*Supplementary Material*

Application of TurboID-based proximity labeling in studying the protein interaction network in plant response to abiotic stress

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**Supplementary Table**

Table 1 Core regulation proteins in abiotic stress regulation which first identified in model plant through classic PPI approaches.

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| **Abiotic stress** | **Regulation protein module in abiotic stress response**  | **Techniques** | **Organism** | **Reference** |
| Temperature | Heat | HSP90-HsfA1 | BiFC, Pull-down | *A. thaliana* | (Yamada et al., 2007) |
| CBK3-HsfA | Y2H | *A. thaliana* | (Liu et al., 2008) |
| CaM-PP7-HSF | Y2H | *A. thaliana* | (Liu et al., 2007) |
| ELF3-ELF4 | Y2H | *A. thaliana* | (Jung et al., 2020) |
| MPK6-HsfA2 | IP | *A. thaliana* | (Evrard et al., 2013) |
| DPB3-DREB2A; NF-YA2-NF-YB3 | Y2H, BiFC, Co-IP, Pull-down | *A. thaliana* | (Sato et al., 2014) |
| NF-YA2-NF-YB3-DPB3 | Y2H | *A. thaliana* | (Sato et al., 2014) |
| Chilling | MEKK1-MKK2-MPK4 | Y2H, IP | *A. thaliana* | (Teige et al., 2004) |
| CRLK1- MEKK1 | Co-IP, BiFC, Pull-down | *A. thaliana* | (Yang et al., 2010) |
| MEKK1- MKK2 | IP | *A. thaliana* | (Furuya et al., 2013) |
| MKK4/5-MPK3/6- ICE1 | IP | *A. thaliana* | (Zhao et al., 2017) |
| NPR1-HsfA1 | BiFC, Co-IP | *A. thaliana* | (Olate et al., 2018) |
| Freeze | SlZ1-ICE1 | IP | *A. thaliana* | (Miura et al., 2007) |
| OST1/SnRK2.6-ICE1; HOS1-ICE1 | Y2H, Pull-down, Co-IP | *A. thaliana* | (Ding et al., 2015) |
| MAPKKK-MAKK5-MPK3/6-ICE1 | Y2H, Pull-down, Co-IP | *A. thaliana* | (Li et al., 2017) |
| CRPK1-14-3-3 proteins  | Y2H, Pull-down, Co-IP | *A. thaliana* | (Liu et al., 2017) |
| 14-3-3 proteins-CBFs | IP-MS, Co-IP, Pull-down | *A. thaliana* | (Liu et al., 2017) |
| OST1/SnRK2.6-PUB25/26-MYB15 | Y2H, Co-IP, Split-LUC, Pull-down | *A. thaliana* | (Wang et al., 2019) |
| NMT1-ERG2-OST1 | Y2H, Co-IP, Split-LUC, Pull-down | *A. thaliana* | (Ding et al., 2019) |
| OST1-BTF3L-CBF | Y2H, Co-IP, Split-LUC, BiFC, Pull-down | *A. thaliana* | (Ding et al., 2018) |
| BIN2-ICE1 | Y2H, Co-IP, BiFC, IP, Pull-down | *A. thaliana* | (Ye et al., 2019) |
| Salinity | Na+ ionic | LRX3/4/5-RALF22/23-FER | IP-MS, Co-IP, Split-LUC, Pull-down | *A. thaliana* | (Zhao et al., 2018) |
| ANN4-SOS2-SCaBP8 | Y2H, BiFC, Co-IP, Split-LUC | *A. thaliana* | (Ma et al., 2019) |
| Light | UV-B | COP1-SPA | Co-IP | *A. thaliana* | (Huang et al., 2013) |
| UVR8-COP1-SPA | Y3H, Co-IP | *A. thaliana* | (Huang et al., 2013) |
| RUP1/RUP2-UVR8 | Co-IP | *A. thaliana* | (Heijde and Ulm, 2013) |
| UVR8-WRKY36 | Y2H, Co-IP, BiFC, Pull-down | *A. thaliana* | (Yang et al., 2018) |
| PIF-COP1 | Co-IP | *A. thaliana* | (Sharma et al., 2019) |
| Nutrient | N | NAR2.1-NRT2.1/2.2/2.3a | Y2H | *O. sativa* | (Yan et al., 2011) |
| CIPK23-AMT1;1/ AMT1;1 | Y2H, BiFC | *A. thaliana* | (Straub et al., 2017) |
| CIPK23-NRT1.1 | BiFC | *A. thaliana* | (Leran et al., 2015) |
| P | SPX1-PHR1 | Y2H, Co-IP | *A. thaliana* | (Puga et al., 2014) |
| SPX4-PHR2 | Y2H, Co-IP, BiFC, Pull-down | *O. sativa* | (Lv et al., 2014) |
| SPX6-PHR2 | Y2H, Co-IP, BiFC | *O. sativa* | (Zhong et al., 2018) |
| PHO2-PHO1/PHT1 | Y2H, BiFC | *A. thaliana* | (Liu et al., 2012) |
| SDEL1-SPX4 | Y2H, BiFC, Co-IP | *O. sativa* | (Ruan et al., 2019) |
| NLA1-PT2/PT8 | BiFC, | *O. sativa* | (Yue et al., 2017) |
| WRKY108-WRKY21 | Y2H, BiFC, Pull-down | *O. sativa* | (Zhang et al., 2021) |
| ALIX-ESCRT-III | Y2H, BiFC | *A. thaliana* | (Cardona-López et al., 2015) |
| PRU1-WRKY6 | Y2H, Co-IP, BiFC, Pull-down | *A. thaliana* | (Ye et al., 2018) |
| CK2α3/β3-PTs | Y2H, Co-IP, Pull-down | *O. sativa* | (Chen et al., 2015) |
| K | AKT1-CIPK23 | Y2H | *A. thaliana* | (Kim et al., 2000) |
| KC1-SYP121 | Y2H, Co-IP, BiFC | *A. thaliana* | (Honsbein et al., 2009) |
| CBL1/CBL9-CIPK23 | Y2H, BiFC | *A. thaliana* | (Xu et al., 2006) |
| ILK1-CML9 | Split-LUC, BiFC | *A. thaliana* | (Brauer et al., 2016) |
| HAK5-ILK1 | Split-LUC, BiFC | *A. thaliana* | (Brauer et al., 2016) |
| AKT1-KC1 | BiFC | *A. thaliana* | (Wang et al., 2016) |
| PP2Cs-AKT1 | Y2H | *A. thaliana* | (Lan et al., 2011) |
| Ca | CIPK-CBL | Y2H  | *A. thaliana* | (Shi et al., 1999) |
| PP2C-CIPK | Y2H | *A. thaliana* | (Lan et al., 2011) |
| PP2C-SnRK2 | Co-IP | *A. thaliana* | (Belda-Palazon et al., 2020) |
| PP2C-RCAR | Y2H | *A. thaliana* | (Tischer et al., 2017) |
| SnRK2- M3Kδ6 | BiFC, Co-IP | *A. thaliana* | (Takahashi et al., 2020) |
| SLAH3-CDPK | BiFC | *A. thaliana* | (Geiger et al., 2011) |
| Fe | IDEF1-IBP1.1/IBP1.2 | Y2H | *O. sativa* | (Kobayashi et al., 2014) |
| Zn | FIT-bHLH38/bHLH39  | Y2H, BiFC | *A. thaliana* | (Yuan et al., 2008) |
| MTP12-MTP5 | BiFC | *A. thaliana* | (Fujiwara et al., 2015) |
| B | BOR1-AP2 | Y2H, Co-IP | *A. thaliana* | (Yoshinari et al., 2019) |
| Toxic | As | PHIF1-PHR1 | Y2H, Co-IP, Pull-down | *A. thaliana* | (Navarro et al., 2021) |
| Cd | CUL4-PRL1-MYB43-HMAs  | Y2H, BiFC, Co-IP, Pull-down | *A. thaliana* | (Zheng et al., 2022) |
| ABI5-MYB49 | Y2H, BiFC, Co-IP, Pull-down | *A. thaliana* | (Zhang et al., 2019) |

HSP70/90, Heat Shock Protein 70/90; Hsf, Heat Shock Transcription Factor; CBK3, CaM-Binding Protein Kinases 3; CaM; Calmodulin; ELF3/4; Early Flowering 3/4; MPK6; Mitogen-Activated Protein Kinases 6; DREB2A; Dehydration-Responsive Element Binding Protein 2a; DPB3 DNA Polymerase II Subunit B3; NF-YA2/YB3, Nuclear Factor Y -Subunit A2/B3; PP7; Serine/Threonine Phosphatase 7; MEKK1, MAPK/ERK Kinase Kinase; MKK2/4/5, MAP Kinase Kinase; MPK3/4/6, Mitogen-Activated Protein Kinase; CRLK1, Calcium/Calmodulin-Regulated Receptor-Like Kinase; ICE1, Inducer of CBF Expression 1;,NPR1, Nonexpressor of Pathogenesis-Related genes 1; SlZ1, SAP and Miz; BTF3, Basic Transcription Factor 3; OST1, Open Stomata 1; SnRK2.6, Sucrose Non fermenting 1-Related Protein Kinase 2-6; HOS1, High Expression Of Osmotically Responsive Gene 1;MAPKKK, Mitogen-Activated Protein Kinase Kinase Kinase;CRPK1, Cytoplasmic Receptor-Like Kinase 1; CBFs, C-Repeat Binding Factors; PUB25/26. Plant U Box E3 Ubiquitin; NMT1, N-Myristoyl Transferase; ERG2, Clade-E Growth-Regulating 2; BTF3L, BTF3-Like Protein; BIN2, Brassinosteroid-Insensitive 2; LRX3/4/5, Leucine-Rich Repeat Extension 3/4/5; RALF22/23, Rapid Alkalinization Factor 22/23; FER, Plasma Membrane-Localized Receptor-Like Protein Kinase FERONIA; ANN4, ANNEXIN4; SOS2, Salt Overly Sensitive; SCaBP8, SOS3-Like Calcium-Binding Proteins; COP1, Constitutive Photomorphogenesis 1; SPA, COP1-Suppressor of PHYA; UVR8, UV Resistance Locus 8; RUP1/2, Repressor of UV-B Photomorphogenesis; WRKY, WRKY DNA-Binding Protein; PIF, Phytochrome-Interacting Factor 4/5; NAR2.1, Nitrate Assimilation Related Protein; NRT2.1/2.2/2.3a, Nitrate Transporter 2.1/2.2/2.3a; CIPK23, Calcineurin B-like Calcium Sensor Proteins; AMT1;1, High-Affinity Ammonium Transporters 1;1; SPX1/4/6, SYG1/Pho81/XPR1 domain-containing protein 1/4/6; PHR1/2, Phosphate Starvation Response 1/2; PHO1, Phosphate1; PHT1, Phosphate Transporter 1; PHO2, Ubiquitin-Conjugating Enzyme 24; SDEL1, RING-Finger Domain-Containing E3 ligases; NLA1, Nitrogen Limitation Adaptation 1; PT2/8, Inorganic Phosphate (Pi) Transporters; ALIX, ALG-2 Interacting Protein-X; ESCRT-III, Endosomal Complex Required for Transport; PRU1, Phosphate Response Ubiquitin E3 Ligase1; CK2α3/β3, Casein Kinase II; AKT1, K+ Transporter; KC1, K+ channel subunit 1; SYP121, Soluble N-ethylmaleimide-Sensitive Factor Protein Attachment Protein Receptor 121; CBL1/9, Calcineurin B-Like 1/9; ILK1, Integrin-Linked Kinase 1; CML9,; Calmodulin-Like Protein 9; HAK5, H+/K+ Symporter; AKT1, K+ Transporter 1; PP2Cs, Protein Phosphatase 2C; RCAR, Regulatory Component of Aba Receptor 1; SnRK2s, Snf1-Related Protein Kinase 2s; M3Kδ6, MAPKK-kinases; CDPK, Calcium-Dependent Protein Kinase 1.

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