

Fast identification of wheat 1BL.1RS translocation by reversed-phase ultra-performance liquid chromatography (RP-UPLC)*Jianwen Zhou^{A,C}, Caixia Han^{A,C}, Hui Cao^A, Shoumin Zhen^A, Zitong Yu^A, Xiaohui Li^A, Wujun Ma^B, and Yueming Yan^{A,D}*^ACollege of Life Science, Capital Normal University, Beijing 100048, China.^BCentre for Comparative Genomics, Murdoch University and Australian Export Grain Innovation Centre, Perth, WA 6150, Australia.^CThese authors contributed equally to this work.^DCorresponding author. Email: yanym@cnu.edu.cn**Supplementary Table 1. The name, origin and 1BL.1RS translocation compositions of 76 bread wheat cultivars and one rye variety used in this work**

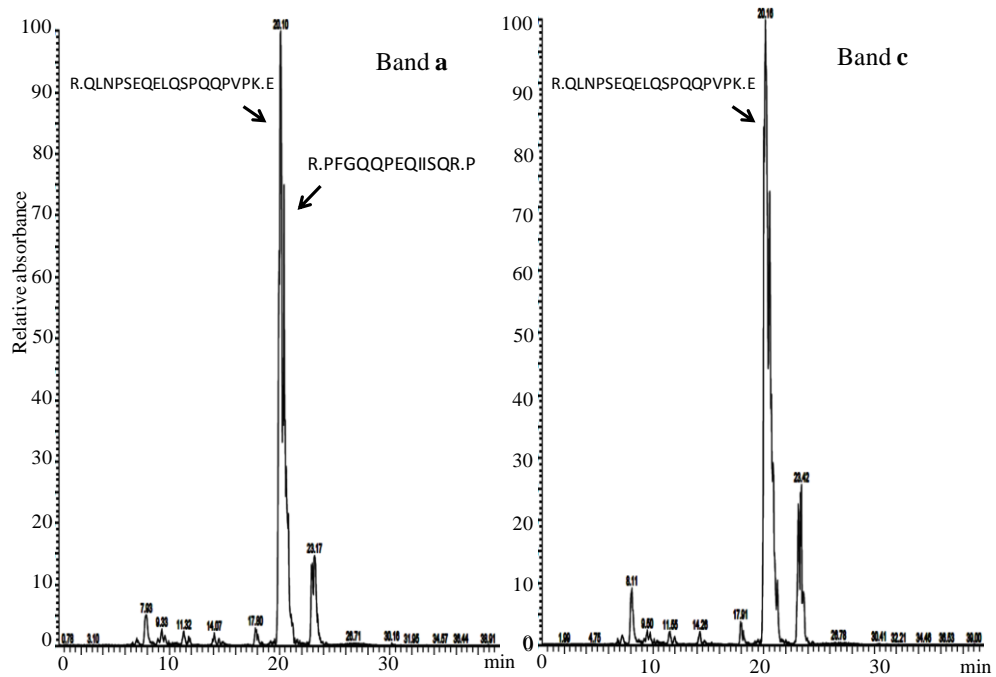
Type	Number	Cultivars	Origin	Released year	Type	Number	Cultivars	Origin	Released year
1BL.1RS translocation	1	Jingzhou Balck Rye	China	1995	Non-1BL.1RS translocation	42	CA0045	China	2002
	2	05Zhong 37	China	2005		43	CA9719	China	2000
	3	Aikang 58	China	2005		44	CA9722	China	2000
	4	Aimengniu II	China	1983		45	Chinese Spring	China	
	5	Aimengniu IV	China	1983		46	Chuanmai 20	China	1978
	6	Beijing 841	China	1992		47	Gaocheng 8901	China	2004
	7	Fu 98-46	China	2000		48	Huaimai 21	China	2008
	8	Han 6172	China	2003		49	Jimai 20	China	2004
	9	Hemai 026	China	2011		50	Jinmai 67	China	1997
	10	Hemai 0521	China	2011		51	Jing 411	China	1993

11	Heyou 1	China	2005	52	Jing 9428	China	1999
12	Hongzhan 6816	China	2000	53	Longmai 26	China	2000
13	Huapei 212	China	2011	54	Lumai 21	China	1991
14	Huaimai 0566	China	2009	55	Lumai 22	China	1991
15	Hemai 026	China	2011	56	Lumai 23	China	1991
16	Jingdong 8	China	1999	57	Ningchun 4	China	1981
17	Jingjiumai 10	China	1998	58	Shan 160	China	1995
18	Jinmai 45	China	1995	59	Shan 253	China	2000
19	Liuhu 98	China	2004	60	Ningmai 13	China	2006
20	Lovrin 10	Rumania		61	Shunmai 1718	China	2011
21	Lovrin 13	Rumania		62	Wanmai 52	China	2007
22	Lumai 8	China	1985	63	Xiaoyan 6	China	1991
23	Lumai 11	China	1988	64	Xiaoyan 54	China	1999
24	Lumai 15	China	1998	65	Yangmai 11	China	1996
25	Luo 6112	China	1999	66	Yangmai 20	China	2010
26	Luomai 21	China	2008	67	Yumai 2	China	1977
27	Lumai 6	China	1980	68	Yumai 4	China	1981
28	Lumai 7	China	1985	69	Yumai 18	China	1984
29	Lumai 14	China	1993	70	Yumai 34	China	1998
30	Lumai 17	China	1990	71	Yumai 47	China	1997
31	Lumai 18	China	1992	72	Zhengmai 9962	China	2010
32	Meng 0318	China	1995	73	Zhengmai 9023	China	2001
33	Neixiang 188	China	2000	74	Zhongmai 415	China	2011
34	Shanqianmai	Rumania	1971	75	Zhongyou 16	China	1995
35	Shi 4185	China	1999	76	Zhongyou 9507	China	2000
36	Shijiazhuang 8	China	2003	77	Zhoumai 19	China	2005
37	Zhongyu 5	China	2001				
38	Zhoumai 16	China	2003				
39	Zhoumai 11	China	2000				
40	Zhoumai 12	China	2000				
41	Zhoumai 18	China	2004				

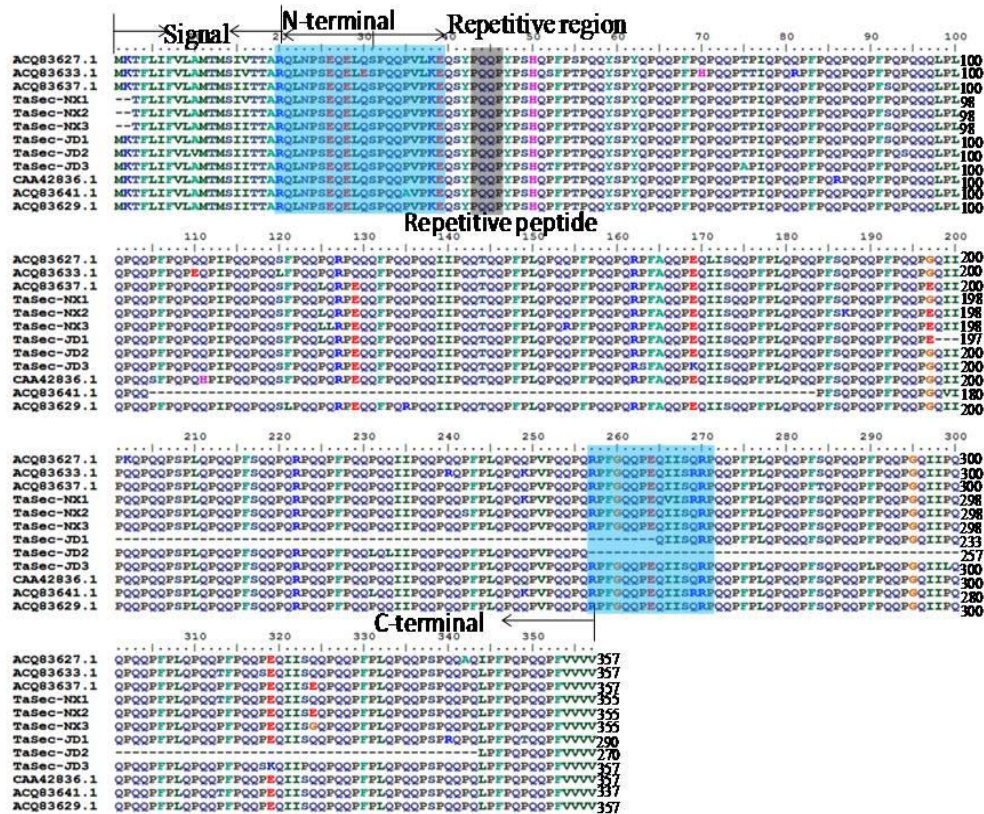
Supplementary Table 2. Repeatability of gliadins in Neixiang 188 separated by RP-UPLC

Peaks [*]	Migration time (min)	RSD%	Peak height (1000 uV)	RSD%	Peak area (1000 uV/S)	RSD%
1	12.194±0.0064	0.0521	285.99±6.26	2.19	166.69±4.51	2.71
2	18.446±0.0017	0.0094	1943.21±554.72	2.86	520.03±15.31	2.94
3	20.932±0.0093	0.044	1001.57±144.04	1.44	311.90±8.66	2.78
4	23.529±0.0055	0.0498	1663.29±24.07	1.45	604.76±11.36	1.88
5	26.377±0.0158	0.0598	1488.97±45.48	3.05	782.28±14.47	1.85
6	27.287±0.160	0.0586	801.28±13.20	1.65	431.68±4.73	1.09
7	27.801±0.016	0.0547	229.76±4.78	2.08	155.45±2.67	1.72
8	29.058±0.1578	0.0543	202.38±4.24	2.10	112.62±2.35	2.01

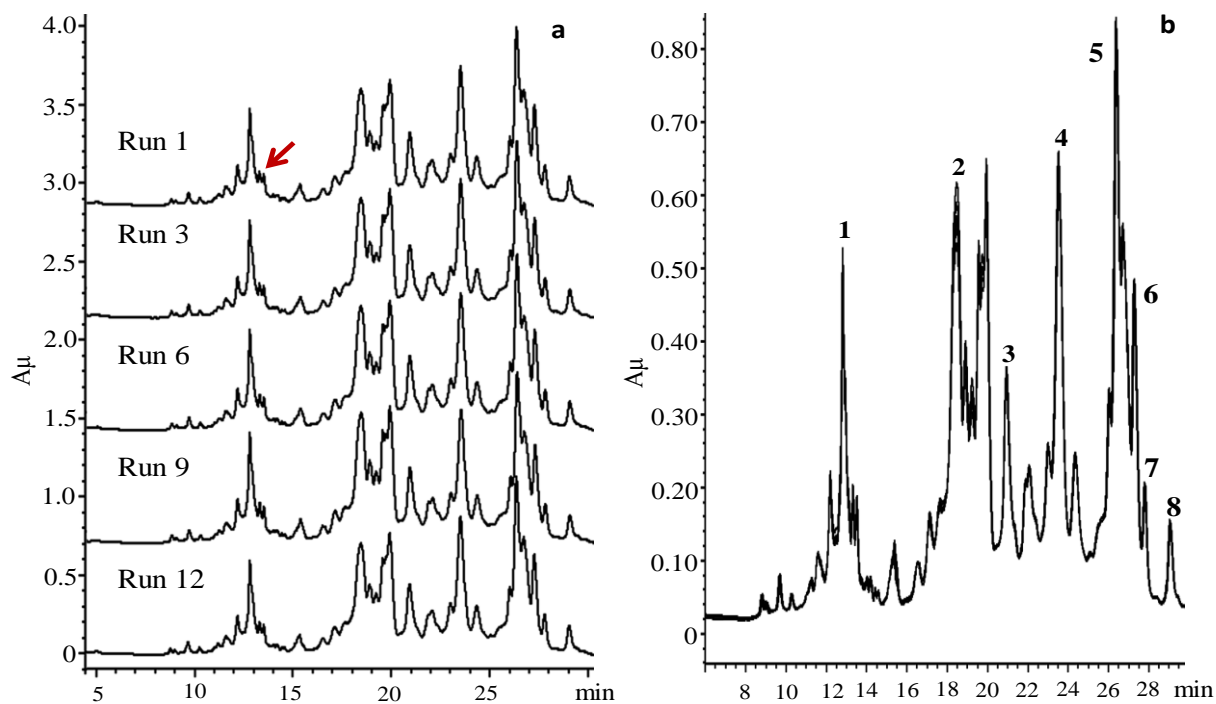
^{*}Peak numbers are same as those indicated in Suppl. Fig. 3.



Supplementary Figure 1. Representative base peak chromatogram of gliadin band *a* and band *c* from A-PAGE separated by LC-MS/MS. Two peptides (R.PFGQQPEQIISR.P and R.QLNPSEQELQSPQQPVPK.E) from gliadin band *a* and one peptide (R.QLNPSEQELQSPQQPVPK.E) from gliadin band *c* that are specific for omega secalins from 1BL.1RS translocation are indicated.



Supplementary Figure 2. Multiple alignment of the deduced amino acid sequences of 7 representative omega secalin genes cloned in this work (TaSec-NX-1, TaSec-NX-2, TaSec-NX-3, TaSec-JD-1, TaSec-JD-2, TaSec-JD-3 and CAA42836.1) with 5 previously characterized omega secalin genes from NCBI (ACQ83627.1, ACQ83633.1, ACQ83637.1, ACQ83641.1 and ACQ83629.1). The positions of 2 peptides specific for omega secalins corresponding to bands *a* and *c* identified by LC-MS/MS are shaded in blue color.



Supplementary Figure 3. Reproducibility of gliadins from wheat cultivar Neixiang 188 separated by RP-UPLC. a. 12 consecutive runs by optimized RP-UPLC; b. Overlap of 12 consecutive runs and 8 main gliadin peaks are indicated. The omega secalins from 1BL.1RS translocation are arrowed.