

The proppin atg18 shows oligomerization upon membrane binding

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PROPPINs (β-propellers that bind polyphosphoinositides) are PtdIns3P and PtdIns(3,5)P₂ binding autophagy related proteins that contain two phosphatidylinositolphosphate (PIP) binding sites in a conserved FRRG motif. Here we present the membrane binding characterization of the PROPPIN Atg18 from *Pichia angusta*. Rapid kinetic experiments suggest that the initial Atg18-membrane binding is driven by non-specific PIP interactions and the FRRG motif retains the protein in the membrane by binding two PIP molecules. Additionally, we studied the residues involved on the membrane binding using FRET and cross-linking experiments. Surprisingly, cross-linking experiments with liposome bound Atg18 yielded several intermolecular cross-linked peptides, which indicated Atg18 oligomerization. Later, we confirmed the Atg18 oligomerization by FRET-based stopped-flow measurements. All together, we demonstrated that Atg18 rapidly oligomerizes upon membrane binding while it is mainly monomeric in solution.