

Table S1. List of taxa, collection information, and Genbank accession numbers for sequences analyzed for Figures 2–5.

Eurasian <i>Elymus</i> – StStHH	Desig ¹	Voucher	Accession	Origin	Genbank pepC ²	Genbank β -amy	Genbank GBSSI	Genbank rpoA	Genbank trnT-F
<i>Elymus breviaristatus</i> Keng ex Keng f.	1	ID	PI 499411	China	b-HM035290-St e-HM035291-H	b-HM035223-St a-HM035224-H	a-HM035268-St b-HM035269-H	KF600660	KF600684
<i>Elymus caninus</i> (L.) L.	1	ID	PI 314205	Uzbekistan	h-HM035292-St b-HM035293-H	a-HM035225-St d-HM035226-H	n-DQ159325-St a-DQ159324-H	KF600661	KF600685
<i>Elymus caninus</i>	2	ID	PI 314612	Kazakhstan	a-HM035294-St d-HM035295-H i-HM035296-H	d-HM035227-St c-HM035228-H	b-HM035270-St a-HM035271-H	KF600662	KF600686
<i>Elymus caninus</i>	4	ID	PI 499413	China	d-HM035297-St f-HM035298-H	d-HM035229-St b-HM035230-H	a-HM035272-St b-HM035273-H	KF600663	KF600687
<i>Elymus caninus</i>	5	ID	PI 531571	Poland	e-HM035299-St g-HM035300-H	d-HM035231-St e-HM035232-H	a-HM035274-St b-HM035275-H	KF600664	KF600688
<i>Elymus dentatus</i> (Hook.f.) Tzvelev	1	ID	PI 628702	Russia	d-HM035301-St c-HM035302-H e-HM035303-H	a-HM035233-St d-HM035234-H	a-DQ159328-St b-DQ159329-H	DQ159334	DQ159290
<i>Elymus dentatus</i>	2	ID	PI 531599	Pakistan	a-HM035304-St b-HM035305-H	i-HM035235-St a-HM035236-H	a-HM035276-St b-HM035277-H	KF600667	KF600691
<i>Elymus mutabilis</i> (Drobow) Tzvelev	1	ID	PI 628704	Russia	NR-St ³ a-HM035306-H i-HM035307-H	a-HM035237-St c-HM035238-H	c-DQ159331-St a-DQ159330-H	DQ159335	DQ159291
<i>Elymus mutabilis</i>	2	ID	PI 499449	China	h-HM035308-St a-HM035309-H f-HM035310-H	h-HM035239-St c-HM035240-H	a-HM035278-St b-HM035279-H	KF600670	KF600694
<i>Elymus sibiricus</i> L.	1	ID	PI 628699	Russia	b-HM035311-St a-HM035312-H	NR-St b-HM035241-H	b-HM035280-St a-HM035281-H	KF600673	KF600697
<i>Elymus sibiricus</i>	3	ID	PI 499461	China	d-HM035313-St a-HM035314-H	g-HM035242-St b-HM035243-H	a-HM035282-St b-HM035283-H	KF600674	KF600698

North American <i>Elymus</i> -StStHH	Desig ¹	Voucher	Accession	Origin	Genbank pepC	Genbank β -amy	Genbank GBSSI	Genbank rpoA	Genbank trnT-F
<i>Elymus canadensis</i> L.	1	ID	Barkworth 97-86	USA	NS ⁴	NS	NS	AY115928	AF519131
<i>Elymus canadensis</i>	2	ID	PI 578675	USA	b-HM035315-St a-AY553243-H	NS	NS	AY115929	AF519132
<i>Elymus canadensis</i>	4	ID	PI 531568	USA	b-AY553248-St a-AY553242-H	a-HM035244-St d-HM035245-H	c-HM035284-St a-HM035285-H	AY115930	AF519133
<i>Elymus elymoides</i> (Raf.) Swezey	1	ID	PI 531606	USA	b-AY553249-St a-AY553244-H	a-HM035246-St c-HM035247-H	a2-AY010992-St d2-AY010965-H	AY115932	AF519135
<i>Elymus glaucus</i> Buckley	4	ID	RJMG 130	USA	NS	NS	a-AY01097-St b-AY010966-H	AY115933	AF519136
<i>Elymus glaucus</i>	6	ID	W6 10215	USA	b-AY553250-St e-HM035316-H	NR-St a-HM035248-H	b-AY010980-St a-AY010967-H	AY115934	AF519137
<i>Elymus glaucus</i>	7	ID	PI 593652	USA	NS	NS	NS	AY115935	AF519138
<i>Elymus hystrix</i> L.	1	ID	Barkworth 97-87	USA	b-AY553251-St a-AY553245-H	NR-St a-HM035249-H	a-AY010982-St d-HM035286-H	AY115936	AF519139
<i>Elymus lanceolatus</i> (Scribn. & J.G.Sm.) D.R.Dewey	1	ID	PI 632507	USA	NS	c-HM035250-St a-HM035251-H	a-AY010993-St d-AY010984-St aa-AY010969-H	AY115937	NS
<i>Elymus lanceolatus</i>	2	ID	PI 632506	USA	NS	a-HM035252-St h-HM035253-H	c-AY010985-St d-AY010994-St a-AY010970-H	NS	NS
<i>Elymus lanceolatus</i>	3	ID	PI 531623	USA	b-AY553252-St a-AY553246-H	NS	NS	AY115938	AF519140
<i>Elymus riparius</i> Wiegand	1	ID	RJMG 160	USA	NS	a-HM035254-St b-HM035255-H	NR-St a-AY010971-H	NS	NS
<i>Elymus trachycaulus</i> (Link) Gould ex Shinners	1	ID	PI 372500	Canada	e-HM035317-St a-HM035318-H	a-HM035256-St b-HM035257-H	b1-AY010986-St a1-AY010972-H	AY115939	AF519141
<i>Elymus trachycaulus</i>	3	ID	PI 452446	Canada	NS	NS	d-AY010987-St a-AY010973-H b-AY010974-H	AY115940	AF519142

<i>Elymus virginicus</i> L.	1	ID	PI436945	USA	NS	NS	NS	AY115941	AF519143
<i>Elymus virginicus</i>	2	ID	PI490361	USA	NS	NS	NS	AY115942	AF519144
<i>Elymus virginicus</i>	4	ID	RJMG 161	USA	NR-St a-HM035319-H	NR-St a-HM035258-H	d-AY010995-St a-AY010975-H	NS	NS
<i>Elymus virginicus</i>	6	ID	RJMG163	USA	NS	NS	NS	AY115943	AF519145
<i>Elymus virginicus</i>	9	ID	RJMG 168	USA	d-HM035320-St a-HM035321-H	a-HM035259-St e-HM035260-H	a-AY010989-St b-AY010976-H	NS	NS
<i>Elymus wawawaiensis</i> J.R.Carlson & Barkworth	1	ID	PI 285272	USA	NS	a-HM035261-St d-HM035262-H	c-AY010996-St a-AY010977-H	AY115944	AF519146
<i>Elymus wawawaiensis</i>	3	ID	PI 598812	USA	b-AY553253-St a-AY553247-H	c-HM035263-St b-HM035264-H	a-AY010990-St b-AY010997-St d-AY010978-H	AY115945	AF519147
Asian <i>Elymus</i>-StStYY	Desig¹	Voucher	Accession	Origin	Genbank pepC	Genbank β-amy	Genbank GBSSI	Genbank rpoA	Genbank trnT-F
<i>Elymus abolinii</i> (Drobow) Tzvelev	1	ID	PI 531555	China	b-GQ844927-St a-GQ844928-Y	b-GQ847678-St a-GQ847679-Y	a-DQ159322-St b-DQ159323-Y	DQ159332	DQ159288
<i>Elymus abolinii</i>	2	ID	PI 531557	Estonia	b-GQ844929-St i-GQ844930-Y	a-GQ847680-St NR-Y	k-GQ847708-St a-GQ847709-Y e-GQ847710-Y	NS	NS
<i>Elymus antiquus</i> (Nevski) Tzvelev	1	ID	PI 632564	China	g-GQ844931-St a-GQ844932-Y	a-GQ847681-St f-GQ847682-Y	a-GQ847711-St b-GQ847712-Y	KF600659	KF600683
<i>Elymus antiquus</i>	2	ID	PI 564958	China	a-GQ844933-St c-GQ844934-Y	a-GQ847683-St e-GQ847684-Y	g-GQ847713-St a-GQ847714-Y	NS	NS
<i>Elymus antiquus</i>	3	ID	PI 619528	China	b-GQ844935-St d-GQ844936-St c-GQ844937-Y	a-GQ847685-St e-GQ847686-Y	b-GQ847715-St a-GQ847716-Y	NS	NS
<i>Elymus antiquus</i>	4	ID	PI 564957	China	c-GQ844938-St h-GQ844939-Y	d-GQ847687-St a-GQ847688-Y	b-GQ847717-St a-GQ847718-Y	NS	NS
<i>Elymus caucasicus</i> (K.Koch) Tzvelev	1	ID	PI 531573	Estonia	a-GQ844940-St d-GQ844941-Y	b-GQ847689-St a-GQ847690-Y	NR-St a-GQ847719-Y b-GQ847720-Y	DQ159333	DQ159289

<i>Elymus ciliaris</i> (Trin.) Tzvelev	1	GH	PI 531575	China	b-GQ844942-St c-GQ844943-Y h-GQ844944-Y	g-GQ847691-St h-GQ847692-Y	g-DQ159327-St b-DQ159326-Y	AY115931	AF519134
<i>Elymus ciliaris</i>	2	ID	PI 531577	Japan	d-GQ844945-St a-GQ844946-Y	f-GQ847693-St i-GQ847694-Y	a-GQ847721-St b-GQ847722-Y	KF600665	KF600689
<i>Elymus ciliaris</i>	5	ID	PI 531576	Estonia	a-GQ844947-St c-GQ844948-Y	e-GQ847695-St a-GQ847696-Y	a-GQ847723-St b-GQ847724-St c-GQ847725-Y	KF600666	KF600690
<i>Elymus gmelinii</i> (Ledeb.) Tzvelev	1	ID	PI 499447	China	NR-St a-GQ844949-Y	e-GQ847697-St f-GQ847698-Y	a-GQ847726-St b-GQ847727-Y	KF600668	KF600692
<i>Elymus longearistatus</i> (Boiss.) Tzvelev	1	ID	PI 401277	Iran	c-GQ844950-St aa-GQ84451-Y	NR-St e-GQ847699-Y	NR-St d-GQ847728-Y	KF600669	KF600693
<i>Elymus nevskii</i> Tzvelev	1	ID	PI 314620	Kazakhstan	a-GQ844952-St b-GQ844953-Y	k-GQ847700-St b-GQ847701-Y	a-GQ847729-St b-GQ847730-Y	KF600671	KF600695
<i>Elymus pendulinus</i> (Nevski) Tzvelev	1	ID	PI 499452	China	a-GQ844954-St b-GQ844955-Y	i-GQ847702-St b-GQ847703-Y	a-GQ847731-St b-GQ847732-Y	KF600672	KF600696
<i>Elymus semicostatus</i> (Nees ex Steud.) Melderis	1	ID	PI 271522	India	d-GQ844956-St a-GQ844957-Y	c-GQ847704-St a-GQ847705-Y	f-GQ847733-St d-GQ847734-Y	NS	NS
<i>Elymus semicostatus</i>	2	ID	PI 207453	Afghanistan	a-GQ844958-St NR-Y	NR-St a-GQ847706-Y	a-GQ847735-St e-GQ847736-Y	NS	NS

<i>Elymus repens</i> – StStHHUkUk	Desig ¹	Voucher	Accession	Origin	Genbank pepC	Genbank β-amy	Genbank GBSSI	Genbank rpoA	Genbank trnT-F
<i>Elymus repens</i> (L.) Gould	1	ID	RJMG119	USA	g-EU282271-St	d-EU282239-St	f ⁶ -AY360849-St c-AY360826-St	AY362780	AY362786
					a-EU282269-H	q-EU282240-H	e-AY360827-H		
					q-EU282272-H	r-EU282241-H			
					b-EU282270-Uk	c-EU282238-Uk	q-AY360828-Uk1		
					NH ⁵	NH	a1-AY360825-T		
					NH	NH	g ⁶ -AY360858-Uk2		
<i>Elymus repens</i>	2	ID	RJMG122	USA	NR-St	i-EU282243-St	g ⁶ -AY360850-St	AY362781	AY362787
					b-EU282274-H	k-EU282244-H	NR-H		
					h-EU282275-H				
					a-EU282273-Uk	a-EU282242-Uk	aa-AY360830-Uk1 cc-AY360832-Uk1		
					NH	NH	bb-AY360831-T		
					NH	NH	hh-AY360829-T		
					NH	NH	h ⁶ -AY360859-Uk2		
<i>Elymus repens</i>	3	ID	RJMG131	USA	d-EU282276-St	a-EU282245-St	f ⁶ -AY360851-St	AY362782	AY362788
					f-EU282277-St				
					h-EU282278-H	d-EU282247-H	NR-H		
						I-EU282248-H			
					i-EU282279-Uk	c-EU282246-Uk	h ⁶ -AY360852-Uk1		
					NH	NH	a-AY360833-T		
					NH	NH	aa-AY360834-T		
					NH	NH	dd-AY360835-T		
					NH	NH	g ⁶ -AY360860-Uk2		
<i>Elymus repens</i>	4	ID	RJMG159	USA	e-EU282281-St	b-EU282250-St	NR-St	AY362783	AY362789
					q-EU282283-St				
					m-EU282282-H	x-EU282251-H	dd-AY360839-H		
					c-EU282280-Uk	a-EU282249-Uk	a-AY360836-Uk1 b ⁶ -AY360853-Uk1 i ⁶ -AY360854-Uk1		
					NH	NH	aa-AY360838-T		
					NH	NH	t ⁶ -AY360837-T		

<i>Elymus repens</i>	5	ID	RJMG166	USA	i-EU282288-St l-EU282289-St a-EU282284-H b-EU282285-H c-EU282286-H e-EU282287-Uk NH NH NH NH	b-EU282253-St a-EU282252-H c-EU282254-Uk NH NH NH NH	NR-St j ⁶ -AY360855-H k-AY360840-Uk1 cc-AY360841-T dd-AY360842-T b ⁶ -AY360861-Uk2 hh-AY360843-Uk2	AY362784	AY362790
<i>Elymus repens</i>	6	ID	RJMG167	USA	d-EU282291-St c-EU282290-H e-EU282292-Uk NH	NS NH	a ⁶ -AY360856-St g ⁶ -AY360857-St dd-AY360845-H hh-AY360846-Uk1 a2-AY360844-T	AY362785	AY362791
Monogenomic Triticeae	Desig¹	Voucher	Accession	Origin	Genbank pepC	Genbank β-amy	Genbank GBSSI	Genbank rpoA	Genbank trnT-F
<i>Aegilops bicornis</i> (Forsskål) Jaub. & Spach	1	GH	L. Morrison s.n.		NS	AY821686	NS	NS	NS
<i>Aegilops caudata</i> L.	1	GH	G 758		NS	a-AY821687 b-AY821688 c-AY821689	AF079262	AY115908	AF519111
<i>Aegilops comosa</i> Sibth. & Sm.	1	GH	G 602		AY553236	a-AY821690 g-AY821696	NS	NS	NS
<i>Aegilops speltoides</i> Tausch	1	GH	L. Morrison s.n.		NS	KF600658	AF079267	AY115909	AF519112
<i>Aegilops tauschii</i> Coss.	1	GH	L. Morrison s.n.		NS	AY821695	AF079268	AY115910	AF519113
<i>Aegilops uniaristata</i> Vis.	1	GH	G 1297		NS	AY821691	AF079270	AY115911	AF519114
<i>Agropyron cristatum</i> (L.) Gaertn.	1	GH	PI 279802	Canada	AY553237	AY821697	AF079271	AY115912	AF519115
<i>Agropyron cristatum</i> <i>Agropyron mongolicum</i> Keng	2	GH	PI 281862	Germany	NS	NS	AY011002	AY115913	AF519116
<i>Australopyrum</i> <i>retrofractum</i> (Vickery) Å.Löve	1	GH	D 2774	China	NS	NS	AY011003	AY115914	AF519117
<i>Australopyrum velutinum</i> (Nees) B.K.Simon	1	GH	PI 533013	Australia	NS	AY821692	AF079272	AY115915	AF519118
<i>Crithopsis delileana</i> (Schult.) Roshev.	1	GH	D 2873-2878	Australia	AY553238	AY821693	AY011004	AY115916	AF519119
	1	GH	H 5562	Jordan	NS	AY821694	GQ847707	NS	NS

<i>Dasypyrum villosum</i> (L.) Candargy	1	GH	PI 251478	Turkey	NS	AY821698	AF079274	AY115925	AF519128
<i>Dasypyrum villosum</i>	2	GH	PI 470279	Turkey	NS	AY821699	NS	AY115926	AF519129
<i>Dasypyrum villosum</i>	3	GH	D 2990	Australia	AY553240	NS	NS	NS	NS
<i>Eremopyrum bonaepartis</i> (Spreng.) Nevski	1	GH	H 5554	Iran	NS	AY821700	AY011005	AY115946	AF519148
<i>Eremopyrum bonaepartis</i>	2	GH	H 5569		NS	NS	NS	AY115947	AF519149
<i>Eremopyrum distans</i> (K.Koch) Nevski	1	GH	H 5552	Iran	NS	AY821701	AY011006	AY115948	AF519150
<i>Eremopyrum orientale</i> (L.) Jaub. & Spach	1	GH	H 5555	Iran	AY553254	AY821702	AY011007	AY115949	AF519151
<i>Henrardia persica</i> (Boiss.) C.E.Hubb.	1	GH	H 5556	Iran	NS	AY821703	AF079276	AY115950	AF519152
<i>Heterantherium piliferum</i> (Banks & Sol.) Hochst.	1	GH	PI 402352	Iran	AY553255	AY821704	AF079277	AY115951	AF519153
<i>Hordeum bogdanii</i> Wilensky	1	ID	PI 531762	Tajikistan	NS	GQ847675	EU282316	NS	NS
<i>Hordeum bogdanii</i>	2	ID	PI 531760	China	EU282293	EU282255	EU282317	NS	NS
<i>Hordeum brachyantherum</i> Nevski	1	GH	PI 531764	USA	NS	NS	NS	AY115917	AF519120
<i>Hordeum brevisubulatum</i> (Trin.) Link	1	GH	PI 401387	Iran	NS	a-AY821705 d-AY821712	AY010961	AY115918	AF519121
<i>Hordeum brevisubulatum</i>	2	GH	PI 401390	Iran	NS	AY821713	AY010964	NS	NS
<i>Hordeum bulbosum</i> L.	1	GH	PI 440417	Kazakhstan	a-EU282294 b-EU282295 c-EU282296	AY821706	AY010962	AY115919	AF519122
<i>Hordeum californicum</i> Covas & Stebbins	1	GH	MA-138-1-40	USA	AY553256	AY821707	AF079273	NS	KF600706
<i>Hordeum chilense</i> Roem. & Schult.	1	ID	PI 531781	Argentina	EU282297	-	EU282318	NS	NS
<i>Hordeum jubatum</i> L.	1	ID	RJMG 106	USA	a-AY553257 f-HM035287	a-AY821708 b-AY821709	a-AY010963 d-HM035266	AY115920	AF519123
<i>Hordeum jubatum</i>	2	ID	RJMG 134	USA	f-HM035288 i-HM035289	c-AY821710 a-AY821711	f-HM035265 m-HM035267	NS	NS
<i>Hordeum marinum</i> Huds.	1	ID	PI 304346	USA	AY553258	a-EU282256 b-EU282257	AY010959	AY115921	AF519124
<i>Hordeum marinum</i>	2	ID	PI 401364	Iran	NS	NS	NS	NS	KF600707
<i>Hordeum marinum</i>	3	ID	PI 304347	England	EU282298	EU282258	EU282319	NS	NS
<i>Hordeum murinum</i> L.	1	ID	PI 247054	USA	a-EU282299 b-EU282300	EU282259	EU282320	AY115922	AF519125
<i>Hordeum murinum</i>	2	ID	CIho 15683	USA	AY553259	EU282260	AY010960	AY115923	AF519126

<i>Hordeum pusillum</i> Nutt.	2	ID	Clho 15654	USA	EU282301	EU282261	EU282321	AY115924	AF519127
<i>Hordeum stenostachys</i> Godr.	1	ID	PI 531791	Argentina	EU282302	EU282262	EU282322	NS	NS
<i>Hordeum vulgare</i> L.	1	na			NS	NS	X07931	NS	NS
<i>Hordeum vulgare</i>	2	ID	RJMG 107	USA	AY553260	EU282263	NS	NS	KF600708
<i>Leymus racemosus</i> ssp. <i>sabulosus</i> (M.Bieb.) Tzvelev	1	GH	PI 531813	Estonia	AY553261	NS	NS	NS	NS
<i>Peridictyon sanctum</i> (Janka) Seberg, Fred., & Baden	1	GH	KJ 248	Greece	AY553262	AY821714	AF079278	AY115952	AF519154
<i>Psathyrostachys fragilis</i> (Boiss.) Nevski	1	GH	PI 343192	Iran	NS	AY821715	AF079279	AY115967	AF519169
<i>Psathyrostachys juncea</i> (Fisch.) Nevski	1	GH	PI 206684	Turkey	NS	AY821716	AF079280	AY115968	AF519170
<i>Pseudoroegneria libanotica</i> (Hack.) D.R.Dewey	1	GH	PI 228391	Iran	EU282304	EU282264	EU282324	AY115955	AF519156
<i>Pseudoroegneria libanotica</i>	3	GH	PI 228392	Iran	EU282305	EU282265	EU282325	KF600675	KF600699
<i>Pseudoroegneria spicata</i> (Pursh) Á.Löve subsp. <i>spicata</i>	1	GH	PI 232117	USA	NS	AY821717	AF079281	NS	NS
<i>Pseudoroegneria spicata</i> subsp. <i>inermis</i> (Scribn. & J.G.Smith) Á.Löve	2	GH	PI 236681	Canada	NS	AY821718	AY010998	AY115956	AF519157
<i>Pseudoroegneria spicata</i> subsp. <i>spicata</i>	3	GH	PI 610986	USA	AY553263	NS	AY010999	AY115957	AF519158
<i>Pseudoroegneria spicata</i> subsp. <i>spicata</i>	4	GH	D 2844	USA	AY553264	AY821719	AY011000	AY115958	AF519159
<i>Pseudoroegneria spicata</i> subsp. <i>spicata</i>	6	ID	RJMG 112	USA	NS	AY821720	a-AY011001 c-AY010991	KF600676	KF600700
<i>Pseudoroegneria spicata</i> subsp. <i>inermis</i>	8	GH	D 2839	USA	NS	NS	NS	AY115959	AF519160
<i>Pseudoroegneria stipifolia</i> (Czern. ex Nevski) Á.Löve	2	GH	PI 313960	Former USSR	EU282306	EU282266	NS	KF600677	KF600701
<i>Pseudoroegneria stipifolia</i>	3	GH	PI 531751	Ukraine	a-EU282307 d-EU282308	AY821721	NS	KF600678	KF600702
<i>Pseudoroegneria strigosa</i> (M.Bieb.) Á.Löve	1	GH	PI 499637	China	b-EU282309 d-EU282310	NS	EU282323	AY115953	AF519155
<i>Pseudoroegneria strigosa</i> ssp. <i>aegilopoides</i> (Drobow) Á.Löve	2	GH	PI 531755	China	EU282311	EU282267	AY360823	AY115954	KF624612
<i>Pseudoroegneria tauri</i> (Boiss. & Balansa) Á.Löve	1	GH	PI 380652	Iran	EU282312	EU282268	EU282326	KF600679	KF600703
<i>Pseudoroegneria tauri</i>	2	GH	PI 401319	Iran	EU282313	NS	EU282327	KF600680	KF600704

<i>Pseudoroegneria tauri</i>	3	GH	PI 380644	Iran	a-EU282314 b-EU282315	NS	-	KF600681	KF600705
<i>Secale cereale</i> L.	1	GH	E.Kellogg s.n.		AY553266	a-AY821723 b-AY821724	AY011009	AY115960	AF519162
<i>Secale montanum</i> (C.Presl.) C.Presl.	1	GH	PI 440654	Hungary	NS	NS	AF079282	AY115961	AF519161
<i>Secale montanum</i>	2	GH	T 36554		NS	AY821725	NS	NS	NS
<i>Secale strictum</i> subsp. <i>anatolicum</i> (Boiss.) K.Hammer	1	GH	PI 206992	Turkey	AY553265	AY821722	AY011008	AY115962	AF519163
<i>Taeniatherum caput-medusae</i> (L.) Nevski	1	GH	PI 208075	Turkey	-	AY821726	AY011010	AY115963	AF519164
<i>Taeniatherum caput-medusae</i>	2	ID	RJMG 189	USA	AY553268	AY821727	b-AY360847 e-AY360848	NS	NS
<i>Taeniatherum caput-medusae</i>	3	ID	PI 314697	Kazakhstan	NS	AY821728	NS	NS	NS
<i>Taeniatherum caput-medusae</i>	4	ID	PI 317475	Afghanistan	NS	AY821729	NS	NS	NS
<i>Thinopyrum bessarabicum</i> (Savul. & Rayss) Á.Löve	1	GH	PI531711	Estonia	NS	AY821730	AF079283	AY115964	AF519165
<i>Thinopyrum elongatum</i> (Host) D.R.Dewey	1	GH	PI 531719	France	NS	AY821731	AF079284	AY115965	AF519166
<i>Thinopyrum elongatum</i>	2	ID	RJMG 113	USA	AY553269	NS	NS	NS	NS
<i>Thinopyrum scirpeum</i> (C.Presl.) D.R.Dewey	1	GH	PI 531749	Italy	NS	GQ847676	AY011011	AY115966	AF519167
<i>Triticum aestivum</i> L.	1	na			AJ007705	NS	NS	NS	NS
<i>Triticum baeoticum</i> Boiss.	1	GH	L.Morrison s.n.		NS	AY821732	AF079285	NS	AF519168
<i>Triticum monococcum</i> L.	1	GH	PI 221413	Serbia	NS	AY821733	NS	NS	NS
<i>Triticum urartu</i> Tumanian	1	GH	L.Morrison s.n.		NS	GQ847677	AF079287	NS	NS
<i>Bromus tectorum</i> L.	1	GH	E.Kellogg s.n.	USA	AY553239	AY821734	AY362757	KF600682	KF600709

¹Numerical designations distinguish individuals within species, and correspond to the numbers after the taxon names in Figs. 2–6.

²Letter designations preceding Genbank accession number distinguish clones from within individuals where applicable, and correspond to the letters following the numerical designations in Figs. 2–6. Genome designations for each sequence following accession numbers were determined based on phylogeny.

³NR – sequence expected based on presumed genomic complement but Not Recovered.

⁴NS – gene or region was Not Sequenced for that individual.

⁵NH – there is No Homoeolog of pepC or β -amy corresponding to the T or Uk2 GBSSI homoeologues of *E. repens*.

⁶Shorter GBSSI fragments generated using the waxy K and F primers [6]; indicated by “FK” on Figures 5 and 6.

Sequence sources: [KF600659–KF600709](#), [KF624612](#) [this publication]; X07931 [1]; AF079235–AF079298 [2]; AY010959–AY011011 [3]; AJ007705 [4]; AY115908–AY115966 and AF519111–AF519168 [5]; AY360823–AY360848 and AY362780–AY362791 [6]; AY553236–AY553269 [7]; AY821686–AY821734 [8]; DQ159288–DQ159335 [9]; EU282269–EU282327 [10]; GQ844970–GQ844958 and GQ847675–GQ847736 [11]; HM035223–HM035321 [12].

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