

**Genome-wide identification of the tea plant bHLH  
transcription factor family and discovery of candidate  
regulator of trichome formation**  
**‘Supplemental Information’**

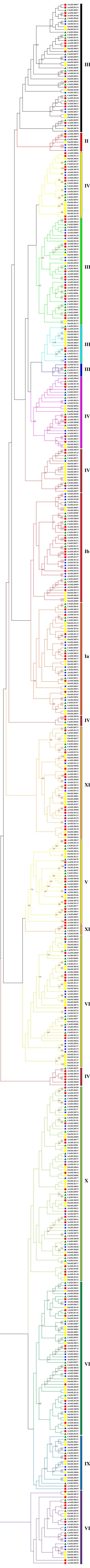
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
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
	<b>basic</b>	<b>helix1</b>	<b>loop</b>	<b>helix2</b>
CsbHLH001	L P A K N L M A E R R R K K L N D R L Y M   R S V V P K S - K M D R A S I   L G D A T E Y L K E L   L Q K I K D L			
CsbHLH046	L P A K N L M A E R R R K K L N D R L Y L   R S V V P K S - K M D R A S I   L G D A V E Y L K E L   L Q K I S D L			
CsbHLH030	L P A K N L M A E R R R K K L N D R L Y M   R S V V P K S - K M D R A S I   L G D A T E Y L K E L   L Q R I N D L			
CsbHLH051	Q P S K N L M A E R R R K R L N D R L S M   R S V V P K S - K M D R T S I   L G D T T I D Y M K E L L E R I N N L			
CsbHLH126	Q P S K N L M A E R R R K R L N D R L S M   R S V V P K S - K M D R T S I   L G D T T I D Y M K E L L E R I N N L			
CsbHLH109	Q P S K N L M A E R R R K R L N D R L S M   R S V V P K S - K M D R T S I   L G D T T I D Y M K E L L E R I N N L			
CsbHLH058	Q P S K N L M A E R R R K R L N D R L S M   R S V V P K S - K M D R T S I   L G D T T I D Y M K E L L E R I N N L			
CsbHLH1061	A A S K N I I V S E R N R R K K L N D R L F A   R A V V P K S - K M D K A S I I K D A I   D Y I Q E L H E O E R R I			
CsbHLH114	A A S K N I I V S E R N R R K K L N D R L F A   R A V V P K S - K M D K A S I I K D A I   D Y I Q E L H E O E R R I			
CsbHLH004	A - Q D H V V A E R K R E E K L S Q R F I A   S A L V P G K - K L D N A S V L G N A   K Y I K E L   Q E H V K K H			
CsbHLH1060	V - Q D R V M A E R K R E E K L S Q R F I A   S A L V P G K - K L D N A S V L G N A   K Y I K E L   Q E H V K K L L			
CsbHLH1017	S N O D H I I M A E R K R E E K L S Q R F I A   S A L V P G K - K M D K A S V L G D A   K Y L K O L   Q E R V K T L			
CsbHLH128	S N O D H I I M A E R K R E E K L S Q R F I A   S A L V P G K - K M D K A S V L G D A   K Y L K O L   Q E R V K T L			
CsbHLH1091	A - R N H I I A E R R E E R R E R L N Q K I I S U   S T L I P G E - K M D K A S I   L Q D A   K Y I K H L   Q E H V O T L			
CsbHLH1054	A - R N H I I A E R R E E R R E R L N Q K I I S U   S A L I P S K - K M D K A S I   L E D A J E Y   I K Q L   K E H V G T L			
CsbHLH1095	- P L N H V E A E R O R R E E K L N Q R F Y A   R A V V P V N S - K M D K A S I   L G D A   I S Y I N E L K S N L Q O T S			
CsbHLH1013	- P L N H V E A E R O R R E E K L N Q R F Y A   R A V V P V N S - K M D K A S I   L G D A   I A Y I N E L K S N L Q O A A			
CsbHLH1062	P P V N H V Q A E R O R R E E K L N N R F Y A   R S V V P V N S - R M D K A S I   L G D A   I A D A V S Y   I K E L   K A K V G E L			
CsbHLH1132	P P V N H V Q A E R O R R E E K L N N R F Y A   R S V V P V N S - R M D K A S I   L G D A   I A D A V S Y   I K E L   K A K V G E L			
CsbHLH1099	T P I N H V Q A E R O R R E E K L N H R F Y A   R S V V P V N S - R M D K A S I   L G D A   I A D A V A Y   I K E L   K A K T E E L			
CsbHLH1090	- P L N H V E A E R O R R E E K L N H R F Y A   R A V V P V N S - R M D K A S I   L G D A   I S D A V S Y   I N E L K A K V E E L			
CsbHLH1098	- P L N H V E A E R O R R E E K L N H R F Y A   R A V V P V N S - R M D K A S I   L G D A   I S D A V S Y   I N E L K A K V E E L			
CsbHLH1041	- P L N H V E A E R O R R E E K L N H R F Y A   R A V V P V N S - R M D K A S I   L G D A   I A D A V A Y   I T E L E R K L K D M			
CsbHLH1078	- P L N H V E A E R O R R E E K L N H R F Y A   R A V V P V N S - R M D K A S I   L G D A   I A Y I T E L E R K L K D M			
CsbHLH1095	- P L N H V E A E R O R R E E K L N H R F Y A   R A V V P V N S - R M D K A S I   L G D A   I T I T D L Q O K K I R I L			
CsbHLH1125	- P L N H V E A E R O R R E E K L N H R F Y A   R S V V P V N S - R M D K A S I   L G D A   I T I T D L Q O K K I R I L			
CsbHLH1024	I D S N H V L S E R R R E E K I N K R F S V   Q S L V P S S - K V N K V S I   L D N T   K Y L   K D L   E R R V E E L			
CsbHLH133	I Y V O C A F P E K R M E D - - E K F L Y   R S M V P S S - K I D K A S I   L G E A   I E Y   K E L   K A R V E E L			
CsbHLH1112	L S A N H V L A E R R R E E K L N E R F Y A   R S L V P F T - K M D K A S I   L G D T   I E Y   K Q L   R K K I L D L			
CsbHLH1034	L S A N H V L A E R R R E E K L N E R F Y A   R S L V P F T - K M D K A S I   L G D T   I E Y   K Q L   R K K I L D L			
CsbHLH1129	A L K S H S E A E R R R E E K I N A H L A T T   R G L   V P C E K - K M D K A T L   L A E V   I S Q V   K Q L   K K T A T E T			
CsbHLH1070	A L R N H S E A E R R R E E K I N A H L A T T   R S L   I P G N I - M E K A S I   A E V   I N N L   K E L   R R N A A E A			
CsbHLH1062	A S K S H S E A E R R R E E K I N N H L A K   R S L   L P S T K - T D K A S I   A E V   I Q H V K E L   K R O T S L I			
CsbHLH1101	A S K S H S E A E R R R E E K I N N H L A K   R S L   L P S T K - T D K A S I   A E V   I Q H V K E L   K R O T S L I			
CsbHLH1099	A S K S H S E A E R R R E E K I N N H L A K   R S L   L P S T K - T D K A S I   A E V   I Q H V K E L   K R O T S V I			
CsbHLH1052	A S K S H K E A E K R Q K I N S H L D K   R T L   L P C S K - T D K A S I   L A K V   I Q R V K E L   K Q Q T S E L			
CsbHLH1012	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P E T R D Q A S I   I G G A I   I N Y V K E L   E Q Q K L Q S L			
CsbHLH1048	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P D Y R D Q A S I   I G G A I   I N Y V K E L   E Q Q K L Q S L			
CsbHLH1032	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P D Y R D Q A S I   I G G A I   I N F V K E L   E Q Q L Q T L			
CsbHLH1091	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P D Y R D Q A S I   I G G A I   I N F V K E L   E Q Q L Q T L			
CsbHLH1069	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P E Y Y V R D Q A S I   I G V G A I   I V G G A I   I E Q V K E L   E Q Q L Q T L			
CsbHLH1116	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P E Y Y V R D Q A S I   I G V G A I   I E Y V K E L   E H L L O S L			
CsbHLH1036	Q R M T H I A V E R R R E E K L N Q M E Y Y   S V L   R G L   M P E Y Y V R D Q A S I   I G V G A I   I E Y V K E L   E H L L O S L			
CsbHLH1097	Q K V S H I T V E R N R R E E K L N Q M E Y Y   S V L   R S L   M P S Y V R D Q A S I   I G G V D Y   I N E L   Q Q V L H S L			
CsbHLH1019	Q K V S H I T V E R N R R E E K L N Q M E Y Y   S V L   R S L   M P C Y V R D Q A S I   I G G V V D Y   I N E L   Q Q V L O S L			
CsbHLH1096	Q N N S H I A V E R N R R E E K L N Q M E Y Y   S V L   R S L   T P C Y   I R D Q A S I   I G G V   I E F I   K E L   H Q V O L S L			
CsbHLH1029	D H E I H W T E R E R R K K M R N M F S N U   H A L L   P H P P K A D K S T I   V D E A V T H I   K S L   Q O T L O K L			
CsbHLH1089	D H E T H I W T E R E R R K K M R N M F S N U   H A L L   S H P P K A D K S T I   V D E A V T H I   K S L   Q O T L O K L			
CsbHLH1050	N D R K T I E K N R - - R N Q M K T L Y S K L   H S L   V H P - - A M P L   P D Q L   E E A A Y   I K K L   Q K N L E K L			
CsbHLH1064	T D R K T I E K N R - - R N Q M K T L Y S K L   H S L   V H P - - A M P L   P D Q L   E E A A Y   I K Q L   K E R I E E L			
CsbHLH1094	L D R K L T V E R N - - R I H M K G K I C F K L   T S L   I P P H F M L S Q Q D L   D Q A A E Y   I K Q L   K E R I E E L			
CsbHLH1071	L Q - H L   D H N R S S S S S L R S L   S D S S E V S P F Y N L   S D S S E V S P F Y N L   S E P P T E A P T Q   R Q L   S T S I S P L			
CsbHLH1093	L P P H T D Q N R S S S S S L R S L   S D S S E V S P F Y N L   S D S S E V S P F Y N L   S E P P T E A P T Q   R Q L   S T S I S P L			
CsbHLH1072	V A A E G G K S T D P R N P K S I K F E Q E R E L   I H D Q K P D K A S T I   L E A N A Y   I K K L   E E E L E K M			
CsbHLH1084	V V G - - G K K T D P N N P R S H A T E Q R V   I P D Q K P D K A S T I   L E A N A Y   I K K L   E E E L E K M			
CsbHLH1027	I M H R D I E R K - - R Q E M A T H   H A S E R   I S M S D H I Q E S V N Y   I K H   K Q K K I K E M			
CsbHLH1071	I N R S D I E R K - - R E M E S T L   Y A S R   E S R L   P Y I - - S T S D H M E A V N Y   I K N   E K N I Q Q L			
CsbHLH1071	L Q - H L   D H N R S S S S S L R S L   S D S S E V S P F Y N L   S D S S E V S P F Y N L   S E P P T E A P T Q   R Q L   S T S I S P L			
CsbHLH1093	V G S T E R T H A V S K H E T E R D R   I P D Q K P D K A S T I   L E A N A Y   I K Q L   Q E K V O K Y			
CsbHLH1067	K H C F M A N S C A S H D Y T S R T N L   I P D Q K P D K A S T I   L E A N A Y   I K Q L   Q E K V O K Y			
CsbHLH1025	K A C R L R R D K L N D K F V E T   G I L E   E P G P P K T D K A A I   L V E A I   R L V I Q L   R G D A Q K L			
CsbHLH1031	K A C R L R R D K L N D K F V E T   G I L E   E P G P P K T D K A A I   L V D A V R M V T Q L   R S E A Q K L			
CsbHLH1111	K A C R L R R D K L N D K F V E T   G I L E   E P G P P K T D K A A I   L S D A V R M V T Q L   R S E A Q K L			
CsbHLH1068	K A D R K L R R D R L N E Q F L E T   G V L   D P D - - K N D K G S I   L T D T   O M A K D P   T D Q V N R L			
CsbHLH1076	K A D R K L R R D R L N E H F E L D   G A I   D P D - - K N D K A T I   L T D T   Q V L   K D L   T A E V N R L			
CsbHLH1012	A M D S H S L A E R R E E K I N K M K C   Q G C S K Y - - T G K A G M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1066	A T D S H S L A E R R E E K I S E R M K Y   Q G C S K Y - - T G K A G M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1019	A T D S H S L A E R R E E K I S E R M K L   Q G C S K Y - - T G K A G M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1095	A T D S H S L A E R R E E K I S E R M K M   Q G C S K Y - - T G K A G M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1044	A T D S H S L A E R R E E K I S E R M K R   Q G C S K Y - - T G K A G M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1043	A T D S H S L A E R R E E K I S E R M K R   Q G C Y K T - - M G M A M   D E   I N Y V H S   Q N Q - - - V			
CsbHLH1044	A T D S H S L A E R R E E K I S E R M K R   Q G C Y K T - - M G M A M   D E   I N Y V Q S L   Q N Q - - - V			
CsbHLH1047	A T D S H S L A E R R E E K I S E R M K R   Q G C S K Y - - T G K A V M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1022	A T D S H S L A E R R E E K I S E R M K R   Q G C S K Y - - T G K A V M   D E   I N Y V Q S L   Q R Q - - - V			
CsbHLH1083	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHLH1103	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHLH1096	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHLH1049	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHLH1082	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHLH1022	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHLH1083	A T H P R S I A E R R E E K T K I S E R M R K   Q N M D M K - - Q T N T   A D M L   D L A V E Y   I K D L   Q K Q - - - V			
CsbHL				



**Figure S2.** Phylogenetic tree of the bHLH family in *Camellia sinensis* L., *Arabidopsis thaliana*, *Actinidia chinensis* and *Oryza sativa* L.. The different-coloured branches indicated different groups of bHLH proteins. Red circle, green triangle, yellow rect and blue star represented bHLH proteins in *Actinidia chinensis*, *Camellia sinensis* L., *Oryza sativa* L. and *Arabidopsis thaliana*, respectively.



**Figure S3.** Conserved motifs and gene structure distributions of *CsbHLH* gene family. The phylogenetic tree included all identified *CsbHLH*s was constructed using Neighbor-joining method. The yellow and green boxes indicated CDS and UTR of *CsbHLH*s (Left). Different coloured boxes represented different motifs (Right).



**Figure S4.** The expression pattern of CsbHLHs of cluster 1, cluster 3 and cluster 5 in different tissues. The RPKM values were downloaded from the Tea Plant Information Archive (TPIA) and used to construct the heat map.