# The structural and dynamical basis of NusA's role in transcription-coupled DNA repair

The biological information required for normal growth and development is stored in the genomic DNA. Most worrisomely, the integrity and stability of DNA is constantly threatened by hazardous environmental substances and genotoxic metabolites that can cause DNA damage. To overcome the lethal effect of DNA damage, cells have developed a wide range of response mechanisms to repair the damage and thus, restore the integrity of the genome. Not surprisingly, DNA damages that escape repair give rise to cancer, aging, cell cycle halt, and cell death. In this thesis, I present my findings on the molecular mechanism of the initial steps of the transcription-coupled DNA repair pathway in bacteria. Besides contributing to the theoretical knowledge in DNA repair research, this work also contributes to method development for investigating structural dynamics that underlie protein function as well as analyzing protein-ligand interactions.

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PH.D. THESIS

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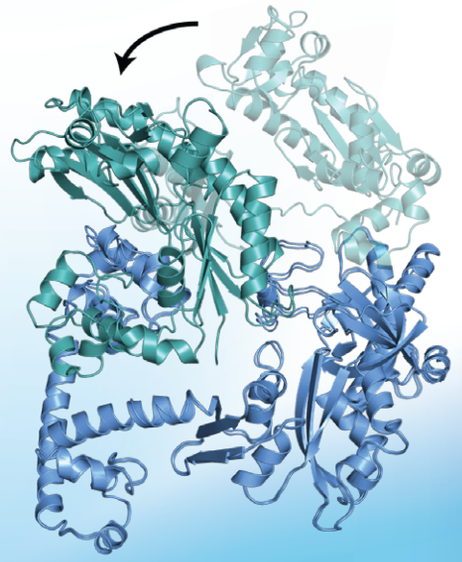

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