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Monoclonal antibodies to plant cell wall components

FOR RESEARCH PURPOSES ONLY

Product Description	Antibody name Cat No.
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Rat HYBRIDOMA CELL CULTURE SUPERNATANTS

anti-xylan	LM10
anti-xylan / arabinoxylan	LM11
anti-xyloglucan	LM15
anti-homogalacturonan	LM7
anti-homogalacturonan	LM18
anti-homogalacturonan	LM19
anti-homogalacturonan	LM20
anti-homogalacturonan	JIM5
anti-homogalacturonan	JIM7
anti-xylogalacturonan	LM8
anti-(1→4)-β-D-galactan	LM5
anti-feruloylated-galactan	LM9
anti-(1→5)-α-L-arabinan	LM6
anti-(1→5)-α-L-arabinan (linear)	LM13
anti-processed arabinan/RG-I	LM16
anti-arabinogalactan-protein	LM2
anti-arabinogalactan-protein	LM14
anti-extensin	LM1

More probes – new charging system!

Rat monoclonal antibodies are supplied as 1 ml or 5 ml units of hybridoma cell culture supernatants.

# units	1 ml	5 ml
1	100	250
2	200	450
3	270	630
4	340	770
5	400	870

Prices in UK £

Product Description	Antibody name Cat No.	Unit sale	Price UK £
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Mouse HYBRIDOMA CELL CULTURE SUPERNATANTS

anti-homogalacturonan	2F4	1.0 ml	175
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His-tagged RECOMBINANT PROTEINS

anti-homogalacturonan	PAM1	50 µg	150
crystalline cellulose CBM	CBM3a	200 µg	200

Contact & Ordering Information:

All orders & enquiries should be by email (antibodies@plantprobes.net) or fax (+44-(0)113-3433144).

Invoices are raised and credit cards are accepted. *The minimum charge is £100.*

Multiple purchases can generate discounts - contact PlantProbes for details.

PlantProbes can also supply hybridoma supernatants for a range of **JIM-designated anti-arabinogalactan-protein (AGP)** and **anti-extensin rat monoclonal antibodies**. These include: anti-AGP: **JIM4, JIM8, JIM13, JIM14, JIM15 & JIM16** and anti-extensin: **JIM11, JIM12, JIM19 & JIM20**.

RAT HYBRIDOMA CELL CULTURE SUPERNATANTS

Hemicellulose probes

Cat. No. LM10

MONOCLONAL ANTIBODY to XYLAN / LM10, (Rat IgG2c), SPECIFICITY: Generated using a neoglycoprotein (xylopentaose-BSA). It can recognise unsubstituted and relatively low-substituted xylans in several species. It has no cross-reactivity with wheat arabinoxylan. **REF:** McCartney *et al.* (2005) *J. Histochem. Cytochem* 53, 543-546.

Cat. No. LM11

MONOCLONAL ANTIBODY to XYLAN / ARABINOXYLAN / LM11, (Rat IgM) SPECIFICITY: Generated using a neoglycoprotein (xylopentaose-BSA). It can recognise unsubstituted and relatively low-substituted xylans in several species. It can also accommodate more extensive substitution of a xylan backbone and binds strongly to wheat arabinoxylan. **REF:** McCartney *et al.* (2005) *J. Histochem. Cytochem* 53, 543-546.

Cat. No. LM15

MONOCLONAL ANTIBODY to XYLOGLUCAN / LM15, (Rat IgG2c), SPECIFICITY: Generated using a neoglycoprotein incorporating the xylosylated heptasaccharide from tamarind xyloglucan (XXXG-BSA). It recognises the XXXG motif of xyloglucan in several species and can accommodate to some extent a single galactosyl residue. **REF:** Marcus *et al.* (2008) *BMC Plant Biology* 8:60

Pectin probes

Cat. No. LM7

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / LM7, (Rat IgM), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody recognises a partially methyl-esterified epitope of HG that results from non-blockwise de-esterification processes. It does not bind to un-esterified homogalacturonan. **REF:** Willats *et al.* (2001) *J. Biol. Chem* 276, 19404-19413; Clausen *et al.* (2003) *Carbohydr. Res.* 338, 1797-1800.

Cat. No. LM18

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / LM18, (Rat IgG2c), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody has some preference for partially methyl-esterified homogalacturonan but can also bind to un-esterified homogalacturonan. **REF:** Verherbruggen *et al.* (2009) *Carbohydr. Res.* 344, 1858-1862.

Cat. No. LM19

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / LM19, (Rat IgM), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody recognises a range of homogalacturonan samples but appears to have a preference for and binds strongly to un-esterified homogalacturonan. **We now recommend the use of LM19 in the place of JIM5 as LM19 binds more effectively to unesterified HG.** **REF:** Verherbruggen *et al.* (2009) *Carbohydr. Res.* 344, 1858-1862.

Cat. No. LM20

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / LM20, (Rat IgM), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody requires methyl-esters for recognition of homogalacturonan and does **not** bind to un-esterified homogalacturonan. **We now recommend the use of LM20 in the place of JIM7 as LM20 binding is more effectively lost by high pH treatments that remove HG methyl esters.** **REF:** Verherbruggen *et al.* (2009) *Carbohydr. Res.* 344, 1858-1862.

Cat. No. JIM5

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / JIM5, (Rat IgG), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody recognises partially methyl-esterified epitopes of homogalacturonan and can also bind to un-esterified homogalacturonan. **We now recommend the use of LM19 in the place of JIM5 as LM19 binds more effectively to unesterified HG.** **REF:** Knox *et al.* (1990) *Planta* 181, 512-521; Willats *et al.* (2000) *Carbohydr. Res.* 327, 309-320; Clausen *et al.* (2003) *Carbohydr. Res.* 338, 1797-1800; Verherbruggen *et al.* (2009) *Carbohydr. Res.* 344, 1858-1862.

Cat. No. JIM7

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / JIM7, (Rat IgA), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody recognises partially methyl-esterified epitopes of homogalacturonan but does **not** bind to un-esterified homogalacturonan. **We now recommend the use of LM20 in the place of JIM7 as LM20 binding is more effectively lost by high pH treatments that remove HG methyl esters.** **REF:** Knox *et al.* (1990) *Planta* 181, 512-521; Willats *et al.* (2000) *Carbohydr. Res.* 327, 309-320; Clausen *et al.* (2003) *Carbohydr. Res.* 338, 1797-1800; Verherbruggen *et al.* (2009) *Carbohydr. Res.* 344, 1858-1862.

Cat. No. LM8

MONOCLONAL ANTIBODY to XYLOGALACTURONAN / LM8, (Rat IgM), SPECIFICITY: The antibody recognises a specific epitope of a xylogalacturonan pectic polysaccharide that is associated with cell detachment and separation in a wide range of species. It has no known cross-reactivity with other polymers. **This antibody does NOT bind to all xylogalacturonans.** **REF:** Willats *et al.* (2004) *Planta* 218, 673-681.

Cat. No. LM5

MONOCLONAL ANTIBODY to (1-4)- β -D-GALACTAN / LM5 (Rat IgG), SPECIFICITY: The antibody was generated using a neoglycoprotein (galactotetraose-BSA). It recognises a linear tetrasaccharide in (1-4)- β -D-galactans. It has no cross-reactivity with (1-3)- β -D-galactans or (1-6)- β -D-galactans. It can recognise pectic polysaccharides in several species. In competitive inhibition ELISA,

antibody binding to (1-4)- β -D-galactan was inhibited (50%) by 58 μ g/ml (1-4)- β -D-galactotetraose and by 0.7 μ g/ml lupin (1-4)- β -D-galactan. **REF:** Jones *et al.* (1997) *Plant Physiol.* 113, 1405-1412.

Cat. No. LM9

MONOCLONAL ANTIBODY to FERULOYLATED-(1-4)- β -D-GALACTAN, (Rat IgM), SPECIFICITY: The antibody recognises a specific epitope of a feruloylated-(1-4)- β -D-galactan that is a structural feature of the pectic polymers of plant species of the Amaranthaceae/Chenopodiaceae. It has no known cross-reactivity with other polymers. In competitive inhibition ELISAs, antibody binding to sugar beet pectin was inhibited (50%) by 15 μ g/ml O-[6-O-(trans-feruloyl)-b-D-galactopyranosyl]-(1 \rightarrow 4)-D-galactopyranose. **REF:** Clausen *et al.* (2004) *Planta* 219, 1036-1041.

Cat. No. LM6

MONOCLONAL ANTIBODY to (1-5)- α -L-ARABINAN / LM6 (Rat IgG), SPECIFICITY: Generated using a neoglycoprotein (arabinoheptaose-BSA). Recognises a linear pentasaccharide in (1-5)- α -L-arabinans. It can recognise pectic polysaccharides in several species. It has no cross-reactivity with gum arabic but it may recognize arabinogalactan-proteins (AGPs) in some species. In competitive inhibition ELISAs, antibody binding to (1-5)- α -L-arabinan was inhibited (50%) by 40 ng/ml (1-5)- α -L-arabinopentaose and 19 ng/ml (1-5)- α -L-arabino-hexaose. **REF:** Willats *et al.* (1998) *Carbohydr. Res.* 308, 149-152; Verherbruggen *et al.* (2009) *Plant J.* 59, 413-425.

Cat. No. LM13

MONOCLONAL ANTIBODY to (1-5)- α -L-ARABINAN (linear) / LM13, (Rat IgG), SPECIFICITY: Isolated from a HTP screen of antibodies generated subsequent to immunization with a pectic fraction. Recognises a linear epitope in (1-5)- α -L-arabinans. Antibody recognition of arabinans increases with arabinofuranosidase action. This antibody binds to a specific subset of pectic arabinans, and to longer stretches of 1,5-linked arabinosyl residues that are likely to be more abundant in unbranched arabinans. The binding of LM13 is more sensitive to arabinanase action than LM6. **REF:** Moller *et al.* (2007) *Glycoconjugate J.* 25, 37-48; Verherbruggen *et al.* (2009) *Plant J.* 59, 413-425.

Cat. No. LM16

MONOCLONAL ANTIBODY to PROCESSED ARABINAN RG-1 / LM16, (Rat IgM), SPECIFICITY: Generated subsequent to immunization with a pectic fraction. Recognises a epitope associated with arabinans and can be generated by arabinofuranosidase action and the loss of arabinosyl residues. The binding of LM16 is sensitive to galactosidase action and the epitope may involve galactosyl residue(s) on RG backbones. **REF:** Verherbruggen *et al.* (2009) *Plant J.* 59, 413-425.

Glycoprotein probes

Cat. No. LM2

MONOCLONAL ANTIBODY to ARABINOGALACTAN-PROTEIN / LM2, (Rat IgM), SPECIFICITY: Generated to rice arabinogalactan-proteins (AGPs). Recognises a carbohydrate epitope containing b-linked glucuronic acid. It can recognise AGPs in several species. In competitive inhibition ELISAs antibody binding to gum arabic was inhibited (50%) by 70 mg/ml 1-O-methyl-b-D-GlcA. The binding of the antibody to AGPs can be fully inhibited by 10 mM 1-O-methyl-b-D-GlcA. **REF:** Smallwood *et al.* (1996) *Planta* 198, 452-459; Yates *et al.* (1996) *Glycobiology* 6, 131-139.

Cat. No. LM14

MONOCLONAL ANTIBODY to ARABINOGALACTAN-PROTEIN / LM14, (Rat IgM), SPECIFICITY: Isolated from a HTP screen of antibodies generated subsequent to immunization with a pectic fraction. Recognizes arabinogalactan-proteins and will also bind to larch arabinogalactan. It can recognise AGPs in several species. **REF:** Moller *et al.* (2007) *Glycoconjugate J.* 25, 37-48

Cat. No. LM1

MONOCLONAL ANTIBODY to EXTENSIN / LM1 (Rat IgM), SPECIFICITY: Generated to rice extensin hydroxyproline-rich glycoproteins (HRGPs). The antibody recognises an epitope that is carried by a range of HRGPs of the extensin class in a wide range of angiosperm species. The LM1 epitope most likely includes extensin glycan components. **REF:** Smallwood *et al.* (1995) *Planta* 196, 510-522.

HIS-TAGGED RECOMBINANT PROTEINS

Cat. No. PAM1

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / PAM1, (Phage display-derived scFv), SPECIFICITY: The antibody recognises the homogalacturonan domain of pectic polysaccharides. It has no known cross-reactivity with other polymers. It can recognise pectic polysaccharides in several species. The antibody is specific to unesterified homogalacturonan and recognises long un-esterified blocks of GalA residues. **REF:** Willats *et al.* (1999) *Plant Journal* 18, 57-65; Willats *et al.* (2000) *Carbohydrate Research* 327, 309-320; Manfield *et al.* (2005) *Plant Science* 169, 1090-1095. **SUPPLY:** PAM1 is provided as a his-tagged recombinant soluble scFv.

Cat. No. CBM3a

CRYSTALLINE CELLULOSE-BINDING MODULE / CBM3a (Recombinant CBM protein), SPECIFICITY: This type A carbohydrate-binding module (CBM) from *Clostridium thermocellum* is directed to crystalline cellulose and can detect cellulose in both *in vitro* assays and directly in plant materials. **REF:** Blake *et al.* (2006) *J Biol. Chem.* 281, 29321-29329. **SUPPLY:** CBM3a is provided as a his-tagged recombinant protein.

MOUSE HYBRIDOMA CELL CULTURE SUPERNATANTS

Cat. No. 2F4

MONOCLONAL ANTIBODY to HOMOGALACTURONAN / 2F4, (Mouse IgG1), SPECIFICITY: The 2F4 mouse monoclonal antibody recognises the homogalacturonan domain of pectic polysaccharides. It binds specifically to a dimeric association of pectic chains through calcium ions. It binds to homogalacturonans with degrees of methyl-esterification (DM) up to 40%. **REF:** Liners *et al.* (1989) *Plant Physiology* 91, 1419-1424; Liners *et al.* (1992) *Plant Physiology* 99, 1099-1104; Liners & van Cutsem (1992) *Protoplasma* 170, 10-21. **SUPPLY:** 2F4 is provided as a 1 mL volume of mouse hybridoma supernatant.