



**Fig. S1. The *dcll-7* homozygous plant showed disrupted anther development but normal pollen mitoses.**

- (a) Phenotype of anther development in Col-0 and *dcll-7* homozygous background.
- (b) Alexander Staining of anthers in Col-0 and *dcll-7*, black arrowhead indicates the viable pollen in *dcll-7* homozygous plant.
- (c) DAPI staining showing morphology of the viable mature pollen from Col-0 and *dcll-7* homozygous plant. Bar=10  $\mu$ m.
- (d) Statistics of single-sperm rate in Col-0 and *dcll-7*. n indicates pollen number. *p*-values were calculated by the Chi-square test. ns, *p* > 0.05.