Supplemental Information

BES1 Functions as the Co-regulator of D53-like SMXLs to Inhibit *BRC1* Expression in Strigolactone-Regulated Shoot Branching in *Arabidopsis*

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Supplemental Figures and Tables

BES1 functions as co-regulator of D53-like SMXLs to inhibit *BRC1* expression in strigolactone-regulated shoot branching in *Arabidopsis*

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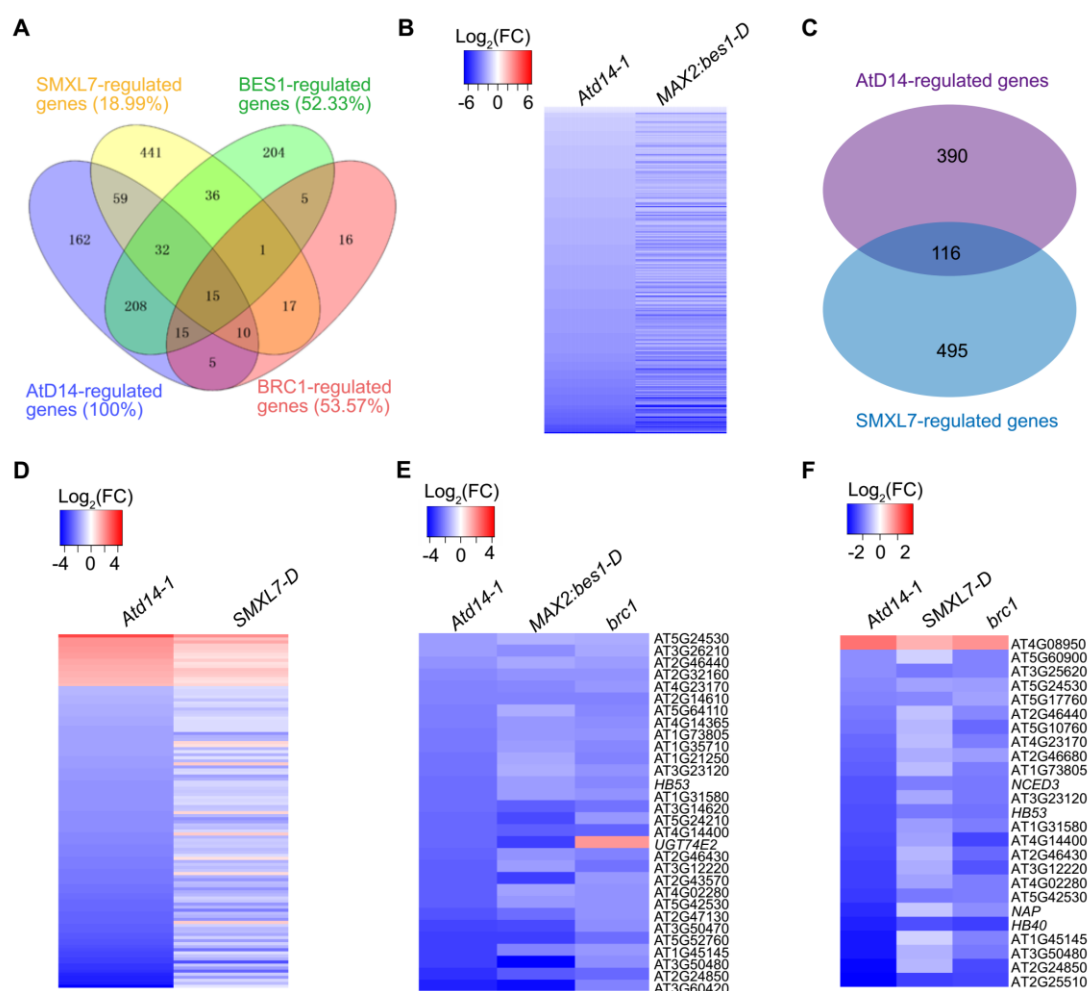
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The supplemental file includes 10 Supplemental Figures and 7 Supplemental Tables.

SUPPLEMENTAL FIGURES

Supplemental Figure 1. Differential expression genes in the *Atd14-1*, *SMXL7-D*, *MAX2:bes1-D* and *brc1* plants, Related to Figure 1.

(A) Percentage in bracket indicated the portion of differential expression genes in *Atd14-1* plants, co-regulated by SMXL7, BES1 and BRC1, respectively, Related to Figure 1.

(B) Heatmap displayed the expression profiles of genes co-regulated by BES1 and AtD14. The colored bars indicated the original fold change values transformed by log2 regression.

(C) Venn diagram of the number of differentially expressed genes in buds of *Atd14-1*, and *SMXL7-D*, compared to Col-0.

(D) Heatmap showed the expression profiles of genes co-regulated by SMXL7 and AtD14. The colored bars indicated the original fold change values transformed by log2 regression.

(E) Heatmap showed the expression profiles of genes co-regulated by AtD14, BES1 and BRC1. The colored bars indicated the original fold change values transformed by log2 regression.
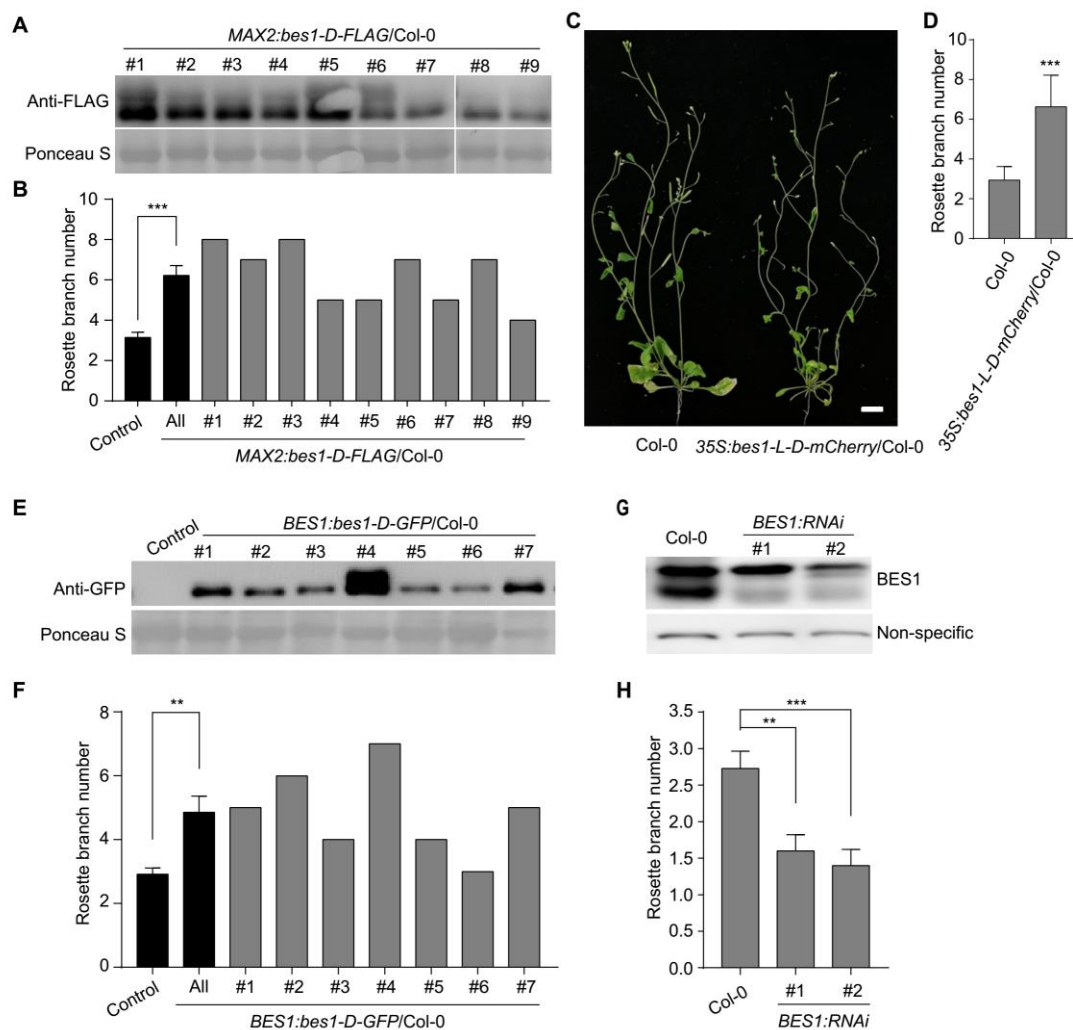
(F) Heatmap showed the expression profiles of genes co-regulated by AtD14, SMXL7 and BRC1. The colored bars indicated the original fold change values transformed by

log$_2$ regression.
Differentially expressed genes in buds were obtained from cuffdiff analysis with q value < 0.05.

Supplemental Figure 2. BES1 plays an important role in branching in
Arabidopsis, **Related to Figure 1.**

(A) The protein level of BES1-FLAG in leaves of *MAX2:bes1-D-FLAG*/Col-0
transgenic T1 lines was detected by anti-FLAG anti-body. Number #1-9 represented 9
independent T1 lines of *MAX2:bes1-D-FLAG*/Col-0.

(B) The corresponding rosette branch numbers of *MAX2:bes1-D-FLAG*/Col-0 lines in
(A) were collected after their completed life cycle. The control was transgenic plants
expressed empty vector (sample number of the Control was 12), "All" means all of
the T1 lines, number #1-9 were indicated in (A).

(C&D) The enhanced branching phenotype(C) and rosette branch numbers (D) of
35S:bes1-L-D-mCherry/Col-0 (sample number was 8) and Col-0 (sample number was
16). Branch numbers were collected after they completed their life cycle.

(E) The protein level of BES1-GFP in *BES1:bes1-D-GFP*/Col-0 transgenic T1 lines
was detected by anti-GFP anti-body. Number #1-7 represented 7 independent T1 lines
of *BES1:bes1-D-GFP*/Col-0.

(F) The corresponding rosette branch numbers of these *BES1:bes1-D-GFP*/Col-0
lines in (E) were collected after their complete life cycle. The control was transgenic

plants expressed empty vector (the sample number was 8), "All" means all of the T1 lines, number #1-7 were indicated in (E)

(G) The protein level of endogenous BES1 detected by anti-BES1 anti-body of 2 independent *BES1-RNAi* lines.

(H) The corresponding rosette branch numbers of wild type Col-0 and these 2 independent *BES1-RNAi* lines 6 weeks after transplant on soil (sample numbers were 11, 10 and 10, respectively).

Data were means ± SE. *P* values in (B, D, F, H) were determined by Student's *t*-test; *** $P < 0.001$; ** $P < 0.01$.

BES1p-L:GUS   BES1p-S:GUS
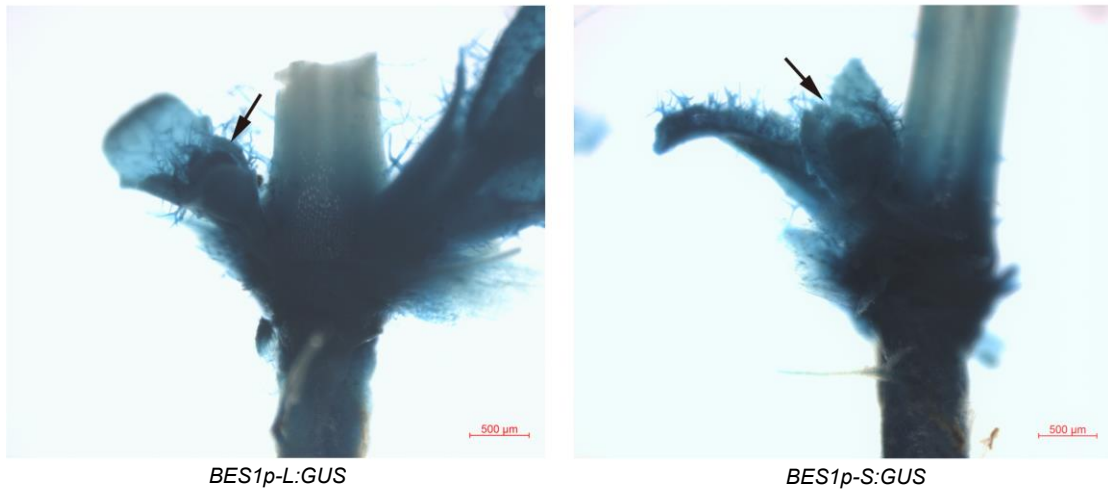
Supplemental Figure 3. Both of the *BES1p-L:GUS* and *BES1p-S:GUS* are highly expressed in the axillary buds. Related to Figure 1.

Buds wrapped by young leaves are less than 0.5 mm and pointed by black arrows. Scar bar represent 500 μm.
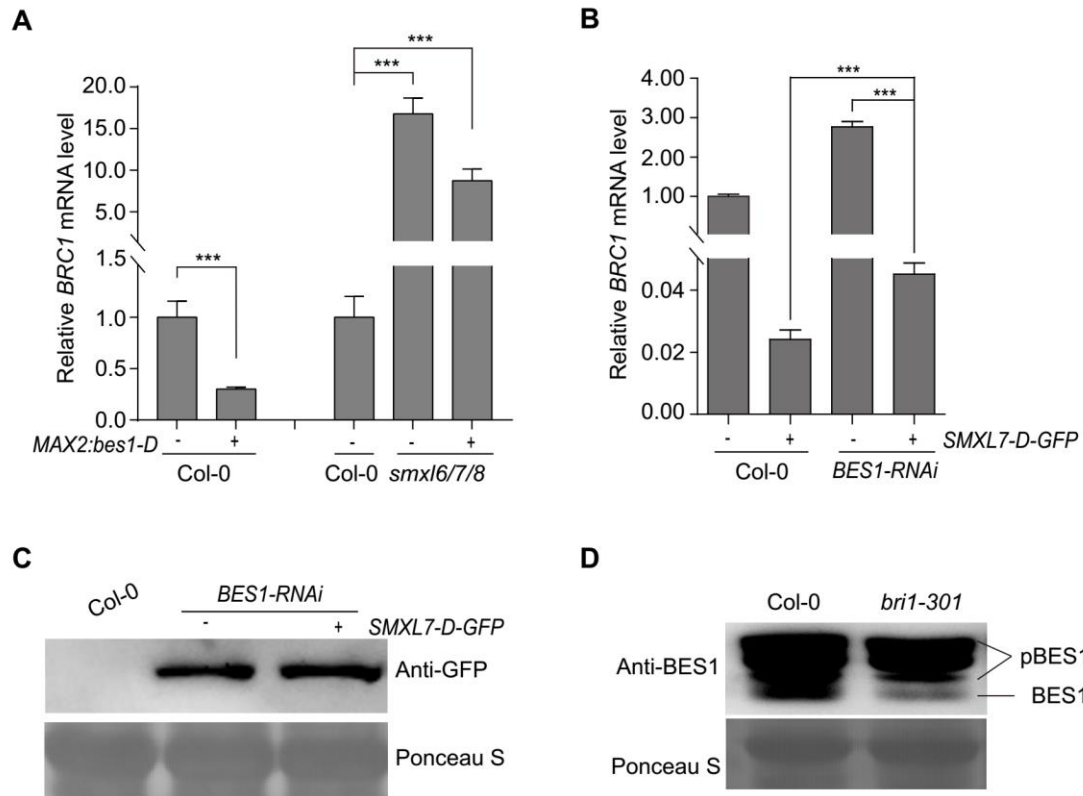
Supplemental Figure 4. Identification of the related protein and expression levels in transgenic plants, Related to Figure 1, 3 and 4.

(A) The transcription level of *BRC1* in *MAX2:bes1-D-FLAG* in Col-0 and *smxl6/7/8* background, and Col-0, *smxl6/7/8* lines, respectively.

(B) The transcription level of *BRC1* in *SMXL7-D-GFP*/Col-0 and *SMXL7-D-GFP /BES1-RNAi* background, Col-0 and *BES1-RNAi* lines.

(C) Immunoblotting revealed SMXL7-GFP levels was similar in *SMXL7-D-GFP/*Col-0 and *SMXL7-D-GFP/BES1-RNAi* transgenic lines using anti-GFP antibody. Ponceau S staining showed that equivalent amounts of loaded proteins were analyzed.

(D) Immunoblotting revealed the phosphorylated status of BES1 in Col-0 and *bri1-301* seedlings by endogenous anti-BES1 antibody. Ponceau S staining showed that equivalent amounts of loaded proteins were analyzed.

Data were means ± SD (n = 3). *P* values in (A and B) were determined by Student's *t*-test; *** $P < 0.001$.
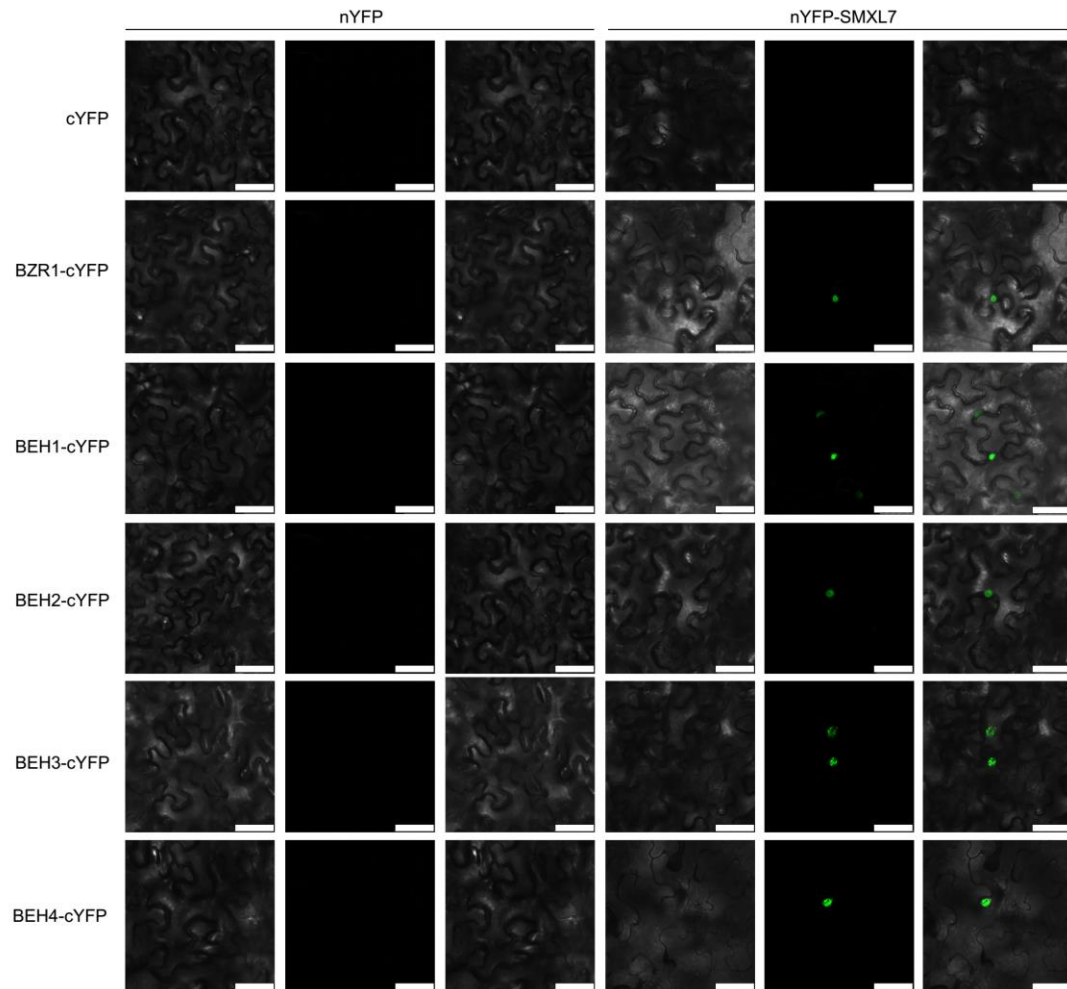
Supplemental Figure 5. SMXL7 interacts with the homologs of BES1, Related to Figure 2.

In bimolecular fluorescence complementation assays, SMXL7 interacted with the homologs of BES1. nYFP was fused to the N-terminus of SMXL7, and cYFP was linked to the C-terminus of BES1 homologs, including BZR1, BEH1, BEH2, BEH3, and BEH4, which were transiently co-expressed with nYFP-SMXL7 in *N. benthamiana* leaves. Scale bars represented 50 μm.
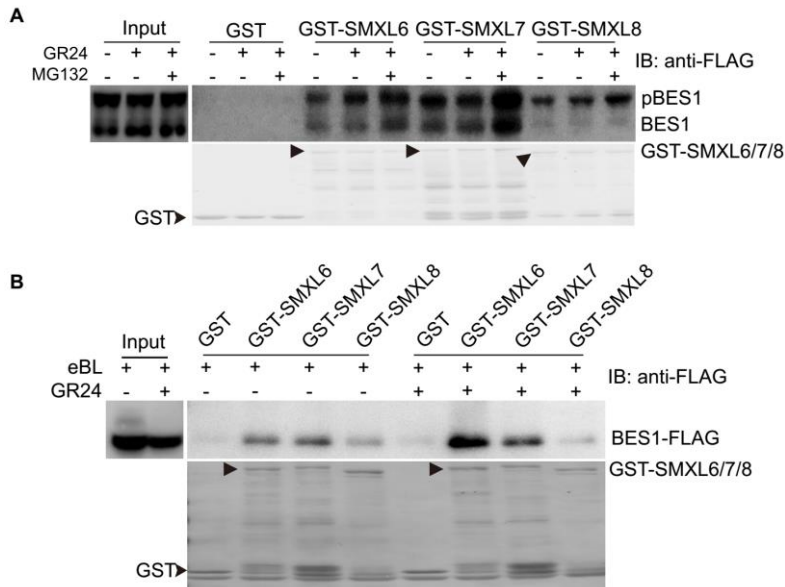
Supplemental Figure 6. BRs and SLs have no effect on the interaction between BES1 and SMXL7, Related to Figure 2.

(A) The interaction between BES1 and D53-like SMXLs was independent of GR24 treatment. 5 μM GR24 and 50 μM MG132 were added in the incubation of GST recombinant proteins and protein extraction of *35S:BES1-FLAG*/Col-0 plants.

(B) The interaction between BES1 and D53-like SMXLs was independent of eBL, and eBL plus GR24 treatment. The semi-*in vivo* pull-down assay used GST recombinant proteins, and protein extraction was from seedlings of *35S:BES1-FLAG*/Col-0 plants. 5 μM eBL and 5 μM eBL plus 5 μM GR24 treatment for 3 hrs were performed on the seedling of *35S:BES1-FLAG*/Col-0 plants before protein extraction and during the incubation of GST recombinant proteins and protein extraction of *35S:BES1-FLAG*/Col-0 plants.
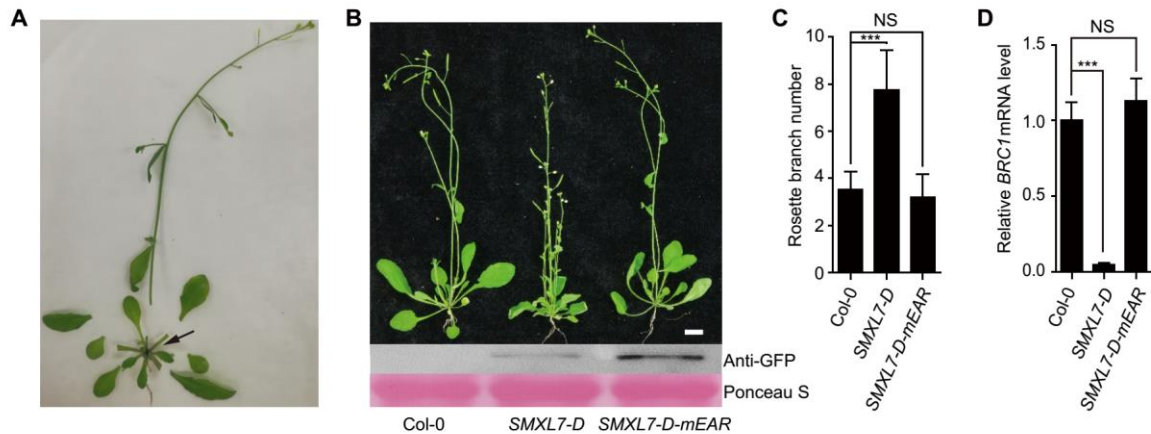
Supplemental Figure 7. The EAR motif of SMXLs is required to inhibit *BRC1* expression. Related to Figure 3.

(**A**) the shoot-root junction region of plants contained rosette buds without rosette leaves and large bud leaves used in ChIP assays (Black arrow pointed).

(**B&C**) Phenotypes and quantification of rosette branch number of Col-0, *SMXL7-D* and *SMXL7-D-mEAR* transgenic lines. bar = 1cm, (Col-0 (n = 15), *SMXL7-D* (n = 19) and *SMXL7-D-mEAR* (n = 26)).

(**D**) Relative expression levels of *BRC1* in Col-0, *SMXL7-D* and *SMXL7-D-mEAR* were determined by qRT-PCR.

Data were means ± SE in (C); data were means ± SD (n = 3) in (D). *P* values in (C and D) were determined by Student's *t*-test; *** *P* < 0.001; non-significant (NS), *P* > 0.05.
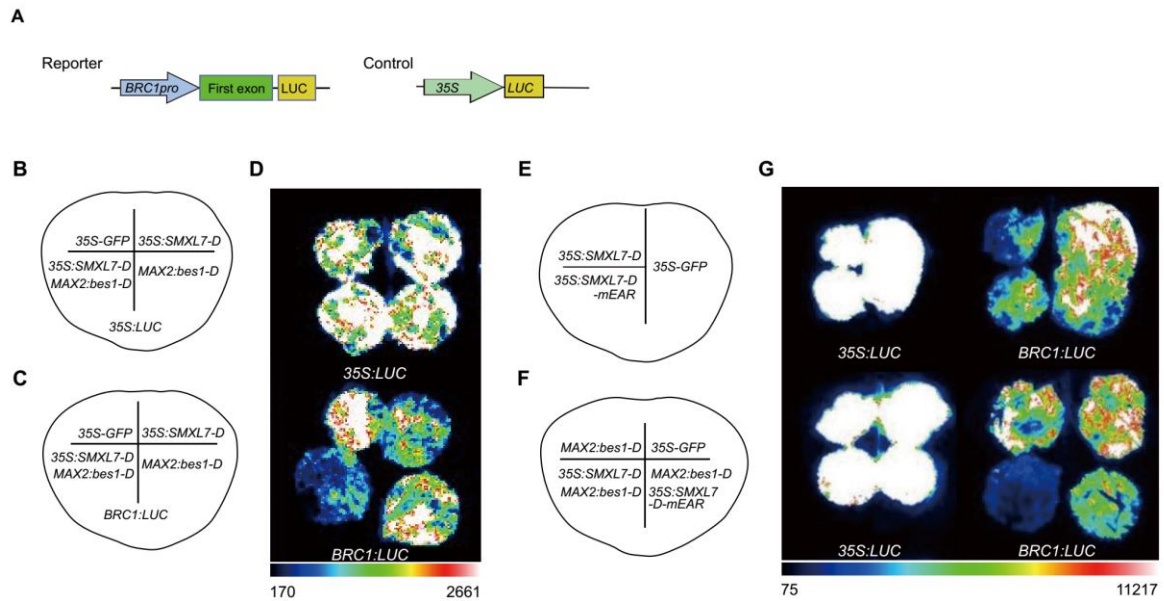
Supplemental Figure 8. The D53-like SMXLs and BES1 depend on each other to inhibit *BRC1* expression. Related to Figure 3.

(A) Schematic diagrams of the luciferase and control reporter in below transient expression assays.

(B&C&D) The LUC reporter system indicated *BRC1* was corporately inhibited by SMXL7 and BES1. Schematic representation in (B&C) showed the combinations of reporters and effectors in the corresponding position.

(E&F&G) The LUC reporter system indicated the EAR motif of SMXL7 was essential for inhibition of the luciferase activity of *BRC1:LUC* by the SMXL7–BES1 complex. Schematic representation in (E&F) showed the combinations of reporters, and effectors in the corresponding position.
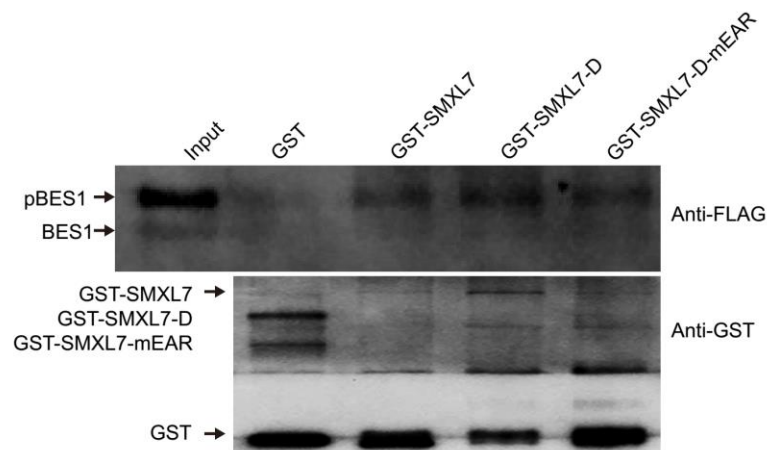
Supplemental Figure 9. BES1 interacts with SMXL7-D and SMXL7-D-mEAR, Related to Figure 3.

Semi-in vivo pull-down assay used glutathione-S-transferase (GST), GST-SMXL7, GST-SMXL7-D, and GST-SMXL7-D-mEAR recombinant proteins, and plant protein was extracted from *35S:BES1-FLAG* plants.
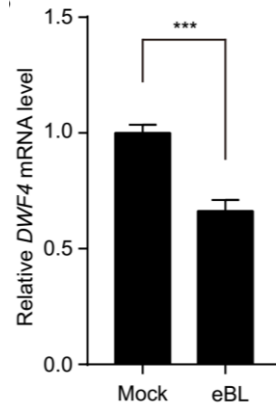
Supplemental Figure 10. Related to Figure 4. The transcription level of *DWF4* in buds of Col-0 under mock and 5 µM eBL treatments for 3 hrs. Data were means ± SD (n = 3). *P* values were determined by Student's *t*-test; *** *P* < 0.001.

Supplemental Table 1. Differential-expressed genes regulated by AtD14

Up-regulated genes in *Atd14-1* (VS Col-0)	Down-regulated genes in *Atd14-1* (VS Col-0)				
AT1G57750	AT4G33540	AT5G13220	AT2G29420	AT5G48430	AT3G46280
AT5G37940	AT3G15950	AT5G19230	AT4G36990	AT3G12220	AT2G34500
AT1G31690	AT3G23570	AT2G33380	AT4G32480	AT4G23230	AT5G38200
AT4G17860	AT5G55120	AT5G50200	AT2G41231	AT5G60270	AT3G59220
AT4G27570	AT1G60140	AT4G33050	AT2G43620	AT5G45380	AT2G15490
AT4G04840	AT4G27560	AT2G02010	AT1G15520	AT2G23680	AT5G13370
AT1G05540	AT1G70530	AT2G39710	AT1G58390	AT3G54420	AT3G48520
AT1G68600	AT1G68670	AT2G37040	AT5G42530	AT1G79410	AT5G52050
AT4G04955	AT2G34660	AT5G42830	AT3G47340	AT5G07010	AT4G15610
AT1G06350	ATMG00020	AT5G12170	AT5G63790	AT5G23660	AT1G43160
AT5G60490	AT1G69870	AT1G09970	AT1G35910	AT5G06860	AT1G01680
AT4G08950	AT4G22505	AT4G15120	AT5G26340	AT3G49780	AT1G05800
AT1G29660	AT3G06500	AT4G21380	AT3G05660	AT3G25730	AT1G07900
AT5G50790	AT4G21410	AT4G08870	AT1G21120	AT2G44790	AT1G13540
AT1G55330	AT2G13790	AT5G64110	AT5G08790	AT4G02280	AT1G18980
AT3G59010	AT2G36320	AT5G38940	AT3G48360	AT2G39980	AT1G28180
AT3G19680	AT5G55860	AT2G47000	AT3G24420	AT5G57260	AT1G33960
AT1G43790	AT1G58360	AT2G46440	AT2G26560	AT2G30140	AT1G62420
AT1G74670	AT1G17420	AT2G05380	AT4G26120	AT5G52760	AT1G70130
AT2G40460	AT5G19120	AT5G22270	AT5G17860	AT4G18170	AT1G73965
AT1G06360	AT5G13750	AT1G13990	AT5G49520	AT1G17170	AT2G14610
AT2G42990	AT5G36160	AT2G47800	AT4G19460	AT3G16530	AT2G31083
AT3G58120	AT5G51830	AT3G21670	AT4G14400	AT1G17180	AT2G42430
AT5G44680	AT2G41090	AT3G26210	AT2G38530	AT1G52890	AT2G44810
AT1G63710	AT1G01720	AT1G76680	AT1G21310	AT2G25510	AT2G47770
AT5G51890	AT3G05650	AT2G27310	AT5G16970	AT1G66480	AT3G02240
AT1G22160	AT1G54010	AT3G25780	AT5G35935	AT5G48657	AT3G11980
AT5G44020	AT2G23200	AT1G61820	AT2G36080	AT1G02920	AT3G46650
AT4G39800	AT1G49750	AT4G23170	AT1G70140	AT1G02930	AT3G49845
AT1G78020	AT4G15760	AT2G27500	AT2G43570	AT1G66760	AT4G04510
AT1G22530	AT1G72940	AT2G30400	AT1G01560	AT3G53480	AT4G04540
AT1G01600	AT3G23030	AT1G58340	AT5G36220	AT1G51800	AT4G13420
AT1G08280	AT3G21690	AT2G38860	AT4G23600	AT3G13790	AT4G22070
AT5G44130	AT2G22680	AT1G17830	AT5G49700	AT5G13330	AT4G27140
AT4G18970	AT5G57660	AT1G69730	AT3G22160	AT3G50470	AT5G07310
AT1G20850	AT2G29450	AT2G36800	AT3G16330	AT1G77450	AT5G10625
AT2G01420	AT4G34138	AT4G14365	AT2G28400	AT4G21120	AT5G12030
AT1G01120	AT1G76520	AT3G27025	AT1G12200	AT4G36740	AT5G16920
AT2G04070	AT2G46270	AT1G76590	AT3G13650	AT2G39030	AT5G52400
AT3G16680	AT5G53420	AT3G47780	AT5G15970	AT4G01870	AT5G64890
AT4G04000	AT1G32640	AT5G24290	AT2G18050	AT3G44860	AT5G66780
AT5G37970	AT5G05460	AT1G31580	AT2G37760	AT4G15530	AT4G39950
	AT4G17900	AT5G20230	AT3G04000	AT3G14440	AT5G52640
	AT3G51450	AT5G57480	AT1G59740	AT2G14560	AT2G43510
	AT2G31160	AT5G35735	AT3G55720	AT2G45570	AT2G41380
	AT5G67420	AT3G48990	AT3G48080	AT4G02520	AT1G64950
	AT1G80440	AT1G72120	AT1G05680	AT3G55970	AT4G31500
	AT2G43520	AT1G21250	AT5G66650	AT2G39200	AT1G64900
	AT1G25550	AT2G44290	AT5G47560	AT3G17609	AT5G22300
	AT3G13110	AT1G62940	AT4G25410	AT4G34710	AT4G22530
	AT4G37180	AT4G35110	AT4G08770	AT1G02850	AT1G02400
	AT3G53260	AT2G18660	AT1G73480	AT4G02380	AT1G69490
	AT1G08800	AT3G25610	AT1G75490	AT3G12580	AT3G19030
	AT4G34000	AT1G35710	AT1G16850	AT3G60420	AT3G50480
	AT3G13910	AT2G46680	AT5G05600	AT2G29440	AT3G50770
	AT5G11260	AT2G41510	AT5G07440	AT2G24850	AT3G50970
	AT1G17745	AT5G03700	AT5G14180	AT2G15480	AT5G15960
	AT1G17380	AT5G10760	AT5G04340	AT3G18550	AT1G16260
	AT4G36040	AT4G37370	AT1G66920	AT1G74010	AT3G44720
	AT5G61010	AT3G57240	AT2G39210	AT1G32960	AT1G69850
	AT2G26530	AT4G13180	AT5G25440	AT3G63380	AT3G28930
	AT1G60730	AT3G46660	AT5G46050	AT5G55050	AT5G66700
	AT1G59700	AT5G60950	AT1G49500	AT1G55920	AT5G60900
	AT4G21400	AT2G20670	AT2G27690	AT3G26830	AT1G72900
	AT5G19440	AT5G49480	AT1G34420	AT5G49690	AT1G56650
	AT3G49120	AT3G21230	AT5G24210	AT4G08555	AT4G34135
	AT3G51430	AT5G14780	AT5G61820	AT1G76930	AT2G46430
	AT4G28490	AT2G36950	AT1G14870	AT1G80820	AT1G45145
	AT4G17500	AT2G27830	AT5G11410	AT3G15500	AT5G25250
	AT1G49050	AT4G18360	AT3G14620	AT1G69930	AT2G37770
	AT5G54170	AT2G32160	AT1G10340	AT4G22710	AT2G29460
	AT1G73500	AT3G03990	AT1G52200	AT3G54150	AT3G23250
	AT5G54510	AT2G15760	AT3G23120	AT3G44300	AT3G49620
	AT2G37180	AT5G39050	AT2G47130	AT1G77760	
	AT1G50420	AT4G38540	AT5G39610	AT1G02360	
	AT4G19700	AT1G73805	AT2G18690	AT4G36850	

Supplemental Table 2. Differential-expressed genes regulated by BES1

Up-regulated genes in *MAX2:bes1-D* (VS Col-0)	Down-regulated genes in *MAX2:bes1-D* (VS Col-0)						
AT1G19350	AT1G20440	AT5G52640	AT1G08050	AT2G36950	AT2G47000	AT4G25810	AT3G60120
AT2G41640	AT4G16990	AT1G31580	AT4G18360	AT5G10380	AT4G25410	AT1G72920	AT4G06746
AT4G25100	AT2G44490	AT4G37410	AT1G18590	AT5G26920	AT4G30270	AT4G34135	AT4G08040
AT5G42800	AT2G26190	AT3G16670	AT3G16720	AT5G01100	AT1G76070	AT2G41100	AT4G11480
AT1G67750	AT3G49120	AT5G53290	AT1G56660	AT1G63720	AT2G41231	AT3G15356	AT4G12490
AT4G00870	AT2G39570	AT5G56980	AT3G25760	AT5G05440	AT2G36970	AT3G52450	AT4G12500
AT4G34760	AT2G29450	AT3G13110	AT1G34420	AT5G49520	AT2G39210	AT1G55920	AT4G13420
AT2G16586	AT5G04720	AT5G46330	AT2G30870	AT5G11410	AT5G65300	AT5G35735	AT4G16260
AT3G07010	AT3G03780	AT4G02940	AT3G10985	AT4G08870	AT1G61560	AT2G45570	AT4G21830
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AT4G22080	AT5G03380	AT1G72450	AT1G76590	AT2G39400	AT5G23510	AT5G24210	AT5G05300
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	AT1G70530	AT4G15760	AT2G43620	AT1G72940	AT1G19180	AT3G49620	AT4G36670
	AT3G50660	AT5G52310	AT1G68840	AT3G16330	AT5G22270	AT4G02520	AT1G37130
	AT3G51450	AT4G14365	AT5G39050	AT2G44080	AT5G08790	AT5G52050	AT3G19030
	AT3G05200	AT3G56400	AT2G16060	AT1G75490	AT1G28370	AT3G01290	AT4G13395
	AT5G42650	AT5G61600	AT3G46660	AT5G12170	AT5G52760	AT2G15480	AT3G22160
	AT1G28130	AT5G44260	AT3G54140	AT2G18660	AT2G02010	AT3G26830	AT4G36850
	AT5G05140	AT4G31500	AT1G02400	AT5G27420	AT4G01870	AT2G29460	AT3G52400
	AT1G03220	AT3G47420	AT5G59540	AT2G37760	AT4G18170	AT3G23250	AT1G15520
	AT5G05460	AT5G63160	AT4G22690	AT3G12580	AT2G30140	AT1G02920	AT4G13180
	AT1G13990	AT1G17380	AT5G61820	AT3G13650	AT5G15960	AT3G16530	AT1G72900
	AT5G06320	AT4G23270	AT1G76520	AT3G18550	AT2G43570	AT1G43160	AT5G07010
	AT1G11330	AT5G17000	AT1G71880	AT5G46350	AT5G13370	AT1G05800	AT1G17170
	AT5G01210	AT3G12220	AT3G50760	AT2G35990	AT3G48650	AT1G07160	AT1G27020
	AT1G68440	AT1G12110	AT4G36500	AT1G76600	AT1G02850	AT1G07900	AT5G55050
	AT1G64950	AT1G73805	AT1G08930	AT3G47780	AT2G27690	AT1G08090	AT1G05680
	AT4G27830	AT4G17900	AT3G25610	AT5G19240	AT3G50470	AT1G13480	AT1G18570
	AT3G59140	AT4G21850	AT1G23850	AT2G29420	AT3G22910	AT1G13520	AT2G25735
	AT2G30600	AT2G46650	AT5G60950	AT1G78000	AT3G54420	AT1G18980	AT2G39530
	AT3G13080	AT4G17490	AT2G24600	AT5G41750	AT3G24420	AT1G20310	AT2G41800
	AT1G13260	AT3G53260	AT4G06744	AT2G15042	AT4G38540	AT1G26390	AT3G04420
	AT1G22890	AT5G56870	AT2G22770	AT2G27500	AT5G60270	AT1G28180	AT3G19615
	AT1G17420	AT3G28220	AT2G30400	AT5G44380	AT4G33050	AT1G30720	AT3G43250
	AT4G17230	AT5G51830	AT4G32870	AT3G25770	AT2G23680	AT1G32350	AT3G48850
	AT5G17380	AT2G27830	AT1G52890	AT5G07440	AT5G17860	AT1G36622	AT3G52748
	AT1G01470	AT4G36990	AT1G18390	AT2G26530	AT5G45380	AT1G51890	AT1G21400
	AT5G19440	AT5G49730	AT5G63790	AT3G13950	AT5G40780	AT1G57650	AT3G21690
	AT4G31800	AT5G53550	AT3G48990	AT3G01970	AT5G50200	AT1G79680	AT4G37370
	AT4G21380	AT1G51680	AT3G16660	AT4G14400	AT1G24147	AT2G02930	AT5G47220
	AT2G40140	AT4G37610	AT1G59740	AT5G52750	AT1G66160	AT2G14610	AT5G19230
	AT5G54170	AT2G25450	AT2G43820	AT3G04720	AT4G22270	AT2G15390	AT2G36690
	AT5G54500	AT1G44350	AT2G30250	AT2G15760	AT1G77760	AT2G17740	
	AT3G49110	AT5G20250	AT3G04000	AT2G24850	AT5G06860	AT2G32660	
	AT4G30530	AT1G78850	AT4G19810	AT2G38470	AT3G14620	AT2G35980	

Supplemental Table 3. Differential-expressed genes co-regulated by AtD14-BES1

Up-regulated genes	Down-regulated genes			
N/A	AT3G23570	AT2G22770	AT4G23600	AT1G80820
	AT1G70530	AT3G25770	AT5G49700	AT3G15500
	AT1G69870	AT5G13220	AT3G22160	AT1G77760
	AT1G17420	AT5G19230	AT3G16330	AT4G36850
	AT5G13750	AT5G50200	AT3G13650	AT2G37770
	AT5G51830	AT4G33050	AT2G37760	AT2G29460
	AT1G01720	AT2G02010	AT3G04000	AT3G23250
	AT1G54010	AT2G37040	AT1G59740	AT3G49620
	AT4G15760	AT5G12170	AT1G05680	AT3G50970
	AT1G72940	AT1G09970	AT5G47560	AT5G15960
	AT3G23030	AT4G21380	AT4G25410	AT2G34500
	AT3G21690	AT4G08870	AT1G73480	AT3G59220
	AT2G29450	AT5G64110	AT1G75490	AT5G13370
	AT1G76520	AT5G38940	AT5G05600	AT5G52050
	AT5G05460	AT2G47000	AT5G07440	AT1G43160
	AT4G17900	AT2G46440	AT5G04340	AT1G05800
	AT3G51450	AT5G22270	AT2G39210	AT1G07900
	AT2G43520	AT1G13990	AT5G25440	AT1G18980
	AT3G13110	AT3G26210	AT5G46050	AT1G28180
	AT3G53260	AT1G76680	AT2G27690	AT2G14610
	AT1G17380	AT2G27310	AT1G34420	AT4G13420
	AT2G26530	AT3G25780	AT5G24210	AT4G22070
	AT1G60730	AT1G61820	AT5G61820	AT4G27140
	AT5G19440	AT4G23170	AT1G14870	AT5G64890
	AT3G49120	AT2G27500	AT5G11410	AT4G20830
	AT4G28490	AT2G30400	AT3G14620	AT5G40780
	AT4G17500	AT2G38860	AT3G23120	AT3G21240
	AT1G49050	AT2G36800	AT2G47130	AT5G59540
	AT5G54170	AT4G14365	AT5G39610	AT1G18570
	AT1G73500	AT1G76590	AT4G34135	AT5G41750
	AT3G28930	AT3G47780	AT2G46430	AT4G24040
	AT1G64950	AT1G31580	AT1G45145	AT5G52750
	AT4G31500	AT5G20230	AT3G19030	AT5G17860
	AT4G39950	AT5G35735	AT3G50480	AT5G49520
	AT1G74100	AT3G48990	AT2G43510	AT4G14400
	AT1G10370	AT1G72120	AT3G12220	AT5G16970
	AT4G34230	AT1G21250	AT5G60270	AT2G36080
	AT2G44080	AT4G35110	AT5G45380	AT1G70140
	AT5G24530	AT2G18660	AT2G23680	AT2G43570
	AT4G27830	AT3G25610	AT3G54420	AT5G36220
	AT1G21000	AT1G35710	AT1G79410	AT2G15480
	AT1G27020	AT4G37370	AT5G07010	AT3G18550
	AT1G72680	AT4G13180	AT5G06860	AT3G63380
	AT1G51760	AT3G46660	AT2G44790	AT5G55050
	AT3G20660	AT5G60950	AT4G02280	AT1G55920
	AT5G17000	AT5G49480	AT2G39980	AT3G26830
	AT3G50950	AT3G21230	AT2G30140	AT5G49690
	AT1G44350	AT5G14780	AT5G52760	AT1G76930
	AT1G06620	AT2G36950	AT4G18170	AT1G19180
	AT2G31750	AT2G27830	AT1G17170	AT5G53290
	AT5G47220	AT4G18360	AT3G16530	AT3G46110
	AT4G37410	AT2G32160	AT1G52890	AT1G18390
	AT1G32700	AT2G15760	AT1G66480	AT1G72930
	AT3G25760	AT5G39050	AT1G02920	AT5G26340
	AT4G15490	AT4G38540	AT1G02930	AT3G05660
	AT5G27420	AT1G73805	AT1G66760	AT5G08790
	AT1G26930	AT5G66700	AT3G13790	AT3G24420
	AT2G32150	AT1G72900	AT5G13330	AT2G26560
	AT5G01210	AT4G22530	AT3G50470	AT4G02380
	AT3G10985	AT1G02400	AT1G77450	AT3G12580
	AT3G22060	AT5G52640	AT4G21120	AT3G60420
	AT4G06744	AT2G29420	AT4G01870	AT2G29440
	AT3G56400	AT4G36990	AT4G15530	AT2G24850
	AT3G15356	AT2G41231	AT2G45570	AT5G19240
	AT1G62300	AT2G43620	AT4G02520	AT2G24100
	AT3G01290	AT1G15520	AT3G55970	AT3G47340
	AT5G52310	AT5G42530	AT2G39200	AT5G63790
	AT3G17609	AT1G02850		

Supplemental Table 4. Differential-expressed genes regulated by SMXL7

Up-regulated genes in *SMXL7-D* (VS Col-0)				Down-regulated genes in *SMXL7-D* (VS Col-0)				
AT5G03545	AT4G25430	AT2G41990	AT5G50150	AT1G07420	AT2G19450	AT4G26530	AT5G10760	AT1G61070
AT4G25010	AT5G65040	AT1G10990	AT5G18670	AT4G35090	AT3G59350	AT5G19120	AT5G15970	AT3G44042
AT1G06830	AT1G28010	AT3G24340	AT1G70090	AT4G22990	AT3G10410	AT3G63160	AT5G40730	AT1G75790
AT2G30766	AT1G69760	AT5G12050	AT1G05010	AT3G46970	AT3G05640	AT5G24770	AT4G11310	AT5G53190
AT5G51190	AT4G08950	AT4G31910	AT4G18970	AT1G77760	AT1G26450	AT2G35950	AT1G73805	AT4G10850
AT1G57750	AT1G08930	AT1G66940	AT3G02550	AT2G47850	AT3G05650	AT3G43670	AT3G26280	AT3G42960
AT3G16150	AT1G22160	AT2G38470	AT4G12870	AT4G14270	AT5G59670	AT5G52390	AT5G51210	AT3G18550
AT3G62150	AT5G64850	AT2G44500	AT4G27450	AT1G56220	AT2G15970	AT1G76790	AT4G14400	AT3G60280
AT1G68840	AT5G62280	AT3G16670	AT1G70940	AT2G04360	AT3G51000	AT3G62740	AT1G35720	AT1G22015
AT4G11460	AT5G07000	AT5G05250	AT1G67900	AT2G42610	AT5G24150	AT2G32530	AT5G17760	AT2G31083
AT2G40330	AT1G68600	AT1G06080	AT5G43700	AT4G26670	AT3G14360	AT3G41768	AT1G35910	AT2G31085
AT1G26680	AT1G05490	AT5G63850	AT5G23530	AT2G29310	AT4G27520	AT2G34655	AT1G65800	AT2G21100
AT4G08300	AT3G45160	AT1G20390	AT1G76090	AT5G26570	AT3G14595	AT1G02850	AT5G60100	AT1G66380
AT5G38710	AT5G52882	AT5G64770	AT4G00872	AT1G22770	AT2G39310	AT2G33380	AT1G52890	AT1G13930
AT5G60780	AT3G20395	AT4G15430	AT3G49580	AT1G13270	AT5G15780	AT1G08890	AT2G20670	AT2G47800
AT5G15830	AT1G13245	AT4G17670	AT1G61563	AT5G66040	AT1G30040	AT5G52310	AT2G40750	AT5G61380
AT2G25735	AT3G02140	AT2G45685	AT5G44680	AT2G36350	AT1G16110	AT4G34710	AT2G41510	AT2G40100
AT3G46490	AT2G29970	AT2G46450	AT1G55330	AT5G38980	AT5G55450	AT1G56300	AT3G12220	AT5G03350
AT4G38340	AT3G02380	AT5G48490	AT1G23090	AT4G27130	AT3G05880	AT1G06460	AT5G42530	AT1G17600
AT4G24570	AT5G24860	AT2G45180	AT2G24490	AT4G09020	AT1G66970	AT3G05660	AT5G23240	AT1G70430
AT3G52450	AT5G08170	AT1G70560	AT5G52560	AT3G46640	AT1G07440	AT3G61198	AT2G42540	AT5G60900
AT4G27280	AT1G15210	AT4G24240	AT5G47910	AT2G37200	AT5G57110	AT3G16450	AT2G36270	AT4G17090
AT1G76650	AT2G31110	AT4G32890	AT3G54500	AT2G25730	AT4G34000	AT4G08870	AT5G18600	AT1G07430
AT4G38830	AT1G25560	AT5G42650	AT2G23170	AT2G21620	AT4G16690	AT5G62360	AT1G23840	AT1G62940
AT3G22540	AT4G36880	AT5G63180	AT4G17460	AT1G64900	AT2G23200	AT3G09790	AT4G04330	AT4G14080
AT1G12110	AT2G02010	AT4G27300	AT5G64570	AT3G53980	AT5G06370	AT1G21310	AT1G73325	AT5G07230
AT3G05727	AT4G18010	AT1G73540	AT4G22490	AT2G15890	AT5G14780	AT2G44290	AT2G40080	AT4G27560
AT5G05440	AT1G28660	AT2G43100	AT5G50200	AT3G62410	AT3G05800	AT5G24470	AT3G62730	AT2G40300
AT4G21870	AT4G22517	AT2G38940	AT5G07230	AT1G80480	AT2G38530	AT5G56840	AT3G28270	AT3G01500
AT4G13575	AT3G16660	AT5G10770	AT4G21850	AT3G26740	AT5G19260	AT4G37180	AT2G18050	AT2G40400
AT1G65390	AT3G19680	AT5G01810	AT2G41100	AT4G12290	AT4G34950	AT1G04620	AT1G16850	AT4G37410
AT5G04190	AT1G44800	AT1G52190	AT3G24420	AT5G27660	AT5G38430	AT5G59220	AT4G02280	AT1G22890
AT1G73330	AT3G26760	AT4G35900	AT2G27402	AT5G06870	AT2G22450	AT1G03400	AT3G02480	AT1G69730
AT1G03170	AT5G64660	AT1G67860	AT3G01490	AT4G19700	AT1G72180	AT2G39710	AT3G22235	AT1G11175
AT2G38310	AT4G39800	AT3G55120	AT4G12910	AT3G56090	AT2G40970	AT2G37760	AT4G32340	AT1G49750
AT4G22520	AT2G40610	AT2G38120	AT1G76240	AT4G39090	AT5G23380	AT2G42530	AT5G66700	AT2G40130
AT1G58370	AT5G19190	AT1G21830	AT1G01120	AT1G04990	AT3G47860	AT2G46440	AT5G13370	AT3G42806
AT5G44380	AT5G61600	AT3G56360	AT3G50060	AT1G21680	AT1G62290	AT5G51720	AT3G25620	AT5G24780
AT2G41640	AT1G16390	AT5G48570	AT5G07580	AT5G20630	AT2G47890	AT3G50480	AT1G52770	AT3G09390
AT4G04955	AT2G44080	AT1G76680	AT3G05900	AT2G43535	AT3G27870	AT2G36885	AT5G19110	AT2G22980
AT1G24530	AT3G05140	AT2G27990	AT3G10040	AT3G05980	AT1G58340	AT2G46680	AT1G19960	AT2G21130
AT3G44260	AT3G27690	AT5G46790	AT2G41050	AT3G05670	AT5G14830	AT4G23710	AT2G24850	AT4G30650
AT1G01060	AT2G30520	AT5G40450	AT3G46620	AT2G28900	AT4G15210	AT4G21380	AT2G39855	AT5G44050
AT5G45340	AT3G26200	AT3G46600	AT1G02190	AT4G27830	AT1G78850	AT1G74890	AT5G59310	AT1G12160
AT1G43800	AT1G28670	AT5G15850	AT3G17330	AT2G14878	AT5G48250	AT5G42750	AT4G33980	AT1G17830
AT4G29780	AT4G17870	AT3G58120	AT4G25750	AT2G16665	AT5G13320	AT4G25480	AT3G47340	AT1G76590
AT4G18290	AT1G73600	AT2G28305	AT3G55980	AT5G67480	AT2G23910	AT5G03840	AT1G07050	AT4G11350
AT5G57560	AT4G14130	AT4G27310	AT4G22513	AT1G05500	AT5G01600	AT2G28160	AT4G25100	AT5G61820
AT4G30140	AT2G23290	AT1G09420	AT3G12320	AT2G41090	AT3G60670	AT1G73480	AT1G68050	AT1G12010
AT5G16570	AT2G34430	AT5G15120	AT1G44100	AT4G04630	AT4G31620	AT1G17665	AT5G66400	AT4G16146
AT5G46240	AT5G07690	AT1G32900	AT5G07460	AT5G54510	AT1G49500	AT1G52100	AT2G25510	AT2G21660
AT2G28780	AT2G06200	AT3G06070	AT1G14430	AT5G36160	AT2G05380	AT1G67260	AT2G33830	AT4G16590
AT2G46830	AT5G59050	AT2G43290	AT4G28680	AT5G21430	AT1G01470	AT1G31580	AT4G36850	AT1G09500
AT2G37460	AT1G57990	AT5G22500	AT4G12980	AT3G53460	AT4G00165	AT1G79520	AT3G14440	AT1G28375
AT1G13260	AT3G05730	AT5G15950	AT1G73590	AT1G44350	AT4G11900	AT5G24530	AT5G42900	AT1G58225
AT2G36120	AT1G78020	AT3G05600	AT5G22580	AT1G50420	AT1G75750	AT2G29340	AT2G39510	AT1G66850
AT5G59780	AT5G61590	AT1G29660	AT4G13495	AT1G45145	AT1G69490	AT5G57630	AT3G27250	AT3G07450
AT1G34060	AT2G42380	AT5G45720	AT1G70260	AT5G08260	AT1G79440	AT5G28910	AT3G22231	AT3G17520
AT5G34795	AT5G65080	AT5G03610	AT4G17490	AT1G71050	AT4G15440	AT4G15490	AT4G36740	AT4G29980
AT5G43580	AT5G37770	AT1G73500	AT4G17860	AT3G43270	AT4G37540	AT2G32540	AT4G21930	AT4G32105
AT4G14140	AT3G20470	AT1G37130	AT3G15540	AT2G01150	AT4G16190	AT3G19200	AT1G44970	AT5G05220
AT1G07135	AT4G17500	AT1G22530	AT4G33790	AT2G31200	AT3G24520	AT4G16270	AT1G04645	AT5G24820
AT5G34800	AT5G61660	AT5G11950	AT4G11280	AT5G25950				
AT3G28345	AT2G30010	AT1G04240	AT5G06980					
AT1G03870	AT1G06350	AT2G23810	AT5G44630					
AT4G20070	AT5G37600	AT2G40000	AT5G07800					
AT5G39890	AT3G23430	AT1G17920	AT2G32560					
AT4G22780	AT2G37040							

Supplemental Table 5. Differential-expressed genes co-regulated by AtD14-SMXL7

Up-regulated genes in both of *SMXL7-D* and *AtD14-1*	Down-regulated genes in both of *SMXL7-D* and *AtD14-1*		Down-regulated genes in *AtD14-1* But up-regulated in *SMXL7-D*
AT1G57750	AT1G77760	AT3G50480	AT5G50200
AT4G04955	AT1G64900	AT2G46680	AT3G24420
AT4G17860	AT4G19700	AT4G23170	AT2G02010
AT4G08950	AT4G27830	AT4G21380	AT2G44080
AT1G22160	AT2G41090	AT1G73480	AT4G17500
AT1G68600	AT3G51430	AT1G31580	AT1G76680
AT3G19680	AT5G54510	AT3G49120	AT1G73500
AT4G39800	AT5G36160	AT5G24530	AT2G37040
AT1G78020	AT1G44350	AT2G29340	
AT1G06350	AT1G50420	AT4G15490	
AT1G01120	AT1G45145	AT1G76590	
AT3G58120	AT4G27560	AT5G61820	
AT1G29660	AT4G37410	AT4G32480	
AT1G22530	AT1G69730	AT4G23600	
AT5G44680	AT1G49750	AT5G60900	
AT1G55330	AT2G47800	AT5G10760	
AT4G18970	AT3G05650	AT5G15970	
	AT3G50950	AT1G73805	
	AT4G34000	AT4G14400	
	AT4G16690	AT5G17760	
	AT2G23200	AT1G35910	
	AT5G14780	AT1G52890	
	AT2G38530	AT2G20670	
	AT1G58340	AT2G40750	
	AT1G49500	AT1G66760	
	AT2G05380	AT2G41510	
	AT1G69490	AT3G12220	
	AT4G37540	AT5G42530	
	AT1G17830	AT2G42540	
	AT5G19120	AT2G36270	
	AT1G02850	AT3G23120	
	AT2G33380	AT2G46430	
	AT5G52310	AT2G18050	
	AT4G34710	AT1G16850	
	AT3G05660	AT4G02280	
	AT4G08870	AT5G66700	
	AT1G21310	AT5G13370	
	AT2G44290	AT3G25620	
	AT4G37180	AT3G47340	
	AT5G59220	AT2G25510	
	AT1G03400	AT4G36850	
	AT2G39710	AT3G14440	
	AT2G37760	AT4G36740	
	AT2G46440	AT1G62940	
	AT2G24850	AT3G18550	
	AT2G31083		

Supplemental Table 6. Differential-expressed genes regulated by BRC1

Up-regulated genes in *brc1* (VS Col-0)	Down-regulated genes in *brc1* (VS Col-0)
AT1G62180	AT2G14560
AT1G04770	AT3G57260
AT5G15120	AT2G18550
AT4G08950	AT3G20810
AT3G02550	AT4G36740
AT3G03270	AT5G60900
AT1G05680	AT3G14620
AT1G58370	AT1G72910
AT1G72430	AT4G14400
AT5G64120	AT3G12220
AT3G27220	AT5G10760
AT4G25100	AT2G24850
AT5G39580	AT2G25510
AT2G38240	AT3G14440
AT4G24110	AT5G52760
AT3G20395	AT2G40080
AT2G19800	AT3G48650
AT2G02990	AT2G46430
AT5G39890	AT1G52100
AT3G10040	AT3G19710
AT2G16060	AT3G23120
AT4G10265	AT3G25620
AT1G43800	AT2G32160
AT4G33560	AT5G42900
AT4G33070	AT1G21250
AT4G39675	AT1G16410
	AT3G50470
	AT1G35710
	AT3G60420
	AT5G66700
	AT4G02280
	AT5G64110
	AT1G73805
	AT4G14365
	AT2G47130
	AT5G24210
	AT4G23170
	AT2G46440
	AT3G26210
	AT3G50480
	AT2G43570
	AT4G33980
	AT5G42530
	AT1G31580
	AT3G19200
	AT1G45145
	AT1G69490
	AT5G57340
	AT3G09260
	AT2G46680
	AT4G22505
	AT5G24530
	AT5G17760
	AT5G59670
	AT2G14610
	AT2G47770
	AT3G17520
	AT5G16920

Supplemental Table 7. Primers for genotyping, CHIP, EMSA, qPCR and recombinant vectors.

Name	sequences 5'-3'
smxl6-LP	AGCCAGAGAAAGACTCGAACC
smxl6-RP	TCAGATCCGAATCGTGAGTTC
smxl7-LP	CGTATTAGCCTCTCGGATTCC
smxl7-RP	GATCAAGAAACGAACGCTGAG
smxl8-LP	TAGCGAAACAATGCTTAACGG
smxl8-RP	TGGTGAGTAACTGCAAATCCC
max2-1-LP	TACATGCAAGCATGCAACTTC
max2-1-RP	AATAGGAACAAAATCGCCACC
LBP1.3	ATTTTGCCGATTTCGGAAC
ChIP-*BRC1*pro-F1-F	ACGTAAGAAAAAGGAGCTACCC
ChIP-*BRC1*pro-F1-R	CATCAATCATGGCGATCCCTC
ChIP-BRC1pro-F2-F	CTTGAGGGATCGCCATGATTG
ChIP-BRC1pro-F2-R	TGATTTGCATTTCACCGTAAG
ChIP-BRC1pro-F3-F	TGACCTTAGTTCTTTCTTACGGTGA
ChIP-BRC1pro-F3-R	AGCATGCACTAAAAGATGCCTAAA
ChIP-BRC1pro-F4-F	TTTAGGCATCTTTTAGTGCATGCT
ChIP-BRC1pro-F4-R	ACAACACAGGCGACGTACTT
ChIP-BRC1pro-F5-F	AAGTACGTCGCCTGTGTTGT
ChIP-BRC1pro-F5-R	TGTTCATGCCTTTTTAGGGGT
BRC1-pro-probe a-F	GAACAAATGCAATATATCAATAGTTAGTGTACATATGAAG
BRC1-pro-probe a-R	CTTCATATGTACACTAACTATTGATATATTGCATTTGTTC
BRC1-pro-probe b-F	AACATAAACAAACACAAGGTCCTAATTATAGAAAAAAATC
BRC1-pro-probe b-R	GATTTTTTTCTATAATTAGGACCTTGTGTTTGTTTATGTT
BRC1-pro-probe c-F	AAGAAGATTATAGTACAAGTGTCATTCTCAAAATTTTGTC
BRC1-pro-probe c-R	GACAAAATTTTGAGAATGACACTTGTACTATAATCTTCTT
BRC1-qPCR-F	GGAAACAAGGTCGATGGGAGA
BRC1-qPCR-R	TTTAAAATGGGCGTTCGCGG
BES1-qPCR-F	GGCTACTATACCTGAATGTG
BES1-qPCR-R	AGAGAATGGCTGTTGTTG
U-BOX-F	TCTTCTTCTGCTACATCTACTCTC
U-BOX-R	AGTGTGTGAACCCGTGAAC
ACT2-F	TGCTGTTGACTACGAGCAGG
ACT2-R	TCCATTCCCACAAACGAGGG
ChIP-*DWF4*pro-F	GACAATGCCAAAAGTCTACGGG
ChIP-*DWF4*pro-R	GGAGCTAGTTTCTCTCTCTCTC
BES1-F	ATGACGTCTGACGGAGCAAC
BES1-R	ACTATGAGCTTTACCATTTCC
BES1-L-F	ATGAAAAGATTCTTCTATAATTCCAGC
BES1pro -F	ATATTAGTATCACTATTCTGCTATTCACTAG
Overlapping-bes1-D-F	CCTGGCTACTAT ACCTG
Overlapping-bes1-D-R	CAGGTATAGTAGCCAGG

SMXL6-F	ATGCCGACGCCGGTGACTACGG
SMXL6-R	CCATATCACATCCACC
SMXL7-F	ATGCCGACACCAGTAACC
SMXL7-R	GATCACTTCGACTCTC
SMXL8-F	ATGCCAACGGCGGTGAAT
SMXL8-R	CTACTGAGATTTTACAAA
*SMXL7*pro-F	TCTACTGTGCATCAAGACAT
overlapping-*SMXL7*-D-F2	CAGATTGTCTGAGGCTATGACACTCCGTGACTCGCATGGG
overlapping-*SMXL7*-D-R2	CCCATGCGAGTCACGGAGTGTCATAGCCTCAGACAATCTG
overlapping-*SMXL7*-mEAR-F2	GCGTTCGTTTGCTGATGCAAATGCTCCTGTGGATGAG
Overlapping-*SMXL7*-mEAR-F2	GCGTTCGTTTGCTGATGCAAATGCTCCTGTGGATGAG