FA1405: CAMo Interactions

ANNUAL MEETING ON CROP-ARTHROPOD-MICROORGANISM INTERACTIONS

'Systems biology approaches to identify mechanisms underlying crop-arthropod-microbe interactions'

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HANDS-ON SYSTEMS BIOLOGY TRAINING SCHOOL

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Sugar shipping in arbuscular mycorrhiza protects tomato plants against *Botrytis cinerea*

Session 2

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Plants can transmit systemic signals in order to keep a good level of defense when the attack starts and they want to keep their integrity for growth. In this type of systemic communication arbuscular mycorrhiza (AM) seems to help from under- to above- ground defenses in a mutualistic symbiosis with most of plants on Earth. For such reason, AM may be a "mark" of great interest in crops. Mycorrhiza-induced resistance (MIR) is one of the best trade-off for AM against biotic stress. One of the primary mechanisms to hamper the entrance of an attacker is the callose accumulation as a physical barrier around the site of pathogen penetration. Both events, systemic communication for defense and callose deposits around the site of infection still remain elusive. Nevertheless, the mutualistic relation between plants and arbuscular mycorrhiza fungi (AMF) is known to have a major impact on sugar metabolism, as the mycorrhiza acts as a sink for photosynthates. The aim of the present work is to decipher how AM manipulates the sugar metabolism, which, upon infection, will be used to produce higher amount of callose than control plants (infected and no mycorrhized), supporting MIR. The findings of the augmentation of cell-wall invertases (*LIN6*), sucrose synthases (*SUS*) in leaves of AM respect to the non-mycorrhized as well as the enhance in the vesicle traffic-responsive gene *SYP121* point to a higher levels of glucose and its shipping, providing enough units of glucose to build the polymer of callose.