KITAMURA LAB HOMEPAGE

Welcome to the Laboratory of Prof. Dr. Masaya Kitamura.

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The proteins, which are main products based on genomic information, play central roles in life processes. For example, when we eat foods, many enzymes and proteins (*e.g.* amylase, cytochrome *c*, etc.) play a role to produce energy in our bodies. In our laboratory, “proteins” are studied from various viewpoints on the basis of genetic engineering technique. “How do proteins function?” “Can we generate more high functional proteins?” “Can we produce useful materials efficiently by using bacteria and enzymes?” “Can we produce recombinant proteins more easily and efficiently?” We are investigating various researches relating to the Protein Engineering and Design.

Keywords, cofactor, antibody, sulfate-reducing bacteria.

Research Themes

1. Structure-function relationships of flavoproteins
2. Structure-function relationships of metalloproteins
3. Production of useful materials on the basis of genetic engineering technology
4. Functional dissection of peptide release factors
5. High functionalization of proteins by applying self-assembling peptides
6. Development of engineered antibodies for medical applications

Selected Publications

1. Kitamura, M., Kojima, S., Ogasawara, K., Nakaya, T., Sagara, T., Niki, K., Miura, K., Akutsu, H. & Kumagai, I. (1994) Novel FMN-binding protein from *Desulfovibrio vulgaris* (Miyazaki F). Cloning and expression of its gene in *Escherichia coli*. *J. Biol. Chem.* **269**, 5566–5573.
2. Liepinsh, E., Kitamura, M., Murakami, T., Nakaya, T., & Otting, G. (1997) Pathway of chymotrypsin evolution suggested by the structure of the FMN-binding protein from *Desulfovibrio vulgaris* (Miyazaki F). *Nat. Struct. Biol.* **4**, 975–979.
3. Nakanishi, T., Tsumoto, K., Yokota, A., Kondo, H., & Kumagai, I. (2008) Critical contribution of VH-VL interaction to reshaping of an antibody: The case of humanization of anti-lysozyme antibody, HyHEL-10. *Protein Sci.* **17**, 261–270.