

## Awakening of ETI: Stripe rust effector candidates reveal HR on wheat *via* a bacterial type III secretion system

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Although the wheat stripe (yellow) rust disease is among the most damaging one on wheat, worldwide, there are still too many unknowns in the interaction mechanism of this pathogen with its host. Whole-genome and transcriptome sequencing are valuable approaches to pinpoint effector candidates that might be involved in PAMP triggered immunity (PTI) and effector triggered immunity (ETI), but routinely used high through-put validation methods scare for testing the biological functions of the wheat pathogen effectors. Nevertheless, one of the bacterial type 3 secretion system (T3SS) seems to be a very promising strategy, since it successfully allows the expression of the candidate effectors in the natural host, wheat. *Pseudomonas fluorescens* mediated T3SS offers auspicious and reliable effector delivery system than others due to lack of basal resistance symptoms in wheat. We analyzed the most of promising effector candidates whether they produce hypersensitive response (HR) upon their delivery into 13 stripe rust resistant (YR) differential wheat lines. We report here, for the first time, 3 of the *Puccinia striiformis* f. sp. *tritici* effector candidates produce HR due to activation of ETI.

These effectors were further characterized to assess the subcellular localizations in *planta* using *Agrobacterium* (GV3101) mediated gene transfer into *N. bentamiana*. Interestingly, one of the effector seems to be targeting plastids of the guard cells, one effector is likely to be located in cytoplasm and nucleus, another one is on nucleus and cell membrane.