

# Visualizing enzyme catalysis and DNA repair by temperature-resolved cryo-EM and time-resolved XFEL

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## Abstract

The recent breakthrough in cryo-EM (1) and X-ray free electron laser (XFEL) has facilitated the understanding of dynamic processes in enzyme catalysis. This lecture will illustrate these advancements with two stories. The first story is to visualize the process of the induced-fit conformational change of ketol-acid reductoisomerase (KARI) by temperature-resolved cryo-EM (2). In the second story, we determined the structural mechanism of photolyase-catalyzed repair of a cyclobutane pyrimidine dimer (CPD) DNA lesion at atomic resolution via time-resolved serial femtosecond X-ray crystallography (TR-SFX). A total of 18 snapshots were obtained at picosecond to microsecond intervals to show DNA repair by photolyase at work in real time (3, 4).

## References:

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