

Supporting Information

Miura et al. 10.1073/pnas.0901942106

SI Text

Plant Materials and Growth Conditions. The *Epi-d1* mutant (natural mutant) has been maintained by seeds for >90 years in the plant breeding laboratory of Kyushu University. All nontransgenic plants used in this study were grown under natural field conditions in a research field at Nagoya University, Togo, Aichi, Japan. Seeds were immersed in water for 2 days and sown in a nursery bed. One-month-old seedlings were transplanted to the paddy field with a spacing of 20 × 35 cm. Transgenic plants were grown in a closed greenhouse.

Primer Sequences Used in This Article. d1-1002-U: 5'- AAAAAA-GTAATTCCAATCACAAATCCGAA-3', d1-1002-L: 5'- CC-TCTCCTGATGATGCAGTG-3', d1-1005-U: 5'- GTT GAGT-AACCACGTCTTCGACGTCTGC-3', d1-1005-L: 5'- GTG-AAATGGTATTGTTGGAAGAC-3', STS-1-U: 5'- TATGCC-AAGTACAATCTAATAAC-3', STS-1-L: 5'- TTTCCGACG-AGGAGTATTCC-3', STS-2-U: 5'- TGACACCGGGCATAAA-AGACG-3', STS-2-L: 5'- TCGGGAGGATGTTGCATCC-3', d1-8-U: 5'-CCACTATGCACATGTATGATATGA-3', d1-8-L: 5'-TCGCCTCTGCACGAAAGCG-3', d1-17-U: 5'-TTAGTGTGGAGCGCGTGGTTAAATGCGG-3',

d1-17-L: 5'- ATTTAGGTCCGGCATAAAAAA-3', D1-exon9-10U: 5'-TATGAGTCATTTGCAGGAGG-3', D1-exon9-10L: 5'-ATTGTACTTACTCGCTAATGGC-3', d1-11-U: 5'-AAACAGGAGATATACTAAACTAAACTCGG-3', d1-11-L: 5'- AAATTGACACTAGATCGA-3', d1-12-U: 5'-GATGTCTCATTGCAAGTTG-3', and d1-12-L: 5'-TTAATTTCACCTCTTACTTAGGGAGACT-3'. Repeat-probe-U: 5'-GTTTGT CGCAGAACG CACCAG-3', repeat-probe-L: 5'-GATTGAGGATTTCACAACCGG-3', D1-probe-U: 5'-TATGAGTCATTTGCAGGAGG-3', D1-probe-L: 5'-ATTGTACTTACTCGCTAATGGC-3', 5s-rRNA-probe-U: 5'-GGATTAGGCTACCAACCAA-3', 5s-rRNA-probe-L: 5'-TTATCCAACCGCAGCTTCT-3', centromere-specific repeat probe-U: 5'-GAGTGTATTGGGTGCGTTCG-3', centromere-specific repeat probe-L: 5'-GTGAGTTTTC-CCACGAACG-3', D1-Chip-1-U: 5'-TATGTATAACAATGT-GGGTCAGC-3', D1-Chip-1-L: 5'-TGCATACATGAGCAGT-AAGC-3', D1-Chip-2-U: 5'-AAAAGTAAGTTAGCACTCG-GAC-3', D1-Chip-2-L: 5'-GTCTGCAGACTGTTACCAGC-3', D1-Chip-3-U: 5'-CTGTGCATATGAACATGTCTG-3', D1-Chip-3-L: 5'-CGAGCACAGTCTACAAGGTC-3', D1-Chip-4-U: 5'-TTTACACGTGGACCATTGATTG-3', D1-Chip-4-L: 5'-TAGACAACAGGTAGAGAATCTG-3'.

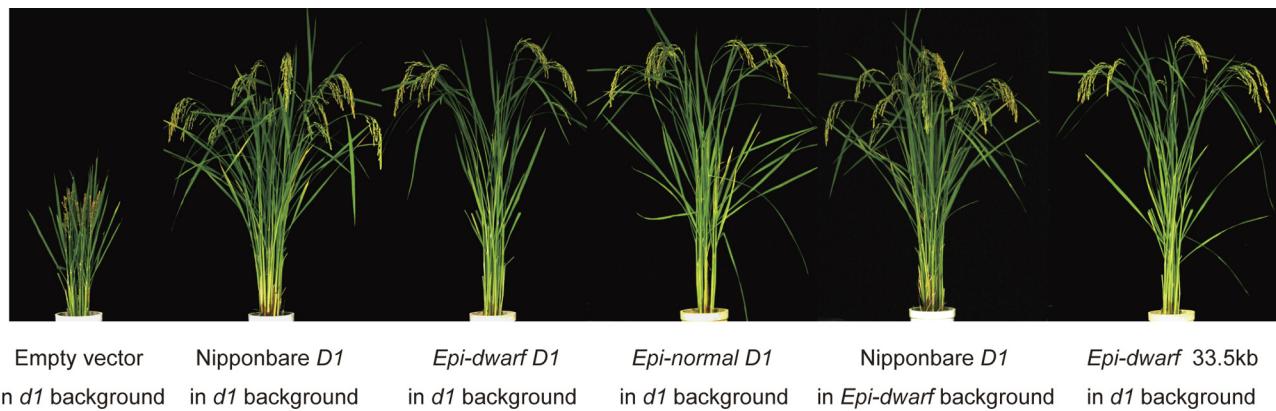


Fig. S1. Transgenic analysis of the *D1* gene. The gross morphology of transformants. The empty vector and *D1* genes cloned from Nipponbare and *Epi-d1* were transformed into *d1* loss-of-function mutant. The *D1* gene cloned from Nipponbare was also transformed into *Epi-dwarf*. The 33.5-kb candidate region cloned from *Epi-d1* was transformed into *d1* loss-of-function mutant.

Fig. S2. Comparison of upstream repeat sequences. Comparison of repeat A, B, C between Nipponbare and *Epi-dl*.

Nipponbare-repeatA	1386	ACAGTTGTACACACCCTCGCCCCATTTCATCCTCTTAAAGGAGTAAGGAGTAATGACAGTCGATATGTGGTTGATTTAAATTTAGAAGAGAACGTTT	1485
Epi-d1-repeatA	1387	ACAGTTGTACACACCCTCGCCCCATTTCATCCTCTTAAAGGAGTAAGGAGTAATGACAGTCGATATGTGGTTGATTTAAATTTAGAAGAGAACGTTT	1486
Nipponbare-repeatB	1400	ACAGTTGTACACACCCTCGCCCCATTTCATCCTCTTAAAGGAGTAAGGAGTAATGACAGTCGATATGTGGTTGATTTAAATTTAGAAGAGAACGTTT	1499
Epi-d1-repeatB	1400	ACAGTTGTACACACCCTCGCCCCATTTCATCCTCTTAAAGGAGTAAGGAGTAATGACAGTCGATATGTGGTTGATTTAAATTTAGAAGAGAACGTTT	1499
Nipponbare-repeatC	1400	ACAGTTGTACACACCCTCGCCCCATTTCATCCTCTTAAAGGAGTAAGGAGTAATGACAGTCGATATGTGGTTGATTTAAATTTAGAAGAGAACGTTT	1499
Epi-d1-repeatC	1400	ACAGTTGTACACACCCTCGCCCCATTTCATCCTCTTAAAGGAGTAAGGAGTAATGACAGTCGATATGTGGTTGATTTAAATTTAGAAGAGAACGTTT	1499
Nipponbare-repeatA	1486	TTGAATAGAATTGTGAACTTACTCGAAATTCATGTTCTTTGTATTGCTTTTGTTGCTACTCTGACTCTATCTGTSAAATGGCAGCTAGTATATT	1585
Epi-d1-repeatA	1487	TTGAATAGAATTGTGAACTTACTCGAAATTCATGTTCTTTGTATTGCTTTTGTTGCTACTCTGACTCTATCTGTSAAATGGCAGCTAGTATATT	1586
Nipponbare-repeatB	1500	TTGAATAGAATTGTGAACTTACTCGAAATTCATGTTCTTTGTATTGCTTTTGTTGCTACTCTGACTCTATCTGTSAAATGGCAGCTAGTATATT	1599
Epi-d1-repeatB	1500	TTGAATAGAATTGTGAACTTACTCGAAATTCATGTTCTTTGTATTGCTTTTGTTGCTACTCTGACTCTATCTGTSAAATGGCAGCTAGTATATT	1599
Nipponbare-repeatC	1500	TTGAATAGAATTGTGAACTTACTCGAAATTCATGTTCTTTGTATTGCTTTTGTTGCTACTCTGACTCTATCTGTSAAATGGCAGCTAGTATATT	1599
Epi-d1-repeatC	1500	TTGAATAGAATTGTGAACTTACTCGAAATTCATGTTCTTTGTATTGCTTTTGTTGCTACTCTGACTCTATCTGTSAAATGGCAGCTAGTATATT	1599
Nipponbare-repeatA	1586	GAAGGTTGAAAGCTTTGGGTTATCCAGCAAGTATTTCATGGCCTTGTCAAGTTGGAGGACTCTGGCCCCAAACTTGggggAAAACCTCAGCTGTTT	1685
Epi-d1-repeatA	1587	GAAGGTTGAAAGCTTTGGGTTATCCAGCAAGTATTTCATGGCCTTGTCAAGTTGGAGGACTCTGGggggAAAACCTCAGCTGTTT	1686
Nipponbare-repeatB	1600	GAAGGTTGAAAGCTTTGGGTTATCCAGCAAGTATTTCATGGCCTTGTCAAGTTGGAGGACTCTGGggggAAAACCTCAGCTGTTT	1699
Epi-d1-repeatB	1600	GAAGGTTGAAAGCTTTGGGTTATCCAGCAAGTATTTCATGGCCTTGTCAAGTTGGAGGACTCTGGggggAAAACCTCAGCTGTTT	1699
Nipponbare-repeatC	1600	GAAGGTTGAAAGCTTTGGGTTATCCAGCAAGTATTTCATGGCCTTGTCAAGTTGGAGGACTCTGGggggAAAACCTCAGCTGTTT	1699
Epi-d1-repeatC	1600	GAAGGTTGAAAGCTTTGGGTTATCCAGCAAGTATTTCATGGCCTTGTCAAGTTGGAGGACTCTGGggggAAAACCTCAGCTGTTT	1699
Nipponbare-repeatA	1686	CCCCAGGTCACTTCACCTAACAAAGATTATTTGCTGATCCAAGAATTCTGCTGAAAGTTGGGTTATGTGAATGTGTTCTGATCAGTGAGATGTACT	1785
Epi-d1-repeatA	1687	CCCCAGGTCACTTCACCTAACAAAGATTATTTGCTGATCCAAGAATTCTGCTGAAAGTTGGGTTATGTGAATGTGTTCTGATCAGTGAGATGTACT	1786
Nipponbare-repeatB	1700	CCCCAGGTCACTTCACCTAACAAAGATTATTTGCTGATCCAAGAATTCTGCTGAAAGTTGGGTTATGTGAATGTGTTCTGATCAGTGAGATGTACT	1799
Epi-d1-repeatB	1700	CCCCAGGTCACTTCACCTAACAAAGATTATTTGCTGATCCAAGAATTCTGCTGAAAGTTGGGTTATGTGAATGTGTTCTGATCAGTGAGATGTACT	1799
Nipponbare-repeatC	1700	CCCCAGGTCACTTCACCTAACAAAGATTATTTGCTGATCCAAGAATTCTGCTGAAAGTTGGGTTATGTGAATGTGTTCTGATCAGTGAGATGTACT	1799
Epi-d1-repeatC	1700	CCCCAGGTCACTTCACCTAACAAAGATTATTTGCTGATCCAAGAATTCTGCTGAAAGTTGGGTTATGTGAATGTGTTCTGATCAGTGAGATGTACT	1799
Nipponbare-repeatA	1786	AGGAATACTAAAATAAAGGACACATTGATATTAAAAAGGCAAGATTCTGAGTAACCTGAAGATGATATATCTTTTGTCAGTAGTGTGAGGCAGG	1885
Epi-d1-repeatA	1787	AGGAATACTAAAATAAAGGACACATTGATATTAAAAAGGCAAGATTCTGAGTAACCTGAAGATGATATATCTTTTGTCAGTAGTGTGAGGCAGG	1886
Nipponbare-repeatB	1800	AGGAATACTAAAATAAAGGACACATTGATATTAAAAAGGCAAGATTCTGAGTAACCTGAAGATGATATATCTTTTGTCAGTAGTGTGAGGCAGG	1899
Epi-d1-repeatB	1800	AGGAATACTAAAATAAAGGACACATTGATATTAAAAAGGCAAGATTCTGAGTAACCTGAAGATGATATATCTTTTGTCAGTAGTGTGAGGCAGG	1899
Nipponbare-repeatC	1800	AGGAATACTAAAATAAAGGACACATTGATATTAAAAAGGCAAGATTCTGAGTAACCTGAAGATGATATATCTTTTGTCAGTAGTGTGAGGCAGG	1899
Epi-d1-repeatC	1800	AGGAATACTAAAATAAAGGACACATTGATATTAAAAAGGCAAGATTCTGAGTAACCTGAAGATGATATATCTTTTGTCAGTAGTGTGAGGCAGG	1899
Nipponbare-repeatA	1886	CTAAACACCTTGTATCACCTACTGCTATTCAATCACGGACATTTCTGACTATTAAACCATGCCACATCACCAGGATTTCGCGCATGAAAGGATT	1985
Epi-d1-repeatA	1887	CTAAACACCTTGTATCACCTACTGCTATTCAATCACGGACATTTCTGACTATTAAACCATGCCACATCACCAGGATTTCGCGCATGAAAGGATT	1986
Nipponbare-repeatB	1900	CTAAACACCTTGTATCACCTACTGCTATTCAATCACGGACATTTCTGACTATTAAACCATGCCACATCACCAGGATTTCGCGCATGAAAGGATT	1999
Epi-d1-repeatB	1900	CTAAACACCTTGTATCACCTACTGCTATTCAATCACGGACATTTCTGACTATTAAACCATGCCACATCACCAGGATTTCGCGCATGAAAGGATT	1999
Nipponbare-repeatC	1900	CTAAACACCTTGTATCACCTACTGCTATTCAATCACGGACATTTCTGACTATTAAACCATGCCACATCACCAGGATTTCGCGCATGAAAGGATT	1999
Epi-d1-repeatC	1900	CTAAACACCTTGTATCACCTACTGCTATTCAATCACGGACATTTCTGACTATTAAACCATGCCACATCACCAGGATTTCGCGCATGAAAGGATT	1999
Nipponbare-repeatA	1986	CAAGGTTCATTTGTCAGAGCTGATECTGTGAGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGAGTTTCTGCTGTTGCTGAGTTGTTGAGG	2085
Epi-d1-repeatA	1987	CAAGGTTCATTTGTCAGAGCTGATECTGTGAGTTCTTCAGTTCTGCTGTTGCTGTTGCTGTTGCTGAGTTGTTGAGG	2086
Nipponbare-repeatB	2000	CAAGGTTCATTTGTCAGAGCTGATECTGTGAGTTCTTCAGTTCTGCTGTTGCTGTTGCTGAGTTGTTGAGG	2099
Epi-d1-repeatB	2000	CAAGGTTCATTTGTCAGAGCTGATECTGTGAGTTCTTCAGTTCTGCTGTTGCTGTTGCTGAGTTGTTGAGG	2099
Nipponbare-repeatC	2000	CAAGGTTCATTTGTCAGAGCTGATECTGTGAGTTCTTCAGTTCTGCTGTTGCTGTTGCTGAGTTGTTGAGG	2099
Epi-d1-repeatC	2000	CAAGGTTCATTTGTCAGAGCTGATECTGTGAGTTCTTCAGTTCTGCTGTTGCTGTTGCTGAGTTGTTGAGG	2099
Nipponbare-repeatA	2086	TTTAATTTCACAGGTTTCTTCCACACTTACGGAGTCTTGTGAGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTGATAT	2185
Epi-d1-repeatA	2087	TTTAATTTCACAGGTTTCTTCCACACTTGGGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTGATAT	2186
Nipponbare-repeatB	2100	TTTAATTTCACAGGTTTCTTCCACACTTGGGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTGATAT	2199
Epi-d1-repeatB	2100	TTTAATTTCACAGGTTTCTTCCACACTTGGGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTGATAT	2199
Nipponbare-repeatC	2100	TTTAATTTCACAGGTTTCTTCCACACTTGGGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTGATAT	2199
Epi-d1-repeatC	2100	TTTAATTTCACAGGTTTCTTCCACACTTGGGTTCTTCAGTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTGATAT	2199
Nipponbare-repeatA	2186	CATGCACTGGGTGCTCGTACATCGTACCTGGAGCTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTTCTGCTGTTGAGG	2285
Epi-d1-repeatA	2187	CATGCACTGGGTGCTCGTACATCGTACCTGGAGCTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTTCTGCTGTTGAGG	2286
Nipponbare-repeatB	2200	CATGCACTGGGTGCTCGTACATCGTACCTGGAGCTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTTCTGCTGTTGAGG	2299
Epi-d1-repeatB	2200	CATGCACTGGGTGCTCGTACATCGTACCTGGAGCTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTTCTGCTGTTGAGG	2299
Nipponbare-repeatC	2200	CATGCACTGGGTGCTCGTACATCGTACCTGGAGCTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTTCTGCTGTTGAGG	2299
Epi-d1-repeatC	2200	CATGCACTGGGTGCTCGTACATCGTACCTGGAGCTTCTGCTGTTTGTGAGTTTCTGCTGTTGCTGTTGAGTTTCTGCTGTTGAGG	2299
Nipponbare-repeatA	2286	TACCAACAAACACAGACTCTTCATGTGGCTATTAGTGTGAGTTACTGTTTAACTCATCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2385
Epi-d1-repeatA	2287	TACCAACAAACACAGACTCTTCATGTGGCTATTAGTGTGAGTTACTGTTTAACTCATCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2386
Nipponbare-repeatB	2300	TACCAACAAACACAGACTCTTCATGTGGCTATTAGTGTGAGTTACTGTTTAACTCATCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2399
Epi-d1-repeatB	2300	TACCAACAAACACAGACTCTTCATGTGGCTATTAGTGTGAGTTACTGTTTAACTCATCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2399
Nipponbare-repeatC	2300	TACCAACAAACACAGACTCTTCATGTGGCTATTAGTGTGAGTTACTGTTTAACTCATCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2399
Epi-d1-repeatC	2300	TACCAACAAACACAGACTCTTCATGTGGCTATTAGTGTGAGTTACTGTTTAACTCATCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2399
Nipponbare-repeatA	2386	ACTGTTAACTTCCCAGGGAGATATAAATATAACTGTTTCAACCTGGGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2485
Epi-d1-repeatA	2387	ACTGTTAACTTCCCAGGGAGATATAAATATAACTGTTTCAACCTGGGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2486
Nipponbare-repeatB	2400	ACTGTTAACTTCCCAGGGAGATATAAATATAACTGTTTCAACCTGGGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2499
Epi-d1-repeatB	2400	ACTGTTAACTTCCCAGGGAGATATAAATATAACTGTTTCAACCTGGGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2499
Nipponbare-repeatC	2400	ACTGTTAACTTCCCAGGGAGATATAAATATAACTGTTTCAACCTGGGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2499
Epi-d1-repeatC	2400	ACTGTTAACTTCCCAGGGAGATATAAATATAACTGTTTCAACCTGGGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2499
Nipponbare-repeatA	2486	TACATTTCCACTAGTAACAAATTTCATCTGTTGAGCTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2585
Epi-d1-repeatA	2487	TACATTTCCACTAGTAACAAATTTCATCTGCTGTTGAGCTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2586
Nipponbare-repeatB	2500	TACATTTCCACTAGTAACAAATTTCATCTGCTGTTGAGCTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2599
Epi-d1-repeatB	2500	TACATTTCCACTAGTAACAAATTTCATCTGCTGTTGAGCTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2599
Nipponbare-repeatC	2500	TACATTTCCACTAGTAACAAATTTCATCTGCTGTTGAGCTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2599
Epi-d1-repeatC	2500	TACATTTCCACTAGTAACAAATTTCATCTGCTGTTGAGCTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2599
Nipponbare-repeatA	2586	TTCACTGGTATTCATTTCTGCAACTGTGATCTTGTGCTTGTGAGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2685
Epi-d1-repeatA	2587	TTCACTGGTATTCATTTCTGCAACTGTGATCTTGTGCTTGTGAGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2686
Nipponbare-repeatB	2600	TTCACTGGTATTCATTTCTGCAACTGTGATCTTGTGCTTGTGAGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2699
Epi-d1-repeatB	2600	TTCACTGGTATTCATTTCTGCAACTGTGATCTTGTGCTTGTGAGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2699
Nipponbare-repeatC	2600	TTCACTGGTATTCATTTCTGCAACTGTGATCTTGTGCTTGTGAGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2699
Epi-d1-repeatC	2600	TTCACTGGTATTCATTTCTGCAACTGTGATCTTGTGCTTGTGAGTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2699
Nipponbare-repeatA	2686	TTGTATGGCCCTCAATCCCTGGCCCCCTTCAACCTGGGAGAAATTGGCAAGAAATTGGCAAGAAATTGGCAAGAACTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2785
Epi-d1-repeatA	2687	TTGTATGGCCCTCAATCCCTGGCCCCCTTCAACCTGGGAGAAATTGGCAAGAAATTGGCAAGAACTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2786
Nipponbare-repeatB	2700	TTGTATGGCCCTCAATCCCTGGCCCCCTTCAACCTGGGAGAAATTGGCAAGAAATTGGCAAGAACTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2799
Epi-d1-repeatB	2700	TTGTATGGCCCTCAATCCCTGGCCCCCTTCAACCTGGGAGAAATTGGCAAGAAATTGGCAAGAACTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2799
Nipponbare-repeatC	2700	TTGTATGGCCCTCAATCCCTGGCCCCCTTCAACCTGGGAGAAATTGGCAAGAAATTGGCAAGAACTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2799
Epi-d1-repeatC	2700	TTGTATGGCCCTCAATCCCTGGCCCCCTTCAACCTGGGAGAAATTGGCAAGAAATTGGCAAGAACTTCTGCTGTTGAGTTTCTGCTGTTGAGTTTCTGCTGTTGAGG	2799

Fig. S2 continued.

Fig. S2 continued.

Fig. S2 continued.

Fig. S2 continued.

Nipponbare-repeatA	6973	GAAGGCAATACTACCTGGGATTAAGGTTGACCGTTTGCAAGATTAGGGGTCAGGGCGTTAAAATCACAGACAAGATAAGGGACCTTATGATGAA	7072
Epi-d1-repeatA	6974	GAAGGCAATACTACCTGGGATTAAGGTTGACCGTTTGCAAGATTAGGGGTCAGGGCGTTAAAATCACAGACAAGATAAGGGACCTTATGATGAA	7073
Nipponbare-repeatB	6976	GAAGGCAATACTACCTGGGATTAAGGTTGACCGTTTGCAAGATTAGGGGTCAGGGCGTTAAAATCACAGACAAGATAAGGGACCTTATGATGAA	7005
Epi-d1-repeatB	6904	GAAGGCAATACTACCTGGGATTAAGGTTGACCGTTTGCAAGATTAGGGGTCAGGGCGTTAAAATCACAGACAAGATAAGGGACCTTATGATGAA	7003
Nipponbare-repeatC	6984	GAAGGCAATACTACCTGGGATTAAGGTTGACCGTTTGCAAGATTAGGGGTCAGGGCGTTAAAATCACAGACAAGATAAGGGACCTTATGATGAA	7083
Epi-d1-repeatC	6984	GAAGGCAATACTACCTGGGATTAAGGTTGACCGTTTGCAAGATTAGGGGTCAGGGCGTTAAAATCACAGACAAGATAAGGGACCTTATGATGAA	7083
Nipponbare-repeatA	7073	CTTTTTGGGAGATGAGGGCCTGTGCATATGACCCATAGGCAGGGACAGAACGGCAGAGAGCTTCACGACGACTCGGCCCTCCCCAATCCGTC	7172
Epi-d1-repeatA	7074	CTTTTTGGGAGATGAGGGCCTGTGCATATGACCCATAGGCAGGGACAGAACGGCAGAGAGCTTCACGACGACTCGGCCCTCCCCAATCCGTC	7173
Nipponbare-repeatB	7006	CTTTTTGGGAGATGAGGGCCTGTGCATATGACCCATAGGCAGGGACAGAACGGCAGAGAGCTTCACGACGACTCGGCCCTCCCCAATCCGTC	7105
Epi-d1-repeatB	7004	CTTTTTGGGAGATGAGGGCCTGTGCATATGACCCATAGGCAGGGACAGAACGGCAGAGAGCTTCACGACGACTCGGCCCTCCCCAATCCGTC	7103
Nipponbare-repeatC	7084	CTTTTTGGGAGATGAGGGCCTGTGCATATGACCCATAGGCAGGGACAGAACGGCAGAGAGCTTCACGACGACTCGGCCCTCCCCAATCCGTC	7183
Epi-d1-repeatC	7084	CTTTTTGGGAGATGAGGGCCTGTGCATATGACCCATAGGCAGGGACAGAACGGCAGAGAGCTTCACGACGACTCGGCCCTCCCCAATCCGTC	7183
Nipponbare-repeatA	7173	TCTCGCCGCCGCGCCCTCGACTCCGCTCTCGCCGCTGGCGGATTCCTCATCTGCAGAGGGTGGCGCCGCTCTCTGCCTCCGGCG	7272
Epi-d1-repeatA	7174	TCTCTGCCGCCGCGCCCTCGACTCCGCTCTCGCCGCTGGCGGATTCCTCATCTGCAGAGGGTGGCGCCGCTCTCTGCCTCCGGCG	7273
Nipponbare-repeatB	7106	TCTCTGCCGCCGCGCCCTCGACTCCGCTCTCGCCGCTGGCGGATTCCTCATCTGCAGAGGGTGGCGCCGCTCTCTGCCTCCGGCG	7205
Epi-d1-repeatB	7104	TCTCTGCCGCCGCGCCCTCGACTCCGCTCTCGCCGCTGGCGGATTCCTCATCTGCAGAGGGTGGCGCCGCTCTCTGCCTCCGGCG	7203
Nipponbare-repeatC	7184	TCTCTGCCGCCGCGCCCTCGACTCCGCTCTCGCCGCTGGCGGATTCCTCATCTGCAGAGGGTGGCGCCGCTCTCTGCCTCCGGCG	7283
Epi-d1-repeatC	7184	TCTCTGCCGCCGCGCCCTCGACTCCGCTCTCGCCGCTGGCGGATTCCTCATCTGCAGAGGGTGGCGCCGCTCTCTGCCTCCGGCG	7283
Nipponbare-repeatA	7273	CATTGCGATCTTAATCCATCCCCTCGCCGCTGGCCCTCGCCCTCGCCGCTGGCGGATCCCCATCTGCAGAGGGTGGCGCCG	7372
Epi-d1-repeatA	7274	CATTGCGATCTTAATCCATCCCCTCGCCGCTGGCCCTCGCCGCTGGCGGATCCCCATCTGCAGAGGGTGGCGCCG	7373
Nipponbare-repeatB	7206	CATTGCGATCTTAATCCATCCCCTCGCCGCTGGCCCTCGCCGCTGGCGGATCCCCATCTGCAGAGGGTGGCGCCG	7305
Epi-d1-repeatB	7204	CATTGCGATCTTAATCCATCCCCTCGCCGCTGGCCCTCGCCGCTGGCGGATCCCCATCTGCAGAGGGTGGCGCCG	7303
Nipponbare-repeatC	7284	CATTGCGATCTTAATCCATCCCCTCGCCGCTGGCCCTCGCCGCTGGCGGATCCCCATCTGCAGAGGGTGGCGCCG	7383
Epi-d1-repeatC	7284	CATTGCGATCTTAATCCATCCCCTCGCCGCTGGCGGATCCCCATCTGCAGAGGGTGGCGCCG	7383
Nipponbare-repeatA	7373	GGCGTCTCTCTCTTCCACCGCATGCTCGCCGTTGAGCATCCTCCCTACCCACACTCATCAAGGTTATCTCGTTATCCCTCAAAAGTTGGGG	7472
Epi-d1-repeatA	7374	GGCGTCTCTCTCTTCCACCGCATGCTCGCCGTTGAGCATCCTCCCTACCCACACTCATCAAGGTTATCTCGTTATCCCTCAAAAGTTGGGG	7473
Nipponbare-repeatB	7306	GGCGTCTCTCTCTTCCACCGCATGCTCGCCGTTGAGCATCCTCCCTACCCACACTCATCAAGGTTATCTCGTTATCCCTCAAAAGTTGGGG	7405
Epi-d1-repeatB	7304	GGCGTCTCTCTCTTCCACCGCATGCTCGCCGTTGAGCATCCTCCCTACCCACACTCATCAAGGTTATCTCGTTATCCCTCAAAAGTTGGGG	7403
Nipponbare-repeatC	7384	GGCGTCTCTCTCTTCCACCGCATGCTCGCCGTTGAGCATCCTCCCTACCCACACTCATCAAGGTTATCTCGTTATCCCTCAAAAGTTGGGG	7483
Epi-d1-repeatC	7384	GGCGTCTCTCTCTTCCACCGCATGCTCGCCGTTGAGCATCCTCCCTACCCACACTCATCAAGGTTATCTCGTTATCCCTCAAAAGTTGGGG	7483
Nipponbare-repeatA	7473	FITCAACCGAAACAGGGTAGATCTGCTCTGCCAGCTCCACCTACTTCAAGTTGTTAATTGATTCTCGTTTTAGAGATTAATTGGTTATTG	7572
Epi-d1-repeatA	7474	FITCAACCGAAACAGGGTAGATCTGCTCTGCCAGCTCCACCTACTTCAAGTTGTTAATTGATTCTCGTTTTAGAGATTAATTGGTTATTG	7573
Nipponbare-repeatB	7406	FITCAACCGAAACAGGGTAGATCTGCTCTGCCAGCTCCACCTACTTCAAGTTGTTAATTGATTCTCGTTTTAGAGATTAATTGGTTATTG	7505
Epi-d1-repeatB	7404	FITCAACCGAAACAGGGTAGATCTGCTCTGCCAGCTCCACCTACTTCAAGTTGTTAATTGATTCTCGTTTTAGAGATTAATTGGTTATTG	7503
Nipponbare-repeatC	7484	FITCAACCGAAACAGGGTAGATCTGCTCTGCCAGCTCCACCTACTTCAAGTTGTTAATTGATTCTCGTTTTAGAGATTAATTGGTTATTG	7583
Epi-d1-repeatC	7484	FITCAACCGAAACAGGGTAGATCTGCTCTGCCAGCTCCACCTACTTCAAGTTGTTAATTGATTCTCGTTTTAGAGATTAATTGGTTATTG	7583
Nipponbare-repeatA	7573	AATCTCATCAAACACCCCTTAAAGACGAAAGAAAAATGTAAGCTCATAATTGTCATCCAAACTCACAATAATTCTTAAGAGAATCTAGACCAAAAC	7672
Epi-d1-repeatA	7574	AATCTCATCAAACACCCCTTAAAGACGAAAGAAAAATGTAAGCTCATAATTGTCATCCAAACTCACAATAATTCTTAAGAGAATCTAGACCAAAAC	7673
Nipponbare-repeatB	7506	AATCTCATCAAACACCCCTTAAAGACGAAAGAAAAATGTAAGCTCATAATTGTCATCCAAACTCACAATAATTCTTAAGAGAATCTAGACCAAAAC	7605
Epi-d1-repeatB	7504	AATCTCATCAAACACCCCTTAAAGACGAAAGAAAAATGTAAGCTCATAATTGTCATCCAAACTCACAATAATTCTTAAGAGAATCTAGACCAAAAC	7603
Nipponbare-repeatC	7584	AATCTCATCAAACACCCCTTAAAGACGAAAGAAAAATGTAAGCTCATAATTGTCATCCAAACTCACAATAATTCTTAAGAGAATCTAGACCAAAAC	7683
Epi-d1-repeatC	7584	AATCTCATCAAACACCCCTTAAAGACGAAAGAAAAATGTAAGCTCATAATTGTCATCCAAACTCACAATAATTCTTAAGAGAATCTAGACCAAAAC	7683
Nipponbare-repeatA	7673	TACCCATAGTCACACAAAATATCTTATCAGGTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGACACTTGGCAT	7772
Epi-d1-repeatA	7674	TACCCATAGTCACACAAAATATCTTATCAGGTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGACACTTGGCAT	7773
Nipponbare-repeatB	7606	TACCCATAGTCACACAAAATATCTTATCAGGTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGACACTTGGCAT	7705
Epi-d1-repeatB	7604	TACCCATAGTCACACAAAATATCTTATCAGGTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGACACTTGGCAT	7703
Nipponbare-repeatC	7684	TACCCATAGTCACACAAAATATCTTATCAGGTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGACACTTGGCAT	7783
Epi-d1-repeatC	7684	TACCCATAGTCACACAAAATATCTTATCAGGTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGACACTTGGCAT	7783
Nipponbare-repeatA	7773	GAATCTAATTAACTTACCTCTTCTTACGGGTTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGATATATCTGTAATAT	7872
Epi-d1-repeatA	7774	GAATCTAATTAACTTACCTCTTCTTACGGGTTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGATATATCTGTAATAT	7873
Nipponbare-repeatB	7706	GAATCTAATTAACTTACCTCTTCTTACGGGTTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGATATATCTGTAATAT	7805
Epi-d1-repeatB	7704	GAATCTAATTAACTTACCTCTTCTTACGGGTTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGATATATCTGTAATAT	7803
Nipponbare-repeatC	7784	GAATCTAATTAACTTACCTCTTCTTACGGGTTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGATATATCTGTAATAT	7883
Epi-d1-repeatC	7784	GAATCTAATTAACTTACCTCTTCTTACGGGTTATAAGGTTATCTTACGGGTTTAAAGGACATACTGTGATATATCTGTAATAT	7883
Nipponbare-repeatA	7873	TTAACTATTTTAACTTTAGACTAATAATATAGATATTAACTTAAAGGTTATTAGTAATTGTTAACTTCAAACTCACAATAATTCTTAAGGAA	7972
Epi-d1-repeatA	7874	TTAACTATTTTAACTTTAGACTAATAATATAGATATTAACTTAAAGGTTATTAGTAATTGTTAACTTCAAACTCACAATAATTCTTAAGGAA	7973
Nipponbare-repeatB	7806	TTAACTATTTTAACTTTAGACTAATAATATAGATATTAACTTAAAGGTTATTAGTAATTGTTAACTTCAAACTCACAATAATTCTTAAGGAA	7905
Epi-d1-repeatB	7804	TTAACTATTTTAACTTTAGACTAATAATATAGATATTAACTTAAAGGTTATTAGTAATTGTTAACTTCAAACTCACAATAATTCTTAAGGAA	7903
Nipponbare-repeatC	7884	TTAACTATTTTAACTTTAGACTAATAATATAGATATTAACTTAAAGGTTATTAGTAATTGTTAACTTCAAACTCACAATAATTCTTAAGGAA	7983
Epi-d1-repeatC	7884	TTAACTATTTTAACTTTAGACTAATAATATAGATATTAACTTAAAGGTTATTAGTAATTGTTAACTTCAAACTCACAATAATTCTTAAGGAA	7983
Nipponbare-repeatA	7973	CAAAATGATATATGCCAACTACAATTAACAAATAGAATGCACTTTGGTTATCTTACTCTTAATTCTTAAGGTTATCTTACGGTCTCCCCACCG	8072
Epi-d1-repeatA	7974	CAAAATGATATATGCCAACTACAATTAACAAATAGAATGCACTTTGGTTATCTTACTCTTAATTCTTACGGTCTCCCCACCG	8073
Nipponbare-repeatB	7906	CAAAATGATATATGCCAACTACAATTAACAAATAGAATGCACTTTGGTTATCTTACTCTTAATTCTTACGGTCTCCCCACCG	8005
Epi-d1-repeatB	7904	CAAAATGATATATGCCAACTACAATTAACAAATAGAATGCACTTTGGTTATCTTACTCTTAATTCTTACGGTCTCCCCACCG	8003
Nipponbare-repeatC	7984	CAAAATGATATATGCCAACTACAATTAACAAATAGAATGCACTTTGGTTATCTTACTCTTAATTCTTACGGTCTCCCCACCG	8083
Epi-d1-repeatC	7984	CAAAATGATATATGCCAACTACAATTAACAAATAGAATGCACTTTGGTTATCTTACTCTTAATTCTTACGGTCTCCCCACCG	8083
Nipponbare-repeatA	8073	TTATGGTAAAAAACTGTTAGTTAACTTATCTGCTAGACCATATGTAATATTATGTAACATGTTCTTATTACCAATCAAATAGACACCTT	8172
Epi-d1-repeatA	8074	TTATGGTAAAAAACTGTTAGTTAACTTATCTGCTAGACCATATGTAATATTATGTAACATGTTCTTATTACCAATCAAATAGACACCTT	8173
Nipponbare-repeatB	8006	TTATGGTAAAAAACTGTTAGTTAACTTATCTGCTAGACCATATGTAATATTATGTAACATGTTCTTATTACCAATCAAATAGACACCTT	8105
Epi-d1-repeatB	8004	TTATGGTAAAAAACTGTTAGTTAACTTATCTGCTAGACCATATGTAATATTATGTAACATGTTCTTATTACCAATCAAATAGACACCTT	8103
Nipponbare-repeatC	8084	TTATGGTAAAAAACTGTTAGTTAACTTATCTGCTAGACCATATGTAATATTATGTAACATGTTCTTATTACCAATCAAATAGACACCTT	8183
Epi-d1-repeatC	8084	TTATGGTAAAAAACTGTTAGTTAACTTATCTGCTAGACCATATGTAATATTATGTAACATGTTCTTATTACCAATCAAATAGACACCTT	8183
Nipponbare-repeatA	8173	ACCTACTTTCATCAAAGAAAAAATAAAAAAT	8240
Epi-d1-repeatA	8174	ACCTACTTTCATCAAAGAAAAAATAAAAAAT	8241
Nipponbare-repeatB	8106	ACCTACTTTCATCAAAGAAAAAATAAAAAAT	8205
Epi-d1-repeatB	8104	ACCTACTTTCATCAAAGAAAAAATAAAAAAT	8171
Nipponbare-repeatC	8184	ACCTACTTTCATCAAAGAAAAAATAAAAAAT	8251
Epi-d1-repeatC	8184	ACCTACTTTCATCAAAGAAAAAATAAAAAAT	8251
Nipponbare-repeatA	8241	TATGGAAACGCACTTCCCTCAAAACGCAAAAAACGGGGCCCGAGCCCTCGACACCAACCCCGTGGAGATGTAAGGCGACGCCAGATGGAGGCCAGGG	8340
Epi-d1-repeatA	8242	TATGGAAACGCACTTCCCTCAAAACGCAAAAAACGGGGCCCGAGCCCTCGACACCAACCCCGTGGAGATGTAAGGCGACGCCAGATGGAGGCCAGGG	8341
Nipponbare-repeatB	8206	TATGGAAACGCACTTCCCTCAAAACGCAAAAAACGGGGCCCGAGCCCTCGACACCAACCCCGTGGAGATGTAAGGCGACGCCAGATGGAGGCCAGGG	8305
Epi-d1-repeatB	8172	TATGGAAACGCACTTCCCTCAAAACGCAAAAAACGGGGCCCGAGCCCTCGACACCAACCCCGTGGAGATGTAAGGCGACGCCAGATGGAGGCCAGGG	8271
Nipponbare-repeatC	8252	TATGGAAACGCACTTCCCTCAAAACGCAAAAAACGGGGCCCGAGCCCTCGACACCAACCCCGTGGAGATGTAAGGCGACGCCAGATGGAGGCCAGGG	8351
Epi-d1-repeatC	8252	TATGGAAACGCACTTCCCTCAAAACGCAAAAAACGGGGCCCGAGCCCTCGACACCAACCCCGTGGAGATGTAAGGCGACGCCAGATGGAGGCCAGGG	8351

Fig. S2 continued.

Fig. S2 continued.

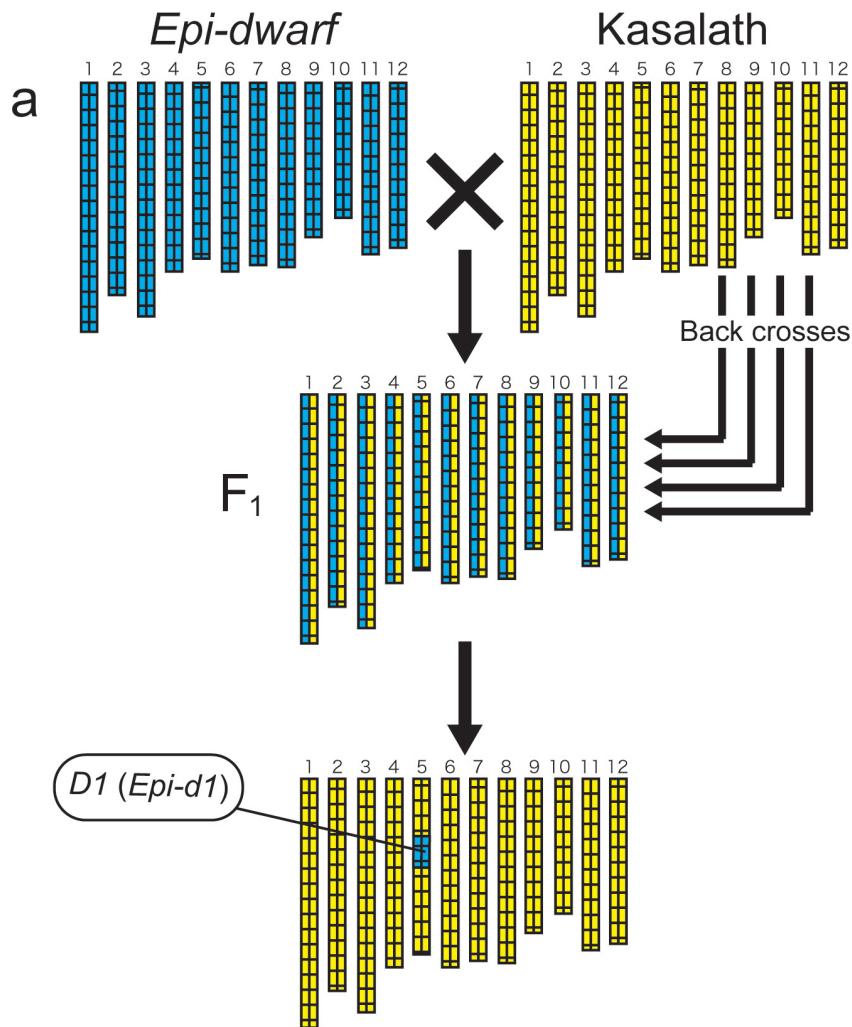


Fig. S3. Construction and gross morphologies of nearly isogenic line (NIL) of *Epi-d1*. The chromosomes of *Epi-d1* and Kasalath are shown as blue and yellow bars, respectively. (a) NIL carries *D1* locus from *Epi-d1* in Kasalath genome background. (b) NIL-*Epi-d1* shows dwarf (Left), chimeric (Center), and normal (Right) phenotypes.

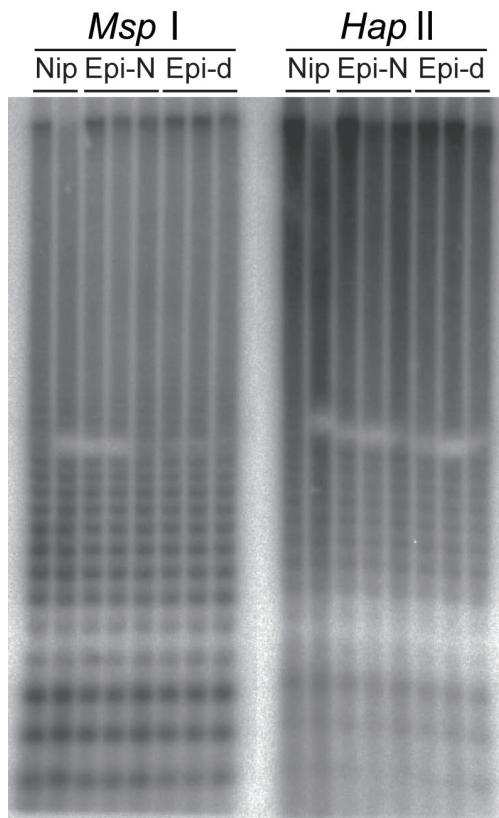


Fig. S4. DNA methylation analysis of 168-bp centromere specific repeat. The genomic DNA extracted from Nipponbare (Nip), *Epi-normal* (Epi-N), and *Epi-dwarf* (Epi-d) were digested by DNA methylation insensitive restriction enzyme, *Msp*I or DNA methylation-sensitive restriction enzyme *Hpa*II. Digested DNAs were hybridized with 168-bp centromere-specific repeat probe.

Table S1. Segregation of chimeric plant

Four independent chimeric plants	Seed source	Phenotype of progenies			Total
		Normal, n (%)	Chimera, n (%)	Dwarf, n (%)	
Plant 1	Normal tillers	44 (23.5)	127 (67.9)	16 (8.5)	187
	Dwarf tillers	3 (2.8)	44 (41.5)	59 (55.7)	106
Plant 2	Normal tillers	59 (22.9)	149 (57.6)	50 (19.4)	258
	Dwarf tillers	21 (23.1)	60 (65.9)	10 (11.0)	91
Plant 3	Normal tillers	86 (43.0)	66 (33.0)	48 (24.0)	200
	Dwarf tillers	2 (1.1)	93 (51.7)	85 (47.2)	180
Plant 4	Normal tillers	47 (31.3)	55 (36.7)	48 (32.0)	150
	Dwarf tillers	0 (0.0)	69 (53.1)	61 (46.9)	130

Table S2. Phenotypic inversion in progenies of normal or dwarf plants of *Epi-d1*

Seed source	Phenotype of progenies			Total
	Normal	Chimera	Dwarf	
<i>Epi-normal</i> plant 1	2,480	220	175	2,875
<i>Epi-normal</i> plant 2	2,631	315	26	2,972
<i>Epi-normal</i> plant 3	2,064	501	143	2,708
<i>Epi-normal</i> plant 4	2,831	49	174	3,054
Total	10,006 (86.2%)	1,085 (9.3%)	518 (4.5%)	11,609 (100%)
<i>Epi-dwarf</i> plant 5	12	713	2,033	2,758
<i>Epi-dwarf</i> plant 6	43	809	2,042	2,894
<i>Epi-dwarf</i> plant 7	31	672	2,229	2,932
<i>Epi-dwarf</i> plant 8	4	744	1,708	2,456
Total	90 (0.8%)	2,938 (26.6%)	8,012 (72.6%)	11,040 (100%)

Table S3. Crossing experiment for allelic interaction

Combination	Segregation in F ₂			Total	χ^2 3:1(N:D)	<i>P</i>
	Normal	Dwarf	Chimera			
<i>Epi-dwarf/Epi-normal</i>	383	134	3	520	0.233	0.50–0.70
<i>Epi-normal/Epi-dwarf</i>	259	102	0	361	2.040	0.10–0.30
<i>Epi-dwarf/IR24</i>	47	15	0	62	0.022	0.70–0.90
IR24/ <i>Epi-dwarf</i>	224	71	3	298	0.137	0.70–0.90
<i>Epi-dwarf/Taichung 65</i>	260	88	0	348	0.015	0.90–0.99
Taichung 65/ <i>Epi-dwarf</i>	318	94	5	417	1.049	0.30–0.50

Table S4. Allelism test between *Epi-d1* and *d1* mutant

Seed source	Phenotype of F ₁ plants			Total
	Normal	Chimera	Dwarf	
<i>Epi-dwarf / d1</i>	0 (0%)	6 (4%)	144 (96%)	150 (100%)