



PEPS

PEPtides de défense des arbres de la famille des Salicacées

Principle investigator:

PETRE, Benjamin, UMR 1136 INRAE/Université de Lorraine Interactions Arbres-Microorganismes (IAM)

Collaboration:

Université du Québec à Trois-Rivières, Trois-Rivières, Canada (Prof. Hugo Germain)

Context - Modern agriculture seeks solutions to reduce the use of chemical pesticides. In this context, academic and private actors have a role to play in the development of non-chemical pesticides, also known as biopesticides. Plants use defense peptides with antimicrobial activities to repel pathogens - these peptides, if vectorized, can be used as biopesticides. Trees have a high molecular diversity that remains little explored, although the availability of model tree genome sequences accelerates the discovery of new molecules.

Objectives - The objective of the PEPS project is to functionally characterize antimicrobial peptides of the RISP (*Rust-Induced Secreted Protein*) family of trees of the Salicaceae family (poplar and willow) and to evaluate their potential for developing biopesticides.

Approach - The PEPS project adopts a functional genomics approach based on protein engineering, genetic engineering, plant molecular physiology, physiology of plant-fungi interactions, and cell biology.

Expected results and impacts - The PEPS project will generate knowledge on the modes of action of tree defense peptides and could lead to a major conceptual advance in plant biology by revealing the existence of multifunctional defense peptides in plants. The PEPS project may also generate functionalized and vectorized molecules, with a strong potential for industrial valorisation as biopesticides.