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Healthcare

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ABSTRACT

A variety of organisms have evolved mechanisms to detect and respond to light, in which the response is mediated by protein structural changes after photon absorption. The initial step is often the photoisomerization of a conjugated chromophore. Isomerization occurs on ultrafast time scales and is substantially influenced by the chromophore environment. Here we identify structural changes associated with the earliest steps in the trans-to-cis isomerization of the chromophore in photoactive yellow protein. Femtosecond hard x-ray pulses emitted by the Linac Coherent Light Source were used to conduct time-resolved serial femtosecond crystallography on photoactive yellow protein microcrystals over a time range from 100 femtoseconds to 3 picoseconds to determine the structural dynamics of the photoisomerization reaction.

The full article can be found here:
<https://www.science.org/doi/abs/10.1126/science.aad5081>