

## XIAOHAN YANG

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### Education

Ph.D. 2003. Floriculture & Ornamental Horticulture/ Plant Molecular Biology/Plant Breeding. Cornell University, Ithaca, NY

M.S. 1989. Ornamental Botany. Huazhong Agricultural University, China

B.S. 1986. Forest Science. Huazhong Agricultural University, China

### Research Interest

- Application of evolutionary genomics to bioenergy and ecological research. Computational functional genomics on genome scale in the evolutionary context, phylogenetic analysis, and genome-wide identification of orthologs and lineage-specific genes.
- Development of high-performance computing system for genome analysis.
- Genome/transcriptome sequencing using new sequencing technology.
- Reducing recalcitrance of biomass for biofuel production
- Improving productivity of biomass for biofuel production: Genetic improvement in drought tolerance and nitrogen utilization.
- Carbon sequestration: Characterization of genes and gene networks associated with carbon allocation and partitioning.

### Professional Experiences

8/2008-present	Staff Scientist (Plant Molecular Biol./Bioinformaticist), Environmental Sciences Division, Oak Ridge National Laboratory.
8/2006-8/2008	Postdoctoral Research Scientist, Oak Ridge National Laboratory.
3/2006-8/2006	Research Associate II, Department of Plant Sciences, University of Tennessee.
5/2005-3/2006	Postdoctoral Research Associate, Department of Plant Sciences, University of Tennessee.
11/2002-5/2005	Postdoctoral Fellow, Department of Horticulture, Cornell University.
8/1997-8/2002	Graduate Research Assistant, Department of Horticulture, Cornell University.
8/1992-7/1997	Assistant Research Scientist, Department of Ornamental Horticulture, Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, Beijing, China.

6/1989-7/1992      Research Assistant, Department of Ornamental Horticulture, Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, Beijing, China.

## Membership

American Society of Plant Biologists

## Honors and Awards

- 2008    Distinguished Achievement Award for Post-Graduate Research in Environmental Science (In recognition of outstanding early career productivity, ability to collaborate effectively in a team setting, and ability to integrate bioinformatics and molecular biology to gain novel insights into evolutionary genomics).
- 2000    Liu Memorial Award in recognition of his excellent progress and high potential for a successful academic career.
- 1995    Israeli Foreign Ministry Fellowship for training at the Volcani Center.

## Other Professional Activities

Reviewer for Journal of Experimental Botany  
Reviewer for Physiologia Plantarum  
Reviewer for Plant Methods  
Reviewer for USDA National Research Initiative Competitive Grants Program

## Collaborative research

International *Mycorrhiza* Genome Consortium  
International *Brachypodium* Initiative

## Grants

**Yang, X.** and Tschaplinski, T.J. Global Profiling of Transcripts in Poplar in Response to Dehydration. The DOE Laboratory Sciences Program (The funding went directly to JGI for the shotgun sequencing of the poplar transcriptome). 2007 – 2008

Cheng, Z.-M., **Yang, X.** and Chen, F. Down-regulating the DHS Gene and Translation Initiation Factor eIF-5A to Increase Poplar Biomass DOE/CPBR/Phenotype Screening \$74000. 10/2006-12/2008

## Teaching experience

**Yang, X.** Phylogenetics: Concepts and Applications, guest lectures for Advanced Experimental Techniques I (BCMB515), Dept. of Biochemistry & Cellular & Molecular Biology, University of Tennessee. Mar 2009; Sept, 2008; Dec, 2007.

**Yang, X.** Homolog identification in *Populus*; phylogenetics, ortholog and primer design. BEESC *Populus* workshop. Hosted by Gunter, L., **Yang, X.**, Kalluri, U.C., and Tuskan, G.A., Feb 20, 2008. Townsend, TN.

Cheng, Z.-M. and **Yang, X.** Advanced Plant Genomics, Dept. of Plant Sciences, University of Tennessee. 2006 Spring semester.

## **Publications**

### **In the area of genomics and bioinformatics:**

- Yang, X.**, Kalluri, U.C., DiFazio, S.P., Wullschleger, S.D., Tschaplinski, T.J., Cheng, Z.-M., Tuskan, G.A. Poplar Genomics: State of the Science. Critical Review in Plant Sciences. (Submitted)
- Yang, X.**, Jawdy, S., Tschaplinski, T.J., and Tuskan, G.A. (2009). Genome-wide identification of lineage specific genes in *Arabidopsis*, *Oryza* and *Populus*. Genomics 93: 473-480.
- Yang, X.**, Kalluri, U.C., Jawdy, S., Gunter, L.E., Yin, T., Tschaplinski, T.J., Weston, D.J., Ranjan, P., and Tuskan, G.A. (2008). F-box gene family is expanded in herbaceous annual plants relative to woody perennial plants. Plant Physiol. 148:1189-1200.
- Yuan, J.S., **Yang, X.**, Lai, J., Lin, H., Cheng, Z.-M., Nonogaki, H., and Chen, F. (2007). The endo-beta-mannanase gene families in Arabidopsis, rice, and poplar. Funct Integr Genomics 7: 1-16.
- Yang, X.**, Tuskan, G.A., and Cheng, Z.-M. (2006). Divergence of the Dof gene families in poplar, Arabidopsis, and rice suggests multiple modes of gene evolution after duplication. Plant Physiol 142: 820-830.
- Yang, X.**, Scheffler, B.E., and Weston, L.A. (2006). Recent developments in primer design for DNA polymorphism and mRNA profiling in higher plants. Plant Methods 2: 4.

### **In the area of molecular biology and biotechnology:**

- Yang, X.**, Scheffler, B.E., and Weston, L.A. (2004). *SORI*, a gene associated with bioherbicide production in sorghum root hairs. J Exp Bot 55: 2251-2259.
- Yang, X.**, Owens, T.G., Scheffler, B.E., and Weston, L.A. (2004). Manipulation of root hair development and sorgoleone production in sorghum seedlings. J Chem Ecol 30: 199-213.
- Bertin, C., **Yang, X.**, and Weston, L.A. (2003). The role of root exudates and allelochemicals in the rhizosphere. Plant and Soil 256: 67-83.

### **In the area of plant physiology:**

- Hagiladi, A., Umiel, N., and **Yang, X.** (1997) *Curcuma alismatifolia*. II. Effects of temperature and daylength on the development of flowers and propagules. Acta Horticulturae 430: 755-761
- Hagiladi, A., Umiel, N., **Yang, X.**, and Gilad, Z. (1997) *Curcuma alismatifolia*. I. Plant morphology and the effect of tuberous root number on flowering date and yield of inflorescences. Acta Horticulturae 430: 747-753
- Jin, B., Dong, H., and **Yang, X.** (1995) Shortening hybridization breeding cycle of rose - a study on mechanisms controlling achene dormancy. Acta Horticulturae 404: 40-47

- Jin, B., Dong, H., Mu, D., **Yang, X.**, Wang, Y., and Xu, X. (1992) Studies on the mechanism of action of B9 in reducing stem elongation of chrysanthemum. *Acta Horticulturae Sinica* 19: 171-174
- Jin, B., Dong, H., and **Yang, X.** (1993) Influence of gaseous environment and light on growth of tissue-cultured carnation plants. *Acta Horticulturae Sinica* 20: 389-393
- Mu, D., Jin, B., and **Yang, X.** (1992) Studies on the effect of IBA and nutrient- mist on the rooting of chrysanthemum cuttings. *Acta Horticulturae Sinica* 19: 89-90
- Mu, D., **Yang, X.**, and Zhang, Y. (1997) The proportional fertilization in pot *Cordyline fruticosa* and *Rosa chinensis*. *Acta Horticulturae Sinica* 24: 71-74
- Yang, X.**, Jin, B., Zhang, Y., Mu, D., and Tang, X. (1995) Enhancement of direct shoot regeneration from internode segments of chrysanthemum by silver nitrate. *Acta Horticulturae* 404: 68-73
- Yang, X.**, and Hu, W. (1990) Studies on the removal of seed dormancy in *Magnolia denudata* Desr. *Journal of Chinese Landscape Architecture* 6: 49-51
- Yang, X.**, Hu, W., and Sun, X. (1991) Changes in biomacromolecules in *Magnolia denudata* seed during dormancy breaking. *Acta Horticulturae Sinica* 18: 75-80
- Yang, X.**, and Jin, B. (1994) *The Camellias*. China Agricultural Sciencetech Press, Beijing

## Presentations

- Yang, X.**, Jawdy, S., Tschaplinski, T.J., and Tuskan, G.A. Genome-wide identification of lineage specific genes in *Arabidopsis*, *Oryza* and *Populus*. The 23<sup>rd</sup> Session of International Poplar Commission (IPC), the Food and Agriculture Organization of the United Nations (FAO). October 26-30, 2008, Beijing, P.R. China. (Format: Oral)
- Yang, X.**, Kalluri, U.C., Jawdy, S., Gunter, L.E., Yin, T., Tschaplinski, T.J., Weston, D.J., Ranjan, P., and Tuskan, G.A. (2008) Comparative analysis of F-box proteins in *Arabidopsis*, *Populus* and rice suggests differential proteolytic roles in woody perennial and herbaceous annual plants. Plant & Animal Genomes XVI Conference. January 12-16, 2008, San Diego, CA. (Format: Oral)
- Yang, X.**, Tschaplinski, T.J., Gunter, L.E., Jawdy, S. and Tuskan, G.A. Conserved evolution in duplicated genes among *Arabidopsis*, poplar and rice. Plant Biology & Botany 2007 Joint Congress, July 7-11, 2007, Chicago, Illinois. (Format: Poster)
- Yang, X.**, Tuskan, G.A., Tschaplinski, T.J., and Cheng, Z.-M. The phylogeny based on third codon transversion resolves the conflict between evolution and development on the origin of flowering plants. Plant Biology & Botany 2007 Joint Congress, July 7-11, 2007, Chicago, Illinois. (Format: Poster)