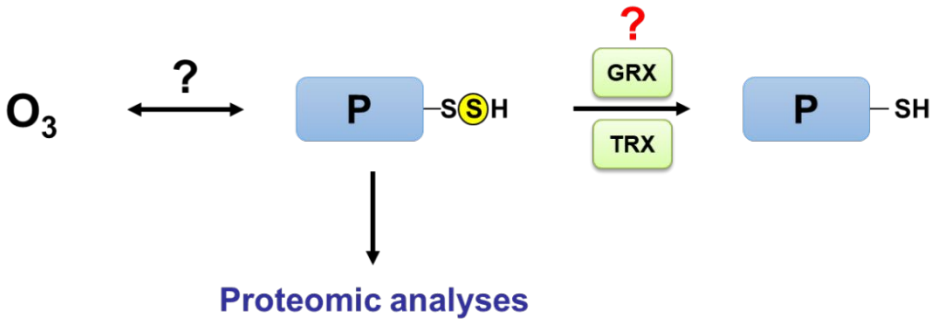
PEROS



Deciphering the relationships between protein persulfidation and oxidative stress

Principle investigator: Jérémy COUTURIER ; UMR Interactions Arbres/Micro-organismes (IAM) 1136

LabEx partners: Anthony Gandin (UMR SILVA)

Collaborations : Christophe Marchand (Laboratoire de Biologie Computationnelle et Quantitative, UMR 7238, Sorbonne Université/CNRS)

Thematic action concerned: *WP1*

Context —
Hydrogen sulfide (H_2S) is a gaseous effector involved in a wide variety of physiological processes in most organisms including photosynthetic organisms. Numerous studies have highlighted the role of H_2S as a signal to enhance plant acclimation/tolerance to various abiotic stresses, ranging from metal exposure to drought, salinity, heat, chilling, and osmotic stress. Considering the central role of reactive oxygen species (ROS) in plant stress responses, the mode of action of H_2S in stress responses has often been linked to oxidative stress and ROS notably. The oxidative modification of cysteine residues to persulfides (protein persulfidation) is suggested to represent the main way by which hydrogen sulfide (H_2S) exerts its biological functions. Protein persulfidation is now well recognized as an important redox post-translational modification in most living organisms, including plants. Hence H_2S signaling via persulfidation of protein cysteine residues represents a novel thiol switching mechanism comparable to nitrosylation or glutathionylation. In this project, we aimed at investigating the relationships between protein persulfidation and oxidative stress in poplar in the context of an acute ozone (O_3) stress, a powerful oxidizing agent.