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# Department of Chemistry

## Special Seminar

9:45 a.m. Thursday, June 7, 2012 • 331 Smith Hall



Associate Professor

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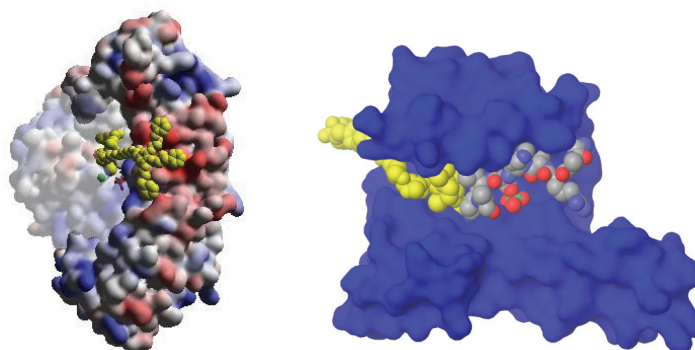
#### *Assembling Small Molecules for Disrupting and Detecting Protein-Protein Interactions*

Research interests include design and synthesis of organic molecules that can self- and/or template-induced assemble and recognize interior and/or exterior of biopolymers such as proteins

Website: [http://www.sanken.osaka-u.ac.jp/~johkanda/Research\\_En.html](http://www.sanken.osaka-u.ac.jp/~johkanda/Research_En.html)

#### Abstract

Low-molecular-weight agents that regulate and/or detect protein-protein interactions (PPIs) are highly desirable for pharmaceutical applications and for elucidating PPI networks, however, it remains a difficult challenge to identify the “drug-like” lead compounds due to the structural features and the environmental factors of protein interfaces. We focus on designing synthetic agents for disrupting PPIs based on the module assembly strategy, in which small module compounds are designed for complementally binding to several areas of targeted protein surface, and are assembled by various means; i.e. metal chelation and covalent linking, to generate a multivalent agent that is more capable of surface recognition than each module compound. The first half of this presentation will describe an example of bivalent prenyltransferase inhibitors, which anchor to the active site and deliver a minimally sized module to the enzyme surface. These compounds potently inhibit farnesylation of the positively charged K-Ras peptide, which is involved in a transient PPI with the acidic surface of FTase. The second half of the presentation will focus on our recent efforts to detect the interaction of 14-3-3 proteins and phosphorylated ligands using the fluorescent probes derived from a natural product, fusicoccin. Details of phosphopeptide sequence-dependent 14-3-3 labeling as well as detection of endogenous 14-3-3 in cells will also be discussed.



Host: Professor Mark Distefano