

P002 Identification of novel plasmodesmal proteins from *Arabidopsis* suspension cultures

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Identification of the structural/functional apparatus associated with symplastic cell-to-cell trafficking in plants remains a major challenge in plant biology. The location of plasmodesmata embedded within the cell wall, the diversity of plasmodesmal structure within developed tissues, and the resistance of plant tissues to disruption have all frustrated past attempts at a biochemical characterisation of plasmodesmata. We have exploited *Arabidopsis* cell suspension cultures as source material in the search for novel plasmodesmal proteins. From a proteomic analysis of purified cell walls (Bayer *et al.*, 2006), which contained plasmodesmata as the only visible membranous structures, attention was focussed on proteins that showed membrane association. The expression of reporter (GFP)- gene fusions in homologous and heterologous plant and cell systems identified the subcellular locations of all the candidate proteins. Plasmodesmal location was confirmed in transgenic plants through the location of the fusion proteins at cell wall puncta located exclusively at cell-to-cell contact faces and as puncta retained on the cell wall after plasmolysis. Proteins showing unambiguous targeting to plasmodesmata have identified two families of novel plasmodesmal membrane proteins. Each protein is differently targeted to plasmodesmata and reveal novel principles for subcellular trafficking and protein targeting. Biochemical and bioinformatic analysis has identified a potential role for one group of proteins in plasmodesmal control in the shoot apex.

Bayer *et al.*, (2006) *Proteomics* 6:301