



HOKKAIDO UNIVERSITY

Title	Selection of nuclear genotypes associated with the thermo-sensitivity of Owen-type cytoplasmic male sterility in sugar beet (<i>Beta vulgaris</i> L.)
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TA30-37	ATGGCGTGGTACAGAAATTC AAGGTTTG	TCTACAATGCTTTAAAACTCAACTTGC GTTCC	60
TA37-19	ATGGCGTGGTACAGAAATTC AAGGTTTG	TCTACAATGCTTTAAAACTCAACTTGC GTTCC	60
PI615522	ATGGCGTGGTACAGAAATTC AAGGTTTG	TCTACAATGCTTTAAAACTCAACTTGC GTTCC	60
TA36-3-b	ATGGCGTGGTACAGAAATTC AAGGTTTG	TCTACAATGCTTTAAAACTCAACTTGC GTTCC	60
TA36-3-c	ATGGCGTGGTACAGAAATTC AAGGTTTG	TCTACAATGCTTTAAAACTCAACTTGC GTTCC	60
TA30-37	AAAACATTTGGTACTATTCCA AACTCCAAGAGTT	CATTCGAATTCCTCATCTTTGTTTAC	120
TA37-19	AAAACATTTGGTACTATTCCA AACTCCAAGAGTT	CATTCGAATTCCTCATCTTTGTTTAC	120
PI615522	AAAACATTTGGTACTATTCCA AACTCCAAGAGTT	CATTCGAATTCCTCATCTTTGTTTAC	120
TA36-3-b	AAAACATTTGGTACTATTCCA AACTCCAAGAGTT	CATTCGAATTCCTCATCTTTGTTTAC	120
TA36-3-c	AAAACATTTGGTACTATTCCA AACTCCAAGAGTT	CATTCGAATTCCTCATCTTTGTTTAC	120
TA30-37	AATCAATCTACTAA---GTG TAGTGGGT	TATTTGGGCTGCAAAATCTGGGTATTTAAT	177
TA37-19	AATCAATCTACTAA---GTG TAGTGGGT	TATTTGGGCTGCAAAATCTGGGTATTTAAT	177
PI615522	AATCAATCTACTAA---GTG TAGTGGGT	TATTTGGGCTGCAAAATCTGGGTATTTAAT	177
TA36-3-b	AATCAATCTACTAA---GTG TAGTGGGT	TATTTGGGCTGCAAAATCTGGGTATTTAAT	177
TA36-3-c	AATCAATCTACTAATAAGT TAGTGGGT	TATTTGGGCTGCAAAATCTGGGTATTTAAT	180
TA30-37	GGGTTTAAACATCATCAAG AGATTAGCTCTTTCT	CTGGTTTTGCAAGGAGAAATTATCAT	237
TA37-19	GGGTTTAAACATCATCAAG AGATTAGCTCTTTCT	CTGGTTTTGCAAGGAGAAATTATCAT	237
PI615522	GGGTTTAAACATCATCAAG AGATTAGCTCTTTCT	CTGGTTTTGCAAGGAGAAATTATCAT	237
TA36-3-b	GGGTTTAAACATCATCAAG AGATTAGCTCTTTCT	CTGGTTTTGCAAGGAGAAATTATCAT	237
TA36-3-c	GGGTTTAAACATCATCAAG AGATTAGCTCTTTCT	CTGGTTTTGCAAGGAGAAATTATCAT	240
TA30-37	GGTGATAAAACCGAAGTA AGTGTTGAATCAT	GGCTGGAAAAATTACTTCTT---GGAATT	294
TA37-19	GGTGATAAAACCGAAGTA AGTGTTGAATCAT	GGCTGGAAAAATTACTTCTT---GGAATT	294
PI615522	GGTGATAAAACCGAAGTA AGTGTTGAATCAT	GGCTGGAAAAATTACTTCTT---GGAATT	294
TA36-3-b	GGTGATAAAACCGAAGTA AGTGCTGAATCAT	TGCTGGAAAAATTACTTCTTCTTGCA GTT	297
TA36-3-c	GGTGATAAAACCGAAGTA AGTGTTGAATCAT	GGCTGGAAAAATTCTTGTTCT---CAATT	297
TA30-37	GCACTAATGTTGAGTACTG GTTATATTTGCTT	ACCGTCATGTGCACCCAGTAGTTGTGCCA	354
TA37-19	GCACTAATGTTGAGTACTG GTTATATTTGCTT	ACCGTCATGTGCACCCAGTAGTTGTGCCA	354
PI615522	GCACTAATGTTGAGTACTG GTTATATTTGCTT	ACCGTCATGTGCACCCAGTAGTTGTGCCA	354
TA36-3-b	GCACTAATCTTG---TGCTT ACCGTCATGT	GCACCCAGTAGTTGTGCCA	345
TA36-3-c	GGACTAATCTTGACTTTT GGTATACTTG	TTACCTCATGTGCACCCAGTAGTTGTGCCA	357
TA30-37	TATACAGGAAGGAAGCATT ATGTGCTTATAT	CAACAACCTGATGAGAATGAAAAGGGAGAA	414
TA37-19	TATACAGGAAGGAAGCATT ATGTGCTTATAT	CAACAACCTGATGAGAATGAAAAGGGAGAA	414
PI615522	TATACAGGAAGGAAGCATT ATGTGCTTATAT	CAACAACCTGATGAGAATGAAAAGGGAGAA	414
TA36-3-b	TATACAGGAAGGAAGCATT ATGTATTATGT	CAACAACCTCGTGAGAATGAAATGGAGAA	405
TA36-3-c	TATACAGGAAGGAAGCATT ATGTGCTTATGT	CAACAACCTCGTGAGAATGAAATGGAGAA	417
TA30-37	GTTGAGAAGCGGAAAATACA ACCTGCTACACACC	CTGATACTGATAGGGTTAGGTCAATA	474
TA37-19	GTTGAGAAGCGGAAAATACA ACCTGCTACACACC	CTGATACTGATAGGGTTAGGTCAATA	474
PI615522	GTTGAGAAGCGGAAAATACA ACCTGCTACACACC	CTGATACTGATAGGGTTAGGTCAATA	474
TA36-3-b	GTTGAGAAGCGGAAAATACA ACCTGCTACACACC	CTGATGAGGGTTAGGTCTATA	465
TA36-3-c	GTTGAGAAGCGGAAAATACA ACCTGCTACACACC	CTGATACTGATAGGGTTAGGTCAATA	477
TA30-37	TTCCAACACATTCTTGAATC ACTGGAAGAGAGAT	TAAATCACCATGAACTCGAACTCGAA	534
TA37-19	TTCCAACACATTCTTGAATC ACTGGAAGAGAGAT	TAAATCACCATGAACTCGAACTCGAA	534
PI615522	TTCCAACACATTCTTGAATC ACTGGAAGAGAGAT	TAAATCACCATGAACTCGAACTCGAA	534
TA36-3-b	TTCCAACACATTATTGATCA CTGGAAGAGAGAT	TAAATCACCATGAACTCGAACTCGAA	525
TA36-3-c	TTCCAACACATTCTTGAATC ACTGGAAGAGAGAT	TAAATCACCATGAACTCGAACTCGAA	537

TA30-37	-----AGAGATGAACTTTCAAGGAGATAACCATTTGGAAGGAGGAGACAGTT	582
TA37-19	-----AGAGATGAACTTTCAAGGAGATAACCATTTGGAAGGAGGAGACAGTT	582
PI615522	-----AGAGATGAACTTTCAAGGAGATAACCATTTGGAAGGAGGAGACAGTT	582
TA36-3-b	CTCGAACTCGAAAGAGATGAACTTTCAAGGAGAAACCATTTGGAAGGAGGAGACAGTT	585
TA36-3-c	CTCGAA-----AGAGATGAACTTTCAAGGAGAAACCATTTGGAAGGAGGAGACAGTT	591
TA30-37	GATGATAAAGATAGTAGGAAGAAGCATAGTGGGGCTAAGATAACTACTAACCATTTGGAA	642
TA37-19	GATGATAAAGATAGTAGGAAGAAGCATAGTGGGGCTAAGATAACTACTAACCATTTGGAA	642
PI615522	GATGATAAAGATAGTAGGAAGAAGCATAGTGGGGCTAAGATAACTACTAACCATTTGGAA	642
TA36-3-b	GATGATAAAGATAGTAGGAAGAAGCATAGTGGGGCTAAGATAACTACTAACCATTTGGAA	645
TA36-3-c	GATGATAAAGATAGTAGGAAGAAGCATAGTGGGGCTAAGATAACTACTAACCATTTGGAA	651
TA30-37	GGGTTGAATTGGGAAATTTTCGTTGTTGATAAACCGTTGGTTGAGTCCAGTTGTTTATTT	702
TA37-19	GGGTTGAATTGGGAAATTTTCGTTGTTGATAAACCGTTGGTTGAGTCCAGTTGTTTATTT	702
PI615522	GGGTTGAATTGGGAAATTTTCGTTGTTGATAAACCGTTGGTTGAGTCCAGTTGTTTATTT	702
TA36-3-b	GGGTTGAATTGGGAAATTTTCGTTGTTGATAAACCGTTGGTTGAGTCCAGTTGTTTATTT	705
TA36-3-c	GGGATGAATTGGGAAATTTTCGTTGTTGATAAACCGTTGGTTGAGTCCAGTTATTTACTT	711
TA30-37	GGTGGGAAGATTGTTGTTTACACCGGATTGCTCAACCATTGCAACTCTGATGCTGAATTG	762
TA37-19	GGTGGGAAGATTGTTGTTTACACCGGATTGCTCAACCATTGCAACTCTGATGCTGAATTG	762
PI615522	GGTGGGAAGATTGTTGTTTACACCGGATTGCTCAACCATTGCAACTCTGATGCTGAATTG	762
TA36-3-b	GGTGGGAAGATTGTTGTTTACACCGGATTGCTCAACCATTGCAACTCTGATGCTGAATTG	765
TA36-3-c	GGTGGGAAGATTGTTGTTTACACCGGATTGCTCAACCATTGCAACTCTGATGCTGAATTG	771
TA30-37	GCTACAATTATCGCGCATCAGGTATATAAACTATTCCTGGGACTCCAATTATGTGCTTA	822
TA37-19	GCTACAATTATCGCGCATCAGGTATATAAACTATTCCTGGGACTCCAATTATGTGCTTA	822
PI615522	GCTACAATTATCGCGCATCAGGTATATAAACTATTCCTGGGACTCCAATTATGTGCTTA	822
TA36-3-b	GCTACAATTATCGCGCATCAGGTATATAAACTATTCCTGGGACTCCAATTATGTGCTTA	825
TA36-3-c	GCTACAATTATCGCGCATCAGGTATATAAACTATTCATGGGACTCCAATTATGTGCTTA	831
TA30-37	AGCTGATGGTTAATAGAACTATACAAAAACATGAAAGGAATTATATGAAAAAACTGA	882
TA37-19	AGCTGATGGTTAATAGAACTATACAAAAACATGAAAGGAATTATATGAAAAAACTGA	882
PI615522	AGCTGATGGTTAATAGAACTATACAAAAACATGAAAGGAATTATATGAAAAAACTGA	882
TA36-3-b	AGCTGATGGTTAATAGAACTATACAAAAACATGAAAGGAATTATATGAAAAAACTGA	885
TA36-3-c	AGCTGATGGTTAATAGAACTATACAAAAA-----ACTGA	866
TA30-37	TGAATTTTAGGTTATCAGATTACATTATGAATGTCATATGTCAATGTGGTGGTATGTATT	942
TA37-19	TGAATTTTAGGTTATCAGATTACATTATGAATGTCATATGTCAATGTGGTGGTATGTATT	942
PI615522	TGAATTTTAGGTTATCAGATTACATTATGAATGTCATATGTCAATGTGGTGGTATGTATT	942
TA36-3-b	TGAATTTTAGGTTATCAGATTACATTATGAATGTCATATGTCAATGTGGTGGTATGTATT	945
TA36-3-c	TGAATTTTAGGTTATCAGATTACATTATGAATGTCATATGTCAATTTGGTGGTATGTATT	926
TA30-37	TGTTAGGTTGGGCATGCTGTGGCTCGACATCAGGCAGAGGATCGGACAGCATTCTTCTGG	1002
TA37-19	TGTTAGGTTGGGCATGCTGTGGCTCGACATCAGGCAGAGGATCGGACAGCATTCTTCTGG	1002
PI615522	TGTTAGGTTGGGCATGCTGTGGCTCGACATCAGGCAGAGGATCGGACAGCATTCTTCTGG	1002
TA36-3-b	TGTTAGGTTGGGCATGCTGTGGCTCGACATCAGGCAGAGCATTGGACAGCATTCTTCTGG	1005
TA36-3-c	TGTTAGGTTGGGCATGCTGTGGCCCGACATGAGGCAGAGGATTGGACAGCATTTTCTGG	986
TA30-37	TGGTCAATGTCC---CTCTACGTGATAATATTTGAAGTTCTATTTACTGCGCGTAAATTT	1059
TA37-19	TGGTCAATGTCC---CTCTACGTGATAATATTTGAAGTTCTATTTACTGCGCGTAAATTT	1059
PI615522	TGGTCAATGTCC---CTCTACGTGATAATATTTGAAGTTCTATTTACTGCGCGTAAATTT	1059
TA36-3-b	TGGTCAATGTTAGGGTTCTACGTGACATTTTGAATTCTATTTACTGCGCGTGAATTT	1065
TA36-3-c	TTGTTAATATCC---CTCAACGTGATATTATTTAAAATTCTATTTACTGAGCCTGAATCT	1043

TA30-37	GCCAATGCAAGATCAAAACTACTCTTAAGGCATCCTCTCTTGCAAAAGTAA	GTCTCTTAC	1119
TA37-19	GCCAATGCAAGATCAAAACTACTCTTAAGGCATCCTCTCTTGCAAAAGTAA	GTCTCTTAC	1119
PI615522	GCCAATGCAAGATCAAAACTACTCTTAAGGCATCCTCTCTTGCAAAAGTAA	GTCTCTTAC	1119
TA36-3-b	GCCAATGCAAGATCAAAACTACTCTTAAGGCATCCTCTCTTGCAAAAGTAA	GTCTCTTAC	1125
TA36-3-c	GCCAATGCAAGATCAAAACT	GCTCTTAAGGCATCCTCTCTTGCAAAAGTAA	GTCTCTTAC 1103
TA30-37	TCTTAAATGTTTTCTTGATGATTAACAAACATGTGGTACTGCTACTGCATAACTGTGTT		1179
TA37-19	TCTTAAATGTTTTCTTGATGATTAACAAACATGTGGTACTGCTACTGCATAACTGTGTT		1179
PI615522	TCTTAAATGTTTTCTTGATGATTAACAAACATGTGGTACTGCTACTGCATAACTGTGTT		1179
TA36-3-b	TCTTAAATGTTTTCTTGATGATTAACAAACATGTGGTACTGCTACTGCATAACTGTGTT		1185
TA36-3-c	TCTTAAATGTTTTCTTGATGATTAACAAACATGTGGTACTGCTACTGCATAACTGTGTT		1163
TA30-37	ACTGCATCACATATGTTACTGCATAATTGCAAAACATATCACATTGCCGGACCTAGTAA		1239
TA37-19	ACTGCATCACATATGTTACTGCATAATTGCAAAACATATCACATTGCCGGACCTAGTAA		1239
PI615522	ACTGCATCACATATGTTACTGCATAATTGCAAAACATATCACATTGCCGGACCTAGTAA		1239
TA36-3-b	ACTGCATCACATATGTTACTGCATAATTGCAAAACATATCACATTGCCGGATCTCGTAA		1245
TA36-3-c	ACTGCATCACATATGTTACTGCATAATTGCAAACTATATTACAT-GCCGGACCTAGTAA		1222
TA30-37	CTTGTTTCATTTGTCAGCGATTTCAATTTAGACATCCATTTGAAAGCAAGTTAAATTTGTA		1299
TA37-19	CTTGTTTCATTTGTCAGCGATTTCAATTTAGACATCCATTTGAAAGCAAGTTAAATTTGTA		1299
PI615522	CTTGTTTCATTTGTCAGCGATTTCAATTTAGACATCCATTTGAAAGCAAGTTAAATTTGTA		1299
TA36-3-b	CTTGTTTCATTTGTCAGCGATTTCAATTTAGACATCCATTTGAGAGCAAGTTAAATTTGTA		1305
TA36-3-c	CTTGTTTCATTTGTCAGCGATTTCAATTTAGATATCCATTTGAGAGCAAGTTAAATTTGTA		1282
TA30-37	TCAAGTTGTGGAATGGAAAAGTAATAGAACTAAATAGAGAGGTGTGATGCTAACAAAATC		1359
TA37-19	TCAAGTTGTGGAATGGAAAAGTAATAGAACTAAATAGAGAGGTGTGATGCTAACAAAATC		1359
PI615522	TCAAGTTGTGGAATGGAAAAGTAATAGAACTAAATAGAGAGGTGTGATGCTAACAAAATC		1359
TA36-3-b	TCAAGTTGTGGAATGGAAAAGTAATAGAACTAAATAGAGAGGTGTGATGCTAACAAAATC		1365
TA36-3-c	TCAAGTTGTGGAATGGAAAAGTAATAGAACTAAATAGAGAGGTGTGATGCTAATAAAAATC		1342
TA30-37	TAATCCATTACTGAGTAATGGTTTTGGATCAATATATGGATTGCTATATTCCACATATTC		1419
TA37-19	TAATCCATTACTGAGTAATGGTTTTGGATCAATATATGGATTGCTATATTCCACATATTC		1419
PI615522	TAATCCATTACTGAGTAATGGTTTTGGATCAATATATGGATTGCTATATTCCACATATTC		1419
TA36-3-b	TAATCCATTACTGAGTAATGGTTTTGGATCAATATATGGATTGCTATATTCCACATATTC		1425
TA36-3-c	TAATCCATTACTGAGTAATGGTTTTGGATCGATATATGGATTGCTATATTCCACAGATTC		1402
TA30-37	TATACTTTGCCGCAGATAACATTAAATTGATGTTGTTTATTTACATTTGACACATTAAAA		1479
TA37-19	TATACTTTGCCGCAGATAACATTAAATTGATGTTGTTTATTTACATTTGACACATTAAAA		1479
PI615522	TATACTTTGCCGCAGATAACATTAAATTGATGTTGTTTATTTACATTTGACACATTAAAA		1479
TA36-3-b	TATACTTTGCCGCAGATAACATTAAATTGATGTTGTTTATTTACATTTGACACATTAAAA		1485
TA36-3-c	TATCCTTTGTCGCAGATAACATTAAATTTATGTTGTTTATGCACATTTGACACAATAAAT		1462
TA30-37	TTGAGTTGTGGACTATAATATATATGCGAGTTAGGTAACATAGAGTGTCAATTTACAGGG		1539
TA37-19	TTGAGTTGTGGACTATAATATATATGCGAGTTAGGTAACATAGAGTGTCAATTTACAGGG		1539
PI615522	TTGAGTTGTGGACTATAATATATATGCGAGTTAGGTAACATAGAGTGTCAATTTACAGGG		1539
TA36-3-b	TTGAGTTGTGGACTATAATATATATGCGAGTTAGGTAACATAGAGTGTCAATTTACAGGG		1545
TA36-3-c	TTGAGTTGTGGACTATAATATATATGTGAGTTAGGTAACATATGGTGTCAATTTACAGAG		1522
TA30-37	TTTGGAAGATTATTCAGGCTAGATTTTCATCAATTACTGCCACGAACTACCTTGCACTTGG		1599
TA37-19	TTTGGAAGATTATTCAGGCTAGATTTTCATCAATTACTGCCACGAACTACCTTGCACTTGG		1599
PI615522	TTTGGAAGATTATTCAGGCTAGATTTTCATCAATTACTGCCACGAACTACCTTGCACTTGG		1599
TA36-3-b	TTTGGAAGATTATTCAGGCTAGATTTTCATCAATTACTGCCACGAACTACCTTGCGATTGG		1605
TA36-3-c	TTTGGAAGATTATTCAGGCTAGAGCTCACAATTACTGCCACGAACTATCT---GCTTGT		1579

TA30-37	GCTTTCTTGGATTGTCTTCCTTGGTGTTTATTCTTTATTTTGGTCGGAAGGAAATAGAAG	1659
TA37-19	GCTTTCTTGGATTGTCTTCCTTGGTGTTTATTCTTTATTTTGGTCGGAAGGAAATAGAAG	1659
PI615522	GCTTTCTTGGATTGTCTTCCTTGGTGTTTATTCTTTATTTTGGTCGGAAGGAAATAGAAG	1659
TA36-3-b	GCTTTGTTGGATTGTCTTCCTTGGTGTTTATTCTTTATTTTGGTCGGAAGGAAATAGAAG	1665
TA36-3-c	CCCTTGTTGGATTGTCTTCCTCGGTGTTTATTCTTTATTATGGTCGGAAGGAAATAGAAG	1639
TA30-37	CAGATCACATTGGAGTGCTTCTGATGGCTTCTGCTGGATACGACCCGCGAGTTGCACCTC	1719
TA37-19	CAGATCACATTGGAGTGCTTCTGATGGCTTCTGCTGGATACGACCCGCGAGTTGCACCTC	1719
PI615522	CAGATCACATTGGAGTGCTTCTGATGGCTTCTGCTGGATACGACCCGCGAGTTGCACCTC	1719
TA36-3-b	CAGATCACATTGGAGTGCTTCTGATGGCTTCTGCTGGATACGACCCGCGAGTTGCACCTC	1725
TA36-3-c	CAGATCACATTGGAGTGCTTCTGATGGCTTCTGCTGGATACGACCCGCGAGTTGCACCTC	1699
TA30-37	AAGTATATGACAAGCTTGCAAAGCCACTGGGCGACTGGAAGTGTGTTAGCAACTCATCCAT	1779
TA37-19	AAGTATATGACAAGCTTGCAAAGCCACTGGGCGACTGGAAGTGTGTTAGCAACTCATCCAT	1779
PI615522	AAGTATATGACAAGCTTGCAAAGCCACTGGGCGACTGGAAGTGTGTTAGCAACTCATCCAT	1779
TA36-3-b	AAGTATATGACAAGCTTGCAAAGCCACTGGGCGACTGGAAGTGTGTTAGCAACTCATCCAT	1785
TA36-3-c	AAGTATATGACAAGCTTGCAAAGCCACTGGGAGACTGGAAGTGTGTTAGCAACTCATCCAT	1759
TA30-37	TTGCAAGAATGAGAGCAAAGTTGTTAGCTCGAGCTGATGTTATGAAGGAAGCAGATAAGA	1839
TA37-19	TTGCAAGAATGAGAGCAAAGTTGTTAGCTCGAGCTGATGTTATGAAGGAAGCAGATAAGA	1839
PI615522	TTGCAAGAATGAGAGCAAAGTTGTTAGCTCGAGCTGATGTTATGAAGGAAGCAGATAAGA	1839
TA36-3-b	TTGCAAGAATGAGAGCAAAGTTGTTAGCTCGAGCTGATGTTATGAAGGAAGCAGATAAGA	1845
TA36-3-c	TTGCAAGAATGAGAGCAAAGTTGTTAGCTCGAGCTGATGTTATGAAGGAAGCAGATAAGA	1819
TA30-37	TATACAATGAAGTTGTAGCAGGACGTGCAATTCAAGGTCTTCAGTAA	1886
TA37-19	TATACAATGAAGTTGTAGCAGGACGTGCAATTCAAGGTCTTCAGTAA	1886
PI615522	TATACAATGAAGTTGTAGCAGGACGTGCAATTCAAGGTCTTCAGTAA	1886
TA36-3-b	TATACAATGAAGTTGTAGCAGGACGTGCAATTCAAGGTCTTCAGTAA	1892
TA36-3-c	TATACAATGAAGTTGTAGCAGGACGTGCAATTCAAGGTCTTCAGTAA	1866

Fig. S2 Alignment of nucleotide sequences of TA-30-37-p5, TA-37-19-p3 and two TA-36-3-p5 *Rfl-Omal* alleles. The nucleotide sequence of PI 615522 *rfl-Omal* corresponds to DDBJ/EMBL/GenBank accession LC085628. Numbering of the nucleotide sequences starts at the first nucleotide of their initiation codons. Dashes are incorporated for maximum alignment. Red letters denote introns. Primer sequences are identified as yellow letters. Single nucleotide polymorphisms in the exons are shown as blue letters.