

# A platform for whole-genome speed introgression from *Aegilops tauschii* to wheat for breeding future crops

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**A platform for whole genome speed introgression from *Aegilops*  
*tauschii* to wheat for breeding future crops**

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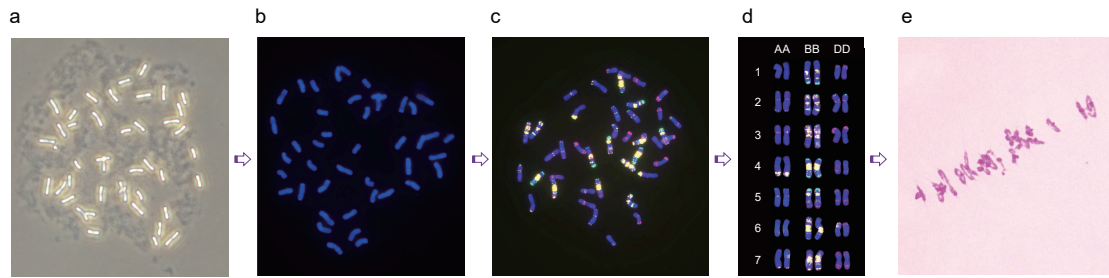
**Supplementary Figures 1-2**

**Supplementary Table 1-3**

**Supplementary Table 1 and Table 3 in separate Excel file**

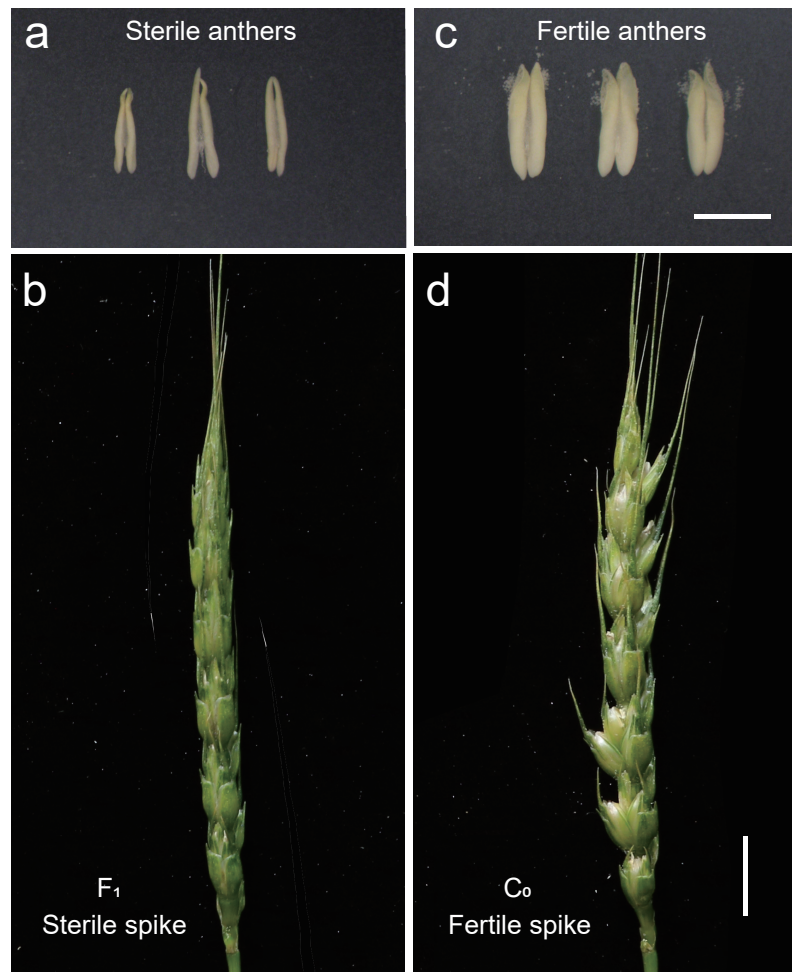
**Supplementary Video file**

## Supplementary Figures



**Supplementary Fig. 1. Mitotic chromosome analysis during the development of AWIs.**

a, a good mitotic cell showing clear chromosome shape under the phase contrast channel. b, a captured image of a cell showing chromosome shape with a 100× oil lens under the DAPI channel using a fluorescence microscope. c, a merged image of four channels (DAPI, FITC, TXRED and CY5) into a single picture after capturing. d, label and process the karyotype analysis on each image according to the standard karyotype of wheat. Blue: DAPI, green: oligo-pSc119.2-1, red: oligo-pTa535-1, yellow: oligo-(GAA)<sub>10</sub> and pTa71-2. e, a good meiotic cell showing clear chromosome pairing.



**Supplementary Fig. 2. Spikes and anthers of a  $F_1/C_0$  chimeric hybrid after colchicine treatment.**

a and b, a sterile spike showing sterile anthers and no seedset. c and d, a fertile spike showing fertile anthers and seedset. Bar = 2 mm (a, c); Bar = 1 cm (b, d).



**Supplementary Table 1.** The inheritance frequencies of *Ae. tauschii* T093 alleles evaluated by 55K SNP array in derived BC<sub>1</sub>F<sub>1</sub>, BC<sub>2</sub>F<sub>1</sub> and BC<sub>3</sub>F<sub>1</sub> generation.

**See Excel file**

**Supplementary Table 2.** Summary of the genes with variations between *Ae. tauschii* T093 and the D subgenome of bread wheat AK58. A total of 16055 genes showed variations in coding sequence regions.

Region	Category	SNP		Indel	
		Numbers	Affected genes	Numbers	Affected genes
Intron	-	326,111	10,352	10,163	4,391
Splicing sites	-	236	250	61	63
	stop gain	621	567	101	99
	stop loss	226	221	5	5
Exon	synonymous SNV	35,541	10,382	-	-
	nonsynonymous SNV	40,005	11,167	-	-
	nonframeshift	-	-	2,053	1,744
	frameshift	-	-	9,990	3,346
Total	-	18,609,736	13,701	521,436	3,869

**Supplementary Table 3.** Statistics of introgressed fragment sizes in derived BC<sub>4</sub>F<sub>1</sub>, BC<sub>4</sub>F<sub>2</sub> and BC<sub>4</sub>F<sub>4</sub> generations.

**See Excel file**

**Supplementary Video 1.** A video file showing how to emasculate the spikes of *Ae. tauschii*.