Phosphoinositides are a class of signaling lipids that are involved in regulating various cellular processes, including cell growth, differentiation, proliferation, and survival. They are derived from phosphatidylinositol, a phospholipid that is found in the cell membrane.

Phosphoinositides can be phosphorylated at different positions on the inositol ring, giving rise to distinct signaling molecules. For example, phosphatidylinositol 4,5-bisphosphate (PIP2) is involved in signaling pathways that regulate ion channels and cytoskeletal dynamics, while phosphatidylinositol 3,4,5-trisphosphate (PIP3) is a key player in the PI3K-Akt signaling pathway, which is important for cell survival and growth.

Phosphoinositides are regulated by a variety of enzymes, including phosphatases, kinases, and lipases, which can modify their levels and localization in the cell. Dysregulation of phosphoinositide signaling has been implicated in various diseases, including cancer, diabetes, and neurodegenerative disorders.