**Using insects as vectors for inoculation of beneficial resistance-inducing microbes in plants**

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**INTRODUCTION**
EU-ITN project MIRA aims to use beneficial microorganisms that induce plant resistance against agricultural pests. We are working with the chosen model system that comprises tomato - *Solanum lycopersicum* - as a host plant, beet armyworm - *Spodoptera exigua* - as a pest and bacterial and fungal species as beneficial microorganisms.

**OBJECTIVE**
Transmission of beneficial bacterial endophytes into plants by sap feeders and pollinators as insect vectors.

**EXPERIMENTS**
1. Vectoring a bacterium from an infected plant into an axenic *in-vitro* plant with a sap feeding insect
2. Vectoring a bacterium from an artificial diet into an axenic *in-vitro* plant with a sap feeding insect
3. Vectoring of a bacterium by inoculated bumble bees with hive dispenser

**OUTLOOK**
After identifying a successful transfer of bacteria by insect vector and achieving plant colonization by a bacterial endophyte, we can develop the experiment further and answer questions like:
1. How many bacteria will be necessary to inoculate the insect vector to achieve an appropriate transmission rate?
2. How many insect vectors are needed to cover a target plant?
3. How long is the longevity of the insect vector during, and after transmission?
4. How much do bacteria influence viability of insect vectors? (Mortality)
5. How many insect vectors need to be released into a large greenhouse in commercial production?

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