

Auxin and jasmonic acid function synergistically during seed germination

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Arabidopsis thaliana. Credit: Wikimedia Commons, [CC BY-SA](#)

Flowering plants proliferate through sexual reproduction and seed

production. Seed germination and subsequent post-germinative growth are strictly regulated and require the precise coordination of multiple environmental and internal cues, including phytohormones. Abscisic acid (ABA) represses seed germination and post-germinative growth in *Arabidopsis thaliana*. Auxin and jasmonic acid (JA) stimulate ABA function; however, the possible synergistic effects of auxin and JA on ABA signaling and the underlying molecular mechanisms remain elusive.

In a study published in *The Plant Cell*, researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences (CAS) showed that exogenous auxin and JA synergistically activated ABA responses to suppress seed germination.

The wild-type seeds simultaneously treated with ABA, indole-3-acetic acid (IAA), and methyl jasmonate (MeJA) displayed dramatically lower percentages of germination and expanded cotyledon greening compared with those treated with combined ABA and IAA or MeJA.

Compared with seeds of wild type, those of lines with defective endogenous auxin biosynthesis, perception, or signaling were much less sensitive to both ABA and MeJA treatment.

Likewise, blocking CORONATINE-INSENSITIVE1(COI1)-mediated endogenous JA signaling also conferred germinating seeds with hyposensitivity to both ABA and auxin.

"These results demonstrate that auxin and JA exhibit synergetic effects on stimulating ABA signaling to suppress [seed germination](#) and post-germinative growth in *Arabidopsis*," said Hu Yanru of XTBG.

More information: Song Mei et al, Auxin contributes to jasmonate-mediated regulation of abscisic acid signaling during seed germination in

Arabidopsis, *The Plant Cell* (2022). [DOI: 10.1093/plcell/koac362](https://doi.org/10.1093/plcell/koac362)

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