

Table S1. Anthocyanin candidate gene primers.

Gene name	Gene ID	Forward primers	Reverse primers
<i>SjUGT79B</i>	GHAGGen		5'CGTTGATGGGTGACTCAGTAT
<i>l</i>	e01140	5'GAAGCAGAAGCAGAAGCAGAA3'	C3'
<i>SjDFR</i>	GHAGGen		5'CCAACACTGGCATTCAAGAAC
	e00696	5'CAGCACTCTGTGAGGCAACT3'	T3'
<i>SjFLS</i>	GHAGGen		5'CTAGAATCTCACGCAGGACTT
	e21877	5'GAGCAACCAGGCATCACAA3'	3'
<i>SjF3H</i>	GHAGGen		
	e06185	5'GAGGTGTTGTCTCAGAGGCAATG3'	5'CCAGTGTGAGGTCAGGTTGT3'
<i>SjCHS1</i>	GHAGGen		
	e19992	5'ATGGTGACCGTTGAGGAGAT3'	5'GTGCTCGCTGTCTGTGATG3'
<i>SjCHS2</i>	GHAGGen		5'CTGTTGGTAATGCGGAAGTAG
	e04222	5'TGGTGAGCGTGGAGGAGAT3'	T3'
<i>SjF3'5'H1</i>	GHAGGen		5'GCATTGTTCAAGGCGATGTCA
	e03412	5'ATGGCGTCCGAAGGCATT3'	3'
<i>SjF3'5'H2</i>	GHAGGen		
	e27644	5'AGCAGCAAGTGATGATACCTAC3'	5'AGCAGGACCAAGACGCATA3'
<i>SjPAL</i>	GHAGGen		5'CCAGACGAGTGTTATCCATTG
	e09401	5'CAGGCAAGCAACCAAGATGA3'	A3'
<i>SjCHI</i>	GHAGGen		
	e13892	5'GGAGCTGGAAGAGAAGGATGA3'	5'CCTCACGGCAGTCTCAATCT3'
<i>SjANS</i>	GHAGGen		
	e01871	5'CACAATATGGTGCCAGGTCTG3'	5'ACTTGCCGTTGCTCAGGAT3'
<i>SjMYB</i>	GHAGGen		
	e24051	5'TGTAGGCTAAGATGGCTGAACT3'	5'TTGGCAGTCCTTCCTGGTAG3'
<i>SjbHLH1</i>	GHAGGen		
	e13386	5'CACCATCCACGACGATTCCT3'	5'GCCGCTGAACTTGCTTCTG3'
<i>SjbHLH2</i>	GHAGGen		5'TAATCTTGCTTAGGAGGAGGC
	e00848	5'TGGCGTGAGTGATGGTGAT3'	T3'
<i>SjM-type_MADS</i>	GHAGGen		5'CTGTTGATTTCCTCGTCTCCTTC
	e06148	5'AACTCGGACTGATACCTGTAGG3'	3'
<i>SjIAA</i>	GHAGGen		5'GTTGCTCTTGCTTATGGACTCT
	e03678	5'GGCAGTGATGAGACCGAGAA3'	3'
		5'CGAGGTGACCGAGCAGCAAAGA	5'TTGCCACATCCACCACCGTCC3
<i>ubiquitin</i>		G3'	'

Table S2. qRT-PCR reaction system and reaction protocol.

The reaction system		The reaction procedure		
Reagents	Usage amount	Pre-denaturation	94 °C 30 s	1 个 Cycle
TB Green Fast qPCR Mix (2X)	10 μL	PCR reaction	94 °C 5 s	40 个 Cycles
PCR Forward Primer (10 μM)	0.8 μL		60 °C 10 s	
PCR Reverse Primer (10 μM)	0.8 μL		95 °C 5 s	
DNA template	2 μL	Dissolve	60 °C 1 min	1 个 Cycle
Rnase free dH ₂ O	6.4 μL		95 °C	
Total	20 μL	Cooling	50 °C 30 s	1 个 Cycle

Table S3. Color variation of different petal types in *S. japonica* 'AM' mutant at different flower developmental stages.

Petal types	L*	a*	b*
S1 QB	90.76±4.46	-2.54±0.09	36.31±2.56
S1 YB	80.02±3.79	11.00±1.09	17.42±0.27
S1 LGB	83.99±3.28	6.41±0.28	26.77±2.38
S2 QB	86.93±4.64	-4.50±0.18	31.92±0.93
S2 YB	73.26±0.59	15.46±2.03	23.30±1.38
S2 LGB	75.91±0.67	7.15±0.05	29.04±0.12
S3 QB	78.74±2.52	-2.70±0.34	27.34±1.59
S3 YB	75.73±3.35	6.53±0.35	18.78±0.44
S3 LGB	78.62±0.52	4.40±0.06	22.14±1.29
S4 QB	93.37±3.53	-3.97±0.09	21.57±0.58
S4 YB	85.19±1.96	4.36±0.19	16.06±0.69
S4 LGB	86.05±0.76	3.59±0.14	19.86±0.68

Table S4. Reference genome sequence alignment.

Sample name	Clean reads(M)	Q20 rate(%)	Q30 rate(%)	Unique_mapped (%)	Multiple_mapped (%)	Unmapped (%)
S1QB1	6,670.83	97.38	92.26	93.21	2.85	3.94
S1QB2	6,671.18	96.98	91.25	93.82	2.88	3.30
S1QB3	6,672.28	96.81	90.82	93.77	2.85	3.38
S1YB1	6,445.19	96.79	90.84	94.42	2.74	2.84
S1YB2	6,673.22	97.06	91.45	94.34	2.72	2.94
S1YB3	6,666.92	96.65	90.44	94.26	2.56	3.18
S1LGB1	6,667.74	96.51	90.00	94.57	2.46	2.97
S1LGB2	6,669.05	96.50	89.90	95.01	2.40	2.59
S1LGB3	6,671.27	96.66	90.48	94.63	2.37	3.00
S2QB1	6,667.22	96.77	90.74	94.25	2.71	3.04
S2QB2	6,669.68	96.45	89.77	92.48	2.80	4.72
S2QB3	6,669.77	96.79	90.86	94.25	2.68	3.07
S2YB1	6,669.45	97.36	92.36	94.78	2.51	2.71

Sample name	Clean reads(M)	Q20 rate(%)	Q30 rate(%)	Unique_mapped (%)	Multiple_mapped (%)	Unmapped (%)
S2YB2	6,672.65	97.01	91.41	94.66	2.57	2.77
S2YB3	6,667.18	96.59	90.14	94.81	2.45	2.74
S2LGB1	6,670.67	96.94	91.26	94.79	2.49	2.72
S2LGB2	6,147.63	96.48	89.93	94.84	2.51	2.65
S2LGB3	6,672.16	96.70	90.43	94.92	2.49	2.59
S3QB1	6,670.31	96.03	88.85	92.13	3.10	4.77
S3QB2	6,672.28	96.45	89.92	93.47	3.06	3.47
S3QB3	6,667.19	96.98	91.32	86.88	3.05	10.07
S3YB1	6,667.03	96.48	89.83	93.45	3.06	3.49
S3YB2	6,669.77	97.13	91.76	93.83	3.02	3.15
S3YB3	6,670.61	96.98	91.33	93.29	2.97	3.74
S3LGB1	6,671.87	96.91	91.12	93.62	2.91	3.47
S3LGB2	6,042.14	96.38	89.67	93.99	2.89	3.12
S3LGB3	6,666.67	96.91	91.14	93.85	2.89	3.26
S4QB1	6,672.92	97.30	92.18	93.20	3.07	3.73
S4QB2	6,672.57	97.15	91.82	92.77	3.31	3.92
S4QB3	6,669.25	96.83	91.02	90.42	7.94	19.50
S4YB1	6,669.44	96.98	91.24	92.97	3.24	3.79
S4YB2	6,669.62	97.11	91.69	92.60	3.30	4.10
S4YB3	6,031.44	96.83	90.97	93.40	3.36	3.24
S4LGB1	6,033.82	96.71	90.54	93.74	3.08	3.18
S4LGB2	6,664.89	96.71	90.52	93.57	3.20	3.23
S4LGB3	6,669.21	96.86	90.88	93.78	2.95	3.27