

Phosphoinositides II: the diverse biological functions

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Abstrak

In two volumes, this book elucidates the crucial mechanisms that control the dynamics of phosphoinositide conversion. Volume II extends into the role of phosphoinositides in membrane organization and vesicular traffic. Endocytosis and exocytosis are modulated by phosphoinositides, which determine the fate and activity of integral membrane proteins. Phosphatidylinositol(4,5)-bisphosphate is a prominent flag in the plasma membrane, while phosphatidylinositol-3-phosphate decorates early endosomes. The Golgi apparatus is rich in phosphatidylinositol-4-phosphate, stressed cells increase phosphatidylinositol(3,5)-bisphosphate, and the nucleus has a phosphoinositide metabolism of its own. Phosphoinositide-dependent signaling cascades and the spatial organization of distinct phosphoinositide species are required in organelle function, fission and fusion, membrane channel regulation, cytoskeletal rearrangements, adhesion processes, and thus orchestrate complex cellular responses including growth, proliferation, differentiation, cell motility, and cell polarization.