**Supplementary Table 5.** Names, abbreviations and codes for all sequences included in the bHLH phylogenetic analysis. In purple are all new sequences isolated in this work.

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| --- | --- | --- | --- |
| **Species** | **Original Code** | **Assigned name in the tree** | **Database** |
| *Amborella\_trichopoda* | AmtrTT8 | AmtrTT8 | Phytozome |
| *Aquilegia\_coerulea* | Aqcoe2G335600 | Aquilegia\_coerulea\_TT8\_ | Phytozome |
| *Arabidopsis\_halleri* | Araha.0776s0003 | Arabidopsis\_halleri\_TT8\_ | Phytozome |
| *Arabidopsis\_lyrata* | AL6G43450 | Arabidopsis\_lyrata\_TT8\_ | Phytozome |
| *Arabidopsis\_thaliana* | AT4G09820 | Arabidopsis\_thaliana\_TT8\_ | Phytozome |
| *Aristolochia\_arborea* | DN50796\_c0\_g1\_i2 | Aristolochia\_arborea\_TT8\_a | Evo Devo Transcriptomes |
| *Aristolochia\_arborea* | DN50796\_c0\_g1\_i5 | Aristolochia\_arborea\_TT8\_b | Evo Devo Transcriptomes |
| *Aristolochia\_deltantha* | DN18087\_c1\_g2\_i1 | Aristolochia\_deltantha\_TT8\_ | Evo Devo Transcriptomes |
| *Aristolochia\_fimbriata* | Afim\_c14784\_g2\_i1 | Aristolochia\_fimbriata\_TT8\_ | Evo Devo Transcriptomes |
| *Aristolochia\_lindneri* | DN10077\_c2\_g6\_i4 | Aristolochia\_lindneri\_TT8\_ | Evo Devo Transcriptomes |
| *Aristolochia\_lindneri* | DN10077\_c2\_g6\_i7 | Aristolochia\_lindneri\_TT8\_ | Evo Devo Transcriptomes |
| *Aristolochia\_macrophylla* | DN21619\_c0\_g1\_i1 | Aristolochia\_macrophylla\_TT8\_a | Evo Devo Transcriptomes |
| *Aristolochia\_macrophylla* | DN21619\_c0\_g1\_i4 | Aristolochia\_macrophylla\_TT8\_b | Evo Devo Transcriptomes |
| *Aristolochia\_manshuriensis* | DN20687\_c1\_g2\_i5 | Aristolochia\_manshuriensis\_TT8\_ | Evo Devo Transcriptomes |
| *Aristolochia\_praevenosa* | DN19158\_c3\_g1\_i4 | Aristolochia\_praevenosa\_TT8\_ | Evo Devo Transcriptomes |
| *Aristolochia\_ringens* | DN16032\_c5\_g4\_i15 | Aristolochia\_ringens\_TT8\_a | Evo Devo Transcriptomes |
| *Aristolochia\_ringens* | DN16032\_c5\_g4\_i19 | Aristolochia\_ringens\_TT8\_b | Evo Devo Transcriptomes |
| *Asarum\_canadense* | DN18835\_c1\_g1\_i2 | Asarum\_canadense\_TT8\_ | Evo Devo Transcriptomes |
| *Asarum\_europaeum* | DN16855\_c1\_g2\_i6 | Asarum\_europaeum\_TT8\_ | Evo Devo Transcriptomes |
| *Boechera\_stricta* | Bostr.25463s0338 | Boechera\_stricta\_TT8\_ | Phytozome |
| *Brachypodium\_distachyon* | Bradi1g54070 | Brachypodium\_distachyon\_TT8\_a | Phytozome |
| *Brachypodium\_distachyon* | Bradi1g54111 | Brachypodium\_distachyon\_TT8\_b | Phytozome |
| *Brachypodium\_stacei* | Brast06G178200 | Brachypodium\_stacei\_TT8 | Phytozome |
| *Brassica\_rapa* | Brara.I02317 | Brassica\_rapa\_TT8 | Phytozome |
| *Capsella\_grandiflora* | Cagra.1664s0001 | Capsella\_grandiflora\_TT8\_ | Phytozome |
| *Capsella\_rubella* | Carubv10002462 | Capsella\_rubella\_TT8\_ | Phytozome |
| *Carica\_papaya* | evm.TU.supercontig\_52.26 | Carica\_papaya\_TT8 | Phytozome |
| *Citrus\_clementina* | Ciclev10019118 | Citrus\_clementina\_TT8\_ | Phytozome |
| *Citrus\_sinensis* | orange1.1g037798 | Citrus\_sinensis\_TT8\_ | Phytozome |
| *Daucus\_carota* | DCAR\_002739 | Daucus\_carota\_TT8\_ | Phytozome |
| *Eucalyptus\_grandis* | Eucgr.H01487 | Eucalyptus\_grandis\_TT8\_ | Phytozome |
| *Eutrema\_salsugineum* | Thhalv10028584 | Eutrema\_salsugineum\_TT8\_ | Phytozome |
| *Fragaria\_vesca* | gene27827 | Fragaria\_vesca\_TT8\_ | Phytozome |
| *Glycine\_max* | Glyma.02G147800 | Glycine\_max\_TT8\_a | Phytozome |
| *Glycine\_max* | Glyma.10G026000 | Glycine\_max\_TT8\_b | Phytozome |
| *Glycine\_max* | Glyma.19G155300 | Glycine\_max\_TT8\_c | Phytozome |
| *Gossypium\_raimondii* | Gorai.007G136400 | Gossypium\_raimondii\_TT8 | Phytozome |
| *Kalanchoe\_dp\_* | 0012s0069 | Kalanchoe\_dp\_TT8\_a | Phytozome |
| *Kalanchoe\_dp* | Kaladp0020s0216 | Kalanchoe\_dp\_TT8\_b | Phytozome |
| *Kalanchoe\_laxiflora* | Kalax.1415s0004 | Kalanchoe\_laxiflora\_TT8\_a | Phytozome |
| *Kalanchoe\_laxiflora* | Kalax.0068s0076 | Kalanchoe\_laxiflora\_TT8\_b | Phytozome |
| *Manihot\_esculenta* | Manes.01G208400 | Manihot\_esculenta\_TT8\_ | Phytozome |
| *Medicago\_truncatula* | Medtr1g072320 | Medicago\_truncatula\_TT8\_ | Phytozome |
| *Mimulus\_guttatus* | Migut.D00287 | Mimulus\_guttatus\_TT8\_ | Phytozome |
| *Oryza\_sativa* | Os07g11020 | Oryza\_sativa\_TT8\_ | Phytozome |
| *Panicum\_hallii* | Pahal.B01396 | Panicum\_hallii\_TT8\_ | Phytozome |
| *Phaseolus\_vulgaris* | Phvul.007G171333 | Phaseolus\_vulgaris\_TT8\_a | Phytozome |
| *Phaseolus\_vulgaris* | Phvul.001G150300 | Phaseolus\_vulgaris\_TT8\_b | Phytozome |
| *Populus\_trichocarpa* | Potri.002G054100 | Populus\_trichocarpa\_TT8\_a | Phytozome |
| *Populus\_trichocarpa* | Potri.005G208600 | Populus\_trichocarpa\_TT8\_b | Phytozome |
| *Prunus\_persica* | Prupe.8G242100 | Prunus\_persica\_TT8 | Phytozome |
| *Ricinus\_communis* | 29647.t000109 | Ricinus\_communis\_TT8\_ | Phytozome |
| *Salix\_purpurea* | SapurV1A.0076s0350 | Salix\_purpurea\_TT8\_a | Phytozome |
| *Salix\_purpurea* | SapurV1A.0289s0260 | Salix\_purpurea\_TT8\_b | Phytozome |
| *Saruma\_henryi* | DN17181\_c0\_g1\_i2 | Saruma\_henryi\_TT8\_ | Evo Devo Transcriptomes |
| *Setaria\_italica* | Seita.2G081900 | Setaria\_italica\_TT8\_ | Phytozome |
| *Setaria\_viridis* | Sevir.2G085200 | Setaria\_viridis\_TT8\_ | Phytozome |
| *Solanum\_lycopersicum* | Solyc09g065100 | Solanum\_lycopersiucm\_TT8\_ | Phytozome |
| *Solanum\_tuberosum* | PGSC0003DMG400012891 | Solanum\_tuberosum\_TT8\_ | Phytozome |
| *Sorghum\_bicolor* | Sobic.002G076600 | Sorghum\_bicolor\_TT8\_ | Phytozome |
| *Thottea\_siliquosa* | DN16947\_c3\_g2\_i1 | Thottea\_siliquosa\_TT8 | Phytozome |
| *Trifolium\_pratense* | Tp57577 | Trifolium\_pratense\_TT8\_ | Phytozome |
| *Vitis\_vinifera* | GSVIVG01011123001 | Vitis\_vinifera\_TT8\_ | Phytozome |
| *Zea\_mays* | Zm00008a027089 | Zea\_mays\_TT8\_ | Phytozome |

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| --- | --- | --- | --- |
| ***Species*** | **Original Code** | **Assigned name in the tree** | **Database** |
| *Amborella\_trichopoda* | AmtrEGL1 | Amborella\_trichopoda\_GL3-like | Phytozome |
| *Aquilegia\_coerulea* | Aqcoe7G033100 | Aquilegia\_coerulea\_GL3\_like | Phytozome |
| *Arabidopsis\_halleri* | Araha.0740s0005 | Arabidopsis\_halleri\_EGL1 | Phytozome |
| *Arabidopsis\_halleri* | Araha.2755s0005 | Arabidopsis\_halleri\_GL3 | Phytozome |
| *Arabidopsis\_halleri* | Araha.7109s0015 | Arabidopsis\_halleri\_MYC1 | Phytozome |
| *Arabidopsis\_lyrata* | AL2G11580 | Arabidopsis\_lyrata\_EGL1 | Phytozome |
| *Arabidopsis\_lyrata* | AL7G48130 | Arabidopsis\_lyrata\_GL3 | Phytozome |
| *Arabidopsis\_lyrata* | AL6G52990 | Arabidopsis\_lyrata\_MYC1 | Phytozome |
| *Arabidopsis\_thaliana* | AT4G00480 | Arabidopsis\_thaliana\_AtMYC1 | Phytozome |
| *Arabidopsis\_thaliana* | AT1G63650 | Arabidopsis\_thaliana\_EGL1 | Phytozome |
| *Arabidopsis\_thaliana* | AT5G41315 | Arabidopsis\_thaliana\_GL3 | Phytozome |
| *Aristolochia\_arborea* | DN58059\_c1\_g2\_i2 | Aristolochia\_arborea\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_clematitis* | DN9755\_c2\_g1\_i5 | Aristolochia\_clematitis\_GL3\_like | Evo Devo Transcriptomes |
| *Aristolochia\_deltantha* | DN19099\_c0\_g4\_i2 | Aristolochia\_deltantha\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_fimbriata* | Afim\_c11436\_g1\_i1 | Aristolochia\_fimbriata\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_lindneri* | DN10441\_c1\_g11\_i3 | Aristolochia\_lindneri\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_macrophylla* | DN20072\_c3\_g1\_i4 | Aristolochia\_macrophylla\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_manshuriensis* | DN17373\_c0\_g1\_i2 | Aristolochia\_manshuriensis\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_praevenosa* | DN19656\_c0\_g1\_i4 | Aristolochia\_praevenosa\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Aristolochia\_ringens* | DN13768\_c0\_g1\_i18 | Aristolochia\_ringens\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Asarum\_canadense* | DN20673\_c2\_g1\_i1 | Asarum\_canadense\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Asarum\_europaeum* | DN16592\_c0\_g1\_i1 | Asarum\_europaeum\_GL3\_like\_ | Evo Devo Transcriptomes |
| *Boechera\_stricta* | Bostr.29223s0199 | Boechera\_stricta\_EGL1\_ | Phytozome |
| *Boechera\_stricta* | Bostr.7200s0145 | Boechera\_stricta\_GL3\_ | Phytozome |
| *Boechera\_stricta* | Bostr.10064s0058 | Boechera\_stricta\_MYC1\_ | Phytozome |
| *Brassica\_oleracea* | Bol011507 | Brassica\_oleracea\_MYC1\_ | Phytozome |
| *Brassica\_rapa* | Brara.I01246 | Brassica\_rapa\_EGL1\_a | Phytozome |
| *Brassica\_rapa* | Brara.I01388 | Brassica\_rapa\_EGL1\_b | Phytozome |
| *Brassica\_rapa* | Brara.D01137 | Brassica\_rapa\_GL3\_ | Phytozome |
| *Brassica\_rapa* | Brara.C02906 | Brassica\_rapa\_MYC1\_a | Phytozome |
| *Brassica\_rapa* | Brara.I00031 | Brassica\_rapa\_MYC1\_b | Phytozome |
| *Capsella\_grandiflora* | Cagra.2104s0007 | Capsella\_grandiflora\_EGL1\_ | Phytozome |
| *Capsella\_grandiflora* | Cagra.4456s0013 | Capsella\_grandiflora\_MYC1\_ | Phytozome |
| *Capsella\_rubella* | Carubv10019965 | Capsella\_rubella\_EGL1\_ | Phytozome |
| *Capsella\_rubella* | Carubv10004345 | Capsella\_rubella\_GL3\_ | Phytozome |
| *Capsella\_rubella* | Carubv10000576 | Capsella\_rubella\_MYC1\_ | Phytozome |
| *Carica\_papaya* | evm.TU.supercontig\_537.2 | Carica\_papaya\_EGL1\_GL3\_like\_ | Phytozome |
| *Citrus\_clementina* | Ciclev10019219 | Citrus\_clementina\_EGL1\_GL3\_like\_a | Phytozome |
| *Citrus\_clementina* | Ciclev10019338 | Citrus\_clementina\_EGL1\_GL3\_like\_b | Phytozome |
| *Citrus\_sinensis* | orange1.1g006217 | Citrus\_sinensis\_EGL1\_GL3\_like\_ | Phytozome |
| *Citrus\_sinensis* | orange1.1g007527 | Citrus\_sinensis\_EGL1\_GL3\_like\_ | Phytozome |
| *Daucus\_carota* | DCAR\_004632 | Daucus\_carota\_EGL1\_GL3\_like\_ | Phytozome |
| *Eucalyptus\_grandis* | Eucgr.D01841 | Eucalyptus\_grandis\_EGL1\_GL3\_like\_ | Phytozome |
| *Eucalyptus\_grandis* | Eucgr.D02287 | Eucalyptus\_grandis\_EGL1\_GL3\_like\_ | Phytozome |
| *Eutrema\_salsugineum* | Thhalv10023356 | Eutrema\_salsugineum\_EGL1\_ | Phytozome |
| *Eutrema\_salsugineum* | Thhalv10027709 | Eutrema\_salsugineum\_GL3\_ | Phytozome |
| *Eutrema\_salsugineum* | Thhalv10029523 | Eutrema\_salsugineum\_MYC1\_ | Phytozome |
| *Fragaria\_vesca* | gene32494 | Fragaria\_vesca\_EGL1\_GL3\_like\_ | Phytozome |
| *Glycine\_max* | Glyma.07G071000 | Glycine\_max­\_EGL1\_GL3\_lik\_a | Phytozome |
| *Glycine\_max* | Glyma.03G009500 | Glycine\_max\_EGL1\_GL3\_like\_b | Phytozome |
| *Glycine\_max* | Glyma.05G208300 | Glycine\_max\_EGL1\_GL3\_like\_c | Phytozome |
| *Glycine\_max* | Glyma.08G014900 | Glycine\_max\_EGL1\_GL3\_like\_d | Phytozome |
| *Gossypium\_raimondii* | Gorai.004G212200 | Gossypium\_raimondii\_EGL1\_GL3\_like\_ | Phytozome |
| *Kalanchoe\_dp* | 0101s0080 | Kalanchoe\_dp\_EGL1\_GL3\_like\_ | Phytozome |
| *Kalanchoe\_dp* | 0472s0024 | Kalanchoe\_dp\_EGL1\_GL3\_like\_ | Phytozome |
| *Kalanchoe\_laxiflora* | Kalax.0262s0008 | Kalanchoe\_laxiflora\_EGL1\_GL3\_like\_ | Phytozome |
| *Kalanchoe\_laxiflora* | Kalax.1257s0001 | Kalanchoe\_laxiflora\_EGL1\_GL3\_like\_ | Phytozome |
| *Manihot\_esculenta* | Manes.02G019400 | Manihot\_esculenta\_EGL1\_GL3\_like\_ | Phytozome |
| *Manihot\_esculenta* | Manes.05G034700 | Manihot\_esculenta\_EGL1\_GL3\_like\_ | Phytozome |
| *Medicago\_truncatula* | Medtr8g098275 | Medicago\_truncatula\_EGL1\_GL3\_like\_ | Phytozome |
| *Mimulus\_guttatus* | Migut.E01090 | Mimulus\_guttatus\_EGL1\_GL3\_like\_ | Phytozome |
| *Oryza\_sativa* | Os01g39480 | Oryza\_sativa\_GL3\_like\_a | Phytozome |
| *Oryza\_sativa\_* | Os01g39580 | Oryza\_sativa\_GL3\_like\_b | Phytozome |
| *Oryza\_sativa\_* | Os04g47040 | Oryza\_sativa\_GL3\_like\_c | Phytozome |
| *Oryza\_sativa\_* | Os04g47059 | Oryza\_sativa\_GL3\_like\_d | Phytozome |
| *Oryza\_sativa\_* | Os04g47080 | Oryza\_sativa\_GL3\_like\_e | Phytozome |
| *Oryza\_sativa\_* | Os11g15210 | Oryza\_sativa\_GL3\_like\_f | Phytozome |
| *Panicum\_hallii\_* | Pahal.G01894 |  | Phytozome |
| *Panicum\_virgatum\_* | Pavir.Gb01093 |  | Phytozome |
| *Phaseolus\_vulgaris* | Phvul.002G290000 | Phaseolus\_vulgaris\_EGL1\_GL3\_like\_Phvul.002G290000 | Phytozome |
| *Phaseolus\_vulgaris* | Phvul.010G098500 | Phaseolus\_vulgaris\_EGL1\_GL3\_like\_Phvul.010G098500 | Phytozome |
| *Populus\_trichocarpa* | Potri.001G103600 | Populus\_trichocarpa\_EGL1\_GL3\_like\_Potri.001G103600 | Phytozome |
| *Populus\_trichocarpa* | Potri.002G159400 | Populus\_trichocarpa\_EGL1\_GL3\_like\_Potri.002G159400 | Phytozome |
| *Populus\_trichocarpa* | Potri.003G128000 | Populus\_trichocarpa\_EGL1\_GL3\_like\_Potri.003G128000 | Phytozome |
| *Populus\_trichocarpa* | Potri.014G083900 | Populus\_trichocarpa\_EGL1\_GL3\_like\_Potri.014G083900 | Phytozome |
| *Prunus\_persica* | Prupe.2G170100 | Prunus\_persica\_EGL1\_GL3\_like\_Prupe.2G170100 | Phytozome |
| *Prunus\_persica* | Prupe.5G100700 | Prunus\_persica\_EGL1\_GL3\_like\_Prupe.5G100700 | Phytozome |
| *Ricinus\_communis* | 0174.t000426 | Ricinus\_communis\_EGL1\_GL3\_like3\_0174.t000426 | Phytozome |
| *Ricinus\_communis* | 30190.t000459 | Ricinus\_communis\_EGL1\_GL3\_like\_30190.t000459 | Phytozome |
| *Salix\_purpurea* | SapurV1A.0046s0390 | Salix\_purpurea\_EGL1\_GL3\_like\_SapurV1A.0046s0390 | Phytozome |
| *Salix\_purpurea* | SapurV1A.0098s0030 | Salix\_purpurea\_EGL1\_GL3\_like\_SapurV1A.0098s0030 | Phytozome |
| *Salix\_purpurea* | SapurV1A.0139s0380 | Salix\_purpurea\_EGL1\_GL3\_like\_SapurV1A.0139s0380 | Phytozome |
| *Salix\_purpurea* | SapurV1A.0612s0160 | Salix\_purpurea\_EGL1\_GL3\_like\_SapurV1A.0612s0160 | Phytozome |
| *Saruma\_henryi* | DN19834\_c2\_g3\_i1 | Saruma\_henryi\_GL3\_like\_DN19834\_c2\_g3\_i1 | Evo Devo Transcriptomes |
| *Saruma\_henryi* | DN19834\_c2\_g3\_i2 | Saruma\_henryi\_GL3\_like\_DN19834\_c2\_g3\_i2 | Evo Devo Transcriptomes |
| *Setaria\_italica* | Seita.5G411500 | Setaria\_italica\_Seita.5G411500 | Phytozome |
| *Setaria\_italica* | Seita.7G195400 | Setaria\_italica\_Seita.7G195400 | Phytozome |
| *Setaria\_viridis* | Sevir.7G207500 | Setaria\_viridis\_Sevir.7G207500 | Phytozome |
| *Solanum\_lycopersicum* | Solyc08g081140 | Solanum\_lycopersicum­\_EGL1\_GL3\_like\_Solyc08g081140 | Phytozome |
| *Sorghum\_bicolor* | Sobic.006G076900 | Sorghum\_bicolor\_Sobic.006G076900 | Phytozome |
| *Sorghum\_bicolor* | Sobic.006G175200 | Sorghum\_bicolor\_Sobic.006G175200 | Phytozome |
| *Sorghum\_bicolor* | Sobic.006G175700 | Sorghum\_bicolor\_Sobic.006G175700 | Phytozome |
| *Theobroma\_cacao* | Thecc1EG016261 | Theobroma\_cacao\_EGL1\_GL3\_like\_Thecc1EG016261 | Phytozome |
| *Thottea\_siliquosa* | DN16685\_c3\_g1\_i22 | Thottea\_siliquosa\_GL3\_like\_DN16685\_c3\_g1\_i22 | Evo Devo Transcriptomes |
| *Thottea\_siliquosa* | DN16685\_c3\_g2\_i3 | Thottea\_siliquosa\_GL3\_like\_DN16685\_c3\_g2\_i3 | Evo Devo Transcriptomes |
| *Trifolium\_pratense* | Tp57577 | Trifolium\_pratense\_EGL1\_GL3\_like\_Tp57577 | Phytozome |
| *Vitis\_vinifera* | GSVIVG01019750001 | Vitis\_vinifera\_EGL1\_GL3\_like\_GSVIVG01019750001 | Phytozome |
| *Vitis\_vinifera* | GSVIVG01026927001 | Vitis\_vinifera\_EGL1\_GL3\_like\_GSVIVG01026927001 | Phytozome |
| *Zea\_mays* | GRMZM5G822829\_EGL1like | Zea\_mays\_GRMZM5G822829\_EGL1like | Phytozome |
| *Zea\_mays* |  | Zea\_mays\_R1 | Phytozome |
| *Zea\_mays* | Zm00008a038470EGL1like | Zea\_mays\_Zm00008a038470EGL1like | Phytozome |
| *Zea\_mays* | Zm00008a038470\_EGL1like | Zea\_mays\_Zm00008a038470\_EGL1like | Phytozome |