

## S01-2 **Phytohormone signaling in guard cells**

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A pair of guard cells forms stoma in the epidermis of leaves in plants, which controls transpiration and gas exchange. The sophisticated guard cells sense a variety of abiotic and biotic stresses and convert the input signals to changes in turgor pressure through modulation of ion channel activities. The changes in turgor pressure are followed by changes in volume of guard cells and adjustments of stomatal apertures. The stomatal responses allow plants to sustain their growth under the stressful conditions. Guard cells achieve the signal integration to optimize stomatal aperture. In other words, plants encode the input signals to calcium signaling and reactive oxygen species signaling to integrate signals and decode the unified signal leading to stomatal responses. We summarize the details of signal transduction pathways of plant hormones such as abscisic acid, jasmonates, and salicylic acid in guard cells. Furthermore, we discuss the low-molecular compounds such as glutathione and reactive carbonyl species involved in the guard cell signaling.