

Figure S1. The genetic linkage map constructed by 2,367 SNP markers in a DH population derived from a cross between Spitfire and Bethlehem-7AS.

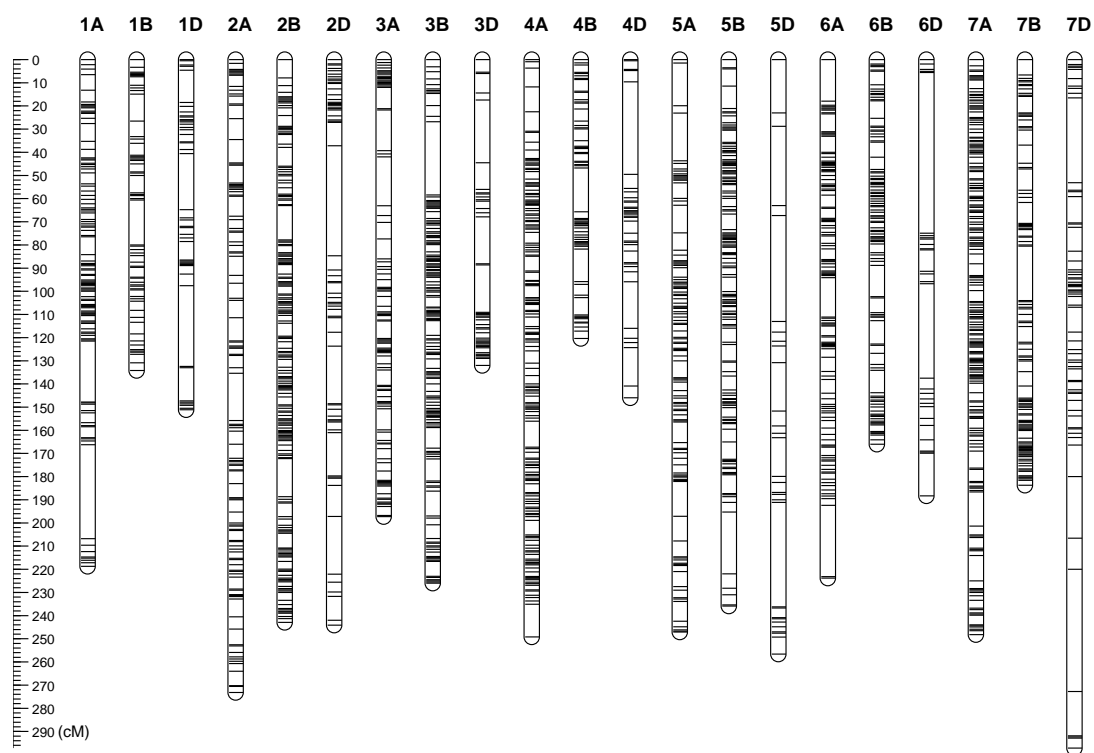


Figure S2. The genetic linkage map constructed by 3,555 SNP markers in a DH population derived from a cross between Gregory and Bethlehem-7AS.

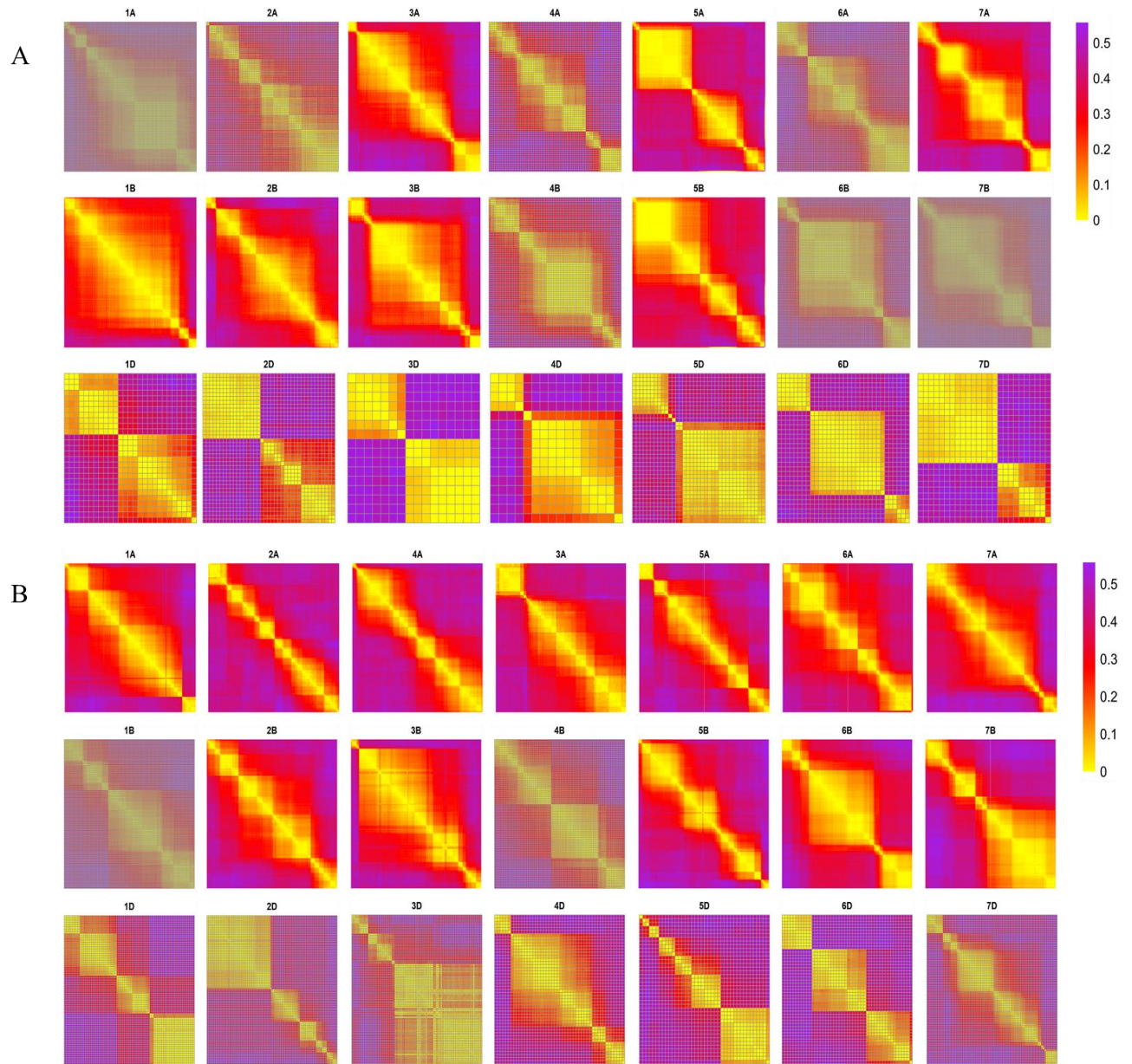


Figure S3. The heat map of the matrices of pair-wise recombination fractions indicated by SNP markers for each chromosome. **(A)** The DH population of Sp7A; **(B)** The DH population of G7A; The axes of X (horizontal) and Y (vertical) represent the markers on each chromosome, the diagonal indicates that the recombination rate of the same marker is 0.0, and the cell color indicates the recombination rate of the two markers.

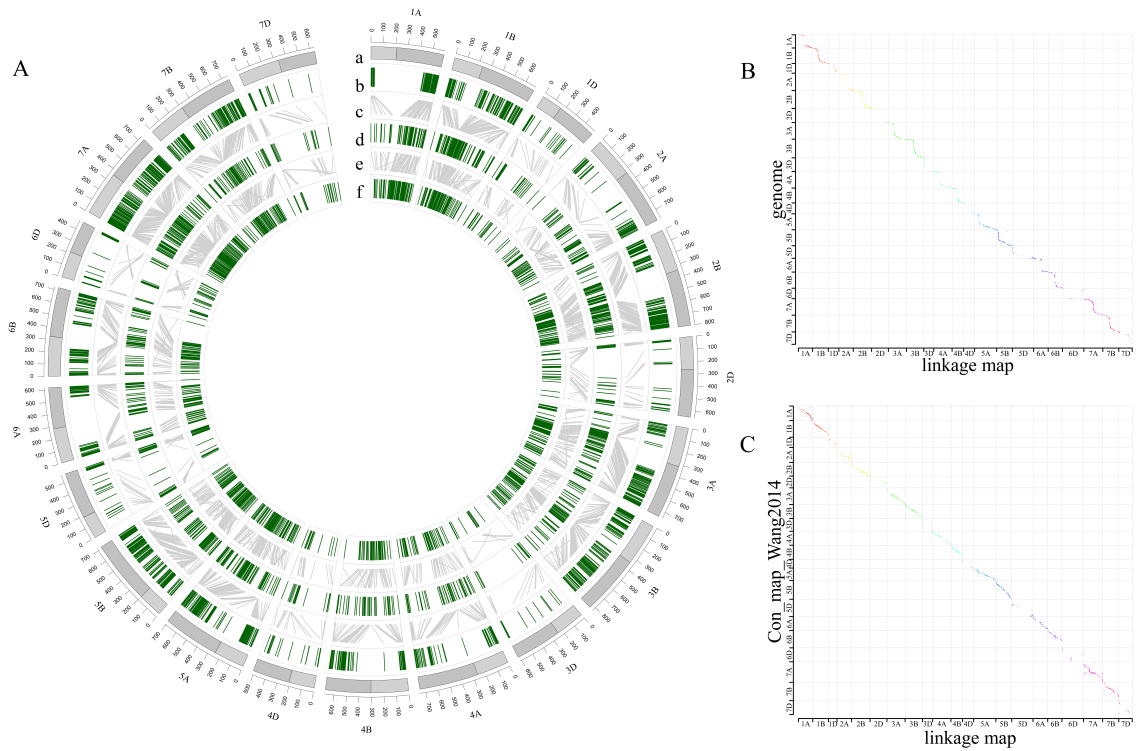


Figure S4. The circos graph and the consecutive curves of collinearity among the genetic linkage map of Sp7A, Con_map_Wang2014 and the physic map of wheat genome (IWGSC RefSeq v1.0). (A) The circos graph of collinearity among the genetic linkage map of Sp7A, Con_map_Wang2014 and the physic map, (a) The chromosomes and the physical location scale of wheat; (b) Physic map of the SNP markers using in the Sp7A; (c) The collinearity between the linkage map of Sp7A and the physic map; (d) The linkage map of Sp7A; (e) The collinearity between the linkage map of Sp7A and Con_map_Wang2014; (f) The consensus map of Wang et, al. (Con_map_Wang2014); (B) The consecutive curves of collinearity between the linkage map of Sp7A and the physic map; (C) The consecutive curves of collinearity between the linkage map of Sp7A and Con_map_Wang2014.

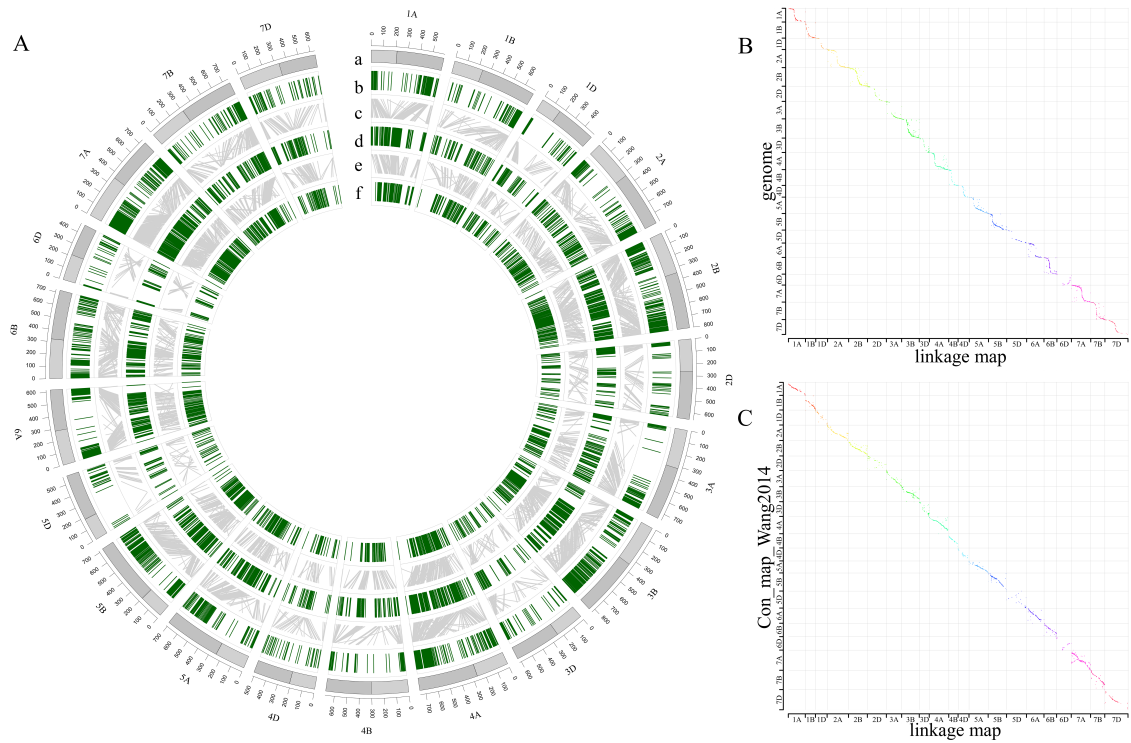


Figure S5. The circos graph and the consecutive curves of collinearity among the genetic linkage map of G7A, Con_map_Wang2014 and the physic map of wheat genome (IWGSC RefSeq v1.0). (A) The circos graph of collinearity among the genetic linkage map of G7A, Con_map_Wang2014 and the physic map, (a) The chromosomes and the physical location scale of wheat; (b) Physic map of the SNP markers using in the G7A; (c) The collinearity between the linkage map of G7A and the physic map; (d) The linkage map of G7A; (e) The collinearity between the linkage map of G7A and Con_map_Wang2014; (f) The consensus map of Wang et. al. (2014) (Con_map_Wang2014); (B) The consecutive curves of collinearity between the linkage map of G7A and the physic map; (C) The consecutive curves of collinearity between the linkage map of G7A and Con_map_Wang2014.