Molecular bases of insect ability to transmit plant viruses

Abstract: Plant viruses have co-evolved into specific relationships with some insects for transmission and survival in nature. The majority of insect vectors are plant-sucking forms, i.e. aphids, leafhoppers and whiteflies. Among them, aphids are the most numerous and versatile group. Recently, marked progress has been achieved in understanding virus-vector interactions and identifying the proteins regulating virus transmission by insects. This review describes the mechanisms of circulative and noncirculative transmission of plant viruses by insect vectors. The functions of the viral capsid protein, a helper component induced in plants infected with some viruses and of the proteins synthesized by endosymbiotic bacteria in the aphid haemolymph are shown.