

Supplementary Material

Table S1. Xyloglucan branching patterns and sidechains of individual plant species. In the xylosylation motif column subscripts indicate the number of consecutive G units observed.

Orders	Family	Species	Generation/Organ/Tissue	Xylosylation Motif	Sidechains	Reference
Liverworts						
Marchantiales	Marchantiaceae	<i>Marchantia polymorpha</i>	Gametophyte	XXGG	X, L, P, Q	[1]
Mosses						
Funariales	Funariaceae	<i>Physcomitrella patens</i>	Protonema, gametophore	XXGG ₃	X, L, M, N, P, Q	[1]
Hornworts						
Dendrocerotales	Dendrocerotaceae	<i>Megaceros sp.</i>	Gametophyte	XXXG	X, L, F	[1]
Notothyladales	Notothyladaceae	<i>Phaeoceros sp.</i>	Gametophyte	XXXG	X, L, F	[1]
Anthocerotales	Anthocerotaceae	<i>Anthoceros agrestis</i>	Gametophyte	XXXG	X, L, F	[1]
Lycophytes						
Lycopodiales	Huperziaceae	<i>Huperzia lucidula</i>	Sporophyte	XXXG, XXGG	X, L, D	[1]
	Lycopodiaceae	<i>Lycopodium tristachyum</i>	Sporophyte	XXXG, XXGG	X, L, F, D, E	[1]
	Lycopodiaceae	<i>Lycopodium cernuum</i>	Aerial stems with leaves	XXGG ₂₋₅ , XXXG	X, L	[2]
Selaginellales	Selaginellaceae	<i>Selaginella kraussiana</i>	Sporophyte	XXXG	X, L, F, D, E	[1]
			Stems with leaves	XXXG,	X, L, F, D, E	[2]
Ferns						
Equisetales	Equisetaceae	<i>Equisetum hyemale</i>	Sporophyte	XXXG	X, L, F, D, E, S	[1]
			Stem internodes	XXXG	X, L, D, E,	[2]
Psilotales	Psilotaceae	<i>Psilotum nudum</i>	Sporophyte	XXXG	X, L, F	[1]
			Upper forked aerial stems	XXGG ₂₋₃	X, L, F	[2]
Polypodiales	Polypodiaceae	<i>Platyserium bifurcatum</i>	Sporophyte	XXXG	X, L, F	[1]
	Pteridaceae	<i>Ceratopteris richardii</i>	Sporophyte	XXXG	X, L, F, S	[1]
Marattiales	Marattiaceae	<i>Marattia salicina</i>	Fertile pinnae	XXXG	X, L, F	[2]
Osmundales	Osmundaceae	<i>Osmunda regalis</i>	Lower sterile pinnae	XXXG	X, L, F	[2]
Hymenophyllales	Hymenophyllaceae	<i>Trichomanes reniforme</i>	Laminae	XXXG	X, L, F, M	[2]
	Hymenophyllaceae	<i>Hymenophyllum demissum</i>	Laminae	XXXG	X, L, F	[2]

Table S1. Cont.

Orders	Family	Species	Generation/Organ/Tissue	Xylosylation Motif	Sidechains	Reference
Gleicheniales	Gleicheniaceae	<i>Sticherus flabellatus</i>	Pinnae (young)	XXXG	X, L, F	[2]
	Gleicheniaceae	<i>Gleichenia dicarpa</i>	Pinnae (young)	XXXG	X, L, F	[2]
Schizaeales	Schizaeaceae	<i>Schizaea dichotoma</i>	Forked fronds	XXGG ₂₋₃ , XXXG	X, L, F	[2]
Salviniales	Salviniaceae	<i>Azolla filiculoides</i>	Upper lobes of leaves	XXGG ₂₋₅ , XXXG	X, L, F, D, E, M	[2]
Cyatheales	Cyatheaceae	<i>Cyathea dealbata</i>	Primary pinnae (young)	XXXG	X, L, F	[2]
Polypodiales	Polypodiaceae	<i>Microsorium punctatum</i>	Laminae (young)	XXGG ₂₋₄ , XXXG	X, L, F, D, E, M	[2]
	Polypodiaceae	<i>Pyrrhosia eleagnifolia</i>	Laminae	XXXG	X, L, F	[2]
Gymnosperms						
Cycadales	Cycadaceae	<i>Cycas revoluta</i>	Leaflets	XXXG	X, L, F	[2]
	Zamiaceae	<i>Macrozamia communis</i>	Leaflets	XXGG, XXXG	X, L, F, M	[2]
Ginkgoales	Ginkgoaceae	<i>Ginkgo biloba</i>	Leaf laminae (young)	XXXG	X, L, F	[2]
Pinales	Ephedraceae	<i>Ephedra americana</i>	Stems (young)	XXXG	X, L, F	[2]
	Pinaceae	<i>Cedrus atlantica</i>	Leaves	XXXG	X, L, F	[2]
	Araucariaceae	<i>Agathis australis</i>	Leaf laminae (young)	XXXG	X, L, F	[2]
	Podocarpaceae	<i>Podocarpus totara</i>	Leaves (young)	XXXG	X, L, F	[2]
	Podocarpaceae	<i>Phyllocladus trichomanoides</i>	Phylloclades (young)	XXXG	X, L, F	[2]
	Sciadopityaceae	<i>Sciadopitys verticillata</i>	Leaves	XXXG	X, L, F	[2]
	Cephalotaxaceae	<i>Cephalotaxus harringtonia</i>	Leaf laminae (young)	XXXG	X, L, F	[2]
	Cupressaceae	<i>Cryptomeria japonica</i>	Leaves (young)	XXXG	X, L, F	[2]
			Xylem	XXXG	X, L, F	[3]
	Cupressaceae	<i>Libocedrus plumosa</i>	Scale-like leaves	XXXG	X, L, F	[2]
	Cupressaceae	<i>Taxodium distichum</i>	Leaves (young)	XXXG	X, L, F	[2]
Monocots						
Alismatales	Araceae	<i>Zantedeschia aethiopica</i>	Peduncle	XXXG	X, L, F	[4]
	Araceae	<i>Lemna minor</i>	Thallus	XXGG ₂₋₄ , XXXG	X, L,	[4]

Table S1. Cont.

Orders	Family	Species	Generation/Organ/Tissue	Xylosylation Motif	Sidechains	Reference
Asparagales	Amaryllidaceae	<i>Allium cepa</i> (onion)	Bulb	XXXG	X, L, F	[4–6]
	Amaryllidaceae	<i>Allium sativum</i> (garlic)	Bulb	XXXG	X, L, F	[5,6]
	Amaryllidaceae	<i>Hybrid</i> (garlic/onion)	Bulb	XXXG	X, L, F	[5]
	Iridaceae	<i>Libertia ixioides</i>	Leaf (young)	XXXG	X, L, F	[4]
	Orchidaceae	<i>Vanilla pompona</i>	Leaf (young)	XXGG _{2–3} , XXXG	X, L, F	[4]
Dioscoreales	Dioscoreaceae	<i>Dioscorea discolor</i>	Leaf blade (young)	XXGG, XXXG	X, L, F	[4]
Pandanales	Pandanaceae	<i>Pandanus veitchii</i>	Leaf blade (young)	XXXG	X, L, F	[4]
Arecales	Arecaceae	<i>Phoenix canariensis</i>	Stem apex	XXXG	X, L, F	[4]
Commelinales	Commelinaceae	<i>Tradescantia fluminensis</i>	Stem	XXGG _{2–3} , XXXG	X, L, F	[4]
	Pontederiaceae	<i>Eichhornia crassipes</i>	Inflated petiole	XXGG _{2–4} , XXXG	X, L, F	[4]
Poales	Bromeliaceae	<i>Ananas comosus</i>	Fruit flesh	XXGG _{2–3} , XXXG	X, L, F	[4]
	Bromeliaceae	<i>Aechmea fasciata</i>	Leaf blade (young)	XXGG _{2–3} , XXXG	X, L, F	[4]
	Cyperaceae	<i>Cyperus papyrus</i>	Stem	XXXG	X, L, F	[4]
	Flagellariaceae	<i>Flagellaria indica</i>	Leaf blade	XXGG _{2–3} , XXXG	X, L, F	[4]
	Juncaceae	<i>Juncus inflexus</i>	Stem	XXXG	X, L, F	[4]
	Poaceae	<i>Avena sativa</i>	Coleoptile	XXGG _{2–4} , XXXG	X, L	[4]
	Poaceae	<i>Festuca arundinacea</i>	Fully emerged leaf blades	XXGG _{2–3}	X	[4]
	Poaceae	<i>Hordeum vulgare</i>	Coleoptile	XXGG _{2–4} , XXXG	X, L	[4]
	Poaceae	<i>Lolium multiflorum</i>	Fully emerged leaf blades	XXGG _{2–3}	X	[4]
	Poaceae	<i>Lolium perenne</i>	Fully emerged leaf blades	XXGG _{2–3}	X	[4]
	Poaceae	<i>Triticum aestivum</i>	Coleoptile	XXGG _{2–4}	X	[4]
	Poaceae	<i>Zea mays</i>	Coleoptile	XXGG _{2–4}	X, L	[4]
			Shoot	XG, XXG	X, L	[5]
	Poaceae	<i>Hordeum vulgare</i> (barley)	Immature plants	XXGG ₃	X	[5]
			Coleoptiles	XXGG _{2–5} , XXXGG	X, <u>G</u>	[7]
	Poaceae	<i>Oryza sativa</i> (rice)	Seedling	XXGG ₃ , XGGG	X	[5]
			Suspension-cultured cells	XXXG	X, L	[5]
			Hull	XG, XXG	X	[5]

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Orders	Family	Species	Generation/Organ/Tissue	Xylosylation Motif	Sidechains	Reference
Liliales Zingiberales	Restionaceae	<i>Elegia capensis</i>	Immature stem (base)	XXXG	X, L, F	[4]
	Typhaceae	<i>Typha orientalis</i>	Rhizome	XXXG	X, L, F	[4]
	Xyridaceae	<i>Xyris formosana</i>	Leaf (young)	XXXG	X, L, F	[4]
	Alstroemeriaceae	<i>Alstroemeria aurantiaca</i>	Leaf blade (young)	XXXG	X, L, F	[4]
	Cannaceae	<i>Canna indica</i>	Rhizome	XXGG ₂₋₃ , XXXG	X, L, F	[4]
	Heliconiaceae	<i>Heliconia schiedeana</i>	Leaf blade	XXGG ₂₋₃ , XXXG	X, L, F	[4]
	Marantaceae	<i>Maranta leuconeura</i>	Leaf blade	XXGG ₂₋₃ , XXXG	X, L, F	[4]
	Strelitziaceae	<i>Strelitzia reginae</i>	Leaf blade	XXGG ₂₋₃ , XXXG	X, L, F	[4]
	Zingiberaceae	<i>Hedychium green ii</i>	Leaf blade, Young rhizome	XXGG ₂₋₄ , XXXG	X, L, F	[4]
	Zingiberaceae	<i>Zingiber officinale</i>	Rhizome	XXGG ₂₋₄ , XXXG	X, L, F	[4]
Eudicots						
Malvales	Malvaceae	<i>Gossypium</i> (cotton)	Cotton fiber	XXXG	X, L, F	[5]
Malpighiales	Salicaceae	<i>Populus alba</i> (poplar)	Cultured cells	XXXG	X, L, F	[5]
Rosales	Rosaceae	<i>Malus domestica</i> (apple)	Fruit, pomace	XXXG	X, L, F	[5,8]
Caryophyllales			Fruit	XXXG	X, L, F, <u>L</u> , <u>F</u>	[9,10]
	Rosaceae	<i>Prunus persica</i> (peach)	Fruit	XXXG	X, L, F, <u>L</u> , <u>F</u>	[11]
	Simmondsiaceae	<i>Simmondsia chinensis</i>	Seed	XXXG	X, L, F, J, <u>L</u> , <u>J</u>	[5]
	Amaranthaceae	<i>Salicornia brachiata</i>	Seedlings	XXXG	X, L, F, <u>L</u> , <u>F</u>	[12]
Fabales	Fabaceae	<i>Copaifera langsdorfii</i>	Seed	XXXG	X, L	[5]
	Fabaceae	<i>Hymenaea courbaril</i>	Cotyledons	XXXG, XXXXG	X, L	[5]
			Seeds	XXXG, XXXXG, XXXXXXG	X, L	[13]
			Leaves	XXXG, XXXXG	X, L	[14]
	Fabaceae	<i>Glycine max</i> (soybean)	Cultured cells	XXXG	X, F	[5]
			Soybean meal	XXXG	X, L, F	[15]
	Fabaceae	<i>Tamarindus indica</i>	Seeds	XXXG	X, L	[5]
	Fabaceae	<i>Phaseolus aureus</i>	Hypocotyls	XXXG	X, L, F	[5]
	Fabaceae	<i>phaseolus vulgaris</i>	Cultured cells	XXGG	X, L, F	[16]

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Orders	Family	Species	Generation/Organ/Tissue	Xylosylation Motif	Sidechains	Reference
Asterales	Fabaceae	<i>Afzelia africana</i>	Seeds	XXXG	X, L	[17]
	Fabaceae	<i>Pisum sativum</i> (pea)	Stems	XXXG	X, L, F	[18]
	Asteraceae	<i>Arctium lappa</i>		XXXG	X, L, F	[5]
	Asteraceae	<i>Lactuca sativa</i> (lettuce)	Leaves	XXXG	X, L, F	[5]
	Asteraceae	<i>Tanacetum ptarmiciflorum</i>	Leaves	XXXG	X, L, F	[5]
Apiales	Apiaceae	<i>Daucus carota</i> (carrot)	Leaves	XXXG	X, L, F	[5]
Ericales	Myrsinaceae	<i>Cyclamen</i> (cyclomen)	Seed	XXXG	X, L	[5]
	Sapotaceae	<i>Argania spinosa</i>	Leaves	XXXG	X, L, F, U	[5]
Brassicales			Fruit pulp	XXGG, XXXG	X, L	[19]
	Ericaceae	<i>Vaccinium myrtillus</i>	Fruit	XXXG	X, L, U, F, <u>G</u> , <u>L</u> , <u>E</u>	[20]
	Brassicaceae	<i>Arabidopsis thaliana</i>	Cell culture, whole tissues	XXXG	X, L, F, <u>L</u> , <u>E</u>	[5,21,22]
			Root, root hair	XXXG	X, Y, F, Z, L	[23]
Lamiales	Tropaeolaceae	<i>Tropaeolum majus</i>	Seedlings	XXXG	X, L	[24]
	Lamiaceae	<i>Ocimum basilicum</i> (basil)	Leaves	XXGG ₃	X, L	[5]
	Oleaceae	<i>Olea europaea</i> (olive)	Purple olive fruit	XXXG	X, L, S	[5]
Solanales	Plantaginaceae	<i>Plantago major</i> (plantain)	Leaves	XXGG ₃	X, L	[5]
	Convolvulaceae	<i>Ipomoea Purpurea</i>	Leaves	XXGG ₃	X, S	[5]
	Solanaceae	<i>Capsicum annuum</i> (pepper)	Leaves	XXGG	X, S	[5]
	Solanaceae	<i>Nicotiana plumbaginifolia</i>	Cultured cells	XXGG, XXGG ₃	X, S, L	[5]
	Solanaceae	<i>Nicotiana tabacum</i>	Leaves	XXGG	X, S	[5]
	Solanaceae	<i>Nicotiana glauca</i>	Pollen grain	XXXG	X, L, F, <u>L</u> , <u>E</u>	[25]
	Solanaceae	<i>Solanum lycopersicum</i>	Cultured cells	XXGG	X, L, S, T, <u>G</u> , <u>S</u> , <u>L</u>	[26,27]
Sapindales			Green tomato fruit	XXGG	X, L, S, <u>G</u>	[28]
	Sapindaceae	<i>Acer pseudoplatanus</i>	Cultured cells	XXXG	X, L, F, A, B, C, <u>L</u> , <u>E</u>	[29,30]
Gentianales	Apocynaceae	<i>Nerium oleander</i>	Leaves	XXXG	X, L, F, S	[5]

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