

Localization and characterization of SMP-containing proteins in Membrane Contact Sites

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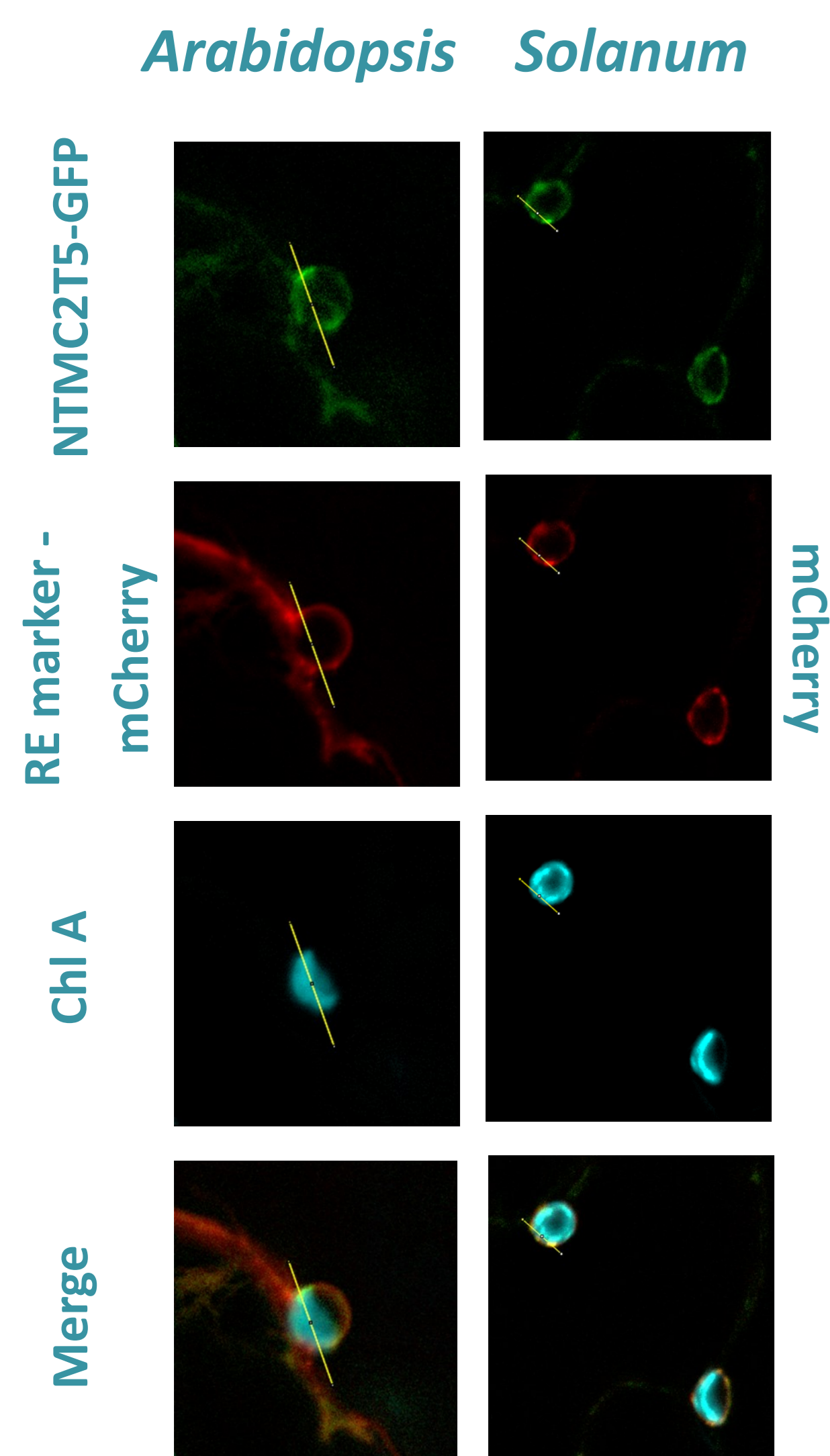
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1 Introduction: MCS and SMP containing proteins

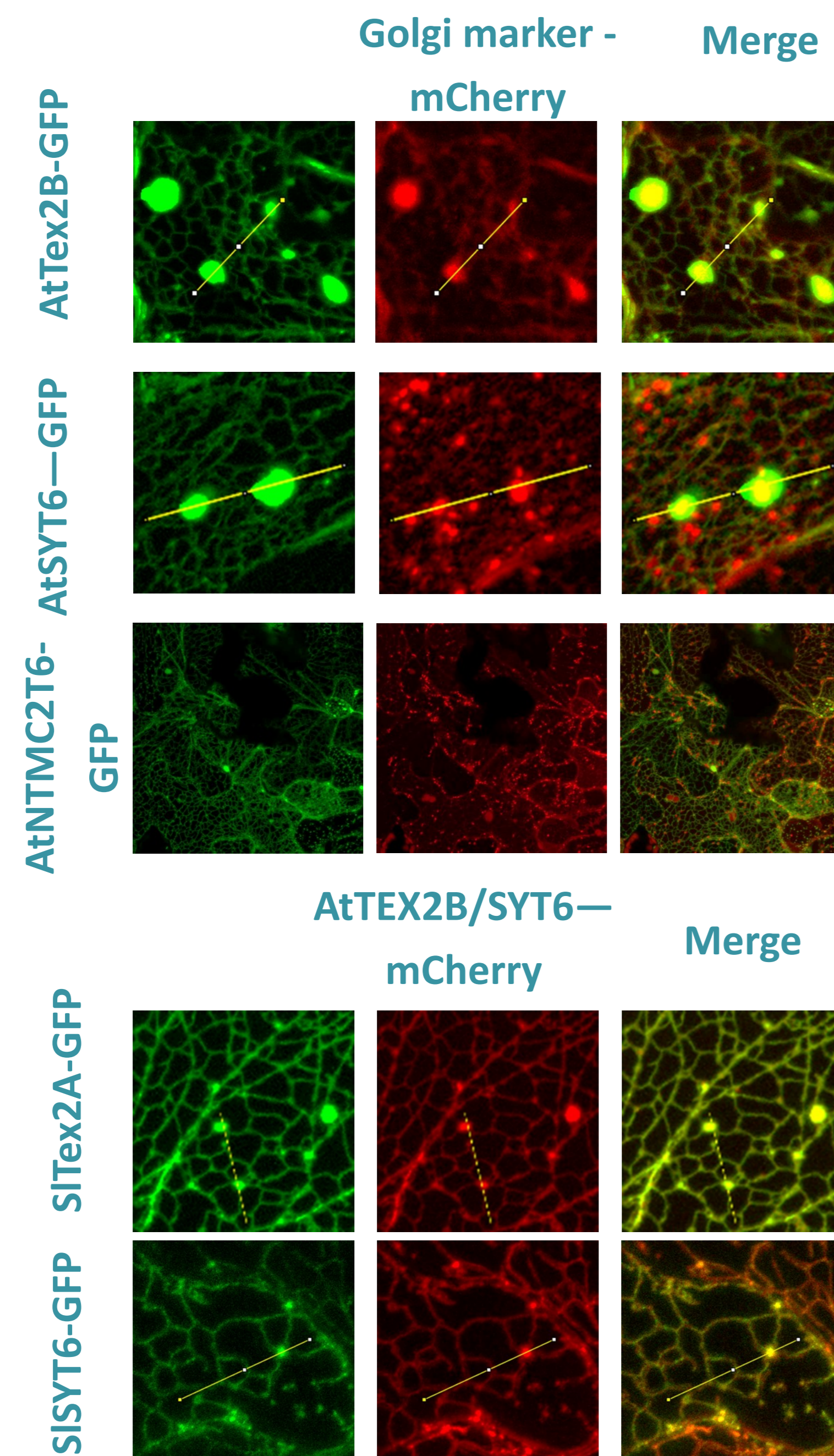
- Membrane contact sites (MCS) are essential for organelles proper functioning.
- MCS formation and lipid transfer is dependent of tethering proteins as Synaptotagmin-1.
- Proteins with synaptotagmin-like mitochondrial-lipid binding (SMP) domain are tethering proteins.
- There are MCS between ER-PM, ER-Golgi, ER-Chloroplasts, and more, but many of the involved proteins are still elusive.

3 SMP-containing proteins subcellular localization

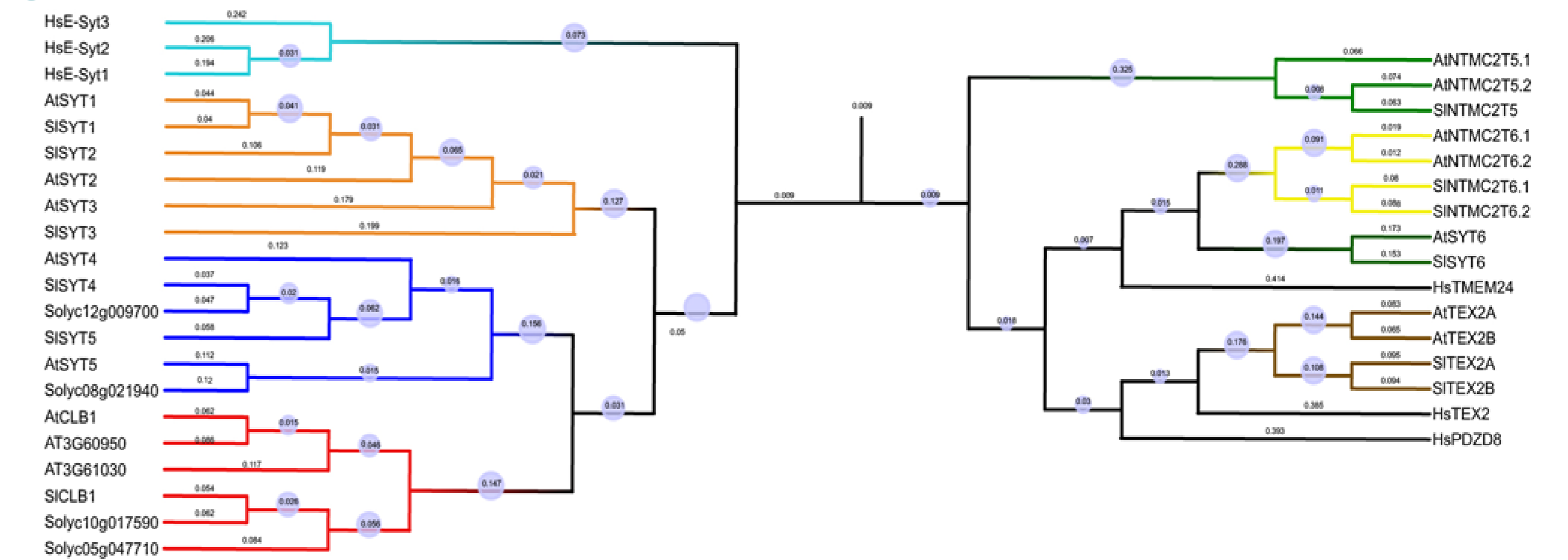
Chloroplast-ER contact sites



Golgi-ER contact sites

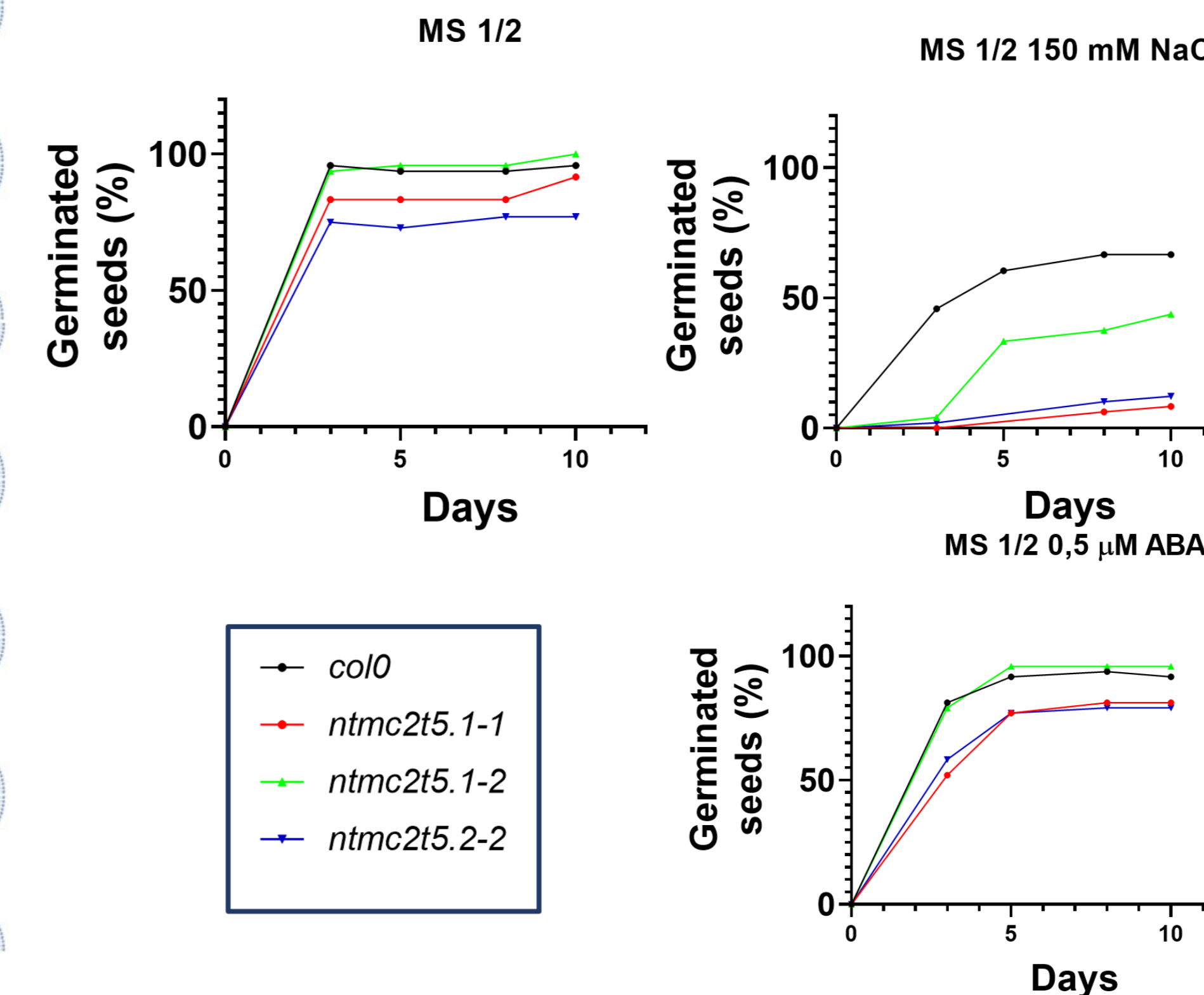


2 Identification of SMP-containing proteins in plants

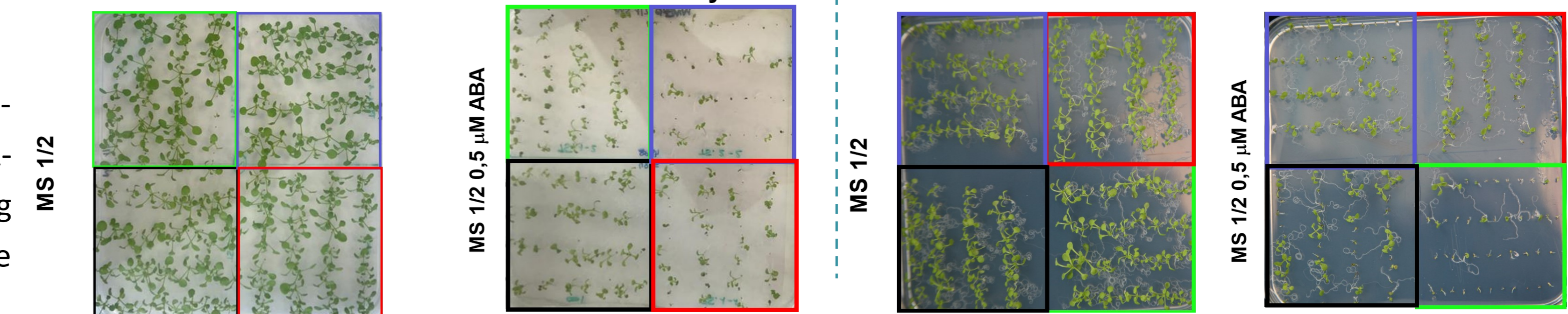
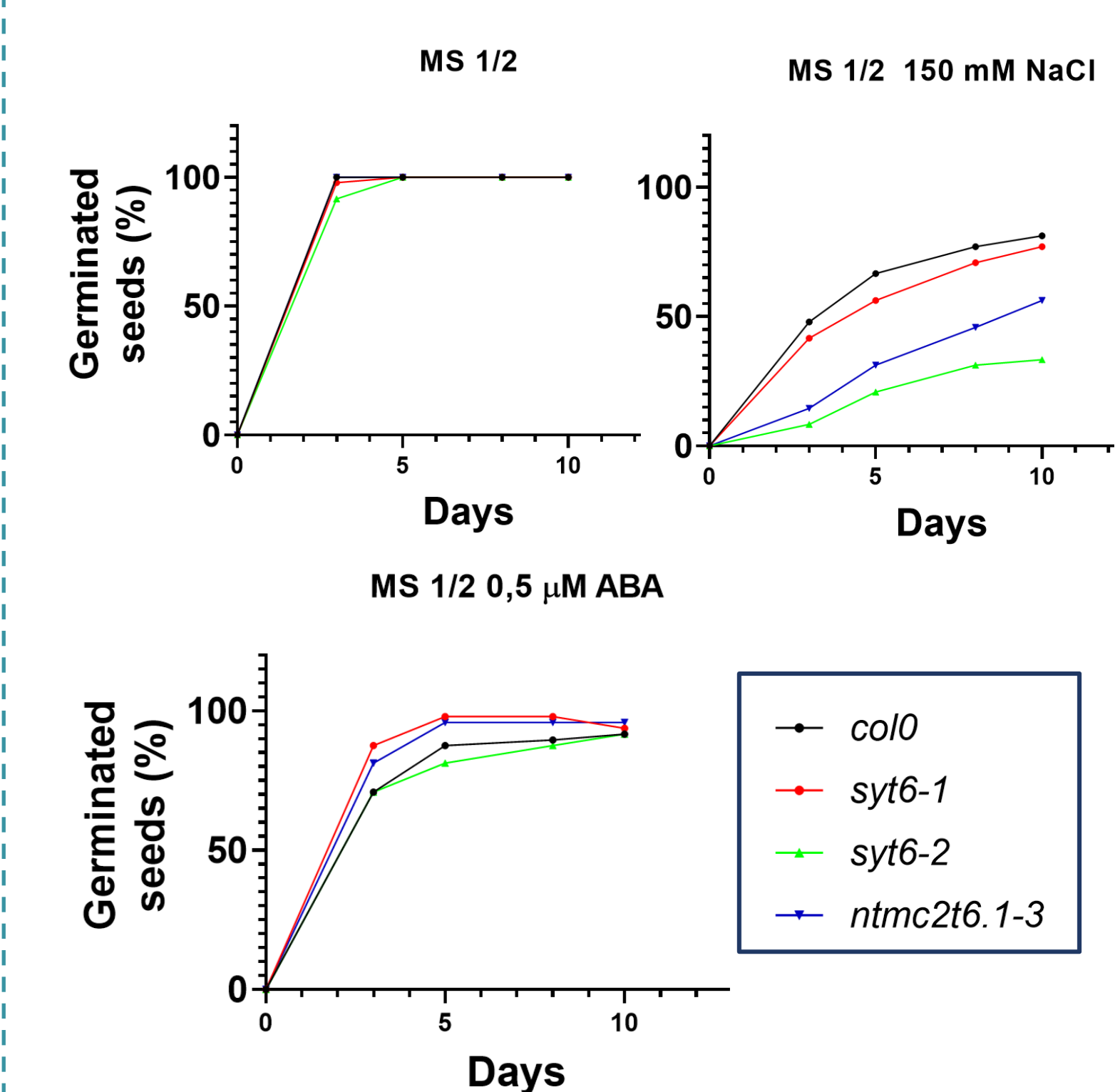


4 Abiotic stress responses are impaired in Arabidopsis SMP-containing protein mutants

ER-Chloroplast contact sites



ER-Golgi contact sites



Highlights

- 1 SMP-containing proteins are highly relevant in membrane contact sites lipid dynamic and functioning during abiotic stresses.
- 2 There are 6 groups of SMP-containing proteins in plants, 3 of them have no ortholog in human nor yeast.
- 3 Plant exclusive SMP-containing proteins are localized in ER-Chloroplast (NTMC2T5) and Golgi-ER (NTMC2T6, SYT6 and Tex2) contact sites.
- 4 Arabidopsis SMP-containing proteins mutants show altered stress phenotypes that suggest an implication in abiotic stress signaling through an ABA-dependent pathway.

Acknowledgments

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