

YGL9 (J10)	(1)	ATGGAGGCTGTCTACGACACCCATCCCTTTC
YGL9 (ZH11)	(1)	ATGGAGGCTGTCTACGACACCCATCCCTTTC
YGL9 (J10)	(85)	ACCGTCCCTTTCGGCTTCGCTCCCCAACCGCGGCTCACCGCCGCGGGGTGTTCCAGGACCAGACCAACCCAAGAAACCCA
YGL9 (ZH11)	(85)	ACCGTCCCTTTCGGCTTCGCTCCCCAACCGCGGCTCACCGCCGCGGGGTGTTCCAGGACCAGACCAACCCAAGAAACCCA
YGL9 (J10)	(169)	GCGAGCAAGGGAGGCGACGACGATGAGGCGTACGGCGAGGTGGACCGTATTGTGTCCAGCCGACCATCAAGAATCCGGTGTTC
YGL9 (ZH11)	(169)	GCGAGCAAGGGAGGCGACGACGATGAGGCGTACGGCGAGGTGGACCGTATTGTGTCCAGCCGACCATCAAGAATCCGGTGTTC
YGL9 (J10)	(253)	GCGGAGGACGGCTCGGCCACACGGTACCGCCACGGAGTACCTCGTCGAGTGAAGGACGGGCACGAGCCTTCGTGGATCCCG
YGL9 (ZH11)	(253)	GCGGAGGACGGCTCGGCCACACGGTACCGCCACGGAGTACCTCGTCGAGTGAAGGACGGGCACGAGCCTTCGTGGATCCCG
YGL9 (J10)	(337)	GCGGAGGCCATAGCGCCGGACGTGGTGGCGGAGTACGAGACCGCTGGTGGACGGCCGCCAAGAAGGCGGACCGCGGAGATC
YGL9 (ZH11)	(337)	GCGGAGGCCATAGCGCCGGACGTGGTGGCGGAGTACGAGACCGCTGGTGGACGGCCGCCAAGAAGGCGGACCGCGGAGATC
YGL9 (J10)	(421)	ACTGCGCTACTCGCGGACGAGACGCTGCGGCGTGACCCCGACCGGAGGATGCGCAGGGGCGCACGGCGATGCATTCGCGCGG
YGL9 (ZH11)	(421)	ACTGCGCTGCTCGCGGACGAGACGCTGCGGCGTGACCCCGACCGGAGGATGCGCAGGGGCGCACGGCGATGCATTCGCGCGG
YGL9 (J10)	(505)	GGGCTTGGATCCGAGGAGTGCCTGCGCGCGCTCGCCGAGGCCGGGGCCGACGTGGGCGACCCGAGCGCCGGCGGGGGCTC
YGL9 (ZH11)	(505)	GGGCTTGGATCCGAGGAGTGCCTGCGCGCGCTCGCCGAGGCCGGGGCCGACGTGGGCGACCCGAGCGCCGGCGGGGGCTC
YGL9 (J10)	(589)	ACGCGCTGCACATCGCGGTTCGGGTACGGGCGCCCGCGCGCGTGCCTGGAGCTGGGCGCCGAGCCGGAGGCCCC
YGL9 (ZH11)	(589)	ACGCGCTGCACATCGCGGTTCGGGTACGGGCGCCCGCGCGCGTGCCTGGAGCTGGGCGCCGAGCCGGAGGCCCC
YGL9 (J10)	(673)	GACGGGCAGGGCCGGACCGCGTGGAGCTGGTCCAGGACGTGCTCGCGAAGACGCCCAAGGGCAACCCGGCGACGTTTCGAGCGG
YGL9 (ZH11)	(673)	GACGGGCAGGGCCGGACCGCGTGGAGCTGGTCCAGGACGTGCTCGCGAAGACGCCCAAGGGCAACCCGGCGACGTTTCGAGCGG
YGL9 (J10)	(757)	CGGCTGGCGCTGGAGGCGCGCGCAAGGAGCTGGAGAAGGCCGTGTACGAGTGGGGCGAAGTGGAGAAGTGGTGGACGCCCGC
YGL9 (ZH11)	(757)	CGGCTGGCGCTGGAGGCGCGCGCAAGGAGCTGGAGAAGGCCGTGTACGAGTGGGGCGAAGTGGAGAAGTGGTGGACGCCCGC
		WT : TGG—Tryptophan yg19: TGA—Stop codon
YGL9 (J10)	(841)	GGCGAGGGCAAGTGGCGGGAGTACTTGGTGGAGTGGCGCGACGGCGCGCACAGGGAGTGGTGGAGGGCGCGCTGGGTGGCGGAG
YGL9 (ZH11)	(841)	GGCGAGGGCAAGTGGCGGGAGTACTTGGTGGAGTGGCGCGACGGCGCGCACAGGGAGTGGGTGGAGGGCGCGCTGGGTGGCGGAG
YGL9 (J10)	(925)	GACCTGGTGAAGGACTTCGACCGCCGGGCTGGAGTACCGCGTCCGCGAGGCCGCTCGTCAACAAGAGGGAGGGCGGGAAGGGGAG
YGL9 (ZH11)	(925)	GACCTGGTGAAGGACTTCGACCGCCGGGCTGGAGTACCGCGTCCGCGAGGCCGCTCGTCAACAAGAGGGAGGGCGGGAAGGGGAG
YGL9 (J10)	(1009)	GGGAAATGGGAGTACCTTGTCAAGTGGGTGGACATCGAGGAGGCGACGTGGGAGCCCGGAGAACGTCGACGCCGAACCTCCTC
YGL9 (ZH11)	(1009)	GGGAAATGGGAGTACCTTGTCAAGTGGGTGGACATCGAGGAGGCGACGTGGGAGCCCGGAGAACGTCGACGCCGAACCTCCTC
YGL9 (J10)	(1093)	CAGGAGTTCGAGCAGCGGCAATCTGGGGTGGCTGCTGGCGGTGATGCTCCGCCCGCCCGCGGTGCGCCGGTGA
YGL9 (ZH11)	(1093)	CAGGAGTTCGAGCAGCGGCAATCTGGGGTGGCTGCTGGCGGTGATGCTCCGCCCGCCCGCGGTGCGCCGGTGA

Appendix A Alignment of the 1167 bp coding sequences of *YGL9* between wild-type *Oryza sativa* L.

indica cultivar J10 (Jinhui10) and *Oryza sativa* L. *japonica* cultivar ZH11 (Zhonghua11). The coding sequences of *YGL9* are consistent between ZH11 and *Oryza sativa* L. *japonica* cultivar Nipponbare.

The red triangle at the 900th base indicates the mutation site in the *yg19* mutant.

Appendix B Sequences of primers used in the study

Sequencing primers		
Primers	Forward sequence (5'-3')	Reverse sequence (5'-3')
S-DNA	CTGCCACTCGCGCCACAAG	AGAATCGAACACCCTCCGTGC
S-cDNA	ATGGAGGCTGTCTACGACACCCATC	GTCGACGGCGACACGCTGTCACC
Vector construction primers		
Primers	Forward sequence (5'-3')	Reverse sequence (5'-3')
YGL9-com	GCCTCTAGAGCGGTCAGTCAGACTAACGTGTGA	GCCCCATGGGCCTGGGCTGACTCTGCATC
YGL9-oe*	TGGTGATTATTCTTGCAGGAATTCATGGAGGCT	GCTTGTGATCGACAGATCAAGCTTCACCC
	GTCCTACGACACCCATC	GGCGACCGGCGGGCGG
YGL9-sub	GCCCTCGAGATGGAGGCTGTCTACGACACCCA	GCCACTAGTCCCCCGGCGACCGGCGGGCGG
Quantitative real-time PCR primers		
Primers	Forward sequence (5'-3')	Reverse sequence (5'-3')
YGL9	GGAGGCTGTCTACGACACCCA	TGGTCTGGTCTGGAACACCG

CHLD	GCTTGCAGAAAGCTACACAAGC	AGGCCGTGAGCTAAAGGAGA
CHLI	GTTCGAGCCTGGTTTGCTTGC	CTCTCCACGGTGTTCATCCTG
CHLM	CCATCCATTGGTCTCCTTATGACA	GTAGCCTACTTACCATCAATGAGTC
YGL1	GATAGAGCTCTGGGGCTTCAGTC	GCTTGCCGGAAGTAAAAGGTAG
PORA	TGTAAGGAGCTGGAACAACAAC	TCAATAGCACATCACTCTCACTACT
CAO1	GACACCTTCATCTGGGCTTCAA	CGAGAGACATCCGGTAGAGC
DVR	CAGGTCGAGACCGTCAAGAAC	ATGACCTGGATCGGCACCTTG
HEMD	TGGAAGGCTGCTGGAAATCCTAAG	TCCTTGGAAGCTCTGAGGCCAA
HEMA1	GAACCTACCAGTCTGAATCATATTGA	CATCCAGTCTACCATTCTCTAATCC
PSY1	GCCTCAAGCAGGCCTATCATC	GTGATGTGCGAGGCATTTGGTC
PSY2	GACAAATTCTGCGTGCCAGGTT	GACAGCAGCTTCTTTGCCCTTGT
PDS	GTTCTGATCGAGTGAACGATGAAG	CGAACATGGTCAACAATAGGCATG
rbcL	GGAGGGACGTATGTCACCACAAAC	GAGTTACTCGGAATGCTGCCAAG
rbcS	GTGGCAACTAAGCCGTCATCGTC	TGCCACACCAACAACATATAGTCGT
psaA	TGGGGTTGATCCTAAGGAGATACCA	CCTCCGCGAAAATAAGAAATTCTG
psaL	TCTGAGAAGCCAACGTACCAGGTG	AGGTTGGAGAGGTACCAGGCGAC
psbA	GCGGTTCCCTATTCAAGTGTATG	TAACCATGAGCGGCCACAATATT
psbO	TCGAGGAGAAGGACGGAATCGAC	CTTTGGGTCGAGGAAGGACGAAC
atpA	TGAATCTCCTGCTCCGGGTATAAT	TGCTGTTTTGCCGTTTGTCT
atpG	AGGTGGAGCTCCTCTACTCCAAGT	TCAGCTTCCCTTCTTGGTGGT
petA	GCAGCAAGGTTATGAAAACCCAC	AACAGCACCCACATTCAACCT
petE	TCCCCTCGAACAATCGAAATG	CAACTGATCCCCACGTCTGTATT
ndhA	CGAGCTGCCGCTCAATCTATTAG	AGGCTGACGCCAAAGATTCCATC
ndhB	TAACAGCTACTCTAGGGGAATGTT	CTTGCCCCACCCATGAGTAAAT
Lhca1	AGGAGATCAAGAACGGACGATT	GTGCCAAGCTCAAGGGTAGATG
Lhca2	CCTGGTGGTCTGTGGTTTGACC	CCTGGAACCAAGCTCCCATGACG
Lhca3	GCTCAGGCTCTTCTCTCTGGGAG	CTCAGGGACTGCTTGGATGCGA
Lhca4	CCCTTCTCCACCTACCTCAACG	TCAACCCGATCTTCGTCAGCACC
Lhca5	TCACCTCGACGGCACATTACCT	CTGCTCAAACCACACTGGCAG
Lhca6	GCGCACCAAGGAGATCAAGAACG	GGACGTGAATGCCGAGAAGACG
Lhcb1.1	TCAACAACAACGCATGGGCCTAC	CCTTCATGAAAGCAATGGACCTC
cab2R(Lhcb1.2)	TGTACGCGGTGCAGTAGATGTAC	ACCGGTACAGATCTCACCTCTC
cab1R(Lhcb1.3)	AAGTGAAGTGGGGACCGTAGC	TCTCGTCGCACTAAACCCATCTTC
Lhcb2.1	CACGATCGAGATGGTGCCAAC	CGGCCTGCGGCTTACATTAA
Lhcb3	GACTTCAAGGAGCCCGTGTGG	CCATGAGGACGACCTGGAATCC
Lhcb4.1	TCTTTCGCGCGCAATTCAAAC	TGCAAGTCGCCATTAACCACC
Lhcb5	GATGAGCTCGCCAAGTGGTACG	CTGAGGCCAAAAGGGTCGTAGC
Lhcb6	GCTCATCTTCTACTTCGAGGCCG	GCGAAACCAACTCTGTGTGTGACG
chla/b	GGTGGTCAAGGTGTCATTGTCAT	ACGCGACTGGATCTTTGGAGAG

* The underlined bases are overlap sequences designed as per the *pEASY-Uni Seamless Cloning and Assembly Kit* user manual.