Plant membrane receptor activation by shape-complementary co-receptor kinases

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Plants have evolved unique membrane receptor kinases which control plant growth, development and interactions with other organisms. These receptors harbor leucine-rich repeat (LRR) ectodomains, which can sense rather different small molecule, peptide and protein ligands. I will compare the LRR receptor kinases BRI1 (which senses a growth-promoting steroid hormone) and HAESA (which senses an abscission-controlling peptide hormone) in mechanistic detail. I will present structural, biochemical and genetic evidence that the co-receptor kinase SERK1 contributes to specific ligand recognition and to receptor activation in both BRI1 and HAESA. Finally, I will discuss how formation of a different receptor – co-receptor signaling complexes at the plasma membrane can trigger specific signaling outputs in the cytoplasm.

References:

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