

Lessons from a century of apical dominance and shoot-branching research.

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Poster

Abstract

For more than a century, scientists have been studying the process of apical dominance, where the apical bud prevents the growth of axillary buds. Beveridge et al. 2023 highlight the different approaches employed throughout history; physiology, genetics, and multidisciplinary era. In the physiology era, researchers believed that auxin played a crucial role in inhibiting bud growth through unknown secondary messengers. CK and ABA were considered potential candidates for these messengers. The genetic era involved the discovery of shoot-branching mutants in various species, which led to the identification of a new branching inhibitor, strigolactones (SLs), as a novel class of plant hormones. Cao et al. 2023 demonstrate that sugar is a better candidate than auxin in regulating CK levels during axillary bud release from apical dominance and also evaluate axillary bud outgrowth from the perspective of multiple successive stages and show that sugars and CK act first, then SL, auxin, and GA. Understanding the core structure of this branching network is valuable for comprehending the diverse aspects of branching control and finding agricultural solutions related to plant architecture. By incorporating this network into crop modeling platforms, we can study the complex interactions between traits/genes, the environment, and management practices (G×E×M).

Beveridge, C.A., Rameau, C., Wijerathna-Yapa, A., 2023. Lessons from a century of apical dominance research. *Journal of Experimental Botany* 74, erad137.

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