Heli Liu

Current Position: Postdoctoral fellow, Department of Molecular Pharmacology & Biological Chemistry, Northwestern University Feinberg School of Medicine, Chicago, Ill.

Education: Ph.D. in biochemistry and molecular biology, 2005, the Institute of Biophysics, Chinese Academy of Sciences, Beijing, China

Non-scientific Interests: Walking, Chinese calligraphy

My deep interest in the structure/function of macromolecules started with the determination of my first crystal structure, the *azotobacter vinelandii* bacterioferritin, when I pursued my Ph.D. degree in Chinese Academy of Sciences at Beijing. I went on to participate in the structural genomics project of *Shigella flexineri* and solved the structures of uroporphyrinogen decarboxylase and phosphoglycolate phosphatase from this pathogen. The rich research experience in my Ph.D. study has provided many opportunities, prompting me to extend interest into revealing the molecular basis for widespread human diseases. In 2006, I joined the lab of Dr. Xiaolin He at the Feinberg School of Medicine at Northwestern University, Chicago, where I study the cell-surface receptors involved in cancer and neurological disorders. In 2007, we published the structure of KIT in complex with its ligand, stem cell factor, shedding light on the activation mechanism of class III receptor tyrosine kinases, which frequently are associated with hematopoietic cancers. Now, we are presenting the structural and biochemical studies of ADAM22, a neuronal adhesion receptor associated with epilepsy. This is the first structure of a full-length extracellular domain of the ADAM family, a family of more than 20 proteins that play important roles in physiology and diseases by serving as either adhesive receptors or membrane-anchored scissors. Our structure provides a reliable template for the large number of ADAMs, offering insights on how the multiple domains of ADAMs collaborate to perform their adhesive function or shedding activities. We wish to soon catch the ADAMs in action by crystallizing their complexes with substrate proteins or ligands. The structures we aim to solve, *e.g.*, the complex between ADAM22 and its ligand LGI-1, will offer more direct and more complete pictures about the function of ADAMs.

Read Dr. Liu's article entitled: Structural Characterization of the Ectodomain of a Disintegrin and Metalloproteinase-22 (ADAM22), a Neural Adhesion Receptor Instead of Metalloproteinase

http://www.jbc.org/cgi/content/full/284/42/29077