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**Genome communication in plants mediated by organelle-nucleus located proteins**

*Philosophical Transaction B*

**Supplementary Table 1.** List of organelle-nucleus located plant proteins (ON)

| protein name(s) | localization method(s) | function in organelles/plastids | function in the nucleus | relocation or dual targeting | references |
|-----------------|------------------------|----------------------------------|-------------------------|-----------------------------|------------|
| ADT5            | P: CFP N: CFP          | phenylalanine biosynthesis       | unknown                 | possible relocation         | Bross et al. 2017 |
| ANAC102         | P: GFP N: pred (NLS)   | component of β-cyclocitrinal- mediated retrograde signalling | NAC transcription factor | not investigated            | D’Alessandro et al. 2008, Inze et al. 2012 |
| ANNEXIN 5       | P: YFP N: YFP          | interaction with RABE1b, a putative GTPase | unknown                 | not investigated            | Lichocka et al. 2018 |
| ATXR5           | P: GFP N: GFP          | unknown                          | control of cell cycle and DNA replication H3K27 methyltransferase | not investigated            | Jacob et al. 2009, 2010, 2014, Raynaud et al. 2006 |
| CDT1            | P: GFP N: GFP          | plastid division (interaction with ARC6) | DNA replication (interaction with DNA polymerase ε) | not investigated            | Domenichini et al. 2012, Raynaud et al. 2005 |
| cp29B (P) SEBF (N) | P: imp, prot N: biochem | RNA-binding protein              | transcriptional repressor | not investigated            | Boyle + Brisson 2001, Ohta et al. 1995, Ruwe et al. 2011 |
| cp31A (P) STEP1 (N) | P: imp, prot N: GFP    | RNA-binding protein; cold stress tolerance by influencing chloroplast RNA processing | telomere-binding protein | not investigated            | Kupsch et al. 2012, Kwon + Chung 2004, Ohta et al. 1995, Ruwe et al. 2011, Yoo et al. 2010 |
| DHFR-TS | P: gold, blot; GFP M: act, GFP N: gold, GFP | dihydrofolate reductase-thymidylate synthase | dihydrofolate reductase-thymidylate synthase | not investigated | Luo et al. 1997 |
|--------|---------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------|----------------|
| ERF34  | P: GFP N: GFP | unknown | transcription factor with AP2 DNA binding motif | not investigated | Saelim et al. 2018, Schwacke et al. 2007 |
| HEMERA (N) pTAC12/PAP5 (P) | P: prot, blot; fluo N: blot, fluo | nucleoid associated protein; PEP associated protein (PAP) | transcriptional activator in phytochrome signalling | relocation | Chen et al. 2010, Galvao et al. 2012, Pfalz et al. 2006, Pfalz et al. 2015, Qiu et al. 2015, Steiner et al. 2011 |
| IPT3   | P: GFP N: GFP | cytokinin biosynthesis | unknown | not investigated | Galichet et al. 2008 |
| LEM1   | P: GFP N: GFP | putative component of ribosomes (PRPS9) | required for embryogenesis | not investigated | Ma + Dooner 2004 |
| LIGASE1| P: GFP M: GFP | DNA replication and excision repair pathways | DNA replication and excision repair pathways | dual targeting | Sunderland 2006 |
| MFP1   | P: gold, fluo GFP, blot N: fluo, blot | nucleoid associated protein with a function in thylakoid association and starch granule formation | matrix attachment region binding | not investigated | Jeong et al. 2003, Meier et al. 1996, Samaniego et al. 2006, Seung et al. 2018 |
| NCP, MRL7, SVR4 | P: CFP, blot N: CFP, blot | nucleoid associated protein promoting compaction; assembly factor of PEP | degradation of PIF1 and PIF3 | possible relocation | Powikrowska et al. 2014, Qiao et al. 2011, Yang et al. 2019 |
| NRIP1  | P: cer N: cer | rhodanese sulfur transferase; immune receptor recognition; plastid function unknown | mediates innate immune receptor recognition by a viral effector | relocation | Caplan et al. 2015 |
| NiWIN4 | P: blot, GFP N: GFP | unknown | induction of hypersensitive cell death; transcriptional repressor | dual targeting | Kodama et al. 2006 |
| OPENER | N: YFP M: YFP | mitochondria dynamics | involved in nuclear envelope and nucleoli stability | relocation | Wang et al. 2019 |
| OR     | P: GFP, blot, BiFC N: GFP, blot | chromoplast development | unknown | dual targeting | Sun et al. 2016, Zhou et al. 2015 |
| Protein | N: | M: | P: | Function | Target | Reference |
|---------|----|----|----|---------|-------|-----------|
| PAP1,7,8,9,12 | pred | unknown | unknown | Pfannschmidt et al. 2015, Steiner et al. 2011 |
| PEND | blot, imp, GFP | blot, imp, GFP | P: prot | chloroplast development | transcription factor | possible relocation |
| GSFB1 | blot, imp, GFP | blot, imp, GFP | N: pred | nucleoid associated protein | transcription factor | possible relocation |
| PBH3 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates mitochondria functionality | repositioning | Huang et al. 2019 |
| PMN1 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates DNA replication and genome stability | relocation | Hammani et al. 2011 |
| RAF2 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates transcription | dual targeting | Huang et al. 2019 |
| SIB1 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates transcription | dual targeting | Huang et al. 2019 |
| SRT1/2 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates transcription | dual targeting | Huang et al. 2019 |
| SWIB-4 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates transcription | dual targeting | Huang et al. 2019 |
| TRXO | blot, imp, GFP | blot, imp, GFP | N: pred | regulates transcription | dual targeting | Huang et al. 2019 |
| WHIRLY1 | blot, imp, GFP | blot, imp, GFP | N: pred | regulates transcription | dual targeting | Huang et al. 2019 |
ABBREVIATIONS USED FOR PROTEINS: ADT5 = arogenate dehydratase 5; ANAC102 = Arabidopsis NAC transcription factor 102; ATXR5 = Arabidopsis trithorax-related 5; CDT1 = CDC10 target 1; cp29B/SEBF = silencing element binding factor/chloroplast RNA-binding protein 29B/cp31A/STEP1 = chloroplast RNA-binding protein 31A/single-stranded telomere-binding protein 1; DHFR = dihydrofolate reductase; ERF34 = ethylene response factor; IFT3 = adenosine phosphate-isopentenyltransferases; LEM1 = lethal embryo 1; MFP1 = matrix attachment region-binding filament-like protein 1; NCP/MRL7/SVR4 = nuclear control of PEP activity/mesophyll-cell RNAi Library line 7/suppressor of variegation 4; NRIP1 = N receptor interacting protein 1, NtWIN4 = Nicotiana tabacum wound-induced clone 4; OR = ORANGE; PAP = PEP-associated protein; PBH3 = prohibitin 3; PEND/GSBF1 = plastid envelope DNA binding/GS-box binding factor 1; PEP = plastid-encoded RNA polymerase; PIF = phytochrome interacting factor; PN1 = PPR protein localized to the nucleus and mitochondria 1; pTAC12 = plastid transcriptionally active chromosome 12; RAF2 = Rubisco assembly factor 2; RCB/MRL7-like/SVR4-like = regulator of chloroplast biogenesis/mesophyll-cell RNAi Library line 7 like/suppressor of variegation 4 like; S1B1 = sigma factor binding protein 1; SRT1/2 = Sirtuin 1/2; SWIB-4 = SWIB-domain containing protein 4; TRXO = thioredoxin.

GENERAL ABBREVIATIONS: P = plastids, M = mitochondria, N = nucleus, GFP, CFP, RFP, YFP = fluorescent fusion proteins, fluo = immunofluorescence, blot = immunoblot analysis, gold = immunogold labelling, act = enzyme activity, imp = in vitro import, prot = proteomics, biochem = biochemical fractionation, cer = cerulean, BiFC = bimolecular fluorescence complementation, pred = prediction

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