

## **XIAOHAN YANG**

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Google Scholar: <https://scholar.google.com/citations?user=DYH7aqAAAAAJ&hl=en>

### ***Education and Training***

- 2006 – 2008 Oak Ridge National Laboratory (ORNL), Postdoc in *Populus* genomics
- 2005 – 2006 University of Tennessee, Postdoc in *Populus* genomics
- 2002 – 2005 Cornell University, Postdoc in molecular genetics of *Arabidopsis*
- 2003 Cornell University, Ph.D. Floriculture & Ornamental Horticulture/Plant Molecular Biology/Plant Breeding
- 1989 Huazhong Agricultural University, China M.S. Ornamental Botany
- 1986 Huazhong Agricultural University, China B.Sc. Forest Science

### ***Research and Professional Experience***

- 2017 – present Joint Faculty, Department of Plant Sciences, University of Tennessee, Knoxville
- 2017 – present Senior Staff Scientist, Biosciences Division, Oak Ridge National Laboratory
- 2015 – present Faculty Member, Bredesen Center for Interdisciplinary Research and Graduate Education, University of Tennessee, Knoxville
- 2014 – present Joint Faculty, Graduate School of Genome Science and Technology (GST), University of Tennessee, Knoxville
- 2012 – present Joint Faculty, Department of Biochemistry & Cellular and Molecular Biology, University of Tennessee, Knoxville
- 2011 – 2016 Staff Scientist, Biosciences Division, Oak Ridge National Laboratory
- 2009 – 2017 Adjunct Faculty, Department of Plant Sciences, University of Tennessee, Knoxville
- 2008 – 2011 Associate Staff Scientist, Biosciences Division, Oak Ridge National Laboratory
- 1989 – 1997 Assistant Research Scientist, Chinese Academy of Agricultural Sciences, Beijing, China.

### ***Honors and Awards***

- 2018 The R&D 100 Award (TNT Cloning System)
- 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***

US National Science Foundation (NSF) review panel.

Reviewer for USDA National Research Initiative Competitive Grants Program, Biotechnology and Biological Sciences Research Council (BBSRC), Research Foundation – Flanders (FWO), and USDA Internal Project.

Reviewer for Biotechnology Progress, BMC Bioinformatics, BMC Biotechnology, Critical Reviews in Plant Sciences, Environmental Management, International Journal of Plant Genomics, Journal of Experimental Botany, Journal of Plant Biotechnology, Journal of Proteomic Research, Nature Biotechnology, Nature Plants, New Phytologist, Physiologia Plantarum, Planta, Plant Methods, Plos Computational Biology

Member of American Association for the Advancement of Science (2018 - present)

Organizer of the 34th New Phytologist Symposium: Systems biology and ecology of CAM plants. Tahoe City, CA, USA, 15–18 July 2014.

<http://www.newphytologist.org/symposiums/view/5>

Leader of the ORNL CAM research team, a key component of the \$14.3 million multi-institutional DOE project to engineer crassulacean acid metabolism (CAM) into C<sub>3</sub> plants to enhance water-use efficiency for sustainable biofuels production on marginal land.

Editorial Board of Scientific Reports (2018 - present)

Lead guest editor for Special Issue "Genetics, genomics, and evolution of CAM photosynthesis" in Genes.

[http://www.mdpi.com/journal/genes/special\\_issues/cam\\_photosynth](http://www.mdpi.com/journal/genes/special_issues/cam_photosynth)

Lead guest editor for Research Topic entitled “Systems Biology and Synthetic Biology in Relation to Drought Tolerance or Avoidance in Plants” in Frontiers in Plant Science.

<http://journal.frontiersin.org/researchtopic/6651/systems-biology-and-synthetic-biology-in-relation-to-drought-tolerance-or-avoidance-in-plants>

Lead guest editor for a special issue entitled “Plant Comparative and Functional Genomics”. International Journal of Genomics.

<http://www.hindawi.com/journals/ijg/si/825361/>

### ***Media Coverage***

“Does Agave Hold the Secret to Drought-Resistant Farming?” (July 13, 2015)

<http://www.scientificamerican.com/article/does-agave-hold-the-secret-to-drought-resistant-farming/>

“Can genetic engineering help quench crops’ thirst?” (January 4, 2016)  
<http://ensia.com/features/can-genetic-engineering-help-quench-crops-thirst/>

“New study of water-saving plants advances efforts to develop drought-resistant crops” (December 5, 2016)  
<https://www.ornl.gov/news/new-study-water-saving-plants-advances-efforts-develop-drought-resistant-crops>

“Small Proteins Secreted by Poplar Roots Form Communication Route with Associated Fungal Communities” (May 10, 2017)  
<http://genomicscience.energy.gov/program/berhighlights.shtml>

“SimPath licenses novel ORNL system for enhanced synthetic biology” (October 16, 2017)  
<https://www.ornl.gov/news/simpath-licenses-novel-ornl-system-enhanced-synthetic-biology>

“Genes found in drought-resistant plants could accelerate evolution of water-use efficient crops” (December 1, 2017)  
<https://www.ornl.gov/news/genes-found-drought-resistant-plants-could-accelerate-evolution-water-use-efficient-crops>

“Researchers Discover Genes That Make Plants Drought-Resistant” (June 21, 2018)  
<https://www.rdmag.com/article/2018/06/researchers-discover-genes-make-plants-drought-resistant>  
<https://www.rdmag.com/article/2018/07/r-d-special-focus-plant-science>

### ***Invention***

#### ***Patent***

Tuskan GA, Yang X, De Paoli HC. “TNT Cloning System”.  
(US Patent No.: 10,017,770 B2; Date of patent: July 10, 2018)

#### ***Pending patent***

Chen J-G, Gunter LE, Jawdy SS, Yang X, Tuskan GA, Bryan AC, “Modulating laccase enzyme to regulate cell wall biosynthesis and recalcitrance in plants”. US Patent App. 15/647,819, 2018.

Chen J-G, Jawdy S, Yang X, Tuskan GA, Yang Y, Gunter LE. “PtDUF266 gene regulating cell wall biosynthesis and recalcitrance in *Populus*”. US Patent App. 15/687,818, 2018

Yang et al. “Genes for enhancing drought and heat tolerance in plants, and methods of use” (2018)

Provisional patent application

Yang et al. “Gene for enhancing salt and drought tolerance in plants” (2019)

Invention disclosures

Invention Disclosure 201303169, DOE S-124,759, “A Lectin-Like Receptor Kinase Leads to Enhanced Mycorrhization in Plants” (elected for patent application)

Invention Disclosure 201403422, DOE S-138,049, “A PtDUF231 Gene Regulating Cell Wall Biosynthesis and Recalcitrance in *Populus*”. (elected for patent application)

Invention Disclosure 201403416 DOE S-138,043, “A Laccase Enzyme Regulating Cell Wall Biosynthesis and Recalcitrance in *Populus*”.

Invention Disclosure 201403419, DOE S-138,046, “PtCAD2359 Knockdown Affects the Lignin Biosynthetic Pathway in *Populus*”.

Invention Disclosure 201403421, DOE S-138,048, “A PtVND6 Gene Regulating Cell Wall Biosynthesis and Recalcitrance in *Populus*.”

Invention Disclosure 201403424, DOE S-138,051, “A Prolyl 4-Hydroxylase Alpha Subunit Enzyme Regulates Cell Wall Biosynthesis and Recalcitrance in *Populus*”.

Invention Disclosure 201403434, DOE S-138,061, “A Serine Hydroxymethyltransferase Regulates Cell Wall Biosynthesis and Recalcitrance in *Populus*”.

Invention Disclosure 201403435, DOE S-138,062, “A Prefoldin-Like Protein Regulates Cell Wall Biosynthesis and Recalcitrance in *Populus*”.

Invention disclosure 201804142 “Gene for enhancing photosynthetic performance and biomass production in plants”

***Invited Talk***

“Implementation of drought avoidance mechanisms for sustainable crop production”. July 20-24, 2018. The Fifth International Horticulture Research Conference. Beijing, China.

“An integrative approach to understanding the function of crassulacean acid metabolism (CAM)-related genes in *Agave* and *Kalanchoe*”. April 9-13, 2018. An international symposium entitled “Biology of CAM Plants”. Phoenix, Arizona, USA

“Unravelling the Molecular Basis of Plant Water-use Efficiency and Plant-microbe Symbiosis”. February 16, 2018. Clemson University.

“Molecular signatures of crassulacean acid metabolism”. July 23-29, 2017. The XIX International Botanical Congress (IBC2017). Shenzhen, China.

“Toolbox for plant synthetic biology”. February 16-17, 2017. BBSRC-funded Global Challenges Research Fund (GCRF) Workshop titled “Exploring synthetic biology for enhanced plant production”, University of Liverpool, UK

“Systems Biology and Synthetic Biology of Crassulacean Acid Metabolism”. April 13, 2016. BCMB 615 Seminar Series, University of Tennessee, Knoxville, TN

“Comparative Evolution of Crassulacean Acid Metabolism (CAM)”. The Plant and Animal Genome Conference; January 2016 in San Diego, CA.

“Discovery of effector-like proteins in *Populus* during symbiosis formation”. IUFRO Tree Biotechnology Conference. 8-12 June 2015, Florence, Italy.

“Genome-wide discovery of non-coding RNAs in willow (*Salix purpurea*)”. The Plant and Animal Genome Conference XXIII. 10-14 January 2015, San Diego, CA, USA.

“Comparative genomics of CAM plants” The 34th New Phytologist Symposium: Systems biology and ecology of CAM plants; Tahoe City, CA, USA 15–18 July 2014

“Comparative genomics of CAM species” The Plant and Animal Genome XXII Conference; January 11-15, 2014 in San Diego, CA

“Agave genomics in support of CAM engineering”. International Symposium on C<sub>4</sub> and CAM Plant Biology (6-9th August, 2013, Champaign, IL).

### **Publications** (88 in total)

Zhang J, Li M, Bryan AC, Yoo CG, Rottmann W, Winkler KA, Collins Cassandra M, Singan V, Lindquist EA, Jawdy SS, Gunter LE, Engle NL, Yang X, Barry K, Tschaplinski TJ, Schmutz J, Pu Y, Ragauskas AJ, Tuskan GA, Muchero W, Chen J-G. 2019. Overexpression of a serine hydroxymethyltransferase increases biomass production and reduces recalcitrance in the bioenergy crop *Populus*. *Sustainable Energy & Fuels* doi:10.1039/C8SE00471D.

Tschaplinski TJ, Abraham PE, Jawdy SS, Gunter LE, Martin MZ, Engle NL, Yang X, Tuskan GA. 2019. The nature of the progression of drought stress drives differential metabolomic responses in *Populus deltoides*. *Annals of Botany*, *mcz002*, <https://doi.org/10.1093/aob/mcz002>.

Mewalal R, Yin H, Hu R, Jawdy SS, Vion P, Tuskan GA, Tacon FL, Labbé JL, Yang X. 2019. Identification of *Populus* small RNAs responsive to mutualistic interactions with mycorrhizal fungi, *Laccaria bicolor* and *Rhizophagus irregularis*. *Frontiers in Microbiology* **Accepted**: doi: 10.3389/fmicb.2019.00515.

- Moseley RC, Tuskan GA, Yang X. 2019. Comparative genomics analysis provides new insight into molecular basis of stomatal movement in *Kalanchoë fedtschenkoi*. *Frontiers in Plant Science* **Accepted**: doi: 10.3389/fpls.2019.00292.
- Abraham PE, Garcia BJ, Gunter LE, Jawdy SS, Engle N, Yang X, Jacobson DA, Hettich RL, Tuskan GA, Tschaplinski TJ. 2018. Quantitative proteome profile of water deficit stress responses in eastern cottonwood (*Populus deltoides*) leaves. *PLOS ONE* **13**: e0190019.
- Biswal AK, Atmodjo MA, Pattathil S, Amos RA, Yang X, Winkeler K, Collins C, Mohanty SS, Ryno D, Tan L, Gelineo-Albersheim I, Hunt K, Sykes RW, Turner GB, Ziebell A, Davis MF, Decker SR, Hahn MG, Mohnen D. 2018. Working towards recalcitrance mechanisms: increased xylan and homogalacturonan production by overexpression of GALactUronosylTransferase12 (GAUT12) causes increased recalcitrance and decreased growth in *Populus*. *Biotechnology for Biofuels* **11**: 9.
- Biswal AK, Atmodjo MA, Li M, Baxter HL, Yoo CG, Pu Y, Lee Y-C, Mazarei M, Black IM, Zhang J-Y, Ramanna H, Bray AL, King ZR, LaFayette PR, Pattathil S, Donohoe BS, Mohanty SS, Ryno D, Yee K, Thompson OA, Rodriguez Jr M, Dumitrache A, Natzke J, Winkeler K, Collins C, Yang X, Tan L, Sykes RW, Gjersing EL, Ziebell A, Turner GB, Decker SR, Hahn MG, Davison BH, Udvardi MK, Mielenz JR, Davis MF, Nelson RS, Parrott WA, Ragauskas AJ, Neal Stewart Jr C, Mohnen D. 2018. Sugar release and growth of biofuel crops are improved by downregulation of pectin biosynthesis. *Nature Biotechnology* **36**: 249.
- Liu D, Palla KJ, Hu R, Moseley RC, Mendoza C, Chen M, Abraham PE, Labbé JL, Kalluri UC, Tschaplinski TJ, Cushman JC, Borland AM, Tuskan GA, Yang X. 2018. Perspectives on the basic and applied aspects of crassulacean acid metabolism (CAM) research. *Plant Science* **274**: 394-401.
- Guo H-B, Ma Y, Tuskan GA, Yang X, Guo H. 2018. Classification of complete proteomes of different organisms and protein sets based on their protein distributions in terms of some key attributes of proteins. *International Journal of Genomics* **2018**: Article ID 9784161. <https://doi.org/9784110.9781155/9782018/9784161>.
- Yin H, Guo H-B, Weston DJ, Borland AM, Ranjan P, Abraham PE, Jawdy SS, Wachira J, Tuskan GA, Tschaplinski TJ, Wullschleger SD, Guo H, Hettich RL, Gross SM, Wang Z, Visel A, Yang X. 2018. Diel rewiring and positive selection of ancient plant proteins enabled evolution of CAM photosynthesis in *Agave*. *BMC Genomics* **19**: 588.
- Lim SD, Yim WC, Liu D, Hu R, Yang X, Cushman JC. 2018. A *Vitis vinifera* basic helix–loop–helix transcription factor enhances plant cell size, vegetative biomass and reproductive yield. *Plant Biotechnology Journal* **16**: 1595-1615.
- Garcia BJ, Labbe J, Jones P, Abraham P, Hodge I, Climer S, Jawdy S, Gunter L, Tuskan GA, Yang X, Tschaplinski TJ, Jacobson D. 2018. Phytobiome and transcriptional adaptation of *Populus deltoides* to acute progressive drought and cyclic drought. *Phytobiomes*: <https://doi.org/10.1094/PBIOMES-1004-1018-0021-R>.
- Moseley RC, Mewalal R, Motta F, Tuskan GA, Haase S, Yang X. 2018. Conservation and diversification of circadian rhythmicity between a model crassulacean acid

- metabolism plant *Kalanchoë fedtschenkoi* and a model C<sub>3</sub> photosynthesis plant *Arabidopsis thaliana*. *Frontiers in Plant Science* **9**: 1757.
- Badmi R, Payyavula RS, Bali G, Guo H-B, Jawdy SS, Gunter LE, Yang X, Winkeler KA, Collins C, Rottmann WH, Yee K, Rodriguez M, Sykes RW, Decker SR, Davis MF, Ragauskas AJ, Tuskan GA, Kalluri UC. 2018. A new calmodulin-binding protein expresses in the context of secondary cell wall biosynthesis and impacts biomass properties in *Populus*. *Frontiers in Plant Science* **9**: 1669.
- Borland AM, Leverett A, Hurtado-Castano N, Hu R, Yang X. 2018. Functional anatomical traits of the photosynthetic organs of plants with crassulacean acid metabolism. In *The Leaf: A Platform for Performing Photosynthesis*, (ed. WW Adams III, I Terashima), pp. 281-305. Springer International Publishing AG, Cham, Switzerland.
- Close D, Rodriguez M, Hu R, Yang X. 2017. Disposition and bioavailability of inulin and free sugar in untreated and dilute acid pretreated *Agave tequilana* leaves. *Biomass and Bioenergy* **106**: 176-181.
- Liu D, Mewalal R, Hu R, Tuskan GA, Yang X. 2017. New technologies accelerate the exploration of non-coding RNAs in horticultural plants. *Horticulture Research* **4**: 17031.
- Plett JM, Yin H, Mewalal R, Hu R, Li T, Ranjan P, Jawdy S, De Paoli HC, Butler G, Burch-Smith TM, Guo H-B, Ju Chen C, Kohler A, Anderson IC, Labbé JL, Martin F, Tuskan GA, Yang X. 2017. *Populus trichocarpa* encodes small, effector-like secreted proteins that are highly induced during mutualistic symbiosis. *Scientific Reports* **7**: 382.
- Yang X, Hu R, Yin H, Jenkins J, Shu S, Tang H, Liu D, Weighill DA, Cheol Yim W, Ha J, Heyduk K, Goodstein DM, Guo H-B, Moseley RC, Fitzek E, Jawdy S, Zhang Z, Xie M, Hartwell J, Grimwood J, Abraham PE, Mewalal R, Beltrán JD, Boxall SF, Dever LV, Palla KJ, Albion R, Garcia T, Mayer JA, Don Lim S, Man Wai C, Peluso P, Van Buren R, De Paoli HC, Borland AM, Guo H, Chen J-G, Muchero W, Yin Y, Jacobson DA, Tschaplinski TJ, Hettich RL, Ming R, Winter K, Leebens-Mack JH, Smith JAC, Cushman JC, Schmutz J, Tuskan GA. 2017. The *Kalanchoë* genome provides insights into convergent evolution and building blocks of crassulacean acid metabolism. *Nature Communications* **8**: 1899.
- Yang Y, Yoo CG, Guo H-B, Rottmann W, Winkeler KA, Collins CM, Gunter LE, Jawdy SS, Yang X, Guo H, Pu Y, Ragauskas AJ, Tuskan GA, Chen J-G. 2017. Overexpression of a Domain of Unknown Function 266-containing protein results in high cellulose content, reduced recalcitrance, and enhanced plant growth in the bioenergy crop *Populus*. *Biotechnology for Biofuels* **10**: 74.
- Yang Y, Yoo CG, Winkeler KA, Collins CM, Hinchee MAW, Jawdy SS, Gunter LE, Engle NL, Pu Y, Yang X, Tschaplinski TJ, Ragauskas AJ, Tuskan GA, Chen J-G. 2017. Overexpression of a Domain of Unknown Function 231-containing protein increases O-xylan acetylation and cellulose biosynthesis in *Populus*. *Biotechnology for Biofuels* **10**: 311.
- Abraham PE, Yin H, Borland AM, Weighill D, Lim SD, De Paoli HC, Engle N, Jones PC, Agh R, Weston DJ, Wullschlegler SD, Tschaplinski T, Jacobson D, Cushman JC, Hettich RL, Tuskan GA, Yang X. 2016. Transcript, protein and metabolite temporal dynamics in the CAM plant *Agave*. *Nature Plants* **2**: 16178.

- Borland AM, Guo H-B, Yang X, Cushman JC. 2016. Orchestration of carbohydrate processing for crassulacean acid metabolism. *Current Opinion in Plant Biology* **31**: 118-124.
- Bryan AC, Jawdy S, Gunter L, Gjersing E, Sykes R, Hinchey MAW, Winkeler KA, Collins CM, Engle N, Tschaplinski TJ, Yang X, Tuskan GA, Muchero W, Chen J-G. 2016. Knockdown of a laccase in *Populus deltoides* confers altered cell wall chemistry and increased sugar release. *Plant Biotechnology Journal* **14**: 2010-2020.
- Czarnecki O, Bryan AC, Jawdy SS, Yang X, Cheng Z-M, Chen J-G, Tuskan GA. 2016. Simultaneous knockdown of six non-family genes using a single synthetic RNAi fragment in *Arabidopsis thaliana*. *Plant Methods* **12**: 16.
- De Paoli HC, Tuskan GA, Yang X. 2016. An innovative platform for quick and flexible joining of assorted DNA fragments. *Scientific Reports* **6**: 19278.
- Hamilton CE, Bever JD, Labbé J, Yang X, Yin H. 2016. Mitigating climate change through managing constructed-microbial communities in agriculture. *Agriculture, Ecosystems & Environment* **216**: 304-308.
- Liu D, Hu R, Palla KJ, Tuskan GA, Yang X. 2016. Advances and perspectives on the use of CRISPR/Cas9 systems in plant genomics research. *Current Opinion in Plant Biology* **30**: 70-77.
- Qian P, Guo H-B, Yue Y, Wang L, Yang X, Guo H. 2016. Understanding the catalytic mechanism of xanthosine methyltransferase in caffeine biosynthesis from QM/MM molecular dynamics and free energy simulations. *Journal of Chemical Information and Modeling* **56**: 1755-1761.
- Yang Y, Labbé J, Muchero W, Yang X, Jawdy SS, Kennedy M, Johnson J, Sreedasyam A, Schmutz J, Tuskan GA, Chen J-G. 2016. Genome-wide analysis of lectin receptor-like kinases in *Populus*. *BMC Genomics* **17**: 699.
- Biswal AK, Hao Z, Pattathil S, Yang X, Winkeler K, Collins C, Mohanty SS, Richardson EA, Gelineo-Albersheim I, Hunt K, Ryno D, Sykes RW, Turner GB, Ziebell A, Gjersing E, Lukowitz W, Davis MF, Decker SR, Hahn MG, Mohnen D. 2015. Downregulation of *GAUT12* in *Populus deltoides* by RNA silencing results in reduced recalcitrance, increased growth and reduced xylan and pectin in a woody biofuel feedstock. *Biotechnology for Biofuels* **8**: 41.
- Borland AM, Wullschleger SD, Weston DJ, Hartwell J, Tuskan GA, Yang X, Cushman JC. 2015. Climate-resilient agroforestry: physiological responses to climate change and engineering of crassulacean acid metabolism (CAM) as a mitigation strategy. *Plant, Cell & Environment* **38**: 1833-1849.
- Cushman JC, Davis SC, Yang X, Borland AM. 2015. Development and use of bioenergy feedstocks for semi-arid and arid lands. *Journal of Experimental Botany* **66**: 4177-4193.
- Guo L, Qiu J, Han Z, Ye Z, Chen C, Liu C, Xin X, Ye C-Y, Wang Y-Y, Xie H, Wang Y, Bao J, Tang S, Xu J, Gui Y, Fu F, Wang W, Zhang X, Zhu Q, Guang X, Wang C, Cui H, Cai D, Ge S, Tuskan GA, Yang X, Qian Q, He SY, Wang J, Zhou X-P, Fan L. 2015. A host plant genome (*Zizania latifolia*) after a century-long endophyte infection. *The Plant Journal* **83**: 600-609.



- Mielenz JR, Rodriguez M, Thompson OA, Yang X, Yin H. 2015. Development of *Agave* as a dedicated biomass source: production of biofuels from whole plants. *Biotechnology for Biofuels* **8**: 79.
- Ming R, VanBuren R, Wai CM, Tang H, Schatz MC, Bowers JE, Lyons E, Wang M-L, Chen J, Biggers E, Zhang J, Huang L, Zhang L, Miao W, Zhang J, Ye Z, Miao C, Lin Z, Wang H, Zhou H, Yim WC, Priest HD, Zheng C, Woodhouse M, Edger PP, Guyot R, Guo H-B, Guo H, Zheng G, Singh R, Sharma A, Min X, Zheng Y, Lee H, Gurtowski J, Sedlazeck FJ, Harkess A, McKain MR, Liao Z, Fang J, Liu J, Zhang X, Zhang Q, Hu W, Qin Y, Wang K, Chen L-Y, Shirley N, Lin Y-R, Liu L-Y, Hernandez AG, Wright CL, Bulone V, Tuskan GA, Heath K, Zee F, Moore PH, Sunkar R, Leebens-Mack JH, Mockler T, Bennetzen JL, Freeling M, Sankoff D, Paterson AH, Zhu X, Yang X, Smith JAC, Cushman JC, Paull RE, Yu Q. 2015. The pineapple genome and the evolution of CAM photosynthesis. *Nature Genetics* **47**: 1435.
- Yang X, Cushman JC, Borland AM, Edwards EJ, Wullschleger SD, Tuskan GA, Owen NA, Griffiths H, Smith JAC, De Paoli HC, Weston DJ, Cottingham R, Hartwell J, Davis SC, Silvera K, Ming R, Schlauch K, Abraham P, Stewart JR, Guo H-B, Albion R, Ha J, Lim SD, Wone BWM, Yim WC, Garcia T, Mayer JA, Petereit J, Nair SS, Casey E, Hettich RL, Ceusters J, Ranjan P, Palla KJ, Yin H, Reyes-García C, Andrade JL, Freschi L, Beltrán JD, Dever LV, Boxall SF, Waller J, Davies J, Bupphada P, Kadu N, Winter K, Sage RF, Aguilar CN, Schmutz J, Jenkins J, Holtum JAM. 2015. A roadmap for research on crassulacean acid metabolism (CAM) to enhance sustainable food and bioenergy production in a hotter, drier world. *New Phytologist* **207**: 491-504.
- Yang X, Leebens-Mack J, Chen F, Yin Y. 2015. Plant comparative and functional genomics. *International Journal of Genomics* **2015**: Article ID 924369.
- Yao J, Guo H, Yang X. 2015. PPCM: Combing multiple classifiers to improve protein-protein interaction prediction. *International Journal of Genomics* **2015**: Article ID 608042.
- Yao J, Guo H, Chaiprasongsuk M, Zhao N, Chen F, Yang X, Guo H. 2015. Substrate-assisted catalysis in the reaction catalyzed by salicylic acid binding protein 2 (SABP2), a potential mechanism of substrate discrimination for some promiscuous enzymes. *Biochemistry* **54**: 5366-5375.
- Borland AM, Hartwell J, Weston DJ, Schlauch KA, Tschaplinski TJ, Tuskan GA, Yang X, Cushman JC. 2014. Engineering crassulacean acid metabolism to improve water-use efficiency. *Trends in Plant Science* **19**: 327-338.
- De Paoli HC, Borland AM, Tuskan GA, Cushman JC, Yang X. 2014. Synthetic biology as it relates to CAM photosynthesis: challenges and opportunities. *Journal of Experimental Botany* **65**: 3381-3393.
- Kalluri UC, Yin H, Yang X, Davison BH. 2014. Systems and synthetic biology approaches to alter plant cell walls and reduce biomass recalcitrance. *Plant Biotechnology Journal* **12**: 1207-1216.
- Myburg AA, Grattapaglia D, Tuskan GA, Hellsten U, Hayes RD, Grimwood J, Jenkins J, Lindquist E, Tice H, Bauer D, Goodstein DM, Dubchak I, Poliakov A, Mizrachi E, Kullán ARK, Hussey SG, Pinard D, van der Merwe K, Singh P, van Jaarsveld I, Silva-Junior OB, Togawa RC, Pappas MR, Faria DA, Sansaloni CP, Petroli CD,

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- Szövényi P, Devos N, Weston DJ, Yang X, Hock Z, Shaw JA, Shimizu KK, McDaniel SF, Wagner A. 2014. Efficient purging of deleterious mutations in plants with haploid selfing. *Genome Biology and Evolution* **6**: 1238-1252.
- Yin H, Chen CJ, Yang J, Weston DJ, Chen J-G, Muchero W, Ye N, Tschaplinski TJ, Wullschleger SD, Cheng Z-M, Tuskan GA, Yang X. 2014. Functional genomics of drought tolerance in bioenergy crops. *Critical Reviews in Plant Sciences* **33**: 205-224.
- Borland AM, Yang X. 2013. Informing the improvement and biodesign of crassulacean acid metabolism via system dynamics modelling. *New Phytologist* **200**: 946-949.
- Chen S, Huang X, Yan X, Liang Y, Wang Y, Li X, Peng X, Ma X, Zhang L, Cai Y, Ma T, Cheng L, Qi D, Zheng H, Yang X, Li X, Liu G. 2013. Transcriptome analysis in sheepgrass (*Leymus chinensis*): A dominant perennial grass of the Eurasian Steppe. *PLOS ONE* **8**: e67974.
- Ye CY, Li T, Yin H, Weston DJ, Tuskan GA, Tschaplinski TJ, Yang X. 2013. Evolutionary analyses of non-family genes in plants. *The Plant Journal* **73**: 788-797.
- Ye C-Y, Yang X, Xia X, Yin W. 2013. Comparative analysis of cation/proton antiporter superfamily in plants. *Gene* **521**: 245-251.
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