SUPPLEMENTARY DATA

Transfection of plant mitochondria and *in organello* gene integration

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nad2-5 ➡

GTACAAAGCTTAGCGGCGAATTTCAAACTTGTGGGGCCCTATCTATTCCATCTCTCGAGCCCCGAAGAAAACCCCCTACCCTTCGGACTCC
ATATATCTTTTGACTCTATATATGTGGGCACCTGATATCTATGAGGGTTCACCCACCCCGGTTACAGCATTCCTTTCTATTGCGCCTAAAA
TCTCTATTTCTGCTAATATTTCACGTGTTTCTATTTATGGTTCTTATGGAGCTACATTGCAACAAATCTTCTTTTTCTGCAGCATTGCTTC
TATGATCTTAGGAGCACTGGGCCGCCATGGCCCAAACGAAAGTAAAAAGACTTCTAGCTCATAGTTCAATTGGACATGTAGGTTATATTCG
TACTGGTTTCTCATGTGGAACCATAGAAGGAATTCAATCACTACTAATTGGTATCTTTATTTATGCATCAATGACGATAGATGCATTCGCC
ATAGTTTTAGCATTACGGCAAACCCGTGTCAAATATATAGCTGATTTGGGCGCTCTAGCCAAAACGAATCCTATTTTGGCTATTACCTTCT
CCATTACTATGTTCTCATACGCAGGAATACCCCCGTTAGCCGGCTTTTGTAGCAAATTCTATTTGTTCTTCGCCGCTTTGGGTTGTGGGGC
TTACTTCCTAGCCCCAGTGGGAGTAGTGACTAGCGTTATAGTCGTTGGGCGGCCGGAAGGTTGCCACGAGTAAGTAAGTTTGGGGGACCGA
AGGCAGTTCTCCGTGCACCGGACACGTAGCTTACCGAATCAGTTGCGACACGGATGGGAATGCATGCTACGAAAGATAGGGTCGAGTCTGA
TACATCAACCGTCTACTCAATATCCTTGTACGAGTCCACAATGACTACACGAGATGAACCTTGGTTTGGTGAATTGAAGTTGGCCTTAGGT
GTAATAGGACTCCCAGTTACTGCGCGCGATCGTATACTGAGGTGCTCCCCGCCGGTTGTTGGAACGACGCGAGCCGGGCCGGGTCTCGATT
CAGAAAGATGAAGGGCCCAAAAGTCTAAATAGGGGGTGCAAAATTCCCCATCTCATTGGGGGCGGAAAACGAATCGACATCTCGATGTGAT
ACAGCCCTTTCGATTTTAGTTGGGAAAGAACGGCGAAGTCCATCCGAACCGTCCAATGAAGAATAAGAGGAGAGCAAAGCGCCAATGGCGC
GCGAAGCGCATGCGGAACGGGCACGGAGAAAAAGAAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCCTTCGCTTCCTGGGCCCAAAGCAGT
GCAGTCTTTCCTGGCCAAATCAAGGATTTGGGGCTTCTTGCTACGCTACAACACTATAGAAATCCATTTTTCTTAGTAATATATATGAATA
GAAAGATAGATCCATCCATCTATCCTATCCGATTTCTATTTTGGTTATCTAAAAAAGAATCGATTTCATTCAACCTTTGATTCAAAGAACT
GCGCTTAGCCCCCCCGCCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAGCCG
GGAAGGGGCCTAGAAGTGCCTACTACTACACCACACTACACTTGGCTCTACACATTTACAGAGCTAACCCCTGTCCAGTGCCTGGCAGAGC
TAAGGGGGCTTCAATCCTTACTCTTTATCCCCATCTTCGCCCAGGCTTAACGGGGCCTTTACTTATTCAGGGGGGAGAGTGGAGCCTCGAA
AAGCACTGTAGAGAGGAAGATCCTTGGCCCCTCTTCATTCTCTACAGGGTTCCAAACCTTTCTTCAACATAGGTGACAACGAGCCAGGCAG
AGATGGAAGAGATCAAACACGGGAATAAGAAGCAAGCTCGCCTTCCTTTTTGATCATTTTGATAGAGGGGGATGAAGAAAGTGGACAAAAC
AGACTCGCATTTCTCATCGAACAAATACAGGAAAAGAATCATATTGAAAACGCTCCTAACCCAACCCCTTCCTTCGTAGAGCCCGTGTATT
GTAAGTGATCCGAACCTGCCCGGAGCGAGCCTCCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGGGCAACTATCTCCTGCGGTTCG
GAGAGGACTCAGCTGTTAGTTAGTACCCCCTTGGTTTCGGGGTGGACCTTTTCACTCTATTTTATTATATACGCTTAGCGAAAAGAATGTT
TTTTGATACACCTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCGTTTCTAGATTGCT

nad2-3 ⬅

Supplementary Figure S1. Sequence of the PCR product amplified in this work from potato mitochondrial DNA using primers nad2-5 and nad2-3. Sequence of the nad2-5 direct primer and complementary sequence of the nad2-3 reverse primer are boxed. The large insertion in *nad2* intron 4, as compared to the sequence with the accession number X93575, is in underlined bold. The *Sph*I sites used for insertion of the partial *gfp* sequence are in underlined blue bold.

DR-5 ➡

AGCAA**GAGCTC**ATACCGCTCCGTTAGGTACTAATGCTTCTACCTATCACCCTCCGGGTGAGTTTGAGAGCTGTGTTTTTTCCAACGTTA
ATAGCATTCCGCGAGAAAAGAGAAAAGTCATCTACTGATGTTGTCAGCGGAGTCCCTCGTCCATCCATGTATGAATAGCGGTATCCCCC
ATTTTGGACAGTGATGAGGTAGTCGACGCAATTTGCATGTGTATTTGCGTTCGGCTTTGCTACTTTCCTTCTAGACTATAAAAGAATGT
CCGCGGAAGGGAATAGTCTACGTGGCCCGGGCCCGGGGTAGTCTTTCAATTCCTTTATCGGGTGGGAGAGTTTAGAACCTGTTAAGCCA
ATAGCTGCAGCTTTAGTCACACTAGCTACATCAGTGGATCATGGATTTAGCATACCACCTCAGAATAGTCTACGTGGCCCCTACTTTTA
TTTTACTACTTTTTTTTCCAGTAATGCAGACAGCCCTTTTTAAAGCGCTAGGCCGGGCAGTTGGTACGAAAACAGAACCATTAGTGGAG
TAAGATCCCGATCAAAGCAGAGCGGTCTAATCGAAATAATCATATCTAAGAGCAGGCAGGCACACGACTGGATATCAAAGGTGGGGCTC
CCCTCCTCTACTCTACTCTACTCTACTAAATGAAATGAAATAGTATTTGTATTTGGGTCGTCTTTGTGTTCGATTCGAATAGAAGCGCC
ATTGTCATCCGCTGCAGTTCTTCATAGTCCGTCCTAGTAAGCTGGTAGGTTGGTGGATGTGAACATAAACTCCTCATATTTCCTACTGT
TGCTTCCTGTATAAAGGAAGAGTTGTCAGACAATGATACTCTTTCCAAATCTGCAATCTTCGTCGTTGTAATGCCTCAGTCATCAATAG
TAGATAGTTGCTCAACTATGCAATAAGGATTTTCCTCTCCTCACAGATTGGAGGACTTTCACTTGACTCACTAGTGGGTTTTGCCTCGG
GAAACAAGAATATGGATTTGAGCAAGTCTGTTTTCCCATGGGCCTACTACCTGCTATTTTCAAAGCGTAGAGGACCCGCCTTTCTGATC
AAAGTATGCTTCCCTTATGGGCGAAACCACTGAATCGGACGGATCCTTTTTTCTTGGATTGACCAGGCCAGCTTCTCCACCCAATTCTT
TTCTTACGAGACGAGATAGGCACAGTGTCAGGGTCATGTGATGTGAATGGTTTGTTTGATCTGTTTCTTGTCCCTATGGGTTCGATTGG
CAATCAGGATATCGGTCGCTTGGCACTAGTCGAATAGGCGATTCAGTCGTGATAGTGCCATCCCTTGCCCCTTGGAGTGAGTTGAAAGC
ACTCTTCCAGCTCTTGATTCGCGGAATTCATTACGAAGCAAGATTTCATTTCATTTCCATTTACGTCATTAGCAAAACAAGCAAGATTC
ACCTCAGGATACGACGAATTCTGGAACACTTCCTTGATTGATATATGCATTTTCTAGAGCAGGCACCATTGACTGCTTCTTCAACGTCT
ATACTATACGAGACGAGACGAGTTATTGTACGAGTC**AAGCTT**CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTA
ACTTTGATTCCATTCTTTTGTTTGTCTGCCATGATGTATACATTGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCC
ATCTTCTTTAAAATCAATACCTTTTAACTCGATTCTATTAACAAGGGTATCACCTTCAAACTTGACTTCAGCACGTGTCTTGTAGTTCC
CGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAACCTTCGGGCATGGCACTCTTGAAAAAGTCATGCCGTTTCATATGATCTGGG
TATCTTGAAAAGCATTGAACACCATAAGAGAAAGTAGTGACAAGTGTTGGCCATGGAACAGGTAGTTTTCCAGTAGTGCAAATAAATTT
AAGGGTAAGTTTTCCGTATGTTGCATCACCTTCAC**AAGCTT**GCTCCAGACCAAGCTCACTTTACACGGGCTTAGAACTCAACCTGACCC
AACAAGAAAACGGATAGACGCAGCGCAACGGCTTGATAGCCTGACTCAGCAAGAGGCGAGGATGCACGTGACTAACTAAAACAGCTTTC
GCGCTATCAACTTCTTTGATCGAACCTGGCCTGGCGATTGAAGCATTCGAGATATAGAAGAAACTGCCCAAGTCAACCGGATATTCCAA
AGCAAGGGTTATGAATCAAAAGAGAAGTGCCAGCTGGATCTCTGGTTCAAAGTTCAGGGCATGGAATTGATTCGTATGCTCGTTCTCTC
GCTGAGCAGAACCATCTCTGTCTGAGAAGACCCAGTCTCCCAGTGTTTCTAGAAAAGGAAATCCCATTCGTCAACCTAAATGGAAGGGC
AGGTAAGGGAAGGCCAGCAGGAAATTCAGTAAGTAAGGTATCTCAGTGCCAGTGCTCTCCGGTTTCAAGTTGATGCGGGCAGTCGTGGG
GACAGGCAAAGCTGGGATGCCTTACTAGCAGGAATGAAAAGGTATGTATGAACCAACAAAGGTCAAGTAGACGAACACATATCCACTCC
ACTAGAGAAAGCGTCGAACCAGGGAAGAATGAATGGTTAGAACCAGTCAAGGGTGCCGTACTCATGCCTACGGGGAAAGAGACTGATCC
GTATCTGATACGCCTTCACTTCTTTCGAGCTTCTTATTCGATTTCTTAAATGACTTCTTCGGGCCTTACCCTAGACTACCTTCACTTAA
CTTAATGCAGAAGCCAGAGTTCGAGGAAAGCGGTAGTTGGTTATTTCGGGATGAATTTCTATTTCTAAAATGTGGATGAACATAAATGG
ACGGAAACGAGAAAAATGCATAATTCATATAAGTTCATTCGAAAGAATGAGGATTCATGATGTCTCTTCCCAACCATTCTTCCTGAGGA
AGGCACCTCCGATCGAGTCCTTAGCGCC**ATGGATATTCTTCGCAGTGCCTTTGGATGCTTCTCAGAAACCGCCTCTTTCCACTGGCTAT**
ATGAAATTCCAAATGAGACTTCCCTGCGTCGCCAAAGGAATGGGAAACTTCTTGGTTCGAAACCTTTGATCCTATGCCGCCTGTCTGAA
AATAAATATAAGCAAGGCACCTATGACTACGAATCCGAAGGCCAAGCATGCGGATTTGACATGGTTTCCCACTTTTCTCAGAGTCACTG
GGCAATAGAAAAGTATACAAGCACATTTCCAATCTACATAAAGATACCAACCAGGTATCTACTTCAAAGACAGGGCGTCGGCGATCCTC
TACTATTAAGAGACAGATAACAATGGTGCCGACAGAGATGGACAGAACTGCAGAGAATACCTCTCCGGAGAAGTCCTTACATGTCTCAA
ACTAAATAAATCCAACCAATAGTGAAACTGAAACAAAAAACACGTCTCTTACACACGAGAGACACTGTTGAGTCTCTCTATACTATTTT
CAGTATAGAGTCGGGGTACACTCAACAAAGA**CTCGAG**TGTAC

⬅ DR-3

Supplementary Figure S2. Sequence of the *DR-Zm/gfp* construct. The partial *gfp* sequence (green) is flanked by *HindIII* sites (underlined blue bold). Sequence of the DR-5 direct primer and complementary sequence of the DR-3 reverse primer are boxed; the 3' end sequence related to the RI/SI linear episome is in orange, it partially overlaps with orf115-a1 (underlined bold); the 5' end *SacI* site and the 3' end *XhoI* site are in blue bold.

nad2-5 ➡

GTACA**AAGCTT**AGCGGCGAATTTCAAACTTGTGGGGCCCTATCTATTCCATCTCTCGAGCCCCGAAGAAAACCCCCTACCCTTCGGACT
CCATATATCTTTTGACTCTATAT**ATGTGGGCACCTGATATCTATGAGGGTTCACCCACCCCGGTTACAGCATTCCTTTCTATTGCGCCT**
AAAATCTCTATTTCTGCTAATATTTCACGTGTTTCTATTTATGGTTCTTATGGAGCTACATTGCAACAAATCTTCTTTTTCTGCAGCAT
TGCTTCTATGATCTTAGGAGCACTGGCCGCCATGGCCCAAACGAAAGTAAAAAGACTTCTAGCTCATAGTTCAATTGGACATGTAGGTT
ATATTCGTACTGGTTTCTCATGTGGAACCATAGAAGGAATTCAATCACTACTAATTGGTATCTTTATTTATGCATCAATGACGATAGAT
GCATTCGCCATAGTTTTAGCATTACGGCAAACCCGTGTCAAATATATAGCTGATTTGGGCGCTCTAGCCAAAACGAATCCTATTTTGGC
TATTACCTTCTCCATTACTATGTTCTCATACGCAGGAATACCCCCGTTAGCCGGCTTTTGTAGCAAATTCTATTTGTTCTTCGCCGCTT
TGGGTTGTGGGGCTTACTTCCTAGCCCCAGTGGGAGTAGTGACTAGCGTTATAGGTCGTTGGGCGGCCGGAAGGTTGCCACGAGTAAGT
AAGTTTGGGGGACCGAAGGCAGTTCTCCGTGCACCGGACACGTAGCTTACCGAATCAGTTGCGACACGGATGGGAAT**GCATGC**CTAGTT
GAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAACTTTGATTCCATTCTTTTGTTTGTCTGCCATGATGTATACATTGTGT
GAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTAACAAGGGT
ATCACCTTCAAACTTGACTTCAGCACGTGTCTTGTAGTTCCCGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAACCTTCGGGCA
TGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGTGACAAGTGTT
GGCCAAGGAACAGGTAGTTTTCCAGTAGTGCAAATAAATTTAAGGGTAAGTTTTCCGTATGTTGCATCACCTTCAC**GCATGC**GGAACGG
GCACGGAGAAAAAGAAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCCTTCGCTTCCTGGGCCCAAAGCAGTGCAGTCTTTCCTGGCCAA
ATCAAGGATTTGGGGCTTCTTGCTACGCTACAACACTATAGAAATCCATTTTTCTTAGTAATATATATGAATAGAAAGATAGATCCATC
CATCTATCCTATCCGATTTCTATTTTGTTATCTAAAAAAGAATCGATTTCATTCAACCTTTGATTCAAAGAACTGCGCTTAGCCCCCCC
GCCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAGCCGGGAAGGGGCCTAG
AAGTGCCTACTACTACACCACACTACACTTGGCTCTACACATTTACAGAGCTAACCCCTGTCCAGTGCCTGGCAGAGCTAAGGGGGCTT
CAATCCTTACTCTTTATCCCCATCTTCGCCCAGGCTTAACGGGGCCTTTACTTATTCAGGGGGGAGAGTGGAGCCTCGAAAAGCACTGT
AGAGAGGAAGATCCTTGGCCCCTCTTCATTCTCTACAGGGTTCCAAACCTTTCTTCAACATAGGTGACAACGAGCCAGGCAGAGATGGA
AGAGATCAAACACGGGAATAAGAAGCAAGCTCGCCTTCCTTTTTGATCATTTTGATAGAGGGGGATGAAGAAAGTGGACAAAACAGACT
CGCATTTCTCATCGAACAAATACAGGAAAAGAATCATATTGAAAACGCTCCTAACCCAACCCCTTCCTTCGTAGAGCCCGTGTATTGTA
AGTGATCCGAACCTGCCCGGAGCGAGCCTCCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGGGCAACTATCTCCTGCGGTTCGG
AGAGGACTCAGCTGTTAGTTAGTACCCCCTTGGTTTCGGGGTGGACCTTTTCACTCTAT**TTTATTATATACGCTTAGCGAAAAGAATGT**
TTTTTGATACACCTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCGTT**TCTAGA**TTGCT

nad2-3 ⬅

Supplementary Figure S3. Sequence of the *nad2-St/gfp* construct. The partial *gfp* sequence (green) is flanked by *SphI* sites (underlined blue bold). Sequence of the nad2-5 direct primer and complementary sequence of the nad2-3 reverse primer are boxed; *nad2* exons 4 and 5 are in underlined bold; the 5' end *SacI* site and the 3' end *XhoI* site are in blue bold.

a

gfp_int3 ➡

CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAG**TTAA**AGTAAAGGCTCGACGAAGGGAGGGAGGTGCGGCGGGGG
AAGGAAAACGCTTTCGGAGATCGAGATTTTTTTTTCATCGAAAACGAAGAAGGCCGAGGATGGCCTACGGTGCGTCTTATCTGAAG
GGAACACGCTTTTTTGACCGCCGTGGTATGATTGCCGGGCCCTCTCCTTACAGTCAAGTGGCTTTCAGCTCCTCTCCTCGTTCCGC
CCTTCCTATTGGGATAGCAGCCTTCGGGCTTTGCCTGCCCTTTCTAATAAAAAATTCCGGCTCGGCCCGGGAAAGCGCTGGCAACA
ACTGAAAGGAAGGGGTCCATGTAGCTGCTGTGTCCGCCCCCTTCTTAGTCAATGGGGCACAGCAGGTTCGGCATCTACTACAAAAG
AGAGAATCCACTTCAGATAACCACGTCTCTGCTAGGCAAGCTTGCT

nad2St_inv ⬅

b

gfp_int3 ➡

CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAG**TTAA**AGGAAAGGCTCGACGAAGGGAGGGAGGTGCGGCGGGGG
AAGGAAAACGCTTTCGGAGATCGAGATTTTTTTTTCATCGAAAACGAAGAAGGCCGAGGATGGCCTACGGTGCGTCTTATCTGAAG
GGAACACGCTTTTTTGACCGCCGTGGTATGATTGCCGGGCCCTCTCCTCGTTCCGCCCTTCCTATTGGGATAGCTGCCTTCGGGCT
TTGCCTGCCCTTTATAATAAAAAATT

nad2Nt_inv ⬅

Supplementary Figure S4. Sequences of the inverse PCR products obtained with *MseI*-digested/religated DNA samples from import/recombination assays with the *nad2-St/gfp* construct and isolated potato (a) or tobacco (b) mitochondria. The *gfp* fragment (green) is followed by the religated *MseI* site (underlined blue bold) and the mtDNA-specific sequence not present in *nad2-St/gfp*. Sequence of the gfp_int3 direct primer and complementary sequences of the nad2St_inv and nad2Nt_inv reverse primers are boxed.

a

ex2St ➡

GATAACCACGTCTCTGCTAGGCAGCGTGTGGAATGGCCGAGAGCGGACCTTTTTGGATATATAATCCAAGTCGAGAGTAGAGTTACAG
GAAAAGCCGTCTGATGGAAAACAACTTTCACGTTCGGTTCAGAGAGCACTTTTTTTCGTTGAGAATTCCTCGTTCCCTTTCGTGTGAAT
TCCCCAGCGGCGAATTTCAAACTTGTGGGGCCCTATCTATTCCATCTCTCGAGCCCCGAAGAAAACCCCCTACCCTTCGGACTCCATA
TATCTTTTGACTCTATATATGTGGGCACCTGATATCTATGAGGGTTCACCCACCCCGGTTACAGCATTCCTTTCTATTGCGCCTAAAA
TCTCTATTTCTGCTAATATTTCACGTGTTTCTATTTATGGTTCTTATGGAGCTACATTGCAACAAATCTTCTTTTTCTGCAGCATTGC
TTCTATGATCTTAGGAGCACTGG-CCGCCATGGCCCAAACGAAAGTAAAAAGACTTCTAGCTCATAGTTCAATTGGACATGTAGGTTA
TATTCGTACTGGTTTCTCATGTGGAACCATAGAAGGAATTCAATCACTACTAATTGGTATCTTTATTTATGCATCAATGACGATAGAT
GCATTCGCCATAGTTTTAGCATTACGGCAAACCCGTGTCAAATATATAGCTGATTTGGGCGCTCTAGCCAAAACGAATCCTATTTTGG
CTATTACCTTCTCCATTACTATGTTCTCATACGCAGGAATACCCCCGTTAGCCGGCTTTTGTAGCAAATTCTATTTGTTCTTCGCCGC
TTTGGGTTGTGGGGCTTACTTCCTAGCCCCAGTGGGAGTAGTGACTAGCGTTATAGGTCGTTGGGCGGCCGGAAGGTTGCCACGAGTA
AGTAAGTTTGGGGGACCGAAGGCAGTTCTCCGTGCACCGGACACGTAGCTTACCGAATCAGTTGCGACACGGATGGGAATGCATGCCT
AGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAACTTTGATTCCATTCTTTTGTTTGTCTGCCATGATGTATACAT
TGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTAAC
AAGGGTATCACCTTCAAACTTGACTTCAGCACGTGTCTTGTAGTTCCCGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAACCT
TCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGTGA
CAAGTGTTGGCCAAGGAACAGGTAGTTTTCCAGTAGTGCAAATAAATTTAAGGGTAAGTTTTCCGTATGTTGCATCACCTTCAC

gfp_int5 ⬅

b

gfp_int3 ➡

CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAACTTTGATTCCATTCTTTTGTTTGTCTGCCATGATGTATAC
ATTGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTA
ACAAGGGTATCACCTTCAAACTTGACTTCAGCACGTGTCTTGTAGTTCCCGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAAC
CTTCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGT
GACAAGTGTTGGCCAAGGAACAGGTAGTTTTCCAGTAGTGCAAATAAATTTAAGGGTAAGTTTTCCGTATGTTGCATCACCTTCACGC
ATGCGGAACGGGCACGGAGAAAAAGAAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCCTTCGCTTCCTGGGCCCAAAGCAGTGCAGTC
TTTCCTGGCCAAATCAAGGATTTGGGGCTTCTTGCTACGCTACAACACTATAGAAATCCATTTTTCTTAGTAATATATATGAATAGAA
AGATAGATCCATCCATCTATCCTATCCGATTTCTATTTTG-TTATCTAAAAAAGAATCGATTTCATTCAACCTTTGATTCAAAGAACT
GCGCTTAGCCCCCCCGCCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAG
CCGGGAAGGGGCCTAGAAGTGCCTACTACTACACCACACTACACTTGGCTCTACACATTTACAGAGCTAACCCCTGTCCAGTGCCTGG
CAGAGCTAAGGGGGCTTCAATCCTTACTCTTTATCCCCATCTTCGCCCAGGCTTAACGGGGCCTTTACTTATTCAGGGGGGAGAGTGG
AGCCTCGAAAAGCACTGTAGAGAGGAAGATCCTTGGCCCCTCTTCATTCTCTACAGGGTTCCAAACCTTTCTTCAACATAGGTGACAA
CGAGCCAGGCAGAGATGGAAGAGATCAAACACGGGAATAAGAAGCAAGCTCGCCTTCCTTTTTGATCATTTTGATAGAGGGGGATGAA
GAAAGTGGACAAAACAGACTCGCATTTCTCATCGAACAAATACAGGAAAAGAATCATATTGAAAACGCTCCTAACCCAACCCCTTCCT
TCGTAGAGCCCGTGTATTGTAAGTGATCCGAACCTGCCCGGAGCGAGCCTCCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGG
GCAACTATCTCCTGCGGTTCGGAGAGGACTCAGCTGTTAGTTAGTACCCCCTTGGTTTCGGGGTGGACCTTTTCACTCTATTTTATTA
TATACGCTTAGCGAAAAGAATGTTTTTTGATACACCTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCGTTACTACTA
GCAATGACTTCCTCTTTCATTACTTCATTCTTT

ex3St ⬅

Supplementary Figure S5. Sequence of the recombined region resulting from the integration of the imported *nad2-St/gfp* construct into the potato mitochondrial genome. The partial *gfp* sequence (green) has been amplified by PCR together with its 5' flank (a) or 3' flank (b); the marker motifs used to distinguish the origin of the sequences are highlighted in orange, with the specific positions in underlined purple when they fit the potato mtDNA sequence or in underlined red when they correspond to the *nad2-St/gfp* construct; the *SphI* sites flanking the *gfp* sequence are in underlined blue bold. Sequences of the ex2St and gfp_int3 direct primers, and complementary sequences of the gfp_int5 and ex3St reverse primers, are boxed.

a

ex2Nt ➡

CTTTTTTCGTTGAGAATTCCTCGTTCCCTTTCGTGTGAATTCCCCAGCGGCGAATTCAAAACTTGTGGGGCCCTATCTATTCCATCTC
TCGAGCCCCGAAGAAAACCCCCTACCCTTCGGACTCCATATATCTTTTGACTCTATATATGTGGGCACCTGATATCTATGAGGGTTCA
CCCACCCCGGTTACAGCATTCCTTTCTATTGCGCCTAAAATCTCTATTTCTGCTAATATTTCACGTGTTTCTATTTATGGTTCTTATG
GAGCTACATTGCAACAAATCTTCTTTTTCTGCAGCATTGCTTCTATGATCTTAGGCG/AGCACTGGCCGCCATGGCCCAAACGAAAGTA
AAAAGACTTCTAGCTCATAGTTCAATTGGACATGTAGGTTATATTCGTACTGGTTTCTCATGTGGAACCATAGAAGGAATTCAATCAC
TACTAATTGGTATCTTTATTTATGCATCAATGACGATAGATGCATTCGCCATAGTTTTAGCATTACGGCAAACCCGTGTCAAATATAT
AGCTGATTTGGGCGCTCTAGCCAAAACGAATCCTATTTTGGCTATTACCTTCTCCATTACTATGTTCTCATACGCAGGAATACCCCCG
TTAGCCGGCTTTTGTAGCAAATTCTATTTGTTCTTCGCCGCTTTGGGTTGTGGGGCTTACTTCCTAGCCCCAGTGGGAGTAGTGACTA
GCGTTATAGGTCGTTGGGCGGCCGGAAGGTTGCCACGAGTAAGTAAGTTTGGGGGACCGAAGGCAGTTCTCCGTGCACCGGACACGTA
GCTTACCGAATCAGTTGCGACACGGATGGGAATGCATGCCTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAAC
TTTGATTCCATTCTTTTGTTTGTCTGCCATGATGTATACATTGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCA
TCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTAACAAGGGTATCACCTTCAAACTTGACTTCAGCACGTGTCTTGTAGTTCC
CGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAACCTTCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGG
GTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGTGACAAGTGTTGGCCAAGGAACAGGTAGTTTTCCAGTAGTGCAAATAAAT
TTAAGGGTAAGTTTTCCGTATGTTGCATCACCTTCAC

⬅ gfp_int5

b

gfp_int3 ➡

CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAACTTTGATTCCATTCTTTTGTTTGTCTGCCATGATGTATAC
ATTGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTA
ACAAGGGTATCACCTTCAAACTTGACTTCAGCACGTGTCTTGTAGTTCCCGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAAC
CTTCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGT
GACAAGTGTTGGCCAAGGAACAGGTAGTTTTCCAGTAGTGCAAATAAATTTAAGGGTAAGTTTTCCGTATGTTGCATCACCTTCACGC
ATGCGGAACGGGCACGGAGAAAAAGAAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCCTTCGCTTCCTGGGCCCAAAGCAGTGCAGTC
TTTCCTGGCCAAATCAAGGATTTGGGGCTTCTTGCTACGCTACAACACTATAGAAATCCATTTTTCTTAGTAATATATATGAATAGAA
AGATAGATCCATCCATCTATCCTATCCGATTTCTATTTTGTTATCTAAAAAAGAATCGATTTCATTCAACCTTTGATTCAAAGAACTG
CGCTTAGCCCCCCCGCCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAGC
CGGGAAGGGGCCTAGAAGTGCCTACTACTACACCACACTACACTTGGCTCTACACATTTACAGAGCCAACCCCTGTCCAGTGCCTGGC
AGAGCTAAGGGGGCTTCAATCCTTACTCTTTATCCCCATCTTCGCCCAGGCTTAACGGGGCCTTTACTTATTCAGGGGGGAGAGTGGA
GCCTCGAAAAGCACTGTAGAGAGGAAGATCCTTGGCCCCTCTTCATTCTCTACAGGGTTCCAAACCTTTCTTCAACATAGGTGACAAC
GAGCCAGGCAGAGATGGAAGAGATCAAACACGGGAATAAGAAGCAAGCTCGCCTTCCTTTTTGATCATTTTGATAGAGGGGGATGAAG
AAAGTGGACAAAACAGACTCGCATTTCTCATCGAACAAATACAGGAAAAGAATCATATTGAAAACGCTCCTAACCCAACCCCTTCCTT
CGTAGAGCCCGTGTATTGTAAGTGATCCGAACCTGCCCGGAGCGAGCCTCCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGGG
CAACTATCTCCTGCGGTTCGGAGAGGACTCAGCTGTTAGTTAGTACCCCCTTGGTTTCGGGGTGGACCTTTTCACTCTATTTTATTAT
ATACGCTTAGCGAAAAGAATGTTTTTTGATACACCTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCGTTACTACTAG
CAATGACTTCCTCTTTCATTACTT

⬅ ex3Nt

Supplementary Figure S6. Sequence of the recombined region resulting from the integration of the imported *nad2-St/gfp* construct into the tobacco mitochondrial genome. The partial *gfp* sequence (green) has been amplified by PCR together with its 5' flank (a) or 3' flank (b); the marker motifs used to distinguish the origin of the sequences are highlighted in orange, with the specific positions in underlined purple when they fit the tobacco mtDNA sequence or in underlined red when they correspond to the *nad2-St/gfp* construct; the position fitting either the tobacco mtDNA sequence or that of the *nad2-St/gfp* construct is circled; the *SphI* sites flanking the *gfp* sequence are in underlined blue bold. Sequences of the ex2Nt and gfp_int3 direct primers, and complementary sequences of the gfp_int5 and ex3Nt reverse primers, are boxed.