

**Table S1 List of sequences included in the alignments and phylogenetic tree**

Species	TAIR/GenBank/ PopGenE/ConGenE/ Gymno Plaza ID	No. of amino acids	Abbreviation	Function	Domain information
<i>Arabidopsis thaliana</i>	AT1G22640	257	AtMYB3	Overexpression downregulates lignin pathway	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-131aa. <b>E-value:</b> 3.14533e-71. <b>Contains</b> EAR domain.
	AT4G38620	282	AtMYB4	Overexpression downregulates lignin pathway	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-140 aa. <b>E-value:</b> 3.94647e-72. <b>Contains</b> EAR domain.
	AT3G13540	249	AtMYB5	Acts as a negative regulator of trichome branching	Contains R2 domain, R3 domain, bHLH interacting domain. Contains MYB5 transcription repressor domain (PLN03212) with interval of 1-249 aa. <b>E-value:</b> 0. <b>Lacks</b> EAR domain.
	AT2G16720	269	AtMYB7	Suppressor of lignin pathway	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-133 aa. <b>E-value:</b> 1.03262e-73. <b>Contains</b> EAR domain.
	AT4G34990	274	AtMYB32	Suppressor of lignin pathway	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-161 aa. <b>E-value:</b> 1.3486e-75. <b>Contains</b> EAR domain.
	AT1G16490	274	AtMYB58	Positively regulates lignin synthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 4-149 aa. <b>E-value:</b> 1.00702e-56. <b>Lacks</b> EAR domain.
	AT1G79180	327	AtMYB63	Positively regulates lignin synthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-440 aa. <b>E-value:</b> 9.98502e-52. <b>Lacks</b> EAR domain.
<i>Populus tomentosa</i> (Populus)	KY114929	441	Pto_MYB170	Positively regulates lignin synthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 4-272 aa. <b>E-value:</b> 0. <b>Lacks</b> EAR domain.
	JQ801749	428	Pto_MYB216	Positively regulates lignin synthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-427 aa. <b>E-value:</b> 0. <b>Lacks</b> EAR domain.
<i>Populus trichocarpa</i> (Populus)	XP_002312966.1	271	Potri_MYB156	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-131aa. <b>E-value:</b> 1.23545e-71. <b>Contains</b> EAR domain.
	XP_002306180.1	268	Potri_MYB221	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-131aa. <b>E-value:</b> 2.11766e-71. <b>Contains</b> EAR domain.
<i>Eucalyptus gunnii</i> (Eucalyptus)	CAE09058.1	255	EgMYB1	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-163 aa. <b>E-value:</b> 2.48018e-70. <b>Contains</b> EAR domain.
<i>Panicum virgatum</i> (Switchgrass)	AEM17348.1	258	PvMYB4	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-151 aa. <b>E-value:</b> 7.71002e-75. <b>Contains</b> EAR domain.
<i>Zea mays</i> (Maize)	NP_001105949.2	273	ZmMYB31	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-131 aa. <b>E-value:</b> 2.085e-74. <b>Contains</b> EAR domain.
	NP_001106009.2	260	ZmMYB42	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-127 aa. <b>E-value:</b> 3.13331e-69. <b>Contains</b> EAR domain.
<i>Ginkgo biloba</i>	AWI63367.1	306	GbMYBR1	Overexpression downregulates lignin pathway	Contains R2 domain, R3 domain, bHLH interacting domain. and MYB5 transcription repressor domain (PLN03212) with interval of 4-130 aa. <b>E-value:</b> 4.05741e-55. <b>Lacks</b> EAR domain.

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<i>Picea abies</i> (Norway spruce)	MA_130918p0010	382	Pa_AtMYB3-like1	Shade<Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 5-150 aa. <b>E-value:</b> 6.07934e-67. <b>Lacks</b> EAR domain.
	MA_323706p0010	357	Pa_AtMYB3-like2	Shade<Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 4-117 aa. <b>E-value:</b> 3.73202e-60. <b>Lacks</b> EAR domain.
	MA_10433651p0010	263	Pa_AtMYB3-like3	Shade>Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 7-153 aa. <b>E-value:</b> 4.12348e-51. <b>Lacks</b> EAR domain.
	MA_173020p0010	334	Pa_AtMYB3-like4	Shade North<Shade South	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 4-158 aa. <b>E-value:</b> 5.17563e-55. <b>Lacks</b> EAR domain.
	MA_7115p0010	293	Pa_AtMYB3-like5	Shade North<Shade South	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 5-116 aa. <b>E-value:</b> 6.26073e-56. <b>Lacks</b> EAR domain.
	MA_223201p0010	242	Pa_AtMYB4-like1	Shade<Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-190 aa. <b>E-value:</b> 6.84075e-65. <b>Contains</b> EAR domain.
	MA_199974p0010	210	Pa_AtMYB4-like2	Shade>Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain . Contains provisional hypothetical protein (PLN03091) with interval of 1-129 aa. <b>E-value:</b> 1.36395e-69. <b>Contains</b> EAR domain.
	MA_93127p0010	358	Pa_AtMYB4-like3	Shade>Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 5-129 aa. <b>E-value:</b> 1.10792e-67. <b>Lacks</b> EAR domain
<i>Pinus taeda</i> (Loblolly pine)	PITA_000010254	304	Pt_AtMYB3-like1	Shade<Sun at latitude South	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 10-144 aa. <b>E-value:</b> 1.62189e-53. <b>Contains</b> EAR domain.
	PITA_000052296	417	Pt_AtMYB3-like2	Shade<Sun at latitude South and North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 5-136 aa. <b>E-value:</b> 1.90929e-66. <b>Lacks</b> EAR domain.
	PITA_000074422	531	Pt_AtMYB3-like3	Shade<Sun at latitude South	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 3-118 aa and 184-270 aa. <b>E-value:</b> 1.7664e-46 . <b>Lacks</b> EAR domain.
	PITA_000071108	312	Pt_AtMYB3-like4	Shade<Sun at latitude South Shade North>Shade South	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 18-183 aa. <b>E-value:</b> 3.31219e-57. <b>Lacks</b> EAR domain.
	PITA_000078623	400	Pt_AtMYB3-like5	Shade<Sun at latitude South and North Shade North>Shade South	Contains R2 domain, R3 domain, bHLH interacting domain. and contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 30-145 aa. <b>E-value:</b> 3.62447e-58. <b>Lacks</b> EAR domain.
	PITA_000054044	331	Pt_AtMYB3-like6	Shade>Sun at latitude South Shade North>Shade South	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 72-192 aa. <b>E-value:</b> 1.09502e-51. <b>Lacks</b> EAR domain.
	PITA_000032473	386	Pt_AtMYB3-like7	Shade>Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-237 aa. <b>E-value:</b> 2.27093e-65. <b>Lacks</b> EAR domain.

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<i>Pinus taeda</i> (Loblolly pine)	PITA_000047748	243	Pt_AtMYB4- like1	Shade<Sun at latitude South Shade North>Shade South	Contains R2 domain, R3 domain and bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 5-152 aa. <b>E-value:</b> 1.06152e-64. <b>Contains</b> EAR domain.
	PITA_000002313	255	Pt_AtMYB4- like2	Shade>Sun at latitude South and North	Contains R2 domain, R3 domain and bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-129 aa. <b>E-value:</b> 7.13904e-67. <b>Contains</b> EAR domain.
	PITA_000008377	245	Pt_AtMYB4- like3	Shade>Sun at latitude South and North	Contains R2 domain, R3 domain and bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-128 aa. <b>E-value:</b> 3.75629e-67. <b>Contains</b> EAR domain.
	PITA_000038178	287	Pt_AtMYB4- like4	Shade>Sun at latitude South and North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 23-203 aa. <b>E-value:</b> 2.74522e-62. <b>Contains</b> EAR domain.
	PITA_000019252	250	Pt_AtMYB4- like5	Shade>Sun at latitude North	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-129 aa. <b>E-value:</b> 6.33336e-72. <b>Lacks</b> EAR domain.
	PITA_000068957	153	Pt_AtMYB4- like6	Shade>Sun at latitude North	Contains R3 domain, bHLH interacting domain. Contains provisional MYB5 transcription repressor domain (PLN03212) with interval of 14-78 aa. <b>E-value:</b> 7.05949e-25. <b>Lacks</b> R2 domain and EAR domain.
<i>Cryptomeria fortune</i> (Chinese cedar)	DOI: 10.1016/j.plaphy.2023 .107879	313	CfMYB5	Represses the lignin biosynthesis	Contains R2 domain, R3 domain, bHLH interacting domain. Contains provisional hypothetical protein (PLN03091) with interval of 1-164 aa. <b>E-value:</b> 1.53e-44. <b>Contains</b> EAR domain.