

Supplementary Materials

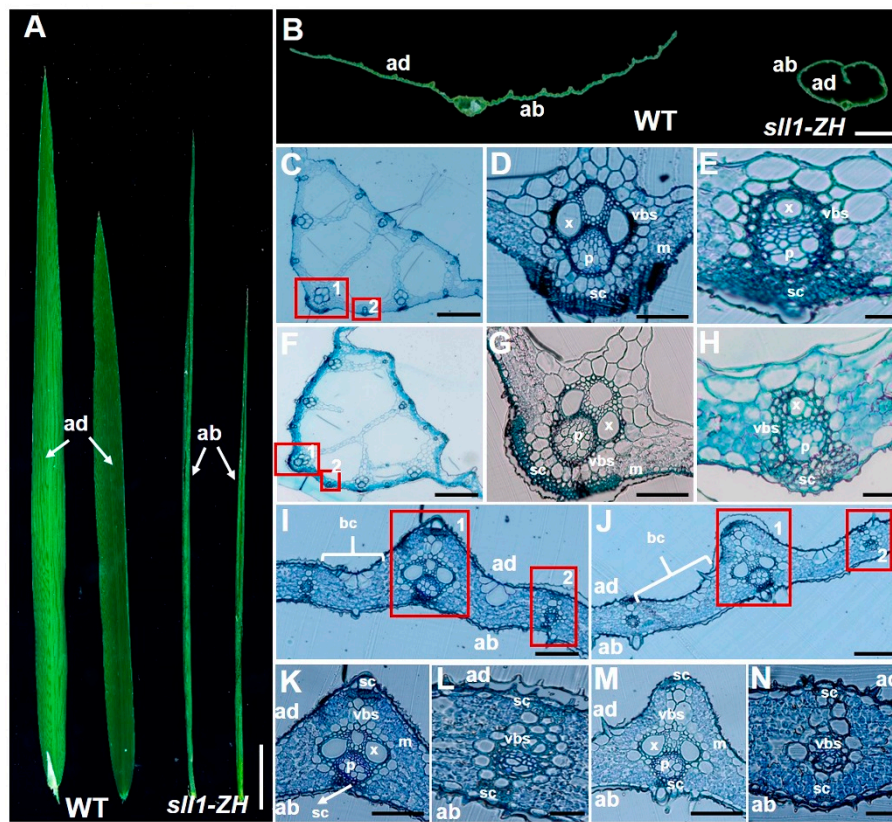


Figure S1. Characterization of leaf in the wild-type and *sll1-ZH* mutant

A, Representative phenotype of sword leaf and inverted two leaf in the wild type and the *sll1-ZH* mutant at heading stage. WT leaves showed unfolded adaxial, but the *sll1-ZH* mutant exhibited rolling abaxial. **B**, Free-hand sections of rolling leaf at the middle part of the sword leaf in the wild type and the *sll1-ZH* mutant at heading stage. WT leaves showed unfolded adaxial (above) and abaxial (below), but the *sll1-ZH* mutant exhibited rolling abaxial and circled adaxial. **C** and **F**, Trans-section of mid-vein of the sword leaf in the wild type and the *sll1-ZH* mutant. Mid-vein of WT were wider, while mid-vein of the *sll1-ZH* mutant were sharper. **D** and **G**, Microphotographs of headpiece region of mid-vein, enclosed in red box (1) of **C** and **F**, respectively. Sclerenchyma layer and mesophyll cells in the *sll1-ZH* mutant were thinner than that of WT, and the size of phloem cell, xylem, vascular bundle sheath were all smaller than that of WT. **E** and **H**, Microphotographs of small veins region of mid-vein, marked in red box (2) of **C** and **F**, respectively. The *sll1-ZH* mutant also displayed smaller phloem cell, xylem, vascular bundle sheath and thinner sclerenchyma layer. **I** and **J**, Trans-section of the margin of the blade in the wild type and the *sll1-ZH* mutant. The lateral veins in WT were

sharper, while that of mutant were smoother. The most obvious difference is the bulliform cells were deeper and narrower in WT but shallower and wider in the *slll-ZH* mutant. **K** and **M**, Microphotographs of the lateral vein region, marked in red box (1) of **E** and **H**, respectively. The *slll-ZH* mutant showed smaller phloem cell, xylem, vascular bundle sheath and thinner sclerenchyma layer and mesophyll cells at both sides. **L** and **N**, Macrophotographs of the small veins region, marked in red box (2) of **E** and **H**, respectively. The *slll-ZH* mutant showed smaller vascular bundle sheath region and thinner sclerenchyma at both sides. ab, abaxial; ad, adaxial; bc, bulliform cells; sc, m, mesophyll cells; p, phloem; sc, sclerenchymatous cells; vbs, vascular bundle sheath; x, xylem. Bars 2 cm (**A**), 2 mm (**B**), 100 μ m (**C**, **F**, **I**, **J**) and 20 μ m (**D**, **E**, **G**, **H**, **K-N**)

Table S1. Segregation analysis of the *slll-ZH* allele

Combination	Seed-setting rate of F ₁	F ₂		$\chi^2(3:1)$	$\chi^2_{0.05}$
		No. of wild type plants	No. of mutant plants		
<i>slll-ZH</i> /Zh8015	77.62	309	91	1.08	3.84
<i>slll-ZH</i> /02428	84.53	311	89	1.613	

Table S2. Candidate genes in the fine-mapping region of *SLL1-ZH* locus

Gene number	Putative function	Biological Process	Specific Expression Tissue of Homologs
		Involved	in <i>Arabidopsis.t</i>
LOC_Os09g23180	Expressed Protein	Unknown	Unknown
LOC_Os09g23190	Putative En/Spm Sub-class Transposon Protein with CACTA motif	Unknown	Unknown
LOC_Os09g23200	SHAQKYF class MYB family	Inflorescence Primordium	Carpel, Carpel Primordium, Cotyledon
	transcription factor with GARP DNA-	Differentiation and Leaf	Primordium, Flower, Guard Cell, Nectary,
	binding Domain	Development	Phloem, Plant Embryo, Pollen, Root, Seed, Stamen, Stem

Table S3. Primers and purpose used in this study

Primer	Forward primer (5'-3')	Reverse primer (5'-3')	Purpose
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RM24222	GAGAGATCGAGATCGCGAGAGG	CCGGTTGTTCTCACCAATCAGG	Linkage analysis
RD6839	GAACAGAGGAGGAGATCGAGAGG	CTTCTTGGGAGATGCAGAAATGG	
X14	ATTTTGGTATTTGCAGG	AGTACACGTAGGTGTGGTG	Fine mapping
X19	GACAACAAACACAGAGC	GGTGACAAAACAGACAC	
X22	TGATGTCCAAAACGTCGGC	CTGGGTACAGTAGCAGTAC	
X30	AACAGATTTGACGCACTCCAA	CCTCCATTTAATAATGTGACAC	
X31	CGGCATCTCTCTCTAACT	AGTTTTCCTACAAGCTAGC	
SLL1-ZH	GCACATCAGCTTGCCGAG	TGGTGGTACGAGCTGTAGAAT	Sequencing
<i>SLL1</i> -COM-	CCATGATTACGAATTCTGCACAGG	TACCGAGCTCGAATTCGGCGAGGA	Complementation vector
<i>EcoR</i> I	GGTGTAAGAATTG	ATGAGTGAATGA	construction
<i>SSL1</i> -ZH	ATGGCTGTCGTCCAATTCTT	TAGAGTGAACCTCGAGACTAGGG	qPCR