

# Ying-Hsuan Sun

Forest Biotechnology Group  
Department of Forestry and Environmental Resources  
North Carolina State University  
Campus Box 7247  
Raleigh, NC 27695-7247  
(o)Tel: 919-513-0015  
(c)Tel: 919-413-7937  
Fax: 919-515-7801  
E-mail: yhsun@ncsu.edu

## **General Research Interest:**

My general research interests are in the areas of **functional genomics** and **bioinformatics** in wood formation.

## **Professional Preparation:**

North Carolina State University, Forestry, Doctor of Philosophy, 2001.  
North Carolina State University, Forestry, Master of Science, 1993.  
National Taiwan University, Forestry, Bachelor of Science, 1987.

## **Appointments:**

2003–present: North Carolina State University, Research Associate.  
2001-2003 Bio-Informatics Group Inc., Cary, North Carolina, Research Scientist.  
1989-1990 Taiwan Forest Research Institute, Division of Silviculture, Research Assistant.

## **Peer Review Journal Publications:**

**Sun Y. H.**, Shi R., Zhang X. H., Chiang V. L. and Sederoff R. R. (2011) MicroRNAs in Trees. *Plant Molecular Biology* DOI: 10.1007/s11103-011-9864-z.

Shi R., **Sun Y. H.**, Li Q, Heber S., Sederoff R. R. and Chiang V. L. (2010) Towards a Systems Approach for Lignin Biosynthesis in *Populus trichocarpa*: Transcript Abundance and Specificity of the Monolignol Biosynthetic Genes. *Plant and Cell Physiology* 51:144-163.

Hung C. Y., **Sun Y. H.**, Chen J., Darlington D. E., Williams A. L., Burkey K. O. and Xie J. (2010) Identification of a Mg-protoporphyrin IX Monomethyl Ester Cyclase Homologue, EaZIP, Differentially Expressed in Variegated *Epipremnum aureum* ‘Golden Pothos’ Is Achieved through a Unique Method of Comparative Study Using Tissue Regenerated Plants. *Journal of Experimental Botany* 61:1483-1493.

Lu S., **Sun Y. H.** and Chiang V. L. (2009) Adenylation of Plant MiRNAs. *Nucleic Acid Research* 37:1878-1885.

Lu S., **Sun Y. H.** and Chiang V. L. (2008) Stress-Responsive MicroRNAs in *Populus*. *Plant Journal* 55:131-151.

Lu S., **Sun Y. H.**, Amerson H. and Chiang V. L. (2007) MicroRNAs in Loblolly Pine (*Pinus taeda* L.) and Their Association with Rust Gall Development. *Plant Journal* 51: 1077-1098.

Yeh T. F., Wang J, Shi R., **Sun Y. H.**, and Chiang V. L. (2007) A Novel O-methyl Transferase Like Gene with a Drastic Ectopic Expression in Response to Tension Wood Formation in *Populus trichocarpa*. *Cellulose Chemistry and Technology* 41: 521-528.

Suzuki S., Li L., **Sun Y. H.** and Chiang V. L. (2006) The Cellulose Synthase Gene Superfamily and Biochemical Functions of Xylem-Specific Cellulose Synthase-Like Genes in *Populus trichocarpa*. *Plant Physiology* 142: 1233-1245.

Lu S., **Sun Y. H.**, Shi R., Clark C., Li L., Chiang V. L. (2005) Novel and Mechanical Stress-Responsive MicroRNAs in *Populus trichocarpa* That Are Absent from Arabidopsis. *The Plant Cell* 17:2186-2203.

Whetten R., **Sun Y. H.**, Zhang Y. and Sederoff R. R. (2001) Functional Genomics and Cell Wall Biosynthesis in Loblolly Pine. *Plant Molecular Biology* 47:275-291.

Bergmann B. A., **Sun Y. H.** and Stomp A-M. (1997) Harvest Time and Nitrogen Source Influence *in vitro* Growth of Apical Buds from Fraser Fir Seedlings. *HortScience* 32:125-128.

### **Book Chapter:**

Shi R., **Sun Y. H.**, Zhang X. H., Chiang V. L. and Sederoff R. R. (2012) “Poly(T) Adaptor RT-PCR” in Jian-Bing Fan (ed.), Next-Generation MicroRNA Expression Profiling Technology: Methods and Protocols, *Methods in Molecular Biology* 822: 53-66.

**Sun Y. H.**, Lu S., Shi R. and Chiang, V. L. (2011) “Computational Prediction of Plant MiRNA Targets” in Kodama, Hiroaki; Komamine, Atsushi (eds.) *Methods in Molecular Biology: RNAi and Plant Gene Function Analysis*, *Methods in Molecular Biology* 744:175-86.

### **Conference talk:**

**Sun Y. H.**, Lu S., Chen Y. C., Song J. and Chiang V. L. Profiling Small Regulatory RNAs In Wood Formation. The 10th International Congress on Biotechnology in the Pulp and Paper Industry, Madison, Wisconsin, June 10-15, 2007.

**Sun Y. H.**, Lu S., Chen Y. C. and Chiang V. L. Profiling Small Regulatory RNAs in Wood Formation. Forestry Tree Workshop, Plant & Animal Genome Conference XV, San Diego, California. January 13-17, 2007.

**Sun Y. H.**, Suzuki S., Li L. and Chiang V. L. Oligo-Microarray Profiling Of Transcription Factors And Cell Wall Formation-Related Genes In *Populus*. Forestry Tree Workshop, Plant & Animal Genome Conference XIII, San Diego, California. January 15-19, 2005.

**Sun Y. H.**, Kepler T. B., Whetten R. and Sederoff R. R. Applications of cDNA Microarrays to Studies in Wood Formation. Workshop on Gene Expression Data, National Institute of Statistical Science, Research Triangle Park, North Carolina, July 13, 2000.

**Sun Y. H.**, Whetten R., Liu B. H. and Sederoff R. R. Stresses Make Wood Younger? A cDNA Microarray Analysis of Juvenile and Mature Wood Development in Loblolly Pine. Forestry Tree Workshop, Plant & Animal Genome Conference VIII, San Diego, California. January 9-12, 2000.

**Sun Y. H.**, Villand P., Whetten R., Somerville S., Kinlaw C. and Sederoff R. R. A cDNA Microarray Analysis of Differential Gene Expression During Juvenile and Mature Wood Formation in Pine. Forestry Tree Workshop, Plant & Animal Genome Conference VII, San Diego, California. January 17-21, 1999.

#### **Conference poster:**

Williams T. I., **Sun Y. H.**, Yeh T. F., Sampson J. S., Muddiman D. C. and Chiang V. L. Proteomic Profiling of *Populus trichocarpa* for the Interrogation of Molecular Mechanisms behind Wood Formation. The 57th American Society for Mass Spectrometry Conference, Philadelphia, Pennsylvania, May 31 - June 4, 2009.

Chiang V. L., Sederoff R. R., Chang H. M., **Sun Y. H.**, Yeh T. F., Li Q. and Shi R., Nielsen D. and Lu S. Genomic Knowledgebase for Facilitating the Use of Woody Biomass for Fuel Ethanol Production. USDA-DOE Plant Feedstock Genomics for Bioenergy Awardee Workshop, Bethesda, Maryland, February 8, 2009.

**Sun Y. H.**, Whetten R., Liu B. H. and Sederoff R. R. Stresses Make Wood Younger? A cDNA Microarray Analysis of Juvenile and Mature Wood Development in Loblolly Pine. Forestry Tree Workshop, Plant & Animal Genome Conference VIII, San Diego, California, January 9-12, 2000.

Busov V., **Sun Y. H.**, R. Whetten, Sederoff R. R. and Goldfarb B. Microarray for Cloning Auxin-induced Genes from Loblolly Pine (*Pinus taeda* L.). The Annual Meeting of the American Society of Plant Physiologists. San Diego, California, July 15-19, 2000.

von Rohr P., **Sun Y. H.**, Alschner R., Sederoff R. R., Whetten R. and Hoeschele I. Quantitative Analysis of Gene Expression Patterns Seen on Microarrays of *Pinus taeda* Xylem cDNAs.

Workshop on Microarray Algorithms and Statistical Analysis: Methods and Standards. Granlibakken, Lake Tahoe, California, November 9-12, 1999.

Busov V., Lanz-Garcia C., **Sun Y. H.**, Whetten R., Sederoff R. R. and Goldfarb B. Molecular Mechanisms of Auxin Action and Response in Loblolly Pine (*Pinus taeda* L.). The Annual Meeting of the American Society of Plant Physiologists. Baltimore, Maryland, July 24-28, 1999.

Allona I., Quinn M., **Sun Y. H.**, Shoop E., Swope K., StCyr S., Retzel E. and Whetten R. Analysis of Gene Expression During Xylem Differentiation in Loblolly Pine. The Annual Meeting of the American Society of Plant Physiologists. Vancouver, BC Canada, August 2-6, 1997.

Whetten R., Allona I. and **Sun Y. H.** Genome Analysis in Loblolly Pine. The 7th International Conference on Biotechnology in the Pulp and Paper Industry. Vancouver, BC Canada, June 16-19, 1998.

**Sun Y. H.** and Stomp A-M. Control of Bud Elongation in *Abies fraseri*. International Conifer Biotechnology Working Group, Sixth Meeting. Research Triangle Park, North Carolina, April 23-28, 1992.

### **Teaching/Mentoring:**

**Mentoring a Kenan Fellow for two consecutive summers in 2010 and 2011. The outreach program in the project “Regulation and Modeling of Lignin Biosynthesis” funded by the National Science Foundation Plant Genome Research Program.**

Mentoring a Kenan Fellow - Sarah Morey, a science teacher in Wakefield High School, Raleigh, North Carolina in learning the application of biotechnology in forestry research, and assisting her developed science education curriculums for high school students.

**Guest lecture PHAR5200, North Carolina Central University, Durham, North Carolina, Department of Pharmaceutical Sciences Spring, 2008.**

The guest lecture series composed of two 1.5-hour courses given to the undergraduate student of the Pharmaceutical Sciences at NCCU. Topics included the introduction of genomics and bioinformatics, and their application in agriculture and medical biotechnologies.

**BIT 815I, cDNA Microarray. North Carolina State University. May 1999.**

This was a graduate level biotechnology two weeks summer course in cDNA microarray technology. It was an intensive two-week course designed to allow participating students to have hands-on experiences on microarray probe design, array spotting, target labeling, hybridization, data acquisition and statistical analysis.