

# TSUMOTO LAB.

[Focusing on the molecular interactions]

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<http://tsumoto-lab.k.u-tokyo.ac.jp/>

Physical Biochemistry

## Interaction with Biomolecules

Understanding the biomolecular interactions, and regulating their functions

Biological phenomena are composed of highly organized and specific molecular interactions. We aim to dissect these biomolecular interactions from multiple points of view, and to screen and design ligands that control them. We also advance bio-medicine in the era of *bio-better* and *bio-superior* using diverse engineering approaches. To create a new generation of diagnosis and therapeutics, bio-physical approaches are applied to the study of disease-related biological machineries.

- ◆ **Antibody Engineering in the Era of Bio-Better** – Fundamental research on the next generation of antibody design through protein engineering and rational strategies based on their physicochemical and cellular properties.
- ◆ **Artificial Regulation of Biomolecular Interactions** – Screening and optimization of fragment-based molecules to modulate biomolecular interactions.
- ◆ **Protein Engineering in Bio-Material Design** – Engineering and development of novel strategies to manipulate biological molecules, and creation of bio-inspired structures based on natural scaffolds and bioactive machines.
- ◆ **Focus on Disease-related Molecular Systems** – Unravel the molecular and physico-chemical basis of bio-systems that strengthen disease, and use that knowledge to fight against pathogen organisms and cancer.

