



ABSTRACT

“SCI1, a tissue-specific cell cycle regulator that controls stigma/style development”

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The success of plant reproduction depends on the appropriate development of the reproductive organs, which involves general and specific regulatory networks. We have characterized a gene, *SCI1* (stigma/style cell cycle inhibitor 1), encoding a nuclear small lysine-rich protein that exerts an inhibitory action on cell cycle. qRT-PCR and *in situ* hybridization experiments showed that *SCI1* is stigma/style-specific and developmentally regulated. *SCI1* RNAi knockdown and overexpression transgenic plants exhibited stigmas/styles with remarkably enlarged and reduced areas, respectively, due to differences in cell numbers. Alterations on *SCI1* expression affected cell divisions on the stigmatic secretory zone (SSZ) and the differentiation timing of the papillar cells. Taken together, our results reveal that SCI1 is a novel tissue-specific negative cell cycle regulator that couples stigma cell division and differentiation. Additionally, two-hybrid and BiFC experiments showed that SCI1 interacts with A-type cyclins. We conclude that *SCI1* represents a novel developmentally regulated tissue-specific gene that controls cell proliferation/differentiation, probably as a component of a signaling pathway involved in upper pistil development.