

**Supplementary Data 5.** Clusterization of the ARR17 gene and five ARR17 partial repeats of males of P.  $\times$  sibirica, P. trichocarpa, P. deltoides, and P. simonii. In the P.  $\times$  sibirica genome assembly, two allelic variants of the ARR17 gene were identified (designated ARR17 (c1) and ARR17 (c2)). ARR17 partial repeat 1 is the closest to the end of the chromosome and the subsequent ones are located further from the end in ascending order, according to the P. trichocarpa "Stettler 14" genome assembly.