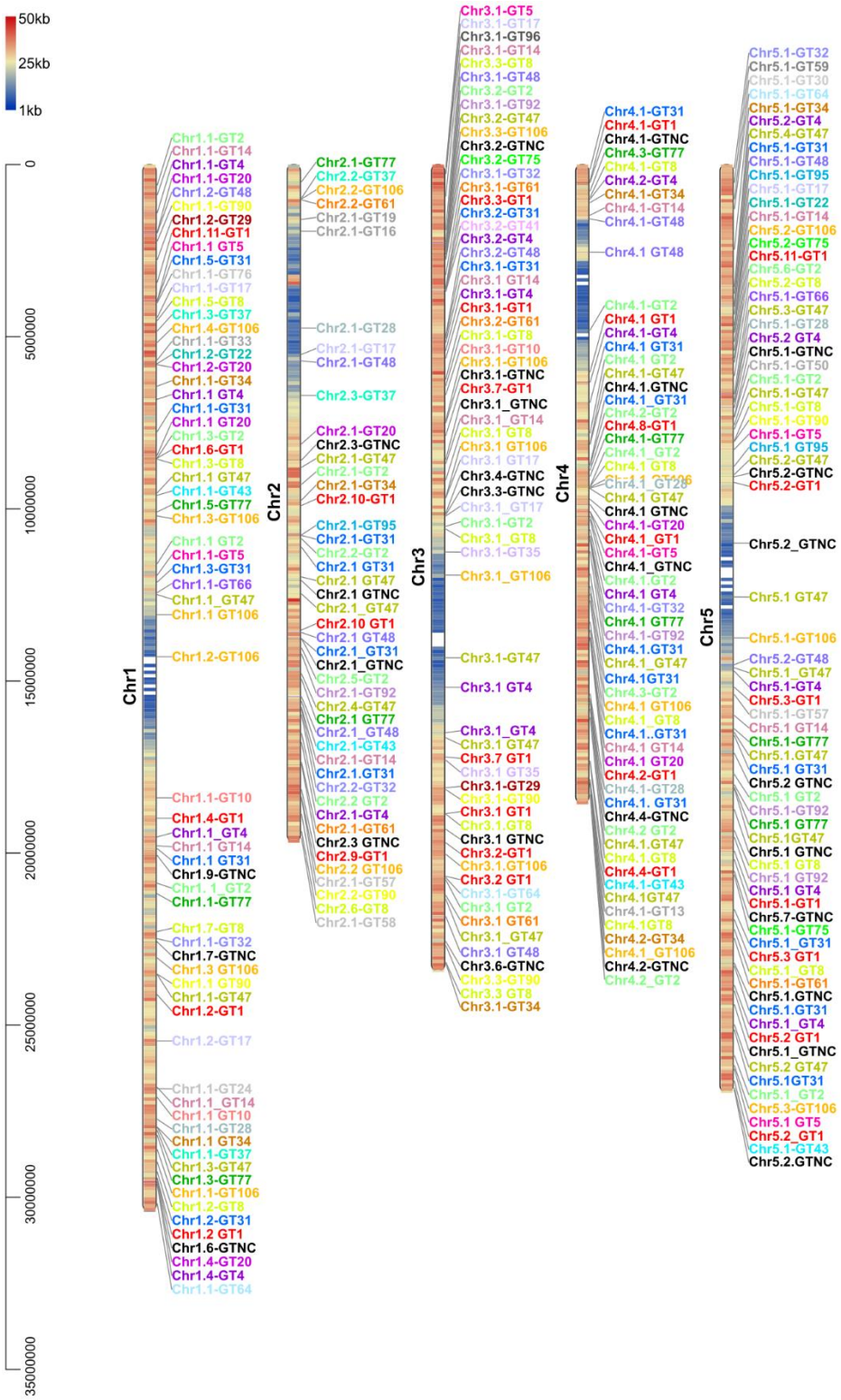

Figure S1. Chromosome location of *Arabidopsis* GT family genes. Genes from different GT families are located on chromosomes, using family-specific colors defined in Figure 2. The number of genes contained within each annotated block is indicated after the decimal point. The color of the chromosome strip shows the gene density at 100 kb intervals, lower for cool colors and higher for warm colors.

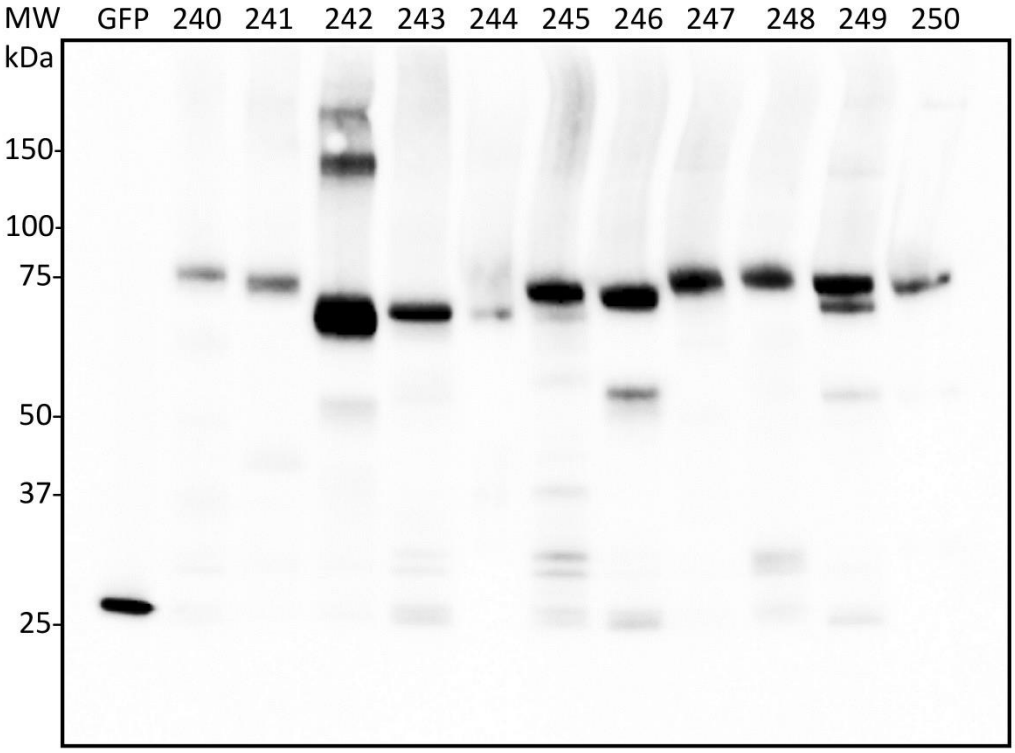

Figure S2. Western-blotting analysis of the 11 recombinant AtGT14 family genes expressed in *Nicotiana benthamiana*. Lane GFP, 5 mg/mL MMs extracted from *N. benthamiana* expressing empty pEarley101 vector with GFP tag (27 kDa, 25 μg total protein). Lanes 240-250, 25 μg microsomal samples of the eleven recombinant AtGT14 family genes (240: AT1G03520, 241: AT1G53100, 242: AT1G71070, 243: AT2G37585, 244: AT3G03690, 245: AT3G15350, 246: AT3G24040, 247: AT4G03340, 248: AT4G27480, 249: AT5G15050, 250: AT5G39990).

Table S1. Selected examples of *Arabidopsis* cell wall biosynthetic GTs whose catalytic specificities have been analyzed by following expression in heterologous systems.

GT family	Gene	Biochemical function	Expression System	Reference
2	CESA	cellulose synthase	*Pichia pastoris*	Purushotham et al. (2016). Proc. Natl. Acad. Sci. U.S.A. [1]
2	CSLA	β-1,4-mannan synthase	*Pichia pastoris*	Voiniciuc et al. (2018). Proc. Natl. Acad. Sci. U.S.A. [2]
2	CSLC	xyloglucan backbone β-1,4-glucan synthase	*Pichia pastoris*	Cocuron et al. (2007). Proc. Natl. Acad. Sci. U.S.A. [3]
2	CSLD	(gluco)mannan synthase	*Nicotiana benthamiana*	Yin et al. (2011). Mol. Plant [4]
2	CSLD3	β-1,4-glucan synthase	*Pichia pastoris*	Yang et al. (2020). Plant Cell [5]
8	GAUT	homogalacturonan α-1,4-galacturonosyltransferase	Human embryonic kidney cell line HEK293	Sterling et al. (2006). Proc. Natl. Acad. Sci. U.S.A. [6]
8	GUX1,2 and 4	xylan α-1,2-glucuronosyltransferase	*Nicotiana benthamiana*	Rennie et al.

				(2012). Plant Physiol. [7]
14	GLCAT14	AGP β-1,6-/β-1,3-galactan β-1,6-glucuronosyltransferase	*Pichia pastoris*	Knoch et al. (2013). Plant J. [8]
31	GALT	AGP β-1,3-galactosyltransferase	*Nicotiana benthamiana*	Basu et al. (2015). BMC Plant Biol. [9]
34	XXT	xyloglucan α-1,6-xylosyltransferase	*Escherichia coli*	Urbanowicz et al. (2012). Proc. Natl. Acad. Sci. U.S.A. [10] Faik et al. (2002). Proc. Natl. Acad. Sci. U.S.A. [11]
34	GMGT	galactomannan α-1,6-galactosyltransferase	*Nicotiana benthamiana*	Voiniciuc et al. (2015). Plant Physiol. [12]
37	FUT1	xyloglucan α-1,2-fucosyltransferase	Mammalian COS cells	Perrin et al. (1999). Science [13]
37	FUT4/6	AGP α-1,2-fucosyltransferase	Tobacco BY2 cells	Wu et al. (2010). J. Biol. Chem. [14]
43	IRX9/14	xylan β-1,4-xylosyltransferase	*Nicotiana benthamiana*	Zeng et al. (2016). Plant Physiol. [15]

47	IRX10	xylan β-1,4-xylosyltransferase	*Pichia pastoris*	Jensen et al. (2014). Plant J. [16]
47	MUR3	xyloglucan β-1,2-galactosyltransferase	*Pichia pastoris*	Madson et al. (2003). Plant Cell [17]
47	ARAD	arabinan α-1,5-arabinosyltransferase	*Nicotiana benthamiana*	Lampugnani et al. (2016). Plant Physiol. [18]
48	GSL	callose synthase	*Pichia pastoris*	Lars et al. (2002). Plant Mol. Biol. [19]
77	RGXT	rhamnogalacturonan-II α-1,3-xylosyltransferase	*Insect cells*	Egelund et al. (2006). Plant Cell [20]
92	GALS1,2 and 3	rhamnogalacturonan-I β-1,4-galactan synthases	*Nicotiana benthamiana*	Ebert et al. (2018). Plant Cell Physiol. [21]
9	HPAT	hydroxyproline β-arabinofuranosyltransferase	*Pichia pastoris*	Suzuki et al. (2017). Plant Physiol. [22]
106	RRT	rhamnogalacturonan-I rhamnosyltransferase	*Nicotiana benthamiana*	Takenaka et al. (2018). Nat. Plants [23]

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