Supplemental Data. Tamada et al. (2009). *ARABIDOPSIS TRITHORAX-RELATED 7* is required for methylation of lysine 4 of histone H3 and for transcriptional activation of *FLOWERING LOCUS C*

Supplemental Table 1. *atx* Mutant Lines Analyzed in the Manuscript

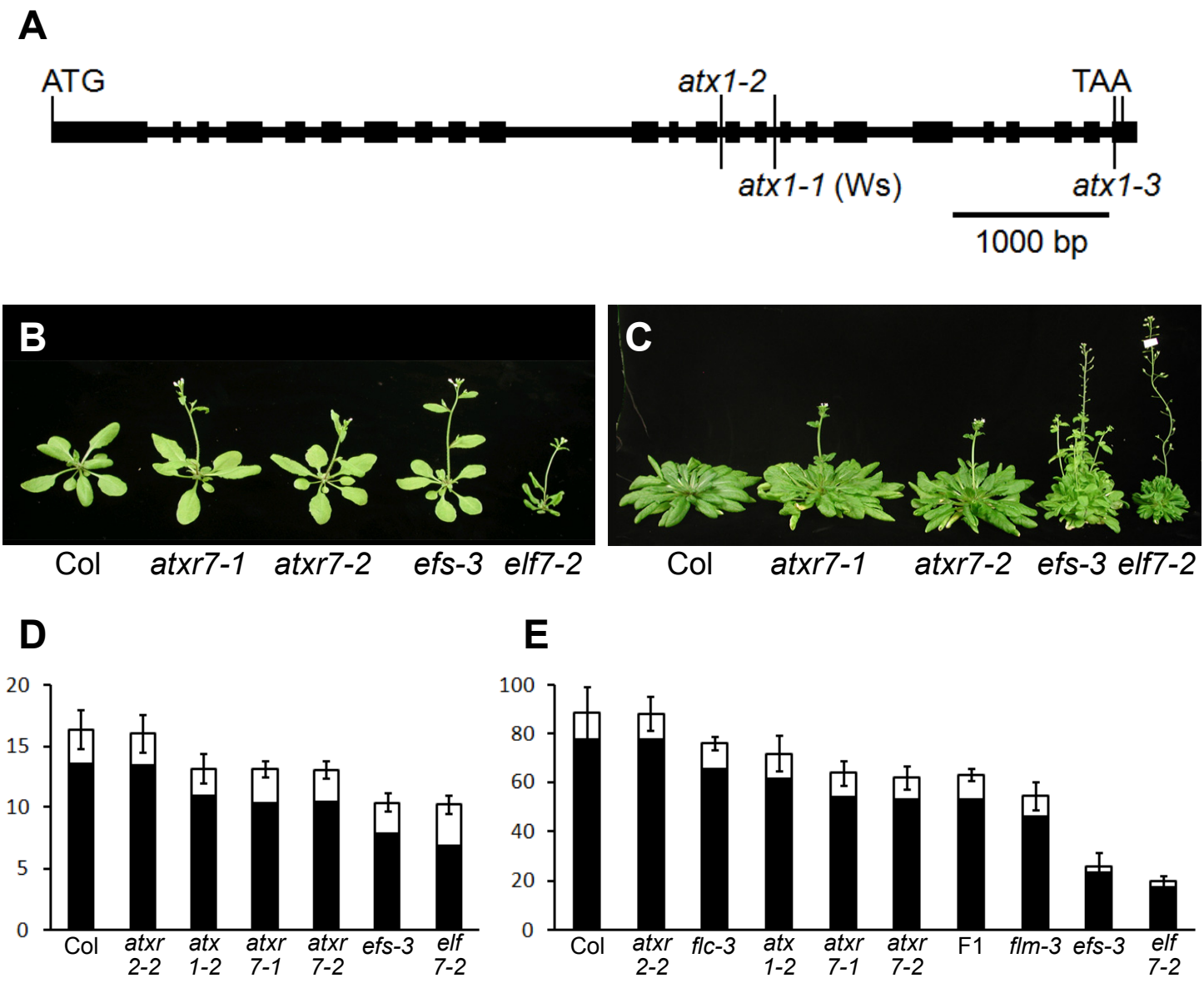
Gene	Locus	Mutant name[a]	Line name	miscellaneous[b]
ATX1	At2g31650	*atx1-2* *	SALK_149002	Pien et al., 2008
		atx1-3 *	SALK_119016C	
ATX2	At1g05830	*atx2-1*	SALK_074806	Pien et al., 2008
		atx2-2	SALK_117262	Saleh et al., 2008
		atx2-3 *	GABI_057B09	
ATX3	At3g61740	*atx3-1*	SAIL_255_F11	
		atx3-2 *	SAIL_582_H12	
ATX4	At4g27910	*atx4-1*	SAIL_1247_E09	
		atx4-2 *	SALK_060156	
ATX5	At5g53430	*atx5-1*	WiscDsLox461-464I8	
		atx5-2 *	SAIL_705_H05	
ATXR1	At1g26760	*atxr1-1* *	GABI_721A04	
		atxr1-2	GABI_355F02	
		atxr1-3	SALK_117606	
		atxr1-4	SALK_028842	
ATXR2	At3g21820	*atxr2-1*	SAIL_600_E07	
		atxr2-2 *	SALK_026154	
		atxr2-3	WiscDsLox471C3	
ATXR3	At4g15180	*atxr3-1* *	WiscDsLox361D10	
		atxr3-2	GABI_489F05	
		atxr3-3	SALK_021008	
ATXR4	At5g06620	*atxr4-1* *	SALK_065711C	
		atxr4-2	SALK_117779	
ATXR7	At5g42400	*atxr7-1* *	SALK_149692	
		atxr7-2 *	SAIL_446_F12	
		atxr7-3	FLAG_370G04	Ws background

[a]Asterisks beside the mutant name indicate the lines into which active *FRI* locus was introgressed.

[b]*atx1-2*, *atx2-1* and *atx2-2* were previously described in the noted papers. Except for *atxr7-3* in the Ws background, all of the mutants are in the Col background.

Supplemental Table 2. Primers for Realtime PCR

Gene	Locus	Forward primer (5' to 3')	Reverse primer (5' to 3')
1, RT-PCR			
FLC		CCGAACTCATGTTGAAGCTTGTTGAG	CGGAGATTTGTCCAGCAGGTG
FLM		GGAAAGAATACGTTGCTGGCAACA	CCGTTGATGATGGTGGCTAATTGA
MAF2		CGAAATACATCATGCTGATGAACTTG	GCTTTGGACTATTTCTAGTAACTCTTTGA
MAF3		GGAAATAAAGGTAAAACAAAACGAAGCTCTT	GAACTCTGATATTTGTCTACTAAGGTACA
MAF4		GATGGGGAAGATGAAGAAGTCTGT	AGTCTCCGGTGGCTTGTTGT
MAF5		GAAACAGGGGATGAAAGAGCAGTA	TGGGCTGTGGCCAGAGCTAT
CO		GCTCCTCAGGGACTCACTAC	CTCCGGCACAACACCAGTTTC
ACT2		GGTAACATTGTGCTCAGTGGTGG	AACGACCTTAATCTTCATGCTGC
2, ChIP			
FLC	1	AGCAGTGGCGGATCCAAGAA	CCCCACATCAATCCAAGTTCA
	2	GCTGATACAAGCATTTCACCAAA	CTTAAATGTCCACACATATGGCAAT
	3	GTATCGTAGGGGAGGAAAGA	GAAGACAAGATTGCCACGTGTA
	4	GAAAGAAATAAAGCGAGAAAAGGAA	GGCTTTGTGCCCTAATTTGAT
	5	GTTGTTTCTCGGTTCTGTGTT	GCTAAAAAGCTTCTTCACGACAT
	6	GTGGACCTATTACTTGGTGATT	GCTGAGTTTTTTGAAGCTACCAA
	7	CAATCTTTTGTTGTGAAAATCGACAA	ACAAGGCTGTGTGAATGACAA
	8	GAGGCTTATGTTTAGGGTTCTT	GAAAAGTCATACAAAGGCATACAGAT
	9	CGGTTGTTGGACATAACTAGGTT	CAAACCCAGACTTAACCAGACT
	10	CTTAAGTAGACGGAACTAAGTCAA	TACACTCAAGATCTCGATGCAA
Ta3		TGGGGCTCTCCAAATGTAAC	GGCTTTTCCACTCACAAAACTT

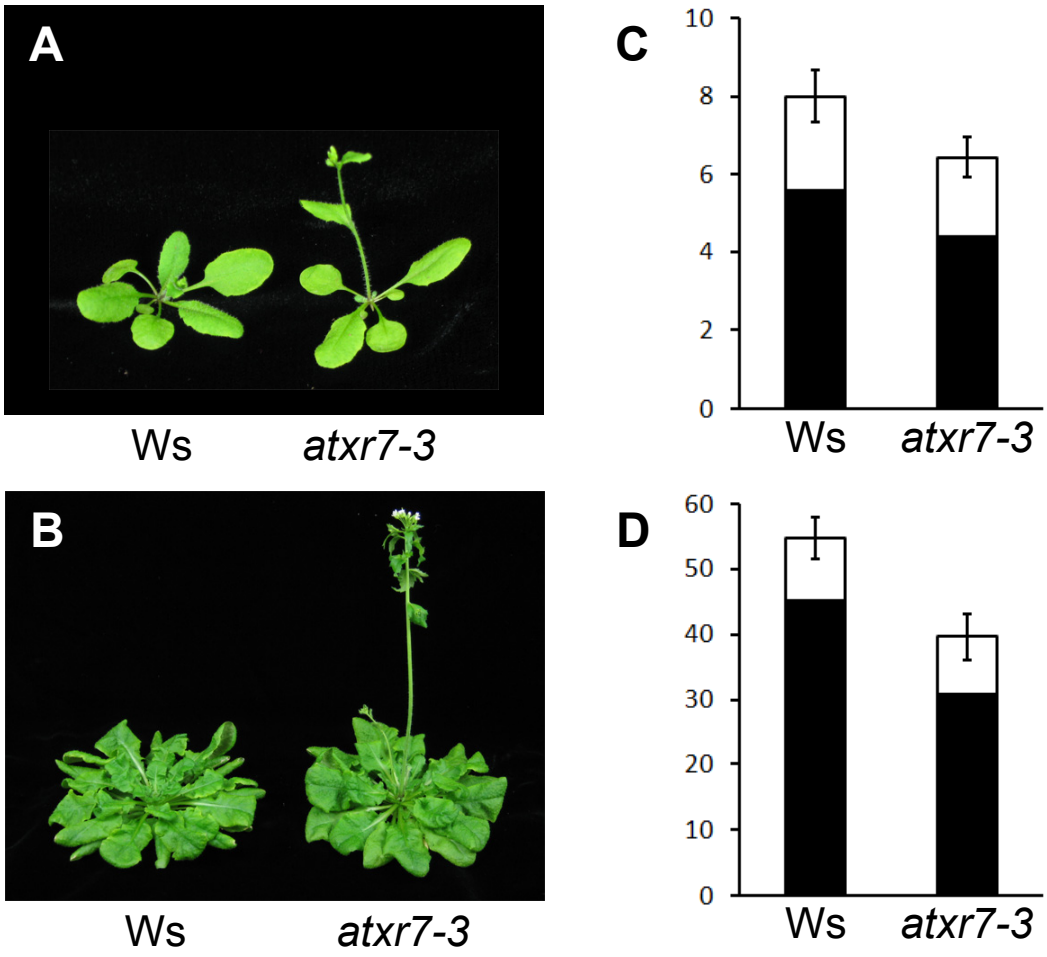


Supplemental Figure 1. Flowering Phenotype of H3K4 Methylase Mutants

(A) *ATX1* gene structure and T-DNA insertion sites. Thick and thin lines indicate exons and introns, respectively. *atx1-2* and *atx1-3* are in the Col background.

(B) and **(C)** Representative plants of Col, *atxr7-1*, *atxr7-2*, *efs-3* and *elf7-2* grown in long days (**[B]**, 23 days old) or short days (**[C]**, 10 weeks old).

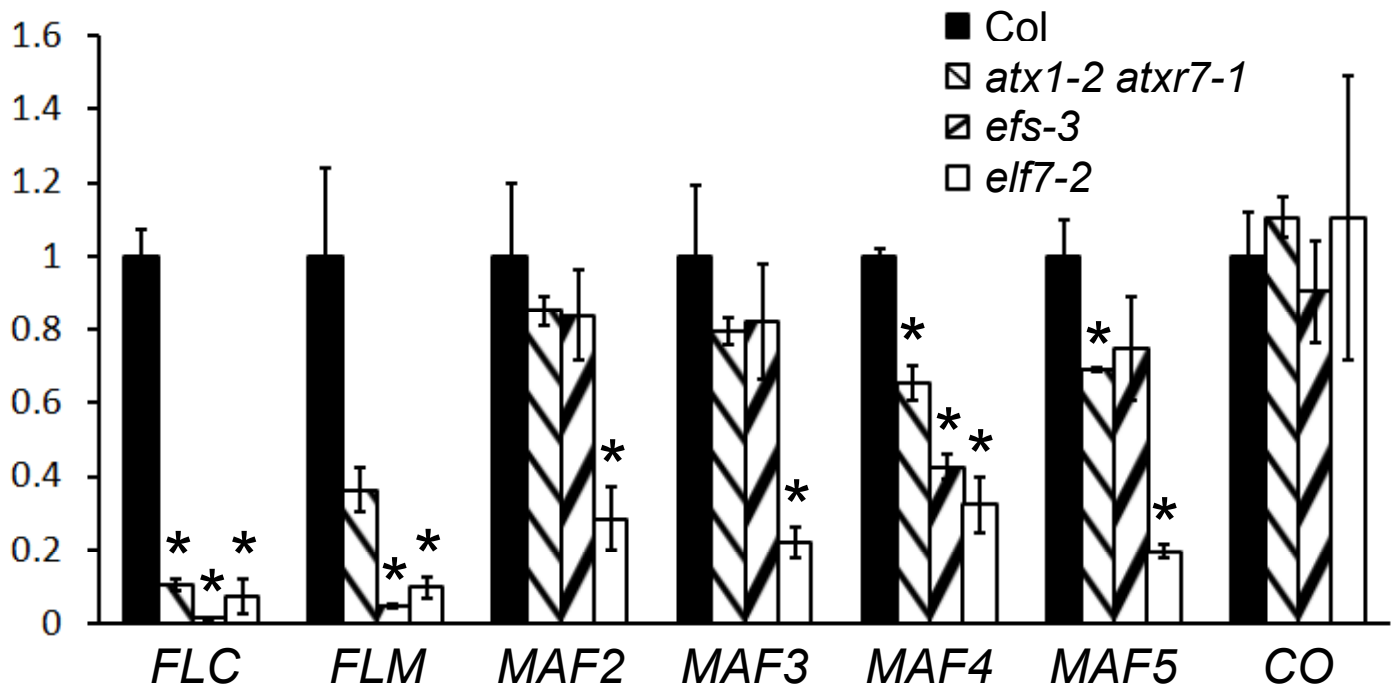
(D) and **(E)** Primary leaf number at flowering of *atx* and typical early flowering mutants grown in long days **(D)** or short days **(E)**. *atxr2-2* is a negative control which did not show any flowering phenotype. F1 indicates F1 plants whose parents are *atxr7-1* and *atxr7-2* mutants. Closed and open bars indicate rosette and cauline leaves, respectively. Bars indicate standard deviation.



Supplemental Figure 2. Flowering Phenotype of *atxr7* in the Ws Background

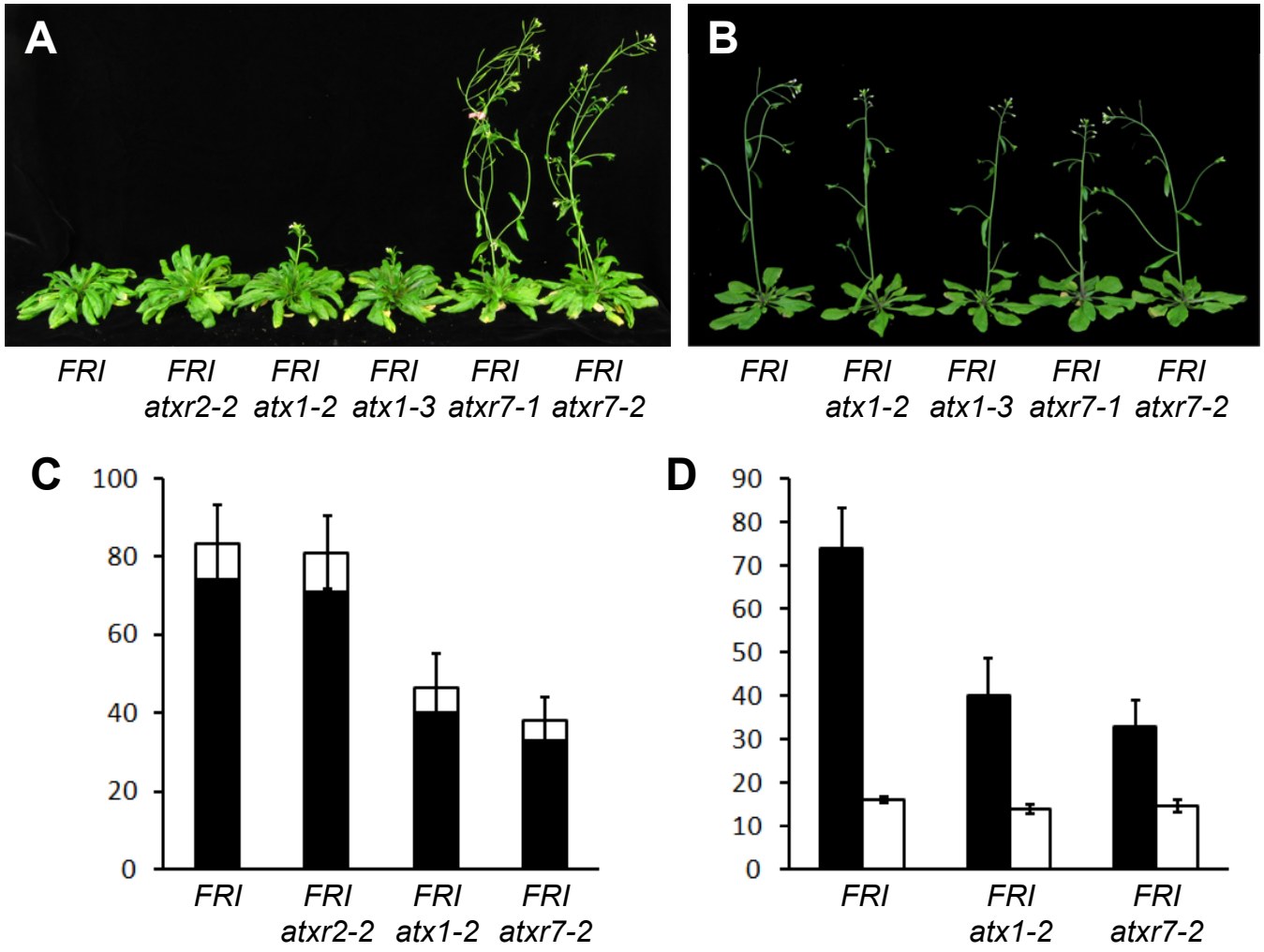
(A) and **(B)** Representative plants of Ws and *atxr7-3* grown in long days (**[A]**, 3 weeks old) or in short days (**[B]**, 10 weeks old).

(C) and **(D)** Primary leaf number at flowering of Ws and *atxr7-3* grown in long days **(C)** or in short days **(D)**. Closed and open bars indicate rosette and cauline leaves, respectively. Bars indicate standard deviation.



Supplemental Figure 3. mRNA Levels of *FLC* and *FLC*-Related Family Genes in *atx1-2 atxr7-1*, *efs-3* and *elf7-2* Mutants

Real-time PCR was performed to analyze the expression level. The averages of the results from 3 different biological replicates are shown. Each experiment was normalized to *ACTIN2* expression. Bars indicate the standard error. Asterisks beyond the bars indicates the significant difference in the expression of the genes between Col and mutants ($p < 0.05$).



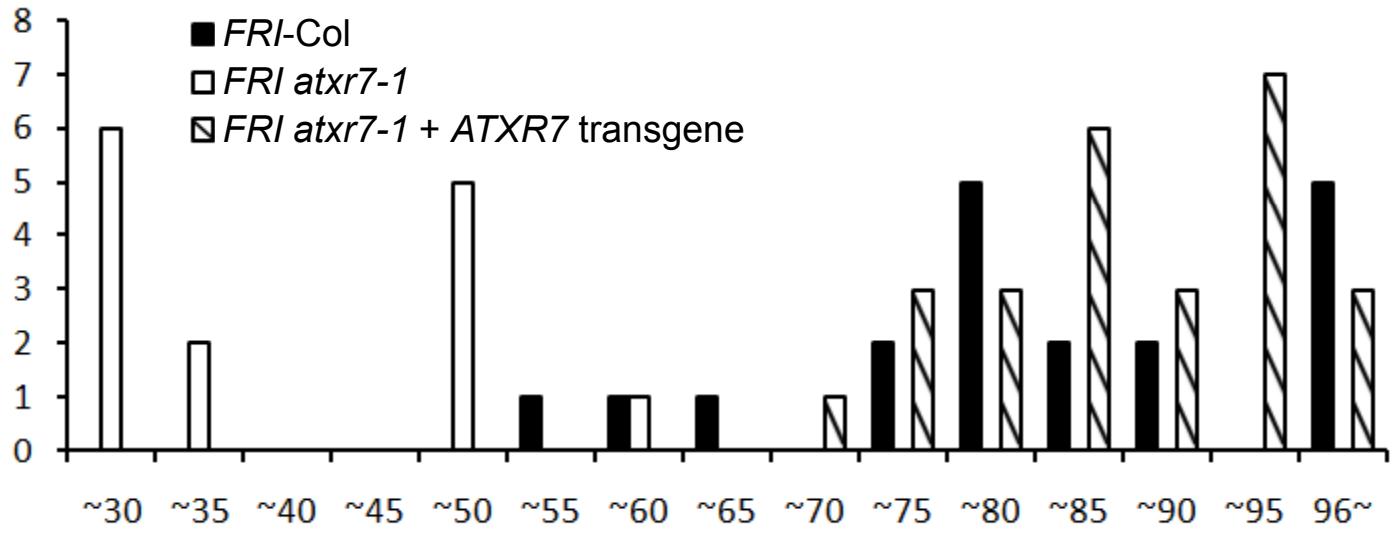
Supplemental Figure 4. Effect of Vernalization on H3K4 Methylase Mutants

(A) Representative 7-week-old plants of *FRI*-Col, *FRI atxr2-2*, *FRI atx1-2*, *FRI atx1-3*, *FRI atxr7-1* and *FRI atxr7-2* grown in long days. Same plants in Figure 3A (*FRI*-Col, *FRI atx1-2* and *FRI atxr7-2*) are presented. *atxr2-2* is a negative control which did not suppress or accelerate the delayed-flowering phenotype caused by *FRI*.

(B) Representative 7-week-old plants of *FRI*-Col, *FRI atx1-2*, *FRI atx1-3*, *FRI atxr7-1* and *FRI atxr7-2* grown in long days with vernalization (40 days of 4 ^{o}C exposure).

(C) Primary leaf number at flowering of *FRI*-Col, *FRI atxr2-2*, *FRI atx1-2* and *FRI atxr7-2* grown in long days. Closed and open bars indicate rosette and cauline leaves, respectively. Bars indicate standard deviation.

(D) Primary rosette leaf number at flowering of *FRI*-Col, *FRI atx1-2* and *FRI atxr7-2* grown in long days with (open bar) or without (closed bar) vernalization. Bars indicate standard deviation.



Supplemental Figure 5. Rapid Flowering Phenotype Caused by the *atxr7* Lesion Is Rescued by an *ATXR7* Transgene

The X- and Y-axis indicate rosette leaf number and the number of the plants of *FRI*-Col (closed bar, n = 19), *FRI atxr7-1* (open bar, n = 14) and different T1 transformants of *FRI atxr7-1 ATXR7pro:ATXR7-FLAG* (hatched bar, n = 26).