Ethylene and jasmonic acid act as negative modulators during mutualistic symbiosis between *Laccaria bicolor* and *Populus* roots

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- **We used morphological studies of transgenic- or hormone-treated *Populus* roots as well as whole genome oligoarrays to identify how these hormones affect root colonization by the mutualistic ectomycorrhizal fungus *Laccaria bicolor* S238N.**
- **Ethylene, jasmonic acid and salicylic acid inducible genes were regulated in the late stages of interaction between *L. bicolor* and poplar. Both ethylene and jasmonic acid treatments were found to impede fungal colonization of roots.**
- **We conclude that ethylene and jasmonic acid pathways limit fungal growth within roots. This induction is likely an adaptive response by the plant such that its growth and vigour is not compromised by the fungus.**

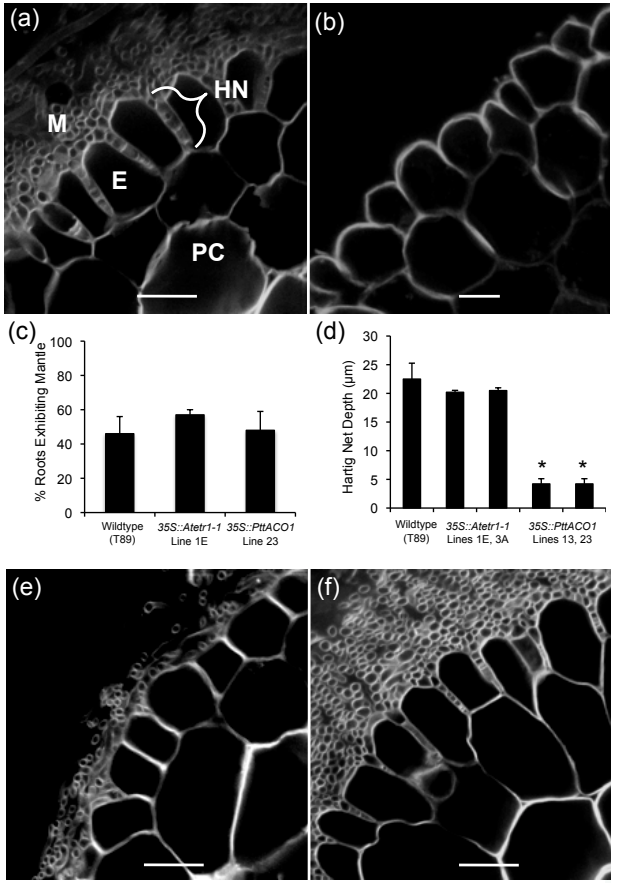

Figure: **: Increased ethylene signaling reduces the development of the Hartig net.** (a) Root colonized by *L. bicolor;* M = mantle; E= epidermal cell; PC = parenchyma cell; HN = Hartig net. (b) Poplar root colonized without fungal contact. (c) Percent of roots exhibiting a fungal mantle. (d) Measurements of Hartig net depth ± SE; * indicates significant difference from wildtype ($p<0.05$). (e) *35S::PttACO1* root colonized by *L. bicolor*. (f) *35S::Atetr1-1* root colonized by *L. bicolor* under control conditions after 14 days of contact. Scale bar of all figures represents 10 µm.

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