

Heil, M. & Ton, J. (2008) Long-distance signalling in plant defence. **Trends Plant Sci.** **13**, 264-272

Abstract: Plants use inducible defence mechanisms to fend off harmful organisms. Resistance induced in response to local attack is often expressed systemically, i.e. in yet undamaged organs. In the search for the translocated signals, biochemical studies follow the physical movement of putative signals, and grafting experiments use mutants impaired in the production or perception of these signals. Long-distance signals can directly activate defence, or prime for stronger and faster defence induction. Historically, research has focused on vascular transport of signalling metabolites, but volatiles can play a critical role as well. We compare the advantages and restraints of vascular and airborne signals for the plant and discuss how they can act in synergy to achieve an optimised resistance in distal plant parts.