

The Phosphatidate Phosphatase Pah1 and Its Regulator Nem1/spo7 Protein Phosphatase Required for Nucleophagy

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Abstract : Nucleophagy selectively degrades nuclear materials, especially nucleolus after nutrient starvation or inactivation of TORC1 kinase in budding yeast. Budding yeast phosphatidate (PA) phosphatase Pah1 that converts PA to diacylglycerol is essential for partitioning of lipid precursors between membrane and storage that is crucial for many aspects of cell growth and development. Pah1 is required for nuclear/ER membrane biogenesis and vacuole function, but whether Pah1 and its activator Nem1/Spo7 protein phosphatase complex are involved in autophagy is largely unknown. Loss of Pah1 causes expansion of the nucleus and fragmentation of the vacuole. Here we show that Pah1 is required for bulk autophagy and nucleophagy after TORC1 inactivation. Loss of Pah1 impaired nucleophagy severely and bulk autophagy to a lesser extent. Loss of the Pah1 activator Nem1-Spo7 protein phosphatase exhibited similar features.

Keywords : autophagy, Nem1/Spo7 phosphatase, Pah1, nucleophagy, TORC1

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