**Supplementary Table S3.** Key genes responding to the salt-stress condition for each module (\* marked for genes having literature support report).

| Gene | Gene name/Description | Module | Centrality | Function | References |
| --- | --- | --- | --- | --- | --- |
| LOC\_Os10g04860\* | *OsOAA* | Yellow | DG, CN | Xanthine dehydrogenase, aldehyde oxidase, OsOAA | (Xiong and Zhu, 2003;Horváth et al., 2011;Colasuonno et al., 2017;Srivastava et al., 2017) |
| LOC\_Os12g43640\* | *OsHAIKU2* | Yellow | DG, CN | receptor-like protein kinase HAIKU2 precursor | (Luo et al., 2005) |
| LOC\_Os01g56460 | encoding mitochondria glycoprotein | Yellow | DG, BW, CN | mitochondrial glycoprotein, putative, expressed |  |
| LOC\_Os02g21009\* | *OsCAX1* | Yellow | BW | Calcium/proton exchanger CAX1-like protein Vacuolar cation/proton exchanger | (Cheng et al., 2004;Pittman and Hirschi, 2016;Wilkins et al., 2016) |
| LOC\_Os06g48960 | *AIG2- like* gene | Yellow | BW | AIG2-like family domain containing protein, expressed |  |
| LOC\_Os02g57620 | citrate transporter | Yellow | BW | Citrate transporter protein, putative, expressed |  |
| LOC\_Os08g43560\* | *OsAPX4* | Yellow | CC | OsAPx4 - Peroxisomal Ascorbate Peroxidase encoding gene 5,8,9, expressed | (Agrawal et al., 2003;Teixeira et al., 2006;Hong et al., 2007;Bonifacio et al., 2011;Jiang et al., 2016) |
| LOC\_Os01g15270\* | expressed protein | Yellow | CC | expressed protein | (Peng et al., 2004) |
| LOC\_Os09g29380 | expressed protein | Yellow | CC | expressed protein |  |
| LOC\_Os01g02900 | *Glycosyl transferase* | Turquoise | DG, BW, CN | glycosyltransferase, putative, expressed, similar to HGA6 (glycosyl transferase in *Hordeum vulgare* subsp. v*ulgare*) |  |
| LOC\_Os02g37090 | *Hydrolase* | Turquoise | DG, BW, CN | hydrolase, alpha/beta fold family domain containing protein, expressed |  |
| LOC\_Os03g22380\* | *OsSRp32* | Turquoise | DG, BW, CN | RNA recognition motif containing protein, expressed  Arginine/ serine-rich splicing factor, OsSRp32 | (Lopato et al., 1996;Isshiki et al., 2006;Filichkin et al., 2010;Reddy et al., 2013;Meyer et al., 2015) |
| LOC\_Os03g29920 |  | Turquoise | DG | proline-rich protein, putative, expressed  Heavy metal transport/detoxification protein domain containing protein |  |
| LOC\_Os07g08440\* | *OsPIF3* | Turquoise | DG, BW, CN | Phytochrome-interacting factor 3, PIF3 | (Wu et al., 2015;Waseem et al., 2019) |
| LOC\_Os08g05960\* | *OsDR10* | Turquoise | DG, CN | Pathogen-induced responsive protein 10  OsDR10 | (Xiao et al., 2009) |
| LOC\_Os09g30180 |  | Turquoise | DG, CN, CC |  |  |
| LOC\_Os12g03260\* | *OsMATE53* | Turquoise | DG, CN | Multi-antimicrobial extrusion protein family protein, OsMATE53 | (Tiwari et al., 2014;Huang et al., 2019) |
| LOC\_Os01g05490 | *Triosephosphate isomerase* | Turquoise | BW | triosephosphate isomerase, cytosolic, putative, expressed |  |
| LOC\_Os01g53060 | encoding peroxisomal membrane protein | Turquoise | BW | peroxisomal membrane protein, putative, expressed |  |
| LOC\_Os01g57030 |  | Turquoise | BW | expressed protein |  |
| LOC\_Os01g63810 | encoding starch binding domain containing protein | Turquoise | BW | starch binding domain containing protein, putative, expressed |  |
| LOC\_Os03g57110 | expressed protein | Turquoise | BW | expressed protein |  |
| LOC\_Os05g48050 | ribosomal protein | Turquoise | BW | ribosomal protein L7/L12 C-terminal domain containing protein, expressed |  |
| LOC\_Os06g06170 | expressed protein | Turquoise | BW | expressed protein |  |
| LOC\_Os06g24730\* | *OsNYC3* | Turquoise | BW | Pheophytinase (Arabidopsis)  Chlorophyll degradation during senescence, OsNYC3 | (Morita et al., 2009) |
| LOC\_Os07g12110 | *OseIF3e* | Turquoise | BW | eukaryotic translation initiation factor 3 subunit E, OseIF3e |  |
| LOC\_Os07g42714 | expressed protein | Turquoise | BW | expressed protein, EF hand domain containing protein |  |
| LOC\_Os08g43170 | *HMG-CoA synthase* | Turquoise | BW | Similar to HMG-CoA synthase |  |
| LOC\_Os10g42040 | *OsRIR1b* | Turquoise | BW | expressed protein, Similar to RIR1b protein precursor |  |
| LOC\_Os11g07916 | *nifU* | Turquoise | BW | nifU, putative, expressed |  |
| LOC\_Os03g63074 | *OsPAP15* | Turquoise | CN | OsPAP15 |  |
| LOC\_Os09g30180 | F-box containing protein | Turquoise | CN | F-box domain, cyclin-like domain containing protein |  |
| LOC\_Os02g27220 | *OsPP2C14* | Turquoise | CC | OsPP2C14 |  |
| LOC\_Os02g44940\* | *OsRALFL8* | Turquoise | CC | RALFL8 - Rapid Alkalinization Factor RALF family protein precursor, expressed | (Sharma et al., 2016;Campbell and Turner, 2017) |
| LOC\_Os03g63590 | metallo-beta-lactamase | Turquoise | CC | metallo-beta-lactamase, putative, expressed |  |
| LOC\_Os04g31030 | nitrate-induced NOI protein | Turquoise | CC | nitrate-induced NOI protein, expressed |  |
| LOC\_Os06g08640 | transferase | Turquoise | CC | transferase family protein, putative, expressed |  |
| LOC\_Os08g10080 | *OMTN6*, *ONAC104* | Turquoise | CC | ONAC104, OMTN6, NAC transcription factor, Negative regulation of drought tolerance | Fang et al., 2014 |
| LOC\_Os08g42400 | *ONAC5* | Turquoise | CC | NAC domain-containing protein 005, NAC domain-containing protein 5, NAC domain-containing protein 35, NAC domain-containing protein 46, NAC domain-containing protein 52 | Takasaki et al., 2010 |
| LOC\_Os06g18670 | *anthocyanidin 3-O-glucosyltransferase* | Blue | DG, CN | anthocyanidin 3-O-glucosyltransferase, putative, expressed |  |
| LOC\_Os09g32532\* | *OsRPL32* | Blue | DG, BW, CN | ribosomal protein L32  OsRPL32 | (Moin et al., 2016;Moin et al., 2017;Linyerera et al., 2021;Moin et al., 2021) |
| LOC\_Os12g33240\* | *mitochondrial ribosomal protein S10* | Blue | DG, CN | mitochondrial ribosomal protein S10 |  |
| LOC\_Os01g16890 | *60S ribosomal protein L30* | Blue | BW | ribosomal protein L7Ae, putative, expressed  60S ribosomal protein L30 |  |
| LOC\_Os01g39860 |  | Blue | BW | 1-aminocyclopropane-1-carboxylate oxidase protein, putative, expressed |  |
| LOC\_Os02g35870 | *Avr9 elicitor response protein* | Blue | BW, CC | Similar to Avr9 elicitor response protein |  |
| LOC\_Os03g02420 |  | Blue | BW | KH domain containing protein, putative, expressed |  |
| LOC\_Os03g08470 | *OsERF1* | Blue | BW | AP2 domain containing protein, APETALA2/ethylene-responsive element binding protein 125, OsERF1 |  |
| LOC\_Os03g13950 |  | Blue | BW |  |  |
| LOC\_Os04g34940 |  | Blue | BW | acetylation lowers binding affinity protein 5, acetylation lowers binding affinity 5, Alba family protein 5, OsAlba5 |  |
| LOC\_Os05g46430 | *60S ribosomal protein L28-1* | Blue | BW | 60S ribosomal protein L28-1, putative, expressed |  |
| LOC\_Os06g16290 | *ribosomal protein L7Ae* | Blue | BW | ribosomal protein L7Ae, putative, expressed |  |
| LOC\_Os07g09000 | *OsPHF1* | Blue | BW | Phosphate transporter traffic facilitator 1, OsPHF1 | Chen et al., 2011; Hu et al., 2018; Wu et al., 2011 |
| LOC\_Os07g46750 |  | Blue | BW | EF-1-beta and EF-1-beta' stimulate the exchange of GDP bound to EF-1-alpha to GTP |  |
| LOC\_Os08g09200 |  | Blue | BW | Catalyzes the isomerization of citrate to isocitrate via cis-aconitate (By similarity) |  |
| LOC\_Os08g44380 | *L1P ribosomal protein* | Blue | BW | L1P family of ribosomal proteins domain containing protein, expressed |  |
| LOC\_Os11g07450 |  | Blue | BW |  |  |
| LOC\_Os12g38180 |  | Blue | BW |  |  |
| LOC\_Os12g42070 |  | Blue | BW, CC | OsWAK receptor-like protein kinase, expressed |  |
| LOC\_Os08g13440 | *OsGLP8-12* | Blue | CN | Germin-like protein 8-12, OsGLP8-12 |  |
| LOC\_Os01g70200 |  | Blue | CC | secondary cell wall-related glycosyltransferase family 47, rice ortholog of Arabidopsis IRX10, IRREGULAR XYLEM10, OsIRX10 |  |
| LOC\_Os04g42200 |  | Blue | CC | expressed protein |  |
| LOC\_Os06g11510 |  | Blue | CC | expressed protein |  |
| LOC\_Os06g48780 | *60S* *acidic ribosomal protein* | Blue | CC | 60S acidic ribosomal protein |  |
| LOC\_Os10g16974 |  | Blue | CC | cytochrome P450, putative, expressed |  |
| LOC\_Os10g40824 | expressed protein | Blue | CC | expressed protein |  |
| LOC\_Os10g22560\* | *OsPTR2* | Black | DG | peptide transporter OsPTR2, putative, expressed | (Ouyangab et al., 2010) |
| LOC\_Os04g49650\* | DUF581 domain containing protein | Black | BW | DUF581 domain containing protein, expressed | (He and Gan, 2004;K and Laxmi, 2014;Nietzsche et al., 2014;Jamsheer et al., 2015) |
| LOC\_Os02g49440\* | *OsOBF4* | Black | BW | dof zinc finger domain containing protein, putative, expressed  OBF binding protein 4, OsOBF4 | (Yanagisawa, 2002;Lijavetzky et al., 2003;Li et al., 2016) |
| LOC\_Os04g11400 | expressed protein | Black | BW | expressed protein |  |
| LOC\_Os07g10460 |  | Black | CC | 5-nucleotidase surE, putative, expressed |  |
| LOC\_Os07g10420 | expressed protein | Green | DG, CN | expressed protein |  |
| LOC\_Os05g09724\* | HAD superfamily phosphatase | Green | DG, CN | HAD superfamily phosphatase, putative, expressed | (Shaik and Ramakrishna, 2013;Purty et al., 2017) |
| LOC\_Os02g57630\* | *OsUCH2* | Green | BW | ubiquitin carboxyl-terminal hydrolase, family 1, putative, expressed  UCH2; ubiquitin thiolesterase/ ubiquitin-specific protease | (Yang et al., 2007;Wang et al., 2018) |
| LOC\_Os07g26630\* | *OsPIP2.4* | Green | BW | aquaporin protein, putative, expressed  Aquaporin PIP2.4, OsPIP2.4 | (Lian et al., 2006;Kuwagata et al., 2012;Mosa et al., 2012;Kumar et al., 2014;Chu et al., 2018) |
| LOC\_Os04g51300\* | *OsAPX* | Green | BW | peroxidase precursor, putative, expressed  Plant ascorbate peroxidase domain containing protein, OsAPX | (Caverzan et al., 2012) |
| LOC\_Os10g01470\* | *OsHOX15* | Green | BW | homeobox associated leucine zipper, putative, expressed, OsHOX15 | (Agalou et al., 2008;Elhiti and Stasolla, 2009;Perotti et al., 2017) |
| LOC\_Os05g05140 | expressed protein | Green | BW | expressed protein |  |
| LOC\_Os11g03730\* | *OsARAF3* | Green | BW | Arabinofuranosidase 3  OsARAF3 | (Sarhadi et al., 2012) |
| LOC\_Os11g44800 | expressed protein | Green | CC | Expressed protein |  |
| LOC\_Os05g43310 | Photosystem II reaction center W protein | Green | CC | photosystem II reaction center W protein, chloroplast precursor, putative, expressed |  |
| LOC\_Os04g40950 | *OsGAPDH* | Green | CC | glyceraldehyde-3-phosphate dehydrogenase, OsGAPDH |  |
| LOC\_Os10g25030\* | *OsRCCR1* | Green | CC | red chlorophyll catabolite reductase, OsRCCR1 | (Tang et al., 2011) |
| LOC\_Os02g02830\* | *OsUBC13* | Green | CC | Ubiquitin-conjugating enzyme 13, OsUBC13 | (Zhiguo et al., 2015; Ma et al., 2021) |
| LOC\_Os04g49748\* | *OsPUP6* | Green | CC | purine permease, OsPUP6 | (Qi and Xiong, 2013) |
| LOC\_Os02g26720\* | *OsITPK4* | Red | DG, BW, CN | Inositol 1, 3, 4-trisphosphate 5/6-kinase, OsITPK4 | (Field et al., 2000;Du et al., 2011) |
| LOC\_Os03g18130\* | *OsASN1* | Red | DG, CN | asparagine synthetase, OsASN1 | (Luo et al., 2018;Lee et al., 2020) |
| LOC\_Os03g52370 | *PIII4* | Red | DG, BW, CN | PIII4 - Proteinase inhibitor II family protein precursor, expressed |  |
| LOC\_Os01g02700 | protein kinase domain containing protein | Red | BW | protein kinase domain containing protein, expressed |  |
| LOC\_Os01g03390\* | Bowman-Birk type bran trypsin inhibitor precursor, *OsBBT17* | Red | BW | Bowman-Birk type bran trypsin inhibitor precursor, expressed, OsBBT17 | (Qu et al., 2003;Habib and Fazili, 2007) |
| LOC\_Os01g15340 | flowering-promoting factor-like 1, *OsFPFL1* | Red | BW | flowering-promoting factor-like 1, OsFPFL1  root architecture associated 1, OsRAA1 |  |
| LOC\_Os01g32780 |  | Red | BW | universal stress protein domain containing protein, putative, expressed |  |
| LOC\_Os01g42860\* | O. sativa chymotrypsin protease inhibitor 2; *OCPI2* | Red | BW, CN | O. sativa chymotrypsin protease inhibitor 2,  OCPI2 | (Huang et al., 2007) |
| LOC\_Os03g48780 | Oxalate oxidase 4; *OsOXO4* | Red | BW | Cupin domain containing protein, expressed  oxalate oxidase 4, OsOXO4 |  |
| LOC\_Os04g43200 | caleosin related protein; *OsClo5* | Red | BW, CN | Calcium-binding and phospholipid-binding protein, Negative regulation of salt stress tolerance; EF-hand, abscisic acid responsive 27-kDa protein; caleosin family protein 5; OsClo5 |  |
| LOC\_Os04g56430\* |  | Red | BW | Root meander curling, receptor-like protein, OsRMC | (Zhang et al., 2009;Serra et al., 2013) |
| LOC\_Os06g46740 | early nodulin-like protein 18; *OsENODL18* | Red | BW | early nodulin 20 precursor, putative, expressed  early nodulin-like protein 18; OsENODL18 |  |
| LOC\_Os07g01250 |  | Red | BW | tobamovirus multiplication protein, putative, expressed |  |
| LOC\_Os07g02810 |  | Red | BW | L-ascorbate oxidase homolog precursor, putative, expressed |  |
| LOC\_Os07g29600 | Zinc finger, RING/FYVE/PHD-type domain containing protein, *OsRFPH2-17* | Red | BW | Zinc finger, RING/FYVE/PHD-type domain containing protein, OsRFPH2-17 |  |
| LOC\_Os07g47090 | KIP1 | Red | BW | KIP1, putative, expressed |  |
| LOC\_Os09g27260 |  | Red | BW | plant viral response family protein, putative, expressed |  |
| LOC\_Os09g33820 | Phospholypase A1 | Red | BW | Similar to Phospholipase A1 |  |
| LOC\_Os10g02070 | Peroxidase A, class III peroxidase 126; *OsPrx126* | Red | BW | Peroxidase A, class III peroxidase 126; OsPrx126 |  |
| LOC\_Os11g26790\* | dehydrin; *OsRAB16A* | Red | BW, CN | dehydrin, putative, expressed, RAB (responsive to ABA) gene 16A, OsRAB16A | (Chourey et al., 2003;Ganguly et al., 2012;Nagaraju et al., 2019) |
| LOC\_Os02g41840 | DUF584 domain containing protein | Red | CC | DUF584 domain containing protein, putative, expressed |  |
| LOC\_Os02g44990 | F-box and DUF domain containing protein; *OsFBDUF13* | Red | CC | OsFBDUF13 - F-box and DUF domain containing protein, expressed |  |
| LOC\_Os03g52660 | ATP synthase F1 | Red | CC | ATP synthase F1, delta subunit family protein, putative, expressed |  |
| LOC\_Os10g28080 | glycosyl hydrolase | Red | CC | glycosyl hydrolase, putative, expressed |  |

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