

1. Record Nr.	UNINA9910686773403321
Titolo	Cholesterol and PI(4,5)P2 in Vital Biological Functions : From Coexistence to Crosstalk // edited by Avia Rosenhouse- Dantsker
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer , 2023
ISBN	9783031215476 9783031215469
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (438 pages)
Collana	Advances in Experimental Medicine and Biology , 2214-8019 ; ; 1422
Disciplina	405
Soggetti	Physical biochemistry Lipids Biochemistry Proteins Biophysical Chemistry Lipidology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- 1. Mutual influence of cholesterol and PI(4,5)P2 on their levels -- Chapter 1. Mechanism of the regulation of plasma cholesterol levels by PI(4,5)P2 -- Chapter 2. Effect of cholesterol depletion on ciliary PI(4,5)P2 levels -- Chapter 3. Impact of cholesterol on PI(4,5)P2 levels in the brain -- Chapter 4. Alterations in PIP2 levels in the intracellular cholesterol trafficking disorder NPC1 -- Chapter 5. Targeting cholesterol release and PI(4,5)P2 redistribution by the oral drug Miltefosine -- 2. Cross-talk between cholesterol and PI(4,5)P2 as a factor affecting protein function -- A. Plasma membrane ion channels -- Chapter 6. From cross-talk to synergism: the combined effect of cholesterol and PI(4,5)P2 on inwardly rectifying potassium channels -- Chapter 7. Link between lysosomal cholesterol and PI(4,5)P2 in the regulation of the voltage gated KCNQ2/3 potassium channel -- Chapter 8. Cholesterol and PI(4,5)P2 binding to a ciliary membrane transient receptor potential channel -- Chapter 9. Regulation of ell by cholesterol and PI(4,5)P2 -- Chapter 10. Cholesterol stimulates the

epithelial sodium channel in a PI(4,5)P₂-dependent manner -- Chapter 11. Roles of cholesterol and PI(4,5)P₂ in store operated calcium entry -- Chapter 12. Roles of cholesterol and PI(4,5)P₂ levels in the modulation of the calcium activated chloride channel TMEM16A -- B. Lipid transport proteins--Chapter 13. PI(4,5)P₂ facilitates ORP1-mediated cholesterol transport by promoting membrane targeting and cholesterol extraction -- Chapter 14. Role of PI(4,5)P₂ binding in ORP2-mediated cholesterol distribution -- Chapter 15. PI(4,5)P₂-dependent transport of cholesterol from lysosomes to peroxisomes at lysosomeperoxisome contact sites -- 3. Cellular processes at the intersection of cholesterol and PI(4,5)P₂ involvement -- Chapter 16. The insertion of the N-terminal domain of Gasdermin-D is increased by PI(4,5)P₂ and decreased by cholesterol -- Chapter 17. Cholesterol promotes the cooperative interaction of formins with PI(4,5)P₂ to initiate actin nucleation -- Chapter 18. Cooperation between cholesterol and PI(4,5)P₂ in the regulation of Engrailed-2 homeoprotein intercellular trafficking -- Chapter 19. Cholesterol and PI(4,5)P₂ as a membrane nanopatform for HIV assembly -- Chapter 20. Role of Cholesterol and PI(4,5)P₂ in the localization of the HIV-1 structural polyprotein Gag to the plasma membrane.

Sommario/riassunto

Cholesterol is an essential component of the plasma membrane. Phosphatidylinositol 4,5-bisphosphate (PI(4,5)P₂), although a minor phospholipid, is the most abundant membrane phosphoinositide. Both lipids play key roles in a variety of cellular functions including as signalling molecules and major regulators of protein function. Studies on these important lipids have traditionally focused on the effect of each lipid individually. Accumulating evidence indicates, however, that these lipids may cross-regulate each other's levels. Furthermore, it is becoming evident that cholesterol and PI(4,5)P₂ can act together to modulate protein function and biological processes. This book provides an overview of cellular functions and molecular mechanisms in which cholesterol and PI(4,5)P₂ functions extend from parallel existence to crosstalk. It includes four sections. The first section introduces the reader to cholesterol and PI(4,5)P₂. The second section demonstrates the mutual influence of these two critical lipids on their levels. The third section, divided into two parts, describes the co-modulation of protein function by cholesterol and PI(4,5)P₂. The first part focuses on ion channels and the second - on lipid transfer proteins. The fourth section highlights other cellular processes at the intersection of cholesterol and PI(4,5)P₂ involvement. Collectively, the book portrays the emerging relationship between cholesterol and PI(4,5)P₂ in a broad array of biological systems and processes. The book will be of interest to a wide audience of research scientists with an interest in the biophysical properties of lipids and the physiological consequences of their presence in biological systems, as well as graduate students, postdoctoral trainees, basic and clinical researchers, and pharmaceutical scientists. Specifically, the content will be relevant to researchers in the fields of biochemistry, molecular biophysics, pharmacology, neurobiology, cardiovascular biology, among others.
