

Special Issue

Cellular and Molecular Mechanisms of Sperm Capacitation

Message from the Guest Editors

Sperm capacitation is a highly regulated biological process that enables mammalian spermatozoa to acquire fertilizing competence through a series of coordinated cellular and molecular events. This complex transformation involves dynamic remodeling of the plasma membrane, ion fluxes and activation of intracellular signaling pathways, ultimately leading to hyperactivated motility and the ability to undergo the acrosome reaction. At the molecular level, capacitation is driven by tightly controlled mechanisms, including protein phosphorylation cascades, calcium signaling and the regulation of protein turnover and localization.

This Special Issue aims to highlight recent advances in the cellular and molecular mechanisms regulating sperm capacitation, with particular emphasis on intracellular signaling pathways, membrane dynamics and functional outcomes. We welcome original research articles and reviews addressing mechanistic insights into sperm physiology, contributing to a deeper understanding of fertilization and male reproductive biology.

Guest Editors

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Cells has become a solid international scientific journal that is now indexed on SCIE and in other databases. We have successfully introduced a special issues format so that these issues serve as mini-forums in specific areas of cell science. *Cells* encourages researchers to suggest new special issues, serve as special issues editors, and volunteer to be reviewers. Our main focus will remain on cell anatomy and physiology, the structure and function of organelles, cell adhesion and motility, and the regulation of intracellular signaling, growth, differentiation, and aging. We are open to both original research papers and reviews.

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