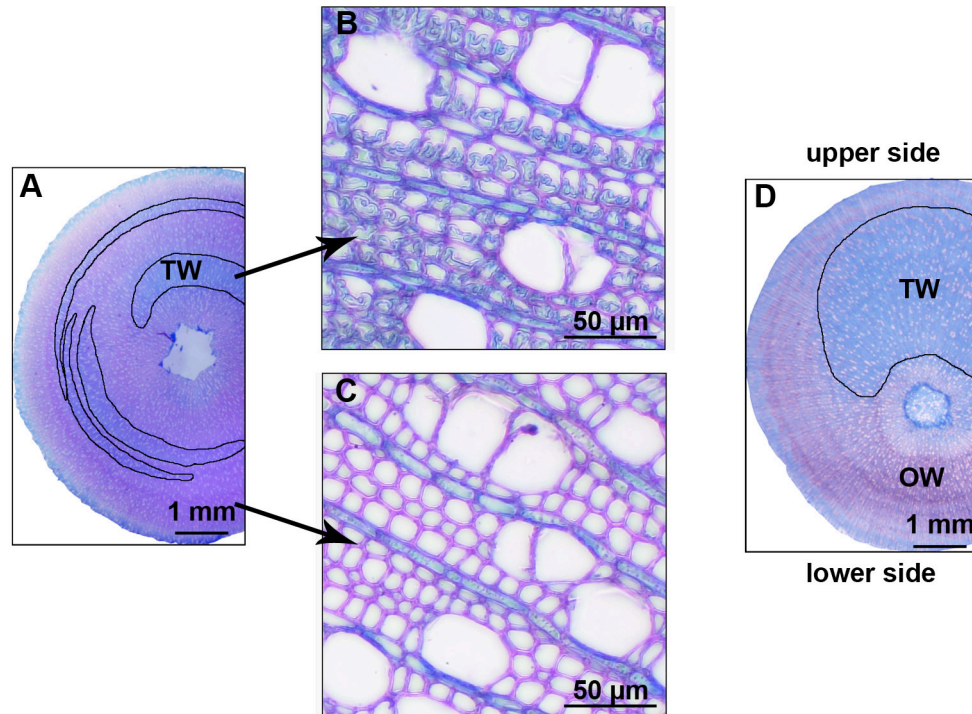


Cellulose and lignin biosynthesis is altered by ozone in wood of hybrid poplar (*Populus tremula* x *alba*)

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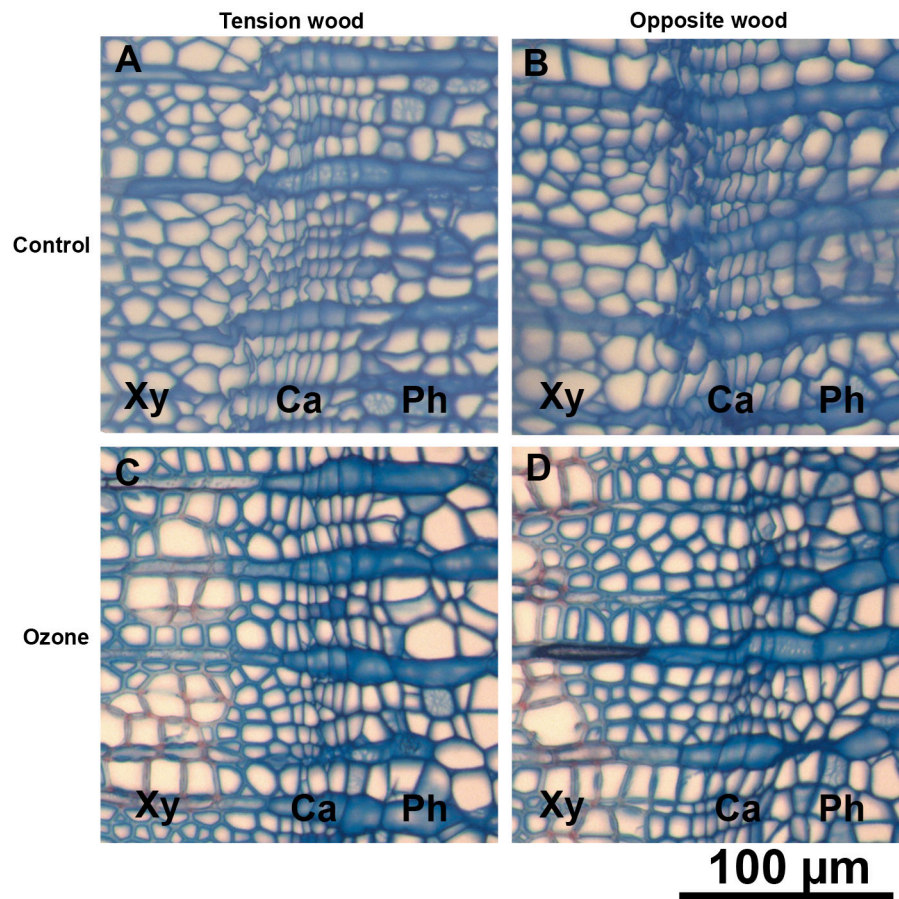


**Fig. S1.** Photomicrographs of stem cross sections stained with safranin O/Astra blue showing tension wood crescents (blue colour) with non-defined pattern in straight poplars (A). Blue coloured areas (B) displayed typical fibres with G-layers encountered in tension wood and pink areas showed ‘normal’ fibres (C). In bent poplars, tension wood was located at the upper side of the stem and opposite wood (or normal wood) at the lower side (D). TW: tension wood; OW: opposite wood.

**Table S1.** Lignin-derived monomers (H, G, S) and S/G ratio after thioacidolysis of tension wood or opposite wood at different stem levels from poplars cultivated for 46 days under control conditions or different ozone concentrations.

Treatment	Tension wood					Opposite wood				
	Yield in H+G+S monomers ( $\mu\text{mol g}^{-1}$ lignin)	% of monomers (w/w)			S/G	Yield in H+G+S monomers ( $\mu\text{mol g}^{-1}$ lignin)	% of monomers (w/w)			S/G
		H	G	S			H	G	S	
Lower stem										
Control	1987 $\pm$ 58	0.40 $\pm$ 0.05	34.6 $\pm$ 1.1	65.0 $\pm$ 1.1	1.88 $\pm$ 0.09	2175 $\pm$ 50	0.63 $\pm$ 0.03	36.0 $\pm$ 0.6	63.4 $\pm$ 0.6	1.76 $\pm$ 0.05
Ozone, 50 nl l <sup>-1</sup>	2090 $\pm$ 41	0.46 $\pm$ 0.03	32.9 $\pm$ 0.5	66.6 $\pm$ 0.5	2.02 $\pm$ 0.05	2123 $\pm$ 33	0.64 $\pm$ 0.07	34.6 $\pm$ 0.3	64.8 $\pm$ 0.4	1.87 $\pm$ 0.03
Ozone, 100 nl l <sup>-1</sup>	1952 $\pm$ 42	0.50 $\pm$ 0.06	33.6 $\pm$ 0.7	65.9 $\pm$ 0.6	1.97 $\pm$ 0.06	2083 $\pm$ 0.37	0.66 $\pm$ 0.06	35.0 $\pm$ 1.1	64.4 $\pm$ 1.1	1.85 $\pm$ 0.09
Ozone, 200 nl l <sup>-1</sup>	2029 $\pm$ 17	0.44 $\pm$ 0.07	32.7 $\pm$ 1.1	66.9 $\pm$ 1.1	2.05 $\pm$ 0.10	2062 $\pm$ 58	0.57 $\pm$ 0.08	35.6 $\pm$ 0.5	63.8 $\pm$ 0.6	1.79 $\pm$ 0.04
Ozone, 300 nl l <sup>-1</sup>	2013 $\pm$ 36	0.44 $\pm$ 0.05	33.1 $\pm$ 1.3	66.4 $\pm$ 1.3	2.01 $\pm$ 0.11	2128 $\pm$ 22	0.69 $\pm$ 0.12	34.2 $\pm$ 0.8	65.1 $\pm$ 0.9	1.91 $\pm$ 0.08
Middle stem										
Control	2213 $\pm$ 37	0.41 $\pm$ 0.02	33.1 $\pm$ 0.3	66.5 $\pm$ 0.3	2.01 $\pm$ 0.03	2300 $\pm$ 167	0.52 $\pm$ 0.01	35.0 $\pm$ 1.0	64.5 $\pm$ 0.9	1.84 $\pm$ 0.07
Ozone, 50 nl l <sup>-1</sup>	1947 $\pm$ 215	0.41 $\pm$ 0.03	34.4 $\pm$ 2.2	65.2 $\pm$ 2.2	1.90 $\pm$ 0.18	2138 $\pm$ 53	0.55 $\pm$ 0.01	35.8 $\pm$ 1.2	63.7 $\pm$ 1.1	1.78 $\pm$ 0.09
Ozone, 100 nl l <sup>-1</sup>	2104 $\pm$ 217	0.41 $\pm$ 0.02	34.6 $\pm$ 1.1	65.0 $\pm$ 1.1	1.88 $\pm$ 0.09	2076 $\pm$ 213	0.52 $\pm$ 0.03	36.0 $\pm$ 1.2	63.5 $\pm$ 1.2	1.76 $\pm$ 0.09
Ozone, 200 nl l <sup>-1</sup>	2088 $\pm$ 48	0.45 $\pm$ 0.01	34.2 $\pm$ 0.4	65.3 $\pm$ 0.4	1.91 $\pm$ 0.04	2088 $\pm$ 198	0.49 $\pm$ 0.01	34.3 $\pm$ 1.2	65.2 $\pm$ 1.2	1.90 $\pm$ 0.10
Ozone, 300 nl l <sup>-1</sup>	2037 $\pm$ 12	0.50 $\pm$ 0.01	33.2 $\pm$ 0.9	66.4 $\pm$ 0.9	2.00 $\pm$ 0.08	2001 $\pm$ 28	0.59 $\pm$ 0.03	35.0 $\pm$ 0.8	64.4 $\pm$ 0.9	1.84 $\pm$ 0.07

Data are mean values (n=3, tree replicates)  $\pm$  SD.



**Fig. S2.** Photomicrographs of cross section showing cambial zone in tension wood (A, C) and opposite wood (B, D) in stems (LS) of poplars cultivated for 46 days under control conditions (A, B) or in 200 nl l<sup>-1</sup> ozone (C, D). Ca, cambium; Ph, phloem; Xy, xylem.

Scale bar = 100 μm.