trees (FW567) at Michigan Tech University  
March 1998 to May 1998: "Molecular Genetics of Trees" (FW5510) at Michigan Tech  
September 1993 to December 1993: "Advanced Plant Genetics" HORT 5325 at Texas Tech  
June 1987 to May 1988: Plant tissue culture (M.Sc. Biotechnology) University of Poona, Pune.  
June 1977 to December 1979: Lecturer of Botany in S.P. College, Pune.

### **Undergraduate Students supervised in their Undergraduate Research Projects: 29**

Sara Blumer, Alisha Pagel, Robin Hawley, Maria Val Martin, Chaitnya Acharya, Steve Githens, Zachary Reusch, Gunjan Hariani, Emily Kenny, Jennifer Chiantello, Melissa Gonsalves, Marie Wilkening, Hwee Chi Tay, James Wee, Katherine Kieckhafer, Laura Kluskens, Katie Kruger, Ellen Brenna, Ashley Sharp, Megan McQuillan, Jill Recla, Kristina Flesher, Eric Koronka, Ayushi Kawatra, Danny Latusek, Ian Bonner, Sandra Orłowski, Nathan Fetting, Eric Hollenbeck

### **Graduate Student Education: I have served on a total of 47 graduate student committees**

#### **Current graduate Students for whom I am the major advisor: 3**

1. Fuyu Xu, Ph.D in FMGB. ongoing since Fall 2003, Major advisor C.P. Joshi
2. Jacob Ladd, Ph.D. in FMGB, ongoing since Fall 2008, Major advisor, C.P. Joshi
3. Aparupa Sengupta, MS in FMGB since Fall 2008, Major advisor, C. P. Joshi

#### **Current Ph. D. Students for whom I am serving as a committee member, major advisors in the parenthesis marked with \*: 4**

4. Yiru Chen, PHD ongoing since 2007, committee member, (Dr. Busov, SFRES\*)
5. Zijun Xu, Ph. D. ongoing since 2004, committee member (Dr. Wusirika, Biology\*)
6. Steve Johnson, Ph. D. ongoing since Fall 2004, committee member (Dr. Murthy\*)
7. Mike Campbell, ongoing since Fall 06, committee member (Dr. Shonnard, CE\*)

#### **Current MS committees on which I am a committee member, major advisors in parenthesis: 1**

8. Paige Cox, MS ongoing since Fall 2008, committee member (Dr. Busov, Forestry\*)

**Past Ph. D. Student committees where I was the major advisor or co-advisor: 5**

9. Shivegowda Thammangowda, Ph.D. graduated 2007, Major advisor **C.P. Joshi**
10. Priya Ranjan, Ph. D., Graduated 2005, **Major advisor C.P. Joshi**, C. Tsai Co-chair
11. Udaya Kalluri, Ph. D., Graduated 2003, **Major advisor C.P. Joshi**
12. Anita Samuga, Ph. D., Graduated 2003, **Major advisor C.P. Joshi**
13. Cheng-Chung Tsao, Ph. D., Graduated, 1998, **Co-advisor C.P. Joshi**, V Chiang: Chair

**Past Ph. D committees where I was a committee member, major advisors in the parenthesis: 13**

14. Nicholas Krom, Ph. D. graduated 2009, committee member (Dr. Wusirika, Biology\*)
15. Christine Zawaski, Ph. D., graduated 2009, Committee member (Dr. Busov\*)
16. Raja S Payyavula, Ph. D. Graduated 2009, committee member (Dr. Tsai/Harding\*)
17. Rui Tang (Sammi) graduated 2008, committee member (Dr. Zhang, Math\*)
18. Sonali Jog, Ph. D. graduated 2005, Committee member (Dr. Murthy)\*
19. Barry Garchow, Ph. D. graduated 2005, Committee member (Dr. Murthy\*)
20. Pengfei Song, Ph. D. Graduated 2005, Committee member (Dr. Leuking)\*
21. Bakul Dhagat, Ph. D., Graduated 2005, Committee member (Dr. Murthy)\*
22. Pooja Sharma, Ph. D., Graduated 2003, Committee member (Dr. Karnosky)\*
23. Ajay Sundaram, Ph. D. Graduated 2003, Committee member (Dr. Bagley, Biology)\*
24. Priit Pechter, Ph. D. Graduated 2001, Committee member (Dr. Tsai, SFWP)\*
25. Leah Vucetich, Ph. D., Graduated 2001, Committee member (Dr. Peterson, SFWP)\*
26. Laigeng Li, Ph. D., Graduated 1997, Committee member (Dr. Chiang, SFWP)\*

**Past MS Students for whom I was a major advisor: 5**

27. Shaik John Saida; Graduated Fall 2008, (**Major advisor: C. P. Joshi**)
28. Voo Siau, MS, Graduated 2006 (**C.P. Joshi, major advisor**)
29. Asha Lakkavaram, MS, Graduated 2006 (**C.P. Joshi, major advisor**)
30. Zihao Wang, Graduated 2003, **Major advisor C.P. Joshi** (co-advisor Dr. Leuking, Biology)\*
31. Rajesh Chavli, M.S., Graduated 2001, **Major advisor C.P. Joshi**

**Past MS committees for whom I was a committee member, major advisors in the parenthesis: 16**

32. Tara Waybrant, MS graduated 2009, committee member (Dr. Dixon, Biology\*)
33. James Wee, MS graduate December 2006, committee member (Dr. Leuking, Biology\*)
34. Jaisudha Purushothaman, MS, graduated 2005, committee member (Dr. Seidel, CS\*)
35. Patience Tenny, MS, Graduated 2005, Committee member (Dr. Wusirika, Biology\*)
36. Jen Taylor, MS, Graduated May 2004, Committee member (Dr. Gale, SFRES)\*
37. Pengfei Song, MS, Graduated April 2004, Committee member (Dr. Campbell, Biology)\*
38. Yanyan Lu, MS. Graduated April 2004, Committee member (Dr. Zhang, Math)\*
39. Mike Jones, M.S., Graduated 2003, Committee member (Dr. Orr, SFRES)\*
40. Hong Li, M.S., Graduated 2003, Committee member (Dr. Zhang, Math)\*
41. Kristina Owens, M.S., Graduated 2003, Committee member (Dr. Orr, SFRES)\*
42. Mahita Kadmiel, M.S., Graduated 2003, Committee member (Dr. Sottile, Biology)\*

43. Phaik Yin Mark, M.S. Graduated 2002, Committee member (Dr. Tsai, SFRES)\*
44. Jun Qian, M.S. Graduated 1999, Committee member (Dr. Huang, CS)\*
45. Srikanth Pangulari, M.S., Graduated, 1999, Committee member (Dr. Van Dam, CE)\*
46. Hao Zhou, M.S. Graduated, 1997, Committee member (Dr. Huang, CS)\*
47. Karla Kinslow, M.S., Graduated, 1997, Committee member (Drs. Podila and Gretz, Biology)\*

### **Supervision of Postdoctoral Research Associates and visiting scientists: 12**

1. Dr. Luguang Wu, University of Queensland, Australia
2. Dr. Yaw-ching Yang, Genome Therapeutics, Boston, USA
3. Dr. Laigeng Li, NCSU, USA returned back to his home country
4. Dr. Cheng-Chung Tsao, National Institute of Environmental Health
5. Dr. Yin Mak, IKPP, Indonesia
6. Dr. Xiaoe Liang, Duke University, NC, USA
7. Dr. Suchita Bhandari, Scientist, BILT, India
8. Dr. Takeshi Fujino, Virginia Tech
9. Dr. Dongyan Zhang, Michigan Tech
10. Dr. Yunxia Liu, returned back to her home country
11. Dr. Ramesh Thakur, Michigan Tech
12. Dr. Xiaohong Zhu, Research Assistant Professor, Michigan Tech

### **My Contributions to Research Fields of My Interest**

#### **Highly cited papers:**

I have published several "highly cited" papers regarding transcription regulatory sequence motifs in eukaryotic genes. A total number of citations with me as a lead author or co-author: ~2500. Please refer to Science Citation Index.

#### **Patents approved and licensed:**

##### **Cellulose synthase encoding polynucleotides and uses thereof**

Authors: Chiang, Wu and Joshi, Approved USA patent #7,049,481 on May 18, 2006

##### **Cellulose synthase promoter and method for modifying cellulose and lignin biosynthesis in plants**

Authors: Chiang, Wu, Joshi, Approved USA patent #7,232,941 on June 19, 2007

#### **Patents filed:**

Also filed one more patent entitled "Enhanced growth of transgenic plants through genetic engineering of cellulose synthases" and another patent on "cellulose synthase promoters" to US and international patent offices.

**Consultant:** CuraGen Corporation, New Haven, CT (now inactive)

## **Service:**

### **Michigan Tech University Committees that I have served on:**

Current Director, University-wide Biotechnology Research Center, 2007-present  
Past Director of SFRES Graduate Program, 2004-2009  
Past Chair of University-wide Faculty Review Committee, 2006-2009  
Current Chair of University-Wide Institutional Review Board committee, 2002-present,  
Past Chair of Promotion and Tenure Committee, SFRES, 2005-2009  
Current member of University-wide Research Advisory Committee, 2005-present  
Past member of University-wide Graduate Faculty Council, 2007-2009  
Current member of SFRES charter revision committee, 2008-present  
Past member of ADVANCE project: University-wide faculty mentoring network, 2008  
Past member of Biology faculty selection committee, 2008-2009  
Past Chair of Biotechnology Faculty Search Committee (2007-08), SFRES  
Past Chair and Member of graduate studies committee (2000-2003), SFWP  
Past Chair and member of SFWP computer committee (1999-2002), SFWP  
Past member of University-wide SFHI faculty search Committee, 2007-2008  
Past member of Promotion and Tenure Committee, Biomedical Engineering, 2007-2008  
Past member of University-wide GA/TA distribution Committee, 2007-2008  
Past member of University-wide investigation committee, 2007  
Past member of advisory Committee, Biotech Research Center, 2005-2007  
Past member of Wetlands Faculty search committee (2005)  
Past member of University-wide Graduate Dean Selection committee, 2005  
Past Member of Biotechnology Faculty Search Committee (2003-04), SFRES  
Past member of SFRES Dean Evaluation committee (2003-04), SFRES  
Past Member of plant biotechnology curriculum committee (1998-2000), SFWP  
Past Member of University wide computer fees committee (1999-2002)  
Past Member of school portfolio/strategic plan committee (1999-2000), SFWP  
Past Member of School Council, SFWP, MTU (2001-2002), SFWP  
Past Member of Ecology Faculty Search Committee (2002), SFWP

### **National Proposal Review panels that I have served on**

National Science Foundation (Metabolic biochemistry) 2005, 2006, 2007  
Department of Energy (Energy Biosciences) 2006  
USDA-NRI (Bioenergy and Biobased products) 2008

### **Reviewed >35 papers for the following 19 journals in the last five years:**

Plant Physiology, Plant Journal, Crop Science, Tree Physiology, BMC Plant Biology, Journal of Plant Physiology, Plant Cell Physiology, International Journal of seed Technology, Phytochemistry, New Phytologist, Journal of Biotechnology, Planta, Journal of Plant Biochemistry and Biotechnology, Cellulose, Molecular Breeding, Journal of Experimental Botany, Plant Cell Report, Plant Biology, Tree genetics and genomics

## Research Funding Activities (Other investigators specified) total: **\$6.56 million**

### Current: total with me as a PI or Co-PI: **\$1,626,877**

- 2008-2012: EU-US Transatlantic Masters degree program in Forest Resources (EU-USTMDPFR). US Dept of Education: ATLANTIS program; MTU PI: **Joshi \$224,000**. Other collaborator Universities include North Carolina State University, NC (PI: Bronson Bullock); University of Helsinki, Finland (PI: Outi Orenius) and Swedish Agricultural University (SLU), Sweden (PI: Eric Agestam and Vilis Brukas)(Total funding about \$1.1 million).
- 2008-2010: Genetic master switches controlling cellulose biosynthesis in plants; CPBR and two other member industries **\$340,000 (Joshi)**
- 2004-2009: "Genetic engineering of cellulose biosynthesis hardwood and softwood trees" USDA-Improved Wood Utilization, Collaborator: Shawn Mansfield, UBC, Canada **\$300,000 (Joshi)**
- 2003-2010: "CAREER-Cellulose biosynthesis in aspen trees" National Science Foundation-IBN CAREER program, **\$741,877 (Joshi)**
- 2008-2011: "Tension wood system" USDA-McIntire Stennis Program **\$21,000 (Joshi)**

### Past Successfully Completed Project Grants: **\$4,936,658**

- 2006-2009: "Modulation of cellulose crystallinity in transgenic trees" CPBR and two other member industries. **\$200,472 (Joshi)**
- 2003-2008: Improved wood properties through genetic manipulation. DOE Agenda 2020. **\$1,871,029 (Joshi, Chiang and Li)**
- 2002-2008: "Molecular Genetics of Cellulose Biosynthesis in Aspen" USDA-McIntire Stennis Program **\$35,000 (Joshi)**
- 2003-2007: Simultaneous expression of angiosperm syringyl monolignol genes in gymnosperm to investigate syringyl lignin biosynthesis in trees. **\$190,000 (Joshi, Chiang, Li)**
- 2001-2004: "Functional Genomics of Fast-Growing Transgenic Aspen Trees", Michigan Life Sciences Corridor Fund, **\$2,013,729 (Tsai, Harding, Joshi, and Chiang)**
- 2003: Acquisition of an ABI PRISM 3100 Avant Genetic analyzer, Research Excellence Fund, **\$50,000, (Tsai, Joshi and Harding)**
- 1999-2004: "Genetic engineering of cellulose biosynthesis in trees: A strategy to cellulose augmentation and lignin reduction", USDA Competitive Grants, **\$215,000 (Chiang, Joshi, Wu)**
- 2002: "Enhancement of Research Mentorship" award from Graduate School MTU, **\$1,000 (Joshi)**
- 1996-2000: "Bioinformatics and Biomolecular modeling" MI Research Excellence Fund, **\$284,000 (Pandey, Joshi, Huang, Podila, Brown, Murthy, Hansmann)**
- 2000: Digital photo-documentation system, MTU, **\$1,428 (Joshi)**
- 1998-2001: "Wood Biotechnology" State of Michigan Research Excellence Fund **\$75,000 (Tsai, Joshi, and Chiang)**

## List of Research Contributions

(Total 149 contributions: 46 refereed journal papers; 16 book chapters; 2 approved patents, 2 book editing and 83 presentations)

### Referred Journal Publications: 46

1. Manoj Kumar, Shivegowda Thammannagowda, Vincent Bulone, Vincent Chiang, Kyung-Hwan Han, **Chandrashekar P. Joshi**, Shawn D. Mansfield, Ewa Mellerowicz, Björn Sundberg, Tuula Teeri, and Brian E. Ellis. An update on the nomenclature for the cellulose synthase genes from *Populus*. **Trends in Plant Science** 14(5):248-254, 2009.
2. Shanfa Lu, Laigeng Li, Xiaoping Yi, **Chandrashekar P. Joshi**, and Vincent L. Chiang: Differential expression of three eucalyptus secondary cell wall- related cellulose synthase genes in response to tension stress. **Journal of Experimental Botany** 59: 681-695, 2008
3. **C.P. Joshi** and S.D. Mansfield: The cellulose paradox: simple molecule, complex biosynthesis. **Current Opinion in Plant Biology**. 10: 220-226, 2007.
4. Reginaldo A. Festucci-Buselli, Wagner C. Otoni and **Chandrashekar P. Joshi**: Structure, organization and functions of cellulose synthase complexes in higher plants. **Brazilian Journal of Plant Physiology** 19(1) 1-17, 2007.
5. Tuskan GA, DiFazio SP, Hellsten U, Jansson S, Rombauts S, Putnam N, Sterck L, Bohlmann J, Schein J, Bhalerao RR, Bhalerao RP, Blaudez D, Boerjan W, Brun A, Brunner A, Busov V, Campbell M, Carlson J, Chalot M, Chapman J, Chen G, Cooper D, Coutinho PM, Couturier J, Covert SF, Cunningham R, Davis J, Degroeve S, dePamphilis C, Detter J, Dirks B, Dubchak I, Duplessis S, Ehlting J, Ellis B, Gendler K, Goodstein D, Gribskov M, Grigoriev I, Groover A, Gunter L, Hamberger B, Heinze B, Helariutta Y, Henrissat B, Holligan D, Islam-Faridi N, Jones-Rhoades M, Jorgensen R, **Joshi C**, Kangasjarvi J, Karlsson J, Kelleher C, Kirkpatrick R, Kirst M, Kohler A, Kalluri U, Larimer F, Leebens-Mack J, Leple JC, Dejardin A, Pilate G, Locascio P, Lucas S, Martin F, Montanini B, Napoli C, Nelson DR, Nelson CD, Nieminen KM, Nilsson O, Peter G, Philippe R, Poliakov A, Ralph S, Richardson P, Rinaldi C, Ritland K, Rouze P, Ryaboy D, Salamov A, Schrader J, Segerman B, Sterky F, Souza C, Tsai C, Unneberg P, Wall K, Wessler S, Yang G, Yin T, Douglas C, Sandberg G, Van de Peer Y, Rokhsar D. The genome of black cottonwood, *Populus trichocarpa* (Torr. & Gray). **Science** 313: 1596 – 1604, 2006
6. Suchita Bhandari, Takeshi Fujino, Shiv Thammannagowda, Dongyan Zhang, Fuyu Xu, and **Chandrashekar P. Joshi**: Xylem-specific and tension stress-responsive coexpression of KORRIGAN endoglucanase and three cellulose synthase genes in aspen trees. **Planta** 224: 828-837, 2006
7. Udaya Kalluri and **C.P. Joshi**: Differential expression of two cellulose synthase genes associated with primary wall and secondary wall development in aspen trees. **Planta** 220: 47-55, 2004.

8. **C.P. Joshi**, S. Bhandari, P. Ranjan, U. C. Kalluri, X. Liang, T. Fujino, and A. Samuga: Genomics of cellulose biosynthesis in poplars. **New Phytologist** 164: 53-61, 2004
9. Ranjan P, Kao Y, Jiang H, **C.P. Joshi**, S.A. Harding and C.J. Tsai: Suppression Subtractive Hybridization-mediated Transcriptome Analysis from Multiple Tissues of Aspen (*Populus tremuloides*) Trees Altered in Phenylpropanoid Metabolism. **Planta**, 219: 694-704, 2004.
10. Anita Samuga and **C.P. Joshi**: Differential expression patterns of two new primary cell wall-related cellulose synthase cDNAs, PtrCesA6 and PtrCesA7 from aspen trees. **Gene**, 334: 73-82, 2004.
11. Xiaoe Liang and **C.P. Joshi**: Molecular cloning of ten distinct hypervariable regions from cellulose synthase gene superfamily in aspen trees. **Tree Physiology** 24: 543-550, 2004.
12. Anita Samuga and **C.P. Joshi**: Cloning and characterization of cellulose synthase-like gene, PtrCSLD2 from developing xylem of aspen trees. **Physiologia Plantarum** 120: 641-651, 2004.
13. Udaya Kalluri and **C.P. Joshi**: Isolation and Characterization of a New, Full-Length Cellulose Synthase cDNA from Developing Xylem of Aspen Trees. **Journal of Experimental Botany** 54: 2187-2188, 2003.
14. **C. P. Joshi**: Xylem-Specific and Tension Stress Responsive Expression of Cellulose Synthase Genes from Aspen Trees. **Applied Biochemistry and Biotechnology** 105: 17-26, 2003.
15. Anita Samuga and **C. P. Joshi**: A new cellulose synthase gene (*PtrCesA2*) from aspen xylem is orthologous to *Arabidopsis AtCesA7* (*irx3*) gene associated with secondary cell wall synthesis. **Gene** 296: 37-44, 2002.
16. L. Vucetich, J.A. Vucetich, **C.P. Joshi**, T.A. Waite, R.O. Peterson: Genetic (RAPD) diversity in *Peromyscus maniculatus* populations in a naturally fragmented landscape. **Molecular Ecology** 10: 35-40, 2001.
17. L. Wu, **C.P. Joshi**, V.L. Chiang: A xylem-specific cellulose synthase gene from aspen (*Populus tremuloides*) is responsive to mechanical stress. **Plant Journal** 22(6): 495-502, 2000
18. N. Klueva, R.C. Joshi, **C.P. Joshi**, D.B. Wester, R.E. Zartman, R.G. Cantrell, H.T. Nguyen: Genetic variability and molecular responses of root penetration in cotton. **Plant Science** 155 (1): 41-47, 2000
19. K. Osakabe, C-C. Tsao, L. Li, J. L. Popko, T. Umezawa, D. T. Carraway, R. H. Smeltzer, **C. P. Joshi**, V. L. Chiang: Coniferyl aldehyde 5-hydroxylation and methylation direct syringyl lignin biosynthesis in angiosperms. **Proceedings of National Academy of Sciences, USA**, 96 (16): 8955-8960, 1999.
20. L. Li, Y. Osakabe, **C. P. Joshi**, V. L. Chiang: Secondary xylem-specific expression of Caffeoyl Coenzyme A-3-O-methyltransferase plays an important role in the methylation

21. **C. P. Joshi**, V.L. Chiang: Conserved sequence motifs in plant S-Adenosyl-L-Methionine dependent methyltransferases. **Plant Molecular Biology**, 37: 663-674, 1998
22. L. Wu, **C. P. Joshi**, V. L. Chiang: AraxCela, A new member of Cellulose Synthase gene family from *Arabidopsis thaliana* (Accession No. AF062485). **Plant Physiology** 117: 1125, 1998 (Plant Gene Register) (#PGR 114)
23. L. Li, X-H. Zhang, **C. P. Joshi**, V L. Chiang: Compression Stress Responsive Expression of ferritin (Accession No. AF028072) and peroxidase Genes (Accession No. AF028073) in the developing xylem of loblolly pine (*Pinus taeda*). **Plant Physiology** 116:1604, 1998 (Plant Gene Register) (PGR # 64)
24. L. Li, J.L. Popko, X-H. Zhang, K. Osakabe, C. Tsai, **C.P. Joshi**, V. Chiang: A novel multifunctional O-methyltransferase implicated in a dual methylation pathway associated with lignin biosynthesis in loblolly pine. **Proceedings of National Academy of Sciences, USA**, 94: 5461-5466, 1997.
25. **C.P. Joshi**, H. Zhou, X. Huang, V. Chiang: Context sequences of translation initiation codon in plants. **Plant Molecular Biology**, 35: 993-1001, 1997.
26. **C.P. Joshi**, N. Klueva, K. Morrow, H.T. Nguyen: Expression of a unique plastid-localized heat shock protein is genetically linked to acquired thermotolerance in wheat. **Theoretical and Applied Genetics**, 95: 834-841, 1997.
27. **C. P. Joshi**, H.T. Nguyen: Differential display mediated rapid identification of different members of a multigene family, HSP16.9 in wheat. **Plant Molecular Biology** 31, 575-584, 1996.
28. **C.P. Joshi**, S. Kumar, H.T. Nguyen: Application of modified differential display technique for the cloning and sequencing of the 3' regions from three putative members of wheat two members of HSP70 gene family. **Plant Molecular Biology**, 30, 641-646, 1996.
29. **C. P. Joshi**, H.T. Nguyen: 5' Untranslated leader sequences from eukaryotic mRNAs encoding heat shock proteins. **Nucleic Acids Research** 23, 541-549, 1995.
30. R.A. Vierling, Z. Xiang, **C.P. Joshi**, M. Gilbert, H.T. Nguyen: Genetic diversity among elite sorghum lines revealed by RFLPs and RAPDs. **Theoretical and Applied Genetics** 87, 816-820, 1994.
31. H.T. Nguyen, **C.P. Joshi**, N. Klueva, J. Weng, K. Hendershot, A. Blum: The heat shock response and expression of heat shock proteins in wheat under diurnal heat stress and field conditions. **Australian Journal of Plant Physiology** 21, 857-867, 1994.
32. **C. P. Joshi**, H.T. Nguyen: Application of RAPD technique for the detection of polymorphism among wild and cultivated tetraploid wheats. **Genome** 36: 602-609, 1993.

33. Y. Z. Cheng, J. Weng, **C. P. Joshi**, H. T. Nguyen: Dehydration stress induced changes in translatable RNAs in sorghum. **Crop Science** 33, 1397-1400, 1993.
34. **C. P. Joshi**, H.T. Nguyen: RAPD (Random Amplified polymorphic DNA) analysis based intervarietal relationships among hexaploid wheat. **Plant Science**, 93: 95-103, 1993.
35. H.T. Nguyen, J. Weng, **C.P. Joshi**: A wheat cDNA clone encoding a plastid-localized heat shock protein. **Plant Physiology** 103, 675-676, 1993.
36. S.W. King, **C. P. Joshi**, H.T. Nguyen: DNA sequence of an ABA responsive gene (RAB15) from water stressed wheat roots. **Plant Molecular Biology** 18, 199-201, 1992.
37. **C.P. Joshi**, S.W. King, H. T. Nguyen: Molecular cloning and characterization of a cDNA encoding a water-stress protein (WSP23) from wheat root. **Plant Science** 86: 71-82, 1992.
38. **C. P. Joshi**, J. Weng, H.T. Nguyen: Wheat ubiquitin gene exhibits conserved protein coding region and a diverged 3' non-coding region. **Plant Molecular Biology** 16, 907-908, 1991.
39. S.A. Bapat, **C.P. Joshi**, A.F. Mascarenhas: Occurrence and frequency of precocious germination of somatic embryos is a genotype dependent phenomenon in wheat. **Plant Cell Reports** 7, 538-541, 1988.
40. **C.P. Joshi**: An inspection of the domain between putative TATA box and translation start site in seventy-nine plant genes. **Nucleic Acids Research** 15, 6643-6653, 1987.
41. **C.P. Joshi**: Putative polyadenylation signals in nuclear genes of higher plants: a compilation and analysis. **Nucleic Acids Research** 15, 9627-9640, 1987.
42. S. Patankar, **C.P. Joshi**, S.A. Ranade, M. Bhave, and P.K. Ranjekar: Interphase nuclear organization in plants. **Proceedings of Indian Academy of Sciences (plant Science)** 94, 539-551, 1985.
43. **C.P. Joshi** and P.K. Ranjekar: Mechanism of HCl-Giemsa banding technique. **The Nucleus** 26, 35-48, 1983.
44. **C.P. Joshi** and P.K. Ranjekar: Visualization and distribution of heterochromatin in interphase nuclei of several higher plant species as revealed by a new Giemsa banding technique. **Cytologia** (Japan) 47, 471-480, 1982.
45. **C.P. Joshi** and P.K. Ranjekar: A simple technique for visualization of telomeric heterochromatin in *Allium cepa*. **Cell and Chromosome Newsletter** 4, 60-61, 1981.
46. **C.P. Joshi** and P.K. Ranjekar : Technique for heterochromatin visualization and chromosome banding in plants. **The Nucleus** 23, 169-176, 1980.

## Editing Services:

\* Currently I am editing a book on “Poplar” with Dr. Stephen DiFazio of West Virginia University for the series on “Genomics of Industrial Crop Plants” (Series editor: Chitta Kole). To be published by Science Publisher, USA in 2009.

\* I am also editing a 1000 page book on “Handbook of Bioenergy Crop Plants” with Dr. Chittaranjan Kole of Clemson University and Dr. David Shonnard of Michigan Tech. This monograph will be published by Taylor and Francis, CRC Press in 2009-2010.

\* I am on the Editorial Advisory Board of “The Open Forest Science Journal” since 2008.

## Refereed Book Chapters: 16

1. **C. P. Joshi**, Brunner A, Busov V, Meilan R, Thammanagowda S, Tsai C.: Poplars. In: Compendium of transgenic crop plants: Transgenic forest tree species. C. Kole and T. Hall (Eds). Wiley-Blackwell Publishing, Oxford, UK. **PP 1-34, 2008**
2. **C. P. Joshi**: Genomics of Wood development. In Aluizio Borém (Ed) Forest Biotechnology. Universidade Vicosa, Brazil, **PP 273-295, 2007 (in Portuguese)**
3. **C.P. Joshi**: Molecular genetics of cellulose biosynthesis in trees. In Kumar S. and Fladung M. (Eds.) Molecular genetics and breeding of forest trees. Haworth Press, Binghamton, NY, **PP 141-165, 2004.**
4. **C.P. Joshi**: Molecular biology of cellulose biosynthesis in plants. In “Recent Research Development in Plant Molecular Biology” (S. Pandalai, Ed) Volume 1, Research Signpost, Kerala, India. **PP 19-38, 2003.**
5. Podila G.K., **C.P. Joshi** and P. B. Kaufman: Functional Genomics and DNA Microarray Technology. In Handbook of Molecular and Cellular Methods in Biology and Medicine, Second Edition, (Cseke LJ , Kaufman PB, Podila GK, Tsai CJ. eds) CRC Press, NY. **PP 319-346, 2003.**
6. L. Wu, T. Fujino, S. Kimura, **C. P. Joshi**, V. Chiang: A xylem-specific cellulose synthase gene from aspen (*Populus tremuloides*) is responsive to mechanical stress. In “Frontiers in Cellulose Science” (T. Itoh, ed), **PP 2-7, 2000.**
7. **C.P. Joshi**, H.T. Nguyen: Cloning of the 3' non-coding regions from several members of heat shock protein gene families by differential display. In: A. Pardee and P. Liang (eds) Differential display: Methods and Applications, Humana Press, **PP 107-121, 1997.**
8. Boerjan W., Baucher M., Chabbert, B., Petit-Conil M, Leple J.C., Pilate G., Cornu D., Monties B., Van Montagu M., Van Doorselaere J., Inze D., Jouanin L, Tsai C.J., Podila G.K., **Joshi C.P.**, Chiang V.L.: Genetic modification of lignin biosynthesis in quaking aspen and poplar. In : Klofenstein N.B., Chun YW, Kim MS and Ahuja MR (eds.), Micropropagation and Genetic Engineering and Molecular Biology of Populus. **PP 193-205, 1997.**

9. H. T. Nguyen, **C.P. Joshi**: Molecular genetic approaches to improving heat and drought stress tolerance in crop plants. In: J. Cherry, ed., NATO Advanced Research Workshop "Role of biotechnology in the improvement of stress tolerance in crop plants", Maratea, Italy, Springer-Verlag, Berlin, P. **279-289**, 1994.
10. H. T. Nguyen, **C. P. Joshi**: RAPD analysis in tetraploid and hexaploid wheats. In: Progress in genome mapping of wheat and related species: Proceedings of the Third public workshop of the International Triticeae Mapping Initiative, (Hoisington D, and A. McNab, eds.), El Batan, Mexico, D.F.: CIMMYT, P. **47-50**, 1993.
11. H.T. Nguyen, C.P. **Joshi**: Molecular and genetic analysis of heat tolerance in plants. In: Mabry TJ, Nguyen HT, Dixon RA, eds., Proceedings of Applications and prospects of Biotechnology for arid and semi-arid lands. Lubbock. IC<sup>2</sup> Institute, Austin, USA, PP **93-106**, 1993.
12. H. T. Nguyen, K. L. Hendershot, **C.P. Joshi**: Molecular genetics of stress breeding: Heat Shock Proteins. In: International Crop Science Congress I (D. Buxton et al., ed.), Crop Science Society Of America, Madison, USA, PP **541-547**, 1993.
13. H. T. Nguyen, **C. P. Joshi**: Molecular strategies for the genetic dissection of water and heat stress adaptation in cereal crops. In: Adaptation of Food Crops to Temperature and Water Stress, (G. Kuo, ed.), Asian Vegetable Research and Development Center, Taipei, Taiwan, **PP 3-19**, 1993.
14. D.P.S. Verma, G.H. Miao, **C.P. Joshi**, C.I. Cheon, A. Delauney: Internalization of Rhizobium by plant cells: targeting and role of peribacteroid membrane nodulins. In: Plant Molecular Biology II (R. G. Herrmann and B.A. Larkins, eds.) P. **121-130**, Plenum Press, New York, NY, 1990.
15. **C.P. Joshi**, E. Muller-Gensert, A. Steffen, H. Lorz and O. Schieder: Interclassical protoplast fusion between orchard-grass and Petunia. In: Genetic manipulation and plant breeding. (Horn, Jensen, Odenbach, and Schieder, eds.) Walter de Grueter and Co. Berlin. P. **689-691**, 1986.
16. **C.P. Joshi** and O. Schieder: Isolation, culture and regeneration of legume protoplasts. In "Proceedings of Recent advances in plant cell and tissue culture of economically important plants", p. **1-4**, 1986.

#### **Conference Proceedings: Invited seminars and Presented Posters: 83**

1. (Invited presentation) **C.P. Joshi**: Genetic engineering of poplars for biofuel production via altered synthesis of cellulose. Presented at Tree Biotechnology meeting at Whistler, BC, Canada during June 28-July 2, 2009.
2. **C.P. Joshi**: Transformation of trees to creepers: Contribution of cellulose biosynthesis in secondary cell walls of secondary xylem to growth habit of transgenic poplar trees. Presented at Gordon Research Conference during August 2-7, 2009 at Bryant University, Smithfield, RI.
3. (Invited seminar) **C.P. Joshi**: Building bridges to the cell wall for improved bioenergy production. Presented at Joint Bioenergy Institute, Emerville, CA on May 8<sup>th</sup>, 2009.

4. (Invited seminar) **C. P. Joshi**: Biotechnological Improvement of Cellulose Biosynthesis in Poplar Trees for Better Bioenergy Production. Presented at “Plant and Bioenergy” Symposium of ASPB during June 21-26, 2008 at Merida, Mexico.
5. (Invited seminar) **Chandrashekhara P. Joshi**, Yunxia Liu, Shivegowda Thammannagowda, Takeshi Fujino, Utku Avci, Lisa M. McDonnell, Robert Sykes, Mark F. Davis, Candace H. Haigler, Rama Joshi, and Shawn D. Mansfield: Metamorphosis of trees to creepers: Perturbation of wood cellulose biosynthesis produces pleiotropic effects in transgenic aspen trees. Presented at the Third meeting on plant cell wall biosynthesis during June 5-8, 2008 at the Asilomar Conference Center, CA.
6. (Invited seminar) **C. P. Joshi**: Towards Genetic Enhancement of Cellulose Biosynthesis in Trees. Presented at the Hanover Forest Science seminar Series on November 6<sup>th</sup>, 2007 at Department of Forestry, Michigan State University, East Lansing, MI.
7. (Invited seminar) **C. P. Joshi**: Building better trees for tomorrow. Presented at the 3rd annual banquet meeting of Sustainable Future Institute on October 10, 2007 at Michigan Technological University, Houghton, MI.
8. (Invited seminar) **C. P. Joshi**: Functional genomics based genetic improvement of cellulose biosynthesis in poplars. Presented at the 10th International Congress for Biotechnology in the Pulp and Paper Industry (ICBPPI 2007) during June 10-14, 2007 at Madison, WI.
9. S. Thammannagowda, Z. Fei, O. Crasta and **C. P. Joshi**: Use of Affymetrix poplar whole genome arrays for global transcriptome analysis of tension wood formation in aspen trees. Presented at the Annual meeting of American Society of Plant Physiologists during July 7-11, 2007 at Chicago, IL.
10. Yunxia Liu, Takeshi Fujino, Shivegowda Thammannagowda, Fuyu Xu, and **Chandrashekhara P. Joshi**: Spatiotemporal regulation of three coordinately expressed poplar cellulose synthase genes involved in xylem development and tension wood formation. Presented at the Annual meeting of American Society of Plant Physiologists during July 7-11, 2007 at Chicago, IL.
11. Xu Fuyu and **C. P. Joshi**: Genome-wide expression analysis of Sucrose Synthase Genes in the Poplar Trees. Presented at the Annual meeting of American Society of Plant Physiologists during July 7-11, 2007 at Chicago, IL.
12. (Invited seminar) **Chandrashekhara P. Joshi**, Yunxia Liu, Fuyu Xu, Shivegowda Thammannagowda, Rama C. Joshi, Chung-Jui Tsai, Zhangjun Fei, Oswald R. Crasta, Mark F. Davis: Efficacy of poplar genome information in unraveling mystery of cellulose biosynthesis. Presented at the IUFRO Tree Biotechnology meeting, Azores, Portugal during June 3-8, 2007.
13. Lisa M McDonnell, K-Y Kang, P. Brar, **C. P. Joshi** and S.D. Mansfield: Genetic engineering of cellulose biosynthesis in hardwood and softwood trees. Presented at the Second USDA grantee meeting at the Marriott Hotel, Washington, DC during March 12-14, 2007.

14. (poster) F. Xu and **C. P. Joshi**: Structure, Expression and Evolution of Sucrose Synthase Genes in *Populus* Genome. Presented at The Third Annual ESC/BRC Graduate Research Forum on Friday, February 23rd, 2007 in the Hesterberg Hall Atrium of the School of Forest Resources and Environmental Sciences on the Michigan Tech campus.
15. (poster) S. Thammangowda, Z. Fei, O. R. Crasta and **C. P. Joshi**: Global transcriptome analysis during tension wood formation in aspen trees. Presented at The Third Annual ESC/BRC Graduate Research Forum on Friday, February 23rd, 2007 in the Hesterberg Hall Atrium of the School of Forest Resources and Environmental Sciences on the Michigan Tech campus. (Grand prize winner, BRC 2007)
16. (Invited seminar) **C. P. Joshi**: Applications of Nanoscale Sciences to Cell Wall Biotechnology in Trees. Presented at the International Symposium on "Frontiers in Nanoscale Science, Technology and Education", Cochin, India during August 15-19, 2006.
17. (Poster) Xu F and **C. P. Joshi**: Protein-Protein Interactions among Cellulose Synthases from Aspen and Arabidopsis. Presented at the "Plant Biology 2006" Annual meeting of Plant Biologists at Boston, MA during August 5-9, 2006. (Travel grant winner from ASPB and BRC)
18. (Poster) Thammangowda S, Fujino T and **C. P. Joshi**: Perturbation of cellulose biosynthesis in transgenic aspen trees. Presented at "Plant Biology 2006" Annual meeting of Plant Biologists at Boston, MA during August 5-9, 2006. (Travel grant winner, BRC)
19. (Invited seminar) **Chandrashekhhar P. Joshi**: Power of Genetic engineering for sustainable future. Presented at the Sustainable Futures Colloquium, MTU on April 12, 2006.
20. (Invited seminar) **Chandrashekhhar P. Joshi**, Takeshi Fujino, Shivegowda S.T., Suchita Bhandari, Dongyan Zhang, Pushpinder Brar, Rama C. Joshi, and Fuyu Xu: The ways and means of boosting cellulose production in transgenic trees. Presented at the IUFRO Tree Biotechnology meeting, University of Pretoria, South Africa, Nov 5-11, 2005.
21. (Invited seminar) **Chandrashekhhar P. Joshi**: Genetic engineering of cellulose biosynthesis in hardwood and softwood trees. Presented at the First USDA grantee meeting at the Airlie Center, Warrenton, VA on February 27, 2006.
22. Shivegowda, S.T, Takeshi Fujino, and **Chandrashekhhar P. Joshi**: Cellulose-deficient wood: A novel phenomenon of cellulose synthesis perturbation via PtrCesA1 overexpression in transgenic aspen trees. Poster presented at The Second Annual ESC/BRC Graduate Research Forum on Friday, February 24<sup>th</sup>, 2006 in the Hesterberg Hall Atrium of the School of Forest Resources and Environmental Sciences on the Michigan Tech campus. (Merit prize winner, BRC 2006)
23. Fuyu Xu and **Chandrashekhhar P. Joshi**: Discovery of Protein-Protein Interactions among Secondary Cellulose Synthases in Aspen. Poster presented at The Second Annual ESC/BRC Graduate Research Forum on Friday, February 24<sup>th</sup>, 2006 in the

24. Pushpinder Brar, Ashalatha Lakkavaram and **Chandrashekhar P. Joshi**: Genomic organization and expression profile of sucrose synthase genes in aspen trees. Poster presented at The Second Annual ESC/BRC Graduate Research Forum on Friday, February 24<sup>th</sup>, 2006 in the Hesterberg Hall Atrium of the School of Forest Resources and Environmental Sciences on the Michigan Tech campus.
25. (invited seminar) **Chandrashekhar P. Joshi**, Takeshi Fujino, Shivegowda S.T., Suchita Bhandari, Dongyan Zhang, and Fuyu Xu: Transgenic Approaches toward Elucidating Cellulose Biosynthetic Processes in Trees. Presented at the second meeting on plant cell wall biosynthesis during August 4-7, 2005 at the Asilomar Conference Center, CA.
26. (poster) **Chandrashekhar P. Joshi**, Takeshi Fujino, Suchita Bhandari, Fuyu Xu, Shivegowda Thammannagowda, Dongyan Zhang, Anita Samuga, and Udaya Kalluri: Xylem-specific and tension stress-responsive expression of three secondary wall-associated cellulose synthases and a membrane-anchored korrigan cellulase from aspen trees. Presented at American Society of Plant Biologists meeting at Seattle, WA during July 17-20, 2005
27. (Poster) Takeshi Fujino, Suchita Bhandari, and **Chandrashekhar P. Joshi**: Coordinated Expression of Secondary Wall-Associated Cellulose Synthase and *Korrigan* Cellulase Genes during Tension Wood Formation in Aspen Trees Presented at the second meeting on plant cell wall biosynthesis during August 4-7, 2005 at the Asilomar Conference Center, CA (BRC Travel grant winner).
28. (invited seminar) **C. P. Joshi**: Cellulose biosynthesis in poplars: a progress report. Invited seminar given at University of British Columbia (UBC), Vancouver, Canada on July 14, 2005.
29. (Poster) P. Brar and **C.P. Joshi**: Impact of Overexpression of Cellulose Biosynthesis-Related Genes on Aspen Trees. 1<sup>st</sup> annual ESC/BRC research Forum, Michigan Technological University, Houghton, MI on February 25, 2005.
30. (Poster) P. Ranjan, **C.P. Joshi** and C.J. Tsai: Diversity, Distribution and Features of LTR Retrotransposons in Selected Plant Genomes. 1<sup>st</sup> annual ESC/BRC research Forum, Michigan Technological University, Houghton, MI on February 25, 2005.
31. (Poster) S. Thammangowda and **C.P. Joshi**: Transgenic Approaches to Unravel the Cellulose Biosynthetic Process in Aspen. 1<sup>st</sup> annual ESC/BRC research Forum, Michigan Technological University, Houghton, MI on February 25, 2005 (BRC Merit award winner 2006).
32. (Poster) F. Xu and **C.P. Joshi**: Discovery of Protein-Protein Interactions among Secondary Cellulose Synthases in Aspen. 1<sup>st</sup> annual ESC/BRC research Forum, Michigan Technological University, Houghton, MI on February 25, 2005 (BRC Merit award winner 2006).
33. (Invited participant) **Chandrashekhar P. Joshi**: Populus genome annotation jamboree. December 6-10, 2004 at Joint Genome Institute, Walnut Creek, CA.

34. (Invited Seminar) **Chandrashekhar P. Joshi**: Biotechnology of cellulose biosynthesis in poplars. Presented at Nanotechnology workshop for the forest product industries during October 17-19, 2004 at Washington, D.C.
35. (Invited seminar) **Chandrashekhar P. Joshi**: Cellulose biosynthesis in Plants. Seminar given at Thapar Institute of Engineering and Technology, Patiala, Punjab, India on August 12, 2004.
36. (Poster) Bhandari S., T. Fujino, **C.P. Joshi**: Expression studies of a membrane anchored endo-1,4  $\beta$  glucanase, Korrikan (Kor) gene from aspen. Presented at "Functional genomics of environmental adaptation in Populus" at Gatlinburg, TN during October 11<sup>th</sup> to 13<sup>th</sup>, 2004.
37. (Invited seminar) **Chandrashekhar P. Joshi**: Wonderful world of cellulose synthases. Seminar presented at Kansas State University, Manhattan, KS on May 13, 2004.
38. (Invited seminar) **Chandrashekhar P. Joshi**, T. Fujino, X. Liang, F. Xu, S. Thammanagowda, A. Samuga, and U. Kalluri: Differential expression patterns of several cellulose biosynthesis related genes in aspen trees. Symposium honoring Professor Debby Delmer on "Biosynthesis of cellulose and other cell wall polymers" by American Chemical Society. Presented during March 29-March 30, 2004 at Anaheim, CA.
39. (Invited seminar) **Chandrashekhar P. Joshi**: Three amigos: Coordinate expression of three cellulose synthase genes in aspen trees. Chemical Sciences Colloquium, Michigan Technological University, Houghton, MI presented on October 31, 2003.
40. **Chandrashekhar P. Joshi**, Xiaoe Liang, Anita Samuga, and Udaya C. Kalluri: Coordinate expression of three cellulose synthase genes implicated in the cellulose biosynthesis of xylem secondary cell walls in aspen trees. Poster presented at the Gordon Research Conference on "Plant Cell walls" during August 10-15, 2003, Meriden, NH.
41. (Invited seminar) **Chandrashekhar P. Joshi**, Xiaoe Liang, Anita Samuga, and Udaya C. Kalluri: Coordinate expression of three cellulose synthase genes may orchestrate cellulose biosynthesis during the wood formation in aspen trees. Annual American Society of Plant Biologists meeting during July 24-30, 2003 at Honolulu, Hawaii.
42. (Invited seminar) **Chandrashekhar P. Joshi**, Xiaoe Liang, Anita Samuga, and Udaya C. Kalluri: Three distinct Cellulose Synthases may help building the xylem secondary walls in aspen. Presented at Tree Biotechnology meeting during June 7-12, 2003 at Umea, Sweden
43. (Invited seminar) Chung-Jui Tsai, Darren Touchell, Mijeong Jeong, Hongyang Jiang, Yu-Ying Kao, Maria Hernandez, Tae-Jin Lee, Priya Ranjan, **Chandrashekhar Joshi**, and Scott Harding. Populus Cell Culture as A Component For Functional Genomic Research. Presented by Dr. Tsai at the Tree Biotechnology meeting during June 7-12, 2003 at Umea, Sweden.
44. (Invited seminar) **C.P. Joshi**, X. Liang, A. Samuga and U. Kalluri: Elucidation of cellulose biosynthesis towards modulation of wood composition. Presented at California

45. Ranjan P., Kao Y.Y., Harding S., Jiang H., Chiang V., **Joshi C.P.** and Tsai C.: Comparison of metabolic changes in control and transgenic aspen trees by functional evaluation of expressed sequence tags. Poster presented by Ranjan at the First Annual Great Lakes Bioinformatics Retreat, August 27 and 28, 2002 at Waldenwoods Resort, MI.
46. Lu S., Li L., **Joshi C.P.**, Zhou Y., Sun J., Zhang Y., Hinchee M., Chiang V.: Molecular cloning and characterization of three cellulose synthases associated with xylem development in *Eucalyptus grandis*. Poster presented by Lu at American Society of Plant Biologists annual meeting at Denver, CO during August 2-7, 2002.
47. Zhou Y., Li L., **Joshi C.P.**, Lu S., Sun J., Zhang Y., Hinchee M., and Chiang V.: Molecular cloning of cellulose synthase genes from loblolly pine. Poster presented by Zhou at American Society of Plant Biologists annual meeting at Denver, CO during August 2-7, 2002.
48. Samuga A., Chavli, R., Kalluri U., Liang X., **Joshi C.P.**: Isolation of hypervariable II regions from 8 new members of CesA gene superfamily in aspen (*Populus tremuloides*). Poster presented by Samuga at American Society of Plant Biologists annual meeting at Denver, CO during August 2-7, 2002.
49. Kalluri U., Samuga A., and **Joshi C.P.**: Isolation and characterization of five new full-length cDNAs from cellulose synthase gene superfamily in aspen (*Populus tremuloides*). Poster presented by Kalluri at American Society of Plant Biologists annual meeting at Denver, CO during August 2-7, 2002.
50. (Invited seminar) **C.P. Joshi**: Xylem-specific and tension stress responsive cellulose synthase genes in aspen trees. Invited seminar given at 24<sup>th</sup> Biotechnology symposium for fuels and Chemicals, Gatlinburg, TN during April 28-May 1, 2002.
51. (Invited seminar) **C.P. Joshi**, L. Wu, R. Chavli, A. Samuga, V. Chiang: Molecular genetics of cellulose biosynthesis in trees. Invited seminar given at 23<sup>rd</sup> Biotechnology symposium for fuels and Chemicals, Brackenridge, CO. May 6-9, 2001.
52. (Invited seminar) **C.P. Joshi**, L. Wu, R. Chavli, A. Samuga, V. Chiang: Extent of cellulose synthase gene family from aspen. Invited seminar at the Tree Biotechnology in the next millennium, Stevenson, Washington, July 22-27, 2001.
53. (Invited seminar) **C.P. Joshi**, L. Wu, R.V. Chavli, V.L. Chiang: "Exciting World of Plant Cellulose" presented invited seminar at "In Vitro Biology" meeting, San Diego, CA during June 11-15, 2000
54. L. Wu, T. Fujino, S. Kimura, **C. P. Joshi**, V. Chiang: A xylem-specific cellulose synthase gene from aspen (*Populus tremuloides*) is responsive to mechanical stress. In "Frontiers in Cellulose Science" meeting presented by Chiang, Nov 10-11, 2000 at Kyoto, Japan.
55. (Invited seminar) **C.P. Joshi**: Plant Biotechnology: Are we playing GOD? In Xi Sigma Pi symposium on "GMOs in Forestry" April 8, 2000, Michigan Technological University,

56. (Invited seminar) **C.P. Joshi**: "How do plants make cellulose?" Biology Seminar series, May 1999, Michigan Tech University, Houghton, MI
57. (Invited seminar) **C. P. Joshi**, L. Wu, V. Chiang: A novel xylem-specific and tension stress responsive cellulose synthase gene from quaking aspen. Seminar presented at "Forest Biotechnology 99" meeting, Oxford, UK, July 11-16, 1999 pp. 19.
58. L. Li, K. Osakabe, C. C. Tsao, J. L. Popko, T. Umezawa, D. T. Carraway, R. H. Smeltzer, **C. P. Joshi**, V L. Chiang: A clarification of syringyl monolignol biosynthesis. Presented at "Forest Biotechnology 99" meeting by Chiang, Oxford, UK, July 11-16, 1999 pp. 27.
59. **C.P. Joshi**, H. Zhou, X. Huang, V. Chiang: Consensus sequences flanking the translation initiation codon may be useful in genome sequencing of plants. Presented at "Plant and Animal Genome VI" meeting, San Diego, CA, USA, 1998 pp. 77.
60. **C.P. Joshi**, V. Chiang: SAM-dependent Methyltransferase-specific amino acid signatures in plants. Annual American Society of Plant Physiology meeting held in Madison, WI, during June 27-July 1, 1998.
61. Li, L., **C.P. Joshi**, V. Chiang: Molecular cloning and characterization of two O-methyltransferases involved in lignin biosynthesis in loblolly pine (*Pinus taeda*) Annual American Society of Plant Physiology meeting held in Madison, WI, 1998.
62. Yang Y-C., **C.P. Joshi**, V. Chiang: Fast growth of aspen plants in extremely low frequency electromagnetic fields. Annual American Society of Plant Physiology meeting held in Madison, WI, during June 27-July 1, 1998.
63. (Invited seminar) Li, L., **C.P. Joshi**, V. Chiang: Existence of two multifunctional o-methyltransferases in loblolly pine questions the concept of monofunctional o-methyltransferase in gymnosperms. Invited presentation at IEG-40 workshop on " Wood and Wood Fibers: Properties and Genetic Improvement" held in Atlanta, GA during July 19-22, 1998.
64. (Invited seminar) Hao L., Li L., Yang Y., **C.P. Joshi** and Chiang V.: Application of Differential display in Wood Biotechnology. Invited oral presentation at the Second International Wood Biotechnology Symposium. Canberra, Australia, 1997.
65. Li L, X. Zhang, **C.P. Joshi** and V.L. Chiang: Differential display mediated identification of compression stress induced cDNAs in loblolly pine. American Society of Plant Physiology meeting at Vancouver, BC, Canada, 1997.
66. (Invited seminar) **C.P. Joshi**, Kumar S., Klueva, N, Joshi R., Nguyen H.T., Hao L., Zhang X, Tsao C., Chiang V: Modified Differential display for the cloning of multigene family members in plants. Invited talk at "Differential display and related techniques for gene discovery" meeting, Cold Spring Harbor Laboratory, New York, 1996.
67. (Invited seminar) **C.P. Joshi**, H.T. Nguyen: Differential display mediated rapid cloning and sequencing of the 3' region of several cDNAs from a large heat shock protein gene

68. N. Klueva, **C.P. Joshi**, H.T. Nguyen: A member of HSP26 gene family is associated with thermotolerance in wheat. Keystone Symposium, Stress proteins in biology and medicine. Santa Fe, New Mexico, 1995.
69. **C.P. Joshi**, H.T. Nguyen: Understanding the roles of heat shock proteins in acquired thermotolerance of wheat plants through molecular genetic analysis. Keystone Symp. on 'Improved Crop and Plant Products Through Biotechnology', Keystone, 1994.
70. H.T. Nguyen, K.L. Hendershot, **C.P. Joshi**: Molecular genetics of stress breeding: Heat shock proteins. First International Congress of Crop Sciences, Ames, Iowa, 1992.
71. H.T. Nguyen, **C.P. Joshi** : Molecular strategies for the genetic dissection of water and high temperature stress adaptation in cereal crops. International Symposium on adaptation of Vegetable and other food crops to temperature and water stress, Taipei, Taiwan, 1992.
72. H.T. Nguyen, **C. P. Joshi**: RAPD analysis in tetraploid and hexaploid wheat. International Triticeae Mapping Initiative, CYMMYT, Mexico, 1992.
73. H.T. Nguyen, **C.P. Joshi**: Molecular and genetic analysis of heat tolerance in plants. International symposium on "Applications and prospects of Biotechnology for arid and semi-arid lands" Lubbock, 1992.
74. **C.P. Joshi**, J. Weng, H. T. Nguyen: Molecular cloning and sequencing of wheat ubiquitin gene. Third International Congress of Plant Molecular Biology, Tucson, Arizona, 1991.
75. S. W. King, **C.P. Joshi**, H. T. Nguyen: Analysis of ABA responsive genes in wheat during drought stress. Third International Congress of Plant Molecular Biology, Tucson, Arizona, 1991.
76. Verma D.P.S., G.H. Miao, **C.P. Joshi**, C.I Cheon., A. Delauney: Internalization of *Rhizobium* by plant cell: targeting and role of peribacteroid membrane nodulins. Presented at the VI th NATO/FEBS advanced study Institute on plant molecular Biology, Schloss Elmau, Germany, 1990.
77. **C.P. Joshi** and O. Schieder.: Isolation, culture and regeneration of legume protoplasts. Presented at the National Symposium on "Recent advances in plant cell and tissue culture of economically important plants" held at Hyderabad, India, 1986.
78. **C.P. Joshi**, E.Muller-Gensert, A. Steffen, H. Lorz, O.Schieder.: Interclassical protoplast fusion between orchard grass and petunia . Presented at International Symposium on "Genetic manipulation in plant breeding" held at West Berlin, Germany, 1985.
79. **C.P. Joshi** and O. Schieder: Isolation and culture of mesophyll protoplasts from *Vigna radiata* and *Coronilla varia*. The 41st conference in the Easter School Series in Agricultural Sciences held at Nottingham, UK, 1984.

80. S.M. Patankar, **C.P. Joshi** and P.K. Ranjekar: Condensed chromatin in higher plants. The 7th All India Cell Biology Conference held at Hyderabad, India, 1984.
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