



Supplemental Figure S1. Schematic representation of the plasmids used in this study. pSI01, pSI02, pSI03 and pSI04 include Arabidopsis *rbcS-1A*, *rbcS-1B*, *rbcS-2B* and *rbcS-3B* gene promoter, respectively. pNS10 include promoter from tobacco *rbcS* (*Ntss23*) gene. pYY0847 and pYI0805 include CaMV 35S promoter alone and CaMV 35S promoter fusing subset of coding region of *At EF1Ba1*. The other plasmids have been published in elsewhere (Stange & Beier, 1992; Fan et al., 1995; Yukawa et al., 1997; Yukawa et al., 2001; Yukawa et al., 2004; Yukawa et al., 2005; Yukawa et al., 2013).

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AtNAP1_1  ---MSNDK--DSFNVSDLTAALKDE-----DRAGLVNALKNKLQNL 37
AtNAP1_3  ---MSNDK--DSFNVSDLTSALKDE-----DRAGLVNALKNKLQNL 37
AtNAP1_2  ---MSNDK--DSMNMSDLSTALNEE-----DRAGLVNALKNKLQNL 37
AtNAP1_4  ---MSNEENIKSDNKSQDSSDLPTIPA-----LDIGAEEDLLAELKNL 42
hNAP1     MADIDNKEQSELDQDLDDVEEVEEETGEETKLRARQLTVQMMQNPQILAALQERLDGLV 60
          :.*.: . : . :
          NES
AtNAP1_1  GQRSDVLENLTPNVKRKRDALRDIQSQHDELEAKFREERAILEAKYQTLYQPLVYKRYEI 97
AtNAP1_3  GQHSVDVLENLTPKIRRRVEVLREIQGKHDEIETKFFREERAALAEAKYQKLYQPLYNKRYEI 97
AtNAP1_2  GQHSVDVLENLTPPVKRKRVFLREIQNQYDEMEAKFFEERAALAEAKYQKLYQPLYTKRYEI 97
AtNAP1_4  LKRPFVVKKLSPKVTKRVFLKDIQVTHDELEEKFLAEKSALEATYDNLKPLFAKRYEI 102
hNAP1     ETPTGYIESLPRVVKRRVNALKNLQVKCAQIEAKFYEEVHDLERKYAVLYQPLFDKRFEI 120
          . :.*. : : ** *::* : : * * * * * . * ** : * : **
          NES
AtNAP1_1  VNGTTEVELAPEDD-----TKVDQGEKTAEEKGVPSFWLTALKNN 140
AtNAP1_3  VNGATEVEGAPED-----AKMDQGEKTAEEKGVPSFWLTALKNN 139
AtNAP1_2  VNGVVEVEGAAEE-----VKSEQGEDKSAEEKGVPDFWLIALKNN 139
AtNAP1_4  VNGVVEAE-----AEKEGVNFWLTAMKTNEM 129
hNAP1     INAIYEPTEECEWKPDEEDEISEELKEKAKIEDEKKDEEKEDPKGIPFWLTVFKNVDL 180
          : * . * : : * : * . * * * : * . : :
          NES
AtNAP1_1  ISEEVTERDEGALKYLKDIKWCKIEEP--KGFKLEFFFDTPNPFKNTVLTKSYHMIDE-- 196
AtNAP1_3  ISEEVTERDEGALYLYLKDIAKWKIEEP--KGFKLEFFFDQNPYFKNTLLTKAYHMIDE-- 195
AtNAP1_2  TAEVITERDEGALKYLKDIKWSRVEEP--KGFKLEFFFDQNPYFKNTVLTKTYHMIDE-- 195
AtNAP1_4  LANEITERDEAALKYLKDIRSCRVEDTS--RNFKLEFLFDSNLYFKNSVLSKTYHVNDE-- 186
hNAP1     LSDMVQEHDEPIKHLKDIKVKFSDAGQPMSFVLEFHFEPNEYFTNEVLTWTKYRMRSEPD 240
          : : : * : * * * : * : * * * : * * * * * : * : * : * : * : *
          NLS
AtNAP1_1  -----DEPLEKAMGTEIDWYPGKCLTQK--ILKKKPKKGSK--NTKPITKLEDCESEFF 246
AtNAP1_3  -----DEPLEKAIGTEIDWYPGKCLTQK--ILKKKPKKGA--NAKPITKTEDCESEFF 245
AtNAP1_2  -----DEPLEKALGTEIEWYPGKCLTQK--ILKKKPKKGSK--NTKPITKTEDCESEFF 245
AtNAP1_4  -----DGPVLEKVI GTDIEWFPKCLTHKVVVKKKTKKGPKKVNNIPMTKTENCSEFF 239
hNAP1     DSDPFSFDGPEIMGCTGCQIDWKKGKNVTLKTIKKKQKHKGRG--TVRTVTKTVSNDSEFF 298
          * * : * : * : * * * * * : * : * * * . . : * * . : * * *
          NES
AtNAP1_1  NFFSPPEVP----DEDEDIDEERAEDLQNLMEQDYDIGSTIREKIIIPRAVSWFTGEAME 301
AtNAP1_3  NFFNPPQVP----DDEDIDEERAELQNLMEQDYDIGSTIREKIIIPHAVSWFTGEAIE 300
AtNAP1_2  NFFSPQVP----DDEDLDDMADELQGMHHDYDIGSTIREKIIISHAVSWFTGEAVE 300
AtNAP1_4  NFFKPEIPEIDEVDDYDDFDTIMTEELQNLMDQDYDIAVTIRDKLIIPHAVSWFTGEALV 299
hNAP1     NFFAPPEVP----ESGDL----DDAEAILAADFEIGHFLREIRIIPRSVLYFTGEAIE 348
          * * * : * : * * * : * : * * * : * : * * * : * : * * * : * : * * *
          NES
AtNAP1_1  AEDFEIDDDEEDDI DEDEDE----EDEEEDD-DDDDEDEE-----SKTKKPSIGNKKG 351
AtNAP1_3  GEEFEIDNDEEDDI DEDEDEDEDEDEDEDEE--DDEDEEEV-----SKTKKPSVLHKKG 354
AtNAP1_2  ADDLDIEDDD--DEIDEDDDEDEDEDEDEDEDEEEDDDEEEDDQGGKSKKKSAGHKKA 359
AtNAP1_4  DE-----DSDDNDDDDNDEKSD----- 317
hNAP1     DD-----DDDYDEEGEAEDEEGEE-----GDEENDPDYDPKK-- 381
          : : * . : : : * : . :
          NES
AtNAP1_1  GRSQIVGEGKQDERPPECKQQ 372
AtNAP1_3  GRPQVTDD--QGERPPECKQQ 374
AtNAP1_2  GRSQLAEG--QAGERPPECKQQ 379
AtNAP1_4  -----
hNAP1     -----DQNPAECKQQ 391

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Supplemental Figure S2. Alignment of Arabidopsis and human NAP1 amino acid sequences. The amino acid sequences of Arabidopsis NAP1;1, 1;2, 1;3 and 1;4, and human NAP1 are aligned by ClustalW. Amino acids region composing of the NES (nuclear export signal) and NLS (nuclear localization signal) are shown in orange and green, respectively. C-terminal acidic regions were shown as yellow. And C-terminal CKQQ motifs as potential PFT (protein farnesyl transferase) recognitin motif are boxed.

Table S1. Clone list

| plasmid | gene | origin | region | vector | PE primer | reference |
|-----------|-----------------------------|-----------------|--------------|--------|-----------|--|
| pSI01 | <i>rbcS-1A</i> | Arabidopsis | -1149 to +50 | pBS II | RT_RBCS | – |
| pSI02 | <i>rbcS-1B</i> | Arabidopsis | -1063 to +59 | pBS II | RT_RBCS | – |
| pSI03 | <i>rbcS-2B</i> | Arabidopsis | -1006 to +86 | pBS II | RT_RBCS | – |
| pSI04 | <i>rbcS-3B</i> | Arabidopsis | -1064 to +40 | pBS II | RT_RBCS | – |
| pAtU2.2 | U2 snRNA gene | Arabidopsis | -381 to +10 | pBS II | T7DKS | Yukawa et al. (2013) |
| pAtU3CP | U3 snoRNA gene | Arabidopsis | -558 to +17 | pBS II | T7DKS | Yukawa et al. (2013) |
| pBAU6 | U6 snRNA gene | Arabidopsis | -449 to +28 | pBS II | T7DKS | Fan et al. (1995) Yukawa et al. (1997) Yukawa et al. (2004) |
| pAt7SL | 7SL RNA gene | Arabidopsis | -319 to +14 | pBS II | T7DKS | Yukawa et al. (2005) |
| pYI0805 | EF1B α -1 (Int2) | Arabidopsis | -303 to +2 | pUC19 | T7DKS | - |
| pGNPS | β -1,3-glucanase gene | tobacco | -1470 to +23 | pBS II | T7DKS | Fan et al. (1995) Yukawa et al. (1997) Yukawa et al. (2004) |
| pNS10 | <i>rbcS</i> | tobacco | -981 to +31 | pBS II | T7DKS | – |
| pNtYI | <i>tRNA^{Tyr}</i> | rustica tobacco | -140 to +270 | pUC19 | PTYR | Stange & Beier. (1992) Yukawa et al. (2001) Yukawa et al. (2004) Yukawa et al. (2005) |
| pRBC-1657 | <i>rbcS</i> | tomato | -1657 to +44 | pBS II | T7DKS | Fan et al. (1995) |
| pYY0847 | 35S promoter | CaMV | -303 to +2 | pBS II | T7DKS | – |

pBS II : pBluescript II

Table S2. Primer list

| primer name | primer sequence (5' to 3') | usage |
|-------------|--|-----------------------|
| RT_RBCS | gaggtcgacggtatcgataagcttgatatac (30 mer) | Primer extension (RT) |
| EF1Be2 | gctagcattgggaaaaccatcacctg (26 mer) | Primer extension (RT) |
| T7DKS | gggcgaattggagctccaccgcggtggcggcgcgtctaga (40 mer) | Primer extension (RT) |
| PTYR | tccgacctaccggattcgaaccagtgacc (29 mer) | Primer extension (RT) |