

Table S1. Sequencing data used for *S.bowleyanae* genome construction. Note that the sequence coverage was calculated using the Kmer -based estimated genome size.

Library resource	Sequencing platform	Insert size (bp)	Clean data (Gb)	Sequence coverage (X)	Use of the data
Genome	Illumina HiSeq X Ten	250 bp	52.06	113	Genome estimation and polishing
Genome	PacBio SEQUEL	20 kb	54.81	119	Genome assembly
Hi-C	Illumina HiSeq X Ten	250 bp	59.09	127	Chromosome construction
Transcriptome	PacBio SEQUEL	0.6-3 kb	73.03	-	Difference analysis and annotation

Table S2. Scaffolds ordering result

Sample	<i>S. bowleyanae</i>
Number of Sequence in Ordering	923
Rate of Number in Ordering(%)	88.24
Length of Sequence in Ordering	450,803,111
Rate of Length in Ordering(%)	98.73
Number of Sequence in Trunks	249
Rate of Number in Trunks(%)	26.98
Length of Sequence in Trunks	315,910,026
Rate of Length in Trunks(%)	70.08

Table S3. Pseudomolecule length statistics after Hi-C assisted assembly

Pseudomolecule	Scaffold Num	Length
chr1	236	87,836,564
chr2	153	73,823,406
chr3	143	59,863,033
chr4	116	57,963,797
chr5	78	50,795,371
chr6	66	48,156,251
chr7	56	36,817,403
chr8	75	35,638,786
Total anchored	923	450,894,611
Unanchored	230	11,642,783

Table S4 Resequencing alignment rate of the *S. bowleyanae* genome by Bowtie2 software

Mapping reads	331,692,018
Mapping rate (%)	95.56
Unmapping reads	15,411,392
Unmapping rate (%)	4.44
Total reads	347,103,410

Table S5 Transcriptome reads alignment rate of the *S. bowleyanae* genome

Total_EST_Num:	630446
Total_EST_Len:	487069878
Bases_Covered_By_Assembly:	0.966481046
Seq_Covered_By_Assembly:	0.43831827
Num90:	249901
Per90:	0.396387637
Num50:	268113
Per50:	0.425275123

Table S6. Annotation statistics for the *S. bowleyanae* genome

Annotation statistics for the genome	Number	Percent (%)
Total protein	44,044	
NR	37,544	85.24
NT	31,981	72.61
eggNOG	25,520	57.94
GO	16,981	38.55
COG	23,203	52.68
KEGG	12,644	33.25
In at least one database	37,877	85.99

Table S7. Repetitive element annotations in the *S. bowleyanae*

	number of elements*	length occupied	percentage of sequence
Retroelements	111489	102337269 bp	22.13 %
SINEs:	714	113993 bp	0.02 %
Penelope	0	0 bp	0.00 %
LINEs:	17549	13040375 bp	2.82 %
CRE/SLACS	0	0 bp	0.00 %
L2/CR1/Rex	38	6910 bp	0.00 %
R1/LOA/Jockey	418	65030 bp	0.01 %
R2/R4/NeSL	143	82412 bp	0.02 %
RTE/Bov-B	421	100595 bp	0.02 %
L1/CIN4	16405	12724384 bp	2.75 %
LTR elements:	93226	89182901 bp	19.28 %
BEL/Pao	99	126812 bp	0.03 %
Ty1/Copia	38289	35526202 bp	7.68 %
Gypsy/DIRS1	48291	48464131 bp	10.48 %
Retroviral	169	26657 bp	0.01 %
DNA transposons	115702	34956801 bp	7.56 %
hobo-Activator	42955	10898694 bp	2.36 %
Tc1-IS630-Pogo	17010	2832609 bp	0.61 %
En-Spm	0	0 bp	0.00 %
MuDR-IS905	0	0 bp	0.00 %
PiggyBac	0	0 bp	0.00 %
Tourist/Harbinger	15732	6466298 bp	1.40 %
Other (Mirage, P-element, Transib)	0	0 bp	0.00 %
Rolling-circles	8512	3637025 bp	0.79 %
Unclassified:	564795	123001957 bp	26.59 %
Small RNA:	2514	403554 bp	0.09 %
Satellites:	579	199565 bp	0.04 %
Simple repeats:	138263	6032577 bp	1.30 %
Low complexity:	19530	983279 bp	0.21 %

Table S8. Statistical analysis of non-coding RNAs in *S. bowleyanae*

Class	number	totalLen	meanLen
Cis-reg;	4	183	45.75
Cis-reg; riboswitch;	1	135	135
Gene;	8	2372	296.5
Gene; antisense;	2	339	169.5
Gene; miRNA;	122	15520	127.2131148
Gene; rRNA;	253	117058	462.6798419
Gene; ribozyme;	10	769	76.9
Gene; snRNA; snoRNA; CD-box;	498	52119	104.6566265
Gene; snRNA; snoRNA; HACA-box;	42	5299	126.1666667
Gene; snRNA; splicing;	139	19984	143.7697842
Gene; tRNA;	881	65833	74.72531215
Intron;	68	7001	102.9558824

Table S9. Size and location of telomere satellite repeat arrays

Contig_Name	Contig_Size	Start_of_telo	End_of_telo	Size_of_telo	Teleomeric_repeat_sequence
chr2	73823406	1290104	1290460	356	TTTAGGG
chr2	73823406	59460614	59461575	961	AAACCCT
tig00006093	36004	26549	26931	382	GTTTAGG
tig00006093	36004	26539	26978	439	AGGGTTTAAGGTTTAGGGTTT

Table S10. Size and location of centromeric repeat sequences

seqid	start	end	period	copynum	consensusSize	pctmatch	pctindel	score	A	C	G	T	repeat_pattern
chr1	8071062	8073276	102	21.8	102	89	5	1274	37	9	13	39	1.77
chr1	15237597	15239466	102	18.4	102	70	8	1086	40	12	9	37	1.76
chr1	18622293	18624135	102	17.9	102	82	3	1423	35	10	14	38	1.81
chr1	28544321	28550022	102	55.8	102	94	0	5219	39	14	9	37	1.77
chr1	43954779	43956385	102	15.6	102	85	4	1214	41	12	10	35	1.77
chr1	44017335	44019139	102	17.6	102	85	4	1391	40	12	9	36	1.77
chr1	48750926	48752740	102	17.6	102	76	6	1209	40	13	10	35	1.79
chr1	55572644	55574770	102	21	101	82	6	1108	40	13	9	37	1.77
chr1	58243224	58245225	102	19.4	102	89	3	1698	36	9	12	40	1.77
chr1	63457842	63464974	102	71.2	102	95	2	6683	37	9	13	39	1.78
chr1	69972121	69973774	102	16.4	102	89	2	1391	37	9	13	40	1.77
chr1	73765394	73770908	102	54	102	75	8	2849	39	13	8	38	1.76
chr1	76462835	76468659	102	57.3	102	71	11	1883	39	13	9	38	1.76
chr1	77340785	77342207	102	13.9	102	94	0	1291	37	9	12	40	1.76
chr1	80538424	80540117	102	17.3	95	81	9	1181	40	11	9	39	1.73
chr2	3931826	3934448	102	25.6	102	88	2	2165	39	13	9	36	1.78
chr2	4691377	4694001	102	25.6	102	88	2	2162	39	13	9	36	1.78
chr2	6263320	6269413	102	59.9	102	60	13	1829	35	15	11	37	1.84
chr2	6773943	6775327	102	13.8	102	95	2	1278	37	9	13	39	1.78
chr2	8373756	8375212	102	14.1	102	82	5	1055	36	9	12	41	1.76
chr2	10628668	10631622	102	29.1	102	83	6	1618	40	12	9	36	1.76
chr2	10678079	10688316	102	101.4	100	43	17	1008	41	11	11	36	1.76
chr2	11459463	11461181	102	16.8	102	94	0	1565	38	8	12	40	1.75
chr2	12564912	12567035	102	20.7	102	82	3	1554	37	9	12	40	1.76
chr2	17096357	17098143	102	17.1	102	80	6	1235	37	9	11	40	1.75
chr2	17531086	17532936	102	18.1	102	81	5	1303	40	12	10	36	1.77
chr2	18011730	18013534	102	17.6	102	85	3	1385	40	13	9	36	1.77
chr2	21569873	21571881	102	19.5	102	86	2	1567	40	13	9	36	1.77
chr2	22007396	22009675	102	22.2	102	84	4	1667	37	9	12	40	1.76
chr2	22555987	22558503	102	24.6	102	89	3	2094	40	13	10	36	1.78
chr2	22797961	22799962	102	19.5	102	86	3	1568	40	13	9	36	1.78
chr2	24276734	24278117	102	13.5	102	89	3	1039	39	13	9	37	1.76
chr2	25262225	25263719	102	14.4	102	93	3	1326	40	13	9	37	1.76
chr2	26681835	26689211	102	72.6	102	94	1	6793	39	13	9	37	1.78
chr2	28617341	28619004	102	16.1	102	84	4	1250	36	9	12	41	1.76
chr2	30559069	30562186	102	30.5	101	93	1	2625	37	9	13	39	1.76

chr2	32698581	32700521	102	19	102	95	0	1833	37	9	14	38	1.79
chr2	33652902	33667309	102	141.1	102	43	18	1551	33	14	16	35	1.89
chr2	36863074	36864574	102	14.6	102	83	4	1083	41	12	9	36	1.77
chr2	40099737	40102214	102	24.2	102	74	9	1191	38	9	12	39	1.76
chr2	40328371	40329826	102	14.4	100	88	3	1108	40	11	9	37	1.76
chr2	47456912	47461928	102	49.1	102	55	13	1601	37	16	13	33	1.87
chr2	49245342	49248451	102	31	101	69	10	1179	39	12	9	38	1.76
chr2	52093826	52096065	102	22	102	95	0	2092	37	9	13	39	1.77
chr2	61320407	61322224	102	17.8	102	87	2	1439	39	13	9	38	1.77
chr2	62564924	62567049	102	21.1	102	84	7	1677	39	11	9	38	1.75
chr2	65664818	65666698	102	18.3	102	82	6	1426	38	9	12	39	1.76
chr2	66481494	66483272	102	17.4	102	92	2	1559	36	10	13	39	1.79
chr3	1307177	1311061	102	38	102	82	5	1659	40	13	9	37	1.77
chr3	1575658	1577734	102	20.2	102	83	4	1511	40	11	9	37	1.75
chr3	2225861	2228699	102	27.9	102	78	8	1728	39	13	8	37	1.77
chr3	4023034	4024900	102	18.2	102	90	2	1588	36	9	13	40	1.78
chr3	5800821	5802482	102	16.2	102	81	5	1101	37	8	12	41	1.74
chr3	10260458	10264579	102	40.7	102	70	10	1470	37	9	13	38	1.79
chr3	10351634	10354113	102	24.5	102	84	4	1862	36	9	11	42	1.73
chr3	14946021	14950292	102	41.7	102	72	8	1592	39	13	9	37	1.78
chr3	15242398	15244905	102	24.6	102	85	4	1903	40	12	10	36	1.77
chr3	28613361	28619432	102	59.3	102	95	1	5606	40	13	9	36	1.77
chr3	29060769	29062462	102	16.6	102	72	9	1002	40	12	10	37	1.76
chr3	34000336	34002189	102	18.5	101	81	8	1376	38	9	11	40	1.74
chr3	35258682	35260489	102	17.7	102	96	0	1691	37	9	13	40	1.76
chr3	35435176	35436652	102	14.1	102	84	5	1044	37	9	12	40	1.75
chr3	40409752	40413758	102	39.5	102	86	3	2924	40	13	9	37	1.76
chr3	44641203	44647964	102	65.9	102	58	12	2297	34	13	16	35	1.88
chr3	47688451	47697507	102	88.8	102	97	0	8659	37	10	13	38	1.8
chr3	47698462	47702045	102	35.1	102	75	8	2249	37	10	11	40	1.76
chr3	47892429	47897879	102	53.3	102	94	0	4987	39	13	9	37	1.77
chr3	49787697	49797061	102	91.8	102	97	0	8894	37	10	13	38	1.8
chr3	49798000	49801713	102	36.5	102	74	8	2233	37	10	11	40	1.76
chr3	53309849	53311929	102	20.2	102	73	11	1217	38	10	11	40	1.76
chr3	57456827	57458724	102	18.5	102	86	2	1489	38	9	12	39	1.76
chr3	57540478	57542464	102	19.4	102	83	4	1480	40	12	9	37	1.76
chr3	58673325	58675324	102	19.4	102	82	5	1448	40	12	9	36	1.76
chr4	763671	765924	102	22.2	102	91	1	1967	37	9	13	39	1.77

chr4	6256240	6257483	102	12.3	102	92	2	1066	37	9	12	40	1.76
chr4	7770197	7774951	102	46.7	102	84	5	2489	38	13	10	36	1.8
chr4	8022462	8024835	102	23.2	102	86	3	1117	37	9	12	40	1.75
chr4	9772919	9774402	101	14.7	101	95	0	1380	35	8	7	48	1.63
chr4	11133885	11135929	102	19.6	102	78	9	1310	40	12	10	36	1.77
chr4	19212037	19213640	102	15.6	102	84	4	1204	40	12	10	36	1.77
chr4	21896353	21899469	102	30.6	102	68	10	1058	39	13	9	37	1.77
chr4	22209445	22213207	102	36.7	102	81	8	1282	39	12	9	38	1.75
chr4	24414218	24416430	102	21.3	102	81	6	1514	40	12	9	36	1.77
chr4	24430932	24432987	102	20.2	102	75	8	1262	40	8	12	38	1.74
chr4	27191949	27193556	102	15.6	102	82	3	1181	41	12	9	36	1.76
chr4	27695072	27697230	102	21.1	102	88	3	1761	40	12	9	37	1.76
chr4	27997754	28001683	102	38.5	102	93	2	3342	37	9	13	39	1.77
chr4	28038013	28041938	102	38.5	102	93	1	3445	39	13	8	38	1.76
chr4	30656901	30659330	102	23.9	102	92	1	1993	37	9	13	39	1.78
chr4	30758662	30760632	102	19.1	102	82	7	1388	39	12	9	38	1.75
chr4	31166890	31168872	102	19.2	102	82	7	1451	38	9	12	39	1.74
chr4	31385839	31387555	102	16.7	102	80	6	1255	37	9	12	40	1.75
chr4	35173551	35176223	102	26.3	102	86	4	2136	39	12	9	37	1.77
chr4	35821708	35824511	102	27.3	102	87	2	2281	39	12	9	38	1.76
chr4	36831985	36834141	102	21.1	102	83	4	1605	40	12	10	36	1.77
chr4	37214219	37216847	102	25.9	102	80	6	1038	40	13	9	37	1.76
chr4	38218115	38219409	102	12.7	102	87	3	1032	40	8	11	39	1.72
chr4	41033556	41035319	102	17.2	102	88	2	1444	37	9	12	40	1.76
chr4	44606853	44610172	102	32.6	102	81	5	1849	40	13	9	36	1.76
chr4	46201009	46204262	102	32.1	101	78	7	1297	39	13	9	37	1.77
chr4	48945120	48946910	102	17.6	102	95	0	1665	37	9	13	39	1.77
chr4	49556294	49558108	102	17.8	102	86	3	1437	36	10	12	40	1.76
chr4	51389887	51391425	102	14.9	102	79	6	1026	39	13	9	37	1.77
chr4	51606323	51607931	102	15.6	102	77	8	1036	39	13	9	38	1.76
chr4	52415925	52417729	102	17.7	99	84	5	1041	39	13	10	36	1.78
chr4	57925279	57927559	102	22.1	102	90	2	1917	36	9	12	40	1.77
chr5	553655	556919	102	32.2	99	84	4	2043	39	14	8	37	1.77
chr5	9243145	9245187	102	19.7	102	76	8	1305	39	13	9	37	1.76
chr5	9607982	9611494	102	34.5	102	80	7	1449	38	8	12	39	1.75
chr5	9628580	9629934	102	13.4	102	90	2	1113	38	14	9	37	1.77
chr5	14986401	14992041	102	57.5	102	66	11	2763	38	9	13	38	1.78
chr5	16992333	16996102	102	36.9	102	92	2	3349	39	13	9	37	1.77

chr5	17354550 17356347	102	17.6	102	83	4	1331 40 13 9 36	1.77
chr5	17710020 17711633	102	15.7	101	84	4	1175 39 12 10 36	1.78
chr5	19741571 19743725	102	21.2	100	82	6	1097 40 13 9 37	1.76
chr5	20201405 20203124	102	16.9	102	85	4	1374 37 9 12 40	1.76
chr5	21137410 21140460	102	29.9	102	74	9	1731 38 8 12 39	1.75
chr5	22907109 22909217	102	20.7	102	82	5	1550 40 12 9 37	1.76
chr5	24245049 24249446	102	45.2	99	55	16	1232 40 9 11 39	1.73
chr5	29368157 29371748	102	35.3	99	88	4	2763 39 13 9 37	1.77
chr5	29575304 29578855	102	34.6	102	92	2	3109 40 13 9 36	1.77
chr5	32142058 32144939	102	28.1	102	92	1	2523 36 9 13 40	1.78
chr5	34660037 34662131	102	20.3	105	85	4	1086 40 13 9 36	1.77
chr5	35340368 35342363	102	19.4	102	84	4	1401 39 13 10 36	1.79
chr5	36581758 36584690	102	28.6	102	89	2	2443 39 13 9 36	1.78
chr5	37039848 37042318	102	24.7	102	87	5	2056 39 8 12 38	1.75
chr5	37807988 37814195	102	60.9	102	96	0	5885 37 9 13 39	1.78
chr5	38074720 38076649	102	18.9	102	94	0	1771 40 13 9 36	1.77
chr5	39621329 39624176	102	27.9	102	71	10	1669 35 10 13 41	1.79
chr5	40115747 40119288	102	35.4	102	82	9	2712 40 12 9 38	1.75
chr6	11643714 11645695	102	19.5	102	85	3	1493 38 9 12 39	1.75
chr6	11980718 11982625	102	18.7	102	95	0	1762 37 9 13 39	1.76
chr6	13026698 13029914	102	31.6	102	96	0	3059 37 9 13 39	1.78
chr6	20282638 20285467	102	27.6	102	87	2	2291 40 12 9 38	1.75
chr6	37386392 37388504	102	20.7	102	96	0	1969 37 9 13 39	1.77
chr6	38891612 38893416	102	17.7	102	95	0	1671 37 9 12 40	1.77
chr6	41679541 41681963	102	23.8	102	89	2	2052 37 9 13 40	1.77
chr7	3813157 3815634	102	24.2	102	74	9	1191 38 9 12 39	1.76
chr7	5187523 5189687	102	21.1	102	87	3	1665 38 9 13 39	1.77
chr7	19193685 19195720	102	19.9	102	76	7	1309 40 12 9 37	1.76
chr7	19517826 19521987	102	40.8	102	90	1	3593 36 9 14 40	1.78
chr7	21140956 21143828	102	28.5	99	80	6	1882 39 14 9 37	1.77
chr7	27401682 27404905	102	32.1	98	75	8	1251 38 10 12 38	1.78
chr7	31702403 31704603	102	21.7	102	88	1	1802 39 9 11 40	1.73
chr7	33131336 33138659	102	72.7	100	50	16	1050 39 10 13 36	1.8
chr8	6083313 6085583	102	22.1	102	88	2	1865 36 9 13 40	1.77
chr8	6738137 6740001	102	18.2	102	79	5	1290 40 12 9 37	1.75
chr8	11412085 11413906	102	17.8	102	95	0	1696 37 9 13 39	1.77
chr8	20849453 20851472	102	19.6	102	86	3	1579 40 13 9 36	1.77
chr8	21097627 21100203	102	25.3	97	83	6	1226 39 14 9 36	1.78

chr8	21177896	21179560	102	16.3	102	82	6	1227	39	8	12	40	1.73
chr8	27078946	27081423	102	24.2	102	74	9	1191	38	9	12	39	1.76
chr8	28934631	28936748	102	20.6	102	87	3	1695	40	12	9	36	1.76
chr8	31199542	31201310	102	17.5	102	72	8	1025	36	9	11	42	1.74
chr8	31325330	31326899	102	15.3	102	79	6	1030	43	11	9	35	1.73
tig00011746	53387	56356	102	29	102	93	1	2661	36	9	13	40	1.77

Table S11. Transcription factors

number	class
1069	protein kinase family protein
665	pentatricopeptide (PPR) repeat-containing protein
461	Disease resistance protein (TIR-NBS-LRR class)
302	FAR1-related sequence 5
130	basic helix-loop-helix (bHLH) DNA-binding superfamily protein
113	Integrase-type DNA-binding superfamily protein
314	myb transcriptional regulator family protein
87	C2H2-like zinc finger protein
85	heat shock transcription factor
74	NAC (No Apical Meristem) domain transcriptional regulator superfamily protein
72	WRKY family transcription factor
70	Homeodomain-like superfamily protein
53	AP2/B3-like transcriptional factor family protein
43	Basic-leucine zipper (bZIP) transcription factor family protein
40	LOB domain-containing protein 1
37	GRAS family transcription factor
35	Zinc finger C-x8-C-x5-C-x3-H type family protein
30	K-box region and MADS-box transcription factor family protein
29	Duplicated homeodomain-like superfamily protein
29	WD-40 repeat family protein / zfw4 protein (ZFWD4)
24	Plant regulator RWP-RK family protein
20	B-box type zinc finger protein with CCT domain
18	basic leucine-zipper 44
18	TCP family transcription factor
17	Transcriptional factor B3 family protein
16	Dof-type zinc finger DNA-binding family protein
16	CCCH-type zinc finger protein with ARM repeat domain
15	Homeobox-leucine zipper family protein / lipid-binding START domain-containing protein
11	Lateral organ boundaries (LOB) domain family protein
10	C2H2-type zinc finger family protein
10	auxin response factor 9
8	Homeobox-leucine zipper protein family
8	Homeodomain-like transcriptional regulator
8	Homeodomain-like/winged-helix DNA-binding family protein
6	MADS-box transcription factor family protein

Table S20 MYB genes identified of *S. bowleyanae*

NDS_011002	NDS_047995	NDS_060514	NDS_068012
NDS_071783	NDS_063000	NDS_035653	NDS_036749
NDS_056507	NDS_027591	NDS_028617	NDS_029118
NDS_020811	NDS_064062	NDS_028779	NDS_029127
NDS_037736	NDS_047962	NDS_059362	NDS_008133
NDS_013597	NDS_065863	NDS_059332	NDS_047990
NDS_048787	NDS_027207	NDS_059339	NDS_052060
NDS_068297	NDS_046810	NDS_059165	NDS_040972
NDS_018864	NDS_046809	NDS_068786	NDS_051964
NDS_037537	NDS_021103	NDS_059369	NDS_043165
NDS_016793	NDS_061205	NDS_035024	NDS_060541
NDS_035545	NDS_046767	NDS_035318	NDS_048007
NDS_034392	NDS_046765	NDS_019100	NDS_037069
NDS_046379	NDS_004904	NDS_017223	NDS_047998
NDS_031692	NDS_009670	NDS_045291	NDS_020902
NDS_071339	NDS_009554	NDS_036906	NDS_058667
NDS_071177	NDS_063745	NDS_036565	NDS_063173
NDS_036344	NDS_035242	NDS_031650	NDS_014090
NDS_050419	NDS_034572	NDS_046773	NDS_068723
NDS_032552	NDS_037067	NDS_032841	NDS_040978
NDS_021689	NDS_042075	NDS_057640	NDS_016497
NDS_021738	NDS_057169	NDS_057642	NDS_043929
NDS_060429	NDS_015179	NDS_001307	NDS_043064
NDS_017222	NDS_061047	NDS_016574	NDS_043172
NDS_059184	NDS_011789	NDS_016526	NDS_049116
NDS_003707	NDS_066011	NDS_032801	NDS_067378
NDS_014405	NDS_017338	NDS_059809	NDS_016659
NDS_037314	NDS_059547	NDS_022935	NDS_045648
NDS_014150	NDS_065086	NDS_021420	NDS_054639
NDS_037665	NDS_037243	NDS_058348	NDS_066985
NDS_047437	NDS_048937	NDS_058254	NDS_045261
NDS_065852	NDS_065842	NDS_054916	NDS_045274
NDS_049541	NDS_045349	NDS_055258	NDS_042230
NDS_013416	NDS_009231	NDS_063728	NDS_071631
NDS_061813	NDS_005356	NDS_036476	NDS_044841
NDS_014332	NDS_031046	NDS_031307	NDS_046112
NDS_019610	NDS_037319	NDS_007573	NDS_044765
NDS_019791	NDS_033831	NDS_065497	NDS_044806
NDS_013689	NDS_017617	NDS_020589	NDS_016023
NDS_065918	NDS_060196	NDS_065624	NDS_035934
NDS_046775	NDS_008498	NDS_035387	NDS_008275
NDS_055025	NDS_058967	NDS_017235	NDS_010377

NDS_044715	NDS_061524	NDS_069396	NDS_036780
NDS_031137	NDS_036230	NDS_046906	NDS_039243
NDS_002652	NDS_036242	NDS_009437	NDS_009027
NDS_046484	NDS_059218	NDS_046735	NDS_006627
NDS_014388	NDS_035508	NDS_033724	NDS_060621
NDS_014442	NDS_034761	NDS_070188	NDS_051785
NDS_015998	NDS_015627	NDS_005424	NDS_009895
NDS_041491	NDS_067623	NDS_020503	NDS_036517
NDS_060835	NDS_064652	NDS_047974	NDS_018479
NDS_009967	NDS_006427	NDS_016916	NDS_041996
NDS_037287	NDS_048967	NDS_056393	NDS_027794
NDS_061299	NDS_016038	NDS_021357	NDS_018249
NDS_036717	NDS_044312	NDS_058915	NDS_018285
NDS_057038	NDS_016228	NDS_057267	NDS_021362
NDS_062938	NDS_063073	NDS_016493	NDS_064379
NDS_034472	NDS_015900	NDS_058103	NDS_073039
NDS_069352	NDS_044296	NDS_049127	NDS_025114
NDS_069505	NDS_059179	NDS_025664	NDS_049236
NDS_037313	NDS_035652	NDS_000484	NDS_065138
NDS_041643	NDS_059159	NDS_044840	NDS_010367
NDS_017185	NDS_034911	NDS_035900	NDS_051186
NDS_017378	NDS_021466	NDS_010788	NDS_068527
NDS_069507	NDS_072385	NDS_001061	NDS_043034
NDS_069354	NDS_072376	NDS_001112	NDS_036790
NDS_060112	NDS_072391	NDS_017878	NDS_060540
NDS_060155	NDS_072371	NDS_046908	NDS_019416
NDS_018511	NDS_029677	NDS_046646	NDS_064256
NDS_021555	NDS_036443	NDS_033795	NDS_059517
NDS_017725	NDS_046811	NDS_019809	NDS_062603
NDS_017778	NDS_058084	NDS_036028	NDS_035196
NDS_032042	NDS_058711	NDS_036107	NDS_056757
NDS_032048	NDS_047250	NDS_048842	NDS_066226
NDS_017690	NDS_019456	NDS_019709	NDS_016026
NDS_043743	NDS_014519	NDS_058876	NDS_050500
NDS_036746	NDS_022852	NDS_058756	NDS_060771
NDS_070387	NDS_065289	NDS_041880	
NDS_043715	NDS_029025	NDS_046774	

Table S21 MYB genes identified of *S. miltiorrhiza*

SMil_00020204	SMil_00025173	SMil_00028207	SMil_00008646
SMil_00015046	SMil_00014482	SMil_00020647	SMil_00012676
SMil_00027448	SMil_00000148	SMil_00009429	SMil_00005696
SMil_00004525	SMil_00001087	SMil_00002802	SMil_00000711
SMil_00014385	SMil_00026142	SMil_00006206	SMil_00028805
SMil_00013392	SMil_00007533	SMil_00024821	SMil_00000869
SMil_00017960	SMil_00011496	SMil_00030390	SMil_00021060
SMil_00001492	SMil_00006207	SMil_00011430	SMil_00006938
SMil_00018864	SMil_00007150	SMil_00023218	SMil_00030164
SMil_00014742	SMil_00015504	SMil_00004153	SMil_00002362
SMil_00023422	SMil_00006537	SMil_00011018	SMil_00000662
SMil_00021683	SMil_00011213	SMil_00029521	SMil_00023774
SMil_00001415	SMil_00004434	SMil_00002979	SMil_00017333
SMil_00016215	SMil_00012368	SMil_00017633	SMil_00011521
SMil_00000930	SMil_00014469	SMil_00011306	SMil_00014034
SMil_00008567	SMil_00018132	SMil_00018386	SMil_00029061
SMil_00024304	SMil_00028099	SMil_00005124	SMil_00002860
SMil_00029184	SMil_00006021	SMil_00015463	SMil_00003434
SMil_00020448	SMil_00004890	SMil_00026352	SMil_00008800
SMil_00009782	SMil_00030163	SMil_00017405	SMil_00010272
SMil_00030357	SMil_00019731	SMil_00004725	SMil_00011788
SMil_00012324	SMil_00002232	SMil_00022618	SMil_00023849
SMil_00004760	SMil_00026708	SMil_00008075	SMil_00019476
SMil_00010893	SMil_00029546	SMil_00011689	SMil_00024328
SMil_00014745	SMil_00012415	SMil_00013761	SMil_00013510
SMil_00028728	SMil_00002641	SMil_00023813	SMil_00030103
SMil_00021779	SMil_00008992	SMil_00022510	SMil_00016985
SMil_00018615	SMil_00000278	SMil_00013639	SMil_00020612
SMil_00019440	SMil_00015099	SMil_00019332	SMil_00025248
SMil_00008487	SMil_00007824	SMil_00006337	SMil_00001912
SMil_00027798	SMil_00019980	SMil_00005799	SMil_00009293
SMil_00005564	SMil_00009256	SMil_00008908	SMil_00009758
SMil_00004597	SMil_00011948	SMil_00004324	SMil_00005233
SMil_00020416	SMil_00010950	SMil_00004555	SMil_00004253
SMil_00020649	SMil_00004577	SMil_00029390	SMil_00024858
SMil_00012892	SMil_00003637	SMil_00008909	SMil_00011590
SMil_00017546	SMil_00026819	SMil_00012619	SMil_00008452
SMil_00015286	SMil_00001970	SMil_00006772	SMil_00003669
SMil_00024671	SMil_00026399	SMil_00028767	SMil_00012942
SMil_00023725	SMil_00019561	SMil_00022686	SMil_00000082
SMil_00011037	SMil_00001784	SMil_00004137	SMil_00007552
SMil_00029973	SMil_00021571	SMil_00021741	SMil_00012145

SMil_00004342	SMil_00012589	SMil_00020705	SMil_00018838
SMil_00011278	SMil_00009856	SMil_00020263	SMil_00018915
SMil_00000866	SMil_00009590	SMil_00004694	SMil_00008421
SMil_00026876	SMil_00013445	SMil_00012128	SMil_00012153
SMil_00005650	SMil_00012728	SMil_00011767	SMil_00010717
SMil_00007416	SMil_00003712	SMil_00012967	SMil_00006739
SMil_00004057	SMil_00021464	SMil_00019281	SMil_00026235
SMil_00015028	SMil_00029058	SMil_00017348	SMil_00001178
SMil_00017398	SMil_00030244	SMil_00024865	SMil_00009993
SMil_00028851	SMil_00008224	SMil_00006334	SMil_00011126
SMil_00007414	SMil_00010353	SMil_00002993	SMil_00005241
SMil_00018221	SMil_00017133	SMil_00022963	SMil_00016032
SMil_00003523	SMil_00000634	SMil_00004118	SMil_00027545
SMil_00024885	SMil_00001785	SMil_00022262	SMil_00025375
SMil_00017692	SMil_00015104	SMil_00024342	SMil_00027296
SMil_00010264	SMil_00027170	SMil_00012675	SMil_00020185
SMil_00003011	SMil_00023956	SMil_00008695	SMil_00000117
SMil_00005073	SMil_00019941	SMil_00009290	SMil_00017985
SMil_00009775	SMil_00008579	SMil_00007574	SMil_00004782
SMil_00008183	SMil_00016503	SMil_00017002	SMil_00019636
SMil_00019405	SMil_00016717	SMil_00002826	SMil_00024722
SMil_00003526	SMil_00002627	SMil_00020648	SMil_00015339
SMil_00018249	SMil_00001910	SMil_00013897	SMil_00002825
SMil_00001911	SMil_00008639	SMil_00005578	SMil_00018998
SMil_00009254	SMil_00021150	SMil_00014065	SMil_00017579
SMil_00015575	SMil_00009781	SMil_00014039	
SMil_00001088	SMil_00012943	SMil_00021805	

Table S22 MYB genes identified of *A. thaliana*

At3g27920	At2g31180	At4g12350	At2g23290	At5g62320	At1g15720
At3g09230	At3g23250	At5g16600	At3g24310	At4g32730	At1g17460
At3g12820	At5g15310	At5g67300	At1g56160	At4g00540	At1g17520
At2g25230	At3g61250	At3g48920	At4g37260	At3g09370	At1g49950
At2g32460	At4g25560	At5g12870	At4g05100	At5g11510	At1g72650
At4g21440	At5g52260	At1g18710	At1g56650	At5g02320	At3g12560
At1g63910	At2g47190	At3g46130	At5g07700	At1g01060	At3g46590
At2g26950	At1g66230	At5g54230	At3g50060	At1g01520	At3g49850
At1g69560	At3g27810	At3g13540	At5g49620	At1g18330	At4g12670
At3g01140	At5g40430	At1g57560	At4g13480	At1g70000	At5g03780
At3g02940	At5g40330	At1g18570	At1g35515	At1g74840	At5g59430
At3g06490	At5g40350	At1g17950	At5g56110	At2g46830	At5g67580
At3g55730	At2g39880	At5g65230	At2g26960	At3g09600	At1g19510
At3g62610	At3g13890	At1g73410	At5g52600	At3g10590	At1g75250
At3g29020	At3g53200	At4g01680	At3g08500	At3g16350	At2g21650
At5g49330	At5g61420	At5g17800	At3g49690	At4g01280	At4g39250
At1g48000	At5g07690	At3g01530	At4g22680	At5g02840	At1g49010
At1g66370	At1g22640	At1g16490	At5g26660	At5g37260	At2g38090
At1g66380	At3g28910	At5g59780	At4g37780	At5g47390	At3g11280
At5g40360	At1g74650	At4g09460	At2g02820	At5g52660	At5g01200
At1g25340	At4g34990	At1g08810	At5g39700	At5g56840	At5g05790
At1g26780	At5g06100	At1g09540	At5g16770	At1g01380	At5g08520
At5g58850	At5g60890	At1g68320	At1g66390	At1g71030	At5g58900
At2g47460	At3g28470	At1g79180	At2g37630	At2g30420	At2g13960
At5g55020	At5g57620	At5g11050	At5g10280	At2g46410	At2g13960
At3g30210	At5g23000	At3g11440	At1g34670	At4g01060	At1g09770
At1g74080	At2g36890	At5g14750	At3g47600	At5g53200	At3g18100
At5g35550	At4g17780	At3g12720	At1g74430	At1g09710	At5g41020
At1g14350	At4g38620	At5g65790	At5g62470	At1g58220	
At3g60460	At5g14340	At4g33450	At4g26930	At1g06910	
At1g06180	At4g28110	At2g16720	At4g18770	At1g07540	

Table S23 Identification of candidate functional genes related to salvianolic acid B biosynthesis in *S. bowleyanae*.

Gene types	Gene_name	Gene ID	Identity of <i>S. bowleyanae</i> and <i>S. miltiorrhiza</i>	Len (a.a)	Root_FPKM	stem_FPKM	Leaf_FPKM
PAL	SbPAL1	NDS_057588	100 %	711	39,456	12,446	9,917
	SbPAL2	NDS_036111	90.58%	708	13116	8130	4737
	SbPAL3	NDS_036032	99.58%	760	27815	13933	8588
	SbPAL4	NDS_057596	99.86 %	704	27334	7857	6828
C4H	SbC4H	NDS_063177	99.60 %	504	24949	12307	8580
4CL	Sb4CL1	NDS_017630	99.63%	535	67	189	66
	Sb4CL2	NDS_017642	99.25%	531	42	98	97
	Sb4CL3	NDS_004503	99.58%	480	209	30	12
RAS	SbRAS	NDS_017424	99.77%	427	9806	7643	6473
CYP450	SbCYP98A75	NDS_028441	100%	509	8813	5191	4420
	SbCYP98A77	NDS_028437	97.05%	508	9512	1314	1558
	SbCYP98A78	NDS_010831	99.02%	508	7525	3610	5635
LAC	SbLAC4	NDS_072611	88.85%	559	28660	13231	8735
TAT	SbTAT	NDS_053053	100%	411	11718	10015	17511
HPPR	SbHPPR	NDS_009817	99.36%	366	4728	3500	3203
HPPD	SbHPPD	NDS_014643	97.30%	481	852	446	406

Table S24 Primers for genes validated by quantitative real-time PCR (qRT-PCR)

Genes	Sequences 5'-3'
GDAPH-F	CCGTTCATCACCGTTGACTACA
GDAPH-R	AACAGTCACAGGCTTTTCACCAA
CYP71A1-F1	AATGCTGCTAAAGTTGGGAAAA
CYP71A1-R1	AGTAGGGGCCGTAGGGAGA
CYP92B29-F	GGTGCCTAAGATAGCCGTGAC
CYP92B29-R	TCCCCGACAGTGATTTGAGAC
CYP98A77-F	GGATTTGATTTGGCGGACTA
CYP98A77-R	CCAAATACCAGCCTTGTATGTTGT
CYP98A78-F	CACTGCACTAAGCCTGAAAACAAG
CYP98A78-R	GCTGAACCAAGGGAGGAACTCT
CYP98A75-F	CCTGATTTGGCGGACTATG
CYP98A75-R	GAATGCAATTCCTGTAATGTTGTTG
LAC4-F	CGCTGAATGGTGGAAATCG
LAC4-R	GATTAGGCGGAGGAGGTATGAT