

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.

Guest Editor

Prof. Dr. Masayuki Takahashi

School of Life Science and Technology, Tokyo Institute of Technology,
Tokyo 152-8550, Japan

Deadline for manuscript submissions

closed (30 November 2025)



International Journal of Molecular Sciences

an Open Access Journal
by MDPI

Impact Factor 4.9
CiteScore 9.0
Indexed in PubMed



mdpi.com/si/245517

*International Journal of
Molecular Sciences*
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
ijms@mdpi.com

[mdpi.com/journal/
ijms](https://mdpi.com/journal/ijms)





International Journal of Molecular Sciences

an Open Access Journal
by MDPI

Impact Factor 4.9
CiteScore 9.0
Indexed in PubMed



[mdpi.com/journal/
ijms](https://mdpi.com/journal/ijms)



About the Journal

Message from the Editor-in-Chief

The International Journal of Molecular Sciences (*IJMS*, ISSN 1422-0067) is an open access journal, which was established in 2000. The journal aims to provide a forum for scholarly research on a range of topics, including biochemistry, molecular and cell biology, molecular biophysics, molecular medicine, and all aspects of molecular research in chemistry. *IJMS* publishes both original research and review articles, and regularly publishes special issues to highlight advances at the cutting edge of research. We invite you to read recent articles published in *IJMS* and consider publishing your next paper with us.

Editor-in-Chief

Prof. Dr. Maurizio Battino

Department of Odontostomatologic and Specialized Clinical Sciences,
Sez-Biochimica, Faculty of Medicine, Università Politecnica delle
Marche, Via Ranieri 65, 60100 Ancona, Italy

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, SCIE (Web of Science), PubMed, PMC, MEDLINE, Embase, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q1 (Biochemistry and Molecular Biology) / CiteScore
- Q1 (Organic Chemistry)