A Pericarp-specific Promoter for Targeting Transgenemediated Disease Resistance. (C07-federico161733-Oral)

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Abstract:

Transgene-mediated resistance is a promising means for controlling Fusarium head blight (FHB) in barley and wheat. Ideally, expression of antifungal genes should be restricted to the spike tissues where infection takes place, stopping the fungus before it spreads and produces significant levels of mycotoxins. With that aim, we cloned and characterized a novel barley gene, EpiLTP, which is highly expressed in the pericarp epidermis, one of the first spike tissues to be colonized. EpiLTP is also highly expressed in the coleoptile and embryo, but not in leaves, stems, roots or other spike tissues. The promoter region, 5'UTR, and the sequence encoding a putative signal peptide were cloned using PCR. Series of 5' and 3' promoter deletions were studied in transient expression assays using sgfp as a reporter. A minimal construct containing 244 bp of promoter and 5'UTR was sufficient to drive preferential expression in the pericarp epidermis, coleoptile and embryo. The suitability of this promoter for engineering transgene-mediated resistance to FHB and other diseases will be discussed with respect to spatial, temporal and inducible patterns of expression of the native and reporter genes.

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