QIU ZHANG

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Profile:

- Over ten years' experience in molecular biology, biochemistry, and microbiology research, with a strong capacity to tackle different problems and handle multiple projects simultaneously
- Detail and results-oriented, highly motivated, analytical with excellent data analysis and interpretation capability
- Consistently recognized as team player with record of independent completion of milestones and development of standard operating procedures (SOPs)

Education:

M.S. Microbiology, University of Wisconsin, Milwaukee, WI, 2004-2007
M.S. Biochemistry and Molecular Biology, Hubei University, Wuhan, China, 1997-2000

Research and Teaching Experience:

May 2007—present: Center for Structural Molecular Biology, Oak Ridge National Laboratory

- Managing the ORNL Bio-Deuteration Laboratory, a DOE user facility: Train users and visitors in ORNL safety procedures and assist with their projects; Maintain chemical inventory and lab supplies; Maintain a safe and clean work environment
- Actively involved in multiple programmatic and user research projects: Clone, purify and characterize proteins from microorganisms, plant and humans; Optimize protein crystallization conditions; Generate isotopic labeled proteins for neutron scattering studies

Sept. 2003—May. 2007: Department of Biological Sciences, University of Wisconsin, Milwaukee

- Screened and characterized the alternative sigma factor HrpL regulated genes and effectors in *Erwinia chrysanthemi* 3937 by combining the mutant library and reporter gene systems using FACS
- Established the protein research platform in the lab such as protein expression, purification, Western blot, and electrophoretic mobility shift assay (EMSA)
- Served as Teaching Assistant for Microbiology 101 (Basic Techniques of Microbiology and Molecular Biology)

July 1997—June 2000: Department of Biological Sciences, Hubei University, Hubei, China

- Generated and characterized green fluorescent protein (GFP) transgenic rice through *Agrobacterium* transformation

Publications:

1. Wan, Q., Zhang, Q., Hamilton-Brehm, S., Weiss, K., Mustyakimov, M., Coates, L., Langan, P., Graham, D. and Kovalevsky, A. 2013. X-ray crystallographic studies of family 11 xylanase Michaelis and product complexes: implications for the catalytic mechanism. *Acta Crystallographica Section D*. In Press.
2. Perticaroli, S., Nickels, J. D., Ehlers, G., O'Neill, H., **Zhang, Q**., and Sokolov, A.P. 2013. Secondary structure and rigidity in model proteins. *Soft Matter* 9:9548-9556
3. Mamontov, E., O'Neill, H., **Zhang, Q.**, Wang, W. and Wesolowski, J. D. 2012. Common features in the microscopic dynamics of hydration water on organic and inorganic surfaces. ***Journal of Physics: Condensed Matter*** 24:064104 (doi:10.1088/0953-8984/24/6/064104).
4. Chu, X. Q., Mamontov, E., O'Neill, H., and **Zhang, Q**. 2012. Apparent Decoupling of the Dynamics of a Protein from the Dynamics of its Aqueous Solvent. ***Journal of Physical Chemistry Letters*** 3: 380–385
5. Kozlovskaya, V., Ankner, F. J., O'Neill, H., **Zhang, Q.** and Kharlampieva, E. 2011. Localized entrapment of green fluorescent protein within nanostructured polymer films. ***Soft Matter*** 7: 11453–11463
6. O'Neill, H., Cardoso, M., Yu, X., Pack, A., Smolensky, D., Zhang, Q., Heller, W. T., and Hong, K. L. 2011. Development of biohybrid solar energy conversion systems. ***American Chemical society Fuel Chemistry Division*** (Preprints)

7. William, T. H., O'Neill, H., **Zhang, Q.**, and Baker, A. G. 2010. Characterization of the Influence of the Ionic Liquid 1-Butyl-3-methylimidazolium Chloride on the Structure and Thermal Stability of Green Fluorescent Protein. *The Journal of Physical Chemistry B* 114: 13866-13871
8. Mamontov, E, O'Neill, H, and **Zhang, Q**. 2010. Mean-squared atomic displacements in hydrated lysozyme, native and denatured. *Journal of Biological Physics* 36: 291-297
9. Yang, S., Peng, Q., **Zhang, Q.**, Zou, L., Li, Y., Robert, C., Pritchard, L., Liu, H., Hovey, R., Wang, Q., Birch, P., Toth, I., and Yang, C.-H. 2010. Genome-wide identification of HrpL-regulated genes in necrotrophic phytopathogen *Dickeya dadantii* 3937. *PLoS ONE* 5(10): e13472
10. Luo, G. M., **Zhang, Q**, Del Castillo, A. R., Urban, V, and O'Neill, H. 2009. Characterization of Sol-Gel-encapsulated proteins using small-angle neutron scattering. *ACS Applied Materials & Interfaces* 10: 2261-2268
11. Yang, S., **Zhang, Q.**, Peng, Q., Yi, X., Chang, J. C., Reedy, R. M., Charkowski, A. O., and Yang, C.-H. 2008. Dynamic regulation of GacA in type III secretion system, pectinase gene expression, pellicle formation, and pathogenicity of *Dickeya dadantii*. *Molecular Plant-Microbe Interactions* 21: 133-142.
12. Yang, S., **Zhang, Q.**, Guo, J., Charkowski, A. O., Glick, B. R., Ibekwe, A. M., Cooksey, D. A., and Yang, C.-H. 2007. Global effect of indole-3-acetic acid (IAA) biosynthesis on multiple virulence factors of *Erwinia chrysanthemi* 3937. *Applied and Environmental Microbiology* 73: 1079-1088.
13. Song, J., **Zhang, Q.**, Luo, M., and Luo, Z. 2001. Studies on transgenic Sinningia Speciosa with green fluorescent protein, *Journal of Hubei University (Natural Science Edition)* 23(2): 171-173.
14. **Zhang, Q.,** Luo, M., and Song, J. 2000. Tissue culture of several improved varieties/lines of Indica Rice, *Plant Physiology Communications* 36: 538-539.
15. Luo, Z., Sheng, X., and **Zhang, Q**. 1999. The expression of green fluorescent protein in tobacco plant, *Journal of Huazhong University of Science and Technology* 27: 64-66.

Presentations: 8 times in National and International Conferences

Lab skills:

Biochemistry and Protein chemistry

- Protein expression vector construction and expression (shake flask and bench top fermenter) in both *E. coli* and yeast; Bradford DC-RC protocols; Native gel electrophoresis; SDS-PAGE
- Protein purification (Chromatography, Ammonium Sulfate precipitation, TCA precipitation, etc.)
- Enzyme assay and kinetics; Western blot; EMSA
- Enzyme, isoenzyme and tRNA sample preparation; Protein crystallization and condition optimization etc.

Recombinant DNA and RNA

- DNA and RNA extraction (plasmid & genomic); Nucleic acids qualification and quantification (gel electrophoresis, Nanodrop, and Bioanalyzer); Gel purification
- Primer design; Cloning, Ligation, and restriction enzyme digestion; Chemical transformation and electroporation
- PCR, cDNA synthesis, qRT-PCR; Sanger sequencing and sequence analysis etc.

Microbiology

- Aseptic techniques; Media and antibiotics preparation; Microbial cell culture and preservation; Chemical and electroporation competent cell preparation; Pathogenicity assays and Physiology assay
- Microscopy (Light and fluorescent); Gene expression (promoter activity) using reporter gene systems such as Gus or GFP
- Mutant construction (random mutagenesis, Tn mutagenesis, cross-over PCR based target deletion, and site-specific mutagenesis) and over-expression library construction

Lab Equipment:

- Autoclave; Incubator; Bioscreen C; Benchtop fermentor (New Brunswick BioFlo system)
- Bioanalyzer; NanoDrop; UV-Vis spectrophotometer; Multiple plate reader
- Electroporator; Gel image system; PCR and Real-time PCR machine
- Sonicator; FPLC; HPLC; Fluorescence-activated cell sorter (FACS); Circular dichroism;

Computer and Bioinformatics Skills:

- Endnote, Excel, PowerPoint, Word, Origin, SigmaPlot 11; Microbial strain and plasmid management using FileMaker; Blast; Vector NTI; Primer3; Artemis etc.