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Molecular insights into nematode-induced changes to hormone physiology and signaling

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Cyst (*Heterodera glycines*) and root-knot nematodes (*Meloidogyne* spp.) are two of the most economically important pathogens of crop plants. Parasitic success depends on the remarkable ability of these nematodes to reprogram root cells into metabolically active feeding sites. Although the feeding sites induced by these two types of nematodes function in a similar capacity as nutrient sinks, the molecular events leading up to their formation differs with respect to hormone physiology and signaling. Recent work demonstrated that cyst nematodes secrete CLE peptides and cytokinin to activate cell division in initial feeding cells. A role for cytokinin in plant-nematode interactions has long been suspected given the importance of this hormone in regulating cell cycle, cell division and nutrient mobilization, all of which represent key cellular processes altered for feeding site formation. Given that cyst and root-knot nematodes both make cytokinin but induce cell division to different degrees, we examined if divergent regulation of cytokinin perception could occur in response to each of these nematode species. Our studies point to differences in the expression of cytokinin biosynthesis, catabolism and signaling genes in response to infection by cyst and root-knot nematodes, suggesting differential manipulation of hormone pathways by these two nematode species.