

2 column widths

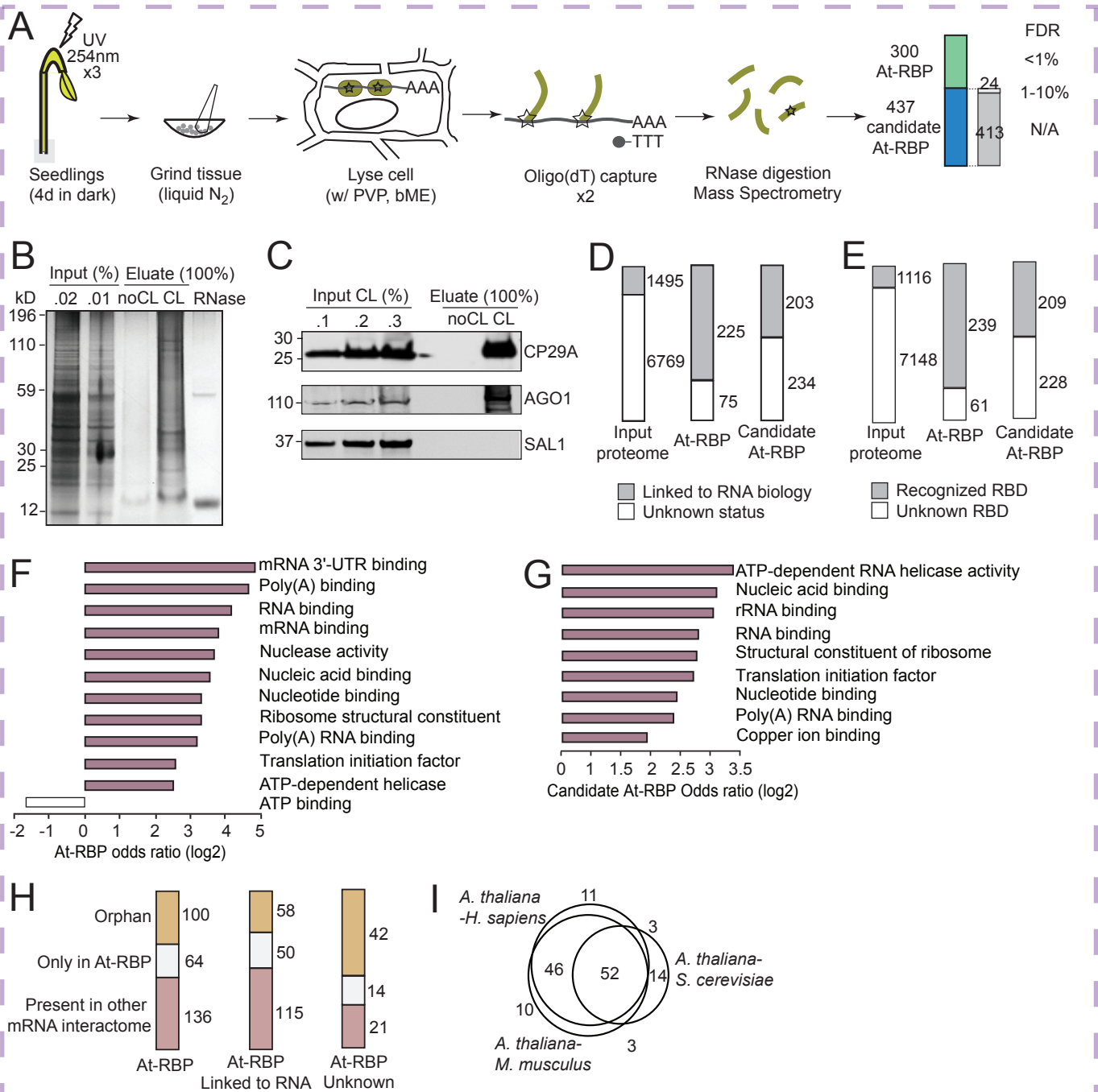


Figure 1

maximum figure height

maximum figure height

2 column widths

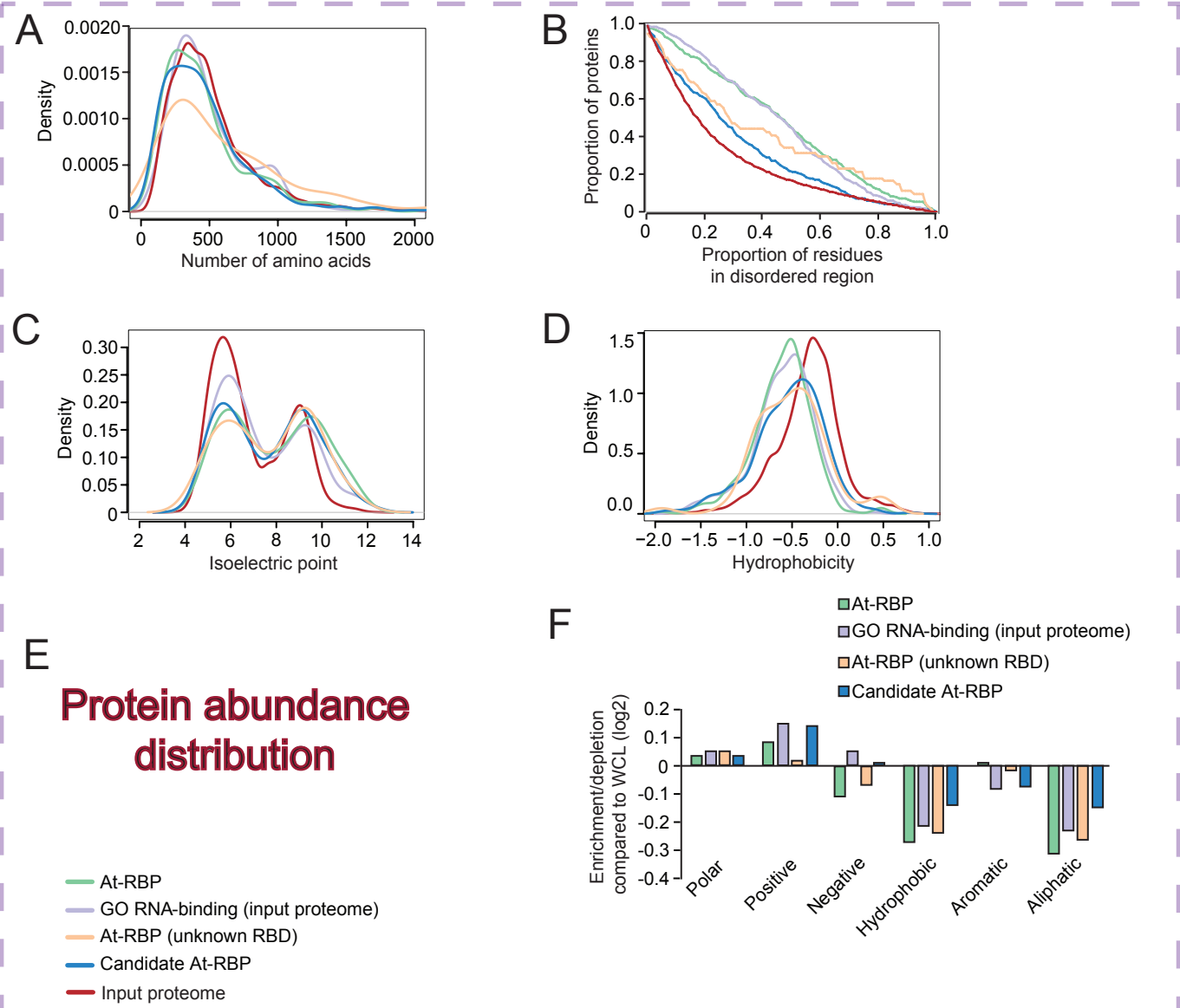


Figure 2

2 column widths

1 column widths

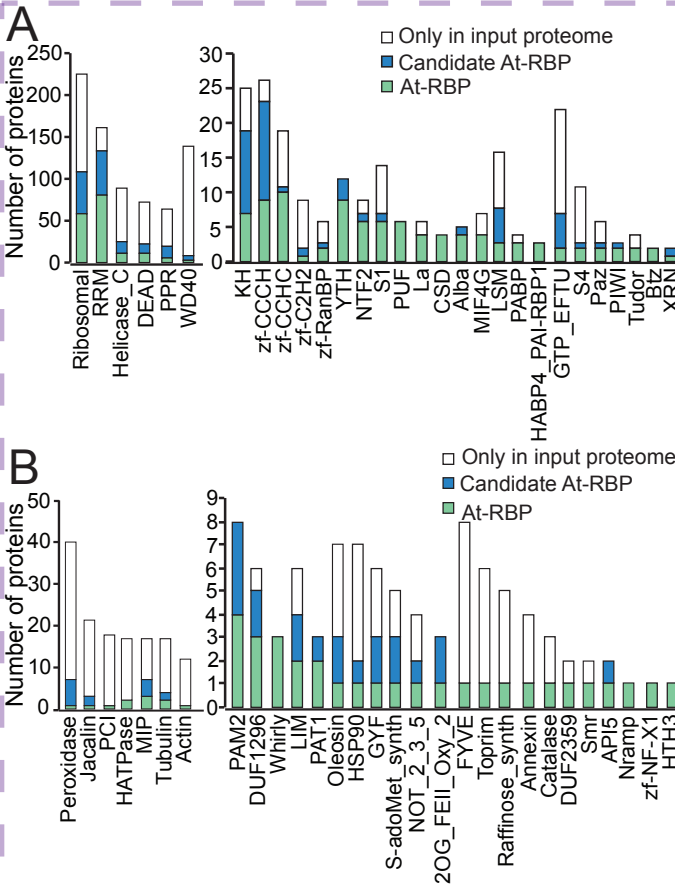


Figure 3

maximum figure height

Figure 4

2 column widths

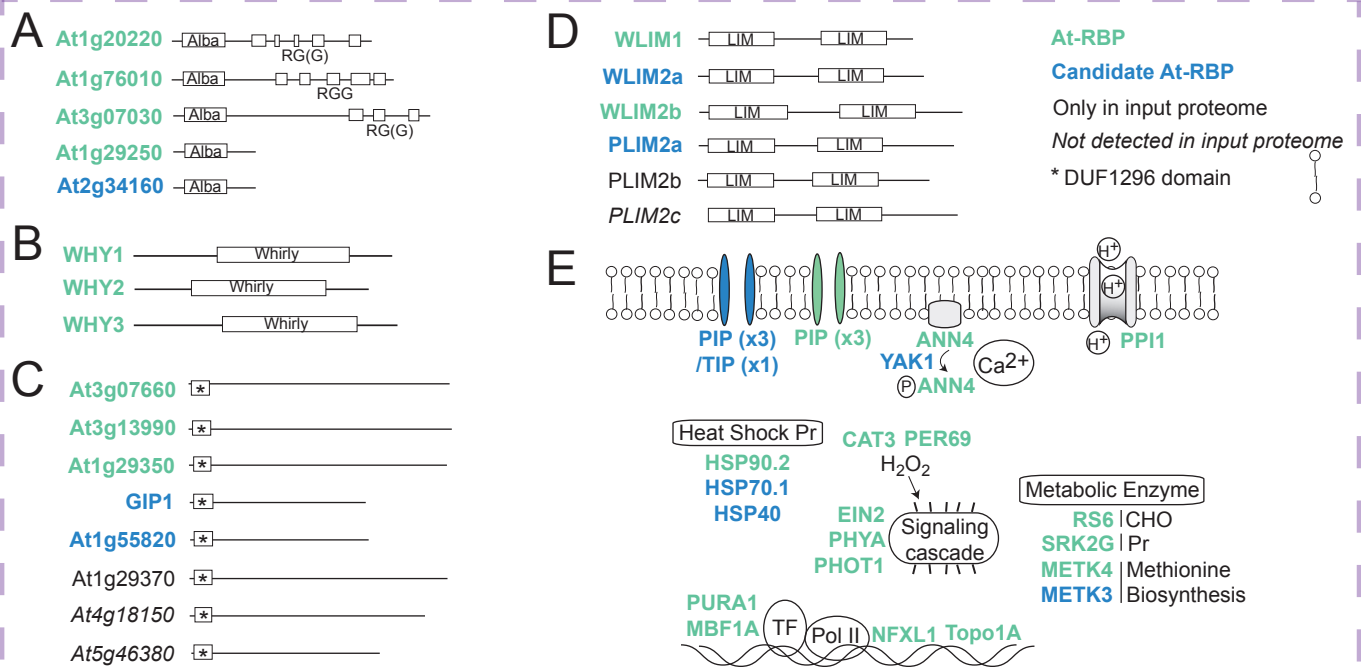
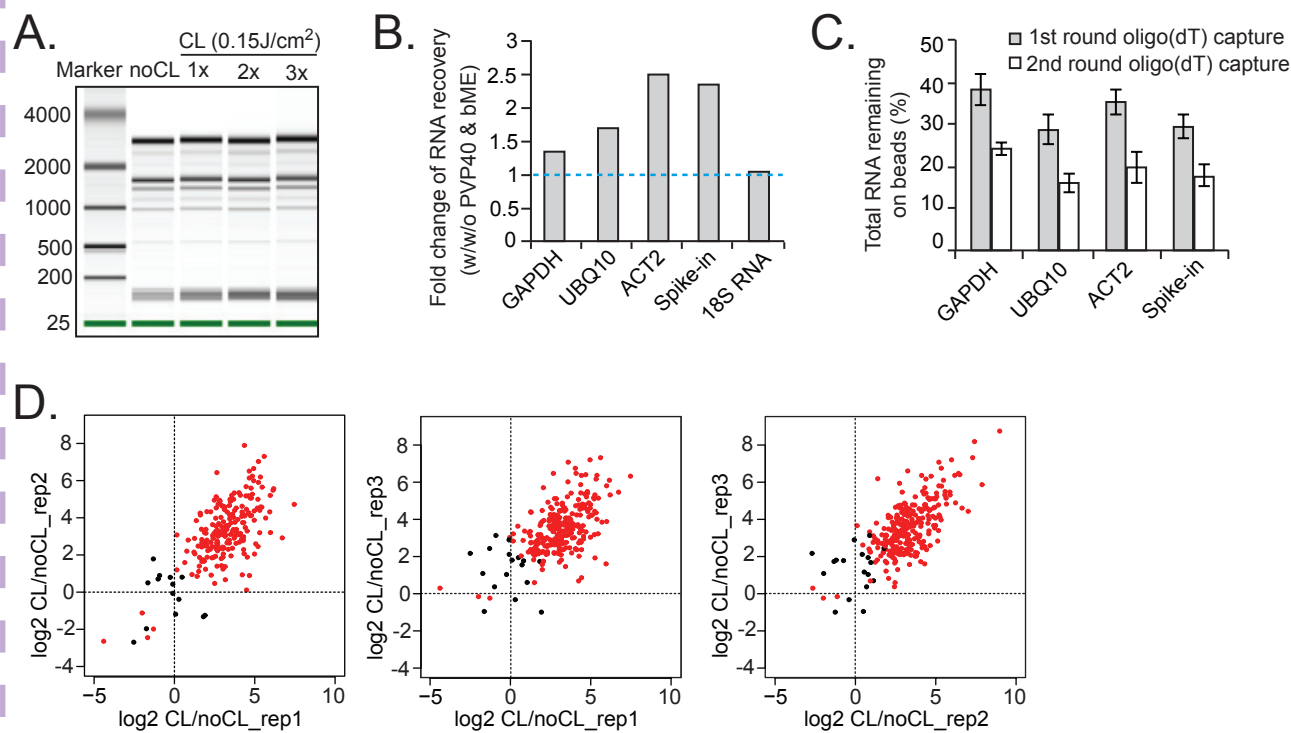


Figure 5

maximum figure height

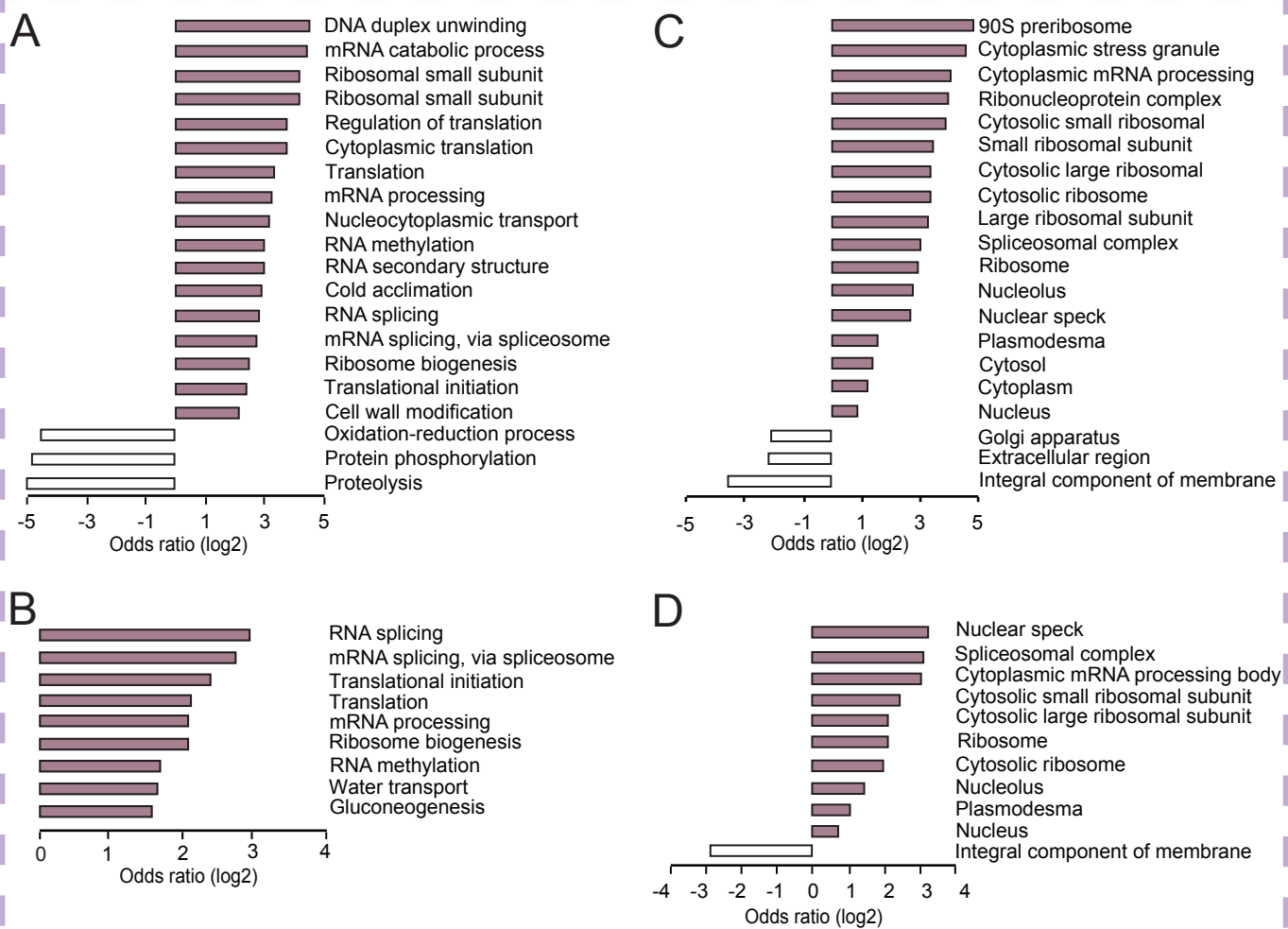
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Supplemental Figure 1

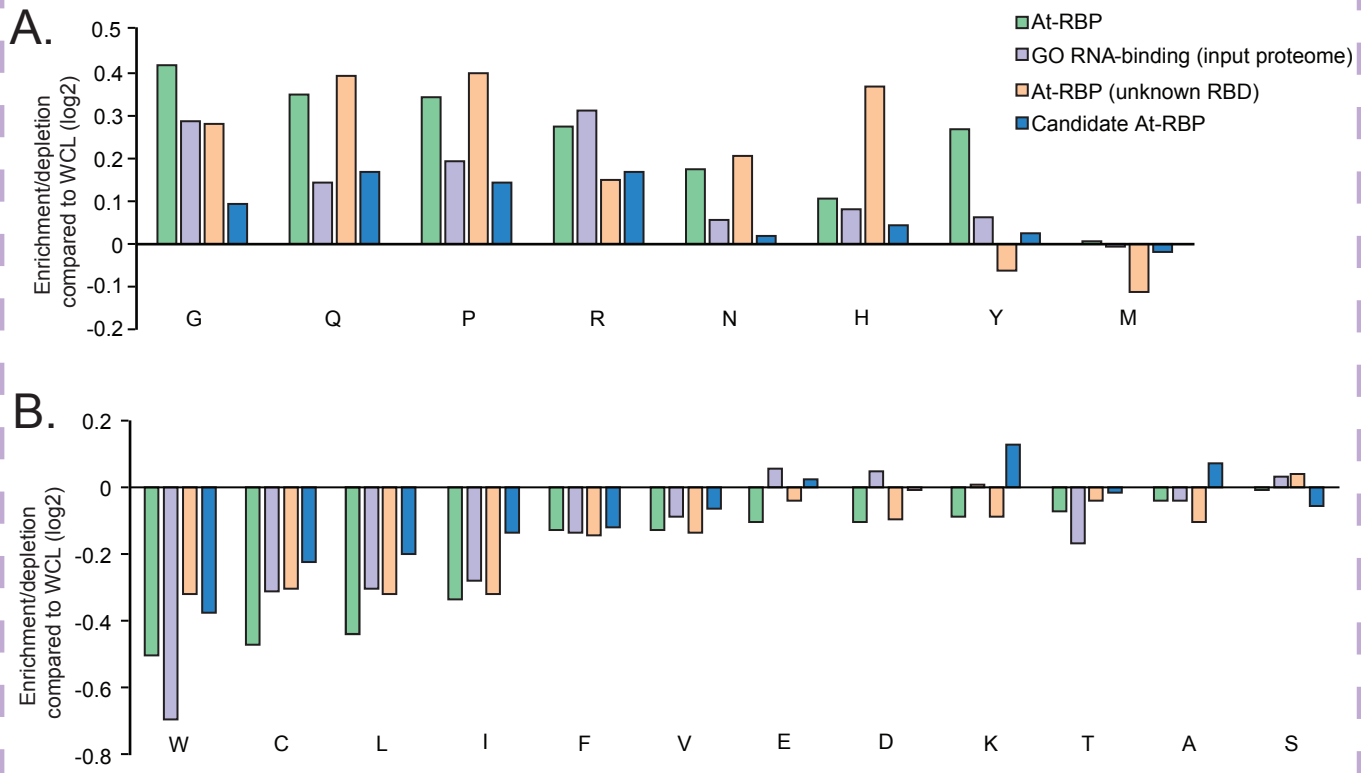
maximum figure height

2 column widths



Supplemental Figure 2

2 column widths



Supplemental Figure 3

Supplemental Table 1: Arabidopsis Zinc-finger proteins without previous RNA-binding annotation identified by mRNA interactome capture.

| Gene ID | Protein name | RBD |
|-----------|--|------------------|
| AT3G06410 | Zinc finger CCCH domain-containing protein 34 | zf-CCCH |
| AT5G18550 | Zinc finger CCCH domain-containing protein 58 | zf-CCCH |
| AT2G47850 | Zinc finger CCCH domain-containing protein 32 | zf-CCCH |
| AT3G15680 | Ran BP2/NZF zinc finger-like superfamily protein | zf-RanBP |
| At1g67325 | RanBP2-type zinc finger protein | zf-RanBP |
| AT5G63260 | Zinc finger CCCH domain-containing protein 67 | zf-CCCH |
| AT3G62240 | RING/U-box superfamily protein | zf-C2H2, zf-RING |
| AT1G10170 | NF-X1-type zinc finger protein NFXL1 | zf-NF-X1 |
| AT2G02160 | Zinc finger CCCH domain-containing protein 17 | zf-CCCH |
| At1g75560 | Zinc knuckle (CCHC-type) family protein | zf-CCHC |

Supplemental Table 2: Examples of orphan Arabidopsis proteins identified by mRNA interactome capture.

| Gene ID | Gene name | Protein domain | Function | FDR |
|------------------------------------|--|------------------------------|---|----------------------|
| Cytoskeleton | | | | |
| AT1G49240 | ACTIN 8 | Actin | structural constituent of cytoskeleton | 2.49E-04 |
| AT1G04820 AT4G20890 | Tubulin alpha-4 chain Tubulin beta-3 chain | Tubulin | structural constituent of cytoskeleton | 6.63E-06 9.47E-06 |
| Enzymes/metabolism | | | | |
| AT1G20620 | Catalase-3 (CAT3) | Catalase | catalyzes the breakdown of hydrogen peroxide (H ₂ O ₂) into water and oxygen | 1.17E-03 |
| AT5G64100 | Peroxidase 69 | Peroxidase | uses H ₂ O ₂ to catalyse oxidative reactions | 1.05E-04 |
| AT5G20250 | RAFFINOSE SYNTHASE 6 (RS6) | Raffinose_syn | involved in carbohydrate metabolism | 2.88E-04 |
| AT3G17390 | S-adenosylmethionine synthase 4 (METK4) | S-adoMet_synt | biosynthesis of S-adenosylmethionine | 1.97E-05 |
| AT5G63650 | Serine/threonine-protein kinase (SRK2G) | Pkinase | SNF1-related protein kinase | 3.96E-05 |
| AT2G32000 | DNA topoisomerase type IA | Toprim | DNA unwinding, involved in DNA replication | 4E-05 |
| AT4G14990 | Topoisomerase II-associated protein (PAT1) | PAT1 | isomerase activity | 3.32E-03 |
| Membrane proteins/transport | | | | |
| AT5G03280 | Ethylene-insensitive protein 2 (EIN2) | Nramp | Involved in ethylene signal transduction | 3.58E-09 |
| AT4G27500 | Proton pump-interactor 1 (PPI1) | No annotated domains | interacts with H ⁺ -ATPase and regulates its activity | 6.85E-15 |
| AT1G20110 | FYVE DOMAIN PROTEIN REQUIRED FOR ENDOSOMAL SORTING 1 (FREE1) | FYVE | regulates multivesicular/ prevacuolar compartment protein sorting | 2.41E-04 |
| AT3G53420 | Aquaporin PIP2-1 | MIP | Transport of water and small solutes | 2.09E-05 |
| AT2G37170 | Aquaporin PIP2-2 | MIP | Transport of water and small solutes | 8.79E-03 |
| AT4G35100 | Aquaporin PIP2-7 | MIP | Transport of water and small solutes | 5.44E-05 |
| AT2G38750 | ANNEXIN 4 (ANN4) | Annexin | Ca ²⁺ dependent membrane binding protein | 4.91E-07 |
| Photoreceptors | | | | |
| AT1G09570 | Phytochrome A (PHYA) | GAF;HATPase_C; HisKA;PAS;PHY | red/far-red light photoreceptor | 1.49E-03 |
| AT3G45780 | Phototropin-1 (PHOT1) | Pkinase | Blue-light photoreceptor | 3.48E-03 |
| Miscellaneous | | | | |
| AT5G56030 | Heat shock protein 90.2 (HSP90.2) | HSP90 | Molecular chaperone assisting in the synthesis and folding of proteins | 5.07E-03 |
| AT2G34040 | Apoptosis inhibitory protein 5 (API5) | API5 | unknown | 4.81E-13 |
| AT1G10170 | NF-X1-type zinc finger protein (NFXL1) | Zf-NF-X1 | negative regulator of the trichothecene phytotoxin-induced defense response | 1.81E-05 |
| AT2G42680 | Multiprotein-bridging factor 1A (MBF1A) | HTH_3;MBF1 | Transcriptional co-activator | 2.7E-03 |
| AT2G32080 | Purin-rich alpha 1 (PURA1) | PurA | Transcription factor | 2.52E-09 |