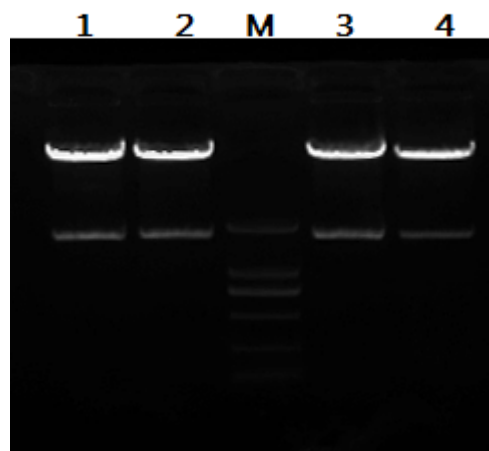
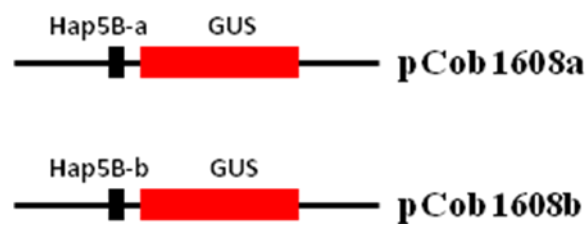




(a)



(b)

Supplementary Figure S1. Double enzyme digestion of recombinant plasmid. 1 and 2 are pCob1608a. 3 and 4 are pCob1608b. M: marker 2000.

NO	Accessions	Grade				Haplotype	Ecotope	NO	Accessions	Grade				Haplotype	Ecotope
		E1	E2	E3	E4					E1	E2	E3	E4		
1	03-885	3	4	3	4	<i>Hap5B-a</i>	I	169	Huaimai 18	1	1	2	2	<i>Hap5B-b</i>	II
2	CP01-39-17-1	3	2	1	2	<i>Hap5B-a</i>	I	170	Huaimai 20	1	1	1	2	<i>Hap5B-b</i>	II
3	CP02-8-5-6-1	1	2	1	2	<i>Hap5B-a</i>	I	171	Huaimai 21	2	1	1	2	<i>Hap5B-b</i>	II
4	CP02-8-5-6-2F1	2	2	3	3	<i>Hap5B-a</i>	I	172	Huaimai 22	1	1	1	3	<i>Hap5B-b</i>	II
5	CP20-39-11-1	2	2	3	3	<i>Hap5B-a</i>	I	173	Huaimai 23	2	1	3	3	<i>Hap5B-b</i>	II
6	Zhongmai 1187	1	1	2	1	<i>Hap5B-a</i>	I	174	Huaimai 24	1	1	2	2	<i>Hap5B-b</i>	II
7	Zhongmai 1195	2	1	3	2	<i>Hap5B-a</i>	I	175	Huaimai 25	1	1	3	2	<i>Hap5B-b</i>	II
8	Zhongmai 1196	2	1	1	2	<i>Hap5B-a</i>	I	176	Huaimai 26	1	1	1	2	<i>Hap5B-b</i>	II
9	Zhongmai 14	2	1	1	2	<i>Hap5B-a</i>	I	177	Huaimai 28	2	2	3	3	<i>Hap5B-b</i>	II
10	876	2	1	4	3	<i>Hap5B-b</i>	I	178	Huaimai 29	1	1	1	2	<i>Hap5B-b</i>	II
11	02-192	4	4	4	4	<i>Hap5B-b</i>	I	179	Huaimai 30	3	2	4	3	<i>Hap5B-b</i>	II
12	CP01-27-3-1-1	2	2	1	2	<i>Hap5B-b</i>	I	180	Huaishi 0806	2	2	1	2	<i>Hap5B-b</i>	II
13	CP01-39-3-2-4	1	1	1	2	<i>Hap5B-b</i>	I	181	Huaishi 0808	2	1	1	2	<i>Hap5B-b</i>	II

14	CP02-63-13-1	2	1	3	2	<i>Hap5B-b</i>	I	182	Huinong 98	3	2	3	4	<i>Hap5B-b</i>	II
15	CP02-9-3-1-1-1	1	1	1	3	<i>Hap5B-b</i>	I	183	Jinli 106	3	3	2	3	<i>Hap5B-b</i>	II
16	<u>Henong 825</u>	2	2	1	2	<i>Hap5B-b</i>	I	184	Jinli 88	3	3	2	3	<i>Hap5B-b</i>	II
17	<u>Tai 10604</u>	1	1	1	1	<i>Hap5B-b</i>	I	185	Junmai 35	2	3	1	2	<i>Hap5B-b</i>	II
18	Zhongmai 1139	2	2	4	1	<i>Hap5B-b</i>	I	186	Kaimai 18	3	3	2	3	<i>Hap5B-b</i>	II
19	Zhongmai 1140	2	1	3	2	<i>Hap5B-b</i>	I	187	Lankao 181	3	2	2	2	<i>Hap5B-b</i>	II
20	Zhongmai 1142	2	2	3	2	<i>Hap5B-b</i>	I	188	Lankao 298	2	2	1	2	<i>Hap5B-b</i>	II
21	Zhongmai 1143	3	2	3	2	<i>Hap5B-b</i>	I	189	Ligao 6 hao	2	2	1	2	<i>Hap5B-b</i>	II
22	<u>Handan 6172</u>	2	2	2	3	<i>Hap5B-a</i>	II	190	Lian 9791	1	1	3	2	<i>Hap5B-b</i>	II
23	Heng 09 - 6186	1	1	2	1	<i>Hap5B-a</i>	II	191	Lunxuan 988	2	3	3	2	<i>Hap5B-b</i>	II
24	Hengguan 35	3	2	3	2	<i>Hap5B-a</i>	II	192	Luomai 05159	2	2	2	2	<i>Hap5B-b</i>	II
25	Jinan 17	1	1	2	2	<i>Hap5B-a</i>	II	193	Luomai 31	3	3	3	3	<i>Hap5B-b</i>	II
26	Ji 5265	2	2	3	2	<i>Hap5B-a</i>	II	194	Luo 1104	3	2	4	3	<i>Hap5B-b</i>	II
27	Jimai 325	1	1	1	2	<i>Hap5B-a</i>	II	195	Luo 1106	3	2	4	4	<i>Hap5B-b</i>	II
28	Jishi 02-1	3	2	2	2	<i>Hap5B-a</i>	II	196	Luo 2708	4	3	2	3	<i>Hap5B-b</i>	II
29	Jinhe 9123	2	2	3	2	<i>Hap5B-a</i>	II	197	Luo 3429	4	3	4	3	<i>Hap5B-b</i>	II

30	Luyuan 502	2	1	2	2	Hap5B-a	II	198	Luo 4688	3	3	2	4	Hap5B-b	II
31	Shannong 055843	1	3	1	2	Hap5B-a	II	199	Luo 6073	3	3	2	3	Hap5B-b	II
32	Shijiazhuang 15	1	1	2	2	Hap5B-a	II	200	Luo 6078	3	2	3	3	Hap5B-b	II
33	Shijiazhuang 8 hao	1	1	1	2	Hap5B-a	II	201	Luo 6135	3	2	3	4	Hap5B-b	II
34	Shimai 12	2	2	3	4	Hap5B-a	II	202	Luo 9920	3	3	3	3	Hap5B-b	II
35	Shimai 18	2	2	2	2	Hap5B-a	II	203	Mingtian 0417	2	1	2	1	Hap5B-b	II
36	Tai 18	1	1	2	3	Hap5B-a	II	204	Taikong 6 hao	3	2	3	2	Hap5B-b	II
37	Xinmai 0401	2	2	2	3	Hap5B-a	II	205	Tianmin 198	4	3	4	4	Hap5B-b	II
38	Xinmai 18	3	2	2	3	Hap5B-a	II	206	Wannong 07213	2	2	3	3	Hap5B-b	II
39	Xinmai 19	3	2	3	2	Hap5B-a	II	207	Wannong 606	1	1	3	2	Hap5B-b	II
40	Xinmai 19023	3	2	4	4	Hap5B-a	II	208	Guomai 06011	2	1	2	3	Hap5B-b	II
41	Xinmai 2111	4	3	4	4	Hap5B-a	II	209	Guomai 0608	2	1	4	1	Hap5B-b	II
42	Xinmai 2119	2	2	2	3	Hap5B-a	II	210	Guomai 0801	3	3	4	3	Hap5B-b	II
43	Xinmai 9408	2	2	1	1	Hap5B-a	II	211	Guomai 10 hao	3	3	3	1	Hap5B-b	II
44	Xinyuanmai 04130	2	2	3	2	Hap5B-a	II	212	Guomai 12 hao	2	1	2	1	Hap5B-b	II
45	Xingmai 13 hao	2	2	2	2	Hap5B-a	II	213	Guomai 8 hao	1	1	3	2	Hap5B-b	II
46	Xingmai 6 hao	2	1	1	2	Hap5B-a	II	214	Xainnong 1 hao	3	2	2	4	Hap5B-b	II

47	Changhe 23	1	1	1	2	<i>Hap5B-a</i>	II	215	Xumai 270	2	3	1	2	<i>Hap5B-b</i>	II
48	984121	2	2	2	2	<i>Hap5B-b</i>	II	216	Xumai 9074	3	2	3	3	<i>Hap5B-b</i>	II
49	Gaoyou 2018	1	1	3	2	<i>Hap5B-b</i>	II	217	Xumai 9158	3	2	3	3	<i>Hap5B-b</i>	II
50	Jimai 19	2	2	1	2	<i>Hap5B-b</i>	II	218	Xuke 718	3	2	3	3	<i>Hap5B-b</i>	II
51	Jimai 20	2	2	3	1	<i>Hap5B-b</i>	II	219	Yanke 028	3	3	4	4	<i>Hap5B-b</i>	II
52	Jimai 21	3	2	1	2	<i>Hap5B-b</i>	II	220	Yanzhan 4110	2	2	4	2	<i>Hap5B-b</i>	II
53	Jimai 22	1	1	1	1	<i>Hap5B-b</i>	II	221	Yimai 11	3	3	1	2	<i>Hap5B-b</i>	II
54	Liangxing 66	1	1	2	2	<i>Hap5B-b</i>	II	222	Yunong 69	2	2	2	2	<i>Hap5B-b</i>	II
55	Liangxing 99	1	1	2	1	<i>Hap5B-b</i>	II	223	Zheng 9023	3	2	5	4	<i>Hap5B-b</i>	II
56	Shannong 05-066	1	1	2	3	<i>Hap5B-b</i>	II	224	Zhengmai 583	3	2	3	2	<i>Hap5B-b</i>	II
57	Shannong 10-2	2	1	1	2	<i>Hap5B-b</i>	II	225	Zhengmai 883	3	2	4	4	<i>Hap5B-b</i>	II
58	Shannong 785	1	1	1	2	<i>Hap5B-b</i>	II	226	Zhengyumai 518	2	3	3	2	<i>Hap5B-b</i>	II
59	Shi B03-5672	2	2	1	2	<i>Hap5B-b</i>	II	227	Zhengyumai 988	3	3	2	4	<i>Hap5B-b</i>	II
60	Shiyu 17	2	2	4	3	<i>Hap5B-b</i>	II	228	Zhengyumai 4 hao	3	3	4	4	<i>Hap5B-b</i>	II
61	Xinmai 0208	2	2	1	2	<i>Hap5B-b</i>	II	229	Zhongfan 5 hao	3	3	3	1	<i>Hap5B-b</i>	II

62	Xinmai 23	3	2	3	4	Hap5B-b	II	230	Zhongmai 895	2	3	1	2	Hap5B-b	II
63	Xinmai 31	2	2	2	2	Hap5B-b	II	231	Zhongyuan 18	3	3	1	1	Hap5B-b	II
64	Changhe 25	3	3	2	3	Hap5B-b	II	232	Zhongyou 989	3	2	2	2	Hap5B-b	II
65	Zhongyu 1023	4	3	3	2	Hap5B-b	II	233	Zhoumai 22	3	3	3	2	Hap5B-b	II
66	Zhongyu 1026	3	2	3	3	Hap5B-b	II	234	Zhoumai 16	3	3	1	3	Hap5B-b	II
67	Zhongyu 1095	2	2	1	2	Hap5B-b	II	235	Zhoumai 18	3	3	2	3	Hap5B-b	II
68	Zhongyu 1107	2	2	2	2	Hap5B-b	II	236	Zhoumai 24	2	2	2	3	Hap5B-b	II
69	Zhongyu 1152	3	2	3	3	Hap5B-b	II	237	Zhoumai 25	4	3	4	5	Hap5B-b	II
70	Zhongyu 9302	3	2	2	2	Hap5B-b	II	238	Zhoumai 27	2	3	3	2	Hap5B-b	II
71	Aifengzao 8	3	2	2	3	Hap5B-a	II	239	Zhoumai 31	2	2	4	3	Hap5B-b	II
72	Annong 0928	3	2	1	3	Hap5B-a	II	240	Yannong 23	2	1	2	2	Hap5B-a	II
73	Annong 0932	3	2	2	3	Hap5B-a	II	241	DH6197	4	3	4	4	Hap5B-b	II
74	Annong 1001	2	2	3	3	Hap5B-a	II	242	Yan 0428	2	1	2	2	Hap5B-b	II
75	Annong 1104	3	2	3	2	Hap5B-a	II	243	Yan 2415	2	1	2	2	Hap5B-b	II
76	Annong 1110	3	2	2	2	Hap5B-a	II	244	Yannong 15	2	2	1	2	Hap5B-b	II
77	Annong 1111	3	3	2	2	Hap5B-a	II	245	Yannong 19	1	1	2	2	Hap5B-b	II
78	Baofeng 10-82	2	1	2	3	Hap5B-a	II	246	Yannong 21	1	1	1	3	Hap5B-b	II

79	Fu 0382	2	3	2	1	<i>Hap5B-a</i>	II	247	Yannong 22	2	1	3	2	<i>Hap5B-b</i>	II
80	Huapei 8 hao	3	3	3	3	<i>Hap5B-a</i>	II	248	Yannong 24	2	1	2	3	<i>Hap5B-b</i>	II
81	Huacheng 699	1	1	1	3	<i>Hap5B-a</i>	II	249	Yannong 999	2	2	2	2	<i>Hap5B-b</i>	II
82	Huarui 0712	1	2	1	3	<i>Hap5B-a</i>	II	250	Xinong 1211	2	2	3	2	<i>Hap5B-a</i>	II
83	Huaimai 31	2	1	2	2	<i>Hap5B-a</i>	II	251	Xinong 529	4	4	4	4	<i>Hap5B-a</i>	II
84	Huaishi 0916	2	1	1	2	<i>Hap5B-a</i>	II	252	Xinong 585	3	3	2	3	<i>Hap5B-a</i>	II
85	Huiyan 22	2	1	3	2	<i>Hap5B-a</i>	II	253	X9610	2	2	3	4	<i>Hap5B-a</i>	II
86	Huiyan 77	2	1	2	2	<i>Hap5B-a</i>	II	254	Jinmai 73	1	1	1	1	<i>Hap5B-b</i>	II
87	Lemai 091156	2	2	3	2	<i>Hap5B-a</i>	II	255	Linyou 8159	1	1	1	1	<i>Hap5B-a</i>	II
88	Lemai W102070	2	1	2	2	<i>Hap5B-a</i>	II	256	Xinong 266	4	3	2	3	<i>Hap5B-b</i>	II
89	Longke 0901	1	1	3	3	<i>Hap5B-a</i>	II	257	Xinong 622	3	3	2	3	<i>Hap5B-b</i>	II
90	Longke 1211	1	1	3	2	<i>Hap5B-a</i>	II	258	Xinong 889	2	2	1	2	<i>Hap5B-a</i>	II
91	Longke 1221	1	1	3	2	<i>Hap5B-a</i>	II	259	Xiaoyan 6 hao	3	2	2	2	<i>Hap5B-b</i>	II
92	Lunxuan 21	2	1	3	3	<i>Hap5B-a</i>	II	260	03G7	1	1	3	1	<i>Hap5B-a</i>	III
93	Luo 2267	3	3	4	4	<i>Hap5B-a</i>	II	261	02P67	3	3	4	4	<i>Hap5B-b</i>	III
94	Luo 6099	2	2	3	2	<i>Hap5B-a</i>	II	262	02Y151	4	4	3	4	<i>Hap5B-b</i>	III
95	Mingtian 07112	3	3	3	2	<i>Hap5B-a</i>	II	263	Annong 0942	4	3	4	4	<i>Hap5B-a</i>	III

96	Neixiang 203	2	2	2	3	<i>Hap5B-a</i>	II	264	Annong 0950	2	2	4	4	<i>Hap5B-a</i>	III
97	Wanke 06290	2	2	2	2	<i>Hap5B-a</i>	II	265	Annong 1039	3	3	4	4	<i>Hap5B-a</i>	III
98	Wanke 08585	3	2	2	2	<i>Hap5B-a</i>	II	266	Annong 1124	3	3	4	3	<i>Hap5B-a</i>	III
99	Wanke 09636	3	3	4	4	<i>Hap5B-a</i>	II	267	Jianmai 206	2	2	2	2	<i>Hap5B-a</i>	III
100	Wanke 700	2	1	2	2	<i>Hap5B-a</i>	II	268	Xumai 1145	3	3	3	4	<i>Hap5B-a</i>	III
101	Wanmai 38	1	1	1	1	<i>Hap5B-a</i>	II	269	Xumai 262	2	1	3	2	<i>Hap5B-a</i>	III
102	Xianmai 2 hao	3	3	1	3	<i>Hap5B-a</i>	II	270	Xumai 6 hao	4	3	4	4	<i>Hap5B-a</i>	III
103	Xianmai 68	3	3	4	4	<i>Hap5B-a</i>	II	271	E158	2	2	4	3	<i>Hap5B-b</i>	III
104	Su 553	2	1	2	2	<i>Hap5B-a</i>	II	272	Y14	3	2+	4	4	<i>Hap5B-b</i>	III
105	Su 853	2	2	3	3	<i>Hap5B-a</i>	II	273	Y18	3	3	3	4	<i>Hap5B-b</i>	III
106	Xuke 1 hao	3	2	2	4	<i>Hap5B-a</i>	II	274	Annong 1034	3	3	4	4	<i>Hap5B-b</i>	III
107	Zhengmai 113	2	2	4	3	<i>Hap5B-a</i>	II	275	Annong 1112	5	5	4	2	<i>Hap5B-b</i>	III
108	Zhengmai 3666	2	2	2	3	<i>Hap5B-a</i>	II	276	Annong 1113	5	5	4	4	<i>Hap5B-b</i>	III
109	Zhengyumai 0519	4	2	2	2	<i>Hap5B-a</i>	II	277	Annong 1114	3	3	4	4	<i>Hap5B-b</i>	III
110	Zhongfan 7093	1	1	1	2	<i>Hap5B-a</i>	II	278	Annong 1115	5	5	4	3	<i>Hap5B-b</i>	III
111	Zi 0706	2	2	2	2	<i>Hap5B-a</i>	II	279	Annong 1116	5	4	3	3	<i>Hap5B-b</i>	III
112	TQ0908	2	2	1	2	<i>Hap5B-b</i>	II	280	Annong 1117	3	3	4	4	<i>Hap5B-b</i>	III

113	Aikang 58	2	2	2	2	<i>Hap5B-b</i>	II	281	Annong 1118	3	4	4	3	<i>Hap5B-b</i>	III
114	Aizao 64 xi	2	2	3	4	<i>Hap5B-b</i>	II	282	Annong 1119	4	3	4	4	<i>Hap5B-b</i>	III
115	An 0817	2	2	3	2	<i>Hap5B-b</i>	II	283	Annong 1120	3	3	4	4	<i>Hap5B-b</i>	III
116	Annong 0807	2	1	1	2	<i>Hap5B-b</i>	II	284	Annong 1121	3	3	4	4	<i>Hap5B-b</i>	III
117	Annong 0711	2	2	2	2	<i>Hap5B-b</i>	II	285	Annong 1122	3	3	4	4	<i>Hap5B-b</i>	III
118	Annong 1003	1	2	1	2	<i>Hap5B-b</i>	II	286	Annong 1123	3	3	4	4	<i>Hap5B-b</i>	III
119	Annong 1005	1	2	1	2	<i>Hap5B-b</i>	II	287	Annong 1125	2	3	3	3	<i>Hap5B-b</i>	III
120	Annong 1006	2	2	1	2	<i>Hap5B-b</i>	II	288	Annong 1126	4	4	4	4	<i>Hap5B-b</i>	III
121	Annong 1008	2	2	2	3	<i>Hap5B-b</i>	II	289	Annong 1127	4	3	4	4	<i>Hap5B-b</i>	III
122	Annong 1014	3	2	3	3	<i>Hap5B-b</i>	II	290	Annong 1128	3	3	4	4	<i>Hap5B-b</i>	III
123	Annong 1016	2	2	2	2	<i>Hap5B-b</i>	II	291	Annong 1129	4	3	4	4	<i>Hap5B-b</i>	III
124	Annong 1026	2	2	2	2	<i>Hap5B-b</i>	II	292	Annong 1130	4	3	4	4	<i>Hap5B-b</i>	III
125	Annong 1027	2	2	3	2	<i>Hap5B-b</i>	II	293	Annong 1131	3	3	4	5	<i>Hap5B-b</i>	III
126	Annong 1101	3	2	2	2	<i>Hap5B-b</i>	II	294	Annong 8455	2	2	3	3	<i>Hap5B-b</i>	III
127	Annong 1102	3	2	1	3	<i>Hap5B-b</i>	II	295	Annong 92484	3	2	4	4	<i>Hap5B-b</i>	III
128	Annong 1103	3	2	1	2	<i>Hap5B-b</i>	II	296	Dangmai 2 hao	3	2	4	4	<i>Hap5B-b</i>	III
129	Annong 1105	2	1	2	2	<i>Hap5B-b</i>	II	297	Dinghong 208	3	2	3	4	<i>Hap5B-b</i>	III

130	Annong 1106	2	1	2	2	Hap5B-b	II	298	Ning 0717	4	3	4	5	Hap5B-b	III
131	Annong 1107	2	1	2	2	Hap5B-b	II	299	Ningqing 185	3	2	4	4	Hap5B-b	III
132	Annong 1108	3	2	2	3	Hap5B-b	II	300	Shengxuan 3 hao	2	2	4	4	Hap5B-b	III
133	Annong 1109	2	2	2	2	Hap5B-b	II	301	Wankenmai 081	3	2	3	4	Hap5B-b	III
134	Annong 9267	2	2	2	3	Hap5B-b	II	302	Yangmai 158	3	2	4	4	Hap5B-b	III
135	Bainong 207	3	3	2	2	Hap5B-b	II	303	Yangmai 16	3	3	3	4	Hap5B-b	III
136	Bainong 3271	2	2	3	3	Hap5B-b	II	304	Yangmai 19	3	3	4	3	Hap5B-b	III
137	Bainong 64	3	2	3	2	Hap5B-b	II	305	Yangmai 20	4	3	4	4	Hap5B-b	III
138	Bainong 898	3	2	2	2	Hap5B-b	II	306	Yangnuomai 1 hao	5	5	4	4	Hap5B-b	III
139	Baofeng 09-82	2	3	2	2	Hap5B-b	II	307	Chuanmai 42	4	3	3	4	Hap5B-a	IV
140	Bolunxuan 182	4	3	3	3	Hap5B-b	II	308	Guinong 775	3	2	1	3	Hap5B-b	IV
141	Danshi 802	2	1	3	2	Hap5B-b	II	309	Mianmai 37	4	4	3	4	Hap5B-b	IV
142	Fanmai 12	3	3	4	3	Hap5B-b	II	310	Mianmai 39	3	2	4	5	Hap5B-b	IV
143	Fanmai 14	3	3	4	4	Hap5B-b	II	311	Neimai 10 hao	4	4	3	4	Hap5B-b	IV
144	Fanmai 5039	2	2	2	2	Hap5B-b	II	312	Neimai 836	4	5	3	4	Hap5B-b	IV
145	Fanmai 5 hao	2	2	3	4	Hap5B-b	II	313	Neimai 8 hao	4	5	3	4	Hap5B-b	IV

146	Fanmai 8 hao	3	3	2	3	<i>Hap5B-b</i>	II	314	Neimai 9 hao	5	5	3	4	<i>Hap5B-b</i>	IV
147	Fengdecunmai 12 hao	3	2	2	2	<i>Hap5B-b</i>	II	315	Qian 079939-5	4	3	4	4	<i>Hap5B-b</i>	IV
148	Fengdecunmai 5 hao	2	3	3	2	<i>Hap5B-b</i>	II	316	Qian 079984-14	4	3	4	4	<i>Hap5B-b</i>	IV
149	Guanmai 1 hao	3	3	3	3	<i>Hap5B-b</i>	II	317	Qian 090304-4	3	2	3	4	<i>Hap5B-b</i>	IV
150	Guomai 0526	2	2	4	4	<i>Hap5B-b</i>	II	318	Qian 102032-8	2	2	3	4	<i>Hap5B-b</i>	IV
151	Guomai 10 hao	1	2	3	1	<i>Hap5B-b</i>	II	319	Qian 110209-4	3	3	4	4	<i>Hap5B-b</i>	IV
152	Guoshengmai 1 hao	4	3	4	4	<i>Hap5B-b</i>	II	320	Qian 11240-2	3	3	3	4	<i>Hap5B-b</i>	IV
153	Guoxinmai 5 hao	2	1	3	2	<i>Hap5B-b</i>	II	321	Qian 11AF19-5	3	3	4	4	<i>Hap5B-b</i>	IV
154	Hongwan 3 hao	2	1	3	2	<i>Hap5B-b</i>	II	322	Qianmai 18	3	3	3	4	<i>Hap5B-b</i>	IV
155	Huacheng 702	2	3	2	2	<i>Hap5B-b</i>	II	323	Qianyu 21	4	3	4	3	<i>Hap5B-b</i>	IV
156	Huahui 1088	2	2	2	3	<i>Hap5B-b</i>	II	324	Yi 00-119	3	5	4	3	<i>Hap5B-b</i>	IV
157	Huaimai 0208	1	1	3	2	<i>Hap5B-b</i>	II	325	Yu 09113	3	4	3	4	<i>Hap5B-b</i>	IV
158	Huaimai 0209	1	2	3	1	<i>Hap5B-b</i>	II	326	Yu 0926	4	5	4	4	<i>Hap5B-b</i>	IV
159	Huaimai 0226	1	1	1	2	<i>Hap5B-b</i>	II	327	Yumai 7 hao	4	4	4	4	<i>Hap5B-b</i>	IV
160	Huaimai 0320	2	2	2	2	<i>Hap5B-b</i>	II	328	Yumai 9 hao	3	4	3	3	<i>Hap5B-b</i>	IV
161	Huaimai 0360	1	2	3	2	<i>Hap5B-b</i>	II	329	ENESCO	1	1	2	1	<i>Hap5B-a</i>	V

162	Huaimai 05155	2	2	4	3	<i>Hap5B-b</i>	II	330	FARO	3	2	3	4	<i>Hap5B-a</i>	V
163	Huaimai 0615	2	1	3	3	<i>Hap5B-b</i>	II	331	R146	3	2	3	3	<i>Hap5B-a</i>	V
164	Huaimai 0705	2	1	3	2	<i>Hap5B-b</i>	II	332	Glenlen	5	5	4	5	<i>Hap5B-b</i>	V
165	Huaimai 0882	2	1	2	2	<i>Hap5B-b</i>	II	333	Niavt14	1	1	1	1	<i>Hap5B-b</i>	V
166	Huaimai 11	2	2	3	2	<i>Hap5B-b</i>	II	334	Nick	5	5	4	4	<i>Hap5B-b</i>	V
167	Huaimai 16	3	2	1	2	<i>Hap5B-b</i>	II	335	R77/6	4	3	3	4	<i>Hap5B-b</i>	V
168	Huaimai 17	1	1	3	3	<i>Hap5B-b</i>	II	336	ARZ	5	5	2	2	<i>Hap5B-b</i>	V

Supplementary Table S1. Basic information of 336 accessions and their sequence polymorphism assays of *TaCOBL-5B*. *I* Northern winter wheat region, *II* Yellow and Huai River valley winter wheat region, *III* low and middle Yangtze River valley winter wheat region, *IV* southwestern winter wheat region, *V* Introduced wheat variety of foreign. “—” represents that wheat cultivars used for cloning the full-length sequence of *TaCOBL* and for identifying allelic variations. E1 to E4 indicate the environments at Suixi in January of 2016, in January of 2017, in January of 2018, and in January of 2021 under cold stress. The cold resistance of wheat was divided into five grades: Grade 1(1: no freezing damage), 2 (leaves are yellow due to cold), 3 (half of leaves freeze to death), 4(leaves are completely withered), 5 (plants or most of their tillers freeze to death) .

Primer set	Primer name and sequence (5'-3')	size (pb)	Amplified target
TaCOBL5A	F2:GAGGGAGTACAATTTATGTG	2446	5A genome specific
	R2:CTGCCTAATACTCTAACCT		
TaCOBL5B	F3:TAGACAACAATCAATCGACC	2200	5B genome specific
	R3:GGGGAAAATTTACCAAGATG		
TaCOBL5D	F4:GAGCTGATCCTCTTAGAC	2241	5D genome specific
	R4:AGTAATAGACCCTGGATAGA		
TaCOBL-2	F5:ATAGGACCTTCACCTTCAGCC		Real-time PCR
	R5:CAGGAGCAGCACGAGCAA		
Actin-p	F6:ATGTACCGTGGTGATGTT		Real-time PCR
	R6:CCTGGTGGCTGGTAGTTG		
TaCOBL-3	F7:ATTGTATAATGGGCAAGGTAGC	254	Haplotypes of <i>TaCOBL-5B</i> specific
	R7:CGAGATGGAAAAGGACGC		
TaCOBL-4	F8: <u>ACGAAGCTT</u> TTGCGGCCCTTGCATGTT	1607	Promoter region
	R8: <u>ACGGGATCC</u> CGTTGCACTCCCCTGCTAAT		

Supplementary Table S2. Primers used in this study.

EST	Expression	Position	Protein	Gene
BE500136	abiotic stresses	IWGSC_CSS_5AS_scaff_1548422:3479-5204	Traes_5AS_10F5A686B	TaCOBL-5A (2594 bp)
JZ886730		IWGSC_CSS_5AS_scaff_1548422:3479-5204	Traes_5AS_10F5A686B	
CA629775		5A:45368428-45369817	Traes_5AS_C77A372931	TaCOBL-5B (2703 bp)
HX137109		5A:45368901-45369818	Traes_5AS_C77A372931	
HX137138		5A:45368428-45369817	Traes_5AS_C77A372931	
CJ552171		5B:24494988-24495559	Traes_5BS_6F5708B40	
JZ885802	abiotic stresses	5B:74668609-74669180	Traes_5BS_6F5708B40	
		5B:24494723-24495315		
		5B:74668344-74668936		
BJ258229		5D:40667343-40667720	Traes_5DS_C13EFC8F7	TaCOBL-5D

BU100163	abiotic stresses	5D:40666933-40667669	Traes_5DS_C13EFC8F7	(2605 bp)
CJ691193	abiotic stresses	5D:40666916-40667584	Traes_5DS_C13EFC8F7	

Supplementary Table S3. The search ESTs results of wheat genome EBI database.

