Deciphering signaling mechanisms of photoreceptors – a dynamic crystallography approach

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Photoreceptors incorporate chemically distinct chromophores to perceive light signals from different wavelengths. Upon absorbing a photon, the chromophore undergoes concerted conformational changes in a confined protein environment. As the primary photo-events develop and propagate, they drive further protein conformational changes, which ultimately alter protein-protein interactions and/or enzymatic activities. Direct observations of these local and global structural changes at the atomic resolution hold the key to mechanistic understanding of light signaling mechanisms of photoreceptors. I will present our recent dynamic crystallography studies on two distinct photoreceptor systems.