

Liang Tong

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EXPERIENCE:

September, 1997 — present

Department of Biological Sciences, Columbia University, New York, New York

Professor (July 04–present), Associate Professor (Sept. 97–June 04, tenured July 01)

- Structural and biochemical studies of enzymes involved in fatty acid metabolism (acetyl-CoA carboxylase, propionyl-CoA carboxylase, pyruvate carboxylase, AMP-activated protein kinase, carnitine acyltransferase, malic enzyme, acyl-CoA synthetase).
- Structural and biochemical studies of pre-mRNA 3'-end processing (CPSF-73, CPSF-100, CstF-77, PAPD1).
- Structural and biochemical studies of RNA polymerase II transcription termination and RNA stability (Rat1, Xrn1).
- Discovery of a quality-control mechanism for mRNA 3'-end capping (Rai1, Dom3Z).
- Structural and biological studies of signal transduction by Toll/interleukin-1 receptor (TIR) domains.
- Structural and biological studies of BEACH domains.
- Structural and biochemical studies of human cytomegalovirus (HCMV) protease.
- Development of new methods and computer programs for protein crystallography (program COMO).
- Design, setup and operation of a structural biology laboratory for protein expression, purification, crystallization, and structure determination by X-ray crystallography.

August, 1992 — August, 1997

Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Connecticut

Principal Scientist (Jan. 96–Aug. 97), Senior Scientist (Aug. 92–Dec. 95)

- Structural studies of human p38 MAP kinase in complex with highly potent and highly specific inhibitors, which revealed the structural basis for specificity of protein kinase inhibitors and a novel, allosteric binding site (the DFG-out conformation).
- Structural studies of human cytomegalovirus (HCMV) protease free enzyme and inhibitor complex, which revealed a new polypeptide backbone fold for serine proteases and the induced-fit behavior of this protease.
- Crystal structures of inhibitor complexes of various proteins (HIV-1 reverse transcriptase, HIV-2 protease, human renin, human thrombin, human p56^{lck} SH2 domain, etc).
- Development of new methods and computer programs for protein crystallography. (The Replace program suite, locked translation function, combined molecular replacement)
- Crystal structures of small molecules (inhibitors, reaction intermediates).
- Design, setup and operation of an X-ray diffraction laboratory for the structure determination of proteins and small molecules.

August, 1989 — July, 1992

Purdue University, West Lafayette, Indiana

Post-Doctoral Research Associate (Prof. Michael G. Rossmann)

- Crystal structure of Sindbis virus capsid protein. The structure was determined by a combination of the multiple isomorphous replacement and the molecular replacement averaging techniques and revealed a chymotrypsin-like serine proteinase.

- Development of new methods and computer programs for protein crystallography. (Locked rotation function (GLRF), translation function, Patterson map interpretation, real and reciprocal space molecular replacement averaging)

August, 1984 — July, 1989

University of California, Berkeley

Graduate Research Assistant (Prof. Sung-Hou Kim)

- Crystal structure determination, by the multiple isomorphous replacement method, and refinement of the catalytic domain of the human *ras* proto-oncogene product p21 and its oncogenic mutants.
- Crystal structure refinement of the sweet-tasting protein monellin.

Teaching Assistant

- Freshman chemistry, graduate level introduction to X-ray crystallography and biophysical chemistry.

January, 1983 — July, 1983

Peking University, Beijing, China

Undergraduate Research Assistant (Prof. You-Qi Tang)

- The characterization and crystal structure determination of the reaction product between $(\text{NH}_4)_2\text{MoS}_4$ and the cupric salts of amino acids, and its relevance to Cu-Mo antagonism.

EDUCATION:

Ph. D., Protein Crystallography. December, 1989

University of California, Berkeley

B. Sc., Chemistry. July, 1983

Peking University (Beijing, P.R. China)

HONORS:

Phi Beta Kappa, 1989; Sigma Xi, 1991.

The Vice President's Golden Achievement Award, 1996. Boehringer Ingelheim Pharmaceuticals, Inc. Ridgefield, CT.

The first Boehringer Ingelheim worldwide Research and Development Award, 1997.

AAAS Fellow, 2010.

EDITORIAL BOARD:

Protein and Peptide Letters, Editor for Eastern USA (Oct. 2006-)

J. Biol. Chem. (July 2006-Dec. 2009)

Journal of Structural and Functional Genomics (Jan. 2007-)

Science in China B: Chemistry (Nov. 2008-)

Faculty of 1000 (2004-2007)

Biologics: Targets and Therapy (2007-)

Protein and Peptide Letters (Jan. 2006-Oct. 2006)