

Simulations of virtual plants reveal a role for SERRATE in the response of leaf development to light in *Arabidopsis thaliana*

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? The SERRATE gene (SE) was shown to determine leaf organogenesis and morphogenesis patterning in *Arabidopsis thaliana*. The *se-1* mutant was used here to investigate the role of SE in leaf development in response to incident light. Virtual plants were modelled to analyse the phenotypes induced by this mutation. ? Plants were grown under various levels of incident light. The amount of light absorbed by the plant was estimated by combining detailed characterizations of the radiative environment and virtual plant simulations. ? Four major changes in leaf development were induced by the *se-1* mutation. Two constitutive leaf growth variables were modified, with a lower initial expansion rate and a higher duration of expansion. Two original responses to a reduced incident light were identified, concerning the leaf-initiation rate and the duration of leaf expansion. ? The *se-1* mutation dramatically affects both changes in the leaf development pattern and the response to reduced incident light.