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WHEAT TRANSGENIC LINES OVEREXPRESSING PGIP SHOWED INCREASED RESISTANCE TO FUNGAL PATHOGEN

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A possible strategy to control plant pathogens is the improvement of natural plant defence mechanisms against the processes that pathogens commonly use to penetrate and colonize the host tissue. One of these defence mechanisms is the ability to inhibit the pathogen's capability to degrade plant cell walls. Polygalacturonase-inhibiting proteins (PGIPs) are plant defence glycoproteins associated with the cell wall of both monocot and dicot species. They interact with fungal endopolygalacturonases (PGs) and modulate their activity favouring the accumulation of oligogalacturonides active as elicitors of plant defence responses.

To assess the effectiveness of these proteins in protecting wheat from the fungal pathogens, we have produced a number of transgenic wheat lines expressing a bean PGIP (PvPGIP2) having a wide spectrum of specificities against fungal PGs. The transgene-encoded protein is correctly secreted in the apoplast, maintains the characteristic recognition specificities and endows the transgenic wheats with new PG recognition capabilities. As a consequence, transgenic wheat tissue showed an increased resistance to fungal PG digestion. Two transgenic lines over expressing PvPGIP2 showed a reduced symptom progression through the leaves or spikes following infection with *Bipolaris sorokiniana* and infection experiments *Fusarium* spp. are in progress. Due to the technological importance of wheat kernel proteins we are also evaluating the impact of the over expression of PvPGIP2 on the accumulation of major protein components such as gliadins and glutenins.