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## **Program and Abstracts**

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**Faba bean necrotic stunt virus (Family Nanoviridae, genus Nanovirus) and Alfalfa leaf curl virus (Family Geminiviridae, genus Capulavirus) interactions within co-infected plants and co-transmitting aphid vector.**

Jeremy DI MATTIA<sup>1</sup>, Faustine RYCKEBUSCH<sup>2</sup>, Jean-Louis ZEDDAM<sup>3</sup>, Michel PETERSCHMITT<sup>2</sup>, Nicolas SAUVION<sup>2</sup>, Stéphane BLANC<sup>2</sup>

<sup>1</sup>University of Montpellier, Montpellier, France. <sup>2</sup>UMR BGPI, INRA, Cirad, Montpellier SupAgro, Montpellier, France. <sup>3</sup>IRD, Cirad, Univ Montpellier, IPME, Montpellier, France

Abstract

Nanoviruses and geminiviruses are important ssDNA plant viruses with a dramatic impact on vegetable crops. They share ecological and molecular features. Both groups of viruses are restricted to the plant vascular system where they are acquired and then transmitted plant-to-plant by insect vectors through the circulative non-propagative mode. Investigating putative interactions between nanoviruses and geminiviruses is essential to determine the differences or similarities in their transmission process. The *Faba Bean Necrotic Stunt Virus* (FBNSV) is a legume nanovirus vectored by different aphid species including *Aphis craccivora*. The *Alfalfa Leaf Curl Virus* (ALCV) also infects legumes and is so far the only reported geminivirus vectored by an aphid: *Aphis craccivora*. After ingestion with the plant sap, FBNSV and ALCV virions massively accumulate in cells of the aphid anterior midgut (AMG) before passage in the hemolymph and to the salivary glands. Though the precise gut-crossing mechanisms remain elusive, previous experiments have definitely established that FBNSV needs the presence of the virus-encoded Nuclear Shuttle Protein (NSP) for successful aphid-transmission while ALCV uses the capsid strategy and does not require any transmission factor. In co-agroinoculated faba bean, we observed co-infection in a small proportion (approximately 10 %) of the test plants. Transmission tests using these co-infected plants and study of the accumulation and localization of the two viruses in aphid guts indicated that they follow a distinct intracellular route and do not interfere, suggesting for the first time that nanoviruses and capulaviruses may interact differently with their common aphid vector.