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Titolo	Membrane Transport Mechanism [[electronic resource]] : 3D Structure and Beyond // edited by Reinhard Krämer, Christine Ziegler
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Descrizione fisica	1 online resource (282 p.)
Collana	Springer Series in Biophysics, , 0932-2353 ; ; 17
Disciplina	571.64
Soggetti	Cell membranes Proteins Biophysics Biological physics Crystallography Bioinformatics Membrane Biology Protein Structure Biological and Medical Physics, Biophysics Crystallography and Scattering Methods Computational Biology/Bioinformatics
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Dance Lessons for Proteins: The Dynamics and Thermodynamics of a Sodium/Aspartate Symporter -- Characterizing the Structure, Function and Evolution of Human Solute Carrier (SLC) Transporters Using Computational Approaches -- Structures of the Prokaryotic Galactose Transporter vSGLT and Their Implications on Alternating Access Mechanism in Human SGLT1 -- Moving Crystallographic Snapshots: A Mechanism for Transport Regulation in BetP -- Development of Refined Homology Models: Adding the Missing Information to the Medically Relevant Neurotransmitter Transporters -- The Life and Times of Lac Permease: Crystals Ain't Enough -- Alternating Access Within the POT Family of Oligopeptide -- Proton Symporters -- The Maltose ABC Transporter: Where Structure Meets Function -- Cooperative Transport

Mechanism and Proton-Coupling in the Multidrug Efflux Transporter Complex ArcAB-TolC -- What Can a Living Fossil Tell Us About Evolution and Mechanism of Ion-Coupled Transporters: The Story of Small Multidrug Transporters Symmetrically Asymmetric: EmrE Seen from the NMR Perspective.

Sommario/riassunto

This book provides a molecular view of membrane transport by means of numerous biochemical and biophysical techniques. The rapidly growing number of atomic structures of transporters in different conformations and the constant progress in bioinformatics have recently added deeper insights. The unifying mechanism of energized solute transport across membranes is assumed to consist of the conformational cycling of a carrier protein to provide access to substrate binding sites from either side of a cellular membrane. Due to the central role of active membrane transport there is considerable interest in deciphering the principles of one of the most fundamental processes in nature: the alternating access mechanism. This book brings together particularly significant structure-function studies on a variety of carrier systems from different transporter families: Glutamate symporters, LeuT-like fold transporters, MFS transporters and SMR (RND) exporters, as well as ABC-type importers. The selected examples impressively demonstrate how the combination of functional analysis, crystallography, investigation of dynamics and computational studies has made it possible to create a conclusive picture, or, more precisely, "a molecular movie". Although we are still far from a complete molecular description of the alternating access mechanism, remarkable progress has been made from static snapshots towards membrane transport dynamics.
