

### Supplementary 3: Genes involved in PGP (Plant growth promoting) functions.

| Functions                          | Genes Involved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| CARBON_DIOXID_FIXATION             | <i>ppc, icd, korA, oorA, oforA, korB, oorB, oforB, cynT, can, rbcL, cbbL, cbbR, cmpR, ndhR</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| IRON_ACQUISITION                   | <i>hmoA, cysG, hema, hemB, hemC, hemD, hemL, sirA, ylnD, cysG, cobA, fmnA, ecfT, ndh, nosX, apbE, yojL, fmnB, coxC, ctaE, foxA, coxA, ctaD, foxB, coxB, ctaC, dps, dpsA, fur, furB, zur, pmrA, troR, lipA, lipL, baeS, bfr, ftnA, ftn, fecB, htsA, fecC, htsB, fecD, htsC, fecE, feuA, yvrC, ABC_FEV_S, fatB, feuB, feuC, chuU, yfhA, hmuU, ABC_FEV_P, fatC, yusV, ABC_FEV_A, feuD, efeB, efeO, efeU, FTR, FTH1, feoA, feoB, mta, ywnD, ymfI, fabG, efpl, blt, ydfK, yqgA, bsbB, hemN, hemZ, cotB3, ddc, dfoI, desA, acrR, smeT, fes, cbsF, cbsH, fhuF, asbA, pchC, rhbD, rhbF, ymfE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NITROGEN_ACQUISITION               | <i>allB, allC, amtB, ybaG, amt, TC_AAT, yifK, gltP, gltT, ntrA, rpoN, peb1A, glnH, peb1B, glnP, glnM, peb1C, glnQ, glnA, glnB, glnY, gltB, gltD, glnT, peb1A, glnH, peb1B, glnP, glnM, peb1C, glnQ, ycbA, glnK, ycbB, glnL, nifM, ppiC, nifS, iscS, nifU, iscU, narK, nrtP, nrt, narU, nasA, nasC, narB, nfrA1, ywcG, nfrA2, ycnD, nirB, nirD, norQ, nosX, apbE, yojL, fmnB, narL, narQ, nirC, eutA, eutB, eutC, eutL, eutM, cchA, eutN, eutN, eutP, eutS, ypfE, eutH, frdA, glnB, glnY, glnR, narL, narQ, acoR, draG, fixA, etfB, fixB, etfA, tnrA, ntrA, rpoN, ABC_SN_A, ytlC, ABC_SN_P, tgnB, tgnR, atzF, uca, dur, urd ureA, ureB, ureC, ureD, ureF, ureG, urel, ycgI</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| PHOSPHATE_SOLUBILIZATION           | <i>aceF, pdhC, ackA, acyP, yccX, korA, oorA, oforA, korB, oorB, oforB, lpd, pdhD, maeA, sfcA, ywK, pduL, poxL, pta, actP, acnA, prpF, buk, menI, ydil, ydil, ydil, ybdB, ptb, ybgC, CS, gltA, acnA, TC_CITMHS, CitMHS_family, citN, citS, frc, yfdW, nagK, sdhA, frdA, sdhB, frdB, sdhC, frdC, dcta, dgoT, argD, pqqL, pqqL, yddC, TC_GNTP, gph, rbcL, cbbL, aceA, dkgA, TC_DASS, yfIS, kgtP, icd, gloB, gloC, ldh, lra6, mgsA, lctP, fumA, fumB, fumC, maeA, sfcA, ywK, mdh, mqo, dcta, TC_DASS, yfIS, maeN, accA, accB, bccP, accC, accD, pccB, mdcF, aceB, glcB, mdh, mqo, pckA, pyc, dcta, ackA, acs, acul, yhdH, bcd, mmdA, mmsA, iolA, pduL, pta, cuyA, dapA, mosA, dat, dld, dsdA, eda, ilvA, tdcB, ldh, ligK, galC, maeA, sfcA, ywK, mccb, metC, mhpE, nagK, patB, malY, pps, ppsA, ptsI, pyk, sdaA, sdaB, tdcG, sseA, tpav, bioA, yhxA, ttuC, dmlA, aarC, cat1, aceA, frdA, gabD, icd, korA, oorA, oforA, korB, oorB, oforB, sucA, sucB, sucD, dcta, ttuC, dmlA, dcta, ttuB, actA, ilvD, gnl, GAMMACA_like, cynT, can, nasA, nasC, narB, phnF, phnP, sat, met3, phoA, phoD, ppx, ppx_gppA, phoE, phoB, phoH, phoP, phoB1, phoR, pph, regX3, yciG, ymdF, gsiB, yxiE, TC_PIT, phoU, phoY, pstA, pstB, phoT, pstC, phoW, pstS, phoS</i> |
| POTASSIUM_SOLUBILIZATION           | <i>TC_DASS, yfIS, GAMMACA_like, cynT, can, nasA, nasC, narB, sat, met3, aceF, pdhC, ackA, acyP, yccX, korA, oorA, oforA, korB, oorB, oforB, lpd, pdhD, maeA, sfcA, ywK, pduL, poxL, pta, actP, acnA, prpF, buk, menI, ydil, ydil, ydil, ybdB, ptb, ybgC, CS, gltA, acnA, TC_CITMHS, CitMHS_family, citN, citS, nagK, sdhA, frdA, sdhB, frdB, sdhC, frdC, dcta, dgoT, argD, pqqL, pqqL, yddC, TC_GNTP, aceA, dkgA, TC_DASS, yfIS, kgtP, icd, gloB, gloC, ldh, lra6, mgsA, lctP, fumA, fumB, fumC, maeA, sfcA, ywK, mdh, mqo, dcta, maeN, accA, accB, bccP, accC, accD, pccB, mdcF, aceB, glcB, mdh, mqo, pckA, pyc, dcta, ackA, acs, acul, yhdH, bcd, mmdA, mmsA, iolA, pduL, pta, cuyA, dapA, mosA, dat, dld, dsdA, eda, ilvA, tdcB, ldh, ligK, galC, maeA, sfcA, ywK, mccb, metC, mhpEnagK, patB, malY, pps, ppsA, ptsI, pyk, sdaA, sdaB, tdcG, sseA, tpav, bioA, yhxA, ttuC, dmlA, aarC, cat1, aceA, frdA, gabD, icd, korA, oorA, oforA, korB, oorB, oforB, sucA, sucB, sucD, dcta, ttuC, dmlA, dcta, actA, ilvD, gnl, kdpA, kdpB, kdpC, kdpD, kch, trkA, mthK, pch, trkA, ktrA, trkG, trkH, ktrB</i>                                                                                                                                       |
| SULFUR_ASSIMILATION MINERALIZATION | <i>ssuD, ssuE, ssuA, ssuB, ssuC, dmdB, cysC, cysH, cysI, cysJ, cysK, cysK2, sat, met3, TC_SULP, cysA, cysT, cysU, cysW, sbp, nifS, iscS, sseA, cysE, cysQ, cysS, ggt</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| FLUORIDE_DETOXIFICATION            | <i>TC_CIC, eriC, crcB</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| Functions                                            | Genes Involved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HEAVY_METAL_DETOXIFICATION                           | <i>iscR, glpF, pduF, pstA, pstB, phoT, pstC, phoW, pstS, phoS, ars, arsenical_pump_membrane_protein, arsC, arsC1, arsR, glpF, pduF, phoU, phoY, pstA, pstB, phoT, pstC, phoW, pstS, phoS, arsB, arsenical_pump_membrane_protein, arsC, arsC1, arsR, arsR, cadC, smtB, cadC, smtB, czcD, zitB, yrdO, zntA, cadA, chrC, sodB, sodA, chrR, cbiL, cbiO, cbiA, cbiB, cobD, cbiC, cbiD, cbiF, cbiG, cbiI, cobA, btuR, cobC, phpB, cobP, cobU, cobQ, cbiP, cobS, cobV, cobU, cobT, rhnA_cobC, corC, czcD, zitB, yrdO, copA, ctpA, cutC, csoR, ricR, cueR, mhqA, mhqE, mhqO, yaiA, ATOX1, ATX1, copZ, golB, cueR, cusR, copR, silR, cusS, copS, silS, dps, dpsA, pcoC, copC, pcoD, copD, delftibactin_hydrolase_domain_protein, mta, ywnD, ymfI, fabG, efpI, blt, ydfK, yqgA, bsbB, fecB, htsA, fecC, htsB, fecD, htsC, fecE, hemN, hemZ, cotB3, ddc, dfol, desA, acrR, smeT, fes, cbsF, cbsH, ymfE, fhuF, feuA, yvrC, ABC_FEV_S, fatB, feuB, feuC, chuU, yfhA, hmuU, ABC_FEV_P, fatC, fatD, yusV, ABC_FEV_A, feuD, fmnA, ecfT, ndh, nosX, apbE, yojL, fmnB, coxC, ctaE, foxA, coxA, ctaD, foxB, coxB, ctaC, hmoA, cysG, hemA, hemB, hemC, hemD, hemL, sirA, ylnD, cysG, cobA, fur, furB, zur, pmrA, troR, lipA, lipL, asbA, pchC, dps, dpsA, baeS, bfr, ftnA, ftn, rhbD, rhbF, efeB, efeO, efeU, FTR, FTH1, feoA, feoB, cadC, smtB, pbrB, pbrC, zntA, cadA, troR, mnth, mntP, yceF, ykoY, cbiO, ddpA, ABC_PE_S, ddpB, appB, ddpC, appC, ddpD, ddpF, dppB1, dppC1, dppD1, dppEhoXN, nixA, nika, cntA, nikB, cntB, nikC, cntC, nikD, cntD, nika, cntF, cysA, dedA, TELLURIUM_RESISTANCE, terD, terE, terF, yceG, yceH, TC_ZIP, zupT, ZRT3, ZIP2, czcD, zitB, yrdO, cadC, smtB, czrA, yozA, zurR, zur, fieF, zntA, cadA, znuA, znuB, znuC, cusR, copR, silR, cusS, copS, silS</i> |
| XENOBIOTICS_BIODEGRADATION                           | <i>biuH, atzF, catE, pcaC, pcaD, catD, namA, nbaA, bsdC, cynX, yeaN, glpA, glpD, opaA, pepQ, pepP, php, opd, adpB, acpD, azoR, azr, azoB, bluB, drgA, nfnB, nfsB, nfrA1, ywcG, nfrA2, ycnD, ssuE, ncd2, npd, pnoA, ybhF, yadG, ecsA, ybhS, ecsB, mhpE, cpxB, cpx, cyp109E1, cyp106A2, yjiB, aldH, dhaS, dehl, dhaA, EC_1_1_1_1, adh, adhE, aldH, dhaS, dhaA, frmA, ADH5, adhC, yiaY, dhaA, rhIB, dhaA, EC_1_1_1_1, adh, adhE, frmA, ADH5, adhC, yiaY, nahD, EC_3_5_1_4, amiE, paaG, paaH, hbd, fadB, mmgB, catE, nemA, nfnB, nfsB, bbsH, catE, mhpE</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| PHYTOHORMONE-ABSCISIC_ACID_DEGRADATION               | <i>auxin_symporter, EC_3_5_1_4, amiE, iaaT, yedL, ysnE, yhcX, aldH, dhaS, betB_homologous, bsdC, poxL, pyc, EC_3_5_1_4, amiE, lysN, patA, patA1, puuE, tpav, bioA, yhxA, trpA, trpB, trpC, trpD, trpE, phnA, trpF, trpR, trpS, yodT, yugH</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| PHYTOHORMONE-CYTOKININS DERIVATE_PRODUCTION          | <i>dapF, hflX, log, yvdD, miaA, ipt, miaB, reca, recX, hprT, hpt, ndmA, xdhB, pucD, xdhC, paod, ygeB, pucA, xpt, yagT, ygeT, xdhB, pbuG, azgA, ghxP, ghxQ, adeQ, pubX</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PHYTOHORMONE-GAMMA-AMINOBUTYRIC_ACID GABA_PRODUCTION | <i>aldH, dhaS, gadA, gadB, patA1, puuB, ordL, gabT, puuE, gabD, gabP</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| PHYTOHORMONE-GIBBERELLINS_PRODUCTION                 | <i>Uncharacterized_P450_system_3Fe_4S_ferredoxin</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| PLANT_SIGNAL-BRANCHING_INHIBITION                    | <i>paia, speG, speB, aldH, dhaS, patA1, puuB, ordL, puuR, puuP, gsp, speE, SRM, SPEC_3, SPSPD, potA, potB, potC, potD</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PLANT_SIGNAL-BRANCHING_STIMULATION                   | <i>EC_3_5_1_4, amiE, iaaT, yedL, ysnE, yhcX, aldH, dhaS, betB_homologous, bsdC, poxL, pyc, EC_3_5_1_4, amiE, lysN, patA, patA1, puuE, tpav, bioA, yhxA, trpA, trpB, trpC, trpD, trpE, phnA, trpF, trpR, trpS, yugH</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| PLANT_SIGNAL-EMBRYOGENESIS                           | <i>paia, speG, speB, aldH, dhaS, patA1, puuB, ordL, puuR, puuP, gsp, speE, SRM, SPEC_3, SPSPD, potA, potB, potC, potD</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PLANT_SIGNAL-GERMINATION_STIMULATION                 | <i>cysA, cysC, cysE, cysH, cysI, cysJ, cysK, cysK2, cysQ, cysS, cysT, cysU, cysW, sat, met3, lipA, lipL, ggt, gadA, gadB, tpav, bioA, yhxA, fhs, fmt, folA, folB, folC, folD, folE, folE2, folK, folP, gcvT, glyA, meth, pabA, pabB, pabC, phoA, phoD, purH, purN, purU, ribA, ribBA, thyA, ygfA, fthC, yqgN, folN, yitI</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| PLANT_SIGNAL-OTHER_TERPENOID DERIVATE_PRODUCTION     | <i>crtE, ispA, crtH, crtISO, crtI, crtM, crtN, crtO, crtP, crtQ, cruC, cruD, ispH, lytB, gcpE, ispG, idi, ispD, ispE, ispF, ispH, lytB, sphC, crtE, ispA, dxs, hepST, idi</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| PLANT_SIGNAL-PHOSPHOLIPID_PRODUCTION                 | <i>cdsA, ynbB, clsA_B, ybhO, ywiE, clsC, ymdC, pmtA, psd, PISD, pgpA, CHO1, pssA</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| PLANT_SIGNAL-UBIQUINONE COENZYME_Q_PRODUCTION        | <i>ubiE, ubiX, bsdB</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| PLANT_SIGNALLING_VOLATILES | <i>aceF, pdhCacoA, acoB, acoR, acuB, acuC, budA, aldC, aldB, alsD, budB, ilvK, alsS, ilvB, ilvG, ilvI, budC, butB, ilvH, ilvN, lpd, pdhD, gldA, dhaD, cysA, cysC, cysE, cysH, cysI, cysJ, cysK, cysK2, cysQ, cysS, cysT, cysU, cysW, sat, met3, OXCT_like, adh1, adh2_2, bdh, gbsB, hmgL, scoA, scoB, accA, accB, bccP, accC, accD, acd, desA, fabD, bmyD, fabF, fabH, fabI, fabL, fabZ, fadB, fadD, fadN, ymfI, fabG, efpI</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| PLANT_VITAMIN_PRODUCTION   | <i>moaA, moaB, moaC_, moaX, moeA, modA, modB, bluB, drgA, cbiA, cbiB, cobD, cbiC, cbiD, cbiF, cbiG, cbiH60, cbil, cbil, cbiX, cbiZ, cobA, btuR, cobC, phpB, cobD, cobL, cobP, cobU, cobQ, cbiP, cobS, cobV, cobU, cobT, pduX, rhnA_cobC, sirA, ylnD, cysG, cobA, feuB, feuC, chuU, yfhA, hmuU, ABC_FEV_P, fatC, fatD, adk, AK, dxs, nifS, iscS, phoA, rsgA, engC, tenA, tenI, thiC, thiD, thiE, thiF, thiG, thil, thiM, thiN, TPK1, THI80, thiO, ylmB, cytX, thiT, RFK, FMN1, bluB, drgA, nfrA1, ywcG, nfrA2, ycnD, ribA, ribBA, ribD, ribE, RIB5, ribC, ribF, ribH, RIB4, ssuE, ycsE, yitU, ywtE, yigB, LYSS5, acpT, UPB1_like, pydC, acpS, budB, ilvK, alsS, ilvB, ilvG, ilvI, coaBC, dfp, coaD, kdtB, coaE, dht, hydA, ilvC, ilvD, ilvE, ilvH, ilvN, panB, panC, panD, panE, apbA, preA, preT, pdxA, pdxK, pdxY, pdxS, pdx1, yaaD, pdxT, pdx2, yaaE, serA, serC, pdxF, thrC, fhs, fmt, folA, folB, folC, folD, folE, folE2, folK, folP, gcvT, glyA, meth, pabA, pabB, pabC, phoA, phoD, purH, purN, purU, ribA, ribBA, thyA, ygfA, fthC, yqgN, folN, yitI, dkgA, menA, menB, menC, menD, menE, menF, menH, menI, ydil, ydiL, ydil, ybdB, wrbA, ahbC, ctaA, ctaB, cyoE, cysG, gltX, hemA, hemB, hemC, hemD, hemE, hemH, ywfl, hemL, hemN, hemZ, hemQ, hemY, sirA, ylnD, cysG, cobA, sirB, lipA, lipL</i> |