

**Volatile emissions of scented *Alstroemeria* genotypes are dominated by terpenes, and a myrcene synthase gene is highly expressed in scented *Alstroemeria* flowers.**

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**Supplementary Table 1.** Terpenoid synthases genes used for comparisons with *Alstro*TPS.

Gene bank	Terpene Synthase	aa	Type	Species	References
AAC24192	(E)- $\alpha$ -bisabolene synthase	817	C <sub>15</sub>	<i>Abies grandis</i>	Bohlmann et al., 1998
AAB70707	(-)-camphene synthase	618	C <sub>10</sub>	<i>Abies grandis</i>	Bohlmann et al., 1997
AAB71084	myrcene synthase	627	C <sub>10</sub>	<i>Abies grandis</i>	Bohlmann et al., 1997
AAB71085	pinene synthase	628	C <sub>10</sub>	<i>Abies grandis</i>	Bohlmann et al., 1997
O64404	$\delta$ -selinene synthase	581	C <sub>15</sub>	<i>Abies grandis</i>	Steele et al., 1998
N/I	<i>Alstroemeria</i> TPS	567	N/I	<i>Alstroemeria</i> sp	N/I
AAO42614	(E)- $\beta$ -ocimene synthase	579	C <sub>10</sub>	<i>Antirrhinum majus</i>	Dudareva et al., 2003
AAO41727	myrcene synthase	584	C <sub>10</sub>	<i>Antirrhinum majus</i>	Dudareva et al., 2003
Q38802	copalyl diphosphate/kaurene	802	C <sub>20</sub>	<i>Arabidopsis thaliana</i>	Sun and Kamiya, 1994
NP_567511	(E)- $\beta$ -ocimene synthase	565	C <sub>10</sub>	<i>Arabidopsis thaliana</i>	Bohlmann et al., 2000
NP_179998	myrcene/ocimene synthase	591	C <sub>10</sub>	<i>Arabidopsis thaliana</i>	Bohlmann et al., 2000
AAL79181	$\beta$ -caryophyllene synthase	548	C <sub>15</sub>	<i>Artemisia annua</i>	Cai et al., 2002
AAK58723	(-)- $\beta$ -pinene synthase	582	C <sub>10</sub>	<i>Artemisia annua</i>	Lu et al., 2002
CAC08805	epi-cedrol synthase	547	C <sub>15</sub>	<i>Artemisia annua</i>	Mercke et al., 1999
ABI21838	(+)- $\alpha$ -pinene synthase	615	C <sub>10</sub>	<i>Cannabis sativa</i>	Guennewich et al., 2007
AAQ04608	valencene synthase	548	C <sub>15</sub>	<i>Citrus sinensis</i>	Sharon-Asa et al., 2003
BAD27260	$\beta$ -pinene synthase	602	C <sub>10</sub>	<i>Citrus unshiu</i>	Shimada et al., 2005
Q96376	S-linalool synthase	870	C <sub>10</sub>	<i>Clarkia breweri</i>	Dudareva et al., 1996
AAU05951	(E,E)- $\alpha$ -farnesene synthase	561	C <sub>15</sub>	<i>Cucumis sativus</i>	Mercke et al., 2004
CAA75244	copalyl diphosphate synthase	959	C <sub>20</sub>	<i>Gibberella fujikuroi</i>	Tudzynski et al., 1996
AAF74977	(+)- $\delta$ -cadinene synthase	551	C <sub>15</sub>	<i>Gossypium hirsutum</i>	Townsend et al., 2005
AAA86337	vetispiradiene synthase	555	C <sub>15</sub>	<i>Hyoscyamus muticus</i>	Back et al., 1995
AAM11626	germacrene A synthase LTC1	559	C <sub>15</sub>	<i>Lactuca sativa</i>	Bennett et al., 2002
ABB73045	linalool synthase	564	C <sub>10</sub>	<i>Lavandula angustifolia</i>	Landmann et al., 2007
AAT86042	(E)- $\beta$ -ocimene synthase	595	C <sub>10</sub>	<i>Lotus corniculatus</i>	Arimura et al., 2004
ACC66282	$\alpha$ -terpineol synthase	592	C <sub>10</sub>	<i>Magnolia grandiflora</i>	Lee and Chappell, 2008
ACC66281	$\beta$ -cubebene synthase	550	C <sub>15</sub>	<i>Magnolia grandiflora</i>	Lee and Chappell, 2008
AAL99381	linalool synthase	606	C <sub>10</sub>	<i>Mentha aquatica</i>	Crowell et al., 2002
CAH10288	cis-muroladiene synthase	551	C <sub>15</sub>	<i>Mentha x piperita</i>	Prosser et al., 2006
Q40577	5-epi-aristolochene synthase	548	C <sub>15</sub>	<i>Nicotiana tabacum</i>	Facchini and Chappell, 1992
AAK06663	limonene synthase	604	C <sub>10</sub>	<i>Perilla frutescens</i>	Takeya et al., 2000 *
AAS47689	(E)- $\alpha$ -bisabolene synthase	807	C <sub>15</sub>	<i>Picea abies</i>	Martin et al., 2004
AAS47693	(-)-linalool synthase	623	C <sub>10</sub>	<i>Picea abies</i>	Martin et al., 2004
AAS47695	longifolene synthase	578	C <sub>15</sub>	<i>Picea abies</i>	Martin et al., 2004
AAS47696	myrcene synthase	633	C <sub>10</sub>	<i>Picea abies</i>	Martin et al., 2004
CAC35696	isoprene synthase	595	C <sub>5</sub>	<i>Populus alba</i> x <i>P. tremula</i>	Miller et al., 2001
CAC41012	myrcene synthase	597	C <sub>10</sub>	<i>Quercus ilex</i>	Fischbach et al., 2001
CAK55186	pinene synthase	597	C <sub>10</sub>	<i>Quercus ilex</i>	Schnitzler, 2006*
AAC26018	(+)-sabinene synthase	590	C <sub>10</sub>	<i>Salvia officinalis</i>	Wise et al., 1998
BAA84918	copalyl diphosphate synthase	800	C <sub>20</sub>	<i>Solanum lycopersicum</i>	Imai, 1998 *
CAE47440	germacrene D synthase	551	C <sub>15</sub>	<i>Solidago canadensis</i>	Prosser et al., 2004
AAD34295	kaurene synthase	784	C <sub>20</sub>	<i>Stevia rebaudiana</i>	Richman et al., 1999
AAS66358	(+)-valencene synthase	556	C <sub>15</sub>	<i>Vitis vinifera</i>	Lucker et al., 2004
AAS66357	(-)-germacrene D synthase	557	C <sub>15</sub>	<i>Vitis vinifera</i>	Lucker et al., 2004
ABY79206	(E)- $\beta$ -caryophyllene synthase	547	C <sub>15</sub>	<i>Zea mays</i>	Kollner et al., 2008
BAG12020	$\alpha$ -humulene synthase	548	C <sub>15</sub>	<i>Zingiber zerumbet</i>	Yu et al., 2008

\* indicates a direct submission into Genbank with no accompanying reference, (N/I: no information).

**Supplementary Table 2.** Primers used for the amplification of gDNA comprising the *AlstroTPS* gene sequence showing their sequence (5' - 3'), length (bp) and T<sub>m</sub> (°C).

Primer	Sequence (5' - 3')	Length (bp)	T <sub>m</sub> (°C)
INTRON1 F	CGCCGCTCGGCAAATTATA	19	55.8
INTRON1 R	TAGCAATATAGGTTCCACCAACA	23	53.7
INTRON2 F	CCTGGAGATGCAGACAAGTATT	22	54.5
INTRON2 R	GCGTTCTACAGATTCTACAGATACA	25	54.0
INTRON3 F	CCCGTGACATTAAGGGATTATTG	23	53.6
INTRON3 R	GCTCTAAAGCATGTAAGGCTC	21	53.5
INTRON4 R	CCTCCTCAAAGTGATACGCC	20	55.3
INTRON5 F	GGCGTATACAAGACAGAAATCAG	23	53.4
NCF421 F	CAGGCTCGAGAAGCTGAA	18	54.5
NCF421 R	ACGTCGTAGATGTCATCGAT	20	53.1
ALSTER F	GGGGACATCTATTACTCACT	21	53.2
ALSTER R	GTTTCATGCATGTAGCATTG	20	50.1

**Supplementary Table 3.** Comparison of the size and position of the introns of *AlstroTPS* with other TPS genes (Full names and details are listed in Supplementary Table 1 and Fig 7). Roman numerals correspond to intron numbers. Dashes and ND symbolize absence of intron and intron size Not Determined respectively. (1) Information provided by J. Chappell (personal communication); (2) Sequence obtained from a public database; (<http://www.ncbi.nlm.nih.gov/>); (3) Data adapted from Trapp and Croteau (2001).

Terpene synthase	Intron size (bp)														TOTAL no of introns
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	
$\beta$ -cubebene synthase (ACC66281) <i>M. grandiflora</i> (sesquiterpene) <sup>1</sup>	-	-	687	-	-	-	-	-	-	-	-	-	-	-	1
terpene cyclase pseudogene (EU366431) <i>M. grandiflora</i> (sesquiterpene) <sup>1</sup>	-	-	677	-	-	-	-	801	-	-	1134	266	-	-	4
<b>terpene synthase</b> <b><i>Alstroemeria</i> sp. (monoterpene)</b>	-	-	111	-	-	-	-	222	-	-	106	-	110	73	5
myrcene/ocimene synthase (NP_179998) <i>A. thaliana</i> (monoterpene) <sup>2</sup>	-	-	100	-	-	-	-	151	-	-	387	145	279	234	6
$\alpha$ -terpineol synthase (ACC66282) <i>M. grandiflora</i> (monoterpene) <sup>1</sup>	-	-	76	-	-	-	-	97	-	-	158	84	114	480	6
limonene synthase (AAK06663) <i>P. frutescens</i> (monoterpene) <sup>3</sup>	-	-	698	-	-	-	-	826	-	-	125	326	91	119	6
limonene cyclase (Z97341) <i>A. thaliana</i> (putative protein) <sup>3</sup>	-	-	100	-	-	-	-	212	-	-	437	89	308	178	6
vetispiradiene synthase (AAA86337) <i>H. muticus</i> (Sesquiterpene) <sup>3</sup>	-	-	ND	-	-	-	-	ND	-	-	ND	93	ND	ND	6
5- <i>epi</i> -aristolochene synthase(Q40577) <i>N. tabacum</i> (sesquiterpene) <sup>3</sup>	-	-	127	-	-	-	-	87	-	-	76	131	155	113	6
$\delta$ -Selinene synthase (O64404) <i>A. grandis</i> (sesquiterpene) <sup>3</sup>	-	-	122	-	-	-	84	147	101	-	55	142	361	76	8
pinene synthase (AAB71085) <i>A. grandis</i> (monoterpene) <sup>3</sup>	-	-	107	-	-	-	85	146	92	537	99	94	106	120	9
( <i>E</i> )- $\alpha$ -bisabolene synthase (AAC24192) <i>A. grandis</i> (sesquiterpene) <sup>3</sup>	-	-	205	164	428	456	156	134	108	96	116	141	103	-	11
copalyl diphosphate/kaurene synthase (Q38802) <i>A. thaliana</i> (diterpene) <sup>3</sup>	822	115	283	253	198	121	79	82	212	357	263	927	494	270	14

