

Supplementary Table S1. Wheat lines used in study.

Wheat line	Alien chromosome
Chinese Spring	
Monad	
TACBOW0001	<i>Leymus racemosus</i> A addition
TACBOW0003	<i>Leymus racemosus</i> E addition
TACBOW0004	<i>Leymus racemosus</i> F addition
TACBOW0005	<i>Leymus racemosus</i> H addition
TACBOW0006	<i>Leymus racemosus</i> I addition
TACBOW0007	<i>Leymus racemosus</i> J addition
TACBOW0008	<i>Leymus racemosus</i> K addition
TACBOW0009	<i>Leymus racemosus</i> L addition
TACBOW0010	<i>Leymus racemosus</i> N addition
TACBOW0011	<i>Leymus racemosus</i> H substitution
TACBOW0012	<i>Leymus racemosus</i> 2Lr#1 addition
TACBOW0013	<i>Leymus racemosus</i> 5Lr#1 addition
TACBOW0014	<i>Leymus racemosus</i> 7Lr#1 addition
TACBOW0015	<i>Leymus racemosus</i> 7Lr#1 addition
TACBOW0016	<i>Leymus racemosus</i> ?Lr#1 addition
TACBOW0017	<i>Leymus racemosus</i> 2Lr#1 addition
TACBOW0018	<i>Secale cereale</i> 1R addition
TACBOW0020	<i>Secale cereale</i> 3R addition
TACBOW0024	<i>Secale cereale</i> 7R addition
TACBOW0025	<i>Secale cereale</i> 1R addition
TACBOW0026	<i>Secale cereale</i> 1R addition
TACBOW0027	<i>Secale cereale</i> 2R addition
TACBOW0028	<i>Secale cereale</i> 3R addition
TACBOW0029	<i>Secale cereale</i> 5R addition
TACBOW0032	<i>Aegilops intermedium</i> 7Ai addition
TACBOW0034	<i>Aegilops intermedium</i> 1Ai addition
TACBOW0035	<i>Aegilops intermedium</i> 4Ai addition
TACBOW0036	<i>Aegilops intermedium</i> 5Ai addition
TACBOW0038	<i>Aegilops elongatum</i> 1E addition
TACBOW0039	<i>Aegilops elongatum</i> 2E addition
TACBOW0040	<i>Aegilops elongatum</i> 3E addition
TACBOW0041	<i>Aegilops elongatum</i> 4E addition
TACBOW0042	<i>Aegilops elongatum</i> 6E addition
TACBOW0043	<i>Aegilops elongatum</i> 5E addition
TACBOW0044	<i>Aegilops elongatum</i> 7E addition
TACBOW0045	<i>Aegilops umbellulata</i> 1U addition
TACBOW0046	<i>Aegilops umbellulata</i> 2U addition
TACBOW0047	<i>Aegilops umbellulata</i> 4U addition
TACBOW0048	<i>Aegilops umbellulata</i> 5U addition

TACBOW0049	<i>Aegilops umbellulata</i> 6U addition
TACBOW0051	<i>Hordeum chilense</i> 1Hch substitution
TACBOW0052	<i>Hordeum chilense</i> 2HchS addition
TACBOW0053	<i>Hordeum chilense</i> 4Hch addition
TACBOW0054	<i>Hordeum chilense</i> 5Hch addition
TACBOW0055	<i>Hordeum chilense</i> 6Hch addition
TACBOW0056	<i>Hordeum chilense</i> 7Hch addition
TACBOW0057	<i>Haynaldia villosa</i> 1V addition
TACBOW0059	<i>Haynaldia villosa</i> 3V addition
TACBOW0060	<i>Haynaldia villosa</i> 4V addition
TACBOW0061	<i>Haynaldia villosa</i> 5V addition
TACBOW0062	<i>Haynaldia villosa</i> 6V addition
TACBOW0064	<i>Triticum aestivum</i> - <i>Secale cereale</i> amphidiploid
TACBOW0065	<i>Triticum aestivum</i> - <i>Secale cereale</i> amphidiploid
TACBOW0066	<i>Triticum turgidum</i> - <i>Secale cereale</i> amphidiploid
TACBOW0067	<i>Triticum turgidum</i> - <i>Secale cereale</i> amphidiploid
TACBOW0068	<i>Triticum turgidum</i> - <i>Haynaldia villosa</i> amphidiploid
TACBOW0069	<i>Triticum aestivum</i> - <i>Aegilops intermedium</i> amphidiploid
TACBOW0070	<i>Triticum aestivum</i> - <i>Aegilops intermedium</i> amphidiploid
TACBOW0123	<i>Leymus mollis</i> A addition
TACBOW0124	<i>Leymus mollis</i> G addition
TACBOW0125	<i>Leymus mollis</i> H addition
TACBOW0126	<i>Psathyrostachys huashanica</i> A addition
TACBOW0127	<i>Psathyrostachys huashanica</i> B addition
TACBOW0128	<i>Psathyrostachys huashanica</i> C addition
TACBOW0133	<i>Aegilops intermedium</i> B addition
TACBOW0136	<i>Aegilops intermedium</i> E addition
TACBOW0137	<i>Aegilops intermedium</i> F addition
TACBOW0138	<i>Aegilops intermedium</i> G addition
TACBOW0189	<i>Aegilops caudata</i> B addition
TACBOW0190	<i>Aegilops caudata</i> C addition
TACBOW0191	<i>Aegilops caudata</i> D addition
TACBOW0193	<i>Aegilops caudata</i> E addition
TACBOW0195	<i>Aegilops longissima</i> 1S [^] I [^] addition
TACBOW0196	<i>Aegilops longissima</i> 2S [^] I [^] addition
TACBOW0197	<i>Aegilops longissima</i> 3S [^] I [^] addition
TACBOW0198	<i>Aegilops longissima</i> 4/7S [^] I [^] addition
TACBOW0201	<i>Aegilops searsii</i> 1S [^] s [^] addition
TACBOW0202	<i>Aegilops searsii</i> 2S [^] s [^] addition
TACBOW0204	<i>Aegilops searsii</i> 4S [^] s [^] addition
TACBOW0205	<i>Aegilops searsii</i> 5S [^] s [^] addition
TACBOW0206	<i>Aegilops searsii</i> 6S [^] s [^] addition
TACBOW0208	<i>Aegilops longissima</i> ?S [^] I [^] addition
TACBOW0209	<i>Aegilops longissima</i> ?S [^] I [^] addition

TACBOW0213	<i>Aegilops elongatum</i> 1ES addition
TACBOW0214	<i>Aegilops elongatum</i> 3ES addition
TACBOW0215	<i>Aegilops elongatum</i> 3EL addition
TACBOW0217	<i>Aegilops elongatum</i> 6ES addition
TACBOW0219	<i>Aegilops elongatum</i> 6EL addition
TACBOW0220	<i>Elymus trachycaulus</i> T1H ^t AS·2H ^t AS addition
TACBOW0221	<i>Elymus trachycaulus</i> T1H ^t AS·3S ^t AL monosomic addition
TACBOW0222	<i>Elymus trachycaulus</i> T1H ^t AS·6H ^t AL addition
TACBOW0224	<i>Elymus trachycaulus</i> T1S ^t AL·7S ^t AL addition
TACBOW0225	<i>Elymus trachycaulus</i> T2H ^t AS·5H ^t AL addition
TACBOW0226	<i>Elymus trachycaulus</i> T5H ^t AL·5H ^t AL addition
TACBOW0227	<i>Elymus trachycaulus</i> T7AL·1AS-1S ^t AS substitution
TACBOW0228	<i>Elymus trachycaulus</i> T7AL·1AS-1S ^t AS (7A) & T5DL·7AS (5D) translocation
TACBOW0229	<i>Elymus trachycaulus</i> T1H ^t AS·1H ^t AS addition
TACBOW0230	<i>Elymus trachycaulus</i> T1H ^t AS·5H ^t AL addition
TACBOW0231	<i>Elymus trachycaulus</i> T1H ^t AS·7S ^t AL addition
TACBOW0232	<i>Aegilops peregrina</i> T3U ^v #1-? addition
TACBOW0233	<i>Elymus trachycaulus</i> T1H ^t AS·1BL translocation
TACBOW0235	<i>Secale cereale</i> 2R addition
TACBOW0236	<i>Secale cereale</i> 3R addition
TACBOW0237	<i>Secale cereale</i> 4R addition
TACBOW0239	<i>Secale cereale</i> 6R addition
TACBOW0240	<i>Secale cereale</i> 7R addition
TACBOW0242	<i>Aegilops longissima</i> 2S ^l addition
TACBOW0244	<i>Aegilops longissima</i> 4S ^l addition
TACBOW0245	<i>Aegilops longissima</i> 5S ^l addition
TACBOW0246	<i>Aegilops longissima</i> 6S ^l addition
TACBOW0247	<i>Aegilops longissima</i> 2S ^l addition
TACBOW0249	<i>Elymus trachycaulus</i> 1H ^t AS addition
TACBOW0250	<i>Elymus trachycaulus</i> 1H ^t AL addition
TACBOW0252	<i>Elymus trachycaulus</i> 1S ^t addition
TACBOW0253	<i>Elymus trachycaulus</i> 5H ^t addition
TACBOW0254	<i>Elymus trachycaulus</i> 6H ^t addition
TACBOW0256	<i>Elymus trachycaulus</i> 7H ^t AS addition
TACBOW0257	<i>Elymus trachycaulus</i> 7S ^t AL addition
TACBOW0258	<i>Elymus trachycaulus</i> 1S ^t AL addition
TACBOW0259	<i>Elymus trachycaulus</i> 5H ^t AS addition
TACBOW0260	<i>Elymus trachycaulus</i> 13H ^t addition
TACBOW0261	<i>Elymus trachycaulus</i> 5S ^t addition
TACBOW0262	<i>Elymus trachycaulus</i> 5S ^t AS addition
TACBOW0264	<i>Elymus ciliaris</i> 1S ^c addition
TACBOW0265	<i>Elymus ciliaris</i> 1 ^Y addition
TACBOW0266	<i>Elymus ciliaris</i> 1Y ^c AS addition
TACBOW0267	<i>Aegilops longissima</i> ?S ^l addition

TACBOW0268	<i>Aegilops longissima</i> ?S [^] I [^] addition
TACBOW0270	<i>Aegilops peregrina</i> 2S [^] v [^] addition
TACBOW0271	<i>Aegilops peregrina</i> 3S [^] v [^] addition
TACBOW0272	<i>Aegilops peregrina</i> 4S [^] v [^] addition
TACBOW0273	<i>Aegilops peregrina</i> 5S [^] v [^] addition
TACBOW0274	<i>Aegilops peregrina</i> 7S [^] v [^] addition
TACBOW0275	<i>Aegilops peregrina</i> 1U [^] v [^] addition
TACBOW0276	<i>Aegilops peregrina</i> 2U [^] v [^] addition
TACBOW0277	<i>Aegilops peregrina</i> 2Uv [^] addition & 2BL deletion
TACBOW0278	<i>Aegilops peregrina</i> 3U [^] v [^] addition
TACBOW0279	<i>Aegilops peregrina</i> 4U [^] v [^] addition
TACBOW0280	<i>Aegilops peregrina</i> 5U [^] v [^] addition
TACBOW0281	<i>Aegilops peregrina</i> 6U [^] v [^] addition
TACBOW0282	<i>Aegilops peregrina</i> 7U [^] v [^] addition
TACBOW0283	<i>Aegilops geniculata</i> 1M [^] g [^] addition
TACBOW0284	<i>Aegilops geniculata</i> 2M [^] g [^] addition
TACBOW0286	<i>Aegilops geniculata</i> 4M [^] g [^] addition
TACBOW0287	<i>Aegilops geniculata</i> 5M [^] g [^] addition
TACBOW0288	<i>Aegilops geniculata</i> 6M [^] g [^] addition
TACBOW0290	<i>Aegilops geniculata</i> 1U [^] g [^] addition
TACBOW0291	<i>Aegilops geniculata</i> 2U [^] g [^] addition
TACBOW0292	<i>Aegilops geniculata</i> 4U [^] g [^] addition
TACBOW0293	<i>Aegilops geniculata</i> 5U [^] g [^] addition
TACBOW0295	<i>Aegilops geniculata</i> 3U [^] g [^] addition
TACBOW0296	<i>Elymus ciliaris</i> 2S [^] c [^] addition
TACBOW0297	<i>Elymus ciliaris</i> 3S [^] c [^] addition
TACBOW0298	<i>Elymus ciliaris</i> 1S [^] c [^] & 5Y [^] c [^] double addition
TACBOW0299	<i>Elymus ciliaris</i> ?Y [^] c [^] addition