

**SUPPLEMENTARY DATA:**

**SAUR Proteins as Effectors of Hormonal and Environmental Signals  
in Plant Growth**

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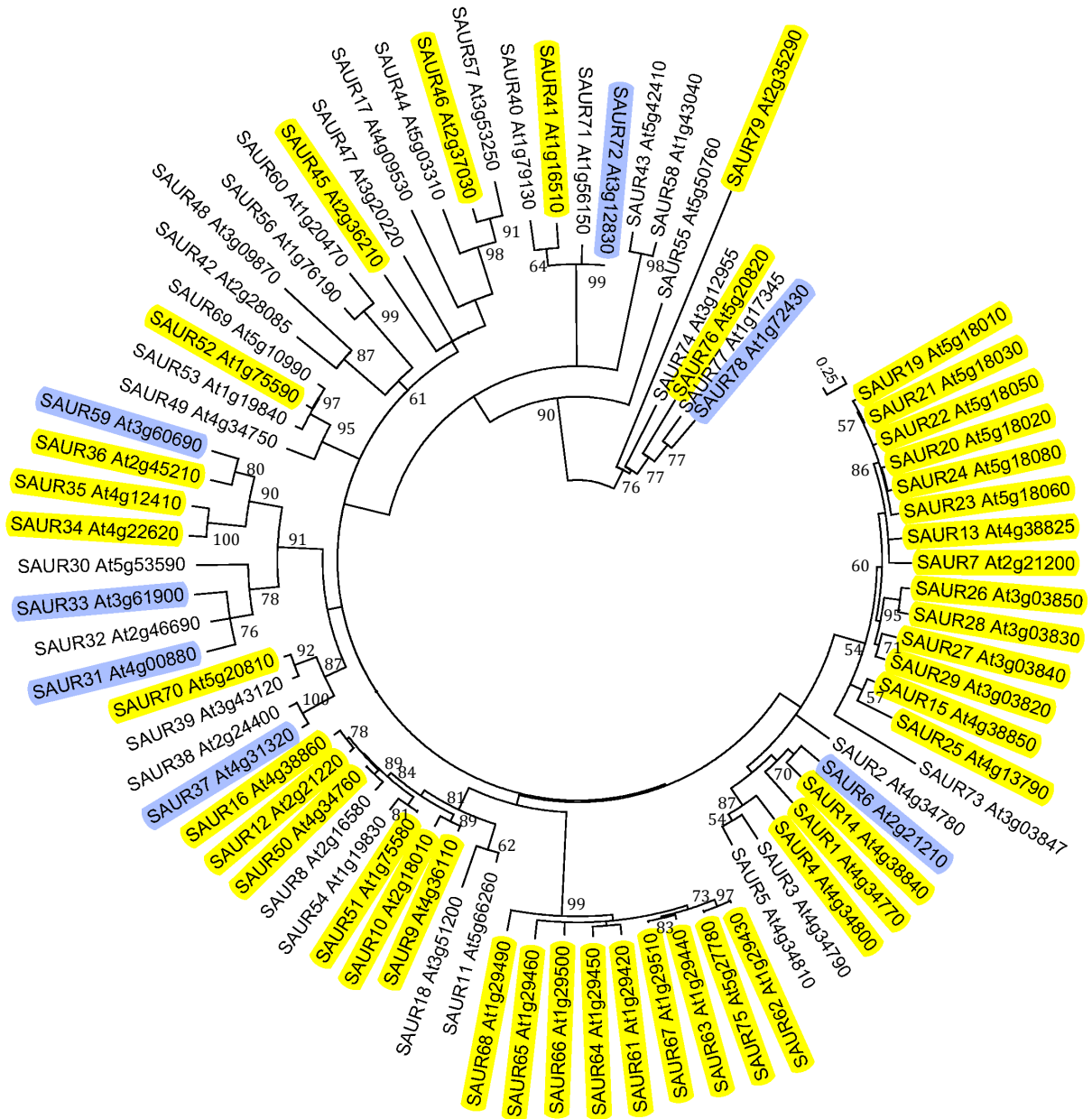
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SAUR44_At5g03310 99 TLFLEVLRCASPRYSL-----Y-----
SAUR46_At2g37030 103 STFLDVRRCAGAPQHNNCICI-----Y-----
SAUR57_At3g53250 88 NTFLDVRRCAGAPQHNNCIGM-----Y-----
SAUR42_At2g28085 113 SHLRMLLTFQWC-----Y-----
SAUR48_At3g09870 101 EVQKILQGSRES-----Y-----
SAUR61_At1g29420 93 VFLEYLIRLVQRMDGDTEKALI-----TSISST-RCSLPCSFQ---LQEHSSSTRL-----VF-----
SAUR68_At1g29490 93 IRFSWSISSN-----Y-----
SAUR64_At1g29450 92 VFLEYLIRLVQRMDADTEKALL-----MSISSA-RCSSQCCLK---LQERSTQQL-----LV---F-----
SAUR66_At1g29500 90 VFLEYLIRLVQRMDGDTEKALL-----MSISSA-RCS---LQ---KQEQSTQQL-----LV---F-----
SAUR65_At1g29460 100 VFLEYLIRLVQRMDGDTEKALL-----MSISSA-RCSMQPQEQ---QS-GYTQQL-----LV---F-----
SAUR62_At1g29430 94 AFLEYLIRLVQRMDGDTEKALL-----LSISSA-RSSFQPPQH---CSATQQL-----LV---F-----
SAUR75_At5g27780 95 VFLEYLIRLVQRMDGDTEKALL-----WSISSA-RCSLQPPQH---CSATQQL-----LV---F-----
SAUR63_At1g29440 93 AFLEYLIRLVQRMDGDTEKALL-----LSISSA-RCSFQPPQEQ---QC-STTQQL-----LV---F-----
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SAUR30_At5g53590 105 DEFFKHVQEVLDDETHRRSHSGGGHNNH-----NHHNNLRCF-----
SAUR31_At4g00880 84 EEFYRQVQLDRENTFLGTNLLDH--HH-----HHNNHLIRCFRV-----
SAUR32_At2g46690 81 EEFYRQVQLDRENTFLGTNLLDH--HH-----HHNNHLIRCFRV-----
SAUR33_At3g61900 87 EEFYRQVQLDRENTFLGTNLLDH--HH-----HHNNHLIRCFRV-----
SAUR56_At1g76190 74 SIMDHIIMLVRSMSHSDYDDVE-----EDPVE-----KSSST-SSTCKGASISS--LFRG-----QSQLQSLV---S-----
SAUR60_At1g20470 76 GLMDHILMLLRNKSLSHDHDDG-----GDDGV-KKTMNQDVSPM-STSCKGASISS--YFFFLPRCNAAHQDKSLQSLV---F-----
SAUR55_At5g50760 109 DFFFKALADKSNPFGHDDHDD-----YDDDDG---F-----TNSPICGFVCSPYRSYGGGVTDPLAMKRNKSYKLLRSPSLFKLTRF
SAUR17_At4g09530 86 STFRSLVMFLISHQDKSH-----Y-----
SAUR41_At1g16510 108 IVFRRVVTETLRGGFEGSGDLE---NL---VASLLSGDEL--IPETTE-----
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SAUR71_At1g56150 92 LVFRRLESRLGLADRVT-----Y-----
SAUR72_At3g12830 104 LVFRRLESRLGLADRVT-----Y-----
SAUR49_At4g34750 91 SLFFEDLIAIVTRCESSSSSSRG---GNPPAATLEDLRCSHV-GL-----AKNNVESRPLL---PGIAEKSVK-
SAUR69_At5g10990 95 SVFEEISIRFIFTR-----SSRF---TCT---DDLKKNRHG-GIRS---K--LDLLMESRPLL---HGVSEKAIIW-
SAUR52_At1g75590 96 SVFEEISIRFISRSSTSRSRF---TCP---DDQKNCRRVVGIRS---K--LDLMIESRPLL---HGVTEKAVM-
SAUR53_At1g19840 95 SVFEEAIRFISRSSTSRSRF---TCP---DDLKCNCGGKIKS---K--LDLMIESRPLL---HGVTEKAVM-
SAUR37_At4g31320 134 AVFEEILKIMEEDNKSDAY---LTTQECRFNATSEEVMSYRHPSDCPRTPSHQPH-SPMCR-
SAUR38_At2g24400 118 SVFEEILKIMEEDNKSDAY---LTTQECRFNATSEEVMSYRHPSDCPRTPSHQPH-SPMCR-
SAUR47_At3g20220 102 SVFEEILIRYMSCDKRRK-----Y-----
SAUR36_At2g45210 136 SDFEYKTRIRASGSSSRVFP-----WGRHC--RN-----
SAUR59_At3g60690 145 SDFEYKTRIRASGSSSRVFP-----WGRHC--RN-----
SAUR18_At3g51200 94 NTFLTLLDSITSY-----Y-----
SAUR11_At5g66260 88 HFFRALISSINP-----Y-----
SAUR9_At4g36110 94 VVFRSLISMFR-----Y-----
SAUR10_At2g18010 102 VVFRSLISMFR-----Y-----
SAUR12_At2g21220 94 VVFRSLISMFR-----Y-----
SAUR16_At4g38860 95 VVFRSLISMFR-----Y-----
SAUR8_At2g16580 98 LFFQDLTSMIR-----Y-----
SAUR50_At4g34760 97 LVFQDLTSMIR-----Y-----
SAUR51_At1g75580 98 VVFRSLISMFR-----Y-----
SAUR54_At1g19830 102 VVFRSLISMFR-----Y-----
SAUR45_At2g36210 109 SVFQDVVNAVESCGNPFDF-----GEFVEEFL-----
SAUR34_At4g22620 136 SDFEYKTRIRASGSSSRVFP-----WGRHC--RN-----
SAUR35_At4g12410 133 SDFEYKTRIRASGSSSRVFP-----WGRHC--RN-----
SAUR39_At3g43120 133 EYFKYLLKCIENHPKDDTSA---EDPVETEE-----
SAUR70_At5g20810 133 EYFKYLLKCIENHPKDDTSA---EDPVETEE-----
SAUR73_At3g03847 125 DNFLTLL-----Y-----
SAUR2_At4g34780 86 DVFLDITSRRLKRNKFIETEI-----N-----
SAUR27_At3g03840 84 DTFITVTSRIQG-----Y-----
SAUR29_At3g03820 85 DTFITVTSRIQG-----Y-----
SAUR26_At3g03850 82 DTFISITSIQIG-----Y-----
SAUR28_At3g03830 82 YTFISITSIQIG-----Y-----
SAUR7_At2g21200 77 DTFVAAASQL-----Y-----
SAUR13_At4g38825 79 DTFITVTSRIQG-----Y-----
SAUR23_At5g18060 80 DTFINVTSLRH-----Y-----
SAUR22_At5g18050 80 DTFINVTSLRH-----Y-----
SAUR21_At5g18030 78 DTFINVTSLRH-----Y-----
SAUR20_At5g18020 80 DTFINVTSLRH-----Y-----
SAUR19_At5g18010 80 DTFINVTSLRH-----Y-----
SAUR24_At5g18080 80 DTFINVTSLRH-----Y-----
SAUR15_At4g38850 79 SLFFTVTSRIQ-----Y-----
SAUR25_At4g13790 82 AFFFTVTSRIQ-----Y-----
SAUR3_At4g34790 96 ESFLYLITSHOLH-----Y-----
SAUR5_At4g34810 94 EVFLDLIASRLQ-----Y-----
SAUR4_At4g34800 79 EYFKYLLKCIENHPKDDTSA---EDPVETEE-----
SAUR1_At4g34770 92 DYFTALASILSGS-----Y-----
SAUR6_At2g21210 85 QIFIDLASRLSTSS-----Y-----
SAUR14_At4g38840 89 EYFKYLLKCIENHPKDDTSA---EDPVETEE-----
SAUR79_At2g35290 89 ILFHEHLWMLLRNDASTFSD-----LDVL-EIIEFYAQD---C-----
SAUR74_At3g12955 108 VLFDEHLWMLRYGDEVHIL-----ESLD-DFAHLYLSP-----
SAUR76_At5g20820 96 VLFHEHLWMLLENADADE-----S--RPESVY-ELVEFYAC-----
SAUR77_At1g17345 95 VLFHEHLWMLKNSSDHGDEDDR--ERGSVE-ELAEFYTY-----
SAUR78_At1g72430 92 VLFHEHLWMLKNSSDHGDEDDR--ERGSVE-ELAEFYTY-----
consensus 181 dvfe lvslk

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**Supplementary Figure 1.** Multiple protein sequence alignment of Arabidopsis SAUR family proteins. Protein sequence alignment was performed using Clustal Omega. The conserved SAUR domain sequence is underlined.

**Supplementary Figure 2.** Phylogenetic tree of Arabidopsis SAUR family proteins.



**Supplementary Figure 2.** Phylogenetic tree of Arabidopsis SAUR family proteins.

Neighbor-joining phylogenetic tree was constructed using Molecular Evolutionary Genetics Analysis (MEGA 6.06). Bootstrap values were obtained from 500 replicates and branches having values > 50 are shown. Scale bar indicates an evolutionary distance of 0.25 amino acid substitutions per position. Auxin induced SAURs are

highlighted in yellow, and auxin repressed *SAURs* are highlighted in blue. Data were obtained from Gil et al. (1994); Tian et al. (2002); Zhao et al. (2003); Goda et al. (2004); Nemhauser et al. (2004); Redman et al. (2004); Okushima et al. (2005); Paponov et al. (2008); Chapman et al. (2012); Spartz et al. (2012); Hou et al. (2013); Kong et al. (2013); Markakis et al. (2013); Stamm and Kumar (2013).

**Supplementary Table 1.** Putative DST elements within the 3'-UTR of Arabidopsis SAUR genes.

Putative DST*	Experimental support
<i>SAUR2</i> /At4g34780**	
<i>SAUR6</i> /At2g21210	
<i>SAUR8</i> /At2g16580	
<i>SAUR13</i> /At4g38825	
<i>SAUR15</i> /At4g38850	Gil et al., 1994; Gil and Green, 1996
<i>SAUR16</i> /At4g38860	
<i>SAUR22</i> /At5g18050	
<i>SAUR24</i> /At5g18080**	
<i>SAUR26</i> /At3g03850	
<i>SAUR27</i> /At3g03840	
<i>SAUR28</i> /At3g03830	
<i>SAUR29</i> /At3g03820**	
<i>SAUR31</i> /At4g00880	
<i>SAUR35</i> /At4g12410**	
<i>SAUR36</i> /At2g45210	Hou et al., 2013
<i>SAUR37</i> /At4g31320**	
<i>SAUR49</i> /At4g34750	
<i>SAUR50</i> /At4g34760	
<i>SAUR51</i> /At1g75580	
<i>SAUR53</i> /At1g19840**	
<i>SAUR54</i> /At1g19830	
<i>SAUR56</i> /At1g76190**	
<i>SAUR57</i> /At3g53250**	
<i>SAUR59</i> /At3g60690	
<i>SAUR61</i> /At1g29420	
<i>SAUR66</i> /At1g29500	
<i>SAUR68</i> /At1g29490	
<i>SAUR72</i> /At3g12830	
<i>SAUR75</i> /At5g27780**	
<i>SAUR79</i> /At2g35290	

\* Arabidopsis *SAUR* genes containing the DST consensus elements GGA(N)<sub>x</sub>ATAGAT(N)<sub>x</sub>GTA in their 3'-UTR sequence.

\*\* Arabidopsis *SAUR* genes lacking annotated 3'-UTR sequences in the TAIR database. For these genes, the 500 bp of genomic sequence downstream of the stop codon were searched for the DST consensus.

**Supplementary Table 2.** Brassinosteroid-regulated *SAUR* genes.

<b>SAURs</b>	<b>AGI number</b>	<b>Regulation by brassinosteroids (BR)</b>	<b>BZR1 binding</b>	<b>BES1 binding</b>
SAUR1	AT4G34770	Induced	Yes, HC	No
SAUR7	AT2G21200	Induced	Yes, HC	No
SAUR9	AT4G36110	Induced	Yes, LC	No
SAUR10	AT2G18010	Induced	Yes, LC	No
SAUR12	AT2G21220	Induced	Yes, HC	No
SAUR14	AT4G38840	Induced	Yes, LC	No
SAUR15	AT4G38850	Induced	Yes, HC	No
SAUR16	AT4G38860	Induced	Yes, HC	Yes
SAUR23	AT5G18060	Induced	No	No
SAUR25	AT4G13790	Induced	Yes, HC	No
SAUR27	AT3G03840	Induced	No	Yes
SAUR28	AT3G03830	Induced	No	Yes
SAUR30	AT5G53590	Induced	Yes, LC	No
SAUR32	AT2G46690	Induced	No	No
SAUR50	AT4G34760	Induced	Yes, HC	No
SAUR62	AT1G29430	Induced	Yes, HC	No
SAUR63	AT1G29440	Induced	Yes, HC	No
SAUR64	AT1G29450	Induced	Yes, HC	No
SAUR65	AT1G29460	Induced	No	NO
SAUR66	AT1G29500	Induced	Yes, LC	No
SAUR67	AT1G29510	Induced	Yes, LC	No
SAUR68	AT1G29490	Induced	Yes, LC	No
SAUR75	AT5G27780	Induced	No	No
SAUR78	AT1G72430	Induced	Yes, HC	No
SAUR79	AT2G35290	Induced	Yes, LC	No
SAUR35	AT4G12410	Repressed	No	No
SAUR36	AT2G45210	Repressed	Yes, HC	Yes
SAUR41	AT1G16510	Repressed	Yes, HC	No
SAUR44	AT5G03310	Repressed	No	No
SAUR46	AT2G37030	Repressed	No	No
SAUR51	AT1G75580	Repressed	Yes, LC	No
SAUR59	AT3G60690	Repressed	Yes, HC	Yes
SAUR71	AT1G56150	Repressed	Yes, HC	No
SAUR72	AT3G12830	Repressed	No	No

Data were obtained from Wang et al. (2012). HC, high confidence; LC, low confidence.

**Supplementary Table 3.** Gibberellin-regulated *SAUR* genes.

<b>SAURs</b>	<b>AGI number</b>	<b>Regulation by gibberellins (GA)</b>
SAUR3	AT4G34790	Induced
SAUR4	AT4G34800	Induced
SAUR5	AT4G34810	Induced
SAUR8	AT2G16580	Induced
SAUR11	AT5G66260	Induced
SAUR15	AT4G38850	Induced
SAUR16	AT4G38860	Induced
SAUR19	AT5G18010	Induced
SAUR20	AT5G18020	Induced
SAUR21	AT5G18030	Induced
SAUR23	AT5G18060	Induced
SAUR24	AT5G18080	Induced
SAUR26	AT3G03850	Induced
SAUR27	AT3G03840	Induced
SAUR28	AT3G03830	Induced
SAUR29	AT3G03820	Induced
SAUR46	AT2G37030	Induced
SAUR49	AT4G34750	Induced
SAUR50	AT4G34760	Induced
SAUR53	AT1G19840	Induced
SAUR55	AT5G50760	Induced
SAUR57	AT3G53250	Induced
SAUR64	AT1G29450	Induced
SAUR65	AT1G29460	Induced
SAUR66	AT1G29500	Induced
SAUR67	AT1G29510	Induced
SAUR68	AT1G29490	Induced
SAUR31	AT4G00880	Repressed
SAUR71	AT1G56150	Repressed

Data were obtained from Bai et al. (2012).



**Supplementary Table 4.** Abscisic acid- and jasmonate-regulated *SAUR* genes.

<b>SAURs</b>	<b>AGI number</b>	<b>Regulation by abscisic acid (ABA)</b>
<i>SAUR30</i>	AT5G53590	Induced
<i>SAUR36</i>	AT2G45210	Induced
<i>SAUR41</i>	AT1G16510	Induced
<i>SAUR59</i>	AT3G60690	Induced
<i>SAUR72</i>	AT3G12830	Induced
<i>SAUR1</i>	AT4G34770	Repressed
<i>SAUR6</i>	AT2G21210	Repressed
<i>SAUR12</i>	AT2G21220	Repressed
<i>SAUR14</i>	AT4G38840	Repressed
<i>SAUR16</i>	AT4G38860	Repressed
<i>SAUR31</i>	AT4G00880	Repressed
<i>SAUR50</i>	AT4G34760	Repressed
<i>SAUR55</i>	AT5G50760	Repressed
<i>SAUR62</i>	AT1G29430	Repressed
<i>SAUR78</i>	AT1G72430	Repressed
<b>SAURs</b>		
<b>SAURs</b>	<b>AGI number</b>	<b>Regulation by methyl jasmonate (MJ)</b>
<i>SAUR9</i>	AT4G36110	Induced
<i>SAUR1</i>	AT4G34770	Repressed
<i>SAUR14</i>	AT4G38840	Repressed
<i>SAUR16</i>	AT4G38860	Repressed
<i>SAUR23</i>	AT5G18060	Repressed
<i>SAUR31</i>	AT4G00880	Repressed
<i>SAUR36</i>	AT2G45210	Repressed
<i>SAUR49</i>	AT4G34750	Repressed
<i>SAUR50</i>	AT4G34760	Repressed
<i>SAUR59</i>	AT3G60690	Repressed
<i>SAUR62</i>	AT1G29430	Repressed
<i>SAUR63</i>	AT1G29440	Repressed

Data were obtained from Nemhauser et al. (2006).