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## A KN1 BINDING PROTEIN 1 (KBP1) encodes plant specific myosin-tail protein that may be involved in intercellular KN1 trafficking

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### Objectives

To isolate interacting proteins with KNOX homeodomain proteins to study the network of cell-to-cell trafficking pathway.

### Materials and Methods

#### 1. Material

Yeast - pJ69-4a

bait plasmid - pGBD-c3-KN1 HD, pGBD-c3-KN1, pGBD-c3-KNAT1, pGBD-c3-KNAT1 Ctrn  
prey cDNA library - pACT2 based Arabidopsis flower bud, pAD424 based Arabidopsis seedling cDNA library.

#### 2. Methods:

Yeast two hybrid screening was carried out using pGBD-c3 based KN1 HD, KN1 and KNAT1 Ctrn as bait.

### Results and Discussion

The intercellular trafficking of the macromolecules via plasmodesmata (PD), plays important roles for involved in the developmental and physiological process in plant cells, is achieved via plasmodesmata (PD), intercellular organelles. PD are intercellular organelles consisted of specialized membrane channels between neighbouring cells. However, little is known about components associated with PD-associated and regulatory components involved in the function they did in cell-to-cell signaling trafficking of macromolecules. KNOTTED1 (KN1), a homeobox protein to function in SAM development in maize, is a well studied non-cell-autonomous protein (NCAP) to function in SAM development, generally known that it can traffic cell-to-cell through PD. To screen some trafficking pathway-plasmodesmatal proteins involved in protein trafficking, we used both full length and HD of KN1 protein as a bait for yeast two hybrid screening. NCAP is expressed in cytosol and functions ectopically in outside of its original cell. We found 2 candidate genes, an KN1 BINDING PROTEIN 1 (KBP1) that was before named as a far-related Caldesmon (CDM)-like protein according to Tair annotation. KBP1 shows very weak homology with a chick caldesmon (24% similarity in whole protein) and includes myosin tail repeats. Blast search for its homologs disclosed only an Arabidopsis protein which has 55.2% identity and 64.4% similarity with the KBP1-like. *In silico* analysis suggested that KBP1 and its homolog (KBP2) may be plant specific cytoskeletal binding proteins that may play a role in intercellular protein trafficking of KN1. Here, we present preliminary results obtained and on going research strategy to reveal the function of these proteins and Topoisomerase IV (Top IV). Caldesmon is cytoskeleton-associated protein, and topoisomerase IV regulates the process of segregating newly replicated chromosome from one another. Both of the candidates have myosin domain, when we analyzed the sequence data with TAIR. Myosin has been implicated in the regulation of PD function.

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