1. Record Nr. UNINA9910971322703321

Titolo	Molecular machines / / editor, Benoit Roux
Pubbl/distr/stampa	Singapore ; ; Hackensack, N.J., : World Scientific, c2011
ISBN	9786613433749 9781283433747 1283433745 9789814343466 9814343463
Edizione	[1st ed.]
Descrizione fisica	1 online resource (288 p.)
Altri autori (Persone)	RouxBenoit <1958->
Disciplina	572.8 579
Soggetti	Molecular biology Bioenergetics Biomolecules Cell interaction Cytology Microbiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
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Sommario/riassunto

Molecular machines are complex biomolecules, proteins, nucleic acids, and carbohydrates that consume energy in order to perform specific functions. The concerted action of all those machines underlies all the activities of the living cell. To understand how such molecular machines are able to perform their function, it is necessary to identify the different moving parts and understand how they act together. Breaking new ground with these difficult problems is likely to require novel paradigms permitting a seamless integration of structural, dynamical and functional data from experiments and theory.The goal of this volume is to provide an introduction to the world of biological molecular machines to a broad audience of students and researchers in biosciences. Each chapter is written by leading experts to cover results from cutting-edge research, while remaining broadly accessible. The volume presents the current state of knowledge for several important systems, ranging from polymerases, the ribosome, chaperonins, the chromatophore, kinases, actin and myosin, membrane transporters, and voltage-gated ion channels, thus giving students and researches in biosciences a pedagogically integrated picture of this exciting and rapidly expanding field.