

SUPPLEMENTARY DATA

Transfection of plant mitochondria and *in organello* gene integration

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nad2-5 →

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GTACAAGCTTAGCGGCGAATTTCAAACTTGTGGGGCCCTATCTATTCCATCTCTCGAGCCCCGAAGAAAACCCCTACCCCTCGGACTCC
ATATACTTTTGACTCTATATATGTGGGCACCTGATATCTATGAGGGTTCACCCACCCCGGTACAGCATTCCCTTTCTATTGCCCTAAAA
TCTCTATTTCTGCTAATATTTCACGTGTTCTATTTATGGTTCCTATGGAGCTACATTGCAACAAATCTTCTTTTCTGCAGCATGCTTC
TATGATCTTAGGAGCACTGGGCCGCCATGGCCCAAACGAAAGTAAAAAGACTTCTAGCTCATAGTTCAATTGGACATGAGGTTATATTCG
TACTGGTTTCTCATGTGGAACCATAGAAGGAATTCAATCACTACTAATTGGTATCTTTATTTATGCATCAATGACGATAGATGCATTCGCC
ATAGTTTTAGCATTACGGCAAACCCGTGTCAAATATATAGCTGATTTGGGCGCTCTAGCCAAAACGAATCCTATTTGGCTATTACCTTCT
CCATTACTATGTTCTCATACGCAGGAATACCCCGTTAGCCGGCTTTGTAGCAAATCTATTTGTTCTTCGCCGCTTGGGTGTGGGGC
TTACTTCTAGCCCCAGTGGGAGTAGTACTAGCGTTATAGTCGTTGGGGGGCCGGAAGTTGCCACGAGTAAGTAAGTTGGGGGACCGA
AGGCAGTTCTCCGTGCACCGGACACGTAGCTTACCGAATCAGTTGCGACACGATGGGAATGCATGCTACGAAAGATAGGGTCGAGTCTGA
TACATCAACCGTCTACTCAATATCCTTGTACGAGTCCACAATGACTACACGAGATGAACCTTGGTTTGGTGAATTGAAGTTGGCCTTAGGT
GTAATAGGACTCCAGTTACTGCGCGGATCGTATACTGAGGTGCTCCCCCGGTTGTTGGAACGACGCGAGCCGGGCGGGTCTCGATT
CAGAAAGATGAAGGGCCAAAAGTCTAAATAGGGGGTGCAAATTCCCCATCTCATTGGGGCGGAAAACGAATCGACATCTCGATGTGAT
ACAGCCCTTTCGATTTTAGTTGGGAAAGAACGGCGAAGTCCATCCGAACCGTCCAATGAAGAATAAGAGGAGAGCAAAGCGCCAATGGCGC
CGAAGCGCATGCGGAACGGGCACGGAGAAAAAGAGTGTGGAGGAGAAAGCAGCCGAGCTCATTCCTTCGCTTCCCTGGGCCCAAAGCAGT
GCAGTCTTTCTGGCCAAATCAAGGATTTGGGGCTTCTGCTACGCTACAACACTATAGAAATCCATTTTCTTAGTAATATATATGAATA
GAAAGATAGATCCATCCTATCTATCCTATCCGATTTCTATTTTGGTTATCTAAAAAAGAATCGATTTCAATCAACCTTTGATTCAAAGAACT
GCGCTTAGCCCCCGCCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAGCCG
GGAAGGGGCCTAGAAGTGCCTACTACTACCCACACTACACTTGGCTCTACACATTTACAGAGCTAACCCCTGTCCAGTGCCTGGCAGAGC
TAAGGGGGCTTCAATCCTTACTCTTTATCCCATCTTTCGCCAGGCTTAACGGGGCTTTACTTATTTCAGGGGGGAGAGTGGAGCCTCGAA
AAGCACTGTAGAGAGGAAGATCCCTTGGCCCTCTTCAATCTCTACAGGGTTCCAAACCTTTCTTCAACATAGGTGACAACGAGCCAGGCAG
AGATGGAAGAGATCAAACACGGGAATAAGAAGCAAGCTCGCTTCTTTTGGATCATTTTGATAGAGGGGATGAAGAAAGTGGACAAAAC
AGACTCGCATTTCTCATCGAACAAATACAGGAAAAGAAATCATATTGAAACCGTCTTAACCCAAACCCCTTCTTCGTAGAGCCCGTGTATT
GTAAGTGATCCGAACCTGCCCGAGCGAGCCTCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGGGCAACTATCTCTCGCGTTCCG
GAGAGACTCAGCTGTAGTTAGTACCCCTTGGTTTCGGGGTGGACCTTTTCACTCTATTTTATTATATACGCTTAGCGAAAAGAATGTT
TTTTGATACACCTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCGTTCTAGATTGCT
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← 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**AGCTC**ATACCGTCCGTTAGGTA**CTA**ATGCTTCTACCTATCACCTCCGGGTGAGTTTGAGAGCTGTGTTTTTCCAACGTTA
ATAGCATTCGCGAGAAAAGAGAAAAGTCACTACTGATGTTGTCAGCGGAGTCCCTCGTCCATCCATGTATGAATAGCGGTATCCCC
ATTTGGACAGTGTAGGTTAGTCGACGAATTTGCATGTGATTTGCGTTCGGCTTTGCTACTTTCCTTCTAGACTATAAAAGAAATGT
CCGCGGAAGGGAATAGTCTACGTGGCCCGGGCCGGGGTGTCTTTCAATTCCTTTATCGGGTGGGAGAGTTTAAACCTGTAAAGCCA
ATAGTGCAGCTTTAGTCACTAGCTACATCAGTGGATCATGGATTTAGCATACCACCTCAGAAATAGTCTACGTGGCCCTACTTTTA
TTTTACTACTTTTTTTCCAGTAATGCAGACAGCCCTTTTAAAGCGCTAGGCCGGCAGTTGGTACGAAAACAGAACCATAGTGGAG
TAAGATCCCGATCAAAGCAGAGCGGTCTAATCGAAATAATCATATCTAAGAGCAGGCAGGCACACGACTGGATATCAAAGGTGGGGCTC
CCCTCCTTACTTACTTACTTACTTACTAATAAGAAATGAAATAGTATTTGTTATTTGGGTCGTCTTTGTGTTGATTGAAATAGAGCGCC
ATTTGTCATCCGTCAGTTCCTCATAGTCCGTCCTAGTAAGCTGGTAGGTTGGTGGATGTGAACATAAATCCTCATATTTCTACTGT
TGCTTCTGTATAAAGGAAGAGTTGTCAGACAATGATACTCTTCCAAATCTGCAATCTTCGTGTTGTAATGCCTCAGTCATCAATAG
TAGATAGTTGCTCAACTATGCAATAAGGATTTTCTCCTCACAGATTGGAGGACTTTCACTTGACTCACTAGTGGGTTTTGCCTCGG
GAAAACAAGAAATATGGATTTGAGCAAGTCTGTTTTCCATGGGCCACTACCTGCTATTTTCAAAGCGTAGAGGCCCGCTTTCTGATC
AAAGTATGCTTCCCTTATGGGCGAAACCTGAATCGGACGGATCCTTTTTTCTTGGATTGACCAGGCCAGCTTCCACCCAATTCCTT
TTCTTACGAGACGAGATAGGCACAGTGTGAGGTCATGTGATGTGAATGGTTGTTGATCTGTTTCTTGTCCCTATGGGTTGATTGG
CAATCAGGATATCCGTCGCTTGGCACTAGTCGAATAGCGGATTCAGTCGTGATAGTGCATCCCTTGCCTTGGAGTGAGTTGAAAGC
ACTTTCAGACTCTTGATTCGCGGAATTCATTACGAAGCAAGATTTCAATTCATTTCCATTTACGTCATTAGCAAAAACAAGCAAGATTC
ACCTCAGGATACGACGAATTCGGAACACTTCCCTGATGATATATGCATTTTCTAGAGCAGGCACCATTGACTGCTTCTTCAACGCTT
ATACTATACGAGACGAGACGAGTTATTGTACGAGTCA**AGCTT**CTAGTTGAACGC**TTC**CAATGTTGTTGCT**TAATTTGAAGTTA**
ACTTTGATTCATTTCTTTGTTGCTGCCATGATGTATACATTTGTTGAGTTATAGTTGATTTCCAATTTGTTGTTCAAGAATGTTTCC
ATCTTCTTTAAATCAATACCTTTAATCTGATCTTAAACAAGGGTATCACCTTCAAACCTTGACTTCAGCACGTGCTTGTAGTTCC
CGTCATCTTTGAAAATATAGTTCTTTCTGTACATAACCTTCGGGCATGGCACTTTGAAAAGTCATGCCGTTTCATATGATCTGGG
TATCTTGAAGCATTGAACACCATAAGAGAAAGTAGTGACAAGTGTGGCCATGGAACAGGTAGTTTCCAGTAGTGCAAAATAATTT
AAGGGTAAGTTTTCCGATGTTGATCACCTTCA**AGCTT**GCTCCAGACCAAGCTCAC**TTC**ACAGGGCTTAGAACTCAACCTGACCC
AACAAGAAAACGGATAGACGCAGCGCAACGGCTTGATAGCCTGACTCAGCAAGAGGGCAGGATGCACGTGACTAACTAAAACAGCTTTC
CGCTATCAACTTCTTTGATCGAACCTGGCCTGGCGATTGAAGCATTCGAGATATAGAAGAACTGCCAAGTCAACCGGATATTCCAA
AGCAAGGGTTATGAATCAAAGAGAAGTCCAGCTGGATCTCTGTTCAAAGTTCAAGGCATGGAATTGATTCGTATGCTCGTCTCTC
GCTGAGCAGAACCATCTCTGTCTGAGAAGACCCAGTCTCCAGTGTCTTAGAAAAGGAAATCCCATTCGTCAACCTAAATGGAAGGGC
AGGTAAGGGAAGGCCAGCAGGAAATTCAGTAAGTAAGGTATCTCAGTGCCAGTGTCTCCGGTTTCAAGTTGATGCGGGCAGTCTGGG
GACAGGCAAAGCTGGGATGCCTTACTAGCAGGAATGAAAAGGTATGTATGAACCAACAAAGGTCAAGTAGACGAACATATCCACTCC
ACTAGAGAAACGTCGAACAGGGAAGAAATGAATGGTTAGAACCAGTCAAGGGTGCCGTACTCATGCCTACGGGGAAGAGACTGATCC
GTATCTGATACGCCTTCACTTCTTTGAGCTTCTTATTCGATTTCTTAAATGACTTCTTCCGGCCCTACCTTAGACTACCTTCACTTAA
CTTAAATGCAGAAGCCAGAGTTCGAGGAAAGCGGTAGTTGGTTATTTCCGGATGAATTTCTATTTCTAAAATGTGGATGAACATAAATGG
ACGAAAACGAGAAAATGCATAAATTCATATAAGTTCAATTCGAAAGAAATGAGGATTCATGATGTCTCTTCCAACCATTTCTCCTGAGGA
AGGCACCTCCGATCGAGTCTTAGCGCC**ATGGATATCTTCGCAGTGCCTTTGGATGCTTCTCAGAAAACCGCCTCTTTCCACTGGCTAT**
ATGAAATTCCAAATGAGACTTCCCTGCGTCGCCAAAGGAATGGGAAACTTCTTGGTTTCGAAACCTTTGATCCTATGCCGCCCTGCTGAA
AATAAATATAAGCAAGGCACCTATGACTACGAATCCGAAGGCCAAGCATGCGGATTTGACATGGTTTTCCACTTTTTCTCAGAGTCACTG
GGCAATAGAAAAGTATACAGCACATTTCCATCTACATAAAGATACCAACCAGGTATCTACTTCAAAGACAGGGCGTCGGCGATCTC
TACTATTAAGAGACAGATAACAATGGTGCCGACAGAGATGGACAGAACTGCAGAGAATACCTCTCCGGAGAAGTCTTACATGTCTCAA
ACTAAATAAATCCAACCAATAGTGAAC**TGAAACAAAAACA**CGTCTCTTACACAGGAGACACTGTTGAGTCTCTTATACTATTTTT
CAGTATAGAG**TCGGGGTACACTCA**CAAAGAC**CTCGAGTGTAC**

← 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 →

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GTACAAGCTTAGCGGCGAATTTCAAACTGTCGGGCCCTATCTATTCCATCTCTCGAGCCCCGAAGAAAACCCCTACCCTTCGGACT
CCATATATCTTTTGACTCTATATATATGTGGGCACCTGATATCTATGAGGGTTCCACCCACCCCGGTTACAGCATTCCTTTCTATTTGGCGCT
AAAATCTCTATTTCTGCTAATAATTTCACTGTTTCTATTTATGGTTCTTATGGAGCTACATTGCAACAAATCTTCTTTTCTGACGCAT
TGCTTCTATGATCTTAGGAGCACTGGCCGCCATGGCCCAACGAAAGTAAAAGACTTCTAGCTCATAGTTCAATTGGACATGTAGGTT
ATATTCGTACTGGTTTCTCATGTGGAACCATAGAAAGGAATCAATCACTACTAATTTGGTATCTTTATTTATGCATCAATGACGATAGAT
GCATTCGCATAGTTTTAGCATTTACGGCAAACCCGTGTCAAAATATATAGCTGATTTGGGGCTCTAGCCAAACGAATCTATTTGGC
TATTACCTTCTCCATTACTATGTTCTCATACGCAGGAATACCCCGGTTAGCCGGCTTTTGTAGCAATTTCTATTTGTCTTCCGGCTT
TGGGTTGTGGGGCTTACTTCTAGCCCCAGTGGGAGTAGTGACTAGCCTTATAGGTCGTTGGGCGGCCGGAAGTTGCCACGAGTAAGT
AAGTTTGGGGGACCGAAGGCAGTCTCCCGTGCACCGGACAGTAGCTTACCGAATCAGTTGCGACACGGATGGGAATGCATGCCTAGTT
GAACGCTTCCATCTTCAATGTTGTCTAAATTTGAAGTTAACTTTGATTCCATTCTTTTGTGTTGCTGCCATGATGATACATTGTTG
GAGTTATAGTTGATTTCAATTTGTGTCCAAGAATGTTTCCATCTCTTTTAAATCAATGCCTTTTAACTCGATTCTATTAACAAGGGT
ATCACCTTCAAACTTGACTTCAGCACGTGCTTGTAGTTCCCGTATCTTTGAAAATATAGTTCTTCTGTACATAACCTTCCGGCA
TGCACTCTTGAAAAAGTCATGCTGTTTTCATATGATCTGGGTACTTTGAAAAGCATTGAACACCATAAGTAAGAGTAGTGACAAGTGT
GGCCAAGGAACAGGTAGTTTCCAGTAGTCAAATAAAATTAAGGGTAAGTTTCCGTATGTTGCATCACCTTCACGCATGCGAACGG
GCACGGAGAAAAAGAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCTTCCGCTTCTGGGCCAAAGCAGTGCAGTCTTCTTCCGGCAA
ATCAAGGATTTGGGGCTTCTGCTACGCTACAACACTATAGAAATCCATTTTCTTAGTAATATATATGAATAGAAAAGATAGATCCATC
CATCTATCTATCCGATTTCTATTTGTTATCTAAAAAGAATCGATTTCAATCAACCTTTGATTCAAAGAACTGCGCTTAGCCCCCC
GCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAGCCGGGAAGGGCCTAG
AAGTGCCTACTACTACACCACACTACACTTGGCTTACACATTTACAGAGCTAACCCCTGTCAGTGCCTGGCAGAGCTAAGGGGGCTT
CAATCCTTACTCTTTATCCCCATCTTCCGCCAGGCTTAACGGGGCCTTTACTTATTCAGGGGGAGAGTGGAGCCTCGAAAAGCACTGT
AGAGAGGAAGATCCTTGGCCCTTCTCATTTCTTACAGGGTCCAAACCTTTCTTCAACATAGGTGACAACGAGCCAGGCAGAGATGGA
AGAGATCAAACACGGGAATAAGAAGCAAGCTCGCTTCTTTTGTATCATTTGATAGAGGGGATGAAGAAAGTGGACAAAACAGACT
CGCATTTCTCATCGAAACAAATACAGAAAAGAAATCATATTTGAAAACGTCCTAACCCAACCCCTTCTTCTGATAGACCCGTGTATTGTA
AGTGATCCGAACCTGCCCGAGCAGCTCCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGGCAACTATCTCTCGGGTTCCG
AGAGGACTCAGCTGTTAGTATGATACCCCTTGGTTTCCGGGTGACCTTTTCACTCTATTTTATATATAGCTTAGCCGAAAAGAAATGT
TTTTTGTATACCTTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCGTTCTAGATTGCT
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← nad2-3

Supplementary Figure S3. Sequence of the *nad2-Stgfp* 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 →

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CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAAATTTGAAGTTAAAGTAAAGGCTCGACGAAGGGAGGGAGGTGCGCGGGGG
AAGGAAAACGCTTTCGGAGATCGAGATTTTTTTTTTCATCGAAAACGAAGAAGGCCGAGGATGGCCTACGGTGCCTTATCTGAAG
GGAACACGCTTTTTTACCGCCGTTGGTATGATGCGGGGCCCTCTTACAGTCAAGTGGCTTTCAGCTCCTCTCCTCGTTCCGC
CCTTCTATTGGGATAGCAGCTTCCGGCTTTGCCTGCCCTTCTAATAAAAAATTCGGCTCGGCCGGGAAAGCGCTGGCAACA
ACTGAAAGGAAGGGTCCATGTAGCTGCTGTGTCGGCCCTTCTTGTCAATGGGGCACAGCAGGTTCCGCATCTACTACAAAAG
AGAGAATCCACTTCAGATAACCACGTCTCTGCTAGGCAGCTTGCT
```

← *nad2St_inv*

b

gfp_int3 →

```
CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAAATTTGAAGTTAAAGTAAAGGCTCGACGAAGGGAGGGAGGTGCGCGGGGG
AAGGAAAACGCTTTCGGAGATCGAGATTTTTTTTTTCATCGAAAACGAAGAAGGCCGAGGATGGCCTACGGTGCCTTATCTGAAG
GGAACACGCTTTTTTACCGCCGTTGGTATGATGCGGGGCCCTCTCTGTTCCGCCCTTCTTATTGGGATAGCTGCCTCCGGCT
TTGCCTGCCCTTATAATAAAAAATTT
```

← *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-Stgfp* 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-Stgfp*. Sequence of the *gfp_int3* direct primer and complementary sequences of the *nad2St_inv* and *nad2Nt_inv* reverse primers are boxed.

a

ex2St →

```
GATAACCACGTCCTGCTAGGCA GCGTGTGGAATGGCCGAGAGCGGACCTTTTTGGATATATAATCCAAGTCGAGAGTAGAGTTACAG
GAAAAGCCGTCGTGATGGAACAACCTTTACGTTGCGTTGAGAGACACTTTTTGCGTTGAGAATCCTCGTTCCCTTTGCGTGTGAAT
TCCCGAGCGGCGAATTTCAAACCTGTGGGGCCCTATCTATCCATCTCTCGAGCCCCGAAGAAAACCCCTACCCCTCGGACTCCATA
TATCTTTTGGACTCTATATATGTGGGCACCTGATATCTATGAGGGTTCACCCACCCGGTTACAGCATTCCCTTCTATTTGCGCCTAAAA
TCTCTATTTCTGCTAATATTTACGTTGTTCTATTTATGGTCTTATGGAGCTACATTGCAACAATCTTCTTTTCTGACGATTCG
TTCTATGATCTTAGGAGCAC TGG=CGCCATGGCCCAAACGAAAGTAAAAAGACTTCTAGCTCATAGTTCAATTGGACATGTAGGTTA
TATTCGTACTGGTTTCTCATGTGGAACCATAGAAGGAATCAATCACTACTAATTGGTATCTTTATTTATGCATCAATGACGATAGAT
GCATTCGCCATAGTTTTAGCATTACGGCAAACCCGTGTCAAATATATAGCTGATTTGGGCGCTCTAGCCAAAACGAATCCTATTTTGG
CTATTACCTTCTCCATTACTATGTTCTCATACGCAGGAATACCCCGTTAGCCGGCTTTTGTAGCAAATCTATTTTGTCTTCGCGC
TTTGGGTTGTGGGCTTACTTCCTAGCCCCAGTGGGAGTAGTGACTAGCGTTA TAGGTCGTTGGGCGCCGGAAGGTTGCCACGAGTA
AGTAAGTTTGGGGACCGAAGGCAGTTCCTCGTGCACCGACAGCTAGCTTACCGAATCAGTTGCGACACGGATGGGAATGCATGCT
AGTTGAACGCTTCCATCTCAATGTTGTGCTAATTTTGAAGTTAACTTTGATTCCATTCCTTTTGTGTTGCTGCCATGATGTATACAT
TGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTAAC
AAGGGTATCACCTTCAAACCTGACTTCAGCACGTGCTTTGTAGTTCCCGTCATCTTTGAAAAATATAGTTCTTCCCTGTACATAACCT
TCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGTA
CAAGTGTGGCCAAGGAACAGGTAGTTTCCAGTAGTGCAATAAATTTAAGGTAAGTTTTC CGTATGTTGCATCACCTTAC
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← gfp_int5

b

gfp_int3 →

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CTAGTTGAACGCTTCCATCTTCAATGTTGTGCTAATTTTGAAGTTAACTTTGATTCCATTCCTTTTGTGTTGCTGCCATGATGTATA
ATTGTGTGAGTTATAGTTGATTTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTA
ACAAGGGTATCACCTTCAAACCTTGACTTCAGCACGTGCTTGTAGTTCCCGTCATCTTTGAAAAATATAGTTCTTTCTGTACATAAC
CTTCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAGCATTGAACACCATAAGTAAGAGTAGT
GACAAGTGTGTTGGCAAGGAACAGGTAGTTTCCAGTAGTGCAAAATAAATTTAAGGGTAAGTTTCCGATGTTGCATCACCTTACGC
ATGCGGAACGGGCACGGAGAAAAAGAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCCTTCGCTTCTCGGCCCAAAGCAGTGCAGTC
TTTCTGGCCAAATCAAGGATTTGGGGCTTCTTGTCTACGTACAACACTATAGAAATCCATTTTCTTAGTAATATATGAATAGAA
AGATAGATCCATCCATCTATCCTATCCGATTTCTATTTTG=TTA TCTAAAAAAGAATCGATTTCAATCAACCTTTGATTCAAAGAACT
GCGCTTAGCCCCCGCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTTAGTACCCGAAGCACTGGAGTGATCCAGTAG
CCGGGAAGGGCCTAGAAGTGCCCTACTACTACACCACACTACACTTGGCTCTACACATTTACAGAGCTAACCCCTGTCCAGTGCCTGG
CAGAGCTAAGGGGCTTCAATCCTTACTCTTTATCCCCATCTTCGCCAGGCTTAACGGGGCTTTACTTATTCAGGGGGGAGAGTGG
AGCCTCGAAAAGCACTGTAGAGAGGAAGATCCTTGGCCCCCTTCAATCTCTACAGGGTTCCAAACCTTTCTTCAACATAGGTGACAA
CGAGCCAGGCAGAGATGGAAGAGATCAAACACGGGAATAAGAAGCAAGCTCGCCTTCCTTTTGTATCATTGATAGAGGGGGATGAA
GAAAGTGGACAAAACAGACTCGCATTTCTCATCGAACAATAACAGGAAAAGAATCATATTGAAAACGCTCCTAACCCAACCCCTTCT
TCGTAGAGCCCGTGTATTGTAAGTGATCCGAACCTGCCGGAGCGAGCCTCCCATAGAGGCAAGTGAAGTTGGTGAAGCCGTATGATGG
GCAACTATCTCCTCGGTTCCGGAGAGGACTCAGCTGTTAGTTAGTACCCCTTGGTTTCCGGGTGGACCTTTTCACTCTATTTTATTA
TATACGCTTAGCGAAAAGAAATGTTTTTGTATACACCTAGGACATGGATTCATATGAACCAATGGATCGTGACAAGTCGTTACTACTA
GCAA TGACTT CCTCTTTCATTACTTCACTTCTTT
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← ex3St

Supplementary Figure S5. Sequence of the recombined region resulting from the integration of the imported *nad2-Stgfp* 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-Stgfp* 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 →

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CTTTTTTCGTTGAGAATTCCTCGTTCCCTTTCGTGTGAATTCCTCCAGCGGCGAATTCAAAACCTTGTGGGGCCCTATCTATTCCATCTC
TCGAGCCCCGAAGAAAACCCCTACCCTTCGGACTCCATATATCTTTGACTCTATATATGTGGGCACCTGATATCTATGAGGGTTCA
CCCACCCCGGTTACAGCATTCCTTTCTATTGCGCCTAAAACTCTATTCTGCTAATATTTACAGTGTTCCTATTATGTTCTTTATG
GAGCTACATTCGAACAAATCTTCTTTTCTGCAGCATGCTTCTATGATCTTAGCG/ABCACTGGCCGCATGGCCAAACGAAAGTA
AAAAGACTTCTAGCTCATAGTTC AATTGGACATGATAGTTATATTCGTACTGGTTTCTCATGTGGAACCATAGAAGGAATTC AATCAC
TACTAATTTGGTATCTTTATTTATGCATCAATGACGATAGATGCATTCCGCATAGTTTTAGCATACGGCAAACCCGTGTCAAATATAT
AGCTGATTTGGGCCTCTAGCCAAAACGAATCCTATTTTGGCTATACCTTCTCCATTACTATGTCTCATACGCAGGAATACCCCG
TTAGCCGGCTTTTGTAGCAAATTCATTTGTTCTTCGCCGCTTTGGGTTGTGGGGCTTACTTCTAGCCCCAGTGGGAGTAGTGACTA
GCCTTATAGGTTCGTTGGGCGGCCGGAAGTTGCCACGAGTAAGTAAGTTTGGGGACCGAAGGCAGTTCTCCGTGCACCGGACACGTA
GCTTACCGAATCAGTTGCACACGGATGGGAATGCATGCCAGTTGAAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAAC
TTTGATTCATTCCTTTTGTGTTGCTGCCATGATGTATACATTTGTGTGAGTTATAGTTGTATTCCAATTTGTGTCCAAGAATGTTTCCA
TCCTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTAACAAGGGTATCACCTTCAAACCTTGACTTCAGCACGTGTCTTGTAGTTCC
CGTCATCTTTGAAAAATATAGTTCTTTCCTGTACATAACCTTCGGGCATGGCCTCTTGAAAAAGTCATGCTGTTTCATATGATCTGG
GTATCTTGAAAAAGCATTTGAACACCATAAGTAAGAGTAGTGACAAGTGTGGCCAAAGGAACAGGTAGTTTTCCAGTAGTGCAATAAAT
TTAAGGTAAGTTTTCGATGTTGCATCACCTTCAC
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← gfp_int5

b

gfp_int3 →

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CTAGTTGAACGCTTCCATCTTCAATGTTGTGTCTAATTTTGAAGTTAACTTTGATTCATCTTTTGTGTTGCTGCCATGATGTATAC
ATTGTGTGAGTTATAGTTGATTTCCAATTTGTGTCCAAGAATGTTTCCATCTTCTTTAAAATCAATGCCTTTTAACTCGATTCTATTA
ACAAGGGTATCACCTTCAAACCTTGACTTCAGCACGTGCTTGTAGTTCCTCGTCACTTTTGAAAAATATAGTTCTTTCCTGTACATAAC
CTTCGGGCATGGCACTCTTGAAAAAGTCATGCTGTTTCATATGATCTGGGTATCTTGAAAAAGCATTTGAACACCATAAGTAAGAGTAGT
GACAAAGTGTGGCCAAGGAACAGGTAGTTTCCAGTAGTGCAAAATAAATTTAAGGGTAAGTTTCCGTATGTTGCATCACCTTCACGC
ATGCGGGAACGGGCACGGAGAAAAAGAAAGTGTGGAGGAGAAGCAGCCGAGCTCATTCCTTCGCTTCTTGGGCCCAAAGCAGTGACGTC
TTTCTTGGCCAAATCAAGGATTTGGGCTTCTTGTACGCTACAACACTATAGAAATCCATTTTCTTAGTAATATATATGAATAGAA
AGATAGATCCATCCATCTATCCTATCCGATTTCTATTTTGTATCTAAAAAAGAATCGATTTTCATTCACCTTTGATTCAAAGAAGTCG
CGCTTAGCCCCCGCCATGAAACGGCTCTGCTGCAATGGATGGCAGAGGGTCCGTAGTACCCGAAGCACTGGAGTGATCCAGTAGC
CGGAAGGGGCTTAGAAGTGCCTACTACTACACACACTACACTTGGCTTACACATTTACAGAGCCAACCCCTGTCCAGTGCCTGGC
AGAGCTAAGGGGCTTCAATCTTACTCTTTATCCCCATCTTCGCCAGGCTTAACGGGGCTTACTTATTCAGGGGGGAGAGTGGAG
GCCTCGAAAAGCACTGTAGAGAGGAAGATCCTTGGCCCTTTCATTTCTTACAGGGTCCAAACCTTCTTCAACATAGGTGACAAC
GAGCCAGGCAGAGATGGAAGAGATCAAACACGGGAATAAGAAGCAAGCTCGCCTTCTTTTGTATCATTTTGTATAGAGGGGGATGAAG
AAAGTGGACAAAACAGACTCGCATTTCTCATCGAACAATAACAGGAAAAGAATCATATTTGAAAACGCTCCTAACCAACCCCTTCTCTT
CGTAGAGCCCGTGTATTGTAAGTGATCCGAACCTGCCCGGAGCGAGCCTCCCATAGAGGCAAGTGAAGTTGGTGAGCCGTATGATGGG
CAACTATCTCCTGCGGTTCCGAGAGGACTCAGCTGTTAGTTAGTACCCCTTGGTTTCGGGGTGGACCTTTTCACTATTTTATTAT
ATACGCTTAGCGAAAAGAAATGTTTTTGATACACCTAGGACATGGATTCTATATGAACCAATGGATCGTGACAAGTCTTACTACTAG
CAATGACTTCCTCTTTCATTA
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← ex3Nt

Supplementary Figure S6. Sequence of the recombinant region resulting from the integration of the imported *nad2-Stgfp* 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-Stgfp* construct; the position fitting either the tobacco mtDNA sequence or that of the *nad2-Stgfp* 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.