Xiaofeng Liu, Ph.D

Assistant Staff Scientist
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Education

1989-1993: B.S. with Honors, Chemistry, Jilin University, Changchun, China.
1996-2001: Ph. D. in Biochemistry, Iowa State University.
2001-present: Postdoctoral training, Children's Hospital Oakland Research Institute (Molecular BioIron, under Dr. Elizabeth Theil)

Grants and Awards

- Pending, NIH R-03: *Two Dps protect DNA from (Fe/H_2O_2) damage: a Bacillus model study*, PA-03-108, IC: NIAID-DMID & NIEHS-COSPB, IRG: IDM-BACP, submitted Oct. 1st, 2005
- 2005-2006 Cooley's Anemia Foundation Postdoctoral Fellowship
- 2004-2005 Cooley's Anemia Foundation Postdoctoral Fellowship
- 2005 ASBMB Postdoctoral Travel Award, ASBMB (American Society of Biochemistry and Molecular Biology) Annual Meeting, Apr. 2-6, 2005. San Diego, CA
- 2004 Postdoctoral Travel Award, ASBMB (American Society of Biochemistry and Molecular Biology) Annual Meeting, Jun. 11-16, 2004. Boston, MA
- 2003 ASBMB Postdoctoral Travel Award, Experimental Biology Meeting 2003, San Diego, CA
- PACE (Premium for Academic Excellence) Fellowships, 1999-2001, Iowa State University.
- Graduate Student Travel Award, 2000, Iowa State University
- Graduate College Tuition Scholarship, Iowa State University, 1996-2001

Teaching

- Lecturer (1993-1995), general chemistry, Changchun College of Traditional Medicine
- Teaching Assistant (1995-1996), organic chemistry I (lab), Western Michigan University
- Teaching Assistant (1996), organic chemistry II (lab), Western Michigan University
- Teaching Assistant (1998), advanced protein chemistry (lab), Iowa State University
- Teaching Assistant (1999), advanced biochemistry (senior & graduate level), Iowa State University
- Teaching Assistant (1999), BBMB 681 (Dept. seminar), Iowa State University.

Committees

Research Information Systems Committee (RISC), Children's Hospital Oakland Research Institute

Mentoring

- Rotation Ph.D. students, Dept. of Biochemistry and Biophysics, Iowa State University, 1999 & 2000.
- Staff Research Associate, Children's Hospital Oakland Research Institute, 2002-2004
- Directing research of two student interns, Children's Hospital Oakland Research Institute.

Research Interests

Molecular and cellular mechanisms of Dps (DNA protection during starvation) proteins in bacterial oxidative stress resistance and iron homeostasis, and roles of Dps in virulence; molecular basis of chromosomal DNA binding and protection; regulation of genes involved in iron homeostasis, peroxide resistance, and virulence; roles of Dps in bacterial chromosome dynamics and global gene expression in response to environmental stimuli.

B. Selected peer-reviewed publications (in chronological order)

1. **Liu, X.**, Theil, E.C. Ferritins: Dynamic management of biological iron and oxygen chemistry. Acc. Chem. Res. 2005; 38:167-175.
2. **Liu, X.**, Theil, E.C. Ferritin as iron concentrator and chelator target. Ann. New York Acad. Sci. 2005: In press.
3. **Liu, X.**, Hintze, K.J., Lonnerdal, B., Theil, E.C. Iron at the center of ferritin, metal/oxygen homeostasis and novel dietary strategies. Biol. Res. 2005: In press.
4. Lonnerdal, B., Bryant, A., **Liu, X.**, Theil, E.C. Iron absorption from soybean ferritin in non anemic women. Am. J. Clin Nutr. 2005: In press
5. **Liu X.**, Kim K, Leighton T, Theil EC. Distinctive and complementary properties of the two *B. anthracis* Dps proteins in DNA protection and iron detoxification. J. Bacteriol. 2005: Under revision.
6. **Liu, X.**, Theil, E.C. Direct identification of the site for the diferric peroxide reaction intermediate. Proc. Natl. Acad. Sci. USA. 2004; 101: 8557-8562.
7. **Liu, X.**, Jin, W., Theil, E.C. Opening protein pores with chaotropes enhances Fe reduction and chelation of Fe from the ferritin biomineral. Proc. Natl. Acad. Sci. USA. 2003; 100: 3653-3658.
8. Jameson, G.N., Jin, W., Krebs, C., Perreira, A.S., Tavares P, **Liu, X.**, Theil, E.C., Huynh, B.H. Mossbauer investigation of Fe mineralization in ferritin. Biochemistry. 2002; 41:13435-13443.
9. Aleshin, A.E., Kirby, C., **Liu, X.**, Bourenkov, G.P., Bartunik, H.D., Fromm, H.J., Honzatko, R.B. Crystal structures of mutant monomeric hexokinase I reveal multiple ADP binding sites and conformational changes relevant to allosteric regulation. J. Mol. Biol. 2000; 296: 1001-1015.
10. Aleshin, A.E., Malfois, M., **Liu, X.**, Kim, C., Fromm, H.J., Honzatko, R.B., Svengun, D. Nonaggregating mutant of recombinant human brain hexokinase exhibits wild-type kinetics and rod-like conformations in solution. Biochemistry. 1999; 38: 8359-8366.
11. **Liu, X.,** Kim, C., Kurbanov, F., Honzatko, R.B., Fromm, H.J. Dual mechanisms for glucose-6 phosphate inhibition of human brain hexokinase. J. Biol. Chem. 1999; 274: 31155-31159.
12. **Liu, X.**, Liu, Z., Li, Y. Solvent and dipole effect on the catalysis of esterification of solid acids: a mechanism study. Chemistry Communications (China) 1993; 35: 117-121.

Patent

Li, Y., Liu, F., **Liu, X.** New Methods in Synthesizing and Processing Epoxy Resin for Industrial Use. Patent No. 92-05, Jilin Scientific Committee, China, 1992.

Oral Presentations and Invited Talks

- Oral presentation: *Differential Stability of Ferritin that is Associated with Iron Release*, Protein Folding and Unfolding session (ASBMB), FASEB Annual Meeting 2003. San Diego, CA.
- Invited Talk: *Ferritin Activities*, Gordon Conference-GRC. Jan 22-25, 2004. Ventura, CA.

- Invited Talk: *Iron In and Iron Out—Biological Activities of Ferritin*,CHORI Research Symposium. Mar 25, 2004.
- Invited Talk: Dept. of Biochemistry & Molecular Biology, Nov. 2005, Jilin University (China).

References

- Elizabeth C. Theil, Ph.D
  Senior Scientist, Children's Hospital Oakland Research Institute;
  Professor Dept. of Molecular Structural Biochemistry, North Carolina State University (adj);
  Professor, Dept. of Nutritional Biochemistry & Toxicology, University of California, Berkeley (adj.)
  Address: 5700 Martin Luther King Jr. Way, Oakland, CA 94609
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- Richard Honzatko, Ph.D
  Professor, Dept. of Biochemistry & Biophysics, Iowa State University
  Address: 4206 Molecular Biology BLDG, Ames, IA 50011
  Phone: (515) 294-7103
  Email: honzatko@iastate.edu

- Edward Solomon, Ph.D
  Monroe E. Spaght Professor in the School of Humanities and Sciences, Stanford University
  Professor, Dept. of Chemistry, Stanford University
  Address: S G MUDD, Rm. 141, Stanford, California, 94305-5080
  Phone: (650) 723-9104;
  Email: edward.solomon@stanford.edu

- Qing Jiang, Ph.D.
  Assistant Professor, Dept. of Foods & Nutrition, Purdue University
  Address: 700 W. State Street, West Lafayette, IN 47907-2059
  Phone: (765) 494-2483;
  Email: qjiang@purdue.edu