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A microbiota–root–shoot circuit favours Arabidopsis growth over defence under suboptimal light

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摘要	Bidirectional root–shoot signalling is probably key in orchestrating stress responses and ensuring plant survival. Here, we show that Arabidopsis thaliana responses to microbial root commensals and light are interconnected along a microbiota–root–shoot axis. Microbiota and light manipulation experiments in a gnotobiotic plant system reveal that low photosynthetically active radiation perceived by leaves induces long-distance modulation of root bacterial communities but not fungal or oomycete communities. Reciprocally, microbial commensals alleviate plant growth deficiency under low photosynthetically active radiation. This growth rescue was associated with reduced microbiota-induced aboveground defence responses and altered resistance to foliar pathogens compared with the control light condition. Inspection of a set of A. thaliana mutants reveals that this microbiota- and light-dependent growth–defence trade-off is directly explained by belowground bacterial community composition and requires the host transcriptional regulator MYC2. Our work indicates that aboveground stress responses in plants can be modulated by signals from microbial root commensals.
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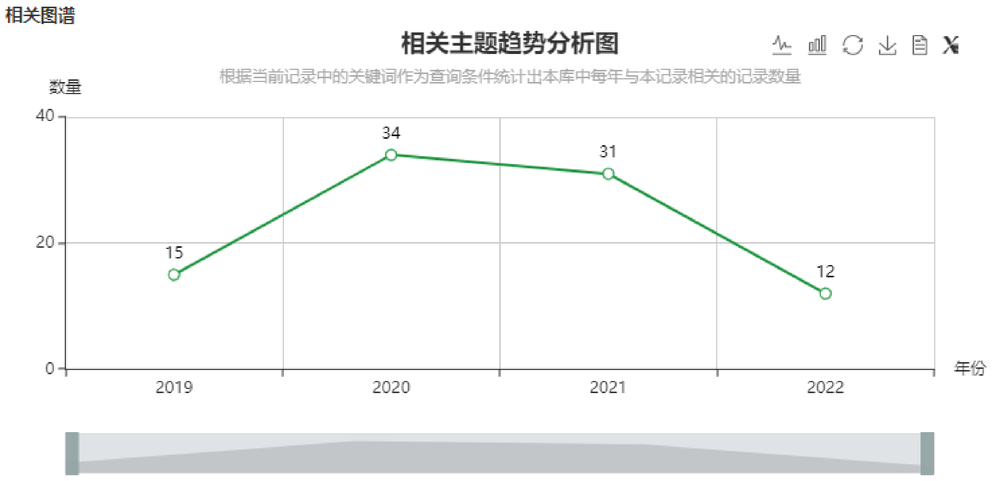

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