

CURRICULUM VITAE

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EDUCATION

- May 1995 **Ph.D. in Forest Science, Outstanding Graduate Student Award (1994)**
School of Forestry and Wood Products (name change '02), Michigan Technological University
Dissertation: Genetic engineering of quaking aspen through Agrobacterium-mediated transformation for modification of lignin biosynthesis (Advisors: VL Chiang, GK Podila)
- June 1991 **M.S. in Agriculture, University First Rank**
Department of Forestry, National Taiwan University, Taiwan
Thesis: Tissue culture of Eucalyptus saligna (Advisors: YN Wang, CH Chiang)
- June 1989 **B.S. in Agriculture, University First Rank**
Department of Forestry (Silviculture core), National Taiwan University, Taiwan

EXPERIENCE

- 05/06- **Professor**, School of Forest Resources and Environmental Science, MTU
04/05- **Ad Hoc Graduate Faculty**, Dept of Forestry & Natural Resources, Purdue University
08/04-08/07 **Director**, Biotechnology Research Center, Michigan Technological University
Dec 2006 **Visiting Professor**, ChaoYang University of Technology, Taiwan
05/02-05/06 **Associate Professor**, School of Forest Resources and Environmental Science, MTU
12/02-08/04 **Interim Director**, Plant Biotechnology Research Center, MTU
03/97-05/02 **Assistant Professor**, School of Forestry and Wood Products, MTU
05/95-03/97 **Post Doctoral Research Fellow**, Plant Biotechnology Research Center, MTU
07/91-08/92 **Research Associate**, Division of Silviculture, Taiwan Forestry Research Institute

TEACHING

- FW5080 Gene Profiling Analysis, graduate level (2004-present)
FW5085 Functional Genomics and Biotechnology, graduate level (2005-present)
FW4085 Tree Biotechnology, undergraduate/graduate level (1997-2003)
FW3075 Introduction to Plant Biotechnology, undergraduate level (1999-2003)
FW335 Wood Structure, undergraduate level (1997-2000)

RESEARCH SUPPORT (collaborators outside of SFRES are noted)

- Neale DB, **Tsai C-J**, Davis MF, Stanton BJ, Discovery of genes for improved cellulose and cellulose-extractability from poplar secondary xylem (06/07-06/08). Chevron-UC Davis Research Program, **\$446,942**.
- Tsai C-J**, Acquisition of an infrared fluorescence imaging system for life sciences research (05/07-05/08). State of Michigan Research Excellence Fund, **\$34,125**.
- Tsai C-J**, NSF Plant Genome Program REU and SYP Supplement (05/06-12/08). NSF, **\$24,678**.
- Tsai C-J**, Harding SA, Protein engineering for manipulation of phenylpropanoid metabolism (09/06-08/08). DOE-CPBR and ArborGen, **\$188,000**.
- Tsai C-J**, UVB-induced secondary metabolism (07/06-06/08). Utah State University, **\$10,000**.
- Tsai C-J**, NSF Plant Genome Research Program REU Supplement (05/06-12/08). NSF, **\$24,596**.

Harding SA, **Tsai C-J**, Lindroth RL (UW-Madison), A genomics investigation of partitioning into and among flavonoid-derived condensed tannins for carbon sequestration in *Populus* (09/05-09/08). DOE, **\$1,386,389**.

Tsai C-J, Harding SA, Protein engineering for manipulation of phenylpropanoid metabolism (09/05-08/06). DOE-CPBR Fellowship, **\$40,000**.

Predebon B (ME-EM), **Tsai C-J**, Biotechnology research center technician support to enhance interdisciplinary molecular research (08/05-08/06). State of Michigan Research Excellence Fund, **\$40,000**.

Tsai C-J, Harding SA, Zhang S (Mathematics), Davis MF (DOE-NREL), A functional genomics approach to investigate regulation of phenolic glycoside metabolism in *Populus* (11/04-12/08). NSF Plant Genome Research Program, **\$2,114,091**.

Tsai C-J, Acquisition of a real-time PCR system for quantitative gene expression analysis in forest genomics and biotechnology research (11/04-11/05). USDA-NRI Equipment Grant with MTU Match, **\$25,000**.

Karnosky DF, Taylor G (Univ Southampton, UK), Podila GK (UA-Huntsville), **Tsai C-J**, Riemenschneider D (USFS), Rogers A (DOE-BNL), An integrated functional genomics consortium to increase carbon sequestration in poplars: Optimizing aboveground carbon gain (03/04-02/07). DOE, **\$916,231**.

Harding SA, **Tsai C-J**, Designing promoters for precision targeting of gene expression (01/03-12/05). DOE-CPBR, **\$126,001**.

Tsai C-J, Harding SA, Molecular dissection of alpha-tubulins during microfibril deposition in wood forming tissues of aspen (11/02-11/07). USDA-NRI, **\$220,000**.

Tsai C-J, Cryopreservation of tree germplasm (10/02-9/07). USDA McIntire Stennis, **\$35,000**.

Tsai C-J, Acquisition of an automated microplate pipetting system for high throughput functional genomics research (01/04-06/05). MTU C2E2 Equipment Grant, **\$5,000**.

Tsai C-J, Joshi CP, Harding SA, Acquisition of a CEQ8000 genetic analyzer for high throughput DNA sequencing and fragment analysis (04/03-06/04). State of Michigan Research Excellence Fund, **\$50,000**.

Tsai C-J, Toward a long-term transgenic tree germplasm preservation program: Cryostorage of value-added transgenic trees (04/02-06/03). State of Michigan Research Excellence Fund, **\$20,000**.

Tsai C-J, Harding SA, Joshi CP, Chiang VL, Functional genomics of fast-growing transgenic aspen (03/01-12/04). Michigan Life Sciences Corridor, **\$2,013,729**.

Tsai C-J, Chiang VL, Davis MF (DOE-NREL), Genetic augmentation of syringyl lignin in low-lignin aspen trees (03/01-08/04). DOE Agenda 2020, **\$504,903**.

Tsai C-J, Vucetich JA, Waite TA (Ohio State U), Richter DL, Assessing ecological consequences of low-lignin and fast-growth transgenic aspen (09/00-09/04). USDA-CSREES, **\$260,000**.

Tsai C-J, Chiang VL, Designing promoters for precision targeting of gene expression (01/01-12/03). DOE-CPBR Fellowship Grant, **\$80,042**.

Tsai C-J, Harding SA, Acquisition of a vibratome for microscopy study of fresh plant tissues (01/01-05/01). MTU C2E2 Equipment Grant, **\$4,800**.

Chiang VL, **Tsai C-J**, Genetic engineering of trees (11/00-11/07, project transferred with VLC to NCSU). South American company, **\$1,050,736**.

Tsai C-J, Chiang VL, Field trial of transgenic aspen (05/01-12/01). Private company, **\$30,000**.

Tsai C-J, Chiang VL, Genetic engineering of Finnish forest tree species with reduced lignin and enhanced growth (Finnish PIs: Häggman HM, Aronen T, 07/00-05/01). Finnish Forest Research Institute, **\$26,130**.

Tsai C-J, Chiang VL, Field trials of transgenic trees (06/00-05/01). Private company, **\$4,320**.

Tsai C-J, Joshi CP, Popko JL, Chiang VL, Wood Biotechnology (12/98-11/01). State of Michigan Research Excellence Fund, **\$75,000**.

Chiang VL, **Tsai C-J**, Popko JL, Genetic engineering of *Populus* (10/98-09/00). Private company, **\$283,028**.

Tsai C-J, Chiang VL, Field trial of transgenic aspen trees (10/98-09/01). UDSA-McIntire Stennis, **\$42,000**.

Tsai C-J, Molecular characterization of genes involved in cambium differentiation in aspen (09/98-09/01). USDA-NRI, **\$50,000**.

Chiang VL, **Tsai C-J**, Joshi CP, Production and characterization of transgenic trees with altered lignin (11/97-10/00). Private company, **\$1,929,000**.

Tsai C-J, Non-destructive evaluation of wood characteristics in living trees (04/97-05/98), US Forest Service, **\$15,000**.

JOURNAL PUBLICATIONS

- Qin H, Feng T, Harding SA, **Tsai C-J**, Zhang S (2008) An efficient method to identify differentially expressed genes in microarray experiments. *Bioinformatics* (accepted).
- Luo K, Harding SA, **Tsai C-J** (2008) A modified T-vector for simplified assembly of hairpin RNAi constructs. *Biotechnology Letters* (in press).
- Oakley RV, Wang Y-S, Ramakrishna W, Harding SA, **Tsai C-J** (2007) Differential expansion and expression of alpha- and beta-tubulin gene families in *Populus*. *Plant Physiology* 145: 961-973.
- Busov V and **Tsai C-J** (2007) Perennial challenges and opportunities. *New Phytologist* 176: 3-6.
- Lin J, Gunter LE, Harding SA, Kopp RF, McCord RP, **Tsai C-J**, Tuskan GA, Smart LB (2007) Development of AFLP and RAPD markers linked to a locus associated with twisted growth in corkscrew willow (*Salix matsudana* 'Tortuosa'). *Tree Physiology* 27: 1575-1583.
- Tiimonen H, Häggman H, **Tsai C-J**, Chiang VL, Aronen T (2007) The seasonal activity and the effect of mechanical bending and wounding on the PtCOMT promoter in *Betula pendula* Roth. *Plant Cell Reports* 26: 1205-1214.
- Rajinikanth M, Harding SA, **Tsai C-J** (2007) The glycine decarboxylase complex multienzyme family in *Populus*. *Journal of Experimental Botany* 58: 1761-1770.
- Tsai C-J**, El Kayal W, Harding SA (2006) *Populus*, the new model system for investigating phenylpropanoid complexity (invited review). *International Journal of Applied Science and Engineering* 4: 221-233.
- Brodeur-Campbell SE, Vucetich JA, Richter DL, Waite TA, Rosemier JN, **Tsai C-J** (2006) Insect herbivory on low-lignin transgenic aspen. *Environmental Entomology* 35: 1696-1701.
- Tuskan GA, DiFazio S et al. (107 authors including **Tsai C-J**), Rokhsar D (2006) The genome of black cottonwood, *Populus trichocarpa* (Torr. & Gray). *Science* 313: 1596-1604.
- Tsai C-J**, Harding SA, Tschaplinski TJ, Lindroth RL, Yuan Y (2006) Genome-wide analysis of the structural genes regulating defense phenylpropanoid metabolism in *Populus*. *New Phytologist* 172: 47-62.
- Harding SA, Jiang H, Jeong ML, Casado FL, Lin H-W, **Tsai C-J** (2005) Functional genomics analysis of foliar condensed tannin and phenolic glycoside regulation in natural cottonwood hybrids. *Tree Physiology* 25: 1475-1486.
- Ho C-K, Chang S-H, Lung J, **Tsai C-J**, Chen K-P (2005) The strategies to increase taxol production by using *Taxus mairei* cells transformed with TS and DBAT genes. *International Journal of Applied Science and Engineering* 3: 179-185.
- Jeong ML, Jiang H, Chen H-S, **Tsai C-J**, Harding SA (2004) Metabolic profiling the sink to source transition in developing leaves of quaking aspen (*Populus tremuloides*). *Plant Physiology* 136: 3364-3375.
- Tsai C-J**, Hubscher SL (2004) Cryopreservation in *Populus* functional genomics. *New Phytologist* 164: 73-81.
- Ranjan P, Kao Y-Y, Jiang H, Joshi CP, Harding SA, **Tsai C-J** (2004) Suppression subtractive hybridization-mediated transcriptome analysis from multiple tissues of aspen (*Populus tremuloides*) trees altered in phenylpropanoid metabolism. *Planta* 219: 694-704.
- Jiang H, Deng Y, Chen H-S, Tao L, Sha Q, Chen J, **Tsai C-J**, Zhang S (2004) Joint analysis of two microarray gene-expression data sets to select lung adenocarcinoma marker genes. *BMC Bioinformatics* 5: 81.
- Wang Y-S, Harding SA, **Tsai C-J** (2004) Expression of a glycine decarboxylase complex H-protein in non-photosynthetic tissues of *Populus tremuloides*. *Biochimica Biophysica Acta* 1676: 267-273.
- Touchell DH, Chiang VL, **Tsai C-J** (2002) Cryopreservation of embryonic cultures of *Picea mariana* (black spruce) using a vitrification protocol. *Plant Cell Reports* 21: 118-124.
- Kao Y-Y, Harding SA, **Tsai C-J** (2002) Differential expression of two distinct phenylalanine ammonia-lyase genes in condensed tannin-accumulating and lignifying cells of quaking aspen. *Plant Physiology* 130: 796-807.

- Harding SA, Leshkevich J, Chiang VL, **Tsai C-J** (2002) Differential substrate inhibition couples kinetically distinct 4-coumarate:CoA ligases with spatially distinct structural and metabolic roles in quaking aspen. *Plant Physiology* 128: 428-438.
- Hu W-J, Harding SA, Lung J, Popko JL, Ralph J, Stokke DD, **Tsai C-J**, Chiang VL (1999) Repression of lignin biosynthesis promotes cellulose accumulation and growth in transgenic trees. *Nature Biotechnology* 17: 808-812.
- Tsai C-J**, Popko JL, Mielke MR, Hu W-J, Podila GK, Chiang VL (1998) Suppression of O-methyltransferase gene by homologous sense transgene in quaking aspen cause red-brown wood phenotypes. *Plant Physiology* 117: 101-112.
- Ho C-K, Chang S-H, Tsay J-Y, **Tsai C-J**, Chiang VL, Chen Z-Z (1998) *Agrobacterium tumefaciens*-mediated transformation of *Eucalyptus camaldulensis* and production of transgenic plants. *Plant Cell Reports* 17 (9): 675-680.
- Hu W-J, Kawaoka A, **Tsai C-J**, Lung J, Osakabe K, Ebinuma H, Chiang VL (1998) Compartmentalized expression of two structurally and functionally distinct 4-coumaric acid:coenzyme A ligase (4CL) genes in aspen (*Populus tremuloides*). *Proceedings of the National Academy of Sciences, USA* 95: 5407-5412.
- Li L, Popko JL, Zhang X-H, Osakabe K, **Tsai C-J**, Joshi CP, Chiang VL (1997) A novel multifunctional O-methyltransferase implicated in a dual methylation pathway associated with lignin biosynthesis in loblolly pine. *Proceedings of the National Academy of Sciences, USA* 94: 5461-5466.
- Tsai C-J**, Mielke MR, Podila GK, Chiang VL (1996) 3' cycle-labeled oligonucleotides with predictable length and their application in primer extension and transgene analysis. *Nucleic Acids Research* 24: 5060-5061.
- Tsai C-J**, Podila GK, Chiang VL (1995) Nucleotide sequence of a *Populus tremuloides* gene encoding bispecific caffeic acid/5-hydroxyferulic acid O-methyltransferase. *Plant Physiology* 107: 1459.
- Tsai C-J**, Podila GK, Chiang VL (1994) *Agrobacterium*-mediated transformation of quaking aspen (*Populus tremuloides*) and regeneration of transgenic plants. *Plant Cell Reports* 14: 94-97.
- Tsai C-J**, Wang Y-N, Chiang C-H (1994) Protoplast isolation from suspension cultures of *Eucalyptus saligna*. *Quarterly Journal of Chinese Forestry* 27 (2): 19-24.
- Tsai C-J**, Wang Y-N, Chiang C-H (1992) Tissue culture propagation of *Eucalyptus saligna*. *Quarterly Journal of the Experimental Forest of National Taiwan University* 6 (2): 33-50.
- Tsai C-J**, Wang Y-N, Chiang C-H (1992) Multiple shoot induction from 8-year-old trees of *Eucalyptus saligna*. *Quarterly Journal of the Experimental Forest of National Taiwan University* 6 (3): 29-36.
- Tsai C-J**, Wang Y-N, Chiang C-H (1992) Callus induction and plant regeneration from embryos of *Eucalyptus saligna*. *Quarterly Journal of Chinese Forestry* 25 (3): 3-14.

BOOK EDITORSHIP

- Cseke LJ, Kaufman PB, Podila GK, **Tsai C-J** (eds) 2003 Handbook of Molecular and Cellular Methods in Biology and Medicine. 2nd ed. CRC Press, Boca Raton, FL. 580p.

BOOK CHAPTERS

- Joshi CP, Brunner A, Busov V, Meilan R, Thammanagowda S, **Tsai C-J** (2007) Poplars. In: Kole C and Hall TC (eds) A Compendium of Transgenic Crop Plants, Vol. 9. Blackwell Publishing, Oxford, UK (in press).
- Cseke LJ, Wu W, **Tsai C-J** (2003) Isolation and purification of DNA. In: Cseke LJ, Kaufman PB, Podila GK, Tsai C-J (eds) Handbook of Molecular and Cellular Methods in Biology and Medicine. 2nd ed. CRC Press, Boca Raton, FL. pp. 1-24.
- Tsai C-J**, Cseke LJ, Harding SA (2003) Isolation and purification of RNA. In: Cseke LJ, Kaufman PB, Podila GK, Tsai C-J (eds) Handbook of Molecular and Cellular Methods in Biology and Medicine. 2nd ed. CRC Press, Boca Raton, FL. pp. 25-44.
- Tsai C-J**, Cseke LJ (2003) Southern hybridization. In: Cseke LJ, Kaufman PB, Podila GK, Tsai C-J (eds) Handbook of Molecular and Cellular Methods in Biology and Medicine. 2nd ed. CRC Press, Boca Raton, FL. pp. 85-104.

- Touchell DH, Wang Y-S, Harding SA, **Tsai C-J** (2003) Differential display. *In*: Cseke LJ, Kaufman PB, Podila GK, Tsai C-J (eds) Handbook of Molecular and Cellular Methods in Biology and Medicine, 2nd ed. CRC Press, Boca Raton, FL. pp. 305-317
- Harding SA, **Tsai C-J**, Cseke LJ, Chang SC, Chen F (2003) In situ hybridization. *In*: Cseke LJ, Kaufman PB, Podila GK, Tsai C-J (eds) Handbook of Molecular and Cellular Methods in Biology and Medicine. 2nd ed. CRC Press, Boca Raton, FL. pp. 487-508.
- Aronen T, Tiimonen H, **Tsai C-J**, Jokipii S, Chen X, Chiang VL, Häggman H (2003) Altered lignin in transgenic silver birch (*Betula pendula*) expressing PtCOMT gene. *In*: Espinel S, Barredo Y, Ritter E (eds) Sustainable Forestry, Wood Products & Biotechnology. DFA-AFA Press. Vitoria-Gasteiz, Spain, pp. 149-161.
- Harding SA, Kao Y-Y, **Tsai C-J** (2003) Phenylalanine ammonia-lyase gene expression in condensed tannin-accumulating and lignifying cells of quaking aspen. *In*: Plant Biotechnology 2002 and beyond, Vasil IK (ed), Kluwer Academic Publishers, Dordrecht, Netherlands, pp. 457-459.
- Boerjan W, Baucher M, Chabbert B, Petit-Conil M, Leple JC, Pilate G, Cornu D, Monties B, Van Montagu M, Van Doorselaere J, Inze D, Jouanin L, **Tsai C-J**, Podila GP, Chiang VL (1997) Genetic modification of lignin biosynthesis in quaking aspen (*Populus tremuloides*) and poplar (*Populus tremula* × *Populus alba*). *In*: Klopfenstein NB et al. (eds), Micropropagation, Genetic Engineering, and Molecular Biology of Populus. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado, pp. 193-205.

OTHER PUBLICATIONS AND REPORTS

- Godin LM, McCabe LR, **Tsai C-J**, Donahue SW (2005) The time course of shear stress induced changes in bone protein and transcription factor mRNA levels in osteocyte-like MLO-Y4 cells. Proceedings of the 2005 Summer Bioengineering Conference, Paper 0360120, Vail, CO, June 22-26, 2005 (refereed paper).
- Harding SA, Casado FL, Jiang H, Jeong ML, Lin H-W, **Tsai C-J** (2004) Linking functional genomics to tree improvement: Growth and fitness tradeoffs in Populus and Salix. *In* Li B, and McKeand S (eds), Forest Genetics and Tree Breeding in the Age of Genomics: Progress and Future, IUFRO Joint Conference of Division 2, Conference Proceedings. Charleston, SC, November 3, 2004, pp. 247-248.
- Aronen T, Tiimonen H, Ylioja T, Niemi K, **Tsai CJ**, Laakso T, Saranpää P, Roininen H, Chiang V, Häggman H (2004) Lignin modification in silver birch – Characterisation of transgenic lines containing *PtCOMT*- or *asPt4CL1* and their ecological interactions. *In* Li B, and McKeand S (eds), Forest Genetics and Tree Breeding in the Age of Genomics: Progress and Future, IUFRO Joint Conference of Division 2, Conference Proceedings. Charleston, SC, November 3, 2004, pp. 344-346.
- Tsai C-J**, Davis MF, Zhang D, Chiang VL (2004) Genetic augmentation of syringyl lignin in low-lignin aspen trees. *In*: 2004 TAPPI Paper Summit and Spring Technical and International Environmental Conference. Atlanta, GA. Paper no. PS0438.
- Davis J, Bohlmann J, Jansson S, Pearson L, Thomas B, **Tsai CJ**, Villar M (2004) The Populus Genome Science Plan 2004-2009: Genetic Resources. pp. 13-16.
http://www.ornl.gov/sci/jpgc/the_populus_genome_science_plan.pdf
- Tsai C-J** (2001) Summary of Breakout 4A – Wood Modification. Proceedings of the First International Symposium on Ecological and Societal Aspects of Transgenic Plantations. Strauss S.H. and Bradshaw, H.D. (eds) College of Forestry, Oregon State University, 2001, pp. 208-209.
- Tsai C-J**, Harding SA, Hu W-J, Lung J, Popko JL, Chiang VL (2000) Enhanced growth and cellulose accumulation in lignin-reduced transgenic aspen trees. Proceedings of the International Symposium on Environmentally Friendly and Emerging Technologies for a Sustainable Pulp and paper Industry. Taipei, Taiwan. pp. 263-266.
- Chen Z-Z, Chang S-H, Ho C-K, Tsay J-Y, Tsai J-B, **Tsai C-J**, Chiang VL (2000) Current advances on tree improvement of *Eucalyptus camaldulensis* at molecular level in Taiwan. Proceedings of the International Symposium on Environmentally Friendly and Emerging Technologies for a Sustainable Pulp and Paper Industry. Taipei, Taiwan. pp. 255-257.
- Hu W-J, Harding SA, Lung J, Popko JL, **Tsai C-J**, Chiang VL, Ralph J, Stokke DD (1999) Repression of lignin biosynthesis in transgenic trees results in high-cellulose and accelerated growth phenotypes.

Proceedings of the 10th International Symposium on Wood and Pulping Chemistry. Yokohama, Japan. pp. 516-519.

Tsai C-J, Mielke MR, Popko JL, Monosso JM, Hu W-J, Podila GK, Chiang VL (1999) Altered lignin composition in quaking aspen through manipulation of caffeic acid/5-hydroxy ferulic acid O-methyltransferase gene expression. In: A. Jamieson, ed. Proceedings of the Second International Wood Biotechnology Symposium. North Forest Products Limited, Ridgley, Australia. pp. 89-95.

Ho C-K, Chang S-H, Tsay J-Y, **Tsai C-J**, Chiang VL, Chen Z-Z (1997) *Agrobacterium*-mediated transformation of *Eucalyptus camaldulensis* and its association with conventional tree improvement programs. 1997 TAPPI Biological Sciences Symposium. San Francisco, CA, October 19-23, TAPPI press, Technology Park, Atlanta. pp. 525-528.

Tsai C-J, Yu J, Ge L, Hu W-J, Kawaoka A, Kumar S, Podila GK, Chiang VL (1995) Transgenic aspen harboring antisense OMT gene and characterization of regulatory sequences of aspen OMT gene. In: Srebotnik, E., and Messner, K., eds., Biotechnology in the Pulp and Paper Industry: Recent Advances in Applied and Fundamental Research. Proceedings of the 6th International Conference on Biotechnology in the Pulp and Paper Industry. Facultas-Universitätsverlag, Vienna, Austria. pp. 301-309.

Chiang VL, **Tsai C-J**, Kumar AS, Yu J, Podila, GK (1994) Regulation of lignin biosynthesis in transgenic quaking aspen (*Populus tremuloides*). TAPPI Biological Sciences Symposium. TAPPI press, Technology Park, Atlanta. pp.161-171.

Karnosky DF, Podila GK, Shin DI, **Tsai C-J**, Chiang VL (1994) Progress in production of transgenic trees with value-added genes: Results with larch and aspen. TAPPI Biological Sciences Symposium. TAPPI press, Technology Park, Atlanta. pp. 157-160.

Chiang VL, Chen Z-Z, Podila GK, Wang W-Y, Bugos RC, Campbell WH, Dwivedi UN, Yu J, **Tsai C-J**, Tsay J-Y, Yang J-C (1993) Genetic manipulation of lignification in *Liquidambar styraciflua* (sweetgum) by introduction of a chimeric sense or antisense O-methyltransferase gene cloned from *Populus tremuloides* (aspen). International conference on Emerging Technologies for Pulp and Paper Industry, May18-20, Taipei, Taiwan. pp. 26-29.

PATENTS

Chiang VL, **Tsai C-J**, Podila GK (1999) Genetic engineering of wood color in plants. US Patent Number 5886243, March 1999.

Chiang VL, **Tsai C-J**, Podila GK (1999) Genetic transformation and regeneration of plants. US Patent Number 5,922,928, July 1999.

Chiang VL, **Tsai C-J**, Hu W-J (2002) Methods of modifying lignin in plants by transformation with a 4-coumarate:coenzyme A ligase nucleic acid. US Patent Number 6455762, September 2002.

Chiang VL, **Tsai C-J**, Hu W-J (2004) 4-coumarate:coenzyme A ligase promoter. US Patent Number 6831208, December 2004.

Chiang VL, **Tsai C-J**, Hu W-J (2005) genetic engineering of plants through manipulation of lignin biosynthesis. US Patent Number 6969784, November 2005.

MEMBERSHIP

American Association for the Advancement of Science (AAAS)

American Society of Plant Biologists (ASPB)

Eucalyptus Genome Network (EUCAGEN)

International *Populus* Genome Consortium (IPGC)

Japanese Society of Plant Physiologists (JSPP)

Society for In Vitro Biology (SIVB)

OUTREACH ACTIVITIES

Michigan Youth Engineering & Science (YES!) Expo: tree genomics exhibit, 05

Summer Youth Programs: NSF-sponsored plant genome workshop for underrepresented high school students, 05-07

Summer Youth Programs: Women in Engineering; Explorations in Engineering; American Indian Workshop
(high school students), 97, 98, 00-06

“Trees for Tomorrow” forest biotechnology hands-on sessions (~40 high school students per year), 98, 01-07

Family Science Nights: NSF-cosponsored local elementary school visits, 05-08

Tree biotechnology demonstration, University Open House, 02-04

Take Our Daughter to Work action hour, 01

NSF GK-12 graduate fellow mentor for NSF project “*MTU Graduate Teaching Fellows in Copper Country
Schools*”, 99-00

Girls+Math+Science = Choices action hour (grade school girls), 99