

P025 Plant CHMP1A and B proteins are involved in the MVB sorting of plant hormone efflux carriers and are required for embryo development

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Although plants contain gene copies of all ESCRT and ESCRT-related components, very limited information is available on the structural organization of the plant ESCRT complexes and their cargo. The *Arabidopsis* CHMP1A and B protein show high similarity at the sequence level to the ESCRTIII-related CHMP1/Did2p proteins but whereas *did2* yeast mutants are viable, *Arabidopsis chmp1a;b* double mutants show defects in embryo development and die shortly after germination. The *chmp1a;b* homozygous embryos show very limited polar differentiation and fail to establish bilateral symmetry, developing into globular structures with rudimentary organs. In addition, the *chmp1a;b* mutants show proliferation of stem cells at the shoot apical meristem and enlarged epidermal cells. The mutant cells contain MVBs with a significantly lower number of internal vesicles, most of which remain attached to the MVB limiting membrane. We have found that plasma membrane-localized PIN1 protein, an efflux carrier for the phytohormone auxin, is sorted for degradation by the ESCRT pathway. In the *chmp1a;b* mutant, PIN1 fails to be internalized into MVB vesicles and is localized to the vacuolar membrane. Our results indicate that the plant ESCRT pathway is required for early plant development by sorting the auxin carrier PIN1 and most likely other auxin carriers.