

Supplementary Table S1: Physiochemical properties of identified *RcbHLH* genes members.

S.No	Gene Name	Gene ID	Transcript	PL (aa)	Mw (Da)	pI	GRAVY	Subcellular Localization
1	<i>RcbHLH1</i>	>RchiOBHm_Chrlg0314891	PRQ54544	431	48073.27	8.43	-0.791	Nuclear
2	<i>RcbHLH2</i>	>RchiOBHm_Chrlg0321521	PRQ55156	235	26564.75	6.59	-0.469	Nucleus
3	<i>RcbHLH3</i>	>RchiOBHm_Chrlg0337011	PRQ56494	456	50995.62	5.7	-0.72	Nucleus
4	<i>RcbHLH4</i>	>RchiOBHm_Chrlg0348781	PRQ57478	467	50434.46	8.87	-0.478	Nucleus
5	<i>RcbHLH5</i>	>RchiOBHm_Chrlg0360001	PRQ58502	616	67480.84	6.09	-0.451	Nucleus
6	<i>RcbHLH6</i>	>RchiOBHm_Chrlg0360811	PRQ58575	487	53990.34	5.49	-0.584	Nucleus
7	<i>RcbHLH7</i>	>RchiOBHm_Chrlg0361191	PRQ58610	417	46500.02	5.93	-0.666	Nucleus
8	<i>RcbHLH8</i>	>RchiOBHm_Chrlg0368211	PRQ59258	235	26652.38	7.72	-0.487	Nucleus
9	<i>RcbHLH9</i>	>RchiOBHm_Chrlg0370561	PRQ59472	264	29366.66	9.37	-0.381	Nucleus
10	<i>RcbHLH10</i>	>RchiOBHm_Chrlg0376001	PRQ59968	305	34748.01	9.53	-0.28	Nucleus
11	<i>RcbHLH11</i>	>RchiOBHm_Chrlg0376011	PRQ59969	189	20314.27	9.1	-0.172	Nucleus
12	<i>RcbHLH12</i>	>RchiOBHm_Chrlg0376061	PRQ59973	236	26619.22	5.92	-0.431	Nucleus
13	<i>RcbHLH13</i>	>RchiOBHm_Chrlg0380101	PRQ60340	365	39760.92	5.65	-0.364	Nucleus
14	<i>RcbHLH14</i>	>RchiOBHm_Chrlg0085911	PRQ46144	420	43096.7	6.05	-0.398	Nucleus
15	<i>RcbHLH15</i>	>RchiOBHm_Chrlg0093571	PRQ46862	580	64776.32	8.54	-0.402	Nucleus
16	<i>RcbHLH16</i>	>RchiOBHm_Chrlg0096091	PRQ47106	430	46607.73	4.66	-0.5	Nucleus
17	<i>RcbHLH17</i>	>RchiOBHm_Chrlg0099391	PRQ47411	317	35061.12	7.59	-0.883	Nucleus
18	<i>RcbHLH18</i>	>RchiOBHm_Chrlg0105931	PRQ48010	375	40959.45	5.28	-0.594	Nucleus
19	<i>RcbHLH19</i>	>RchiOBHm_Chrlg0109611	PRQ48342	351	39272.24	6.03	-0.505	Nucleus
20	<i>RcbHLH20</i>	>RchiOBHm_Chrlg0109621	PRQ48343	353	39390.11	6.03	-0.58	Nucleus
21	<i>RcbHLH21</i>	>RchiOBHm_Chrlg0109941	PRQ48369	366	40888.73	4.68	-0.553	Nucleus
22	<i>RcbHLH22</i>	>RchiOBHm_Chrlg0112221	PRQ48571	331	37170.94	6.9	-0.479	Nucleus
23	<i>RcbHLH23</i>	>RchiOBHm_Chrlg0120331	PRQ49295	282	31513.18	5.95	-0.624	Nucleus
24	<i>RcbHLH24</i>	>RchiOBHm_Chrlg0126861	PRQ49880	225	25858.21	6.45	-0.592	Nucleus
25	<i>RcbHLH25</i>	>RchiOBHm_Chrlg0152511	PRQ52166	538	58909.3	6.68	-0.681	Nucleus
26	<i>RcbHLH26</i>	>RchiOBHm_Chrlg0160481	PRQ52893	303	33160.72	8.37	-0.261	Nucleus
27	<i>RcbHLH27</i>	>RchiOBHm_Chrlg0176421	PRQ54343	446	49859.63	5.35	-0.679	Nucleus
28	<i>RcbHLH28</i>	>RchiOBHm_Chrlg0451111	PRQ41841	332	35287.47	5.81	-0.474	Nucleus
29	<i>RcbHLH29</i>	>RchiOBHm_Chrlg0454211	PRQ42123	339	38454.88	5.49	-0.591	Nucleus
30	<i>RcbHLH30</i>	>RchiOBHm_Chrlg0458701	PRQ42533	727	78158.11	6.19	-0.608	Nucleus
31	<i>RcbHLH31</i>	>RchiOBHm_Chrlg0462431	PRQ42879	255	28839.41	8.88	-0.624	Nucleus
32	<i>RcbHLH32</i>	>RchiOBHm_Chrlg0480621	PRQ44563	343	38173.42	8.63	-0.738	Nucleus
33	<i>RcbHLH33</i>	>RchiOBHm_Chrlg0480751	PRQ44576	358	39368.24	5.88	-0.626	Nucleus

34	<i>RcbHLH34</i>	>RchiOBHm_Ch3g0493491	PRQ45624	296	32533.1	6.55	-0.6	Nucleus
35	<i>RcbHLH35</i>	>RchiOBHm_Ch4g0390311	PRQ36336	263	30810.44	10.02	-0.804	Nucleus
36	<i>RcbHLH36</i>	>RchiOBHm_Ch4g0392401	PRQ36516	225	25174.59	6.15	-0.724	Nucleus
37	<i>RcbHLH37</i>	>RchiOBHm_Ch4g0399211	PRQ37134	244	27541.4	5.47	-0.456	Nucleus
38	<i>RcbHLH38</i>	>RchiOBHm_Ch4g0403251	PRQ37501	154	17072.46	7.72	-0.36	Nucleus
39	<i>RcbHLH39</i>	>RchiOBHm_Ch4g0409001	PRQ38007	433	46602.51	9.63	-0.462	Nucleus
40	<i>RcbHLH40</i>	>RchiOBHm_Ch4g0412071	PRQ38282	553	59516.91	6.01	-0.671	Nucleus
41	<i>RcbHLH41</i>	>RchiOBHm_Ch4g0415421	PRQ38568	446	49859.63	5.35	-0.679	Nucleus
42	<i>RcbHLH42</i>	>RchiOBHm_Ch4g0418301	PRQ38829	202	22556.18	8.94	-0.132	Nucleus
43	<i>RcbHLH43</i>	>RchiOBHm_Ch4g0429161	PRQ39800	185	20481.6	5.75	-0.198	Nucleus
44	<i>RcbHLH44</i>	>RchiOBHm_Ch4g0434901	PRQ40334	239	26799.7	6.12	-0.766	Nucleus
45	<i>RcbHLH45</i>	>RchiOBHm_Ch4g0435901	PRQ40429	353	39135.9	6.12	-0.645	Nucleus
46	<i>RcbHLH46</i>	>RchiOBHm_Ch4g0437041	PRQ40531	548	58964.81	5.15	-0.614	Nucleus
47	<i>RcbHLH47</i>	>RchiOBHm_Ch4g0437281	PRQ40554	335	36625.36	5.88	-0.891	Nucleus
48	<i>RcbHLH48</i>	>RchiOBHm_Ch4g0443741	PRQ41144	487	55167.11	7.52	-0.571	Nucleus
49	<i>RcbHLH49</i>	>RchiOBHm_Ch4g0445091	PRQ41269	274	29833.34	6.46	-0.693	Nucleus
50	<i>RcbHLH50</i>	>RchiOBHm_Ch5g0004471	PRQ28570	248	26823.35	6.2	-0.535	Nucleus
51	<i>RcbHLH51</i>	>RchiOBHm_Ch5g0004791	PRQ28602	271	30703.32	5.5	-0.251	Nucleus
52	<i>RcbHLH52</i>	>RchiOBHm_Ch5g0004831	PRQ28606	442	47499.47	6.07	-0.544	Nucleus
53	<i>RcbHLH53</i>	>RchiOBHm_Ch5g0008581	PRQ28954	190	21373.19	7.99	-0.542	Nucleus
54	<i>RcbHLH54</i>	>RchiOBHm_Ch5g0008601	PRQ28955	164	18099.03	9.44	-0.079	Nucleus
55	<i>RcbHLH55</i>	>RchiOBHm_Ch5g0024601	PRQ30434	236	27111.68	4.81	-0.506	Nucleus
56	<i>RcbHLH56</i>	>RchiOBHm_Ch5g0025741	PRQ30536	210	23790.32	6.01	-0.337	Nucleus
57	<i>RcbHLH57</i>	>RchiOBHm_Ch5g0036871	PRQ31566	451	49559.81	6.4	-0.698	Nucleus
58	<i>RcbHLH58</i>	>RchiOBHm_Ch5g0037201	PRQ31594	232	25480.94	8.54	-0.62	Nucleus
59	<i>RcbHLH59</i>	>RchiOBHm_Ch5g0053301	PRQ33058	263	29143.81	6.4	-0.468	Nucleus
60	<i>RcbHLH60</i>	>RchiOBHm_Ch5g0056871	PRQ33373	328	36019.48	4.97	-0.36	Nucleus
61	<i>RcbHLH61</i>	>RchiOBHm_Ch5g0056881	PRQ33374	366	40012.09	5.28	-0.227	Nucleus
62	<i>RcbHLH62</i>	>RchiOBHm_Ch5g0077341	PRQ35193	437	48210.31	6.14	-0.793	Nucleus
63	<i>RcbHLH63</i>	>RchiOBHm_Ch6g0245181	PRQ21974	339	37676.19	6.03	-0.873	Nucleus
64	<i>RcbHLH64</i>	>RchiOBHm_Ch6g0246251	PRQ22073	324	36428.4	8.5	-0.434	Nucleus
65	<i>RcbHLH65</i>	>RchiOBHm_Ch6g0253641	PRQ22745	338	37258.3	5.17	-0.699	Nucleus
66	<i>RcbHLH66</i>	>RchiOBHm_Ch6g0254731	PRQ22849	284	30719.02	6.66	-0.663	Nucleus
67	<i>RcbHLH67</i>	>RchiOBHm_Ch6g0257881	PRQ23126	364	40179.92	6.24	-0.616	Nucleus
68	<i>RcbHLH68</i>	>RchiOBHm_Ch6g0264701	PRQ23740	423	46899.5	5.64	-0.65	Nucleus

69	RcbHLH69	>RchiOBHm_Ch6g0268091	PRQ24045	150	17170.48	8.73	-0.85	Nucleus
70	RcbHLH70	>RchiOBHm_Ch6g0270891	PRQ24301	243	27366.84	6.55	-0.463	Nucleus
71	RcbHLH71	>RchiOBHm_Ch6g0278441	PRQ24977	550	62457.42	5.34	-0.751	Nucleus
72	RcbHLH72	>RchiOBHm_Ch6g0278471	PRQ24979	629	71260.27	5.11	-0.627	Nucleus
73	RcbHLH73	>RchiOBHm_Ch6g0283511	PRQ25421	549	59556.28	6.87	-0.677	Nucleus
74	RcbHLH74	>RchiOBHm_Ch6g0285491	PRQ25608	510	56212.31	6.78	-0.822	Nucleus
75	RcbHLH75	>RchiOBHm_Ch6g0288981	PRQ25926	477	52862.45	5.52	-0.426	Nucleus
76	RcbHLH76	>RchiOBHm_Ch6g0291161	PRQ26126	702	77902.08	5.4	-0.604	Nucleus
77	RcbHLH77	>RchiOBHm_Ch6g0308241	PRQ27714	210	23622.92	9.25	-0.559	Nucleus
78	RcbHLH78	>RchiOBHm_Ch6g0308251	PRQ27715	333	36036.22	5.79	-0.609	Nucleus
79	RcbHLH79	>RchiOBHm_Ch6g0309431	PRQ27825	378	41893.99	5.05	-0.812	Nucleus
80	RcbHLH80	>RchiOBHm_Ch6g0310101	PRQ27886	430	46836	5.51	-0.716	Nucleus
81	RcbHLH81	>RchiOBHm_Ch7g0180121	PRQ16059	271	29236.34	5.74	-0.736	Nucleus
82	RcbHLH82	>RchiOBHm_Ch7g0180851	PRQ16131	92	10412.66	9.17	-0.634	Cytoplasm
83	RcbHLH83	>RchiOBHm_Ch7g0180941	PRQ16137	91	10326.73	5.56	-0.47	Cytoplasm
84	RcbHLH84	>RchiOBHm_Ch7g0181001	PRQ16143	249	27745.16	6.08	-0.76	Nucleus
85	RcbHLH85	>RchiOBHm_Ch7g0182341	PRQ16266	363	40658.96	8.24	-0.716	Nucleus
86	RcbHLH86	>RchiOBHm_Ch7g0183781	PRQ16398	566	62248.21	6.94	-0.825	Nucleus
87	RcbHLH87	>RchiOBHm_Ch7g0185551	PRQ16560	284	31727.31	5.19	-0.581	Nucleus
88	RcbHLH88	>RchiOBHm_Ch7g0187141	PRQ16704	468	52847.49	6.78	-0.527	Nucleus
89	RcbHLH89	>RchiOBHm_Ch7g0187261	PRQ16714	449	50582.49	6.69	-0.53	Nucleus
90	RcbHLH90	>RchiOBHm_Ch7g0188921	PRQ16873	530	57719.54	5.81	-0.574	Nucleus
91	RcbHLH91	>RchiOBHm_Ch7g0189021	PRQ16881	346	38633.15	6.41	-0.697	Nucleus
92	RcbHLH92	>RchiOBHm_Ch7g0193761	PRQ17327	190	21553	9.6	-0.425	Nucleus
93	RcbHLH93	>RchiOBHm_Ch7g0197531	PRQ17672	639	71594.68	5.49	-0.477	Nucleus
94	RcbHLH94	>RchiOBHm_Ch7g0199961	PRQ17895	254	29292.63	9.08	-0.61	Nucleus
95	RcbHLH95	>RchiOBHm_Ch7g0209751	PRQ18771	693	76197.58	5.45	-0.629	Nucleus
96	RcbHLH96	>RchiOBHm_Ch7g0210101	PRQ18800	320	35626.56	7.01	-0.262	Nucleus
97	RcbHLH97	>RchiOBHm_Ch7g0212241	PRQ18991	463	51937.63	6.08	-0.344	Nucleus
98	RcbHLH98	>RchiOBHm_Ch7g0227911	PRQ20414	223	24211.84	5.06	-0.635	Nucleus
99	RcbHLH99	>RchiOBHm_Ch7g0233161	PRQ20898	355	40313.19	4.71	-0.598	Nucleus
100	RcbHLH100	>RchiOBHm_Ch7g0236841	PRQ21224	214	23660.97	9.78	-0.455	Nucleus

aa = amino acid; Da = Daltons; GRAVY= grand average of hydropathy; Mw = molecular weight; pI = isoelectric points; PL = protein length.

Supplementary Table S2. Gene duplication events among *RcbHLHs* genes.

Chr	Gene Name	Start	End	Chr	Gene Name	Start	End
chr4	RcbHLH42	43688763	43690280	chr1	RcbHLH1	2173916	2176711
chr7	RcbHLH92	12029125	12030711	chr4	RcbHLH39	32037594	32046392
chr5	RcbHLH55	18681604	18682426	chr5	RcbHLH53	5519637	5522225
chr5	RcbHLH61	60668676	60670256	chr5	RcbHLH60	60659595	60661176
chr3	RcbHLH34	40682138	40683694	chr6	RcbHLH70	28916670	28917826
chr2	RcbHLH22	24091959	24093817	chr4	RcbHLH46	60257934	60262082
chr1	RcbHLH8	58410232	58411096	chr1	RcbHLH12	63317042	63317901
chr7	RcbHLH95	27189201	27192104	chr4	RcbHLH48	64773328	64775829
chr2	RcbHLH20	21004865	21006834	chr5	RcbHLH52	3190712	3193738
chr4	RcbHLH44	58544648	58546277	chr7	RcbHLH100	61575032	61576445
chr7	RcbHLH85	3628757	3630748	chr2	RcbHLH25	69890195	69894102
chr7	RcbHLH86	4540924	4545994	chr3	RcbHLH30	7313238	7318371
chr4	RcbHLH38	22340653	22342021	chr7	RcbHLH81	2155792	2158763
chr1	RcbHLH7	53198215	53201363	chr2	RcbHLH16	8997567	8999847
chr7	RcbHLH96	27727709	27730558	chr5	RcbHLH57	31165212	31168132
chr7	RcbHLH99	57579572	57581440	chr4	RcbHLH35	5608794	5611098
chr6	RcbHLH75	52184363	52186951	chr6	RcbHLH71	41562004	41565059
chr2	RcbHLH26	76320188	76321485	chr7	RcbHLH90	8295405	8298561
chr6	RcbHLH73	46738527	46741061	chr4	RcbHLH40	35820711	35823775
chr3	RcbHLH28	2345789	2350386	chr1	RcbHLH3	28673606	28676196
chr5	RcbHLH59	55573191	55574872	chr2	RcbHLH27	88244910	88247805
chr5	RcbHLH62	83273897	83277699	chr1	RcbHLH11	63276165	63276902
chr4	RcbHLH45	59308327	59312260	chr6	RcbHLH74	48829170	48833566
chr6	RcbHLH79	67137708	67139138	chr6	RcbHLH77	66321336	66322449
chr3	RcbHLH31	10114223	10115213	chr6	RcbHLH63	1110505	1113642
chr1	RcbHLH10	63268663	63269742	chr7	RcbHLH84	2713095	2715710
chr1	RcbHLH4	41770117	41772993	chr1	RcbHLH6	52697497	52699471

chr6	RcbHLH76	54337112	54342571	chr7	RcbHLH93	15468201	15472708
chr6	RcbHLH72	41578713	41582380	chr2	RcbHLH15	6833754	6836544
chr5	RcbHLH56	19690297	19691573	chr5	RcbHLH51	3144460	3145771
chr7	RcbHLH98	51174741	51177367	chr4	RcbHLH43	53995807	53997332
chr3	RcbHLH32	26442170	26445394	chr2	RcbHLH24	41432994	41434209
chr6	RcbHLH80	67513823	67517581	chr6	RcbHLH67	13314500	13317333
chr2	RcbHLH17	11611832	11614318	chr6	RcbHLH65	8755304	8756807
chr7	RcbHLH89	7027943	7031094	chr7	RcbHLH97	29568909	29570891
chr7	RcbHLH94	17924260	17925106	chr6	RcbHLH68	20040197	20049062
chr7	RcbHLH91	8415832	8418451	chr2	RcbHLH21	21285281	21287305
chr1	RcbHLH5	51819211	51822366	chr4	RcbHLH41	40124051	40126253
chr3	RcbHLH33	26579491	26584767	chr4	RcbHLH37	16381854	16386043
chr2	RcbHLH18	17185031	17187821	chr6	RcbHLH64	1988321	1989551
chr6	RcbHLH66	9664169	9666472	chr1	RcbHLH9	60070116	60071728
chr5	RcbHLH58	31555063	31559065	chr5	RcbHLH50	2899378	2901732
chr6	RcbHLH78	66323498	66326408	chr4	RcbHLH36	7808139	7811073

Supplementary Table S3. List of primers used in this study.

Gene Name	Primer set	
	Forward primer (5'-3')	Reverse primer (5'-3')
<i>RcbHLH13</i>	GGGGTAGGAAGCCAGCAAAT	GGCACAACAGCTCGTAAAGC
<i>RcbHLH22</i>	AACTCCAGCTTGTTGCGGTA	ATTCGTTCAAGTTTCGGGGCT
<i>RcbHLH30</i>	ATTGTCGGTGCCATCTGTTG	TGATGCGAGATTGCCATTGG
<i>RcbHLH35</i>	CAGTACTGAATCCAAGCGCC	ATGTGGCGAAAACCCCTTGTC
<i>RcbHLH41</i>	AGCTGCAAGGCTCATAGCAA	CTCCAGCCAGATACATGCGT
<i>RcbHLH43</i>	CGCTACACCCACTGTTCTCA	TTGATCCCCTGACGGATTGC
<i>RcbHLH44</i>	CTGGTCCTGCCTTTGACATCT	TCGTGCTGTACTGACCTCTTC
<i>RcbHLH47</i>	AGTTCAGCGTTTCCGGTTG	GCATCTCCAACGCCGCAATA
<i>RcbHLH48</i>	ATTCCAGCCTCACGTTTCCC	CCTGCGACGAGTTAGGGTTC
<i>RcbHLH49</i>	GATAGCCGGTGTAAGAGGGC	TAGAAGGTTCCGGCAACGGAG

<i>RcbHLH62</i>	TTCCAGCACCCCTCATCACAC	TGACCATTCAGACCACCACC
<i>RcbHLH63</i>	GGTGAAACCCGACCTGAGTT	TTGTTGCTCTCAGTCTCGGC
<i>RcbHLH66</i>	TGGTGCCTGATTCCAAATTCT	AATCCACAACGTGACTTGAAGCTG
<i>RcbHLH94</i>	TGTCGTCCCAAATGTTTCGAAA	TTCGGGACTCTTGTAGCTCTTT
<i>RhActin1</i>	ATATTGTGCTCAGTGGTGGGTC	TACAAAAAGGAGACCAGGAAGC
