Mechanisms of Biotic Interactions
Fabienne Micheli - Poster-B185

Abstract Title: BIOINFORMATIC ANALYSIS OF GLUTATHIONE PEROXIDASE FAMILY FROM THEOBROMA CACAO AND GENE EXPRESSION DURING MONILIOPHTHORA PERNICIOSA INFECTION

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Abstract

Glutathione peroxidases (GPXs) are enzymes which are part of the antioxidant system of the cell. Mammalian GPXs are known as selenoproteins because containing the selenocysteine (Sec) amino acid. In plants, these proteins are less known. Here, were analyzed the protein structure and the gene expression of five GPXs from Theobroma cacao . The three-dimensional structure of the TcGPXs showed that the catalytic site of Tc PHGPX and TcGPX (2,4 and 5) contain a cysteine while the GPX8 contain a tryptophan. Interestingly, the T. cacao GPX did not show any selenocysteine in their structure. Docking analysis revealed that TcGPXs can bind to selenium. Phylogenetic analysis split plant and mammalian GPXs in two distinct branches. RT-qPCR analysis of TcGPXs during the T. cacao - Moniliophthora perniciosa interaction showed that TcGPX8 gene is overexpressed in the green broom phase of the susceptible cacao variety. In the resistant variety, the TcGPX5 was significantly more expressed in the final stages of the interaction. This study shows that TcGPXs are important targets for the understanding of the T. cacao - M. perniciosa interaction but also for the functionality of these proteins.

Mechanisms of Biotic Interactions
Clara Zaremski - Poster-B123

Abstract Title: CHARACTERIZATION OF FUNGAL COMMUNITIES ASSOCIATED WITH AQUILARIA SPP. FOR THE PRODUCTION OF AGARWOOD

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Abstract

Aquilaria is a tree genus distributed in Southeast Asia, known for its oleoresin production. The induction of this oleoresin is described as a stress reaction by injury and, or fungal infection. In response to this stress, Aquilaria spp. produces an oleoresin that accumulates in the wood. The wood of not-injured trees is clear. The wood of injured trees tints and becomes odorous; we call it Agarwood. The quality of

the oils, extracted from the wood, is variable. These variations are due to, in part, to the diversity of fungi that infect Aquilaria . The objective of this work is to characterize the fungal communities associated with Agarwood in areas where Aquilaria is native (South East Asia) and in an introductory area (French Guiana). We collected wood samples of Aquilaria from these countries to sequence fungal ITS2. Thus, we obtained 693,961 sequences grouped into 535 OTUs (Ascomycetes 87%, Basidiomycetes 10.5%). Fungi specific to a geographical area were highlighted as well as ubiquitous fungi in different areas. These results allow considering the role of these microorganisms in the quality of Agarwood.

Mechanisms of Biotic Interactions
Jan Schulze Hüynck - Poster-B122

Abstract Title: CYSTEINE PROTEASES AND THEIR INHIBITORS IN MICROBE-MAIZE ROOT INTERACTIONS

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Abstract

Plants are associated with a broad spectrum of microbes and the outcome in plant-microbe interactions ranges from beneficial symbiosis to destructive diseases. The plant apoplast plays a crucial role during the establishment of a plant-microbe interaction. Plant proteases are key players in microbe perception and cysteine proteases belong to the most abundant proteins in the plant apoplast. Among them, papain-like cysteine proteases (PLCPs) have been identified as pivotal components during plant immunity. We propose that regulation of PLCP activity might be necessary to establish an interaction between plant and microbes thus microorganisms need to overcome plant defense responses by modulating, inhibiting or activating PLCP activity. We have identified a novel root specific PLCP in maize called CP1c due to its high sequence homology to maize CP1a and CP1b. Preliminary results suggest that maize endophytic bacteria of the classes Actinomycetes and Flavobacteriia can inhibit maize root PLCPs. Further experiments aim to reveal the microbial molecule responsible for the observed inhibition. Besides, a biochemical characterization of CP1c as well as colonization assays of maize CRISPR-CAS PLCP mutant lines using a maize-SynCom are ongoing experiments to understand the role of PLCPs in maize roots during plant-microbe interactions.

Mechanisms of Biotic Interactions
Safa Labidi - Poster-B120

Abstract Title: IMPROVING RESISTANCE TO POTATO COMMON SCAB BY CALLI HABITUATION TO THAXTOMIN A AND TREATMENT WITH 2,4-D

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Abstract
