Table S1: Hemicellulosic/pectin sugar composition (%, Dry weight) of sequentially extracted cell wall fractions of 7-day old *Col-0* and *gh43null* seedlings. The sugar composition of AIR1/AIR2 treated cell wall material and sequential extracted $CaCl_2$ soluble, CDTA, NaOH and the cell wall residue was measured. The material was Trimethylsilyl (TMS) derivatised and quantified with a GC/MS according to an inositol internal standard and a monosaccharide sugar standard (*n* = 3 biological pooled replicates).

	Treatment	Ara	Rha	Fuc	Xyl	Man	Me-GlcA	Gal	GalA	Glc	GlcA	Total
Col-0	AIR1+ AIR2	2.52 ± 0.05	2.73 ± 0.06	0.90 ± 0.02	2.50 ± 0.05	1.09 ± 0.02	1.47 ± 0.03	3.98 ± 0.15	7.28 ± 0.20	1.87 ± 0.10	1.72 ± 0.43	26.06 ± 0.84
gh43null		2.31 ± 0.16	2.48 ± 0.24	0.87 ± 0.02	2.24 ± 0.21	1.10 ± 0.05	1.40 ± 0.03	3.45 ± 0.30	6.42 ± 0.56	1.95 ± 0.20	1.77 ± 0.30	23.99 ± 2.02
Col-0	$CaCl_2$ soluble	4.29 ± 0.08	0.86 ± 0.05	0.90 ± 0.08	0.79 ± 0.06	1.07 ± 0.06	2.09 ± 0.14	5.49 ± 0.20	2.45 ± 0.19	1.55 ± 0.09	1.11 ± 0.08	20.59 ± 0.69
Gh43null		3.91 ± 0.53	0.73 ± 0.06	0.73 ± 0.01	0.67 ± 0.03	0.84 ± 0.05	1.66 ± 0.13	4.77 ± 0.57	2.14 ± 0.34	1.51 ± 0.07	0.89 ± 0.04	16.94 ± 1.69
Col-0	50 mM CDTA	0.76 ± 0.05	0.64 ± 0.04	0.70 ± 0.04	0.57 ± 0.03	0.67 ± 0.04	1.04 ± 0.06	0.97 ± 0.06	4.14 ± 0.52	0.67 ± 0.04	0.84 ± 0.07	11.01 ± 0.94
gh43null		0.70 ± 0.03	0.61 ± 0.04	0.64 ± 0.03	0.54 ± 0.02	0.61 ± 0.03	0.95 ± 0.05	0.89 ± 0.04	4.04 ± 0.82	0.62 ± 0.03	0.74 ± 0.03	10.35 ± 0.87
Col-0	4M NaOH	1.75 ± 0.19	1.63 ± 0.20	1.09 ± 0.09	6.16 ± 0.80	2.04 ± 0.23	1.65 ± 0.13	2.84 ± 0.32	2.22 ± 0.23	4.96 ± 0.58	1.03 ± 0.07	25.39 ± 2.83
gh43null	0.1% w/v $NaBH_4$	1.72 ± 0.11	1.62 ± 0.07	1.04 ± 0.03	5.88 ± 0.51	2.07 ± 0.09	1.59 ± 0.05	2.83 ± 0.23	2.52 ± 0.04	4.90 ± 0.26	1.04 ± 0.10	25.20 ± 1.24
Col-0	Cell wall	2.84 ± 0.18	2.92 ± 0.18	0.81 ± 0.03	1.42 ± 0.09	0.75 ± 0.02	1.31 ± 0.04	3.10 ± 0.18	5.43 ± 0.37	4.47 ± 0.15	1.90 ± 0.14	24.94 ± 1.33
gh43null	residue	2.59 ± 0.14	2.70 ± 0.17	0.73 ± 0.02	1.23 ± 0.05	0.69 ± 0.01	1.17 ± 0.05	2.62 ± 0.16	5.13 ± 0.59	4.20 ± 0.15	1.68 ± 0.13	22.75 ± 1.21

Table S2: The binding specificity of the primary Antibodies used in the COMPP		
Probe	**Specificity**	**Reference**
JIM5/7	Homogalacturonan	(Clausen et al., 2003)
LM5	(1,4)-β-D-Gal_4	(Jones et al., 1997)
LM6	(1,5)-α-L-Ara*f*$_5$, branches tolerated	(Willats et al., 1998)
LM18/19/20	Homogalacturonan	(Verhertbruggen et al., 2009)
INRA-RU1/2	Backbone of RG-I	(Ralet et al., 2010)
LM15	XXXG-motif in xyloglucan	(Marcus et al., 2008)
LM25	XLLG, XXLG, XXXG in xyloglucan	(Pedersen et al., 2012)
LM10/11	(1,4)-β-D-xylan	(McCartney et al., 2005)
LM28	Glucuronosyl-containing epitope in heteroxylan	(Cornuault et al., 2015)
LM23	Non-acetylated xylosyl residues	(Manabe et al., 2011)
BS400-4	(1,4)-β-D-mannan/galactomannan	(Pettolino et al., 2001)
CBM3a	CBM binding crystalline cellulose w. xyloglucan cross-reactivity	(Blake et al., 2006)
LM1	Extensin	(Smallwood et al., 1995)
LM3	Extensin	(Castilleux et al., 2018)
JIM11/12/20	Extensin	(Smallwood et al., 1994)
LM2	GlcA that is terminally attached to 1,6-linked galactan	(Smallwood et al., 1996; Ruprecht et al., 2017)
LM14	Arabinogalactan protein	(Moller et al., 2008)
JIM13	Arabinogalactan protein	(Yates et al., 1996)
JIM16	β-1,3-linked galactan backbone when substituted with a single β-1,6-linked Gal residue	(Ruprecht et al., 2017)
MAC207	Arabinogalactan protein	(Yates et al., 1996)

Blake AW, McCartney L, Flint JE, Bolam DN, Boraston AB, Gilbert HJ, Knox JP. 2006. Understanding the biological rationale for the diversity of cellulose-directed carbohydrate-binding modules in prokaryotic enzymes. *Journal of Biological Chemistry* **281**(39): 29321-29329.

Castilleux R, Plancot B, Ropitaux M, Carreras A, Leprince J, Boulogne I, Follet-Gueye ML, Popper ZA, Driouich A, Vicre M. 2018. Cell wall extensins in root-microbe interactions and root secretions. *Journal of Experimental Botany* **69**(18): 4235-4247.

Clausen MH, Willats WG, Knox JP. 2003. Synthetic methyl hexagalacturonate hapten inhibitors of anti-homogalacturonan monoclonal antibodies LM7, JIM5 and JIM7. *Carbohydr Res* **338**(17): 1797-1800.

Cornuault V, Buffetto F, Rydahl MG, Marcus SE, Torode TA, Xue J, Crépeau M-J, Faria-Blanc N, Willats WG, Dupree P. 2015. Monoclonal antibodies indicate low-abundance links between heteroxylan and other glycans of plant cell walls. *Planta* **242**(6): 1321-1334.

Manabe Y, Nafisi M, Verhertbruggen Y, Orfila C, Gille S, Rautengarten C, Cherk C, Marcus SE, Somerville S, Pauly M, et al. 2011. Loss-of-function mutation of REDUCED WALL ACETYLATION2 in Arabidopsis leads to reduced cell wall acetylation and increased resistance to Botrytis cinerea. *Plant Physiol* **155**(3): 1068-1078.

Marcus SE, Verhertbruggen Y, Herve C, Ordaz-Ortiz JJ, Farkas V, Pedersen HL, Willats WG, Knox JP. 2008. Pectic homogalacturonan masks abundant sets of xyloglucan epitopes in plant cell walls. *BMC Plant Biol* **8**: 60.

McCartney L, Marcus SE, Knox JP. 2005. Monoclonal antibodies to plant cell wall xylans and arabinoxylans. *J Histochem Cytochem* **53**(4): 543-546.

Moller I, Marcus SE, Haeger A, Verhertbruggen Y, Verhoef R, Schols H, Ulvskov P, Mikkelsen JD, Knox JP, Willats W. 2008. High-throughput screening of monoclonal antibodies against plant cell wall glycans by hierarchical clustering of their carbohydrate microarray binding profiles. *Glycoconjugate Journal* **25**(1): 37-48.

Pedersen HL, Fangel JU, McCleary B, Ruzanski C, Rydahl MG, Ralet MC, Farkas V, von Schantz L, Marcus SE, Andersen MC, et al. 2012. Versatile high resolution oligosaccharide microarrays for plant glycobiology and cell wall research. *J Biol Chem* **287**(47): 39429-39438.

Pettolino FA, Hoogenraad NJ, Ferguson C, Bacic A, Johnson E, Stone BA. 2001. A (1 -> 4)-beta-mannan-specific monoclonal antibody and its use in the immunocytochemical location of galactomannans. *Planta* **214**(2): 235-242.

Ralet MC, Tranquet O, Poulain D, Moise A, Guillon F. 2010. Monoclonal antibodies to rhamnogalacturonan I backbone. *Planta* **231**(6): 1373-1383.

Ruprecht C, Bartetzko MP, Senf D, Dallabernadina P, Boos I, Andersen MCF, Kotake T, Knox JP, Hahn MG, Clausen MH, et al. 2017. A Synthetic Glycan Microarray Enables Epitope Mapping of Plant Cell Wall Glycan-Directed Antibodies. *Plant Physiol* **175**(3): 1094-1104.

Smallwood M, Beven A, Donovan N, Neill SJ, Peart J, Roberts K, Knox JP. 1994. Localization of Cell-Wall Proteins in Relation to the Developmental Anatomy of the Carrot Root Apex. *Plant Journal* **5**(2): 237-246.

Smallwood M, Martin H, Knox JP. 1995. An epitope of rice threonine- and hydroxyproline-rich glycoprotein is common to cell wall and hydrophobic plasma-membrane glycoproteins. *Planta* **196**(3): 510-522.

Smallwood M, Yates EA, Willats WGT, Martin H, Knox JP. 1996. Immunochemical comparison of membrane-associated and secreted arabinogalactan-proteins in rice and carrot. *Planta* **198**(3): 452-459.

Verhertbruggen Y, Marcus SE, Haeger A, Ordaz-Ortiz JJ, Knox JP. 2009. An extended set of monoclonal antibodies to pectic homogalacturonan. *Carbohydr Res* **344**(14): 1858-1862.

Willats WG, Marcus SE, Knox JP. 1998. Generation of monoclonal antibody specific to (1-->5)-alpha-L-arabinan. *Carbohydr Res* **308**(1-2): 149-152.

Yates EA, Valdor JF, Haslam SM, Morris HR, Dell A, Mackie W, Knox JP. 1996. Characterization of carbohydrate structural features recognized by anti-arabinogalactan-protein monoclonal antibodies. *Glycobiology* **6**(2): 131-139.

Table S3: Primers used for genotyping and cloning

Genotyping primers		
gh43a-1	LP	ATCAGGTAAGCAACACCATCG
gh43a-1	RP	CATCTTTGCATTGCAATGATG
gh43b-1	LP	ACGAAAACAGAGCAGCACAAC
gh43b-1	RP	ATCGGTGTTGGATGTTACTCG
gh43b-2	LP	TCTTTGTTCCCGTGACAGATC
gh43b-2	RP	TCCGTGTCTGTCCAAATTCTC
LBb1.3	LB	ATTTTGCCGATTTCGGAAC
LB1	LB	ATTAGGCACCCCAGGCTTTACACTTTATG
Cloning primers		
gh43a c-YFP	FW	CAAAAAAGCAGGCTCCATGATTCATAACTTTATTACCCAGG
	RV	AGAAAGCTGGGTCGGCAGGCAGCCGCCATTTACTGT
gh43b c-YFP	LP	CAAAAAAGCAGGCTCCagggattgatttgaagtttggtg
	RP	AGAAAGCTGGGTCGGCAGCAATCTTCTTCTCTCTTGCTG