

**Hui Li**  
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### **CURRENT RESEACH INTERESTS**

As a knowledgeable research assistant scientist with lots of experience in protein purification and crystallization, I'm very interested in automation of scientific research, optimizing protein purification condition to get the best quality and the most quantity of proteins, and designing of crystallization screening conditions. I am also an expert in enzyme characterization and Eukaryotic expression system. My goal is to produce maximum amount of quality crystals, and characterize the enzymatic functions with the least cost.

### **EDUCATION**

1994-1999 University of Illinois at Chicago  
Ph.D. degree from the Department of Biological Sciences  
Major: Biochemistry and Molecular Biology

1990-1993 Peking University  
M.S. degree from the Department of Biology  
Major: Insecticide Toxicology

1986-1990 Fudan University  
B.S. degree from the Department of Biology  
Major: Histology

### **POSITIONS HELD**

January 2003-Current Assistant Scientist with Dr. Andrzej Joachimiak  
Argonne National Lab

April 2002-Aug 2003 Part-time faculty in College of Dupage

Mar2000-Aug2000 Lab manager for Dr. Jeanne Romero-Severson  
Purdue University

1999-2000 Post-doctor with Dr. Dixon Kaufman  
Northwestern University

1994-1999 Graduate student with Dr. Joseph Kieber  
University of Illinois at Chicago

1990-1993 Graduate student with Dr. Jianmei Yang  
Peking University

1986-1990 Undergraduate research with Dr. Yanxi Chen  
Fudan University

### **AWARDS**

Student of Excellence Scholarship, every semester from 1986 to 1990

## **SKILLS**

### **Molecular Biology and Genetics**

Microbial cell culture, bacteria transformation, DNA cloning techniques, library screening, interaction cloning, polymerase chain reaction (PCR), mutagenesis, Northern blotting, yeast two-hybrid system, plant transformation, plant DNA isolation, nuclei isolation, genotyping.

### **Protein Biochemistry and Protein Crystalization**

Mammalian and insect cell tissue culture (baculovirus expression system), gene expression in bacteria, protein purification by gel filtration, affinity chromatography, FPLC, gas chromatography, antibody generation, SDS-PAGE, Western-blotting, protein phosphorylation, co-immunoprecipitation, protein crystallization, ELISA assay, RIA assay and enzyme kinetics.

### **Microsurgery**

Pancreas islet isolation and transplantation.

## **EXPERIENCE**

### **Teaching**

Teach Biology 101 lecture and lab.

Teaching assistant for Invertebrate Zoology, Biology, Genetics, Genetics Lab, Microbiology lab, Advanced Microbiology, and Insecticide Toxicology.

### **Research**

#### **Research assistant Scientist for Dr. Andrzej Joachimiak**

Purify protein from different organisms using affinity chromatography and gel filtration, crystallize purified protein, use and maintain robots. Use reductive methylation techniques to improve crystallization. Design crystallization screens, including ANL-1 and ANL-2 to improve crystallization success rate. Characterize enzyme functions, including glucose kinase, fructose kinase, mevalonate 5-pyrophosphate decarboxylase, thioesterases I and II, pyrroline-5-carboxylate reductase, adenylosuccinate lyase, prephenate dehydratase, chitosanase, and methionine aminopeptidase. Study enzyme function using mutagenesis technology. Express protein in BaculoVirus expression system.

### **Lab manager for Dr. Jeanne Romero-Severson**

Isolate restrictable DNA from Red Oak to develop micro-satellites. Familiar with sequencing techniques.

### **Post-doctor research in Northwestern University with Dr. Dixon Kaufman**

Research project focused on the effects of cytokines, such as TNF- $\alpha$  and IL-1, on islet-transplantation. Isolated pancreas islet from mutant mice to transplant into diabetic mice in order to study the effects of cytokines on the level of rejection.

### **Research assistant in University of Illinois at Chicago with Dr. Joseph Kieber**

Designed and developed protein expression system for an Arabidopsis Raf homolog, purified these proteins using bacterial and insect cell expression systems, and analyzed the in vitro characteristics of these purified proteins. Over expressed various signaling elements in plants to determine their roles in ethylene signal transduction pathway.

### **Research assistant in Peking University**

Designed and developed experimental system to analyze the effect of insecticide on the activity of various enzymes in *Daphnia*.

### **POSTER PRESENTATIONS**

1995: Poster presentation at 6<sup>th</sup> International Arabidopsis Meeting. (Madison, WI)

1996: Poster presentation at the UIC Molecular Biology Retreat. (Lake Geneva, WI)

1997: Poster presentation at 8<sup>th</sup> International Arabidopsis Meeting. (Madison, WI)

Poster presentation at the UIC Molecular Biology Retreat. (Lake Geneva, WI)

Poster presentation at Plant Phosphorylation Workshop. (Jackson Hole, WY)

1998: Poster presentation at 9<sup>th</sup> International Arabidopsis Meeting. (Madison, WI)

2004: Automated purification using AKTAexplorer and AKTExpress in the Midwest Center for Structural Genomics. Y. Kim, M. Zhou, I.Dementieva, R. Wu, L. Lezondra, P. Quartey, G. Joachimiak, H. Li, C. Hatzos, N. Maltseva, and A. Joachimiak. **NIH\_Bottleneck meeting**

Crystallization Strategy in the Midwest Center for Structural Genomics.  
Younghang Kim, Irina Dementieva, Ruiying Wu, Min Zhou, Grazyna Joachimiak, Lour Lezondra, Pearl Quartey, **Hui Li**, Andrzej Jochimiak. **ACA**

High Throughput Protein Production at The Midwest Center for Structural Genomics. Dementieva, I., Kim, Y., Zhou, M., Wu, R., Lezondra, L., Quartey, P., Joachimiak, G., Korolev, O., **Hui Li**, and Joachimiak A. **PEPtalk** San Diego

Automation of protein purification for structural genomics. Kim, Y., Dementieva, I., Zhou, M., Wu, R., Lezondra, L., Quartey, P., Joachimiak, G., **Hui Li**, and Joachimiak A. **Keystone symposia**.

2005: Crystal Structure of a Novel Tetrahedral- shaped Protease from *Shigella flexneri*. Boguslaw Nocek, Andrew Binkowski, **Li Hui**, Frank Collart, Andrzej Joachimiak. **ACA** meeting.

Use of reductive methylation of proteins to increase crystallization efficiency at the Midwest Center for Structural Genomics. Kim, Y., Quartey, P., Lezondra, L., Hatzos, C., Zhou, M., Maltseva, N., **Li, H.**, Wu, R. and Joachimiak, A. **NIH Protein Purification & Crystallization workshop**

Automated purification using AKTAexplorer and AKTExpress in the Midwest Center for Structural Genomics. Y. Kim, M. Zhou, I. Dementieva, R. Wu, L. Lezondra, P. Quartey, G. Joachimiak, H. Li, C. Hatzos, N. Maltseva, and A. Joachimiak. **NIH Protein Purification & Crystallization workshop**

Crystal Structure of *Salmonella typhimurium* NP460328, a Conserved Cytoplasmic Protein. **Hui Li**, Marianne Cuff, Frank Collart, Shiu Moy, Andrzej Joachimiak. **ACA** meeting

Use of reductive methylation of proteins to increase crystallization efficiency at the Midwest Center for Structural Genomics. Kim, Y., Quartey, P., Lezondra, L., Hatzos, C., Zhou, M., Maltseva, N., **Li, H.**, Wu, R. and Joachimiak, A. **IUCR**

2006: Generation of Expression Clones Using High-Throughput Technologies for Protein Structure Determination and Drug Discovery. Shiu Moy, Youngchang Kim, Changsoo Chang, Jerzy Osipiuk, Rongguang Zhang, **Hui Li**, Ruiying Wu, Frank Collart, Andrzej Joachimiak. **ACA** meeting.

SP0731 from *Streptococcus pneumoniae* is a Member of the VOC Superfamily. Norma Duke, **Hui Li**, Frank Collart, Andrzej Joachimiak. **ACA** meeting.

Lecture poster: Expression, Purification and Crystallization Methods Developed at the MCSG Adoptable to a Structural Biology Laboratory. Min Zhou, Youngchang Kim, Pearl Quartey, **Hui Li**, Ruying Wu, Cathy Hatzos, Lour Volkart, Grazyna Joachimiak, Mark Donnelly, Andrzej Joachimiak. **ACA** meeting

Structural insights into the mechanism of proline biosynthesis. B. Nocek, C. Chang, L. Volkart, **H. Li**, D. Holzle, F. Collart and A. Joachimiak. Structural Genomics, Keystone symposia, Keystone, Colorado. 29 Jan- 3Feb 2006.

2007: Crystal Structure of Salmonella typhimurium NP460328, a Conserved Cytoplasmic Protein. **Hui Li**, Marianne Cuff, Frank Collart, Shiu Moy, Andrzej Joachimiak. ACA meeting.

2008: STRUCTURAL GENOMICS OF EUKARYOTIC CHAPERONE PROTEINS  
Jerzy Osipiuk, Minyi Gu, Monireh Bargassa, Rory Mulligan, Min Zhou, Natalia Maltseva, Erika Duggan, **Hui Li**, Catherine Hatzos, Cindy Voisine, Chandan Sahi, Elizabeth A. Craig, Richard I. Morimoto and Andrzej Joachimiak. The 13th Annual Midwest Stress Response and Molecular Chaperone Meeting, January 19 2008.

## **PUBLICATIONS**

1. **Li, H.**, Li, Y., Yang, J. (1994) The effect of insecticide on various enzyme activity of *Daphnia Magna*. *ACTA Scientiarum Naturalium Universitatis Pekinensis*, NO **1**.
2. Huang, Y., **Li, H.**, Gupta, R., Morris, P., Luan, S. and Kieber, J (2000). ATMPK4, an Arabidopsis homolog of mitogen-activated protein kinase, is activated in vitro by AtMEK1 through threonine phosphorylation. *Plant Physiology* . **122**, 1301-1310. (cited 16 times)
3. **Li, H.**, Huang, Y., and Kieber, J. (2003) Biochemical and functional analysis of CTR1, a protein kinase that negatively regulates ethylene signaling in *Arabidopsis*. *Plant J*. Jan; **33**(2):221-33. (cited 26 times)
4. Kim Y, Dementieva I, Zhou M, Wu R, Lezondra L, Quartey P, Joachimiak G, Korolev O, **Li, H**, Joachimiak A.(2004) Automation of protein purification for structural genomics.*J Struct Funct Genomics* **5**(1-2):111-8
5. Nocek B, Chang C, **Li, H**, Lezondra L, Holzle D, Collart F, Joachimiak A(2005) Crystal structures of delta1-pyrroline-5-carboxylate reductase from human pathogens Neisseria meningitides and Streptococcus pyogenes. *J Mol Bio* **354**(1):91-106
6. Cuff, M. E., **Li, H.**, Moy, S., Watson, J., Cipriani, A., and Joachimiak, A. Crystal structure of an acetyltransferase protein from *Vibrio cholerae*. *Proteins* (2007) Nov 1; **69**(2):422-7.
7. Tan, K., **Li, H.**, Zhang, R., Gu, M., Clancy, S., and Joachimiak, A. (2008) Structures of open (R) and close (T) states of prephenate dehydratase (PDT)--implication of allosteric regulation by L-phenylalanine. *J Struct Biol*. **162**(1):94-107.

8. Kim, Y., **Li, H.**, Binkowski, T. A., Holzle, D., Cipriani, A., Collart, F., and Joachimiak, A. (2008), <sup>2</sup>Crystal Structure of Fatty Acid/Phospholipid Synthesis Protein PlsX from *Enterococcus faecalis*<sup>2</sup>, *Proteins* (accepted).
9. Kim, Y., Quartey, P., **Li, H.**, Volkart, L., Hatzos, C., Chang, C., Nocek, B., Cuff, M., Osipiuk, J., Tan, K., Fan, Y., Bigelow, L., Maltseva, N., Wu, R., Borovilos, M., Duggan, D., Zhou, M., Binkowski A. T., Zhang, R., Joachimiak, A.. A Large-Scale Evaluation of Protein Reductive Methylation. (Accepted by *Nature Method.*)
10. Nocek B, **Li, H.**, Hatzos, C., Osipiuk, J., Collart, F., and A. Joakimiak\* IAA Acetyltransferase From *Bacillus Cereus* ATCC 14579. (in preparation)
11. **Li, H.**, Chang, C., and Joachimiak, A. Crystal Structure of an Adenylosuccinate Lyase from *Legionella pneumophila*, a leading pathogen causes Legionnaire's Disease. (in preparation)
12. Nocek, B., Cuff, M.E., **Li, H.**, Volkart, L., Quartey, P., and Joachimiak, A.. Structural Studies of ROK Fructokinase from *Bacillus subtilis*. (in preparation)

Co-author of 54 protein structures deposits in PDB with ID: 2CSG, 1Y0E, 2PP6, 1S4K, 2I7H, 1Y9K, 1SS4, 1Y7U, 1Y9W, 2B81, 1XQA, 1XVS, 2FCK, 2PDO, 1U7N, 2AG8, 1YQG, 1XC2, 1Z6M, 1Z0X, 2R41, 3B48, 3D3Y, 2GS8, 2AEE, 2OL5, 1Y1O, 1Q9U, 2OIW, 2EWC, 2FI0, 2I0M, 2GUP, 2I6X, 2I6D, 2I9D, 2G2C, 2P1Z, 2O5H, 2IKB, 2IS5, 2P0N, 3D37, 2O1R, 2IQ8, 2QMX, 2RK5, 3BHG, 3CIT, 3DPJ, 3CCY, 2RE1, 3B79, 2QHK.

## Abstract

Crystal Structure of *Bacillus stearothermophilus* RBSTP0257, a conserved hypothetical protein. **Hui Li**, Youngchang, Kim, Frank Collart, Shiu Moy and Andrzej Joachmiak' ACA meeting 2004.

## Conference

ACA meeting 2004, Chicago.

NIGMS 2005 PSI Protein Production & Crystallization Workshop Feb. 2-3, 2005. Washinton D.C.