

## Genetic loci governing androgenic capacity in perennial ryegrass (*Lolium perenne* L.)

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### Supplementary information

**Table S3** Gene annotations for each scaffold found to be significantly associated with the response to anther culture.

Scaffold	Scaffold length (kbp)	Start (bp)	End (bp)	Arabidopsis locus	Name(s) or description
60	277.8	7100	73719	AT5G52450	MATE efflux family protein
		36155	38008	AT5G52450	MATE efflux family protein
		41600	42255	AT5G52450	MATE efflux family protein
		114910	119696	AT2G15240	UNC-50 family protein
123	256.4	22922	26802	AT3G02410	ICME-LIKE2, ISOPRENILCYSTEINE METHYLESTERASE-LIKE 2
		22922	26802	AT5G15860	ATPCME, ICME, ISOPRENILCYSTEINE METHYLESTERASE, PCME, PRENYLCYSTEINE METHYLESTERASE
		27463	31921	AT3G18040	MAP KINASE 9, MPK9
		197961	200766	AT5G07990	CYP75B1, CYTOCHROME P450 75B1, D501, TRANSPARENT TESTA 7, TT7
		204751	213979	AT5G52450	MATE efflux family protein
127	250.4	38352	41786	AT1G19330	Histone deacetylase complex subunit
		227351	228127	AT1G29860	ATWRKY71, EXB1, EXCESSIVE BRANCHES1, WRKY DNA-BINDING PROTEIN 71, WRKY71

Scaffold	Scaffold length (kbp)	Start (bp)	End (bp)	Arabidopsis locus	Name(s) or description
233	212.6	13284	39350	AT5G15070	ARABIDOPSIS HOMOLOG OF YEAST VIP1 2, ATVIP2, VIH1, VIP HOMOLOG 1, VIP1 HOMOLOG 2, VIP2
		123380	130183	AT5G62670	AHA11, H(+)-ATPASE 11, HA11
		131144	134955	AT1G27150	Tetratricopeptide repeat (TPR)-like superfamily protein
		199043	204791	AT3G05545	RING/U-box superfamily protein
813	154	34360	44241	AT1G33290	P-loop containing nucleoside triphosphate hydrolases superfamily protein
		98603	105466	AT5G14420	RGLG2, RING DOMAIN LIGASE2
		149380	153333	AT1G47830	SNARE-like superfamily protein
815	148.4	7582	22714	AT2G20330	Transducin/WD40 repeat-like superfamily protein
		23376	32394	AT4G21470	ATFMN/FHY, FMN/FHY, RIBOFLAVIN KINASE/FMN HYDROLASE
		58149	62391	AT2G01120	ATORC4, ORC4, ORIGIN RECOGNITION COMPLEX SUBUNIT 4
		139557	146531	AT5G43920	Transducin/WD40 repeat-like superfamily protein
1607	115.8	28155	33804	AT5G57140	ATPAP28, PAP28, PURPLE ACID PHOSPHATASE 28
		44535	50663	AT2G27100	SE, SERRATE
		89740	92906	AT3G07040	RESISTANCE TO PSEUDOMONAS SYRINGAE 3, RPM1, RPS3
		100317	104480	AT3G07040	RESISTANCE TO PSEUDOMONAS SYRINGAE 3, RPM1, RPS3
1669	116.6	36273	49336	AT3G63520	ATCCD1, ATNCED1, CAROTENOID CLEAVAGE DIOXYGENASE 1, CCD1, NCED1
2075	106.6	6177	6430	AT1G70680	Caleosin-related family protein
		7022	9674	AT1G70670	ARABIDOPSIS THALIANA CALEOSIN 4, ATCLO4, CALEOSIN 4, CLO4, PEROXYGENASE 4, PXG4
2554	103	2585	8463	AT2G45260	Myosin-4 protein (DUF641)
		46779	53204	AT5G35210	PHD TYPE TRANSCRIPTION FACTOR WITH TRANSMEMBRANE DOMAINS, PTM
3194	88.8	21212	27087	AT3G46820	TOPP5, TYPE ONE SERINE/THREONINE PROTEIN PHOSPHATASE 5

Scaffold	Scaffold length (kbp)	Start (bp)	End (bp)	Arabidopsis locus	Name(s) or description
		36911	38396	AT5G64700	UMAMIT21, USUALLY MULTIPLE ACIDS MOVE IN AND OUT TRANSPORTERS 21
		43210	51417	AT2G47580	SPLICEOSOMAL PROTEIN U1A, U1A
		51670	56416	AT3G52860	MED28, MEDIATOR28
3723	81.3	37204	45974	AT1G63810	Nucleolar protein
		80302	80933	AT4G23160	CRK8, CYSTEINE-RICH RLK (RECEPTOR-LIKE PROTEIN KINASE) 8
4385	80.8	20744	21199	AT5G26880	AGAMOUS-LIKE 26, AGL26
		35922	58157	AT3G23640	HETEROGLYCAN GLUCOSIDASE 1, HGL1
		67663	70662	AT4G15240	Glycosyltransferase (DUF604)
		71970	75561	AT3G20740	FERTILIZATION-INDEPENDENT ENDOSPERM 1, FIE, FIE1, FIS3
6186	59.2	35206	36492	AT1G70090	GALACTURONOSYLTRANSFERASE-LIKE 9, GATL9, GLUCOSYL TRANSFERASE FAMILY 8, LGT8
		47809	54233	AT1G12000	Phosphofructokinase family protein
6436	57	45334	47951	AT4G13330	S-adenosyl-L-methionine-dependent methyltransferases superfamily protein
		48789	50285	AT5G20190	Tetratricopeptide repeat (TPR)-like superfamily protein
		51151	57039	AT5G43960	Nuclear transport factor 2 (NTF2) family protein with RNA binding (RRM-RBD-RNP motifs) domain-containing protein
7045	53.2	1236	5326	AT4G38180	FAR1-RELATED SEQUENCE 5, FRS5
		6122	14989	AT2G23380	CLF, CURLY LEAF, ICU1, INCURVATA 1, SDG1, SET1, SETDOMAIN 1, SETDOMAIN GROUP 1
		39822	46005	AT5G52010	C2H2-like zinc finger protein
		39823	45693	AT1G28600	GDSL-motif esterase/acyltransferase/lipase
8920	44.9	2729	10974	AT1G75850	LAZ4, VPS35 HOMOLOG B, VPS35B
15142	24.8	16759	22240	AT5G08560	ATWDR26, WD-40 REPEAT 26, WDR26
16597	14.2	7880	8705	AT5G54960	PDC2, PYRUVATE DECARBOXYLASE-2