

## ***Cauliflower mosaic virus uses the host sensory system for instantaneous transmission by an insect vector***

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Many plant and animal viruses are spread by insect vectors. Cauliflower mosaic virus (CaMV) is aphid-transmitted, with the virus being taken up from specialized transmission bodies (TB) formed within infected plant cells. However, the precise mechanism of TB mediated virus acquisition by aphids is unknown. We have shown that TBs react instantly to the presence of the vector by ultra-rapid and reversible redistribution of their key components onto microtubules throughout the cell. Enhancing or inhibiting the TB reaction pharmacologically or by using virus mutants led to enhanced or inhibited transmission, respectively, confirming the requirement of this TB phenomenon for efficient virus-acquisition. Beyond that our results reveal a fascinating, and hitherto unforeseen mechanism whereby CaMV shares the host's perception of the aphid, translating it into an independent response. The unattended capability of viruses to react, via the host, to the outside world opens new research horizons, i.e. investigating the impact of “perceptive behaviors” on other steps of the infection cycle. We try to understand which mechanisms and signalization pathway are involved in this phenomenon.