**Identification and analysis of an outer-seed-coat-specific promoter**

**from Arabidopsis thaliana**

Elahe Esfandiari • Zhaoqing Jin • Ashraf Abdeen •Jonathan S. Griffiths • Tamara L. Western • George W. Haughn

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Abstract Differentiation of the Arabidopsis thaliana (Arabidopsis) seed coat epidermal cells involves pronounced changes highlighted by the synthesis and secretion of copious amounts of dispensable, pectinaceous mucilage followed by a thick cellulosic secondary cell wall. This cell type, therefore, represents an excellent molecular-genetic model to study the biosynthesis and modification of cell wall components, particularly pectin. To support such research, we sought to identify a promoter that drives expression specifically in the Arabidopsis seed coat epidermis. Arabidopsis seed coat microarray data was analysed for genes expressed in the wild type seed coat but not the seed coat of the apetala2 mutant where the epidermal cells fail to differentiate. Of 14 candidate genes, 9 showed a seed-specific expression pattern by reverse transcriptase- PCR. Transcriptional regulatory region-b-glucuronidase (GUS) reporter gene fusions introduced into Arabidopsis identified one promoter, that of the DIRIGENT PROTEIN1 (DP1) gene, as seed coat specific. The specificity of the expression was confirmed using a second reporter gene, Citrine YFP. Expression of both reporter genes was limited to the epidermal and palisade cell layers of the seed coat. Quantitative PCR data using wild type seed coat RNA suggested that the promoter is particularly active at 7 days post anthesis. The DP1 promoter was able to direct transcription of GUS in a similar pattern in the Brassica napus seed coat. Thus, in addition to its application in studying the plant cell wall, this promoter will provide an experimental tool for expressing high-valued recombinant proteins as well as modifying seed coat traits in economically important crops.