Jun Yin

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Education

Harvard Medical School, Boston, MA, USA	Postdoctoral Research Fellow	2003-present
University of California at Berkeley, CA, USA	Ph.D. in Organic Chemistry	2003
Rutgers University, New Brunswick, NJ, USA	M.S. in Chemistry	1997
Peking University, Beijing, China	B.S. in Chemistry	1995

Research Experience

2003-present Harvard Medical School, postdoctoral research in the Department of Biological Chemistry and Molecular Pharmacology with Prof. **Christopher T. Walsh**.

- Developed a high-throughput method for cloning natural product biosynthetic gene clusters from bacterial genomes by phage display. Collaborated with Prof. **Roberto Kolter** and Prof. **Jon Clardy** at Harvard Medical School.
- Identified an eleven residue peptide tag for versatile protein labeling by site specific posttranslational modification catalyzed by Sfp phosphopantetheinyl transferase. Collaborated with Prof. **Roberto Kolter** at Harvard Medical School and Prof. **Neil L. Kelleher** at the University of Illinois, Urbana-Champaign.
- Developed an efficient method for *in vivo* labeling and imaging cell surface receptors based on Sfp phosphopantetheinyl transferase-catalyzed post-translational modification of peptidyl carrier protein (PCP). Collaborated with Prof. **David E. Golan** at Harvard Medical School and Prof. **Marianne Wessling-Resnick** at Harvard School of Public Health.
- Developed a novel method for encoding small molecules with phagemid and screening chemical libraries by phage display. The screening results were then decoded by DNA microarray. Collaborated with the **Bauer Center for Genomics Research** at Harvard University.
- Discovered that Sfp phosphopantetheinyl transferase-catalyzed protein posttranslational modification can be used for site-specific protein labeling and applied this method for high-throughput protein microarray printing. Collaborated with the **Institute of Chemistry and Cell Biology** at Harvard Medical School.

1999-2003 The Scripps Research Institute, La Jolla, CA, graduate research in the

Department of Chemistry with Prof. **Peter G. Schultz**.

- Ph.D. Thesis title: Evolution of Antibody Catalysis.
- Carried out directed evolution on a heme-binding peroxidase antibody using phage display and increased its catalytic activity by a factor of ten. Collaborated with the **Genomics Institute of the Novartis Research Foundation**, San Diego, CA on high-throughput screening of enzymatic activities.
- Carried out extensive mutagenesis studies on ferrochelatase catalytic antibody 7G12 and characterized the functions of somatic mutations during antibody affinity maturation by measuring hapten binding affinity, catalytic activity and Resonance Raman spectroscopy of various mutants. Collaborated with Prof. **Thomas G. Spiro** at the Princeton University.
- Solved a total of eight crystal structures of the Fab fragment of catalytic antibodies 7G12 and 28B4 both in the germline form and in the affinity-matured form with various ligands or substrates bound. Elucidated the catalytic mechanism of ferrochelatase antibody 7G12 and monooxygenase antibody 28B4. Characterized the structure-function relationship of the somatic mutations accumulated during antibody immunological evolution. Collaborated with Prof. **Richard A. Lerner**, Prof. **Raymond C. Stevens** and Prof. **Floyd E. Romesberg** at The Scripps Research Institute.

1997-1999 University of California at Berkeley, graduate research in the Department of Chemistry with Prof. **Peter G. Schultz**.

- Carried out kinetic studies on the ferrochelatase catalytic antibody 7G12.
- Moved to The Scripps Research Institute with Prof. Peter G. Schultz's group in July 1999.

1995-1997 Rutgers University, New Brunswick, NJ, graduate research in the Department of Chemistry with Prof. **Stephen Anderson**.

- Characterized the interaction of tissue plasminogen activator with amyloid β-peptide fibrils in Alzheimer's disease. Collaborated with the **Center for Advanced Biotechnology and Medicine** at the Rutgers University.

1994-1995 Peking University, undergraduate research in the Department of Chemistry with Prof. **Baohuai Wang**.

- Measured the enthalpies of dissolution of fullerenes C_{60} and C_{70} in various organic solvents by microcalorimetry.

Teaching Experience

1998, Fall University of California at Berkeley, Department of Chemistry
Teaching assistant for Organic Chemistry (Chem 112B), responsible for discussion section and laboratory techniques.

1997, Fall University of California at Berkeley, Department of Chemistry
Teaching assistant for Organic Chemistry (Chem 112A), responsible for

discussion section and laboratory techniques.

Honors and Professional Memberships

1995-1996	Graduate student fellowship, Rutgers University
1993-1994	Outstanding student scholarship, Peking University
1997-present	American Chemical Society

Publications

1. **Yin, J.**, Straight, P. D., McLoughlin, S. M., Zhou, Z., Lin, A. J., Golan, D. E., Kelleher, N. L., Kolter, R. & Walsh, C. T. (2005). Genetically encoded short peptide tag for versatile protein labeling by Sfp phosphopantetheinyl transferase. *Proc Natl Acad Sci U S A*, in press.

2. **Yin, J.**, Lin, A. J., Buckett, P. D., Wessling-Resnick, M., Golan, D. E. & Walsh, C. T. (2005). Single-cell FRET imaging of transferrin receptor trafficking dynamics by Sfp catalyzed site specific protein labeling. *Chem Biol*, in press.

3. McLoughlin, S. M., Mazur, M. T., Miller, L. M., **Yin, J.**, Liu, F., Walsh, C. T. & Kelleher, N. L. (2005). Chemoenzymatic approaches for streamlined detection of active site modifications on thiotemplate assembly lines using mass spectrometry. *Biochemistry*, in press.

4. Vaillancourt, F. H., **Yin, J.** & Walsh, C. T. (2005). SyrB2 in syringomycin E biosynthesis is a nonheme FeII α-ketoglutarate- and O2-dependent halogenase. *Proc Natl Acad Sci* U S A 102, 10111-6.

5. Venkateshrao, S., **Yin, J.**, Jarzecki, A. A., Schultz, P. G. & Spiro, T. G. (2004). Porphyrin distortion during affinity maturation of a ferrochelatase antibody, monitored by Resonance Raman spectroscopy. *J Am Chem Soc* 126, 16361-7.

6. **Yin, J.**, Liu, F., Schinke, M., Daly, C. & Walsh, C. T. (2004). Phagemid encoded small molecules for high throughput screening of chemical libraries. *J Am Chem Soc* 126, 13570-1.

7. **Yin, J.**, Liu, F., Li, X. & Walsh, C. T. (2004). Labeling proteins with small molecules by site-specific posttranslational modification. *J Am Chem Soc* 126, 7754-5. This paper was featured by *Chem & Eng News* (2004) volume 82, page 31.

8. **Yin, J.**, Mills, J. H. & Schultz, P. G. (2004). A catalysis-based selection for peroxidase antibodies with increased activity. *J Am Chem Soc* 126, 3006-7.

9. Jimenez, R., Salazar, G., **Yin, J.**, Joo, T. & Romesberg, F. E. (2004). Protein dynamics and the immunological evolution of molecular recognition. *Proc Natl Acad Sci U S A* 101, 3803-8.

10. **Yin J.** & Schultz P. G. (2004) Immunological evolution of antibody catalysis. In "*Catalytic Antibodies*" (Keinan, E. ed), Wiley-VCH, Weinheim, pp. 1-29.

11. **Yin, J.**, Beuscher, A. E. t., Andryski, S. E., Stevens, R. C. & Schultz, P. G. (2003). Structural plasticity and the evolution of antibody affinity and specificity. *J Mol Biol* 330, 651-6. This paper was featured on the cover of the issue.

12. **Yin, J.**, Andryski, S. E., Beuscher, A. E. t., Stevens, R. C. & Schultz, P. G. (2003). Structural evidence for substrate strain in antibody catalysis. *Proc Natl Acad Sci U S A* 100, 856-61.

13. Schultz, P. G., **Yin, J.** & Lerner, R. A. (2002). The chemistry of the antibody molecule. *Angew Chem Int Ed Engl* 41, 4427-37.

14. **Yin, J.**, Mundorff, E. C., Yang, P. L., Wendt, K. U., Hanway, D., Stevens, R. C. & Schultz, P. G. (2001). A comparative analysis of the immunological evolution of antibody 28B4. *Biochemistry* 40, 10764-73.

15. Romesberg, F. E., Santarsiero, B. D., Spiller, B., **Yin, J.**, Barnes, D., Schultz, P. G. & Stevens, R. C. (1998). Structural and kinetic evidence for strain in biological catalysis. *Biochemistry* 37, 14404-9.

16. **Yin, J.**, Wang, B. H., Li, Z. F., Zhang Y. M., Zhou, X. H. & Gu, Z. N. (1996) Enthalpies of dissolution of C_{60} and C_{70} in o-xylene, toluene, and carbon disufide at temperatures from 293.15 K to 313.15 K. *J Chem Thermodynamics* 28, 1145-1151.

Patent

1. **Yin, J.**, Walsh, C. T., Straight, P. D., Kolter, R. & Zhou, Z. (2005) Genetically encoded short peptide tag for versatile protein labeling by Sfp phosphopantetheinyl transferase. United States provisional patent filed.

Presentations

1. **Yin, J.**, (2005). Labeling protein with small molecules by site specific post-translational modification. Young Protein Scientist Symposium at the 19th Annual Symposium of The Protein Society, Boston, MA, USA, July 29 - August 3, 2005 (invited oral presentation).

2. **Yin, J.**, Liu, F., Lin, A. J., Buckett, P. D., Wessling-Resnick, M., Golan, D. E. & Walsh, C. T. (2005). Labeling protein with small molecules by site specific posttranslational modification. 19th Annual Symposium of The Protein Society, Boston, MA, USA, July 29 - August 3, 2005 (poster presentation).

3. **Yin, J.**, Liu, F., Lin, A. J., Buckett, P. D., Wessling-Resnick, M., Golan, D. E. & Walsh, C. T. (2005). Labeling protein with small molecules by site specific posttranslational modification. 14th Gordon Research Conference on Bioorganic Chemistry, Proctor Academy, Andover, NH, USA, June 12 - 17, 2005 (poster presentation).

4. Vaillancourt F. H., **Yin, J.**, Walsh, C. T. (2005). A novel type of chlorinating enzyme in Syringomycin E biosynthesis. Experimental Biology 2005, San Diego Convention Center, San Diego, CA, USA, April 2-6. FASEB J. 19(4): A306-A307 (poster presentation).

5. **Yin, J.**, Beuscher, A. E. t., Andryski, S., Stevens, R. C.; Schultz, P. G. (2003). *In vivo* and *in vitro* evolution of catalytic antibodies. 225th ACS National Meeting, New Orleans, LA, USA, March 23-27, 2003, (oral presentation).

Immigration Status

United States permanent resident since 2005

References

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