Crosstalk between Ras and inositol phosphate signaling revealed by lithium action on inositol monophosphatase in *Schizophyllum commune*.

Murry R, Kniemeyer O, Krause K, Saiardi A, Kothe E (2019) Crosstalk between Ras and inositol phosphate signaling revealed by lithium action on inositol monophosphatase in *Schizophyllum commune*. *Adv Biol Regul* 72, 78-88. PubMed

ILRS Authors

Reyna Murry

Projects

Phosphatidylinositol (PI) signaling in basidiomycete *S. commune*
Details

Abstract

Mushroom forming basidiomycete *Schizophyllum commune* has been used as a tractable model organism to study fungal sexual development. Ras signaling activation via G-protein-coupled receptors (GPCRs) has been postulated to play a significant role in the mating and development of *S. commune*. In this study, a crosstalk between Ras signaling and inositol phosphate signaling by inositol monophosphatase (IMPase) is revealed. Constitutively active Ras1 leads to the repression of IMPase transcription and lithium action on IMPase activity is compensated by the induction of IMPase at transcriptome level. Astonishingly, in *S. commune* lithium induces a considerable shift to inositol phosphate metabolism leading to a massive increase in the level of higher phosphorylated inositol species up to the inositol pyrophosphates. The lithium induced metabolic changes are not observable in a constitutively active Ras1 mutant. In addition to that, proteome profile helps us to elucidate an overview of lithium action to the broad aspect of fungal metabolism and cellular signaling. Taken together, these findings imply a crosstalk between Ras and inositol phosphate signaling.

Identifier

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