

Xiaoqiang Wang, Ph.D.
Associate Professor
Plant Biology Division
Samuel Roberts Noble Foundation
2510 Sam Noble Parkway
Ardmore OK 73401, USA
Tel.: 5802246720; Fax: 5802246692
Email: xwang@noble.org

EMPLOYMENT

2010-present, Associate Professor, Head of Laboratory of Structural Biology,
Plant Biology Division, Samuel Roberts Noble Foundation, Ardmore, OK 73401

2012, January – June, Adjunct Associate Professor, Department of Physiology,
University of Texas Southwestern Medical Center at Dallas

2004-2009, Assistant Professor, Head of Laboratory of Structural Biology,
Plant Biology Division, Samuel Roberts Noble Foundation, Ardmore, OK 73401

2002- 2004, Research Scientist, Head of Lab of Structural Biology,
Plant Biology Division, Samuel Roberts Noble Foundation, Ardmore, OK 73401

1999- 2002, Research Fellow, Laboratory of Structural Biology,
NIEHS, NIH, Research Triangle Park, NC 27709

1996- 1999, Research Associate, Crystallography Program,
Oklahoma Medical Research Foundation, Oklahoma City, OK 73104

1995- 1996, Research Associate, Department of Chemistry,
University of Manchester, Manchester, UK

1993- 1995, Research Associate, Institute of Biophysics, Chinese Academy of Sciences,
Beijing, China

EDUCATION

1990-1993, Ph.D. in Protein Crystallography, Institute of Biophysics,
Chinese Academy of Sciences, Beijing, China

1987-1990, M.S. in Physical Chemistry, Dept. of Chemistry, Wuhan University, Wuhan, China

1983-1987, B.S. in Chemistry, Dept. of Chemistry, Wuhan University, Wuhan, China

PROFESSIONAL ASSOCIATION MEMBERSHIPS

American Crystallographic Association
The Phytochemical Society of North America
American Society of Plant Biologists

HONORS AND AWARDS

2000 First Prize in Natural Science, Chinese Academy of Sciences
1996 Outstanding research paper prize in Biochemistry, Biophysics, and Molecular
Biology, Chinese Society of Biochemistry and Molecular Biology

RESEARCH GRANTS

Wang, X. (PI), Molecular and structural basis of plant biomass biosynthesis. Oklahoma Center for the Advancement of Science and Technology, 2011-2013

Wang, X. (PI), Dixon, R.A. (Co-PI), National Science Foundation, 2004-2008, Structural and functional studies of plant natural product uridine diphosphate glycosyltransferases.

Wang, X. (PI), Young Scientist Grant, National Natural Science Foundation of China, 1995-1997, Crystallographic studies of inhibited and calcium-free phospholipase A2 from the venom of *Aggistrodon halys pallas*.

PROFESSIONAL SERVICE

Editorial Board: *Frontiers in Plant Metabolism and Chemosynthesis*, 2011-present

Manuscripts reviewed for the following journals: *Proc. Natl. Acad. Sci. USA.*;

PLoS Biology; *Plant Cell*; *J. Mol. Biol.*; *J. General Virology*; *Planta*;
Anti-Cancer Agents in Medicinal Chemistry; *Acta Crystallographica*;
Molecules; *Biochimica et Biophysica Acta*; *Archives of Microbiology*;
Journal of Molecular Catalysis B: Enzymatic; *ACS Chemical Biology*;
Bioorganic & Medicinal Chemistry Letters; *Molecular Biology Reports*;
Natural Product Reports; *Int. J. Mol. Sci.*

Grant proposals reviewed for the National Science Foundation

Grant proposals reviewed for the Czech Science Foundation

Synchrotron user proposals reviewed for the Advanced Photon Source, Argonne National Laboratory

Member of the International Scientific Advisory Committee for the International Conference on Antimicrobial Research (ICAR2010, Valladolid, Spain; ICAR2012, Lisbon, Portugal)

Advisory Board Member, BIT's 2nd Annual World Congress of Molecular and Cell Biology (Beijing, China, 2012)

Crystallography workshop for the Noble Scholars, Noble summer interns and teachers in the Noble-Oklahoma Science Project, July, 2005, 2006, 2007.

Seminar series on structural biology for graduate students,
School of Life Sciences, Fudan University, Shanghai, China, May 2007

Doctoral dissertation defense committee (chair): Haiyun Pan (Fudan University, 2007)

STUDENTS, POSTDOCTORAL TRAINEES

Postdoctoral associates

He Li, 2011-present;	Haiyun Pan, 2008-present
Qing Chang, 2009-present;	Hui Shao, 2004-2007, 2009-present
Someswar Sagurthi 2010-present;	Lenong Li, 2005-2009
Sujuan Xu, 2008-2010;	Zhenzhan Chang, 2004-2007
Luis Escamilla-Trevino, 2005-2007;	Sijiu Liu, 2003-2004

Research technician

Oksana Gordon, 2007 - 2008	Jianqiao Lin, 2002 - 2004
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Students

Fabiola Muro (New Mexico State University, Las Cruces, New Mexico), Summer 2012
Rachel Sassella (Hockaday School, Dallas, Texas), summer 2011, 2012
Joel Guimatiu Teko (Southeastern Oklahoma State University), summer 2010

Tina Li (Southeastern Oklahoma State University), summer 2009
Takara Hawkins (Eastern Oklahoma State College), summer 2008
Daniel Mannas (University of Notre Dame), summer 2004, 2005, 2006, 2007
Logan Holley (Oklahoma East Central University), summer 2005

Visiting Scientists:

Dr. Peng Nan, Associate Professor, School of Life Sciences, Fudan University, China; 2009
Dr. Vijay Veerrappan, Institute for Agricultural Biosciences, Oklahoma State University; 2012

PUBLICATIONS

- (1) Wu, B., **Wang, X.**, Zhang, S., Hu, M. (2012). Accurate prediction of glucuronidation of structurally diverse phenolics by human UGT1A9 using combined experimental and in silico approaches, *Pharmaceutical Research*. in press.
- (2) Wu, B., Basu, S., Meng, S., **Wang, X.**, Hu, M. (2011). Regioselective sulfation and glucuronidation of phenolics: insights into the structural basis, *Current Drug Metabolism*. 12, 900-916.
- (3) Cheng, X., **Wang, X.**, Wu, J., Briddon, R.W., Zhou, X. (2011). β C1 encoded by tomato yellow leaf curl China betasatellite forms multimeric complexes in vitro and in vivo. *Virology*. 409, 156-162.
- (4) Wang, X. (2011). Structure, function and engineering of enzymes in isoflavonoid biosynthesis. *Functional & Integrative Genomics*. 11, 13-22.
- (5) Wang, X. (2010). Structural studies and mechanisms of isoflavonoid biosynthesis. In: *Isoflavones Biosynthesis, Occurrence and Health Effects*, Thompson, M.J., eds (Nova Science Publishers), pp. 239-254
- (6) Li, L., Cheng, N., Hirschi, K.D., **Wang, X.** (2010). Crystal structure of Arabidopsis chloroplastic monothiol glutaredoxin AtGRXcp. *Acta Crystallographica*. D66, 725-732.
- (7) Morgan, R.L., Zhou, H., Lehto, E., Nguyen, N., Bains, A., **Wang, X.**, Ma, W. (2010). The catalytic domain of the diversified *Pseudomonas syringae* type III effector HopZ1 determines their allelic specificities in plant hosts. *Molecular Microbiology*, 76, 437-455.
- (8) **Wang, X.** (2009). Structure, mechanism and engineering of plant natural product glycosyltransferases. *FEBS Letters* 583, 3303-3309.
- (9) Modolo, L.V., Li, L., Pan, H., Blount, J.W., Dixon, R.A., **Wang, X.** (2009). Crystal structures of glycosyltransferase UGT78G1 reveal the molecular basis for glycosylation and deglycosylation of (iso)flavonoids. *J. Mol. Biol.* 392, 1292-1302.
- (10) Modolo, L.V., Escamilla-Trevino L.L., Dixon, R.A., **Wang, X.** (2009). Single amino acid mutations of *Medicago* glycosyltransferase UGT85H2 enhance activity and impart reversibility. *FEBS Letters* 583, 2131-2135.
- (11) Li, L., Chang, Z., Pan, Z., Fu, Z., **Wang, X.** (2008). Modes of heme-binding and substrate access for cytochrome P450 CYP74A revealed by crystal structures of allene oxide synthase. *Proc. Natl. Acad. Sci. USA*. 105, 13883-13888.
- (12) Chang, Z., Li, L., Pan, Z., **Wang, X.** (2008). Crystallization and preliminary X-ray analysis of allene oxide synthase, cytochrome P450 CYP74A2 from *Parthenium argentatum*. *Acta Crystallographica*. F64, 668-670.
- (13) Pan, H., Wang, Y., Zhang, Y., Zhou, T., Fang, C., Nan, P., Wang, X., Li, X., Wei, Y., & Chen, J. (2008). Phenylalanine ammonia lyase functions as a switch directly controlling the accumulation of calycosin and calycosin-7-O-beta-D-glucoside in *Astragalus membranaceus* var. *mongolicus* plants. *Journal of Experimental Botany*, 59, 3027-3037.

(14) Shao, H., Dixon, R.A., **Wang, X.** (2007). Crystal structure of vestitone reductase from Alfalfa (*Medicago sativa* L.). *J. Mol. Biol.* 369, 265-276.

(15) Li, L., Modolo, L.V., Escamilla-Trevino L.L., Achnine, L., Dixon, R.A., **Wang, X.** (2007). Crystal structure of *Medicago truncatula* UGT85H2 - Insights into the structural basis of a multifunctional (iso)flavonoid glycosyltransferase. *J. Mol. Biol.* 370, 951-963.

(16) Modolo, L.V., Blount, J.W., Achnine, L., Naoumkina, M.A., **Wang, X.**, Dixon, R.A. (2007). A functional genomics approach to (iso)flavonoid glycosylation in the model legume *Medicago truncatula*. *Plant Molecular Biology* 64, 499-518.

(17) He, X., **Wang, X.**, Dixon, R.A. (2006). Mutational analysis of the *Medicago* glycosyltransferase UGT71G1 reveals residues that control regio-selectivity for (iso)flavonoid glycosylation. *J. Biol. Chem.* 281, 34441-34447.

(18) **Wang, X.**, He, X., Lin, J., Shao, H., Chang, Z., Dixon, R.A. (2006). Crystal structure of isoflavone reductase from Alfalfa (*Medicago sativa* L.). *J. Mol. Biol.* 358, 1341-1352.

(19) Shao, H., He, X., Achnine, L., Blount, J.W., Dixon, R.A., **Wang, X.** (2005). Crystal structures of a multifunctional triterpene/flavonoid glycosyltransferase from *Medicago truncatula*. *Plant Cell* 17, 3141-3154.

(20) **Wang, X.**, McLachlan, J., Zamore, P.D., Hall, T.M.T. (2002). Modular recognition of RNA by a human Pumilio-homology domain. *Cell* 110, 501-512.

(21) **Wang, X.**, Zamore, P.D., Hall, T.M.T. (2001). Crystal structure of a Pumilio homology domain. *Molecular Cell* 7, 855-865.

(22) **Wang, X.**, Hall, T.M.T. (2001). Structural basis for recognition of AU-rich element RNA by the HuD protein. *Nature Structural Biology* 8, 141-145.

(23) **Wang, X.**, Terzyan, S., Tang, J., Loy, J.A., Lin, X., Zhang, X.C. (2000). Human plasminogen catalytic domain undergoes a novel conformational change upon activation. *J. Mol. Biol.* 295, 903-914.

(24) **Wang, X.**, Tang, J., Hunter, B., Zhang, X. (1999). Crystal structure of streptokinase beta-domain. *FEBS Lett* 459, 85-89.

(25) **Wang, X.**, Lin, X., Loy, J.A., Tang, J., Zhang, X.C. (1998). Crystal structure of the catalytic domain of human plasmin complexed with streptokinase. *Science* 281, 1662-1665.

(26) Zhao, H., Tang, L., **Wang, X.**, Zhou, Y., Lin, Z. (1998). Structure of a snake venom phospholipase A₂ modified by p-bromo-phenacyl-bromide. *Toxicon* 36, 875-886.

(27) Rivera, M., Seetharaman, R., Ghirdhar, D., Wirtz, M., Zhang, X., **Wang, X.**, White, S. (1998). The reduction potential of cytochrome b5 is modulated by its exposed heme edge. *Biochemistry* 37, 1485-1494.

(28) **Wang, X.**, Wang, C., Tang, J., Dyda, F., Zhang, X.C. (1997). The crystal structure of bovine bile salt activated lipase: insights into the bile salt activation mechanism. *Structure* 5, 1209-1218.

(29) **Wang, X.**, Zhao, H., Lin, Z., Zhou, Y. (1997). Crystal Structure of Ca²⁺-saturated acidic phospholipase A₂ from *Agiistrodon halys pallas*. *Acta Biochimica et Biophysica Sinica*, 29, 142-149.

(30) **Wang, X.**, Zhao, H., Lin, Z., Zhou, Y. (1996). Crystallization and X-ray diffraction data of Ca²⁺-free and Ca²⁺-binding acidic phospholipase A₂ from the venom of *Agiistrodon halys pallas*. *Acta Biophysica Sinica* 12, 183-186.

(31) Niu, X., Meng, W., Gui, L., **Wang, X.**, Lin, Z. (1996). The crystallization and preliminary crystallographic analysis of the monoclinic crystal form of basic phospholipase A₂ from

the venom of *Agkistrodon halys pallas*. *Acta Biochemica et Biophysica Sinica* 28, 206-209.

(32) **Wang, X.**, Yang, J., Gui, L., Lin, Z., Chen, Y., Zhou, Y. (1996). Crystal structure of an acidic phospholipase A₂ from the venom of *Agkistrodon halys pallas* at 2.0 Å resolution. *J. Mol. Biol.* 255, 669-676.

(33) **Wang, X.**, Chen, R., Lin, Z. (1995). Modelling study of a neutral phospholipase A₂ from the venom of *Agkistrodon halys pallas*. *Acta Biochemica et Biophysica Sinica* 27, 602-609.

(34) Liu, Y., **Wang, X.**, Xie, C., Qu, S., Deng, F., Guo, Y. (1996). Microcalorimetric study of metabolic inhibition by humic acids in mitochondria from *Oryctolagus cuniculus domesticus* liver cells. *Chemosphere*, 33, 99-105.

(35) Deng, F., Gu, P., He, M., Guo, Y., Liu, Y., **Wang, X.**, Xie, C., Qu, S. (1994). Thermochemical study on the mitochondria from four species of fish liver. *Journal of Wuhan University*, No.5, 123-126.

(36) Xie, C., **Wang, X.**, Song, Z., Qu, S., Wang, P., Quo, Z. (1992). A microcalorimetric study on human lung cancer A549 cells whose metabolism is inhibited by medicated liposome. *Thermochimica Acta* 205, 33-37.

(37) **Wang, X.**, Xie, C., Qu, S., Zhou, Z. (1991). Microcalorimetric study of Mitochondrial Metabolism. *Thermochimica Acta* 176, 69-74.

(38) Deng, F., Guo, Y., **Wang, X.**, Xie, C. (1990). Measurement of Thermochemistry of Embryonic Development of *Paramisgurnus Dabryanus*. *Journal of Wuhan University*, No.1, 127-128.

(39) Lin, Z., Tang, L., Zhao, K., Zhao, H., **Wang, X.**, Meng, W., Gui, L., Song, S., Chen, Y., Zhou, Y. (2000). Structures and pharmacological activities of venom phospholipase A₂ from *Agkistrodon halys pallas*. In *Natural and Synthetic Toxins: Biological Implications (ACS Symposium series 745)*. (Tu A.T. and Gaffield W. ed.), American Chemical Society, Washington, DC. pp249-261.

(40) Lin, Z., **Wang, X.**, Yang, J., Gui, L., Zhou, Y. (1993) Structure of acidic phospholipase A₂ from the venom of *Agkistrodon halys pallas*. In *Advances in Venom and Toxin Research* (Tan, N.M. et al. ed.), Malaysian Society Toxinology, Kuala Lumpur. pp89-94.

INVITED SEMINAR/CONFERENCE PRESENTATIONS

- (1) BIT's 2nd Annual World Congress of Molecular and Cell Biology, Beijing, China, May 2012 (Talk, Chair for session "Protein Structure, Dynamics and Proteomics")
- (2) 50th Anniversary Meeting of the Phytochemical Society of North America, Kohala Coast, Hawaii, December 2011 (Talk)
- (3) School of Life Sciences, Fudan University, Shanghai, China, May 2011
- (4) BIT's 2nd Symposium on Enzymes & Biocatalysis, Dalian, China, April 2011 (Talk, Chair for session "Structural & Functional Studies of Enzymes").
- (5) Dept. of Biology, Texas Woman's University, Denton, TX, March, 2011
- (6) American Association of Pharmaceutical Scientists (AAPS) University of Houston Chapter, (Prof. Ming Hu's group, Department of Pharmacological and Pharmaceutical Sciences, University of Houston College of Pharmacy), Houston, TX, November 2010
- (7) Vth International Congress on Legume Genetics and Genomics, Pacific Grove, California, July 2010 (Talk)

- (8) 2010 Enzymes, Coenzymes & Metabolic Pathways Gordon Research Conference, Waterville Valley, New Hampshire, July 2010
- (9) The 55th Annual Oklahoma Pentasectional Meeting of the American Chemical Society, Norman, Oklahoma, April 2010 (Talk)
- (10) 2009 American Crystallographic Association Annual Meeting, Toronto, Canada, July 2009 (Talk)
- (11) Dept. of Biochemistry and Molecular Biology, University of Oklahoma College of Medicine, Oklahoma City, Oklahoma, February, 2009 (Talk)
- (12) 2009 Glycobiology Gordon Research Conference, Ventura, California, January 2009 (Talk)
- (13) Dept. of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, Oklahoma, September, 2008 (Talk)
- (14) XXI Congress and Assembly of the International Union of Crystallography, Osaka, Japan, August 2008
- (15) The 22nd Symposium of the Protein Society, San Diego, CA, July, 2008
- (16) 2007 American Crystallographic Association Annual Meeting, Salt Lake City, Utah, July, 2007
- (17) The 18th International Conference on Arabidopsis Research, Beijing, China, June 2007
- (18) Center for Plant Cell Biology, University of California at Riverside, March, 2007 (Talk)
- (19) 2006 American Society of Plant Biologists Annual Meeting, Boston, MA, August 2006
- (20) 10th International Conference on the Crystallization of Biological Macromolecules, Beijing, China, June, 2004
- (21) 2003 American Society of Plant Biologists Annual Meeting, Honolulu, Hawaii, July, 2003
- (22) Institute of Biophysics, Chinese Academy of Sciences, Beijing, China, January, 2002 (Talk)
- (23) 2001 American Crystallographic Association Annual Meeting, Los Angeles, CA, July, 2001
- (24) Symposium in Structural Biology and Bioinformatics, Chapel Hill, NC, March, 2001
- (25) 2000 Mid-Atlantic Protein Crystallography Meeting, Hapers Ferry, WV, May, 2000
- (26) 1998 SouthWest Macromolecular Symposium, College Station, TX, November, 1998 (Talk)
- (27) 1998 American Crystallographic Association Annual Meeting, Arlington, VA, July, 1998
- (28) 1997 American Crystallographic Association Annual Meeting, St. Louis, MO, July, 1997
- (29) Second Conference of the Asian Crystallographic Association, Bangkok, Thailand, November, 1995
- (30) Seminar-cum-School on Macromolecular Crystallographic Data, Calcutta, India, November, 1995 (Talk)
- (31) The First East Asian Symposium on Biophysics, Himeji, Japan, May 1994 (Talk)
- (32) XVI Congress and General Assembly of the International Union of Crystallography, Beijing, China, August, 1993