

The *Populus alba* cationic cell-wall-bound peroxidase (CWPO-C) regulates plant growth, lignin content and composition in poplar

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Supplementary information

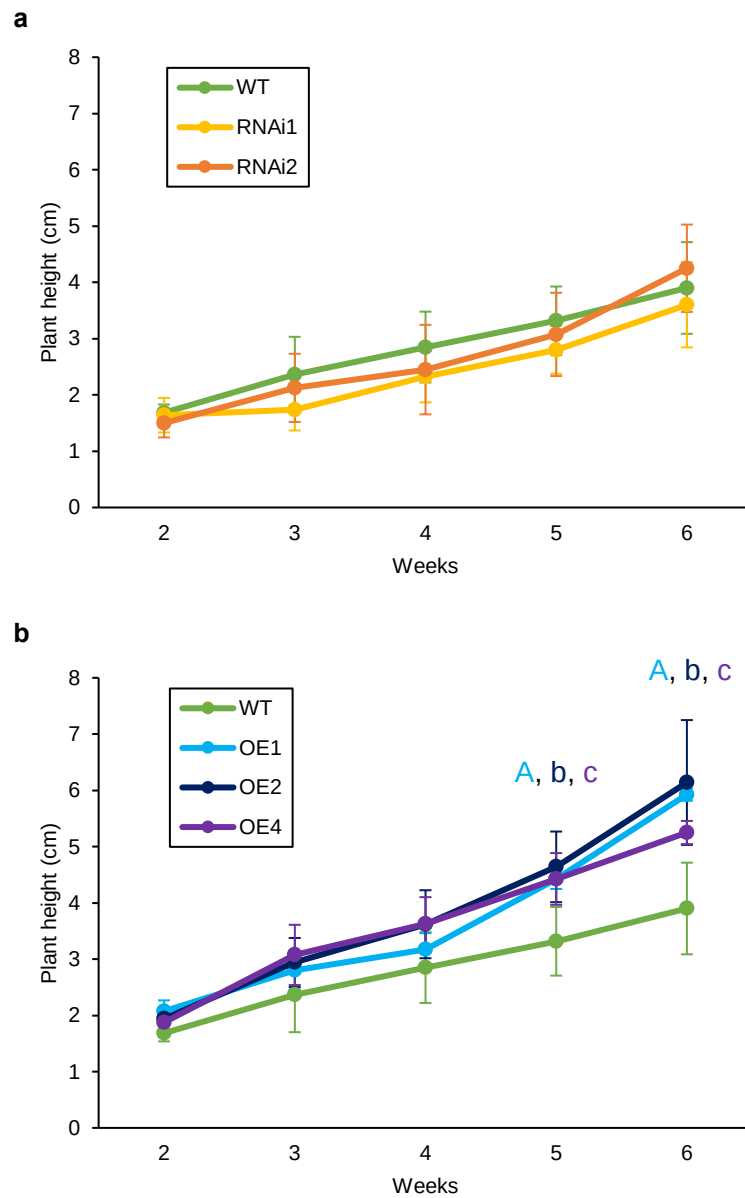


Fig. S1 Effect of CWPO-C expression on stem growth in CWPO-C transgenic lines. **a** RNAi suppression lines 1 and 2. **b** Overexpression lines OE1, 2 and 4. Different letters represent significant differences. Lower-case letter: significant difference ($p < 0.05$), upper-case letter: significant difference ($p < 0.01$) compared with WT (Student's t test). Four biological replicates were analyzed, and data are presented as the mean $\pm$ standard deviation

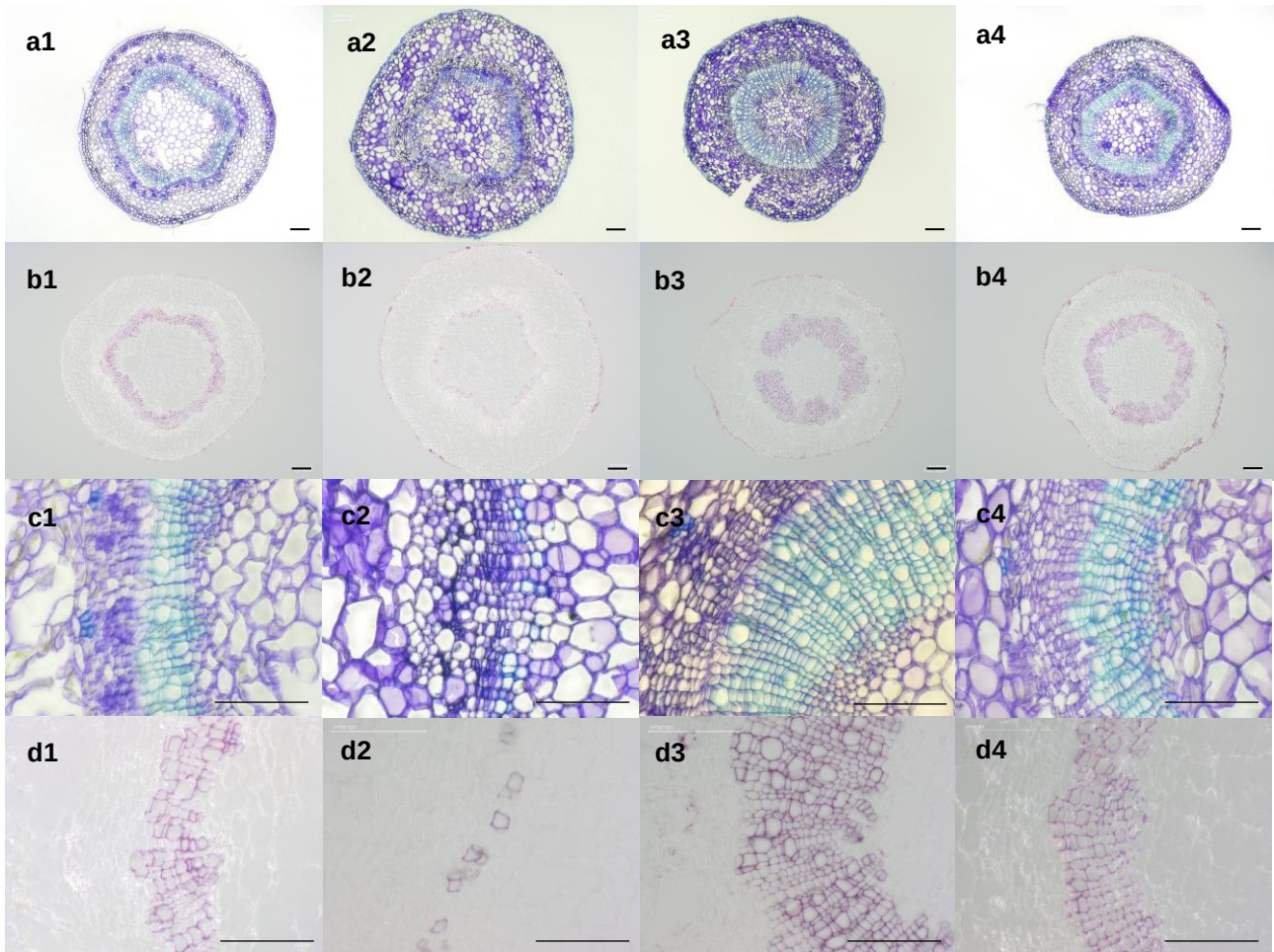


Fig. S2 Cross sections of basal stem of CWPO-C transgenic poplar lines. **a, c** Toluidine blue staining. **b, d** Wiesner staining. **a1, b1, c1, d1** WT. **a2, b2, c2, d2** RNAi suppression line RNAi2. **a3, b3, c3, d3** Overexpression line OE2. **a4, b4, c4, d4** Overexpression line OE4. Sections (20 μm thick) were prepared from the basal stem of 6-week-old plants. Bar 100 μm

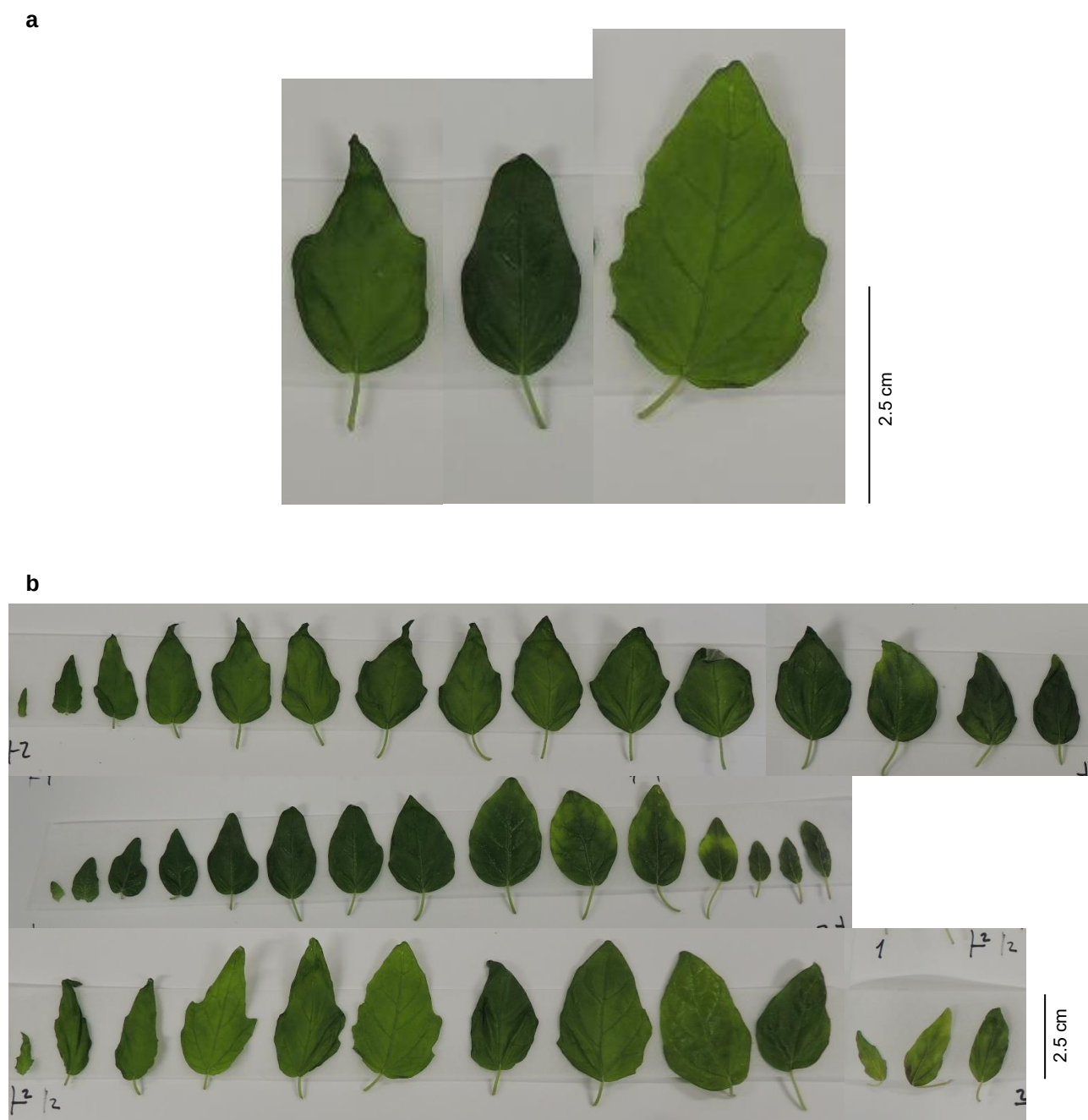


Fig. S3 Leaf phenotype in CWPO-C transgenic poplar lines. **a** Leaf color and border shape. Left to right: WT, OE1 and RNAi1. **b** Leaves in 6-week-old poplar. Left to right: younger to older leaves. Upper row: WT; middle row: OE1; lower row: RNAi1

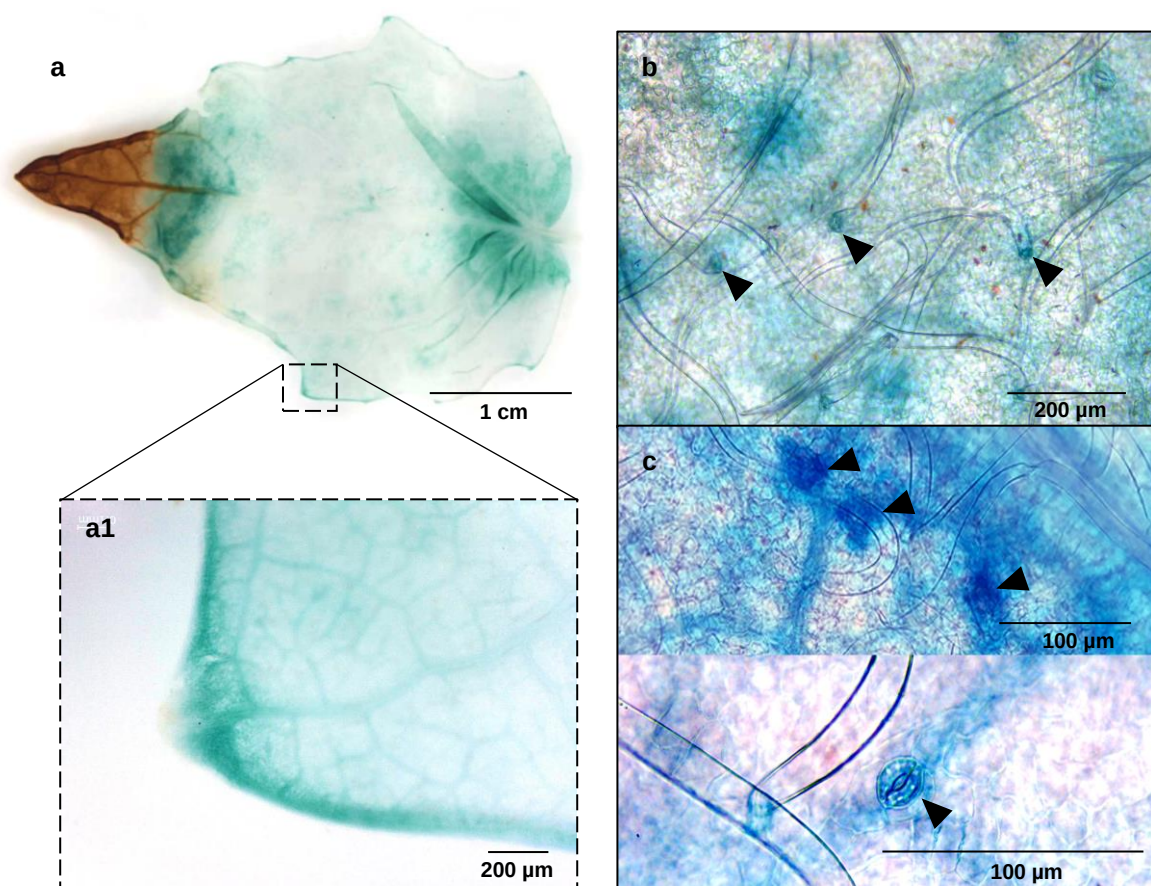


Fig. S4 *GUS* expression driven by *CWPO-C* promoter in poplar leaf. **a** Leaf. **a1** Hydathode. **b** Trichome (black arrows: base of trichome). **c** Stomata (black arrow: stoma)

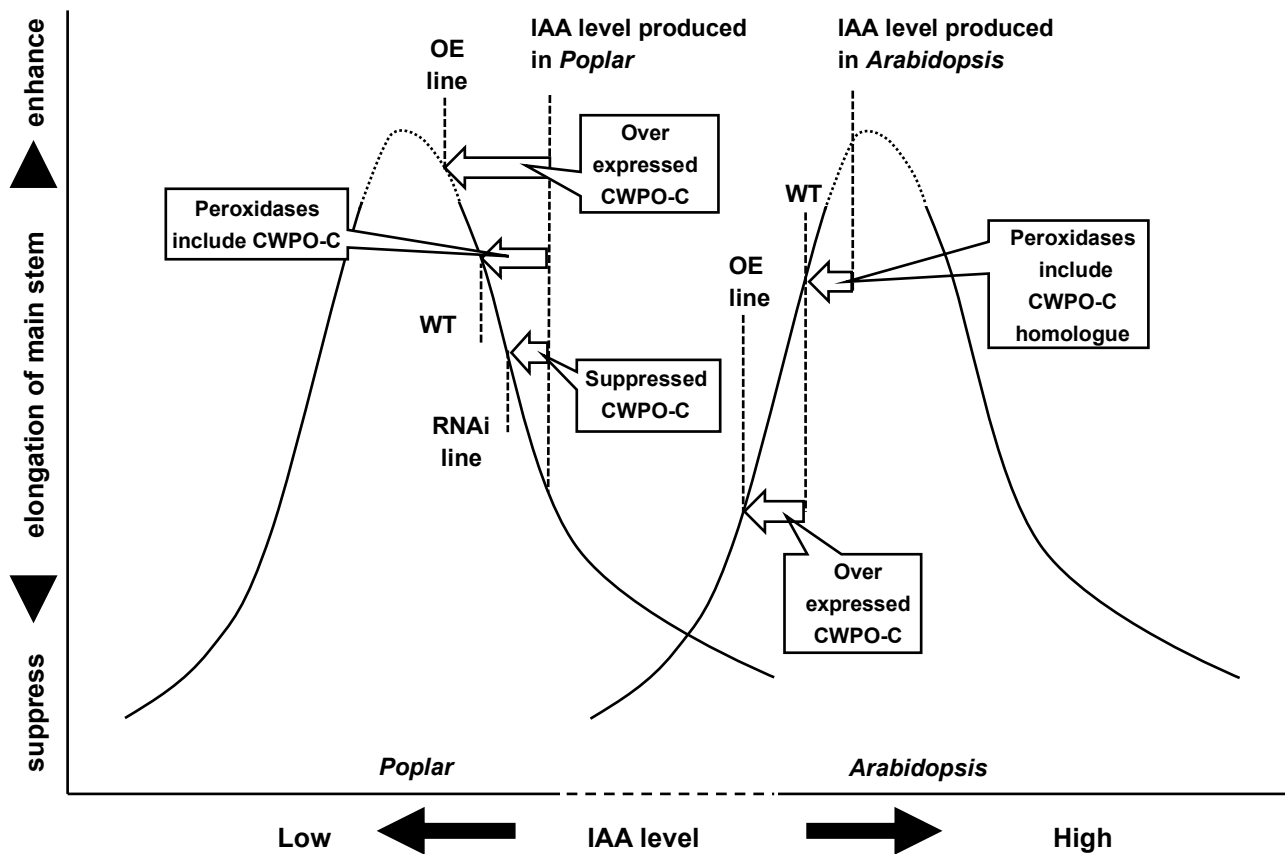


Fig. S5 Schematic representation of possible responses to altered *CWPO-C* expression in Arabidopsis and poplar. Stem elongation is promoted or inhibited over a range of auxin concentration, depending on the plant species and the effect of *CWPO-C* expression on auxin catabolism. In both poplar and Arabidopsis, overexpressed *CWPO-C* decreases IAA concentration *via* catabolism. In Arabidopsis, decreased IAA concentration leads to reduced elongation growth. In poplar, by contrast, overexpressed *CWPO-C* again decreases IAA concentration, but leads to enhanced elongation. The difference in apparent effects is presumed to result from different responses toward IAA concentration in the two plant species