

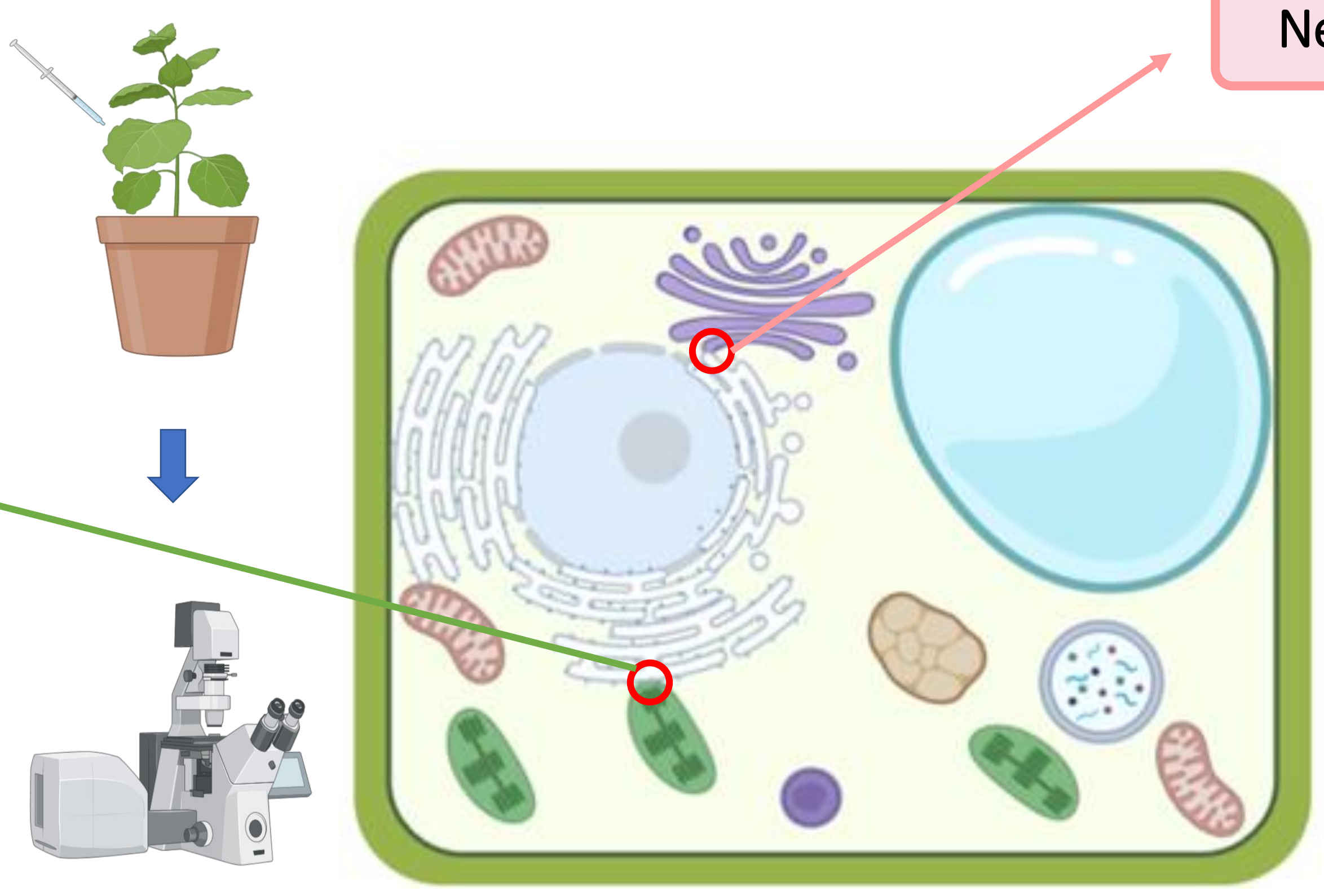
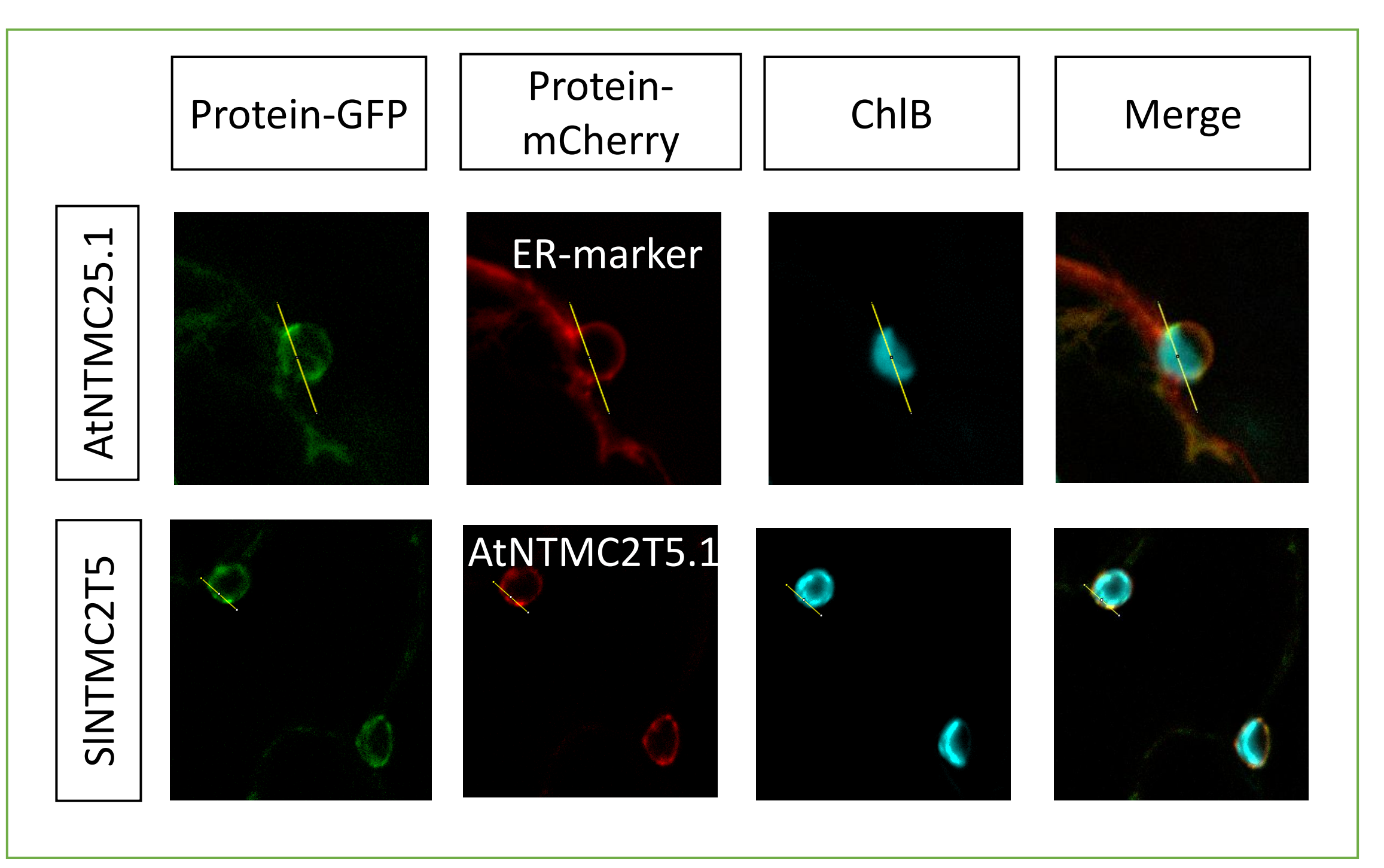
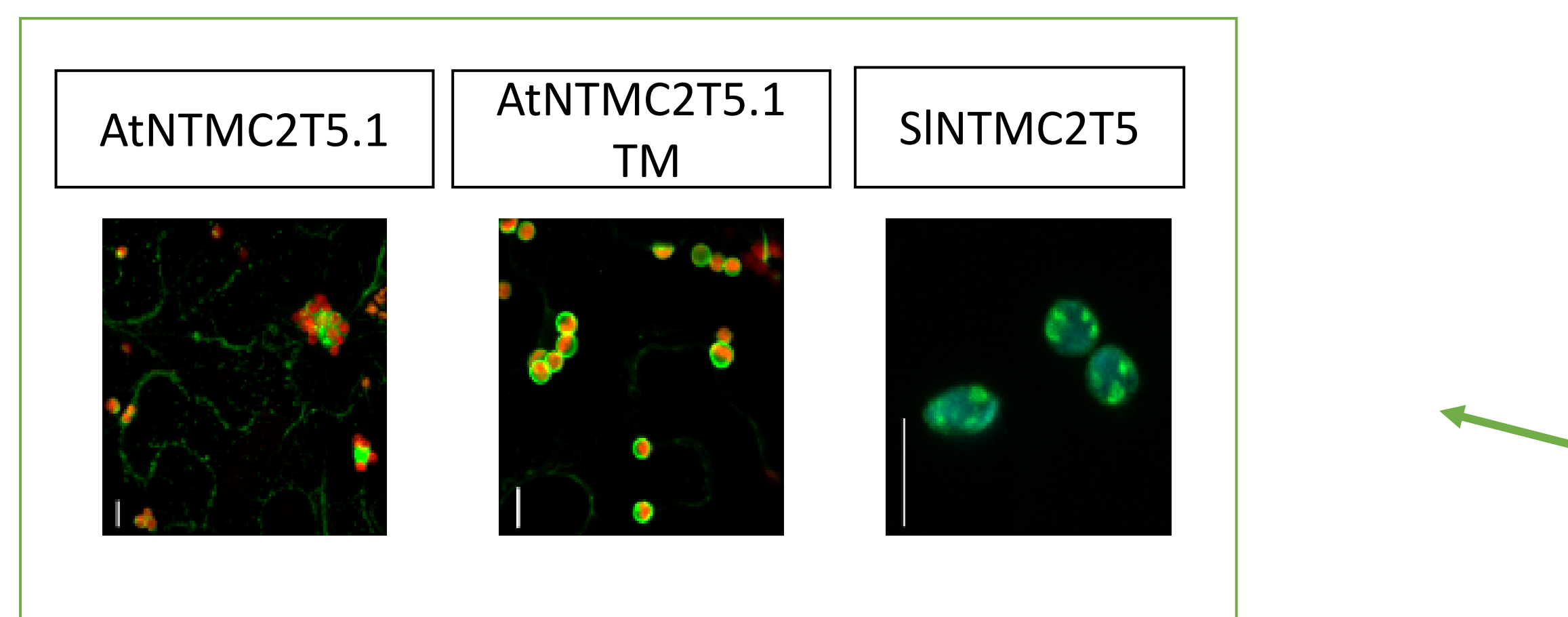
SMP-CONTAINING PROTEINS AT MEMBRANE CONTACT SITES: SUBCELLULAR LOCALIZATION AND CHARACTERIZATION.

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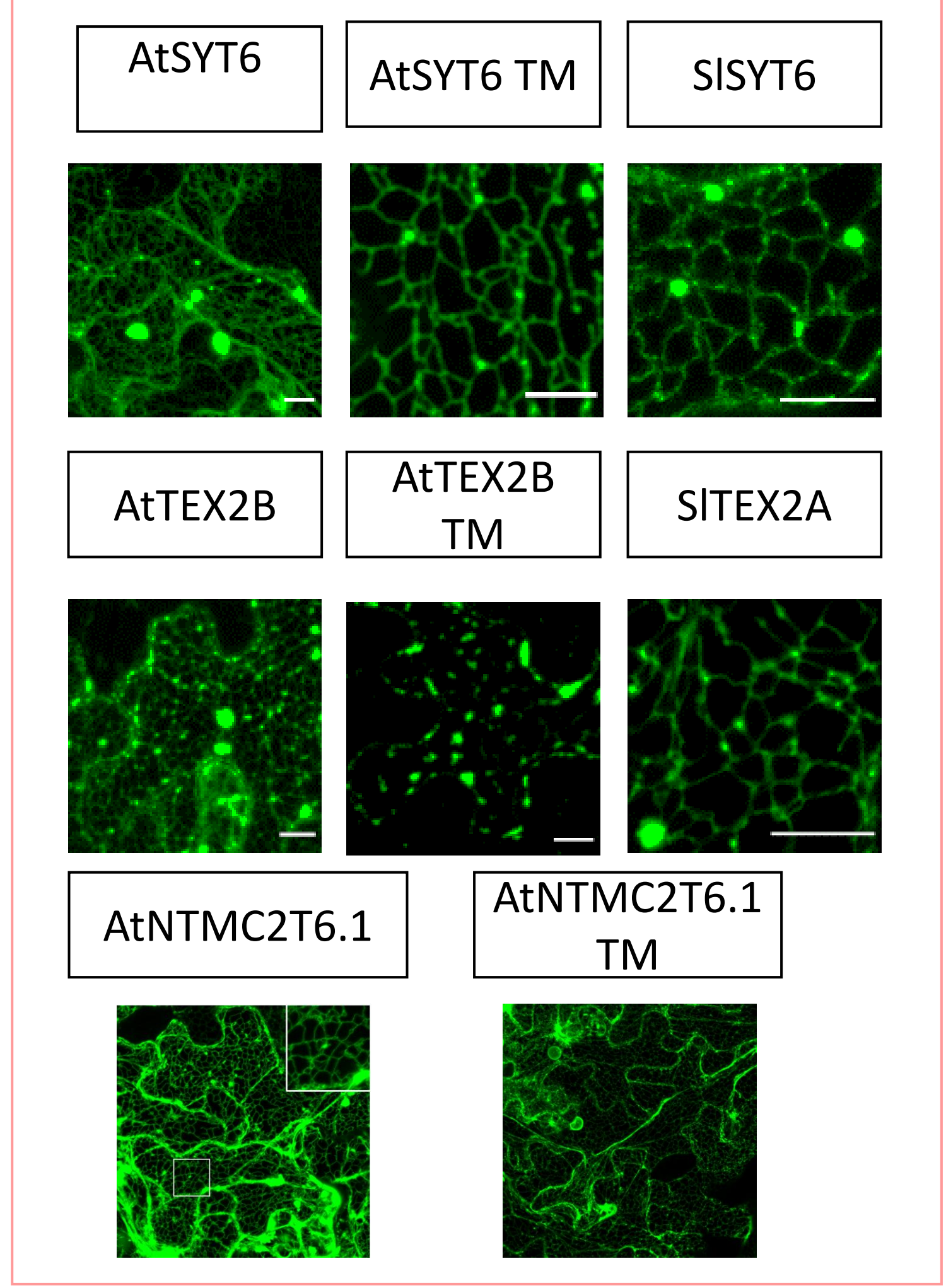
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Membrane contact sites (MCS) are microdomains where two membranes of two different organelles are in close apposition, but they do not fuse. MCS are essential for non-vesicular transport of lipids. This lipid transport is mediated by several families of proteins which all of them contain a lipid transfer domain, as the synaptotagmin-like mitochondrial lipid-binding (SMP) domain. SMP domains assemble into a tubular like structure with hydrophobic lipid transport cavity. The most studied SMP protein is Arabidopsis SYT1 which is known to be involved in tolerance to multiple abiotic stresses, including wounding, cold or high salinity. We have studied the occurrence of additional SMP proteins in *A. thaliana* and *S. lycopersicum*. Transient expression in *N. benthamiana* leaves followed by confocal microscopy was used to study the subcellular localization of these proteins. Finally, to determine whether these proteins are involved in abiotic stress tolerance, we have analysed the root growth and seed germination rates of Arabidopsis mutants for these genes under different conditions.

Newly identified ER-Chloroplast contact sites proteins



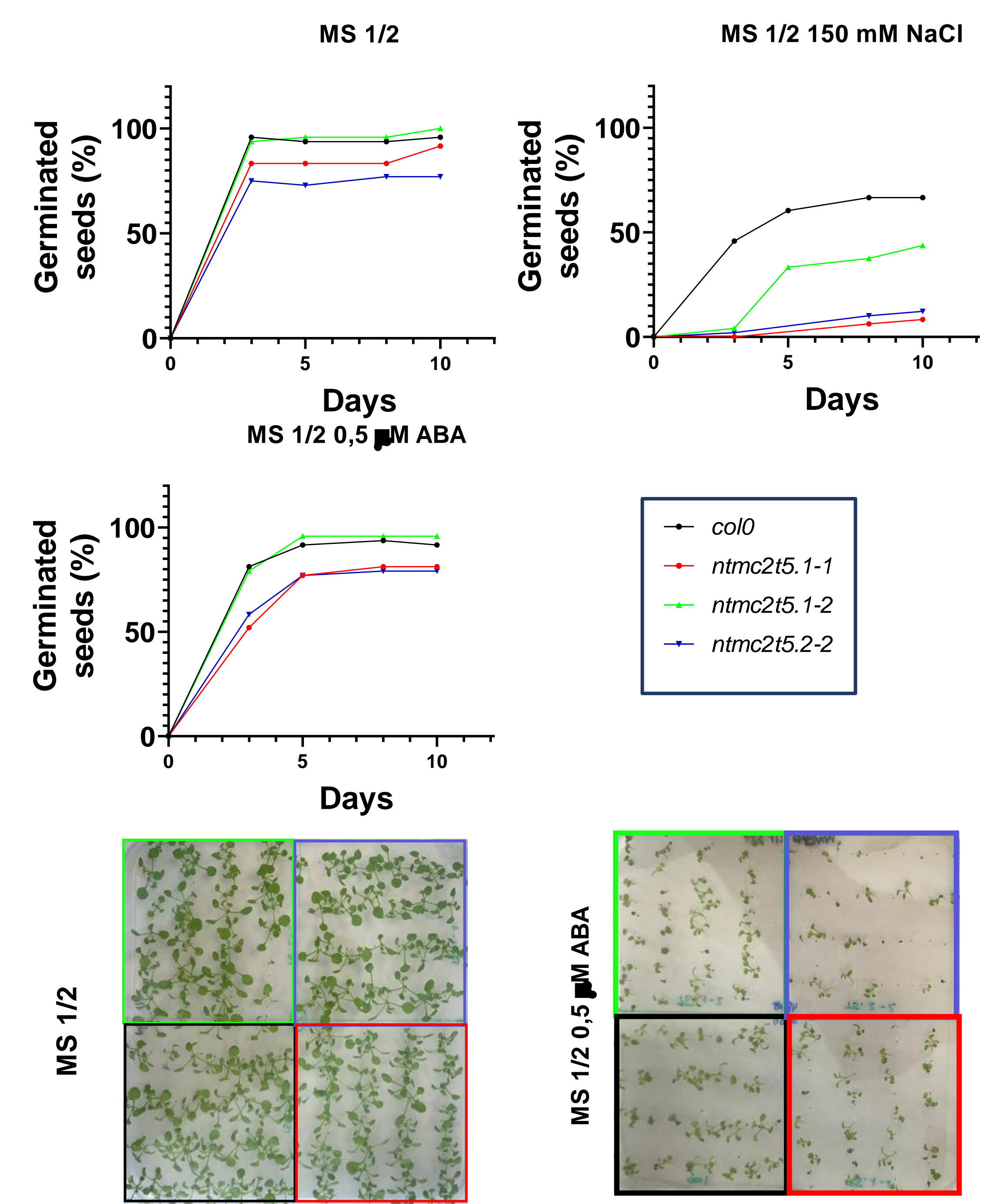
Newly identified ER-Golgi contact sites proteins



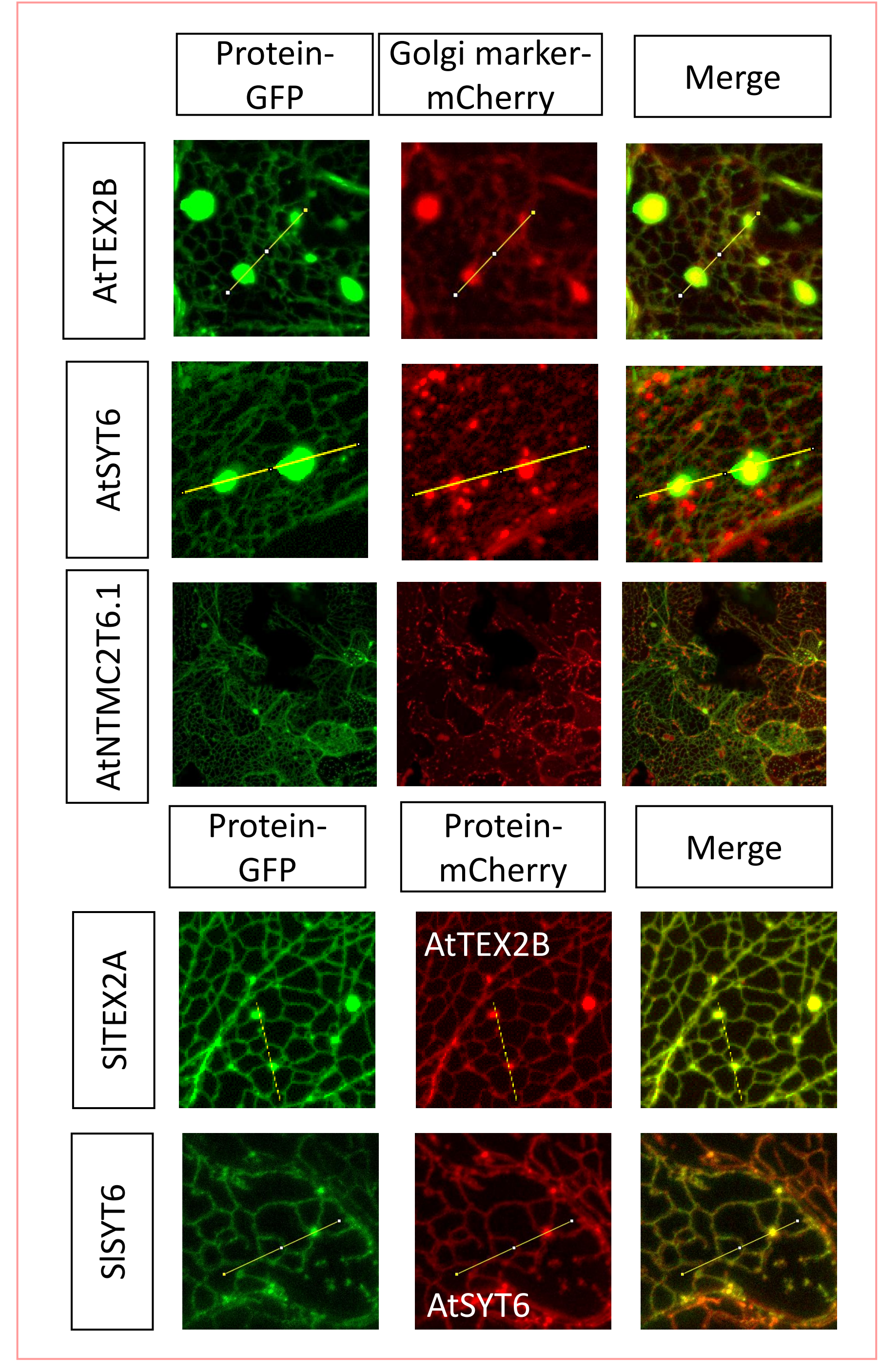
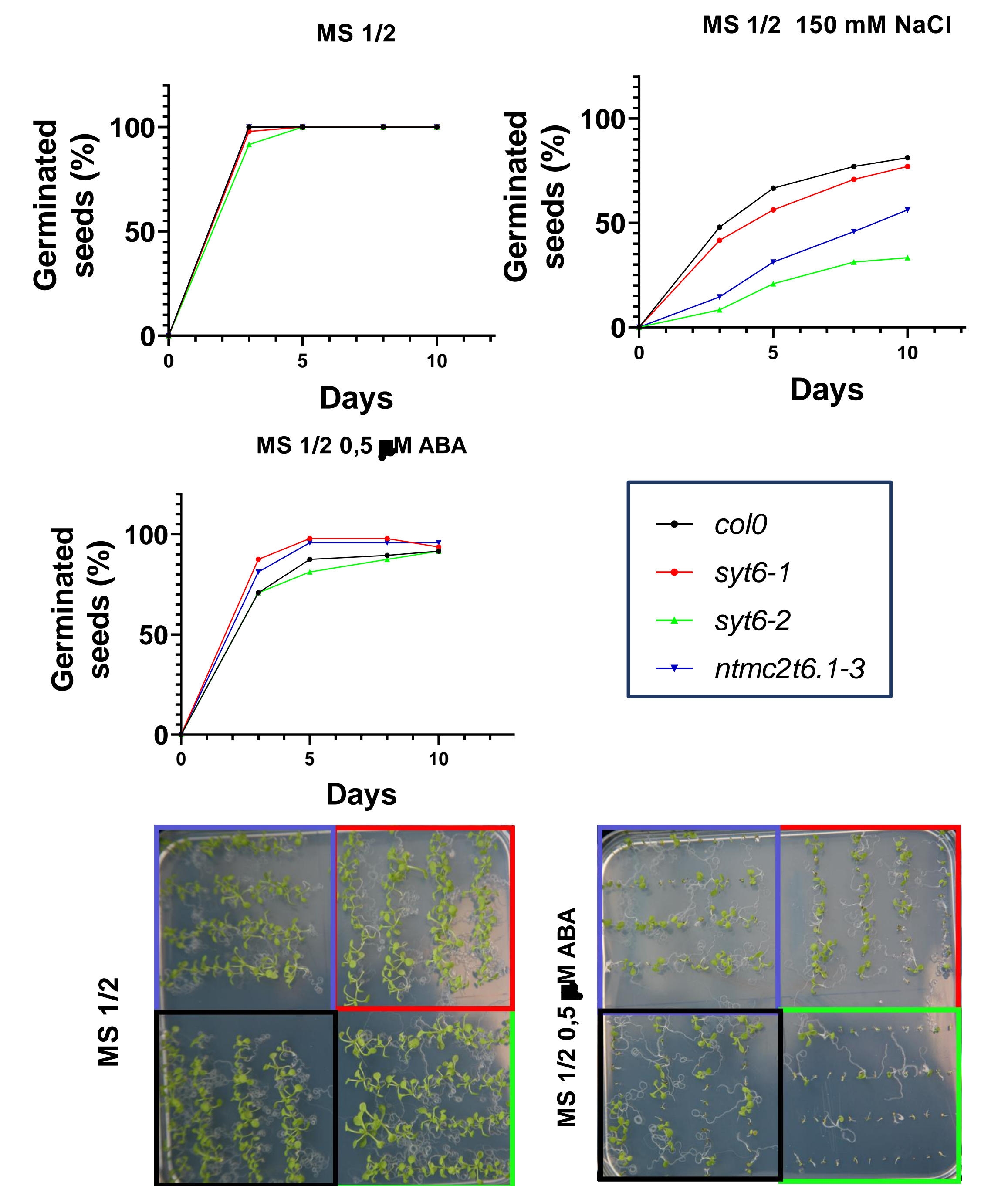
Conclusions

- We have identified two Arabidopsis proteins that localize in chloroplast-ER and five proteins that are part of ER-Golgi contact sites. All of them exclusively plant proteins but TEX2 ones.
- Interaction between ER-Golgi proteins was not detected, but formation of homo-dimers occurred.
- Some of the Arabidopsis mutants (knock out for these proteins) have shown lower germination rates in media supplemented with NaCl than WT. Additionally, they showed lower levels of expanded cotyledons in media supplemented with ABA. These results suggest that these proteins may be implicated in abiotic stress signalling through an ABA-dependent pathway.

ER-Chloroplast proteins shown phenotypic differences in presence of NaCl and ABA



ER-Golgi proteins shown phenotypic differences in presence of NaCl and ABA



ER-Golgi proteins do not interact themselves, but SYT6 forms homodimers

