



The Roles of Ion Channels and Transporters in Intracellular Signaling

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Message from the Guest Editors

Ion channels and transporters, found in all cells, are transmembrane proteins that enable the passive flow of ions both in and out of cells or cellular organelles, following their electrochemical gradients. Proper maintenance of ion channels and transporters is critical for a range of cellular processes, such as signal transduction, neurotransmitter release, nerve impulses, muscle contraction, hormone secretion, volume regulation, growth, motility, apoptosis, and ion and water homeostasis. Dysfunction of ion channels or transporters may result in diseases of the nervous system (e.g., epilepsy), the cardiovascular system (e.g., Brugada syndrome), the respiratory system (e.g., cystic fibrosis), the endocrine system (e.g., neonatal diabetes mellitus), the urinary system (e.g., Bartter syndrome), and the immune system (e.g., Isaac syndrome).

Keywords

- ion channel
- ion transporter
- signal transduction
- mechanism
- regulation
- human disease
- treatment
- drug discovery





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