

SUPPLEMENTAL S2. *Triticum aestivum* mitochondrial NADH dehydrogenase subunit I (*nad1*) and subunit 5 (*nad5*) genes involved in trans-splicing

(A) *Triticum aestivum* mitochondrial *nad1* gene, exon 4 (ACCESSION X57966) and transcript unit for *mat-r-nad1e-nad5c* (ACCESSION X57965. (Chapdelaine and Bonen (1991) Cell 65:465-472).

The 3' half *nad1-I4* trans-intron containing the Maturase-Reverse Transcriptase (*mat-r*) reading frame (2134 nt) is underlined. The downstream region (grey letters) is formed by the 3'-half *nad5-I2* intron, the *nad5c* exon and the 5'-half *nad5-I3* intron. The position of primers (P1a, P1b, P2a, P2b, P3a and P3b) used to analyze the branched splicing intermediates are blue highlighted. Exons regions are indicated in red (*nad1d* and *nad5e*) or black (*nad5c*) uppercase letters. C-editing targets throughout the sequence are indicated as red lowercase letters. Ten nucleotides in underlined italics bold letters (yellow highlighted) indicate the limits of the sequences from the co-transcript used for recombinant *Mat1*, *Dx1* and their derivatives used in electroporation experiments. Details on the assembling procedure are described in the Methods section.

(a) *Triticum aestivum* mitochondrial *nad1* gene exon 4 (*nad1d*) transcription unit.

ctcgagaccgctctccgtccatatttaggacgggttagggcgattttttaagaataaaaaccttctgt
cgatttatccacacttccatgacttctagaggaaagctaactgcttgctggctgggagctgtatgagc
ggtaacgtccacgtacggctccgtgagaaggtggacggaaatggccttggtgtacctcactcccg**TCT**
TCAATGGGGTCTGCTCTTTTTTTTTTAGGAGAGTATGCCAATATGATCTTCAATGAGgtgcggggctt
tgcattctgacattcggttgggctttcctctgcgggagcccgcgtcccggcctttt**tg**tgcaataa**accc**
ctccggccgaagactagtgataggtgggtcccgcggagctttcggagaagggtagcctagtgtgtaagc
acagcaatgaaccgcggaaccctcagacgacccttctaagataaggggggagatcc**tcagtagtgg**
tgaccctttgactcttccactgacttatatatgtaccgaatgctcatacgggaaagtgaactcctggg
tctggaacctgggggggttgctccgataaaaaatcctttcttctcgtccactctaggggggtgctggac
acacctgctgagattacaggtgacgggtacaagaatggcggggaagtgaagagtaccgcagcattc
agggatgaatgtagaccatcgggcgggataatcattccggctcctgggagaggtggcgacaccagtc
tgagctgaggaagccagccaattgagtcactgaaacgaccgcaggaggcgcaccctaagcccagctt
ctcggagctgctattgcgaaatacg

(b) *Triticum aestivum* mitochondrial co-transcript containing *mat-r*, *nad1e* and *nad5c* and the 3' half introns *nad1-I4* and *nad5-I2*.

ccgggtccaaacctgctgagctagctaatttttctttacgagatctcggtcttccggaatgattgg
agagagccccgcctcctcttggttgggtgcccgggcccagagatgatgggacta**cttccttaa**gagcct
ttcgttcgggcccggcaggagggccctgatctatcaattgagggagcaaaaaacaggccttgctcccc
cttttttaaatgaagaagaagaaggggtcgaagtttagaccgctcacagtagttctacccatagaaa
agatcatgaaagaggcgatcagaatggtacc**ccgaatcc**atttacgatcccagatttccagacacatcg
cacttccgctcgggtcgaggctgccactcggccctcagacggatcaaagaagagtggggaacctctcg
ctgggttttggaaatcgacatcaggaagtgttttcacaccatcgaccgacatcgattcatctcaatct
tgaaggaagagatcgacgattccaagttcttttac**cc**cactcagaaaaagtttccgcccggagcactc
gtaggggggtgagaagggccctgactccatcccaaacagtgtactactatcggccctac**cagg**caatat
ctacctacacaagctcgatcaggagatagggaggatccggcagaagcagaaattcctcttgtagtga
aaataagatcggttctattaagaataggtcgtcgtattgatgaccaagaaaagtatggaaaagaagca
agcttcaacgctccccaagacaacagagccctcatagtgaggagggtaaagagcatccaacgcaaagc
gacctttcattcccttgtttcgctcgtggcacacccccccacaagcacccccaggcgaaggggagacc
agaaaacgcctttcgttttcccccttcagcggccctagccgccttccttaacaagccctcgagcctc

ctttgcgccgccttctcatagaagccgctggggtgaccccgaaggccgaattcaatggtagagaagg
ctttaataagaatttggccatgagagaccttcttaagtattgcaaagaagggcctgctgatagagc
tgggcggggagggcgatactagttatcaggtcagagagaggcctggcccgtaagctggccccctttaa
agccattccttattaataaggatttgttacgcgcgatatgccgacgacttactactgggaatcgtggg
tgccgtatcttctcatagaaatacaaaaacgtatcaccacttctacaatccgggtctgaacctt
gggtaggctccgcaggatcaacaaccatagctgcacggagtacggtagaattccCGgtacggtcatt
cgggaagtcccccgaggacgactcccatacaattcttgcgagagctggagaagcgtctacgggtaa
gcaccgtatccatataactgcctgccacctacgctccgccatccattccaagtttagggacctaggt
atagtatccctatcaaagagcttacgaaggggatgagcgggaagaggtcgtctactggacgcggttcaa
ctagcggagactcttgaaaagatggactaaaaagtcccccaagttagcgtattatgggggacgctcaa
gcacatccggcaaagatcgagggggatctcgttggtgcatagctcaggtcagagcaaggtgccatcag
gcgttcaacaggcagctctcagatcgggcatgagtgctcctgaagaagaaattgtatactcccttgg
cgggaaggcggcgggggaaggaaggggacactgggcgggatcttccagcagcgaattccccatacagat
agaggcgcctatcaaaaagatactccgaaggcttcgggatcgaggtctcattagccgaagaagacca
ggccaatccacgtggcctcttggaccaacgtcagcagacagagacatagtaaattggcCGcggggcctc
gcgataagtcCTctgtcctactacaggtgctgcgacaacctttaCCAagtcgcaacgattgtcaacta
ccagatccgctggcctatattcaccctagcccacaagcacaatcttcggcgcggaatataatcc
taaagtacCCcaaaagactcaaatatagtcaatcaagaaggtggtaagaccttgctgagttcccaac
agcatagagcttgggaagctcggactcggtaacatccgaacaacgacggagcactcaactacatggt
taataagtagcgatttttagcgaacagggcgtttacatgagattagttgagtaggcttgcttatctgcta
taagatagctagttgtgggcttctgaaaaaaaaaaggctgaaggcttCGctatcgtcctatggcttgt
attgtagtcgtagcttgtagtcggcctccatgcctctttagtcttctaatcctgaggccttttct
cttcattcattttgcggtagttacgcgtcagaaaaatagaaccttccggccccggaagatcgctgct
cgcttctggcgactagcttctaccacaatggctaaagctaccttgaatcaatcaatgaatgaatgat
tcgtaacccccatgggttcgaggaccggttggtcaaaggaaaaggggggtccagattccaggacggag
ccgtatgagggcagagctctcacgtacggttcccttgagaaggggtgtgataaccaccacctatcaggccc
gacgagcgggtccacgagctgcacccactactcaccCGGTCTATGCACATcGCTCTTTCcAGGAGGTTG
GCTGCCTATCCTAGATCTTCCCATTTCcAAAAAGATCCCTTGTTTCGATCTGGTTTAGTATCAAGGTTT
TTcTTTTTCTGTTTcTATATATATGGGTCCGTGCAGCATTTCACGATATCGTTATGATCAATTAATG
GGACTTGGCcGGAAGTGTCTTGCCTCTATCATTAGCTcGGGTAGTCCCGTTTCAGGTGTTTcAGT
CACCTTTCGATGGCTCCCTTAAtgatgtgccaggaagtttcttctgaagggggctactccccgaaaa
tgccccgccccttgctcgtttgtcgttggggattcattgctcgttctgcggtataaagtaacgtagcc
agcctaatttccagaatagggctgcggggcaggaagggttgggttgggtgcaatcttgctcgcacaccct
ctcctccggcgaacctgcgatcgcgcctctaactgaatgctcaactgaggtcgtgtacaacaacctt
aaccgcacaagcctgggctgggctacccecatccctagaggagccgtatgaggcgggaagctccacgt
acggttttgaagcgcagccttccagcaatggggcctagggaccGATATGATGATTGGTTTAGGTAagg
gccccggcctactatgggcacctgtagggattagtgctgagaccgcgatccacaactgacgatg
ggactcacccttgacttgagaatggaagaagggaaacatagcatgtcacaagagcagggcgaggggct
ccgccctacagcagagaggacgcctcgcgagccgggcttggagatgaggccttttcgcgaagccaag
tcaatttcgggcccaccaaacctgcaactgaggaaaagccctatggagtaaggggaagcgtgtacgt
tgtcacactccccgccctccaaaggctagaggacgggcccagacgcagcagagcgcagcggcagga
gcggtatccccacgagcagggggacagggagacggccatctcagggcacatcacgacctacaggcaaca
ccggcgagaccaggaaggaacccgattgggagtcagaggatccatagtagtaccgcagcctcccggac
ttcatattcatcttcttaagaaagggtaagggatctcttcttgcacggaaaaaaaataagctc
cgctgatttgactcggcacaacctaacgatacatccaataccaatgatctgtgcctaccgatacagata
ctcctccaaaaaattgactatataaagag

(B) Sequence of the *T. aestivum nad5* scattered gene (GenBank: AH001278) (Pereira de Souza et al. Plant Cell 3 (12), 1363-1378 (1991). Only the transcript unit containing exons *nad5a* and *nad5b* is presented. The downstream region from *nad5b*, containing the 5'-half of the *trans*-intron *nad5-I2*, is part of the co-transcript *mat-r-nadle-nad5c* (see above). The position of primers P1b and P2B used to analyze the *nad5b/nad5c* branched splicing intermediate are blue highlighted.

```
gttatttcgtacaggctattcaaggtctattggctttattgcttatgtggtacttcgaccgcaagcc
tcgcttatgcaccgagaaagatcgtagataggaaagatctgttatgcaccaacgacggcccttctct
ttacctttatcgtctcacaacctcagtcattgctggcttgaatgctgtctctctctcttttcttctgctcgc
gagagtgaataagaggacgaccaccgcgaggatggaatgagtcggcaaggggatcaacctctt
ctttcagtaaaggccacacattatccttaaatattgggataaaaggactctgaagaaggaaactctct
tcccgtcttgcgtaactgaccactgcaaatcaagtgcgaaagtgccttatatgcttaaacagtttttctc
tcaatgacaggccgcttgaacattgtctgatttttttttaagagactcgatcttATGTATCTACTTAT
TGTCTTTTTGCCTTGTCTCGGTAGTTCGGTAGCCGGTTTTTTCGGACGTTTTCTAGGATCTGAAGGAA
CCGCTATAATGACCACCACGTGCGTTTTCATTTTCTTCGATCTTATCTTTGATTGCTTTTTATGAAGTC
GCACTGGGAGCTAGTGCTTGCTATCTCAGAATAGCTCCATGGATCTCATCGGAAATGTTTGATGCTTC
TTGGGGCTTCTTtggcgaccgtgaagtcaccggatgaattgccgagtagatagatcagatccggacgc
tgcagttgttcgcggtgatacggactcgaccgctcctaccaccctggggatcatagcatgctcgg
gaatcgaggggggacatactggacgtaactactcccgtcgggtggggctctgccgcctgcctttcg
atcgatacacagttgaggaggccgatcacgaacgtgacaggtgtgggagcgatcctgggaaggcaagg
ctaagacggcgccttgcataatgggtagcaagagggcgcttatgccccgacgggtggggccttatgggga
agggccagcccaatagggacagcacacccccactttaagcgcacatctctgtatcgactgaataactc
tatctaaggggtgacgtcgggtggaaccgggtgaaccacgcgagctggttagatgcgtggggcagagggt
cgtagtaccctctttcttgatccagccttttcttcgcttcggtagttaatcacctaaaatccaagg
gaggctggcctgcacgccatacctataccatacagtgccaggcaggcgggtggactcatttttgatt
agggaaaggaagaaggggctaagcacggcagatgccgtacacttgagtggcaaggaagcagagacc
gtacttcttttgcaggcctgttcttacataaggttcccgcagaagatcaagttggtgagccgtgtga
tgggaaaccttcccgcaggttcggagagcactgaagacgaatgagaggttaccaccacatcattgc
aaggggagctcgcctcgattcgcagattggcctgactcgtaattcacttttgactctgtGTTCGATAGC
CTGACCGTAGTGATGTTAATTGTGGTTACATTCATAAGTAGCTTGGTCCATCTTTATTCCATTTCATA
TATGTCGAGGATCCGCATAGCCCCGATTTATGTGTTATTTATCCATTTTTACTTTTTTATGCTAATGTTGGT
GACTGGAGATAACTTCTTCAATTTATCTGGGATGGGAGGGAGTAGGTCTTGCTTCATATTTGTTAATTCATTTCTGGTTA
CACGACTTCAGGCGGATAAAGCTGCTATAAAAGCTATGCTTGTCATCGAGTAGGTGATTTTGGATTAGCTCTTGGGATTTTT
GGTTGTTTTACTCTCTTCAACAGTAGACTTTTTCAACCATTTTTGCTTGTGCTAGTGTCCAGAAATGAATGGATTTTTTG
CAATATGAGATTGAATGCCATAACTCTGATTTGTATTTACTTTTTATTGGTGCTGTTGGGAAATCTGCACAGATAGGATTGC
ATACTTGGTTACCCGATGCAATGGAGGGTCCCACCTCCAGTATCTGCTTTGATTTCATGCAGCTACTATGGTCACTGCTGGCGTT
TTCATGATAGCAAGGTGCTCCCCTTTATTTGAATACTCACCTACGGCTTTGATTGTTATTACTTTTTGCAGGAGCTATGACGTC
ATTCCTTGGCGCAACCACTGGAATATTACAGAACGATCTAAAGAGGGTCATAGCTTATTCAACTGCAGTCAATTAGGCTATA
TGATCTTTGCTTGGCGCATCTCTAACTATTCGGTTAGCGTCTTTCACTTAATGAATCACGCGTTTTTCAAAGCATTACTCTTC
CTGAGTGCGGGTTCCGGTATTTCATGCCATGTCGGATGAGCAAGATATCGGGAAGATGGGGGGCTTGCCCTCCTCTTCTCTT
GACCTATGCCATGATGCTCATGGGCAGCTTATCTCTTATTGGATTTCTTTTCTAACAGGATTTTATTCTAAAGATGTGATCT
TAGAGCTCGCTTACAAAAGTATACCATCAGTGGGAACTTTGCTTTCTGGTTGGGAAGTGTCTCTGTCTTTTCACTTCTTAT
TACTCTTTTCGTTTACTATTTCTAACATTTCTAGTACCAACTAATTCATTCGGGCGAGACAGATTACGATGTCATGATGCGCC
CATTCCTATGGCCATTCTTTAATACTTTTGGCTCTCGGGAGTCTCTTTGTAGGATACTTGGCCAAAgtgtgacctgtagcc
cataagtcagtagtgcgcaagcggctgttctcaccgatacgatcgtacgaggtcacaatttaccacaacgatcatccg
gggtgaacaagaattggggatcggatcgggcgaaattcaccgcaatggctgagatggtcagtcgactccctcccccttctgt
gggggtctggaccctacgagtgagcagaaaaggaggaggaaagaggccctgggtgaaccgtcataataagtgaacaagtga
actttgctgccgcagtagtgagtagtactgaccacccgaggggacggccctgaagcgaaggacaggaacgagcggaaatcaat
gtgtccaatcttggccttgcaccgaccatccaacggaccatggactaaacggccactgcctgaaaggactatgctatgtcc
aggggaccgctgcctccacaaggtacatcttgacatggtggcctataactatccaagaagacactcgaaaaaggaagga
taacaaacctaccgggtggactgcccagctacaagtcctacgacacaggagcgggatctctaaaaagccaaggtcttaggt
ggccaagagggccacttggagacttgggatctcagcaggaaatgtaaggttgtttaaagccggccgataggcgaagagaa
tccaaaagttttgtctgatctgagtaggctcaacatagggaaataccctaaccctgggaaccggggcatataaatccgcttat
ggcattcaccacaagcatacagagacagatggaatgaaagaagaaaaagtactccgcagc
```