

Ideotype plants from Defensin Protein Promiscuity

OBJECTIFS

The IDP-Pro project aims to develop a new approach to produce plants with better tolerance to biotic and abiotic stresses. For that, we will investigate whether and how the properties of defensins could be shared and how they could combine in planta.

ACTIONS

To do this, we will answer the following questions: Do cowpea defensins possess the properties of transmitting zinc tolerance? What is the bactericidal activity, and what is the anti-protease activity of the different PDF1 of Arabidopsis? How do the different properties of defensins can be combined within the same molecule and what are their actions at the cellular and in planta level?

RESULTATS

The zinc tolerance activity of cowpea defensins tested in the yeast system showed that they were not all equivalent. Interestingly, chimeric defensins constructed after in silico study retained the ability to confer tolerance to zinc. In-plant analysis of the action of these proteins is underway. The purification of the defensins to test the bactericidal and anti-protease activities of the various defensins of Arabidopsis and chimeric defensins is under way.

PERSPECTIVES

The completion of the IDP-Pro project will allow the acquisition of knowledge from the gene to the plant in the fields of genetics, genomics and plant improvement. We will be able to provide the scientific community with a multi-functional description of the defensins from both *V. unguiculata* and Arabidopsis and from combined chimeric proteins. With this project, we will implement an innovative approach, which as such, holds promise for beneficial output to improve phenotype of transgenic plants which might be considered as valuable tools to improve plant resilience when facing multiple stresses constraining their growth and yields.

Responsable :

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