

## Special Issue

# Molecular Studies of DNA Strand Exchange

### Message from the Guest Editor

This Special Issue aims to gather recent results about the DNA strand exchange reaction from various fields and approaches in one place, facilitating efficient exchange. The reaction is a primary process of homologous recombination and is present in all living organisms for genomic maintenance. However, the reaction also relates to the progression of cancer, as well as the propagation of drug resistance among bacteria and the escape of parasites from the host's immune system. The reaction is now a target for drug development. Despite the importance and research effort, the reaction mechanism remains to be clarified. The reaction occurs within a long protein filament. Furthermore, its structure is dynamic, involving the hydrolysis of ATP. In addition, the reaction is regulated by several proteins and requires mediator proteins. However, recent developments in experimental and computational analyses, such as cryo-EM, AI-assisted molecular modeling, and single-molecule observation, shed new light on the reaction mechanism. This Special Issue is accepting any analyses of strand exchange reactions and drug development targeting the reaction.

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### Guest Editor

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## International Journal of Molecular Sciences

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