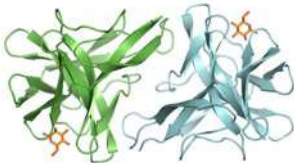
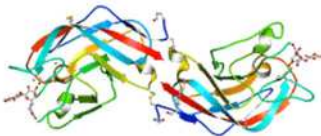


Name UNNO Hideaki	Job Title Associate professor	Area of Expertise Structural Biology; Biochemistry
1. Main Research Topics 1) Structural analysis for proteins. Our research targets enzyme proteins and carbohydrate-binding proteins (lectins). Using X-ray crystallography and cryo-electron microscopy, we elucidate their three-dimensional structures in detail. Through structural analysis, we further clarify the chemical reaction mechanisms catalyzed by proteins and the structural basis of protein function. Examples of proteins analyzed so far are shown below.  Membrane pore-forming complex structure of the hemolytic lectin CEL-III from <i>Cucumaria echinata</i> (a sea cucumber). CEL-III is a protein that functions as a toxin against other organisms. Through crystallographic analysis, we revealed how CEL-III perforates cell membranes and destroys cells. 2) Discovery of novel lectins and their applications. Focusing primarily on marine invertebrates, we search for new lectins from these organisms. For each lectin discovered, we carry out detailed characterization—including structural analysis—to uncover its unique properties. We also work toward practical applications such as drug discovery by identifying useful activities, e.g., antiviral activity, exhibited by lectins. Examples of novel lectins discovered so far are shown below.   Lectin CGL1 from a bivalve (Pacific oyster) Lectin AJLec from a sea anemone.		
2. Keywords Structural biology; biochemistry; enzymes; lectins; antiviral activity.		
3. Remarks and Websites Ongoing projects: protein structural analysis; discovery of novel lectins and its functional analyses. researchmap: https://researchmap.jp/read0127731 Laboratory: https://www.cms.nagasaki-u.ac.jp/lab/seitai/ Selected Publications H. Unno, et al., <i>J. Biol. Chem.</i> 289(18), 12805–12812 (2014). S. Urata, et al., <i>Antiviral Res.</i>, 240, 16189 (2025).		