

Description of Additional Supplementary Files:

Supplementary Data 1: Sequence of clones from OBE genes isolated during the yeast-two-hybrid screen using the SMXL5 protein as a bait.

Supplementary Data 2: OCRs and associated genes specific for GFP-positive or GFP-negative fractions from wild type, *smxl5*, *smxl4;smxl5* or *smxl5;obe3* backgrounds, respectively.

Supplementary Data 3: Genes with OCRs specific for GFP-positive or GFP-negative fractions for wild type, *smxl5*, *smxl4;smxl5* and *smxl5;obe3* backgrounds.

Supplementary Data 4: OCRs and associated genes specific for wild type, *smxl5*, *smxl4;smxl5* and *smxl5;obe3* plants comparing GFP-positive fractions from the respective backgrounds.

Supplementary Data 5: OCRs and associated genes specific for wild type, *smxl5*, *smxl4;smxl5* and *smxl5;obe3* plants comparing GFP-negative fractions from the respective backgrounds.

Supplementary Data 6: Xylem, phloem and non-phloem genes according to Brady et al., 2007.