**“How plant hormones regulate vegetative and flower growth”**

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At seedling, vegetative, and reproductive phases, plants must allocate their growth appropriately among different organs. Plants can adjust growth allocation according to ambient conditions such as temperature and light; or after events such as fertilization, when developing seeds induce fruit growth. Several plant hormones including auxin mediate such responses. Loss of the Auxin Response transcription Factors ARF6 and ARF8 in the model plant Arabidopsis has striking effects on growth of stems, flower organs, and fruits. Complete loss of ARF function decreases stem or fruit growth, whereas partial ARF function can instead increase growth, indicating possible effects of feedback regulation, changes in auxin level, or cross-talk with other signaling pathways. Flowers of *arf6 arf8* plants arrest as unopened buds that resemble broccoli florets. In flowers, ARF6 and ARF8 promote production of a second hormone, jasmonate, which controls petal growth and anther dehiscence (pollen release). Similar regulatory networks control vegetative and flower growth in other plants, but in some cases have interesting differences. The flower growth phenotypes also recall structural variations that determine mating systems in some plant species. In tomato, loss of *ARF8* orthologs affects flower growth, and can also cause seedless fruit growth, a potentially useful agronomic trait. Mutations that expand the domain of *ARF6* and *ARF8* transcription can accelerate growth of anthers, leading to delayed anther desiccation and pollen release. These Auxin Response Factors control expression of many target genes that promote growth, including a large family of *Small Auxin Up RNA* (*SAUR*) genes, which comprise a large family in most plants. Increased SAUR activity can stimulate stem and flower growth dramatically, likely by increasing cell wall loosening and/or sink strength.