Table S4. Inventory of *Arabidopsis* and rice cellulose synthase (*cesa*) mutant alleles

Gene	CesA	Allele	Mutation	Phenotype	Reference
At4g32410	*AtCESA1*	*rsw1-1*	A(549)V	Root swelling, stunted growth (heat, temperature sensitive)	[1]
		rsw1–20	D(780)N	Swollen root, abnormal dark morphology, reduced growth of hypocotyls and roots	[2]
		rsw1-45	E(779)K	Swollen root, abnormal dark morphology, reduced growth of hypocotyls and roots	[2]
		rsw1-2	G(631)S	Lethality	[3]
		aegeus	A(903)V	Quinoxyphen resistant, reduced cellulose content, altered cellulose crystallinity, increased CSC velocity	[4]
		any1	D(604)N	Dwarf plants with reduced anisotropic growth of roots, aerial organs, and trichomes	[5]
At5g05170	*AtCESA3*	*ixr1-2*	G(998)D	Semidominant resistance to isoxaben	[6]
		cev1	G(617)E	Stunted root growth, induction of defense responses	[7]
		eli1-1	S(301)F	Stunted root growth, induction of defense responses	[8]
		eli1-2	A(522)V	Stunted root growth, induction of defense responses	[8]
		than	P(578)S	Root swelling, stunted growth at permissive temperature, semidominant mutation, lethality	[9]
		mre1	G916E	Short, swollen root and etiolated hypocotyl, cellulose deficiency, dwarf plants	[10]
		ixr1-6	S(377)F	Isoxaben resistant, decreased cellulose content, cellulose crystallinity and plant height. Ectopic lignin deposition. Swollen roots.	[11,12] [12]
		ixr1-4		Isoxaben resistant, decreased cellulose content, cellulose crystallinity and plant height. Ectopic lignin deposition. Swollen roots.	
At5g44030	*AtCESA4*	*irx5-3*	Q(263)Stop	Irregular xylem vessels	[13]
At5g64740	*AtCESA6*	*prc1-1/1-3*	Q(720)Stop	Reduced growth of dark-grown hypocotyls and roots (many alleles), root hair henotype	[14,15]
		prc1-4/1-5	W(777)Stop	Reduced growth of dark-grown hypocotyls and roots	[15]
		prc1-9	K(722)S	Reduced growth of dark-grown hypocotyls and roots	[16]
		prc1-20		Oryzalin hypersensitive, isoxaben hypersensitive, short, swollen etiolated hypocotyls and roots, cellulose content deficiency	
		es20r4	D(605)N	Reduced sensitivity to Endosidin20, less long roots	[17]
		es20r10	P(595)S	Reduced sensitivity to Endosidin20, long roots	[17]
		es20r11	D(396)N	Reduced sensitivity to Endosidin20, long roots	[17]
At5g17420	*AtCESA7*	*fra5*	P(557)T	Fragile fibers, weak stem, extremely thin fiber walls, semidominant mutation	[18]
		mur10-1	W(444)Stop	Reduction in growth and dark-green coloration of the aerial parts	[19]
		mur10-2	H(734)Y	Reduction in growth and dark-green coloration of the aerial parts	[19]
		irx3	W(589)Stop	Irregular xylem. Low levels of crystalline cellulose and collapsed xylem cells	[20,21]
At4g18780	*CESA8*	*irx1-1*	D(683)N	Weak stem, collapsed xylem vessels	[22]
		irx1-2	S(679)L	Weak stem, collapsed xylem vessels	[22]
		fra6	R(362)K	Reduced fiber wall thickness	[18]
		exi1-2	G(508)E	Small rosette leaves, flowers, siliques, reduced cell elongation, dwarf plants, altered vasculature and cell morphology, cellulose content deficiency, impaired water transport	[23]

Gene	Cesa	Allele	Mutation	Phenotype	Reference
Os01g54620	*CESA4*	*bc11*	G(858)R	Reduced mechanical strength in the culms and leaves, abnormal growth, dwarfism, withered leaf tips	[24]
		fc17	F(426)S	Brittleness, reduced extension force but no significant reduction in breaking force of basal stem internode	[25]
Os09g25490	*CESA9*	*bc88*	P(421)L	Brittle phenotype with pleiotropic phenotypes, withered leaf tips	[26]
		bc6	R588G		[27]
		osfc16	$W^{481}P^{482}GN \rightarrow C^{481}S^{482}GN$	Brittle phenotype but no pleiotropic phenotypes, culms and leaves easily broke	[25]
		sdbc1	D387N	Normal plant growth and high biomass production Mild brittle culm phenotypes	[28]

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