Special Issue

Membranes: Where Chemistry and Physics Converge for Biology

Message from the Guest Editors

Biological membranes serve as hubs for cellular communication. Their remarkable diversity in molecular composition governs the physicochemical properties of these membranes. Emerging studies are unraveling the crucial role of such mechanochemical features and the collective behavior of membranes in cellular functions. The stiffness and fluidity of the membrane, which are intrinsically related to lipid composition, have now been shown to play a key role in potentiating membrane-receptor signaling in immune cells. Liposomes are effective carriers for mRNA in COVID-19 vaccines, but they lack tissue specificity, thereby resulting in off-target effects that harm healthy cells. Significant attention is given to naturally derived membrane-based drug delivery particles and innovative biomimetic platforms with precisely controlled membrane mechanical properties. Studies using naturally produced extracellular vesicles provide compelling evidence of their superiority over conventional liposomes, particularly demonstrating prolonged persistence in peripheral blood and minimal toxicity. We welcome novel contributions in the field of membrane biology that can advance therapeutic outcomes.

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Message from the Editor-in-Chief

You are cordially invited to contribute a research article or a comprehensive review for consideration and publication in *Membranes* (ISSN 2077-0375). *Membranes* is an international, peer-reviewed open accessjournal of membrane technology published monthly online by MDPI. The journal covers the broad aspects of the science and technology of both biological and non-biological membranes, including membrane dynamics and the preparation and characterization of membranes and their applications in water, environment, energy, and food industries. Articles contributing to better understanding of transport processes in all types of membranes are also welcome. The scientific community and the general public have unlimited and free access to the content as soon as it is published. We would be pleased to welcome you as one of our authors.

Editor-in-Chief

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