

## Crystal Structure of Novel Orange-emitting Fluorescent Protein from Stony Coral

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Green fluorescent protein (GFP) from *Aequorea* and GFP-like proteins are now ubiquitously used as biological markers. The chromophore is formed in an autocatalytic cyclization of encoded tripeptide segment. The fluorescent properties of the proteins should connect to the environment around the chromophore, in which the chromophore interacts with amino acids forming hydrogen-bonds,  $\pi$ - $\pi$  stacking and so on. Thus, to understanding better the physicochemistry of GFP and GFP-like proteins, it is of importance to have 3D-structural information, especially regarding their chromophores.

We have crystallized a novel orange-emitting fluorescent protein from a stony coral, which shows emission peak maxima at 548nm, and subsequently, succeed in determination of the structure to 1.7Å resolution using molecular replacement method. The protein shares  $\beta$  can fold which is specific to the fluorescent proteins. Comparison of the environment around the chromophore with that of the other structural-known GFP and GFP-like proteins have emerged that a cation- $\pi$ interaction between the chromophore and a charged amino acid affects orange-emitting fluorescent property of the protein.

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