Neural and behavioural sensitivity to characteristic floral scent components in *Andrena vaga* bees

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Specialized (oligolectic) bees rely on a small range of host plants for their pollen collection, in strong contrast to bees like honeybees which forage on a broad and generalized flower spectrum. As compared to generalists, the specialists might have evolved neural adaptations allowing them to effectively locate their specific host flowers. To investigate how host odours are processed in their brains, we used calcium imaging experiments and recorded odour-evoked activity patterns in the antennal lobe for the specialist *A. vaga* and, for comparison, in the generalist honeybee *Apis mellifera*. We recorded responses to synthetic compounds in serial solutions as well as to volatile compounds of the odour bouquet of *Salix* flowers separated by a gas chromatograph. We performed bioassays with specialized *Andrena vaga* bees to identify the relative importance of visual versus olfactory cues to locate *Salix* (willows) host plants and to test the attractiveness of neural active compounds.

Our behavioural experiments showed that *A. vaga* bees orientate mainly on olfactory cues to locate host flowers. In our physiological experiments, *A. vaga* bees, but not the honeybee *A. mellifera*, had a particularly high sensitivity for characteristic components of the host-flower odour. These floral scent components were also attractive for naïve *A. vaga* bees in bioassays. In conclusion, our experiments suggest that *A. vaga* females show correlates between neural organization and host-plant finding behaviour.

References

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Individual perfume dynamics in male orchid bees

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Whereas unraveling the evolutionary reasons for perfume signaling in orchid bees will ultimately require experimentation with females, the study of how perfume phenotypes are compiled during the life of males may add valuable background information on signal content. I will talk about the results from experiments conducted in La Gamba, Costa Rica,