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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
- Genomics of CAM (Crassulacean Acid Metabolism) plants
- Discovery of small signaling proteins
- Genome/transcriptome sequencing using new sequencing technology
- Genetic improvement in water use efficiency and drought tolerance in bioenergy crops
- Reducing recalcitrance of biomass for biofuel production

# Professional Experiences

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| 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. |
| 6/1989-7/1997 | Research Assistant and Assistant Research Scientist, 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 USDA National Research Initiative Competitive Grants Program

Reviewer for Journal of Experimental Botany, Phyiologia Plantarum, International Journal of Plant Genomics, Journal of Plant Biotechnology, Plant Methods, Environmental Management, BMC Biotechnology, Journal of Proteomic Research.

## 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.

**Yang, X.** Homolog identification in *Populus*; phylogenetics, ortholog and primer design. BESC *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

**Yang X**, Tschaplinski TJ, Hurst GB, Jawdy S, Abraham PE, Lankford PK, Adams RM, Shah MB, Hettich RL, Lindquist E, Kalluri UC, Gunter LE, Pennacchio C, Tuskan GA. 2011. Discovery and annotation of small proteins using genomics, proteomics, and computational approaches. *Genome Research* 21(4): 634-641.

**Yang X**, Ye C-Y, Bisaria A, Tuskan GA, Kalluri UC. 2011. Identification of candidate genes in *Populus* cell wall biosynthesis using text-mining, co-expression network and comparative genomics. *Plant Science* 181: 675– 687.

**Yang X**, Ye C-Y, Cheng Z-M, Tschaplinski TJ, Wullschleger SD, Yin W, Xia X, Tuskan GA. 2011. Genomic aspects of research involving polyploid plants. *Plant Cell, Tissue and Organ Culture* 104: 387–397.

Ye C-Y, Li T, Tuskan GA, Tschaplinski TJ, **Yang X**. 2011. Comparative analysis of GT14/GT14-like gene family in *Arabidopsis*, *Oryza*, *Populus*, *Sorghum* and *Vitis*. *Plant Science* 181: 688– 695.

Weston DJ, Karve AA, Gunter LE, Jawdy SS, **Yang X**, Allen SM, Wullschleger SD. 2011. Comparative physiology and transcriptional networks underlying the heat

shock response in Populus trichocarpa, Arabidopsis thaliana and Glycine max. *Plant Cell Environ* 34(9): 1488-1506.

Cai B, **Yang X**, Tuskan GA, Cheng ZM. 2011. MicroSyn: a user friendly tool for detection of microsynteny in a gene family. *BMC Bioinformatics* 12: 79.

Guo J, **Yang X**, Weston DJ, Chen JG. 2011. Abscisic Acid receptors: past, present and future. *J Integr Plant Biol* 53(6): 469-479.

Guo J, Jin Z, **Yang X**, Li JF, Chen JG. 2011. Eukaryotic initiation factor 6, an evolutionarily conserved regulator of ribosome biogenesis and protein translation. Plant Signal Behav 6(5): 766-771.

**Yang X**, Li T, Weston D, Karve A, Labbe JL, Gunter LE, Sukumar P, Borland A, Chen J-G, Wullschleger SD, Tschaplinski TJ, Tuskan GA. 2011. Innovative biological solutions to challenges in sustainable biofuels production. In Biofuel Production-Recent Developments and Prospects, (ed. MADS Bernardes), pp. 375-414. Intech, Rijeka.

DiFazio SP, **Yang X**, Tuskan GA. 2011. The *Populus* Genome Sequence. In *Genetics, Genomics and Breeding of Poplar*, (ed. CP Joshi, SP DiFazio, C Kole). Science Publishers, Enfield, New Hampshire.

Tyler L, Bragg JN, Wu J, **Yang X**, Tuskan GA, Vogel JP. 2010. Annotation and comparative analysis of the glycoside hydrolase genes in *Brachypodium distachyon*. *BMC Genomics* 11: 600.

Vogel JP, Garvin DF, Mockler TC, Schmutz J, Rokhsar D, Bevan MW, Barry K, Lucas S, Harmon-Smith M, Lail K, …, **Yang X**, Kalluri UC, Tuskan GA et al. 2010. Genome sequencing and analysis of the model grass *Brachypodium distachyon*. *Nature* 463(7282): 763-768.

Ranjan P, Yin T, Zhang X, Kalluri U, **Yang X**, Jawdy S, Tuskan G. 2009. Bioinformatics-based identification of candidate genes from QTLs associated with cell wall traits in *Populus*. *BioEnergy Research* DOI 10.1007/s12155-009-9060-z: 1-11.

Xu Z, Zhang D, Hu J, Zhou X, Ye X, Reichel KL, Stewart NR, Syrenne RD, **Yang X**, Gao P, Shi W, Doeppke C, Sykes RW, Burris JN, Bozell JJ, Cheng MZ, Hayes DG, Labbe N, Davis M, Stewart CN, Jr., Yuan JS. 2009. Comparative genome analysis of lignin biosynthesis gene families across the plant kingdom. *BMC Bioinformatics* 10 Suppl 11: S3.

**Yang X**, Kalluri UC, DiFazio SP, Wullschleger SD, Tschaplinski TJ, Cheng ZM, Tuskan GA. 2009. Poplar genomics: State of the science. *Crit Rev Plant Sci* 28(5): 285-308.

**Yang X**, Jawdy S, Tschaplinski TJ, Tuskan GA. 2009. Genome-wide identification of lineage-specific genes in *Arabidopsis*, *Oryza* and *Populus*. *Genomics* 93(5): 473-480.

Osburn LD, Yang X, Li Y, Cheng ZM. 2009. Micropropagation of Japanese honeysuckle (*Lonicera japonica*) and Amur honeysuckle (*L. maackii*) by shoot tip culture. J Environ Hort 27(4): 195-199.

**Yang X**, Kalluri UC, Jawdy S, Gunter LE, Yin TM, Tschaplinski TJ, Weston DJ, Ranjan P, Tuskan GA. 2008. The F-box gene family is expanded in herbaceous annual plants relative to woody perennial plants. *Plant Physiology* 148(3): 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.

**Yang, X**., Scheffler, B.E., and Weston, L.A. (2004). *SOR1*, 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.

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 Scientech Press, Beijing