# Two lysine motif receptor-like kinases (VvLYKs) participate in chitin-triggered immunity in grapevine

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# BOOK OF ABSTRACTS

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**Highlights**

- Two Pattern Recognition Receptors (PRRs) VvLYK1-1 and VvLYK1-2 participate in the signaling of chito-oligosaccharides in grapevine
- VvLYK1-1 is involved in powdery mildew resistance

## Introduction

In nature, plants are constantly exposed to potentially pathogenic microbes such as bacteria, fungi, oomycetes or viruses. However, plants have developed effective immune systems triggering various defence reactions against invading pathogens upon the perception of pathogen-associated molecular patterns (PAMPs; Dodds and Rathjen, 2010). The recognition of these conserved microbial signatures is ensured by Pattern Recognition Receptors (PRRs) which also detect plant endogenous molecules released during pathogen invasion, called damage-associated molecular patterns (DAMPs; Boller and Felix, 2009).

Chitin, a fungal cell wall component, is a well-known PAMP that triggers defence responses in many mammal and plant species. The aim of the study was to determine the effects of chito-oligosaccharides on grapevine's immunity and identify the receptor(s) involved in the perception of chito-oligosaccharides in grapevine.

## Material and methods

Grapevine cells (*Vitis vinifera* cv Gamay) were cultivated as described in Gauthier et al. (2014). *Arabidopsis thaliana* plants from wild-type (WT) Columbia (Col-0), mutant and transgenic lines were grown *in vitro* for two weeks in controlled conditions for defence responses or in jiffy peat pellets in a controlled growth chamber for four weeks for protection assays. Grapevine cells or Arabidopsis plants were treated with water, chitin, chitosan (Elicityl, 0.1 g/l for cells and 1 g/l for plants) or flagelline (10 µM) taken as a positive control. ROS production and cytosolic $Ca^{2+}$ variations ($[Ca^{2+}]$cyt) in grapevine cells were performed according to Dubreuil-Maurizi et al. (2010) after elicitor treatments, by measuring the chemiluminescence of luminol for $H_2O_2$ production and using apoaequorin expressing cells to detect variations of $[Ca^{2+}]$cyt. Protein extraction, SDS-PAGE and western blotting for MAPK phosphorylation analysis were carried out as previously described (Trdà et al., 2014). RNA extraction and quantitative real-time PCR were performed using primers for the