BALANCING PLANT IMMUNITY

Plant immune systems must integrate a diversity of factors to successfully fight off pathogens without harming the plant. Defense-related changes in hormone signaling, for example, can interfere with plant growth. Many species power down their immune systems at night, when growing ramps up. Plant immunity also fluctuates with changes in temperature, humidity, and light exposure, and is likely dependent on a plant's microbiota below and above the soil.

CIRCADIAN CLOCK: Some *Arabidopsis* immune genes operate on a diurnal basis so that they are at their most active in the morning, when certain fungi release their spores.

ENVIRONMENT: At warm temperatures, *Arabidopsis* favors PAMP receptor–mediated over NLR-mediated immunity. This switch is advantageous because some bacteria are less likely to secrete effectors when temperatures rise.

MICROBIOME: Microbes may influence plant immune pathways to help them discern friend from foe, while hormones produced by the plants influence which microbes hang around.