Presentations

[1] (Invited presentation) J. Ohnuki, M. Takano, “Electrostatic ratcheting mechanism of peptide synthesis by non-ribosomal molecular machine”, The 58th annual meeting of the biophysical society of Japan, Online conference (2020).

[2] 大貫隼，高野光則，“誘電アロステリーによるアクチン繊維の脱重合機構”，第 1 回生体分子シミュレーション・モデリング研究会，Online conference (2021).

Awards

・Early career presentation award from the biophysical society of Japan

Research Summary

・We investigated the physical mechanism of successive peptide synthesis by a non-ribosomal molecular machine. Based on our molecular dynamics (MD) results, we propose the electrostatic ratcheting mechanism of the peptide synthesis with the essential part shared between non-ribosomal and ribosomal molecular machines.

・We continued to study the mechanism of actin depolymerization and its regulation from the viewpoint of dielectric and piezoelectric allostery.

・By utilizing a Ising-like Hamiltonian and a combinatorial optimization technique, we propose a method to search allosteric pathway extended from an input site to distant and unknown sites in the large-scale Coulombic network which is obtained from MD simulation.