

1 Supplementary file 1 for

2
3 **Transcription activator-like effectors from endosymbiotic bacteria control the**
4 **reproduction of their fungal host**

5
6 Ingrid Richter^a, Zerrin Uzum^a, Philipp Wein^a, Evelyn M. Molloy^a, Nadine Moebius^a, Timothy P. Stinear^b, Sacha J. Pidot^b,
7 Christian Hertweck^{a,c,*}

8
9 * Address correspondence to Christian Hertweck. christian.hertweck@leibniz-hki.de

10
11
12 **This PDF file includes:**

13
14 Figures S1 to S3
15 Tables S1 to S7
16 SI References
17
18
19
20
21

10 20 30 40 50 60 70 80 90 100
 M. rhizoxinica M1 (CBW77121) MCTASPAVEHAGPKSNSKALGSAARKPAATSRHTAPLDELRSKLGVHLRKGQPPASIGSTMPGRAVGSTMPARAI GVTPADRDTPGYSIDTVGVLGVDE
 Mycetohabitans sp. M2 (MN840555) MCTASPAVEHAGPKSNSKALGSAARKPAATSRHTAPLDELRSKLGVHLRKGQPPASVSGSTMPGRAVGSTMPARAI GVTPADRDTPGYSIDTVGVLGVDE
 Mycetohabitans sp. M3 (MN840550) VYTASPAVEHASPKNRKKSLGSTAPKPAATSRRTAALHELRSKIGAPLRGKQPRPSAGAAIP-----ARAI GVTPADYDTPGYSIDTVGVLGVDE
 Mycetohabitans sp. M4 (MN840552) VYTASPAVEHAGPKSNRKKSLGSTAPKPAATSRRTAALHELRSKIGAPLRGKQPRPSVGAaip-----ARAI GVTPADYDTPGYSIDTIGVLGVDE
 M. endofungorum M5 (MN840553) VYTASPAGEHAGPKSNHKKSLGTAPKPAATSRRTAALHELRSKIGAPLRGKQPRPSVGAaip-----ARAI GVTPADYDTPGYSIDTVGVLGVDE
 Mycetohabitans sp. M6 (MN840556) MCTASPAVEHAGPKSNSKALGSAARKPAATSRHTAPLDELRSKLGVHLRKGQPPASIGSTMPGRAVGSTMPARAI GVTPADRDTPGYSIDTVGVLGVDE
 Mycetohabitans sp. M7 (MN840551) VYTASPAVEHAGPKSNRKKSLGSTAPKPAATSRRTAALHELRSKIGAPLRGKQPRSSVGAaip-----ARAI GVTPADYDTPGYSIDTIGVLGVDE
 Mycetohabitans sp. M8 (MN840554) MCTASPAVEHAGPKSNSKALGSAARKPAATSRHTAPLDELRSKIGIRLRGKQPPASVRSAMP-----ARAI GVTPTDHDTPGYNIDTVGVLGVDE
 B. pseudomallei (ZP04890375) ETRHLAVSLFTGEEGREALS GWIADDFDPGGAARLQRMHQLMYAAAVLVKQNGRAAARLLRNYCG-----MSTERPDLQLKRQSYSMQRVLVSAR
 B. pseudomallei (ZP02502372) ETRHLAVSLFTGEEGREALS GWIADDFDPGGAARLQRMHQLMYAAAVLVKQNGRAAARLLRNYCG-----MSTERPDLQLKRQSYSMQRVLVSAR
 B. pseudomallei (ZP02494128) EARHLAVSLFTGEEGREALS GWIADDFDPGGAARLQRMHQLMYAAAVLVKQNGRAAARLLRNYCG-----MSTERPDLQLKRQSYSMQRVLVSAR
 X. euvesicatoria (WP011347306) LAEANA EIDLRSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 X. campestris (AZR30894) LARTNAQIEQLQSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 X. vasicola (AVQ09097) LARTNAQIEQLQSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 X. citri (ARR12757) LADANA EIDLRSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 X. campestris (AKS22319) LADTNA EIDLRSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 X. oryzae (AKO19890) LARTNAQIEQLQSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 X. oryzae (ACD59124) LARTNAQIEQLQSAYA QARDALQS DQASSSASAPARTLASH LAEEQRQEMQVLR TQLVRDEQMLSLQRVHAERCQRNARRLQERLAQVEAKLQQAQHS
 Burkholderia sp. (WP013592484) -----GAKLAHASIERTAAFIAEGSAAARGLPMPKFMNPRAI RDTLRLLRNREANAAAAREWGTLDHDFMQPVI AVNRLFPIPADASREAADARQAAI
 Burkholderia sp. (ADN59567) EIAIGAHGAKLADASIARTTASLAAGDATRGALPVPKFMNPRAI RDTLRLLRNREANATAREWADTLDEHFMQPVI AVNRLFPPVPANASREVADARQAAI
 R. solanacearum (YP003748288) MSATKP-RPEVLQSRPVPAGTRPEDLP GVPDLKAPQTAARQRKIDATAKA AAFNPPTSIAESMRGHLGLGR TKVAPQSVSIAEAMSS EAGLQVHLARLIGQ
 R. solanacearum (BAH04968) ASKHSGRPVNTVADYSPPARTVSAPPDLPTTADDRDRASRLARTAGLVQRAQRGLQKLGQTRHARAPKPEASSTRLPVTVPDSAPRYRQLLAQGF AATQD
 R. solanacearum (BAD42384) ASKHSGRPVNTVADYSPPARTVSAPPDLPTTADDRDRASRLARTAGLVQRAQRGLQKLGQTRHARAPKPEASSTRLPVTVPDSAPRYRQLLAQGF AATQD
 R. solanacearum (YP003747289) AAINVTSVPGFTKTTIDPLP--IPKRPPPPSLGKTTPRPAQGHKLD AIDRQV DNLTAKLYPPLPTGTRADPEAKRAI GSERAFASAVEALFVPSGASVEAK
 R. solanacearum (WP013209172) AAISVAVP GFTKTTIDPLP--VPKRPPPPKLGKVPKPAQGHKLDGIDRQV HNLTEKLYPPLPAGLHSEPDAKRSIAHEWAFAGAVEALFVPSGASAEAA
 R. solanacearum (WP011002069) IIFPFYSKTGTTPTRAQPKPDVVPA LKPAAPRRMPPAAPGRKHQRNVDAVVP PAMATSPRAEIRFPLTAD AQRYLRAQWRQAE TGGRFDQAAVDR LTTT
 R. solanacearum (WP003275417) MATTGPERAKARPSYPI PAR---ADMPPAPPTGPAHTPARQRKIDAAVRATFNPGPSIAELLRHPLGR---KPA AAPVPITEAMGTAEGM QARLGLFGS
 R. solanacearum (WP003274509) AAINVTSVPGFTKTTIDPLP--IPKRPPPPSLGKTTPRPAQGHKLD AIDRQV DNLTAKLYPPLPTGTRADPEAKRAI GSERAFASAVEALFVPSGASVEAK
 R. solanacearum (EAP71656) MSATRP-RPEVLQSRPVPAGTRPEDLP GVPDLKAPQTAARQRKIDATAKA AAFNPPTSIAESMRGHLGLGR TKVTPQSVSIAEAMGSEAGLQVHLARLIGQ
 R. solanacearum (EAP71039) MATTGPERAKARPSYPI PAR---ADMPPAPPTGPAHTPARQRKIDAAVRATFNPGPSIAELLRHPLGR---KPA AAPVPITEAMGTAEGM QARLGLFGS
 R. solanacearum (CBJ39728) AAINVAVP GFTKTTIDPLP--IPKRPPPPNLSKTPKPAQGHKLD R IDRQV DNLTAKLYPPLPSGQHGDPEAKRAI ASGRAFASAVEALFVPSGAGVANAV
 R. solanacearum (CBJ35355) MSATKP-RPEVLQSRPVPAGTRPEDLP SVPATGPAQPAARQRKIDATVKATFNPPSSIAESMRSHLGLGQA KVT-QAVSISEAMSSQAGLQVHLARLLGQ
 R. solanacearum (CAD17997) -----NALKAYPPPALSEASALQPATAREQARAARSQAATAALVQRTQQGLQRMGR TDNSHAAA SAEPGARQPVTVPE SARQYRQLLAQQFAATR D
 R. solanacearum (BAH47286) IIFPFYSKTGTTPTRAQPKPDVVPA LKPAAPRRMPPAAPGRKHQRNVDAVVP PAMATSPRAEIRFPLTAD AQRYLRAQWRQAE TGGRFDQAAVDR LTTT
 R. solanacearum (BAH47283) AAINVAVP GFTKTTIDPLP--IPKRQPPNLPKAPKPAQGHKLD R IDRQV HNLTKLYPPLPSGLHADPEAKRAI ASSRA FVS AVEALFVPSGAGVYAV
 R. solanacearum (BAH04967) -----NALKAYTPPALSEASALQPATAREQARAARSQAATAALVQRTQQGLQRMGR TDNSHAAA SAEPGARQPVTVPE SARQYRQLLAQQFASTR D
 R. solanacearum (BAD42389) MSATRP-RPEVLQSRPVPAGTRPEDLP SVPATGPAQPAARQRKIDATVKA AAFNPSSSIAESMRSHLGLGQDKVARQSVSIAEAMSS EAGMRVHLARLLS Q

```

      110      120      130      140      150      160      170      180      190      200
M. rhizoxinica M1 (CBW77121) PRHWTRAQLLNHLVEANYPGPTLATAELAYQLHTSLDDGTGEVNAARVQLVLFAMHEAGLRDNTRAMMD-----
Mycetohabitans sp. M2 (MN840555) PRHWTRAQLLNHLVEANYPGPTLATAELAYQLHTSLDDGTGEVNAARVQLVLFAMHEAGLRDNTRAMMD-----
Mycetohabitans sp. M3 (MN840550) PRLWTRAQLLNHLVEANYPGPNLATAELAHQLHTGLDDGTGKVSAAARQLVLFAMHEAGLRD-----
Mycetohabitans sp. M4 (MN840552) PRLWTRAQLLNHLVEANYPGPNLATAELAHQLHTGLDDGTGKVSAAARQLVLFAMHEAGLRD-----
M. endofungorum M5 (MN840553) PRLWTRAQLLNHLVEANYPGPNLATAELAHQLHTGLDDGTGKVSAAARQLVLFAMHEAGLRD-----
Mycetohabitans sp. M6 (MN840556) PRHWTRAQLLNHLVEANYPGPTLATAELAYQLHTSLDDGTGEVNAARVQLVLFAMHEAGLRDNTRAMMD-----
Mycetohabitans sp. M7 (MN840551) PRLWTRAQLLNHLVEANYPGPNLATAELAHQLHTGLDDGTGKVSAAARQLVLFAMHEAGLRD-----
Mycetohabitans sp. M8 (MN840554) PRYWTRAQLLNHLVEANYPGPNLVTAELAHQLHTGLDDGTGKVSAAARQLVLFAMHDAQVDR-----
B. pseudomallei (ZP04890375) GTSLDILGIPPSITGREHHAEQKSVYRNALAIQYLHEKLDAAAYKPDSEDMMLAAQIVSAEALGGSGDRTEREYHFSSR-----
B. pseudomallei (ZP02502372) GTSLDILGIPPSITGREHHAEQKSVYRNALAIQYLHEKLDAAAYKPDSEDMMLAAQIVSAEALGGSGDRTEREYHFSSR-----
B. pseudomallei (ZP02494128) GTSLDILGIPPSITGREHHAEQKSVYRNALAIQYLHEKLDAAAYKPDSEDMMLAAQIVSAEALGGSGDRTEREYHFSSR-----
X. euvesicatoria (WP011347306) RINTEEVWQHEQTVSALEAANGDMQRAVETAAQPPANEARRAPDSDVADAMAALLDALPGFR-----EDTIGPMSR
X. campestris (AZR30894) RVNTEKELWQHEQTVSALEAANGDMQRAVETAAQPPANEARRAPDSDVADAMAALLDALPGFR-----EDTIGPMSR
X. vasicola (AVQ09097) RVNTEKELWQHEQTVSALEAANGDMQRAVETAAQPPANEARRAPDSDVADAMAALLDALPGFR-----EDTIGPMSR
X. citri (ARR12757) RINTEELWQYEQTVSALEAANGDMQRVVEHAAAHPPADEALFVAADIVADTMEALLEALPGFR-----EQTIDPVNR
X. campestris (AKS22319) RINTEELWQHEQTVSVLEAADGDMQRAVEHAAQLPADEARFVASDIVADTMQTLLDVLPGFR-----EETLDPVSR
X. oryzae (AKO19890) RVNTEELWQDHTVSALEAANGDMQRAVETAAQSPADEARRAPDSDVADAMAALLDALPGFR-----EDTIGPMSR
X. oryzae (ACD59124) RVNTEKELWQDHTVSALEAANGDMQRAVETAAQSPADEARRAPDSDVADAMAALLDALPGFR-----EDTIGPMSR
Burkholderia sp. (WP013592484) NRLLDGLTLRRPRPARADASLPPAVERLPQACVVPVLAQALAEASDGDPILAARILDRLQQPF-----DIAG-----
Burkholderia sp. (ADN59567) DSLLDGLTLRRPRPAQADPTLPLTVDRLPQECVVPVADALAEASGGDPALAARILHRLQQLPL-----DIGGLSGVSAIGDTSSTRDTAGTAENSGISG
R. solanacearum (YP003748288) LVHAPAVHTLHQALLGGLPQGAESASTHPLAQHVLVAEALANACGGDAVRATAALEALKAGT-----FLPTSHAEGE
R. solanacearum (BAH04968) AGAVGRLADRLRALAPPLAEAG--ERTRYARPMLLAKVLEHTCGQDAAAALRVLDRLTGGM-----RLGAPTFAAPDG
R. solanacearum (BAD42384) AGAVGRLADRLRALAPPLAEAG--ERTRYARPMLLAKVLEHTCGQDAAAALRVLDRLTGGM-----RLGAPTFAAPDG
R. solanacearum (YP003747289) AETAPHLHNLRLDLTRIAEQPDAVDSTRYAGMLQCARALAAATGGNAADACAALHLRTHF-----SLTDGSDNAP
R. solanacearum (WP013209172) SR----LPDLLGHLKQVADAQPGVADATRYAGMLQCARALATATGGNAADACVALEHLRTHF-----SLTDGSGGAP
R. solanacearum (WP011002069) LT----ARLLATSAAATGNGVHEDSGEKACARAIMVCDALAQATGGDPARAHDALLALLDIT-----SHADAR
R. solanacearum (WP003275417) RAGAPGMQALHTALLGTFAARLVASASARPFARHVLLAEALANASEGDAVRAMAALRVLQSGR-----FLPMLFPENQ
R. solanacearum (WP003274509) AETARHLHNLRLDLTQIAETQPDAAADSTRYAGMLQCARALVAATGGNAADACAALGHLRTHF-----SLTDGSDSES
R. solanacearum (EAP71656) PAHAPAVRTLHRALLDRLPRVAESASAPFAHQHVLVTEALANACGGDAVRATAALRALKAGA-----FLPTLHAEGE
R. solanacearum (EAP71039) RAGAPGMQALHTALLGTFAARLVASASARPFARHVLLAEALANASEGDAVRAMAALRVLQSGR-----FLPMSFPENQ
R. solanacearum (CBJ39728) PG----LRNLIHGLARMAAQPDVDTTRYAGMLQCARALATATGGRADEACRAFEHLREHF-----SLTDGSDGAA
R. solanacearum (CBJ35355) FVHAPTVPRAFHDALLDSLQPTTESASERPFQHVLLAEALANACGGDTRVATAALHALKAGE-----FLPTSHAADE
R. solanacearum (CAD17997) TGAVARLSARLEALAPP-ADAVG--EHLRYARPTLVAEALAHTCGHDAAAAALRVLASLENEA-----RLDTAAFGTTPDAPARA
R. solanacearum (BAH47286) LT----ARLLATSAAATGNGVHEDSGEKACARAIMVSDALAQATGGDPARAHDALLALLDIT-----SHADAR
R. solanacearum (BAH47283) PG----LQTLIDGLAGMAEQPDVDTTRYAGMLQCARALATATGGRADEACRALEHLRDRF-----SLTDGSDGAP
R. solanacearum (BAH04967) TGAVTRLSARLEALAPP-ADAVG--EHLRYARPTLVAEALAHTCGHDAAAAALRVLASLENEA-----RLDTAAFGTTPDAPARS
R. solanacearum (BAD42389) PLHAPAVRALHGALLDSLQPTTESASGRGFAHQHVLVAEALVNACGGDITIRATAALRALKAGE-----FLPTAHGTGD

```

```

                210      220      230      240      250      260      270      280      290      300
                |.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
M. rhizoxinica M1 (CBW77121) -----STMATMVLQQLRLLNFDQPFHDAPTPTGDARLPDQQLQAWRASWETARVLRTEEGFETLLKLR-----
Mycetohabitans sp. M2 (MN840555) -----STMATMVLQQLRVLNFDQPFHDAPTPGDAHLDPDQQLQAWRASWETARVLRTEEGFETLLKLR-----
Mycetohabitans sp. M3 (MN840550) -----STTATMMLRQLRRLNFDQPFHDASAAAGGAHLDPDQR-QAWRASWETARVLRTEYGFETLLKLR-----
Mycetohabitans sp. M4 (MN840552) -----STTATMVLRLRRLNFDQPFHDASAAVGGGAHLDPDQR-QAWRASWETARVLRTEYGFETLLKLR-----
M. endofungorum M5 (MN840553) -----STTATMVLRLRRLNFDQPFHDASAAAGGAHLDPDQR-QAWRASWETARVLRTEYGFETLLKLR-----
Mycetohabitans sp. M6 (MN840556) -----STMATMVLQQLRLLNFDQPFHDAPTPTGDARLPDQQLQAWRASWETARVLRTEEGFETLLKLR-----
Mycetohabitans sp. M7 (MN840551) -----STTATMMLRQLRRLNFDQPFHDASAVAGGAHLDPDQR-QAWRASWETARVLRTEYGFETLLKLR-----
Mycetohabitans sp. M8 (MN840554) -----STTATKVLRLRRLNFDQPFHDVSAAGGAHLDPDQR-QAWRASWETARVLRTEYGFETLLKLR-----
B. pseudomallei (ZP04890375) -----VVDNLGSIYQERLSIDALACAANLISIDRDNGAKALGAVAMLSSEQADVMDALEQAGELVRLPLGIRRDIA
B. pseudomallei (ZP02502372) -----VVDNLGSIYQERLSIDALACAANLISIDRDNGAKALGAVAMLSSEQADVMDALEQAGELVRLPLGIRRDIA
B. pseudomallei (ZP02494128) -----VVDNLGSIYQERLSIDALACAANLISIDRDNGAKALGAVAMLSSEQADVMDALEQAGELVRLPLGIRRDIA
X. euvesicatoria (WP011347306) -----QVLRRAWADGLHGRSAAFGGTDALQPVDAALNIALQALSIASEGDAEAAANVLRQLGEVQLRELI PPPQVSNAAEAVP
X. campestris (AZR30894) -----QILRTWAGGLQGRSAAFGGTDALQPVDAALNIALQALSIASEGDATAANVLRQLGEVQLRELI PPPQVSNAAEAVP
X. vasicola (AVQ09097) -----QILRTWAGGLQGRSAAFGGTDALQPVDAALNIALQALSIASEGDATAANVLRQLGEVQLRELI PPPQVSNAAEAVP
X. citri (ARR12757) -----QVLRRAWADGLHGRSAAFGGTDALQPVDAALNIALQALSIASEGDATAANVLRQLGEVQLRELI PPPQVSNAAEAVP
X. campestris (AKS22319) -----QVLRVWADGLHARSAAFGGTEALQPVDAALNIALQALSIASEGDATAANVLRQLGEVQLRELI PPPQVSNAAEAVP
X. oryzae (AKO19890) -----QVLRVWADGLHARSAAFGGTEALQPVDAALNIALQALSIASEGDATAANVLRQLGEVQLRELI PPPQVSNAAEAVP
X. oryzae (ACD59124) -----QVLRVWADGLHARSAAFGGTEALQPVDAALNIALQALSIASEGDATAANVLRQLGEVQLRELI PPPQVSNAAEAVP
Burkholderia sp. (WP013592484) -----DAAHAAPDELEERRAWRCAQDLAHARCAALEGLLRLQFGDGARHAEERGNGAARLVVYLQAGRKLR-----S
Burkholderia sp. (ADN59567) -----TSDASGTSNTSNTSNTTIRAAPAQHPSQAAPADLEQRAWRCAQNLAHARCAALEGLLRLQYGD SARHAEERGNGAARLVVYLQAAHKLR-----S
R. solanacearum (YP003748288) -----TASFRPGNGGANGSRI GRMAPDGPVRRP GNVGANTLHSAQPAAEDAML DAMHAAQELAGIGDVG MQALLALMPRLKPAKHEP
R. solanacearum (BAH04968) -----SPDAHEP-ALIRQASAASDAFFDALSDFHDAAPAAETGAAWRTAQLLARYHAGFDALCSLMH I PDVPEQRQA
R. solanacearum (BAD42384) -----SPDAHES-ALIRQASAASDAFFDALSDFHDAAPAAETGAAWRTAQLLARYHAGFDALCSLMH I PDVPEQRQA
R. solanacearum (YP003747289) -----PSPEKQAWSAAKLLAHTASGFDALLALR PALAEVDAARPDG-MNHRMKREGLRTFLQAADHLAARMPA-----DT
R. solanacearum (WP013209172) -----ATPAQKHAWSTAKLLAHTASGFDALLALR PALAEVDAARPDG-MNHRMKREGLRTFLQAADHLAARMPA-----DT
R. solanacearum (WP011002069) -----VRADVLALQ TALGMTAIGLDTLLAIAPHVLPQR-----GSAAPEIQREALRHALRAADHL LRRKPADAPGPTS
R. solanacearum (WP003275417) -----PASP-LGAPGSDTGAGALH PAR-----SSFPDDGMGLSPAQTARAKLDALHVGQALASIGDVG MQTLAASIPGLEPARHEP
R. solanacearum (WP003274509) -----PSPEKQAWSAAKLLAHTASGFDALLALR PALAEVDAARPDG-MNDRMKREGLRTFLQAADHLAARMPA-----DT
R. solanacearum (EAP71656) -----TASFRSSNAGADASRIARMA LDGPGVRRRTGSAGADALHSAQPAAEDAML DAMHAAQELAGIGDVG MQALLALMPRLKPARHEP
R. solanacearum (EAP71039) -----PASP-LRAPRFSDTGAGALH PAR-----SSFPDDGMGLSPAQTARAKLDALHVGQALASIGDVG IQTLAASIPGLEPALHEP
R. solanacearum (CBJ39728) -----PTPAQTQAWSTAKLLAHTASGFDALLALR PALAKVDATLPDDHMNGRMKREGLRTFLQAADLMAARLPAGVAPPQT
R. solanacearum (CBJ35355) -----TASFRSHASVRIASAAQVAPNGPDRGIDNADATSPSTRRVLAKDAML DAMHAAQELAGIGDVG MQALLALMPRLPAKREP
R. solanacearum (CAD17997) -----SVSSATFHDAISEQEGPDEPDGPPPPQSFSARSSASSEAFFDAMSVLEEPGEPEDAGAAWRTAQLLSRYHAGFEALCDLMRLPQT PAHRHA
R. solanacearum (BAH47286) -----VQADVLALQ TALGMTAIGLDTLLAIAPHVLPQRGL--AEGSAAPEIQREALRHALRAADHL LRRKPADAPGPTS
R. solanacearum (BAH47283) -----PIPAQMHWSTAKLLAHTASGFDALLALR PALAEVDAARPDG-MNHRMKREGLRTFLQAADLMAARLPAGVAPPQT
R. solanacearum (BAH04967) -----SVSSATFHDAISEQEAPEPDGPPPPQSFSARSSASSEAFFDAMSVLEEPGEPEDAGAAWRTAQLLSRYHAGFEALCDLMRLPQT PAHRHA
R. solanacearum (BAD42389) -----AASFRPSDAGAEADAATAQAEPAQGHARRIGNASANA IHPTRQTPVEHAMLDAMRAAQGLAGIGDVG MQALLAVMPPLOPAKREP

```

	310	320	330	340	350	360	370	380	390	400
<i>M. rhizoxinica</i> M1 (CBW77121)	AEKCAPLSRSVDRDMLHVL	LDSDRIDNHVRLTQP	HDS-----	HATPVHAAPDFDD	PSPSGT	DKRQWLQGH	LAMKGD	AKSTLLASQV	FAIA	
<i>Mycetohabitans</i> sp. M2 (MN840555)	AEKCAPLSRSVDRDMLHVL	LDSDRIDNHVRLTQP	HDS-----	HATPVHAAPDFDD	PSPSGT	DKRQWLQGH	LAMKGD	AKSTLLASQV	FAIA	
<i>Mycetohabitans</i> sp. M3 (MN840550)	AEKCAPLSRSADRDM	LHVLDDTAEWIENHVRLAQ	RDG-----	HATSVHAALDFDD	PSPSGT	TAKRQWLQSH	LAMKGD	AKATLLASQV	FAIA	
<i>Mycetohabitans</i> sp. M4 (MN840552)	AEKCAQLSRSANRDM	LHVLDDTAEWIENHVRLAQ	RDG-----	HATSVHAALDFDD	PSPSGT	TAKRQWLQSH	LAMKGD	AKATLLASQV	FAIA	
<i>M. endofungorum</i> M5 (MN840553)	AEKSAFLSRADRDM	LHVLDDTADRIETHVRLVQ	RDG-----	HATSVHAALDFDD	PSPSGT	TAKHQWLQSH	LAMKGD	AKATLLASQV	FAIA	
<i>Mycetohabitans</i> sp. M6 (MN840556)	AEKCAPLSRSVDRDMLHVL	LDSDRIDNHVRLTQP	HDS-----	HATPVHAAPDFDD	PSPSGT	DKRQWLQGH	LAMKGD	AKSTLLASQV	FAIA	
<i>Mycetohabitans</i> sp. M7 (MN840551)	AEKCAPLSRSADRDM	LHVLDDTAERIENHVRLAQ	RDG-----	HATSVHAALDFDD	PSPSGT	TAKRQWLQSH	LAMKGD	AKATLLASQV	FAIA	
<i>Mycetohabitans</i> sp. M8 (MN840554)	AEKFAPLSRSADRDM	LHVLDDTAERIENYVRFVQ	QHDG-----	HATPMHAALDFDD	SSPSGT	TAKRQWLQGH	LAMKGD	AKATLLASQV	FAIA	
<i>B. pseudomallei</i> (ZP04890375)	TVADLDKVLNANGEGPG	ARASVSSVDPMGQASAKAI	GKLRALAVAP-DIGNIP	IGAAARAAIPM	QOKIAYFKWRNG-LAD	ERKARLVFERLYKLN	KYA			
<i>B. pseudomallei</i> (ZP02502372)	TVADLDKVLNANGEGPG	ARASVSSVDPMGQASAKAI	GKLRALAVAP-DIGNIP	IGAAARAAIPM	QOKIAYFKWRNG-LAD	ERKARLVFERLYKLN	KYA			
<i>B. pseudomallei</i> (ZP02494128)	TVADLDKVLNANGEGPG	ARASVSSVDPMGQASAKAI	GKLRALAVAP-DIGNIP	IGAAARAAIPM	QOKIAYFKWRNG-LAD	ERKARLVFERLYKLN	KYA			
<i>X. euvesicatoria</i> (WP011347306)	PMEIVTACVGLLASVPR	GMQVLLHTLCEQPTSPARE	WLEAAQVYLRASHRLAL	TPDAEQAERAWLAD	AQMGARHAVHG	DSPQLQGSATDA	QRS	AFHAFR		
<i>X. campestris</i> (AZR30894)	PMEAVTTCVGLLASVPR	GMQVLLHTLCEQPTSPARE	WLEAAQVYLRASHRLAL	TPDAEQAERAWLAD	AQMGARHAVHG	DSPQLQGSATDA	QRS	AFHAFR		
<i>X. vasicola</i> (AVQ09097)	PMEAVTTCVGLLASVPR	GMQVLLHTLCEQPTSPARE	WLEAAQVYLRASHRLAL	TPDAEQAERAWLAD	AQMGARHAVHG	DSPQLQGSATDA	QRS	AFHAFR		
<i>X. citri</i> (ARR12757)	TMETVTACVGLLASVPR	GMQVLLHMLREEP	TPSREWLEAAQVYLRASHRLAL	TPDAEQAERTWLGD	AQMGARHAVHG	DSPQLQGSATDA	QRGAFHAFR			
<i>X. campestris</i> (AKS22319)	PMEETVTACVGLLASVPR	GMQVLLHMLREEP	TPSREWLEAAQVYLRASHRLAL	TPDAEQAERTWLGD	AQMGARHAVHG	DSPQLQGSATDA	QRGAFHAFR			
<i>X. oryzae</i> (AKO19890)	PMEAVTTCVGLLVSVPR	GMQVLLHMLREEP	TPSREWLEAAQVYLRASHRLAL	TPDAEQAERAWLAN	AQMGARHAVHG	DSPQLQGSATDA	QRS	AFHAFR		
<i>X. oryzae</i> (ACD59124)	PMEAVTTCVGLLVSVPR	GMQVLLHMLREEP	TPSREWLEAAQVYLRASHRLAL	TPDAEQAERAWLAD	AQMGARHAVHG	DSPQLQGSATDA	QRS	AFHAFR		
<i>Burkholderia</i> sp. (WP013592484)	IDADLGATPADLNHE	STYRFLFADDPYGRHMLAL	DAARRLPP-----	DAADAHDTG---	ACEIEAITAYRL	WLQLG-FDESGPGS	DLARASQLL	FDGG		
<i>Burkholderia</i> sp. (ADN59567)	MDADLGATPADLNDA	AYRMFIEDPYARHALLAL	DAARRLPP-----	DAASVHDTG---	DCEIEAITAYRL	WQMG-FDESGPGS	DLEAAQLL	FDGG		
<i>R. solanacearum</i> (YP003748288)	LECVLQAAEQVTTET	KGAQVRLPDIIGHAEK	VADTRNDTLACKVLR---	AQVKALRAPD	TYDALSRADKSAV	FAWRQG-FRTDDRHS	LLSQTQ	QLAK-F		
<i>R. solanacearum</i> (BAH04968)	AHAFLOAADALQHG	SVKPPAGSPQALLDK	HPIGSGTPEESLAIK-----	TLHGAAAVLRGE	APTPEQAGALFA	WRQG-FREEGPGT	ALDKTKAR	IGR--		
<i>R. solanacearum</i> (BAD42384)	AHAFLOAADALQHG	SVKPPAGSPQALLDK	HPIGSGTPEESLAIK-----	TLHGAAAVLRGE	APTPEQAGALFA	WRQG-FREEGPGT	ALDKTKAR	IGR--		
<i>R. solanacearum</i> (YP003747289)	PGALLQRARSHLAS	ADRHSLAGDGLAVHALL	CAADLHADPG-----	KAHAIGDR-----	TQVAAYVAWRSG-	YREGGKGSALERS	LGRMNK-F			
<i>R. solanacearum</i> (WP013209172)	PHAQWQDAHNRLSHA	ADRSTLGGDGLVNLAL	CAAKVHAAPH-----	DAANAIDDR-----	TQVAAYVAWRSG-	YREGGKGTALERS	LGRMNK-F			
<i>R. solanacearum</i> (WP011002069)	LEALAAALADPVLPA	VERGRPGSSAGASVAP	PKAPAWLADPGNALAI	KALHAANALRAD	PAAQCPH	LAQAYLAWRNG-FD	REGPGTDL	AKAQQRLFK-L		
<i>R. solanacearum</i> (WP003275417)	LEFVLQSAERITQET	TRGRKVLHGEILAHAD	AVRGTSANTLACKVLR---	AEVRLGAEHPVSG	LDRADKAAVFA	WRQG-FRSDEKRS	PLRRTQER	FAK-F		
<i>R. solanacearum</i> (WP003274509)	PGALLERARSHLAS	ADRHSLAGDGLAVHALL	CAADLHADPS-----	KAHAIGDR-----	TQVAAYVAWRSG-	YREGGKGSALERS	LGRMNK-F			
<i>R. solanacearum</i> (EAP71656)	LECVLQAAEQITTE	KGAQVRFDDIIA	HAEKVAGTRDDTLACKVLR---	AEVKALRTPGIY	DALSRADKSAV	FAWRQG-FRTDDRHS	LLSQTQ	QLAK-F		
<i>R. solanacearum</i> (EAP71039)	LEFVLQSAERITQET	TRGRKVLHGEILAHAD	AVRGTSADTLACKVLR---	AEVRLGAEHPVSG	LDRADKAAVFA	WRQG-FRSDEKRS	PLRRTQER	FAK-F		
<i>R. solanacearum</i> (CBJ39728)	PHAQLQDARARLVAA	TDRASLAGDGLALNAL	CAAQVHAQPH-----	EAAQAVKDP-----	AQVAAYVAWRSG-	YREGGKGSALERS	VGRMHK-F			
<i>R. solanacearum</i> (CBJ35355)	LEFVLQAAEQVAAE	TKGAQVRLPDIIE	HAEKMAGTRGDTLACKVLR---	AEVKALRAAD	THDALSRADKSAV	FAWRQG-FRSDDKHS	LLSQTQ	QLAK-F		
<i>R. solanacearum</i> (CAD17997)	AHAFLOAADALQGA	AGQAASPOALLQRC	PPSGT	PDDSLAIK-----	TLHAAAQLRGEAL	SPEQTGALFAWRQG-FRA	EGPGS	DLAKVKARTAK--		
<i>R. solanacearum</i> (BAH47286)	LEALAAALADPVLPA	VERGRPGSSAGASVAP	PKAPAWLADPGNALAI	KALHAANALRAD	PAAQCPH	LAQAYLAWRNG-FD	REGPGTDL	AKAQQRLFK-L		
<i>R. solanacearum</i> (BAH47283)	PHAQLQDARARLDA	ADRASLAGDGLALNAL	VCAAQVHAEPH-----	EAAHAVDDR-----	AQVAAYVAWRSG-	YREGGKGSALERS	LGRMHK-F			
<i>R. solanacearum</i> (BAH04967)	AHAFLOAADALQGA	-----SPRALQRC	PPSGAPDDSLAIK-----	TLHAAAQLRGEAL	SPEQTGALFAWRQG-FRA	EGPGS	DLAKVKARTAK--			
<i>R. solanacearum</i> (BAD42389)	LEFVLQAAEQVSVET	KGAQVLLPDIIGHAE	KMAGTRNDTLACKVLR---	AEVKALRAAD	TYDALSRADKSAV	FAWRQG-FLTDDKHS	LLSQTQ	QLAK-F		

```

          410          420          430          440          450          460          470          480          490          500
M. rhizoxinica M1 (CBW77121)  KKFFDQT-----EPPHSASGPTPEGRFASFIETLTPNEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKL
Mycetohabitans sp. M2 (MN840555) KKFFDQT-----EPPHSASGPTPEGRFASFIETLTPNEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKL
Mycetohabitans sp. M3 (MN840550) KKYFDQT-----EHPHSTSGSTPEDRFASFIRTLAPSEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKV
Mycetohabitans sp. M4 (MN840552) KKYFDQT-----EHPHSTSGSTPEDRFASFIRTLAPSEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKV
M. endofungorum M5 (MN840553)  KKYFDQT-----EPPHSTSGSTPEDRFASFIRTLAPSEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKV
Mycetohabitans sp. M6 (MN840556) KKFFDQT-----EPPHSASGPTPEGRFASFIETLTPNEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKL
Mycetohabitans sp. M7 (MN840551) KKYFDQT-----EHPHSTSGSTPEDRFASFIRTLAPSEKEALFDWQQR--FHESGRGTDKAKASGRLLNNVRKVVTSIIGKV
Mycetohabitans sp. M8 (MN840554) KKYFDQT-----EHPHSTSGSTPEDRFASFIRTLAPSEKEALFDWRQR--FHESGRGTDKAKASGRLLNHFVRKVITSIIGKV
B. pseudomallei (ZP04890375)  DRAIPRG-----KNLTGRLRRI GDDIAGAFGHRKPNVGMLEEGLLGG-----FLREDVFNEKIAPAFHSLIEKYRES
B. pseudomallei (ZP02502372)  DRAIPRG-----KNLTGRLRRI GDDIAGAFGHRKPNVGMLEEGLLGG-----FLREDVFNEKIAPAFHSLIEKYRES
B. pseudomallei (ZP02494128)  DRAIPRG-----KNLTGRLRRI GDDIAGAFGHRKPNVGMLEEGLLGG-----FLREDVFNEKIAPAFHSLIEKYRES
X. euvesicatoria (WP011347306) NGYETTRAG-----SPYARVNAQLQMFQWAVAGSGRRGRRLNPFNALKLG--MKVGASEALPTAVRRANDAFREAAAGHLTSWL
X. campestris (AZR30894)      NGYETTRAG-----SPYARVNASLQMFQWAVAGGETRQKRALNPFNALKLG--MKVGASEALPTAVRRANDAFREAAAGHLTSWL
X. vasicola (AVQ09097)       NGYETTRAG-----SPYARVNASLQMFQWAVAGGETRQKRALNPFNALKLG--MKVGASEALPTAVRRANDAFREAAAGHLTSWL
X. citri (ARR12757)          NGYETTRAG-----SPYARVNAQLQMFQWAVAGSAPRQKRALNPFNALALG--MKVGASEALPTAERRANDAFREAAAGHLTSWL
X. campestris (AKS22319)     NGYETTRTG-----SPYARVNAQLQMFQWAVAGSRRRGNSDLNPFNALALG--MKVGASEALPTAVRRANDAFREAAAGHLTSWL
X. oryzae (AKO19890)         NGYETTRAG-----SPYARVNASLQMFQWAVAGGQTRQKRALNPFNALKLG--MKVGASEALPTAGRRANDAFREAAAGHLNSWL
X. oryzae (ACD59124)         NGYETTRAG-----SPYARVNASLQMFQWAVAGGQTRQKRALNPFNALKLG--MKVGASEALPTAGRRANDAFREAAAGHLNSWL
Burkholderia sp. (WP013592484) TTWVARGAERQARKDRALGPIDGAPPAHRFAHARARIGLAVHDMPRAFQGNRSPIGVSSLLGADTPFFDTTRGRYDTALIAARDALLDYSHAQLPAAATP
Burkholderia sp. (ADN59567)  TTWVARGAERQARKDRALGPIDGAPPAQRFAQARARVGLAVHDPVRAFGRNRPIDTSSLLGADTPFFDTTRGQYDSALIAAREALLDYSNEQLPCAATP
R. solanacearum (YP003748288) RKYVSRAETRDKLDRMRHDP-----SQSTAATVRLVANNVQRAFVSHKKSPLLGMGRYGALG---TGTRHVPTDLELDKHLRTAIDELKGVHAAR
R. solanacearum (BAH04968)   --FVRR-----VIPRVEKHGWRTMLWQMIGKKASPLSSAR-LGLQA---AHRKNLAGEYKDYVDALRSAAATTLAARYAQA
R. solanacearum (BAD42384)   --FVRR-----VIPRVEKHGWRTMLWQMIGKKASPLSSAR-LGLQA---AHRKNLAGEYKDYVDALRSAAVTTLAARYAQA
R. solanacearum (YP003747289) TAWARR-----AEHRANHRLAAFDPRLLGMRKTPVIAAA-YGTGG---ANLGLLNQEAQALHDTVKDGLAEMLAHSVTL
R. solanacearum (WP013209172) TTWARR-----AEHRANHRLAAFDPRLLGMRKSPATAAA-YGTGG---ANLGLLNQEAQALHDTVKDGLAEMLAHSVTL
R. solanacearum (WP011002069) FAYAEER-----AARTG---MAARAAAAGFFGTQKSPLSALQNFGTAG---VMLGHPDDEFARFTAALAP---VKTQLADRL
R. solanacearum (WP003275417) RKYVARAEKRDALNKMHFDPNPI--RSAGKLATKTAGLVTNVQRFVSHQKSPLLGGLKYGALA---AGAQLAPTQVRLDEHLITAMGELKAYLESS
R. solanacearum (WP003274509) TAWARR-----AEHRANHRLAAFDPRLLGMRKTPVIAAA-YGTGG---ANLGLLNQEAQALHDTVKDGLAEMLAHSVTL
R. solanacearum (EAP71656)   RKYVSRAETRDKLDRMRHDP-----SQSTAATARLVANNVQRAFVSHKKSPLLAMGRYGTG---TGTRHVPTDLELDKHLRTAIDALKAHVEAR
R. solanacearum (EAP71039)   RKYVARAEKRDALNKMHFDPNPI--RSAGKLATKTAGLVTNVQRFVSHQKSPLLGGLKYGALA---AGAQLAPTQVRLDEHLITAMGELNAYLKSS
R. solanacearum (CBJ39728)   TTWARR-----AEHRATHPLAAFDPRLGMRKSPATAAA-YGTGG---ANLGLLNQEAQALHDTVKRGIEMQAHSTEL
R. solanacearum (CBJ35355)   RKYVSRAETRDKLDKARHDPGN-----PMQSSVATARLVANNAQRVFSHKKSPLLAMKYGSLA---AGTKHVPMQVLELDKHLRTAIDALRVRLAQA
R. solanacearum (CAD17997)   --FVSR-----TIRRVENHGWRSTLWQVVGKKSPLSAAR-LGMQA---AHRVSLDKKEYTAYAASLRTALGMLGARYREA
R. solanacearum (BAH47286)  FTYAEER-----AARTG---MAARAAAAGFFGTQKSPLSALQNFGTAG---VMLGHPDDEFARFTAALAP---VKTQLADRL
R. solanacearum (BAH47283)  TTWARR-----AEHRATHPLAAFDPRLGMRKSPATAAA-YGTGG---ANLGLLNQEAQALHDTVKHGIEMQAHSTAL
R. solanacearum (BAH04967)  --FVNR-----TIRRVENHGWRSTLWQVVGKKSPLSAAR-LGMQA---AHRVSLAKEYTAYAASLRTALGMLGARYREA
R. solanacearum (BAD42389)  RKYVSRAETRNLNEARQDF-----ARSTAATARLVANNVQRAFVSRKKSPLLAMKYGSLA---AGTRHVPTDQVELDKHMRTAIDALKDRLQTR

```

	510	520	530	540	550	560	570	580	590	600																
<i>M. rhizoxinica</i> M1 (CBW77121)	VPGEVA	AAFFNR	RRPGLH	ETDKAK	ASHRLN	KNFVSE	VATRDRE	HYGSHL	IQRIFG	TMKAP---	MVAATR	IKSGAG	KATE-													
<i>Mycetohabitans</i> sp. M2 (MN840555)	VPGEVA	AAFFNR	RRPGLH	ETDKAK	ASHRLN	KNFVSE	VATRDRE	HYGSHL	IQRVFG	TMKAP---	MVAATR	IKSGAG	KATE-													
<i>Mycetohabitans</i> sp. M3 (MN840550)	VPAKVA	ALFNQR	PPGLH	ETDKAK	ASHRLN	KNFVSE	VALRDRE	HCGSHL	IQRIRG	AMKAP---	MIAT-	RIPSGA	SRAAE-													
<i>Mycetohabitans</i> sp. M4 (MN840552)	VPAKVA	ALFNQR	PPGLH	ETDKAK	ASHRLN	KNFVSE	VALRDRE	HCGSHL	IQRIRG	AMKAP---	MIAT-	RIPSGA	SRAAE-													
<i>M. endofungorum</i> M5 (MN840553)	VP GKVA	ALFNQR	PPGLH	ETDKAK	ASHRLN	KNFVSE	VAPRDRE	HCGSHL	VQRIRG	AMKAP---	MIAT-	RIPSGA	SRAAE-													
<i>Mycetohabitans</i> sp. M6 (MN840556)	VPGEVA	AAFFNR	RRPGLH	ETDKAK	ASHRLN	KNFVSE	VATRDRE	HYGSHL	IQRIFG	TMKAP---	MVAATR	IKSGAG	KATE-													
<i>Mycetohabitans</i> sp. M7 (MN840551)	VPAKVA	ALFNQR	PPGLH	ETDKAK	ASHRLN	KNFVSE	VALRDRE	HCGSHL	IQRIRG	AMKAP---	MIAT-	RIPSGA	SRAAE-													
<i>Mycetohabitans</i> sp. M8 (MN840554)	VPGEVA	ALFNQR	PDRETD	KAKASH	RNLKNF	VSEVAL	RDRKH	CGSHL	IQRIRG	AMKAP---	MIAT-	RIPSGA	SRAAE-													
<i>B. pseudomallei</i> (ZP04890375)	GAGAG	GAGAG	GAGAG	VAKARSE	VVSRVF	EKLLK	DGFSSK	IEIKS	DDLK	WVALAVAG	----	GRNDA	VKRSL	EFES	SIR-	RD	LKN									
<i>B. pseudomallei</i> (ZP02502372)	----	GAGAG	GAGAG	VAKARSE	VVSRVF	EKLLK	DGFSSK	IEIKS	DDLK	WVALAVAG	----	GRNDA	VKRSL	EFES	SIR-	RD	LKN									
<i>B. pseudomallei</i> (ZP02494128)	----	GAGAG	GAGAG	VAKARSE	VVSRVF	EKLLK	DGFSSK	IEIKS	DDLK	WVALAVAG	----	GRNDA	VKRSL	EFES	SIR-	RD	LKN									
<i>X. euvesicatoria</i> (WP011347306)	VARRQ	IQLAG	GRMPSQ	DELLAM	QALLEY	QWLP	HEQNAT	DLFT	TAKVL	GTERRAQ	ELQRS	VAA	SVNET	DDLQ	PAACH	PAIAS-	AWGAL	RAGRM	LPET	LR						
<i>X. campestris</i> (AZR30894)	VARRH	TQSA	CGQLPS	QDELAM	QALSEY	YQWLP	HEQNAT	DLIFT	TAKVLA	ETERRAQ	ELQDS	VTAS	SLST	DDRQ	PAACH	PAIAS-	AWVAL	RTGR	VRLE	PET	LR					
<i>X. vasicola</i> (AVQ09097)	VARRH	TQSA	CGQLPS	QDELAM	QALSEY	YQWLP	HEQNAT	DLIFT	TAKVLA	ETERRAQ	ELQDS	VTAS	SLST	DDRQ	PAACH	PAIAS-	AWVAL	RTGR	VRLE	PET	LR					
<i>X. citri</i> (ARR12757)	VARRQ	IQRAG	GRMPSQ	DELLAM	QALLEY	QWLP	HEQNAT	DLFT	TAKVL	GTERRAQ	ELQRS	VAA	SVNE	ADDLQ	PAACH	PAIAS-	AWAAL	RAGRM	LPET	LR						
<i>X. campestris</i> (AKS22319)	VARRQ	IQLAG	GRMPSQ	DELLAM	QALSEY	AHWLP	HEQNAT	DLFT	TAKVL	GTERRAQ	ELQRS	VAA	SA	ESD	DLQ	PAACH	PAIAS-	AWVAL	RAGRM	LPET	LR					
<i>X. oryzae</i> (AKO19890)	VARRH	IQMT	CGQLPS	QDELAM	QALAE	CVQWLP	HEQSAT	ELIFT	TAKVLA	ETERRAQ	ELQDS	VTAS	SLST	DARQ	PAACH	PAIAS-	AWVAL	RTSR	MRLP	PET	MR					
<i>X. oryzae</i> (ACD59124)	VARRH	IQMT	CGQLPS	QDELAM	QALAE	CVQWLP	HEQSAT	ELIFT	TAKVLA	ETERRAQ	ELQDS	VTAS	SLST	DARQ	PAACH	PAIAS-	AWVAL	RTSR	MRLP	PET	MR					
<i>Burkholderia</i> sp. (WP013592484)	GRMLT	HALNA	ERLQ	AWSAAR	PAVPS	DAPL	RELQ	KRRP	ESFEI	GRRD	DARR	MWDA	ARAR	VAA	LRGQ	DDER	MERTV	GRTL	RMF	DD	---	RERRR	RFI	DDM	TEG	
<i>Burkholderia</i> sp. (ADN59567)	GRMLT	HALNA	QRLQ	AWTDAR	PDVPA	HAKPRE	LQKRRP	ESFAL	GRRE	ARRM	WDAAR	ARVA	GLRV	EGD	QRTQ	RNV	ERAL	RM	FDD	---	PQ	RRR	FV	DD	VTS	
<i>R. solanacearum</i> (YP003748288)	SGKAQ	FSIGR	HGEV	PVPL	RAA	ILEH	WSAAS	ADQ-	RPQGY	TLDG	NAV	VDIA	EGIR	----	ATGK	SVV	GAD	GR	LP	AQ	----	---	LE	Q	LIG	
<i>R. solanacearum</i> (BAH04968)	EAAPL	DPPG	ALPWR	SPQEM	WSSAV	LKH	WASALA	QAS	PQDC	VLTND	ILAA	IGR	QLR	DTV	TRAF	DALA	AGIA	QATE	HDD	G	LR	EH	---	LR	AS	
<i>R. solanacearum</i> (BAD42384)	EAAPL	DPPG	ALPWR	SPQEM	WSSAV	LKH	WASALA	QAS	PQDC	VLTND	ILAA	IGR	QLR	DTV	TRAF	DALA	AGIA	QATE	HDD	G	LR	EH	---	LR	AS	
<i>R. solanacearum</i> (YP003747289)	RRLDG	GHAL	PTERR	GLLLL	REAV	LQHW	RAQIG	TWR	SSK	LKLD	ADK	QI	AR	AVR	----	SA	HGT	D	DAE	AV	LY	----	---	EF	R	
<i>R. solanacearum</i> (WP013209172)	RQP	GGH	SLSTE	QRGL	LLL	REAV	LQHW	GAH	I	DPT	WR	SK	LK	LD	AD	KR	DI	AQ	AVR	----	---	---	---	---	---	---
<i>R. solanacearum</i> (WP011002069)	KAAS	TSR	ALK	TR	----	CA	VL	AA	E	QW	ERR	MA	SK	GL	R	ST	F	R	S	R	D	L	E	V	A	A
<i>R. solanacearum</i> (WP003275417)	DAPAR	AVQR	--	GA	IP	LP	V	LA	RA	AV	L	HA	W	DA	S	E	T	R	----	---	---	---	---	---	---	---
<i>R. solanacearum</i> (WP003274509)	RRLDG	GHAL	STERR	GLLLL	REAV	LQHW	RAQIG	TWR	SSK	LKLD	ADK	QI	AR	AVR	----	SA	HGT	D	DAE	AV	LY	----	---	---	---	---
<i>R. solanacearum</i> (EAP71656)	SGAAQ	FNIG	RHGE	VPTV	TL	RAA	I	LE	H	WSAAS	ADR	RPQGY	TLDG	NAV	VDIA	EGIR	----	---	---	---	---	---	---	---	---	---
<i>R. solanacearum</i> (EAP71039)	DAPAR	AVQR	--	GA	IP	LP	V	LA	RA	AV	L	HA	W	DA	S	E	T	R	----	---	---	---	---	---	---	---
<i>R. solanacearum</i> (CBJ39728)	RGLN	DR	HAL	STE	QRGL	LLL	REAV	LQHW	GAS	I	GT	WR	SS	K	L	S	D	H	K	R	A	I	D	R	V	R
<i>R. solanacearum</i> (CBJ35355)	SGEAR	F	SV	GR	HGE	VPTV	IL	R	T	A	I	L	E	H	WSAAS	ADK	RPQGY	TLDG	NAV	V	H	I	A	E	C	I
<i>R. solanacearum</i> (CAD17997)	LALSP	-	A	H	A	D	L	P	W	K	Q	A	E	Q	M	W	Q	A	I	L	Q	H	W	A	S	L
<i>R. solanacearum</i> (BAH47286)	KAAS	TSR	ALK	TR	----	CA	VL	AA	E	QW	ERR	MA	SK	GL	R	ST	F	R	S	R	D	L	E	V	A	A
<i>R. solanacearum</i> (BAH47283)	RALN	GR	HAL	STE	QRGL	LL	REAV	LQHW	A	Q	S	I	G	T	WR	SS	K	L	S	D	H	K	R	A	I	D
<i>R. solanacearum</i> (BAH04967)	LALSP	-	A	H	A	D	L	P	W	K	Q	A	E	Q	M	W	Q	A	I	L	Q	H	W	A	S	L
<i>R. solanacearum</i> (BAD42389)	SGEAR	F	SL	GR	Y	GE	V	P	T	V	A	L	R	G	A	I	L	E	H	S	A	T	S	E	S	K

	610	620	630	640	650	660	670	680	690	700
1									
2										
3	<i>M. rhizoxinica</i> M1 (CBW77121)	--ESSAADAQASAPD-----	-----	-----YASAASTAGAAEPTRAASTATQSI--	TTAVADASDRGWDALKRIVPSLRPGMAVEFSDGGALVTTE					
4	<i>Mycetohabitans</i> sp. M2 (MN840555)	--ESSAADAQASAPD-----	-----	-----YASAASTAGAAEPTRAASTATQSI--	TTAVADASDSGWDALKRIVPSLRPGMAVEFSDGGALVTTE					
5	<i>Mycetohabitans</i> sp. M3 (MN840550)	--KSSAADMQASASD-----	-----	-----HASAASTAEASELTRAASTATQSV--	TTAVADATDSGWDALKHIVPSLRPGMAVEFSDGGELAVTTE					
6	<i>Mycetohabitans</i> sp. M4 (MN840552)	--KSSAADMQASAPD-----	-----	-----DASAASIAEASELTRAASTATQSV--	TTAVADATDSGWDALKHIVPSLRPGMAVEFSDGGELAVTTE					
7	<i>M. endofungorum</i> M5 (MN840553)	--KSSAADLQASAPD-----	-----	-----HASAASTTEASELTRAASTATQSV--	TTAVADATDSGWDALKHIVPSLRPGMAVEFSDGGELAVTTE					
8	<i>Mycetohabitans</i> sp. M6 (MN840556)	--ESSAADAQASAPD-----	-----	-----YASAASTAGAAEPTRAASTATQSI--	TTAVADASDRGWDALKRIVPSLRPGMAVEFSDGGALVTTE					
9	<i>Mycetohabitans</i> sp. M7 (MN840551)	--KSSAADMQASASD-----	-----	-----HASAASTAEASELTRAASTATQSV--	TTAVADATDSGWDALKHIVPSLRPGMAVEFSDGGELAVTTE					
10	<i>Mycetohabitans</i> sp. M8 (MN840554)	--KSSAADRQASAPD-----	-----	-----HASAASTAEASELTRAASTATQSV--	TTAVTDATDSGWDALKRIVSSLRPGMAVEFSDACKLFTTTE					
11	<i>B. pseudomallei</i> (ZP04890375)	GFSVDVLERWAAEAG-----	-----	-----LDDGNFRRQLNDRSIVSNNGYGEIPELGD	DRASVFSAFSEIVARYRAGKSLKFSGGVGLLALG					
12	<i>B. pseudomallei</i> (ZP02502372)	GFSVDVLERWAAEAG-----	-----	-----LDDGNFRRQLNDRSIVSNNGYGEIPELGD	DRASVFSAFSEIVARYRAGKSLKFSGGVGLLALG					
13	<i>B. pseudomallei</i> (ZP02494128)	GFSVDVLERWAAEAG-----	-----	-----LDDGNFRRQLNDRSIVSNNGYGEIPELGD	DRASVFSAFSEIVARYRAGKSLKFSGGVGLLALG					
14	<i>X. euvesicatoria</i> (WP011347306)	LIQRGLLDHAGQPSDLPVG-----	-----	-----AATLDEELASDARTHFHQAIHGASRLLEHGD--	TSRVRSPRALFECLRNLLEWRDKLRLTEQRVIGLNTT					
15	<i>X. campestris</i> (AZR30894)	LIQRGLLDHVPQPIDTPDG-----	-----	-----AAHLGKELASVARNNFHQAVGNASRFLHEGD--	TSRVRSPRALFACLRNVMERLEWRDKLRLTEQRVIGLNTT					
16	<i>X. vasicola</i> (AVQ09097)	LIQRGLLDHVPQPIDTPDD-----	-----	-----AAPLGEKELASVARNNFHQAVGNASRFLHEGD--	TSRVRSPRALFACLRNVMERLEWRDKLRLTEQRVIGLNTT					
17	<i>X. citri</i> (ARR12757)	LIQRGLLDHAGQPSDLPVG-----	-----	-----AAPLDEELASVARDHFHRAVGHASRFLHEGD--	TSRVKSPRALFECLRNLMERLEWRDKLRLTEQRVIGLNTT					
18	<i>X. campestris</i> (AKS22319)	LIQRGLLDHAGQPTDMPIG-----	-----	-----AAPLDEELASVARNNFHQAVGHASRFLHEGD--	TSRVRSPRALFECLRNLMERLEWRDKLRLTEQRVIGLNTT					
19	<i>X. oryzae</i> (AKO19890)	LIQRGLLDHAIQPNTPAG-----	-----	-----AAPLDKELASLARNHFHQAVGNASRFLHEGD--	TSRVRSPRALFACLRNMERLEWRDKLRLTEQRVIGLNTT					
20	<i>X. oryzae</i> (ACD59124)	LIQRGLLDHAIQPNTPAG-----	-----	-----AAPLDKELASVARNNFHQAVGNASRFLHEGD--	TSRVRSPRALFACLRNVMERLEWRDKLRLTEQRVIGLNTT					
21	<i>Burkholderia</i> sp. (WP013592484)	GFTLAALLESWFNASG-----	-----	-----MAAADARAEPSTARHLQAAHDLLANPGI--	APLDRITTRNLRKQHLALMAQNVPGTGFTSYDGNALGIDAS					
22	<i>Burkholderia</i> sp. (ADN59567)	GFTLAALERCFNASG-----	-----	-----MAADHPVRAQPAQRNLQAAHDLNPNPGI--	APLQRITTHNLRQHLALMAQNIPGTGFTSYDGNALGIDAS					
23	<i>R. solanacearum</i> (YP003748288)	RLNHATLKEWARDAA-----	-----	-----MPQRTETGEETFSSAMRRARNILRDPDK--	DKPADMSADSMRDYLNKFMADHNI GNSMTFADGGALGVNTS					
24	<i>R. solanacearum</i> (BAH04968)	GLPP-ARDSPIHPPPGGLIGLAPSGALLRSWSP---	---	---AAPAGPLEKALKSAERIEQQDD-LQLREKTIEAARELIESLLTTIDAGGKLRRLASGSALGVNTG						
25	<i>R. solanacearum</i> (BAD42384)	GLPP-ARDSPIHPPPGGLIGLAPSGALLRSWSP---	---	---AAPAGPLEKALKSAERIEQQDD-LQLREKTIEAARELIESLLTTIDAGGKLRRLASGSALGVNTG						
26	<i>R. solanacearum</i> (YP003747289)	KWIDEAASADSNPAA-----	-----	-----SPMLRRAKAKIVEAGDIARGRIKLGKT--	TLADFRDAMTDAIGTMPLGNYVRYFDGGTYGLNANMTVNQH					
27	<i>R. solanacearum</i> (WP013209172)	RWLDEAASFDPDPSA-----	-----	-----SPTLHLARTKIAEAGGIERGRPIKQGA--	TMADFRNAMTGAIDAMPLGNYVRYFDGGTYGASINMTVNQH					
28	<i>R. solanacearum</i> (WP011002069)	TWADEAWRLSGQAVP-----	-----	-----EPIR--ANIDLVES---RLAGDIRPKPG--	DTNAQLDAIGALVKQMPDIYDIRVSSGGTVGLGGVPSQSLA					
29	<i>R. solanacearum</i> (WP003275417)	RLTHATLEHWGHDA-----	-----	-----MPQRSVDGKETVFAGAMRRARNILDPGK--	DVPADMTADSMRAFKNFVIEHNGGNSMTFTDGGALGINTG					
30	<i>R. solanacearum</i> (WP003274509)	KWIDEAASADSNPSA-----	-----	-----SPMLRRAKAKIVEAGDIARGRIKLGKT--	TLADFRDAMTDAIGTMPLGNYVRYFDGGTYGLNANMTVNQH					
31	<i>R. solanacearum</i> (EAP71656)	RLDHATLGTWAHDA-----	-----	-----MPQRTETGEETFSSAMRRARNILRDPDK--	DKPADMTADSMRDHLKFMADHNI GNSMTFADGGALGVNTS					
32	<i>R. solanacearum</i> (EAP71039)	RLTHATLEHWGHDA-----	-----	-----MPQRSVDGKETVFAGAMRRARNILDPGK--	DVPADMTADSMRAFKNFVIEHNGGNSMTFTDGGALGINTG					
33	<i>R. solanacearum</i> (CBJ39728)	RWLDEARAFDSRASE-----	-----	-----SPMLREAAEDLVKAGDIERGRPIKQGT--	TLADFREALTGAIQMPGNYVRYFDGATYGANTNMVNQH					
34	<i>R. solanacearum</i> (CBJ35355)	QLSHATLKAWARDAA-----	-----	-----MPQRTETGEETFSSAMRRARNILKPRG--	DKPLDMTAGNMRFLKNFMAEHNVTMTFTDGGALGVNTG					
35	<i>R. solanacearum</i> (CAD17997)	NLNLGASNLVPTPPPQFIDAYPSGAVLRKWEQVDAGAASGFLRKALDTEARIEQQDD-LKLQEAIDAARGVIESLITTTIEGGGKLRRLASGTSIGVNTG								
36	<i>R. solanacearum</i> (BAH47286)	TWADEAWRLSGQAVP-----	-----	-----EPVR--ANIDLVES---RLAGDIRPKPG--	DTNAQLDAIGALVKQMPDIYDIRVSSGGTVGLGGVPSQSLA					
37	<i>R. solanacearum</i> (BAH47283)	RWLDEARAFDPRASE-----	-----	-----SPTLRAAADNIVKAGDIERGRPIKPRGT--	TLADFREALTGAIQMPGNYVRYFDGATYGVTNMVNQH					
38	<i>R. solanacearum</i> (BAH04967)	NLNLGASNLHVAPPQFIDAYPSGAVLRKWEQVDAGAASGFLRKALDTEARIEQQDD-LKLQEAIDAARGVIESLITTTIEGGGKLRRLASGTSIGVNTG								
39	<i>R. solanacearum</i> (BAD42389)	RLSHATLATWARDAA-----	-----	-----MPQRTETGEETFSSAMRRARNILEPGK--	DKPVDMTADSMRAFKNFTGEHNVGNAMTFTDGGALGVNTG					
40										


```

81                                     810       820       830       840       850       860       870       880       890       900
82                                     . . . . . | . . . . . | . . . . . | . . . . . | . . . . . | . . . . . | . . . . . | . . . . . | . . . . . |
83 M. rhizoxinica M1 (CBW77121) ARPRGILVQVARQPKADGSGY-----DDEAMEARMGHIIDTMMSLSPAGATAESRGTREQCWNALAQSLVGAR--DVSVGWIDGTVDKCRHGSSTGVP
84 Mycetohabitans sp. M2 (MN840555) ARPRGILVQVARQPKADGSGY-----DDEAMEARMGHIIDTMMSLSPAGATAESRGTREQCWNALAKSLVGAR--DVSVGWIDGTVDKCRHGSSTGVP
85 Mycetohabitans sp. M3 (MN840550) ARPRGILVQVARQLKEDGSGY-----DDEAMQASVNHILDTMKSLSPAGAAAESRGTSEQCWNNTLAQSLVGAR--DVSVGWIEGTVDKCRHGASTGPL
86 Mycetohabitans sp. M4 (MN840552) ARPRGILVQVARQLKEDGSGY-----DDEAMQASVNHILDTMKSLSPAGAAAESRGTSEQCWNNTLAQSLVGAR--DVSVGWIEGTVDKCRHGASTGPL
87 M. endofungorum M5 (MN840553) ARPRGILVQVARQLKEDGSGY-----DDEVMQARVNHILDTMKSLSPAGAAAESRGTSEQCWNNTLAQSLVGAR--DVSVGWIEGTVDKCRHGASTGPL
88 Mycetohabitans sp. M6 (MN840556) ARPRGILVQVARQPKADGSGY-----DDEAMEARMGHIIDTMMSLSPAGATAESRGTREQCWNALAQSLVGAR--DVSVGWIDGTVDKCRHGSSTGVP
89 Mycetohabitans sp. M7 (MN840551) ARPRGILVQVARQLKEDGSGY-----DDEAMQASVNHILDTMKSLSPAGAAAESRGTSEQCWNNTLAQSLVGAR--DVSVGWIEGTVDKCRHGASTGPL
90 Mycetohabitans sp. M8 (MN840554) ARPRGILVQVARQLKDDGSGY-----DDEAMQASVNHILDTMKSLSSAGATAESRGTSEQCWNNTLAQSLVGAR--DVSVGWIEGTVDKCRHAASTGPL
91 B. pseudomallei (ZP04890375) TREKGAIVRFVPRAGSLGGGE-----AWRGWAQDCLSIIGNSADS-----ADLLERLAE EYV NAG--EIGIGMTEKEENVISSSAAVGAG
92 B. pseudomallei (ZP02502372) SREKGAIVRFVPRAGSLGGGE-----AWRGWAQDCLSIIGNSADS-----ADLLERLAE EYV NAG--EIGIGMTEKEENVISSSAAVGAG
93 B. pseudomallei (ZP02494128) TREKGAIVRFVPRAGSLGGGE-----AWRGWAQDCLSIIGNSADS-----ADLLERLAE EYV NAG--EIGIGMTEKEENVISSSAAVGAG
94 X. euvesicatoria (WP011347306) GIEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDAGQLSERDFLGE LLAHHP SIT--VGLIGHAERNSTAT ESSL SVAAG
95 X. campestris (AZR30894) GVEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDTAQLTERDFLAE LLAHHP SIT--VGLIGHAERNST ESSL SVAAG
96 X. vasicola (AVQ09097) GVEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDTAQLTERDFLAE LLAHHP SIT--VGLIGHAERNST ESSL SVAAG
97 X. citri (ARR12757) GIEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDAGQLSERDFLGE LLAHHP SIT--VGLIGHAERNATAT ESSL SVAAG
98 X. campestris (AKS22319) SIEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDAGQLTERDFLGE LLAHHP SIT--VGLIGHAERNASAT ESSL SVAAG
99 X. oryzae (AKO19890) GIEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDTSQLTERDFLAE LLAHHP SIT--VGLIGHAERNST ESSL SVAAG
100 X. oryzae (ACD59124) GIEHGVQIRVPRRKGQEELEQ-----RAQFLAMFEHLLQLAEQSGDDTAQLTERDFLAE LLAHHP SIT--VGLIGHAERNST ESSL SVAAG
101 Burkholderia sp. (WP013592484) AREQSVVLRARRLAPTPATAA-----LEAELWHKDSRQMVNAYWDAAEQ--AQTPEEFMQILAAGIADNERISL--SSQNNNATSITATPLTVGGVARAN
102 Burkholderia sp. (ADN59567) AREESVVLRARRLAPTPATAE-----LEAELWHKDSQQMVNAYWDAAEQ--AQTPEEFMQILAAGIADNERISL--SSQNNNATTVTATPLTVGGVARAN
103 R. solanacearum (YP003748288) TNPVGVRLRFSTQRKEDGSSM-----NSD-AMRKQMSDMIYMF DACC---PAKRHLSPAQLWEDFAVHHFDQ--KNLSVGWADYSSLNSKMGGSVTLT
104 R. solanacearum (BAH04968) GVMFRAVRQLDRAQQTGGYHDWEAVKYDDTATRQALISLSNWLFEQAT--EHRQRPLEREAIWNALALHCGTG--NTISVGWVDQQRRLRHKLRLSGG
105 R. solanacearum (BAD42384) GVMFRAVRQLDRAQQTGGYHDWEAVKYDDTATRQALISLSNWLFEQAT--EHRQRPLEREAIWNALALHCGTG--NTISVGWVDQQRRLRHKLRLSGG
106 R. solanacearum (YP003747289) SAPAGVVIIRTG---LSYGADG-----KATSAWRDNVAEVRFLFQTAAL--GQTRPVPPERMW EQFAERFFRT--PDISVNWRDQRRSSE TVTKHGSSA
107 R. solanacearum (WP013209172) SAPAGVVIIRTG---LSYDAEG-----KPTSAWRDNVADVTRFLFQTAAV--GQSARPVPPDRMWEQFADRFRT--PDISVNWRDQRRSHTVTKHGSSA
108 R. solanacearum (WP011002069) GGPGRVTVIRTR---RSDDQP-----GRPDARWTTMLEVLHATRAGPN--SDAPR--NAREMWSGLARRFWND--PAC SINWTD SRSTTSATSGSASAT
109 R. solanacearum (WP003275417) NHPVGVRLRFARQRNASGNM-----VDKGMVRRQMETMVDYLF DACC---PAKRHLSPAALWEDFANHHFDQ--ENLSVAWQDYSSALSSRMGVSVTGS
110 R. solanacearum (WP003274509) SAPAGVVIIRTG---LSYGADG-----KATSAWRDNVAEVRFLFQTAAL--GQATRPVPPERMW EQFAERFFRT--PDISVNWRDQRRSSE TVTKHGSSA
111 R. solanacearum (EAP71656) TNPVGVRLRFSTQRKEDGSGM-----NSD-AMRKQMSDMIYMF DACC---PAKRHLSPAQLWEDFAVHHFDQ--KNLSVGWADYSTLNSKMGGSVTLT
112 R. solanacearum (EAP71039) NHPVGVRLRFARQRNASGNM-----VDKGMVRRQMETMVDYLF DACC---PAKRHLSPAALWEDFANHHFDQ--ENLSVAWQDYSSALSSRMGVSVTGS
113 R. solanacearum (CBJ39728) SAPVGVIVRTG---LTYGTDG-----KATNAWRDNVADVTRFLFQSAAE--GQAARPVPPDRMWEQFSARFFRT--PDISVNWRDQRRSHTVTKHGSSA
114 R. solanacearum (CBJ35355) TNPTGVRLRFTTQRKEDGTAM-----NSD-AMRKQMSDMVDYMF DACC---PAKRHLSPSELWEDFAVHHFDQ--KHL SVGWEDYSSLNSKMGGAITAT
115 R. solanacearum (CAD17997) GVMYRAVRQVT---QAAGPHADWDVAVKYDDAATREAMIALSNWLFQAT--EHRERPPGADAVWNALAQHCSGAGADAI SVGWVDQQRKHLRHKL RVGGG
116 R. solanacearum (BAH47286) GGPGRVTVIRTR---RSDDQP-----GRPDARWTTMLEVLHAARSAGPN--SDAPR--NAREMWSGLARRFWND--PAC SINWTD SRSTTSATSGSASAT
117 R. solanacearum (BAH47283) SAPVGVIVRTG---LTYGADG-----KATSAWRDNVADVTRFLFQTAAE--GQAARPVPPDRMWEQFSARFFRT--PDISVNWRDQRRSHTVTKHGSSA
118 R. solanacearum (BAH04967) GVMYRAVRQVT---QAAGPHADWDVAVKYDDAATREAMIALSNWLFQAT--EHRERPPGADAVWNALAQHCSGAGADAI SVGWVDQQRKHLRHKL RVGGG
119 R. solanacearum (BAD42389) TNPTGVRLRFTTQRKDDGSAM-----NSD-AMRKQMSDMVDYMF EACC---PKRHLSPSALWEDFAVHHFDQ--KNLSVAWEDYASVNSKMGASVTLT

```

	910	920	930	940	950	960	970	980	990	1000
121										
122										
123	<i>M. rhizoxinica</i> M1 (CBW77121)	ASAGVPIGLPHPF	GMSTSVSVVPSGKHVHN	-ISTSRSDSGRMSTEKRHAERSIEVKVEVRVGVASVSATLSSNPKSGISTG	-----P					
124	<i>Mycetohabitans</i> sp. M2 (MN840555)	VSAGVPIGLPHPF	GMSTSVSVVPSGKHVNN	-ISTSRSDSGRMSTEKRHAERSIEVKVEVRVGVASVSATLSSNPKSGVNTG	-----P					
125	<i>Mycetohabitans</i> sp. M3 (MN840550)	VSTGVPIGLPAPLSTSVSASVPSGKHVNS	-ISTSRSDSGRMSTEKRHTERSIEVKIEAKVGVASISATSSSPKSGVSTG	-----P						
126	<i>Mycetohabitans</i> sp. M4 (MN840552)	VSTGVPIGLPAPLSTSVSASVPSGKHVNS	-ISTSRSDSGRMSTEKRHTERSIEVKIEAKVGVASISATSSSPKSGVSTG	-----P						
127	<i>M. endofungorum</i> M5 (MN840553)	VSAGVPLGLPAPFSTSVSASVPSGKHVNS	-ISTSRSDSGRMSTEKRHTERSIEVKIEAKVGVASISATSSSPKSGVSTG	-----P						
128	<i>Mycetohabitans</i> sp. M6 (MN840556)	ASAGVPIGLPHPF	GMSTSVSVVPSGKHVHN	-ISTSRSDSGRMSTEKRHAERSIEVKVEVRVGVASVSATLSSNPKSGISTG	-----P					
129	<i>Mycetohabitans</i> sp. M7 (MN840551)	VSTGVPIGLPAPLSTSVSASVPSGKHVNS	-ISTSRSDSGRMSTEKRHTERSIEVKIEAKVGVASISATSSSPKSGVSTG	-----P						
130	<i>Mycetohabitans</i> sp. M8 (MN840554)	VSVGIPNVLPAFLGASVSASVPSGKHVNS	-ISTSRSDSGHMSTEKRHAERSIEVKVEAKVGVASVAATSSSPKSSVSTG	-----P						
131	<i>B. pseudomallei</i> (ZP04890375)	VKASSSGG---	DFRGGAGVSASIGVKREWRRHKAVRELDNKMGNHFKDQSSSTSVTWNAGLNASESYQLNPTPDFSTAS	-----AS						
132	<i>B. pseudomallei</i> (ZP02502372)	VKASSSGG---	DFRGGAGVSASIGVKREWRRHKAVRELDNKMGNHFKDQSSSTSVTWNAGLNASESYQLNPTPDFSTAS	-----AS						
133	<i>B. pseudomallei</i> (ZP02494128)	VKASSSGG---	DFRGGAGVSASIGVKREWRRHKAVRELDNKMGNHFKDQSSSTSVTWNAGLNASESYQLNPTPDFSTAS	-----AS						
134	<i>X. euvesicatoria</i> (WP011347306)	VRVGNMDGQPRRATL	LGASLGVKARRETSRS	----QTPIEGYMTMVLKDSSAQSRVEIAGRASASVVAQQWTDPGTGNAPP	-----TPVARLSMA					
135	<i>X. campestris</i> (AZR30894)	VRVGNMDGRPRRATL	LGASLGIKARRETSRT	----QTPIEGYMTMVLKDSSAQSRVEIAGRASASLVAQQWTPSTGNAPP	-----NPIARLSMA					
136	<i>X. vasicola</i> (AVQ09097)	VRVGNMDGRPRRATL	LGASLGLKARRETSRT	----QTPIEGYMTMVLKDSSAQSRVEIAGRASASLVAQQWTPSTGNAPP	-----NPIARLSMA					
137	<i>X. citri</i> (ARR12757)	VRVGNMDGRPRRATL	LGASLGLKARRETSRS	----QTPIEGYMTMVLKDSSAQSRVEIAGRASASLVAQQWTHPSTGNAPP	-----TPVARLSMA					
138	<i>X. campestris</i> (AKS22319)	VRVGNMDGKPRRATL	LGASLGLKARRETSRS	----QTPIEGYMTMVLKDSSAQSRVEIAGRASASVVAQQWTHPSIGNAPP	-----TPVARLSMA					
139	<i>X. oryzae</i> (AKO19890)	VRVGNMDGRPRRATL	LGASLGLKARRETSRS	----QTPIEGYMTMVLKDSTAQSRVDIAGRASASLVAQQWTPSAGNAPP	-----SPVARLSMA					
140	<i>X. oryzae</i> (ACD59124)	VRVGNMDGRPRRATL	LGASLGLKARRETSRS	----QTPIEGYMTMVLKDSTAQSRVDIAGRASASLVAQQWTPSAGNAPP	-----SPVARLSMA					
141	<i>Burkholderia</i> sp. (WP013592484)	VFGASSS----	ERVGGYAGVSSG-VTLYS-AADLKEGALASTIGATAVQGSLTASVG--AQFAPRAAFALGDGTGEIGS	-----VSPGA						
142	<i>Burkholderia</i> sp. (ADN59567)	VFGANSP----	ERVGAYAGVSSG-VTLYS-AADLKEGALASTIGATAVQGLTASAG--TQFAPRALMLGDGAGEVGS	-----VSPGA						
143	<i>R. solanacearum</i> (YP003748288)	ARAGVTTEDGQAIRAGGSIGYGV	T-WNPFFT-MGSRKEKSGTAPILREDRGSAHIHTLTATASGQLPAVPLPVEPDGAANG	-----LGVPG						
144	<i>R. solanacearum</i> (BAH04968)	VQARISSK-GAPIRVGPSARLTAE	-ATSRD-ATATRETAGIMRVEQSVQGGHLLTLRAGLTYSAGKMFYTSAAPDAATG	----SDATGGRHRI	QGGFNG					
145	<i>R. solanacearum</i> (BAD42384)	VQARISSK-GAPICVGPSARLTAE	-ATSRD-ATATRETAGIMRVEQSVQGGHLLTLRAGLTYSAGKMFYTSAAPDAATG	----SDATGGRHRI	QGGFNG					
146	<i>R. solanacearum</i> (YP003747289)	MRVAAGP----	VRVLPFAFVGHG-HVLAS-KNDRVDINGWLRGVERARARASNVHVGASLAALAPAVGHFNSRSGFPD	-----ITLPS						
147	<i>R. solanacearum</i> (WP013209172)	VRVAAGP----	VRVLPFAFVGHG-RLLAS-KNDRIDDNGWLRGVERARARASNVHVSASLAAVAPAIHGFNSHSGFPDS	-----ITLPS						
148	<i>R. solanacearum</i> (WP011002069)	ARVGTAD----	TKWGPALGATLR-HVARA-AHRQWDKTGNHAI	DVSTHNSGRATAVAATLVEALPGIP-VPNGSGHLAA	-----LSFPT					
149	<i>R. solanacearum</i> (WP003275417)	ARLGVKTDDGGETV	RVTGGLFGYAFN-WSPFT-RGKRQEASGRFPVMRNERGVMYSH	TVTATGTQLPSVPLPDSHEGVSDS	-----LGLPN					
150	<i>R. solanacearum</i> (WP003274509)	VRVAAGP----	VRVLPFAFVGHG-QVLAS-KNDRVDINGWLRGVERARARASNVHVGASLAALAPAVGHFNSRSGFPDS	-----ITLPS						
151	<i>R. solanacearum</i> (EAP71656)	ARAGVTTEDGQAIRAGGSIGYGV	T-WNPFFT-MGSRKEKSGTAPILREDRGSAHIHTLTATASGQLPAVPLPAQPDGATNS	-----LGVPA						
152	<i>R. solanacearum</i> (EAP71039)	ARLGVKTDDGGETV	RVTGGLFGYAFN-WSPFT-RGKRQEASGRFPVMRNERGVMYSH	TVTATGTQLPSVPLPDSHEGVSDS	-----LGLPN					
153	<i>R. solanacearum</i> (CBJ39728)	VRVAAGQ----	VRVLPFAFVGHG-RVLAS-KNDRVDINGWLRGVERARARASNVHVSGLAAVAQVGHFNSRSGFPES	-----VTLPS						
154	<i>R. solanacearum</i> (CBJ35355)	ARAGVKTADGQTVRGGGSIGYGV	T-WNPFFT-MGERKEKSGTAPILREDRGSAHIHTVTVAAASGQLPGVPLPDSLDAANS	-----LGVPS						
155	<i>R. solanacearum</i> (CAD17997)	VNVRVTAP-AAPVVRVGVVRLTGE	-ITSRD-TTAMRETTGIMRAEQYSQGGHMTVRAGVNYAVGKRFYTS	PAQDAAAAGPTASVPSGGRRSITQGGFNG						
156	<i>R. solanacearum</i> (BAH47286)	ARVGTAD----	TKWGPALGATLR-HVARA-AHRQWDKTGNHAI	DVSTHNSGRATAVAATLVEALPGIP-VPNGSGHLAA	-----LSFPT					
157	<i>R. solanacearum</i> (BAH47283)	VRVAAGA----	VRVLPFAFVGHG-QVLAS-KNDRVDINGWLRGVERARARASNVHVSGLAAVAQVGHFNSRSGFPES	-----VTLPS						
158	<i>R. solanacearum</i> (BAH04967)	VNVRVTAP-AAPVVRVGVVRLTGE	-ITSRD-TTAMRETTGIMRAEQYSQGGHMTVRAGVNYAVGKRFYTS	PAQDAAAAGPTASVPSGERRSITQGGFNG						
159	<i>R. solanacearum</i> (BAD42389)	ARAGVTTQDQTVRAGGSVGYGFT	-WNPFFT-IGQRQEKSGIAPILREDRGSAHLH	AVTVAASVQLPAGFLPDPDGAANS	-----LGVPS					

		1010	1020	1030	1040	1050	1060	1070	1080	1090	1100					
161															
162		SSKRLW	DKQLYQAKV	SLSR	TLQS	YQGGKIE	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT				
163	<i>M. rhizoxinica</i> M1 (CBW77121)	SSKRLW	DKQLYQAKV	SLSR	TLQS	YQGGKIE	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT				
164	<i>Mycetohabitans</i> sp. M2 (MN840555)	SSKRLW	DKQLYQAKV	SLSR	TLQS	YQGGKIE	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT				
165	<i>Mycetohabitans</i> sp. M3 (MN840550)	TSKRLW	DKQLYQAKV	SLSR	TLQTHHGKID	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT					
166	<i>Mycetohabitans</i> sp. M4 (MN840552)	TSKRLW	DKQIYQVKV	SLSR	KLQTHHGKID	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT					
167	<i>M. endofungorum</i> M5 (MN840553)	TSKRLW	DKQIYQVKV	SLSR	TLQTHHGKID	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT					
168	<i>Mycetohabitans</i> sp. M6 (MN840556)	SSKRLW	DKQLYQAKV	SLSR	TLQS	YQGGKIE	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT				
169	<i>Mycetohabitans</i> sp. M7 (MN840551)	TSKRLW	DKQLYQAKV	SLSR	TLQTHHGKID	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT					
170	<i>Mycetohabitans</i> sp. M8 (MN840554)	TSKRLW	DKQIYQVKV	SLSR	TLQVSYQGGKID	PRA	CFLD	VDFL	DATAYE	YATRQLLDHNGDRDDAGIKAVR	TYLEQKRAQSAKPLADQAASAVKNVLELGNGT					
171	<i>B. pseudomallei</i> (ZP04890375)	AQAFSVGG	TLFS	SAKEGAS	VAIRLRDGMV	DELA	LAILDR	TRNGRR	GV	ELIARDY	PLVWKAMGKTDAE	EGE	AALNR	-----FFASELGRGVNRPLRP		
172	<i>B. pseudomallei</i> (ZP02502372)	AQAFSIGG	TLFS	SVKEGTS	VAIRLRDGMV	DAELA	LAILDR	TRNGRR	AVDLIARDY	PIVWKAMGKTDAE	EGE	AALNR	-----FFASELGRGVNRPLRP			
173	<i>B. pseudomallei</i> (ZP02494128)	AQAFSIGG	TLFS	SVKEGTS	VAIRLRDGMV	DAELA	LAILDR	TRNGRR	AVDLIARDY	PIVWKAMGKTDAE	EGE	AALNR	-----FFASELGRGVNRPLRP			
174	<i>X. euvesicatoria</i> (WP011347306)	TLDLGS	RE	LRSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDDQR	-----LYMVAERQLQDFIDRVRLHMQD	
175	<i>X. campestris</i> (AZR30894)	ALDLGS	RE	VHSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDDQR	-----LYMVAERQLQDFIDRVRLHMQD	
176	<i>X. vasicola</i> (AVQ09097)	ALDLGS	RE	VHSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDDQR	-----LYMVAERQLQDFIDRVRLHMQD	
177	<i>X. citri</i> (ARR12757)	TLDLGS	RE	LRSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDEQR	-----LYMVAERQLQDFIDRVRLHMQD	
178	<i>X. campestris</i> (AKS22319)	TLDLGS	RE	LRSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDDQR	-----VYMVAERQLQDFIDRVRLHMQD	
179	<i>X. oryzae</i> (AKO19890)	ALDLGS	RE	LRSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDDQR	-----LYMVAERQLQDFIDRVRLHMQD	
180	<i>X. oryzae</i> (ACD59124)	SLDLGS	RE	LRSAG	SNTFSTLW	MFNNEIDPV	RTDRGF	EFFNFAS	FERE	VKRNWQ	LWTHY	GISK	LQGGK	VDDQR	-----LYMVAERQLQDFIDRVRLHMQD	
181	<i>Burkholderia</i> sp. (WP013592484)	KTGGAA	VELTPFGR	SSVVFAMR	DNRG	FVAEY	TMQDRMFRN	AD	WARSVRAN	-----PAWAHGIGA	-----ERLQQVIE	QTQQ	--ES			
182	<i>Burkholderia</i> sp. (ADN59567)	KTLLASA	AVEATPFGR	SSVVFAMR	DNRG	FVAEY	TMQDRMFRN	AD	WARSVRAN	-----PAWLQGGIGA	-----QRLQQVIE	QTQL	--ES			
183	<i>R. solanacearum</i> (YP003748288)	VPVASAT	YMLGNGGF	NANIR	TLVER	GRLSEAF	TYRDL	SERN	IDDFLKFAN	D	PARRKEWEAMCGAE	QGGAYAEHG	--AGG	PD	LKKRLDDDFL	
184	<i>R. solanacearum</i> (BAH04968)	GTPLSW	SKQFAEL	GHTVE	VRTIHL	NGRLAD	RVSYSD	KRYKSGTE	F	LALIR	TRQ	RQVWID	MLSR	KPGMTREAAE	-----QEFKVFCDMVER	
185	<i>R. solanacearum</i> (BAD42384)	GTPLSW	SKQFAEL	GHTVE	VRTIHL	NGRLAD	RVSYSD	KRYKSGTE	F	LALIR	TRQ	RQVWID	MLSR	KPGMTREAAE	-----QEFKVFCDMVER	
186	<i>R. solanacearum</i> (YP003747289)	TPIVGL	SANILPS	GT	SVTLRRV	DEHG	RLNPRFIRRLVE	FI	DPSAF	L	SHMQAR	----MPRIART	DASRE	-----KVGAFMSAMKDM		
187	<i>R. solanacearum</i> (WP013209172)	APIVGL	VAA	NIMPS	GT	SVTLRRV	DEHG	RLNPRFIRRLVE	FI	DPSAF	L	SHMQAR	----LPRIART	DASRA	-----KVGAFMSAMDDM	
188	<i>R. solanacearum</i> (WP011002069)	QPVVG	I	GTT	LFTTT	QNAALR	IGR	DSGRI	IPKHTFRD	TE	FGTFKAFK	QFVD	THRSE	WL	TALGGT	
189	<i>R. solanacearum</i> (WP003275417)	VPIHS	ATYMLG	EGGF	NAIV	RTLME	HGRHSE	FTYRDL	SERS	I	HDFL	KIANEP	GR	KAWEALCAAE	QGGDAARG	-----KERLDDF
190	<i>R. solanacearum</i> (WP003274509)	TPIVGL	SANILPS	GT	SVTLRRV	DEHG	RLNPRFIRRLVE	FI	DPSAF	L	SHMQAR	----MPRIART	DASRE	-----KVGAFMSAMKDM		
191	<i>R. solanacearum</i> (EAP71656)	VPVASAT	YMLGNGGF	NANIR	TLVER	GRLSEAF	TYRDL	SERS	IDDFLKFAN	D	PARRKEWEAVCGAE	QGGAYAEHG	--EGG	PD	LKKRLDDDFL	
192	<i>R. solanacearum</i> (EAP71039)	VPIHS	ATYMLG	EGGF	NAIV	RTLME	HGRHSE	FTYRDL	SERS	I	HDFL	KIANEP	GR	KAWEALCAAE	QGGDAARG	-----KERLDDF
193	<i>R. solanacearum</i> (CBJ39728)	TPIVGL	SANILPS	GT	SVTLRRV	DEHG	RLNPRFIRRLVE	FI	DPSAF	L	SHMQAR	----LPQIAHSD	DASRA	-----KVGAFMSAMKDM		
194	<i>R. solanacearum</i> (CBJ35355)	VPVASAT	YMLGNGGF	NATV	RTLLE	RGRLSEAF	TYRDL	SERN	IGDFLKFAN	D	PARRKEWEALCSAE	QGGAYADTGHGE	AGPDL	GKKRLDDDFL		
195	<i>R. solanacearum</i> (CAD17997)	GTPLTY	T	KQFAEHS	H	TAKLKT	VHL	DGR	LAD	RV	CFYD	KEYKSAKEYL	L	IRSAQD	TWID	
196	<i>R. solanacearum</i> (BAH47286)	QPVVG	I	GTT	L	FATQ	TNAALR	IGR	DSGRI	IPKHTFRD	TE	FGTFKAFK	QFVD	THRSE	WL	
197	<i>R. solanacearum</i> (BAH47283)	VPIV	G	AS	N	LPS	GT	SVTLRRV	DEHG	RLNPRFIRRLVE	FI	DPSAF	L	SHMQAR	----LPQIAHSD	
198	<i>R. solanacearum</i> (BAH04967)	GTPLTY	T	KQFAEHS	H	TAKLRT	VHL	DGR	LAD	RV	CFYD	KEYKSAKEYL	L	IRSAQD	TWID	
199	<i>R. solanacearum</i> (BAD42389)	VPIAS	ATYMLG	NGGF	NATIR	TLE	MR	GR	LSEAF	TYRDL	SERN	IND	F	KIANEP	GR	
200		KAWEALCSAE	QGGAYAAH	GKADAGP	--GKKRLDDDFL	DKIQEM	--AR									

```

201                                     1110       1120       1130
202                                     ....|....|....|....|....|....|...
203 M. rhizoxinica M1 (CBW77121)      RQTDSHIHRYALTDPAAEQINLLQAHFEQHLYR
204 Mycetohabitans sp. M2 (MN840555) RQTDSHIHRYALTDPAAEQINLLQAHFEQHLYR
205 Mycetohabitans sp. M3 (MN840550) RQMHSIHRYALTDPAAEQINLLQAHFEQHLYR
206 Mycetohabitans sp. M4 (MN840552) RQMHSIHRYALTDPAAEQINLLQAHFEQHLYR
207 M. endofungorum M5 (MN840553)    RQTDSHIHRYALTDPAAEQINLLQAHFEQHLYR
208 Mycetohabitans sp. M6 (MN840556) RQTDSHIHRYALTDPAAEQINLLQAHFEQHLYR
209 Mycetohabitans sp. M7 (MN840551) RQMHSIHRYALTDPAAEQINLLQAHFEQHLYR
210 Mycetohabitans sp. M8 (MN840554) RQTDSHIHRYALTDPAAEQINLLQAHFEQHLYR
211 B. pseudomallei (ZP04890375)     EVPETYVASYRMTKEAASALNHRYAQIDLEQML
212 B. pseudomallei (ZP02502372)     EVPETYVASYRMTKEAASALNHRYAQIDLEQML
213 B. pseudomallei (ZP02494128)     EVPETYVASYRMTKEAASALNHRYAQIDLEQML
214 X. euvesicatoria (WP011347306)   NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
215 X. campestris (AZR30894)         NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
216 X. vasicola (AVQ09097)          NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
217 X. citri (ARR12757)              NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
218 X. campestris (AKS22319)         NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
219 X. oryzae (AKO19890)             NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
220 X. oryzae (ACD59124)             NKFASLIVDWVLQAEAAPRLDALRAQAQLLRVA
221 Burkholderia sp. (WP013592484)   SGEFSFGERWAIREERVPRLNQYLTLNQLRAR
222 Burkholderia sp. (ADN59567)      SGEFSFGERWVIADEYVPRLNQYLTLNQLRAR
223 R. solanacearum (YP003748288)    P-NQAHYMRWRLGEQERLAMDDYMAAARMAERG
224 R. solanacearum (BAH04968)       GNVSYLYRERLKPAIAREIEGQLDLADMHRAL
225 R. solanacearum (BAD42384)       GNVSYLYRERLKPAIAREIEGQLDLADMHRAL
226 R. solanacearum (YP003747289)    QGNLAYGESWKIRPEVTEVLNAYTDEIQLLKC
227 R. solanacearum (WP013209172)    QGNLAYGESWKIRPEVTEVLNAYTDEIQLLKC
228 R. solanacearum (WP011002069)    AGNLIMGERMHMTDEAARRL-----
229 R. solanacearum (WP003275417)    P-NQAYYMRWRLGTEERLAMDDYLGVAKIAERG
230 R. solanacearum (WP003274509)    QGNLAYGESWKIRPEVTEVLNAYTDEILLILKC
231 R. solanacearum (EAP71656)       P-NQAHYMRWRLGEQERLAIDDYMAAARMAERG
232 R. solanacearum (EAP71039)       P-NQAYYMRWRLGTEERLAMDDYLGVAKIAERG
233 R. solanacearum (CBJ39728)       QGNLAYGESWKIRPEVTEVLNAYTDEIQLMLKC
234 R. solanacearum (CBJ35355)       P-NQAHYMRWRLGEQERLAMDDYMAAARMAERG
235 R. solanacearum (CAD17997)       GPHIRYLLRERLRPAAAAREVEGHLDLANLHRAT
236 R. solanacearum (BAH47286)       AGNLIMGERMHMTDEAARRL-----
237 R. solanacearum (BAH47283)       QGNLAYGESWKIRPEVTEVLNAYTDEIQLMLKC
238 R. solanacearum (BAH04967)       GPHIRYLLRERLRPAAAAREVEGHLDLANLHRAT
239 R. solanacearum (BAD42389)       P-NQAHYMRWRLGEQERLAMDDYMAAARMADRG
240
241
242
243
244

```

Fig. S1. Alignment of predicted AWR proteins from endofungal *Mycetohabitans* species, plant pathogenic *R. solanacearum*, and plant-associated *Burkholderia* spp. modified from Sole *et al.* Sequences identified in this study are highlighted in bold (Table S3). GenBank accession numbers are indicated in brackets.

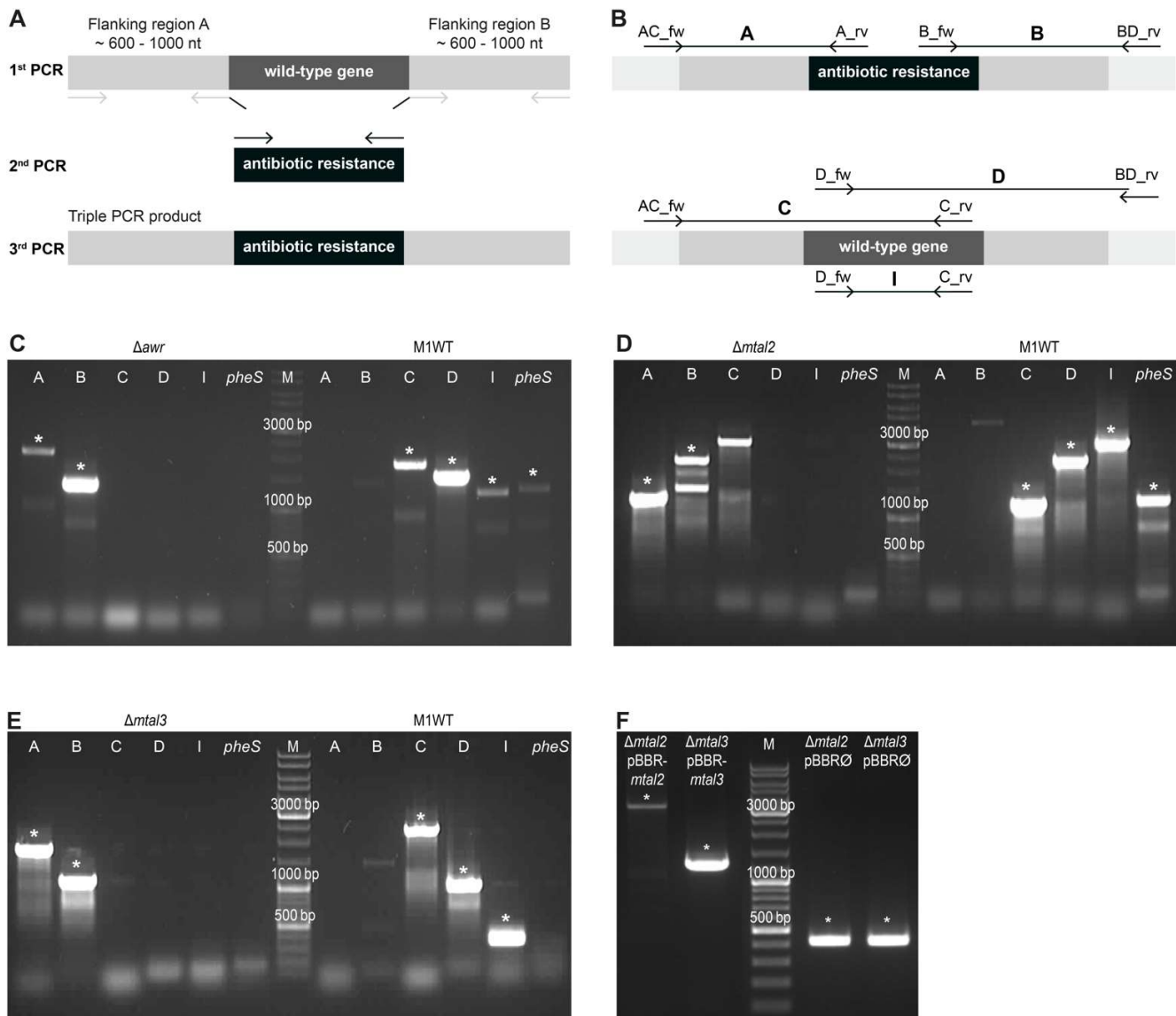


Fig. S2. Confirmation of *M. rhizoxinica* AWR and MTAL mutant strains and their complementation by PCR. (A) Schematic representation of the construction of mutant vector. (B) Schematic representation of the confirmations of successful gene inactivation. The PCR products of the mutant strain correspond to amplicons A and B, whereas products C and D are amplified from the wild type. Absence of contaminating *M. rhizoxinica* wild type (M1WT) in the mutant strains was confirmed by lack of amplification of an internal fragment (amplicon I) from the wild-type gene of interest. The removal of the mutant vector was confirmed by amplification of the counter-selection marker gene *pheS* (amplicons *pheS*). (C) The *awr* gene was deleted in *M. rhizoxinica* M1WT to generate *M. rhizoxinica* $\Delta awr::Kan^R$ (*M. rhizoxinica* Δawr). PCR products were obtained from genomic wild-type and mutant DNA using control primers listed in Table S4B. Bands corresponding to the expected sizes are indicated by asterisks (*). (D) The *mtal2* gene was deleted in *M. rhizoxinica* HKI-454 to generate *M. rhizoxinica* $\Delta mtal2::Kan^R$ (*M. rhizoxinica* $\Delta mtal2$). PCR products were obtained from genomic wild-type and mutant DNA using control primers listed in Table S4B. Bands corresponding to the expected sizes are indicated by asterisks (*). (E) The *mtal3* gene was deleted in *M. rhizoxinica* HKI-454 to generate *M. rhizoxinica* $\Delta mtal3::Kan^R$ (*M. rhizoxinica* $\Delta mtal3$). PCR products were obtained from genomic wild-type and mutant DNA using control primers listed in Table S4B. Bands corresponding to the expected sizes are indicated by asterisks (*). (F) Colony PCRs were performed to confirm the presence of the relevant complementation plasmids in the strains *M. rhizoxinica* $\Delta mtal2$ pBBR-*mtal2* and *M. rhizoxinica* $\Delta mtal3$ pBBR-*mtal3*. *M. rhizoxinica* *mtal* mutant strains were also transformed with an empty control plasmid to generate the negative control strains *M. rhizoxinica* $\Delta mtal2$ pBBR \emptyset and *M. rhizoxinica* $\Delta mtal3$ pBBR \emptyset . PCR products were amplified using control primers listed in Table S4C. Bands corresponding to the expected sizes are indicated by asterisks (*).

```

265                               10       20       30       40       50       60       70       80       90      100
266                               |         |         |         |         |         |         |         |         |
267 M. rhizoxinica M1 (E5AV36)    FSQSDIVKVIAGNIGGAQALQAVLDLESMLGKRGFSRDDIAKMAGNIGGAQTLQAVLDLESAFRER--GFSQADIVKVIAGNNGGAQALYSVLD--VEPTLG
268 Mycetohabitans sp. M2 (MN891944) FSQSDIVKVIAGNIGGAQALQAVLDLESMLGKRGFSRDDIAKMAGNIGGAQTLQAVLDLESAFRER--GFSQADIVKVIAGNNGGAQALYSVLD--VEPTLG
269 Mycetohabitans sp. M4 (MN840538) -----LSPLERSKIEKH--YGGAAATLAFISNQHDELAQ--VLSRTDILKIASYDCAAQALQAVLD--CGPMLG
270 M. endofungorum M5 (MN891945)    FSQSDIVKVIAGNIGGAQALQAVLDLESMLGKRGFSRDDIAKMAGNIGGAQTLQAVLDLESAFRER--GFSQADIVKVIAGNNGGAQALYSVLD--VEPTLG
271 Mycetohabitans sp. M6 (MN840537) FSQSDIVKVIAGNIGGAQALQAVLDLESMLGKRGFSRDDIAKMAGNIGGAQTLQAVLDLESAFRER--GFSQADIVKVIAGNNGGAQALYSVLD--VEPTLG
272 Mycetohabitans sp. M7 (MN840539) -----
273 Mycetohabitans sp. M7 (MN840540) -----
274 Mycetohabitans sp. M8 (MN840541) -----
275 M. rhizoxinica M1 (E5AW45)    FSRADIVRIAGNGGGAQALYSVLDVEPTLGKRGFSQVDVVKIAG--GGAQALHTVLEIGPTLGER--GFSRGDIVTIAGNNGGAQALQAVLE--LEPTLR
276 Mycetohabitans sp. M2 (MN840542) FSRADIVRIAGNGGGAQALYSVLDVEPTLGKRGFSQVDVVKIAG--GGAQALHTVLEIGPTLGER--GFSRGDIVTIAGNNGGAQALQAVLE--LEPTLR
277 Mycetohabitans sp. M3 (MN840545) -----
278 Mycetohabitans sp. M6 (MN840543) FSRADIVRIAGNGGGAQALYSVLDVEPTLGKRGFSQVDVVKIAG--GGAQALHTVLEIGPTLGER--GFSRGDIVTIAGNNGGAQALQAVLE--LEPTLR
279 Mycetohabitans sp. M7 (MN840544) -----
280 M. rhizoxinica M1 (E5AW43) -----
281 Mycetohabitans sp. M2 (MN840547) -----
282 Mycetohabitans sp. M4 (MN840549) -----
283 Mycetohabitans sp. M6 (MN840546) -----
284 Mycetohabitans sp. M7 (MN840548) -----
285 AvrXa10 X. oryzae (Q56830) -----LTPDQVVVAIASNIGGQALETVQRLLPVLCQA-HGLTPDQVVVAIASHGGGKQALETVQR-LLPVLCQ
286 AvrBs3 X. euvesicatoria (P14727) -----LTPDQVVVAIASHGGGKQALETVQRLLPVLCQA-HGLTPDQVVVAIASNIGGQALETVQR-LLPVLCQ
287 Brg11 R. solanacearum (Q8XYE3) -----LTPDQVVVAIASNTGGKRALEAVCVQLPVLRAAPYRLSTEQVVVAIASNKGKQALEAVKADLLDLRGA
288
289                               110      120      130      140      150      160      170      180      190     200
290                               |         |         |         |         |         |         |         |         |
291 M. rhizoxinica M1 (E5AV36)    KRGFSRADIVKVIAGNTGGAQALHTVLDLEPALGKRGFS-----RIDIVKVIAGNNGGAQALHAVLD--LGPTLRE
292 Mycetohabitans sp. M2 (MN891944) KRGFSRADIVKVIAGNTGGAQALHTVLDLEPALGKRGFS-----RIDIVKVIAGNNGGAQALHAVLD--LGPTLRE
293 Mycetohabitans sp. M4 (MN840538) KRGFSRGDIVKVIAGNDGGAQALYSVLDVEPPLRERGF-----RADIVKVIAGNIGGAQALQAVLE--LEPTLRE
294 M. endofungorum M5 (MN891945)    KRGFSRADIVKVIAGNTGGAQALHTVLDLEPALGKRGFS-----RIDIVKVIAGNNGGAQALHAVLD--LGPTLRE
295 Mycetohabitans sp. M6 (MN840537) KRGFSRADIVKVIAGNTGGAQALHTVLDLEPALGKRGFS-----RIDIVKVIAGNNGGAQALHAVLD--LGPTLRE
296 Mycetohabitans sp. M7 (MN840539) -----VLE--LESTLRE
297 Mycetohabitans sp. M7 (MN840540) -----VLE--LESTLRE
298 Mycetohabitans sp. M8 (MN840541) -----
299 M. rhizoxinica M1 (E5AW45)    ERGFNQADIVKVIAGNGGGAQALQAVLDVEPALGKRGFSRVDIAKIAGGGAQALQAVLGLEPTLRKRGFHPTDIIKIAGNNGGAQALQAVLD--LELMLRE
300 Mycetohabitans sp. M2 (MN840542) ERGFNQADIVKVIAGNGGGAQALQAVLDVEPALGKRGFSRVDIAKIAGGGAQALQAVLGLEPTLRKRGFHPTDIIKIAGNNGGAQALQAVLD--LELMLRE
301 Mycetohabitans sp. M3 (MN840545) -----MSAMFMPQEGKQSANGLNLS-----PLERIKIEKHYGGSATLAFISN--QHDELAQ
302 Mycetohabitans sp. M6 (MN840543) ERGFNQADIVKVIAGNGGGAQALQAVLDVEPALGKRGFSRVDIAKIAGGGAQALQAVLGLEPTLRKRGFHPTDIIKIAGNNGGAQALQAVLD--LELMLRE
303 Mycetohabitans sp. M7 (MN840544) -----MPVTSVYQKDKPFGARLNLS-----PLERIKIEKHYGGSATLEFISN--QHDKLAQ
304 M. rhizoxinica M1 (E5AW43) -----
305 Mycetohabitans sp. M2 (MN840547) -----
306 Mycetohabitans sp. M4 (MN840549) -----
307 Mycetohabitans sp. M6 (MN840546) -----
308 Mycetohabitans sp. M7 (MN840548) -----
309 AvrXa10 X. oryzae (Q56830)    AHGLTPDQVVVAIASNIGGKQALATVQR-LLPVLCQDHG-----LTPDQVVVAIASHGGGKQALETVQR-LLPVLCQD
310 AvrBs3 X. euvesicatoria (P14727) AHGLTPDQVVVAIASNIGGKQALETVQR-LLPVLCQAHG-----LTPDQVVVAIASNIGGKQALETVQR-LLPVLCQA
311 Brg11 R. solanacearum (Q8XYE3) PYVLDTEQVVVAIASHNGGKQALEAVKADLLDLRGA-----LSTEQVVVAIASHNGGKQALEAVKADLLDLRGA
312

```

```

313
314
315
316 M. rhizoxinica M1 (E5AV36) CGFSQATIAKIAGNIGGAQALQMVLD--LGPALGKRGFSQATIAKIAGN-----IGGAQALQTVLD--LEPA
317 Mycetohabitans sp. M2 (MN891944) CGFSQATIAKIAGNIGGAQALQMVLD--LGPALGKRGFSQATIAKIAGN-----IGGAQALQTVLD--LEPA
318 Mycetohabitans sp. M4 (MN840538) RGFSQVDIVKIASNDGGAQALYSVLD--VEPTFRERGFSSRADIVKTIAGNNGGAQALHTVLDVESALSSEHGFCRGTVKIAGNIGGAQALQAVLE--LEPT
319 M. endofungorum M5 (MN891945) CGFSQATIAKIAGNIGGAQALQMVLD--LGPALGKRGFSQATIAKIAGN-----IGGAQALQTVLD--LEPA
320 Mycetohabitans sp. M6 (MN840537) CGFSQATIAKIAGNIGGAQALQMVLD--LGPALGKRGFSQATIAKIAGN-----IGGAQALQTVLD--LEPA
321 Mycetohabitans sp. M7 (MN840539) RSFNRADIVRIAGNGGGAQSLYSVRD--AGPTLGRRGFSRVDIVKIAG-----GGAQALHTVLE--LEPT
322 Mycetohabitans sp. M7 (MN840540) RSFNRADIVRIAGNGGGAQSLYSVRD--AGPTLGRRGFSRVDIVKIAG-----GGAQALHTVLE--LEPT
323 Mycetohabitans sp. M8 (MN840541) -----MAGNI-----GGAQALQAVLE--LEPA
324 M. rhizoxinica M1 (E5AW45) RGFSQADIVKMASNIGGAQALQAVLN--LEPALCERGFSPDIVKMAGNSGGAQALQAVLDLELAFRERGFSDIVKMASNIGGAQALQAVLE--LEPA
325 Mycetohabitans sp. M2 (MN840542) RGFSQADIVKMASNIGGAQALQAVLN--LEPALCERGFSPDIVKMAGNSGGAQALQAVLDLELAFRERGFSDIVKMASNIGGAQALQAVLE--LEPA
326 Mycetohabitans sp. M3 (MN840545) -VLSRADILKIASYDCAAQALQAVLD--CGPMLGKRGFSRADIVKIAGNG-----GGAQALQAVLE--LEPT
327 Mycetohabitans sp. M6 (MN840543) RGFSQADIVKMASNIGGAQALQAVLN--LEPALCERGFSPDIVKMAGNSGGAQALQAVLDLELAFRERGFSDIVKMASNIGGAQALQAVLE--LEPA
328 Mycetohabitans sp. M7 (MN840544) -VLSRADILKIASYDCAAQALQAVLD--CGPMLGKRGFSRADIVKIAGNG-----GGAQALQAVLE--LEPT
329 M. rhizoxinica M1 (E5AW43) -----FARDIIKITGNG-----GGAQALKAVVV--HGPT
330 Mycetohabitans sp. M2 (MN840547) -----FARDIIKITGNG-----GGAQALKAVVV--HGPT
331 Mycetohabitans sp. M4 (MN840549) -----FARDIIKITGNG-----GGAQALKAVVV--HGPT
332 Mycetohabitans sp. M6 (MN840546) -----FARDIIKITGNG-----GGAQALKAVVV--HGPT
333 Mycetohabitans sp. M7 (MN840548) -----FARDIIKITGNG-----GGAQALKAVVV--HGPT
334 AvrXa10 X. oryzae (Q56830) HGLTPDQVVAIASNIGGKQALETVQR--LLPVLCDHGLTPDQVVAIASNI-----GGKQALETVQR--LLPVL
335 AvrBs3 X. euvesicatoria (P14727) HGLTPQVVAIASNIGGKQALETVQA--LLPVLCAHGLTPQVVAIASNI-----GGKQALETVQA--LLPVL
336 Brg11 R. solanacearum (Q8XYE3) YALSTEQVVAIASHNIGGKQALEAVKAHLLDLRGVPYALSTEQVVAIASHN-----GGKQALEAVKAQLLDLR
337
338
339
340 M. rhizoxinica M1 (E5AV36) LCERGFSAITAKMAGNNGGAQALQ-----TVLDLEPAL
341 Mycetohabitans sp. M2 (MN891944) LCERGFSAITAKMAGNNGGAQALQ-----TVLDLEPAL
342 Mycetohabitans sp. M4 (MN840538) LRERGFSSRADILRIAGNGGGAQALQ-----AVLELEPTL
343 M. endofungorum M5 (MN891945) LCERGFSAITAKMAGNNGGAQALQ-----TVLDLEPAL
344 Mycetohabitans sp. M6 (MN840537) LCERGFSAITAKMAGNNGGAQALQ-----TVLDLEPAL
345 Mycetohabitans sp. M7 (MN840539) LRKRGFNPTDIVRMAGNDGGAQALQ-----AVFELEPAF
346 Mycetohabitans sp. M7 (MN840540) LRKRGFNPTDIVKIAGNDGGAQALQ-----AVLELEPAL
347 Mycetohabitans sp. M8 (MN840541) FRERGFSPDIVKMAGNIGGAQALQ-----AVLELEPML
348 M. rhizoxinica M1 (E5AW45) LHERGFSAIVKMAGNSGGAQALQAVLDLELVFRERGFSPDIVEMAGNIGGAQALHTVLDLELAFRERGVQRADIVKIVGNNGGAQALQAVFELEPTL
349 Mycetohabitans sp. M2 (MN840542) LHERGFSAIVKMAGNSGGAQALQAVLDLELVFRERGFSPDIVEMAGNIGGAQALHTVLDLELAFRERGVQRADIVKIVGNNGGAQALQAVFELEPTL
350 Mycetohabitans sp. M3 (MN840545) FRERGFSSRADIVKIASNNGGAQALQALQ-----AVLELEPTL
351 Mycetohabitans sp. M6 (MN840543) LHERGFSAIVKMAGNSGGAQALQAVLDLELVFRERGFSPDIVEMAGNIGGAQALHTVLDLELAFRERGVQRADIVKIVGNNGGAQALQAVFELEPTL
352 Mycetohabitans sp. M7 (MN840544) FRERGFSSRADIVKIASNNGGAQALQALQ-----AVLELEPTL
353 M. rhizoxinica M1 (E5AW43) LNECGFSQADIVRIADNIGGAQALK-----AVLEHGPTL
354 Mycetohabitans sp. M2 (MN840547) LNECGFSQADIVRIADNIGGAQALK-----AVLEHGPTL
355 Mycetohabitans sp. M4 (MN840549) -----VLDYEQVF
356 Mycetohabitans sp. M6 (MN840546) LNECGFSQADIVRIADNIGGAQALK-----AVLEHGPTL
357 Mycetohabitans sp. M7 (MN840548) -----VLDYEQVF
358 AvrXa10 X. oryzae (Q56830) CQDHGLTPDQVVAIASNNGGKQALETV-----QRLLPVLC
359 AvrBs3 X. euvesicatoria (P14727) CQAHGLTPQVVAIASNIGGKQALETV-----QALLPVLC
360 Brg11 R. solanacearum (Q8XYE3) GAPPYALSTAQVVAIASNNGGKQALEGIG-----EQLLKLR
361
362

```



```

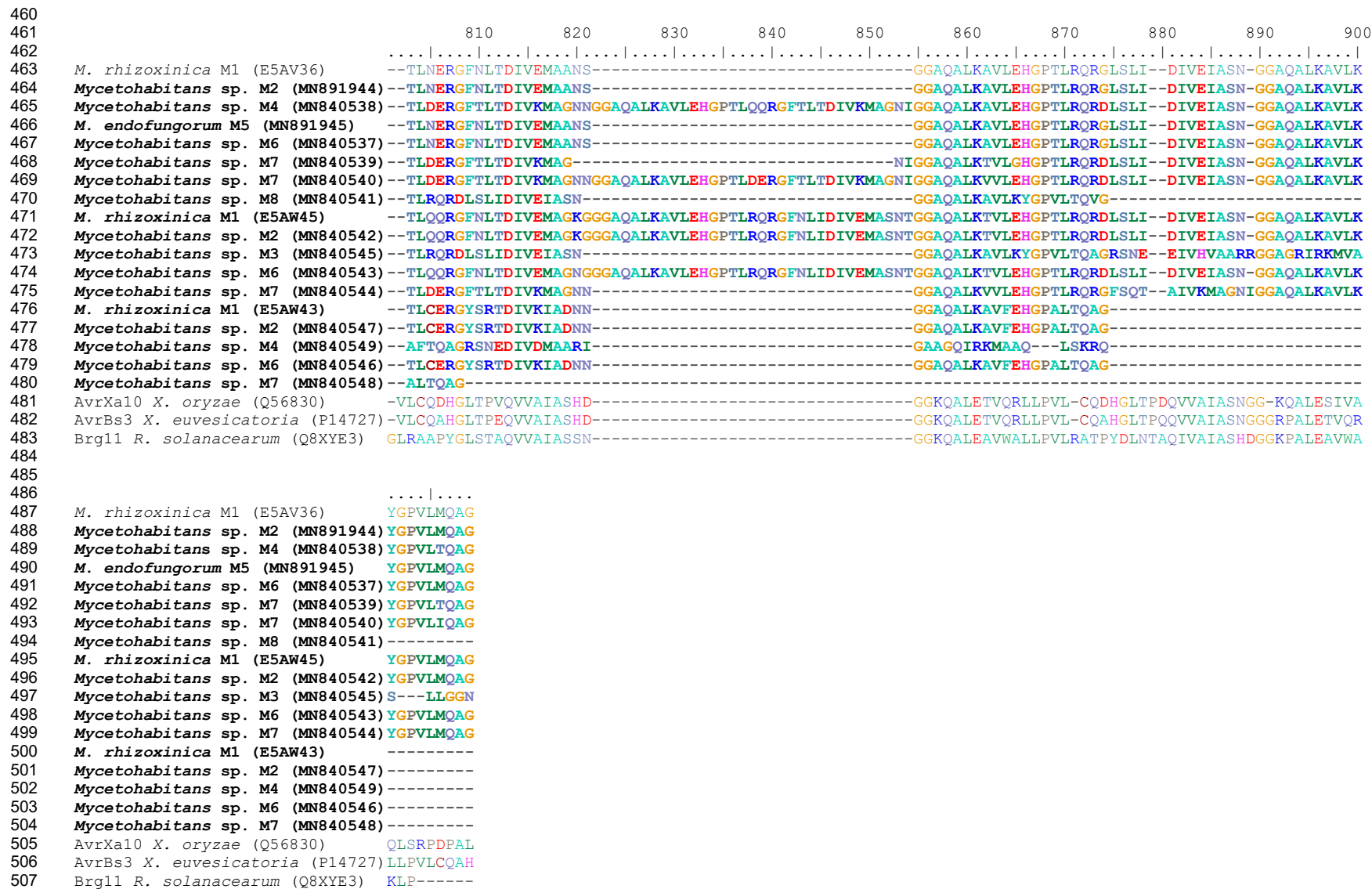
363                                     410       420       430       440       450       460       470       480       490       500
364                                     .....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
365 M. rhizoxinica M1 (E5AV36)          RKRDFRQADI I I K I A G N D G -----G A Q A L Q A V --I E H G P T L R Q H G F N L A D I V K M A G N I G G A Q A L Q A V L D L K P V L D
366 Mycetohabitans sp. M2 (MN891944) RKRDFRQADI I I K I A G N D G -----G A Q A L Q A V --I E H G P T L R Q H G F N L A N I V K M A G N I G G A Q A L Q A V L D L K P V L D
367 Mycetohabitans sp. M4 (MN840538) RERSFNRADIVRIAGNGGGAQALYSVRDAGPTL GKRGF S Q V D I V K I A G G G A Q A L H T V --L E L E P T L R K R G F N P T D I V R M A G N D G G A Q A L Q A V L E L E P A F R
368 M. endofungorum M5 (MN891945)     RKRDFRQADI I I K I A G N D G -----G A Q A L Q A V --I E H G P T L R Q H G F N L A D I V K M A G N I G G A Q A L Q A V L D L K P V L D
369 Mycetohabitans sp. M6 (MN840537) RKRDFRQADI I I K I A G N D G -----G A Q A L Q A V --I E H G P T L R Q H G F N L A D I V K M A G N I G G A Q A L Q A V L D L K P V L D
370 Mycetohabitans sp. M7 (MN840539) RERSFSQPDIVKMA G N N G -----G A Q A L Q A V --L E L D P A F R E R G F N P T D I V K I A G N N G G A Q A L Q A V L E L E P A L R
371 Mycetohabitans sp. M7 (MN840540) RERGF S Q P D I V K M A G N D G -----G A Q A L Q A G --L E L D P A F R E R G F N P T D I V K I A G N I G G A Q A L Q A V L E L E P A F R
372 Mycetohabitans sp. M8 (MN840541) RECDFRQADIVKIA G N G G -----S A Q A L K A V --L E H G P T L R Q R G F S R A D I V K I A A N G G G A Q A L Q A V L K -----
373 M. rhizoxinica M1 (E5AW45)          RERGFNQATIVKIAANGGGAQALYSVLDVEPTL D K R G F S R V D I V K I A G G G A Q A L H T A --F E L E P T L R K R G F N P T D I V K I A G N K G G A Q A L Q A V L E L E P A L R
374 Mycetohabitans sp. M2 (MN840542) RERGFNQATIVKIAANGGGAQALYSVLDVEPTL D K R G F S R V D I V K I A G G G A Q A L H T A --F E L E P T L R K R G F N P T D I V K I A G N K G G A Q A L Q A V L E L E P A L R
375 Mycetohabitans sp. M3 (MN840545) REHGF S R A D I V R I A G N G G -----G A Q A L Y S V --L D V G L T L G K R S F S R A D I V K M A R N D G G A Q A L H T V L K L E P T L G
376 Mycetohabitans sp. M6 (MN840543) RERGFNQATIVKIAANGGGAQALYSVLDVEPTL D K R G F S R V D I V K I A G G G A Q A L H T A --F E L E P T L R K R G F N P T D I V K I A G N K G G A Q A L Q A V L E L E P A L R
377 Mycetohabitans sp. M7 (MN840544) REHGF S R A D I V R I A G N G G -----G A Q A L Y S V --L D V G P T L G K R G F S R A D I V K I A G N G G G A Q A L H T V F K L E P T L G
378 M. rhizoxinica M1 (E5AW43)          NERDYSGADIVKIA G N G G -----G A R A L K A V --V M H G P T L C E S G Y S G A D I V K I A S N G G G A Q A L E A V A M -----
379 Mycetohabitans sp. M2 (MN840547) NERDYSGADIVKIA G N G G -----G A R A L K A V --V M H G P T L C E S G Y S G A D I V K I A S N G G G A Q A L E A V A M -----
380 Mycetohabitans sp. M4 (MN840549) RQRGFARVDI I K I T G N D G -----G A Q A L K A V --I V H G S T L N E R G Y S G A N I V K I A G N G G G A R A I E A V M -----
381 Mycetohabitans sp. M6 (MN840546) NERDYSGADIVKIA G N G G -----G A R A L K A V --V M H G P T L C E S G Y S G A D I V K I A S N G G G A Q A L E A V A M -----
382 Mycetohabitans sp. M7 (MN840548) RQRGFARVDI I K I T G N D G -----G A Q A L K A V --V V H G P T L N E R G Y S G A D I V K I A G N G G G A W A L K A V M -----
383 AvrXa10 X. oryzae (Q56830)          QTHGLTPDQVVAI A N H D G -----G K Q A L E T V --Q R L L P V L C Q D H G L T P D Q V V A I A S N I G G K Q A L A T V Q R --L L P V L
384 AvrBs3 X. euvesicatoria (P14727) QAHGLTPEQVVAI A S H D G -----G K Q A L E T V --Q R L L P V L C Q A H G L T P E Q V V A I A S H D G G K Q A L E T V Q R --L L P V L
385 Brg11 R. solanacearum (Q8XYE3)     APYGLSTEQVVAI A S H D G -----G K Q A L E A V G A Q L V A L R A A P Y A L S T E Q V V A I A S N K G G K Q A L E A V K A Q L L E L R
386
387                                     510       520       530       540       550       560       570       580       590       600
388                                     .....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
389 M. rhizoxinica M1 (E5AV36)          E H G F -----S Q P D I V K M A G N I G G A Q A L Q A V --L S L G P A L R E R G F S Q P D I V K I A G N T G G A Q A L Q A V L D L E L T L
390 Mycetohabitans sp. M2 (MN891944) E H G F -----S Q P D I V K M A G N I G G A Q A L Q A V --L S L G P A L R E R G F S Q P D I V K I A G N T G G A Q A L Q A V L D L E L T L
391 Mycetohabitans sp. M4 (MN840538) E R G F -----S Q P D I V K M A G N N G G A Q A L Q A G --L E L E P A F R E R G F N P T D M V K I A G N N G G A Q A L Q A V L E L E P A L
392 M. endofungorum M5 (MN891945)     E H G F -----S Q P D I V K M A G N I G G A Q A L Q A V --L S L G P A L R E R G F S Q P D I V K I A G N T G G A Q A L Q A V L D L E L T L
393 Mycetohabitans sp. M6 (MN840537) E H G F -----S Q P D I V K M A G N I G G A Q A L Q A V --L S L G P A L R E R G F S Q P D I V K I A G N T G G A Q A L Q A V L D L E L T L
394 Mycetohabitans sp. M7 (MN840539) E R G F -----S Q P D I V K M A S N S G G A Q A L Q A G --L E L E P -----
395 Mycetohabitans sp. M7 (MN840540) E R G F -----S Q P D I V K M A G N S G G A Q A L Q A G --L E L E P A F R E R G F N P T D I V K I A G N N G G A Q A L Q A V L E L E P A L
396 Mycetohabitans sp. M8 (MN840541) -----
397 M. rhizoxinica M1 (E5AW45)          E R G F N Q A T I V K M A G N A G G A Q A L Y S V L D V E P A L R E R G F S Q P E I V K I A G N I G G A Q A L H T V --L E L E P T L H K R G F N P T D I V K I A G N S G G A Q A L Q A V L E L E P A F
398 Mycetohabitans sp. M2 (MN840542) E R G F N Q A T I V K M A G N A G G A Q A L Y S V L D V E P A L R E R G F S Q P E I V K I A G N I G G A Q A L H T V --L E L E P T L H K R G F N P T D I V K I A G N S G G A Q A L Q A V L E L E P A F
399 Mycetohabitans sp. M3 (MN840545) E R G F -----S R G D I V K M A G N I G G A Q A L K A V --L E -----
400 Mycetohabitans sp. M6 (MN840543) E R G F N Q A T I V K M A G N A G G A Q A L Y S V L D V E P A L R E R G F S Q P E I V K I A G N I G G A Q A L H T V --L E L E P T L H K R G F N P T D I V K I A G N S G G A Q A L Q A V L E L E P A F
401 Mycetohabitans sp. M7 (MN840544) E R G F -----S R G D I V K M A G N I G G A Q A L Q A V --L E L E P A F H E R S F C Q P D I V K M A G N I G G A Q A L Q A V L E L E P A F
402 M. rhizoxinica M1 (E5AW43)          -----
403 Mycetohabitans sp. M2 (MN840547) -----
404 Mycetohabitans sp. M4 (MN840549) -----
405 Mycetohabitans sp. M6 (MN840546) -----
406 Mycetohabitans sp. M7 (MN840548) -----
407 AvrXa10 X. oryzae (Q56830)          C Q A H G -----L T P D Q V V A I A S H D G G K Q A L E T V --Q R L L P V L C Q D H G L T P D Q V V A I A S N N G G K Q A L E T V Q R L L P V L
408 AvrBs3 X. euvesicatoria (P14727) C Q A H G -----L T P Q Q V V A I A S N G G K Q A L E T V --Q R L L P V L C Q A H G L T P E Q V V A I A S N S G G K Q A L E T V Q A L L P V L
409 Brg11 R. solanacearum (Q8XYE3)     G A P Y A -----L S T A Q V V A I A S H D G G N Q A L E A V G T Q L V A L R A A P Y A L S T E Q V V A I A S H D G G K Q A L E A V G A Q L V A L
410
411

```

```

412                               610       620       630       640       650       660       670       680       690       700
413   .....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
414   M. rhizoxinica M1 (E5AV36)   VEHGFSQPDIVRITGNRGGAAQALQAVLALELTLRERGFSPQDIVKVIAGNSGGAQALQAVLDLELTFRER--GFSQADIVKVIAGNDGGTQALHAVLDLERM
415   Mycetohabitans sp. M2 (MN891944) VEHGFSQPDIVRITGNRGGAAQALQAVLALELTLRERGFSPQDIVKVIAGNSGGAQALQAVLDLELTFRER--GFSQADIVKVIAGNDGGTQALHAVLDLERM
416   Mycetohabitans sp. M4 (MN840538) RERGFSPQDIVKMASNSGGAQALQVVLLELEPTLRERDFRQADIVKVIAGNSGGAQALNAVILKLGPTLRQR--GFSRADIVKIAAN-----
417   M. endofungorum M5 (MN891945)   VEHGFSQPDIVRITGNRGGAAQALQAVLALELTLRERGFSPQDIVKVIAGNSGGAQALQAVLDLELTFRER--GFSQADIVKVIAGNDGGTQALHAVLDLERM
418   Mycetohabitans sp. M6 (MN840537) VEHGFSQPDIVRITGNRGGAAQALQAVLALELTLRERGFSPQDIVKVIAGNSGGAQALQAVLDLELTFRER--GFSQADIVKVIAGNDGGTQALHAVLDLERM
419   Mycetohabitans sp. M7 (MN840539) -----TLRERDFRQADIVKMASNSGGAQALNAVILKLGPTLRQR--GFSRADIVKIAAN-----
420   Mycetohabitans sp. M7 (MN840540) RERSFSQPDIVKMASNSGGAQALQAVLVLEPTLRERDFRQADIVKMASNSGGAQALNAVILKLGPTLRQR--GFSRADIVKIAAN-----
421   Mycetohabitans sp. M8 (MN840541) -----
422   M. rhizoxinica M1 (E5AW45)     RERGFSPQDIVKMASNIGGAQALQAVLELEPALRERGFSPQDIVEMAGNIGGAQALQAVLELEPAFRER--GFSQSDIVKVIAGNIGGAQALQAVLELEPT
423   Mycetohabitans sp. M2 (MN840542) RERGFSPQDIVKMASNIGGAQALQAVLELEPALRERGFSPQDIVEMAGNIGGAQALQAVLELEPAFRER--GFSQSDIVKVIAGNIGGAQALQAVLELEPT
424   Mycetohabitans sp. M3 (MN840545) -----
425   Mycetohabitans sp. M6 (MN840543) RERGFSPQDIVKMASNIGGAQALQAVLELEPALRERGFSPQDIVEMAGNIGGAQALQAVLELEPAFRER--GFSQSDIVKVIAGNIGGAQALQAVLELEPT
426   Mycetohabitans sp. M7 (MN840544) RERGFSRGDIVKMAGNIGGAQALQAGLELEPAFRERGFSRGDIVKMAGNIGGAQALQAVLELEPAFREH--GFSQPDIVKVIAGNIGGAQALQAVLELEPA
427   M. rhizoxinica M1 (E5AW43) -----
428   Mycetohabitans sp. M2 (MN840547) -----
429   Mycetohabitans sp. M4 (MN840549) -----
430   Mycetohabitans sp. M6 (MN840546) -----
431   Mycetohabitans sp. M7 (MN840548) -----
432   AvrXal0 X. oryzae (Q56830)    CQD-----HGLTPAQVVAIANHGGKQALETVQRLLPVLCQD-HGLTPVQVVAIASN-----
433   AvrBs3 X. euvesicatoria (P14727) CQA-----HGLTPAQVVAIASNSGKQALETVQRLLPVLCQA-HGLTPAQVVAIASH-----
434   Brg11 R. solanacearum (Q8XYE3) RAAP-----YALNTEQVVAIASSHGGKQALEAVRALFPDLRAAPYALSTAQLVAIASN-----
435
436                               710       720       730       740       750       760       770       780       790       800
437   .....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
438   M. rhizoxinica M1 (E5AV36)   LGERGFSTRADIVNVAGNNGGAQALKAVLEHEATLNERGFSTRADIVKVIAGNSGGAQALKAVLEHEATLDER--GFSRADIVRVIAGNGGGAQALKAVLEHGP
439   Mycetohabitans sp. M2 (MN891944) LGERGFSTRADIVNVAGNNGGAQALKAVLEHEATLNERGFSTRADIVKVIAGNSGGAQALKAVLEHEATLDER--GFSRADIVRVIAGNGGGAQALKAVLEHGP
440   Mycetohabitans sp. M4 (MN840538) -----GGGAQALQAVLKHGPTLGER--GFTLTDIVEMAGNNGGAQALKAVLEHGS
441   M. endofungorum M5 (MN891945)   LGERGFSTRADIVNVAGNNGGAQALKAVLEHEATLNERGFSTRADIVKVIAGNSGGAQALKAVLEHEATLDER--GFSRADIVRVIAGNGGGAQALKAVLEHGP
442   Mycetohabitans sp. M6 (MN840537) LGERGFSTRADIVNVAGNNGGAQALKAVLEHEATLNERGFSTRADIVKVIAGNSGGAQALKAVLEHEATLDER--GFSRADIVRVIAGNGGGAQALKAVLEHGP
443   Mycetohabitans sp. M7 (MN840539) -----GGGAQALQAVLKHGPTLGER--GFTLTDIVKMASNNGGAQALKAVLEHGP
444   Mycetohabitans sp. M7 (MN840540) -----GGGAQALQAVLKHGPTLGER--GFTLTDIVKMASNNGGAQALKAVLEHGP
445   Mycetohabitans sp. M8 (MN840541) -----HGPTLDER--GFTLTDIVKMAGNVGGAQALKAVLEHGP
446   M. rhizoxinica M1 (E5AW45)     LRESDFRQADIVNVIAGNDGSTQALKAVIEHGPRLRQRGFNRASIVKVIAGNSGGAQALQAVLKHGPTLDER--GFNLTNIVKVIAGNGGGAQALKAVIEHGP
447   Mycetohabitans sp. M2 (MN840542) LRESDFRQADIVNVIAGNDGSTQALKAVIEHGPRLRQRGFNRASIVKVIAGNSGGAQALQAVLKHGPTLDER--GFNLTNIVKVIAGNGGGAQALKAVIEHGP
448   Mycetohabitans sp. M3 (MN840545) -----HGPTLDER--GFTLTDIVKMAGNIGGAQALKAVLEHGP
449   Mycetohabitans sp. M6 (MN840543) LRESDFRQADIVNVIAGNDGSTQALKAVIEHGPRLRQRGFNRASIVKVIAGNSGGAQALQAVLKHGPTLDER--GFNLTNIVKVIAGNGGGAQALKAVIEHGP
450   Mycetohabitans sp. M7 (MN840544) FRERGFSPSINVIKVIAGNIGGAQALQAVLELEPMLRECDFRQDIVKMASGSGGAQALNAVILKHGPTLRQR--GFSQADIVKVIAGNSGGAQALKAVIEHGP
451   M. rhizoxinica M1 (E5AW43) -----HGSTLCER--GYCRTDIAKIAGNGGGAQALKAVIEMHGP
452   Mycetohabitans sp. M2 (MN840547) -----HGSTLCER--GYCRTDIAKIAGNGGGAQALKAVIEMHGP
453   Mycetohabitans sp. M4 (MN840549) -----HGPTLGER--GYSRTDIVKIIDNNGGAQALKAVFEHGP
454   Mycetohabitans sp. M6 (MN840546) -----HGSTLCER--GYCRTDIAKIAGNGGGAQALKAVIEMHGP
455   Mycetohabitans sp. M7 (MN840548) -----HGPTLGER--GYSRTDIVKIADNNGGAQALKAVFEHGP
456   AvrXal0 X. oryzae (Q56830) -----SGGKQALETVQRLLPVLCQD-HGLTPVQVVAIASNSGKQALATVQRLLP
457   AvrBs3 X. euvesicatoria (P14727) -----DGGKQALETVQRLLPVLCQA-HGLTPAQVVAIASHGGKQALETVQRLLP
458   Brg11 R. solanacearum (Q8XYE3) -----PGGKQALEAVRALFRELRAAPYALSTEQVVAIASNSHGGKQALEAVRALFR

```



508
509 **Fig. S3.** Alignment of predicted TAL effector proteins from endofungal *Mycetohabitans* species (MTAL) and plant pathogenic *R. solanacearum* and *Xanthomonas*
510 species. The core repeats of each protein were used for alignment (1). Sequences identified in this study are highlighted in bold (Table S3). GenBank accession
511 numbers are indicated in brackets.
512

Table S1. Fungal strains used in this study that harbor bacterial endosymbionts (2).

Taxon	Strain designation	Origin	Bacterial endosymbiont (isolate)
<i>Rhizopus microsporus</i> van Tieghem	ATCC 62417	Rice seedlings, Japan	<i>Mycetohabitans rhizoxinica</i> HKI-454 (M1)
<i>Rhizopus</i> sp. strain F-1360	ATCC 20577	Soil, Japan	<i>Mycetohabitans</i> sp. strain HKI-512 (M2)
<i>Rhizopus microsporus</i> Tieghem var. <i>microsporus</i>	CBS 111563	Sufu starter culture, rice wine tablet, Vietnam	<i>Mycetohabitans</i> sp. strain HKI-455 (M3)
<i>Rhizopus microsporus</i> Tieghem var. <i>microsporus</i>	CBS 699.68	Soil, Ukraine	<i>Mycetohabitans</i> sp. strain HKI-402 (M4)
<i>Rhizopus microsporus</i> Tieghem	CBS 112285	Ground nuts, Mozambique	<i>Mycetohabitans endofungorum</i> HKI-456 (M5)
<i>Rhizopus microsporus</i> var. <i>chinensis</i> (Saito) Schipper & Stalpers	CBS 261.28	Not specified, USA	<i>Mycetohabitans</i> sp. strain HKI-513 (M6)
<i>Rhizopus microsporus</i> Tieghem var. <i>microsporus</i>	CBS 700.68	Forest soil, Georgia	<i>Mycetohabitans</i> sp. strain HKI-403 (M7)
<i>Rhizopus microsporus</i> Tieghem var. <i>microsporus</i>	CBS 308.87	Man, from deep necrotic tissue within the hand following a spider bite, Australia	<i>Mycetohabitans</i> sp. strain HKI-404 (M8)

515 **Table S2.** Predicted nuclear localization sequences (NLS) within AWR proteins from endofungal *Mycetohabitans* and plant-associated *Burkholderia* species, and
 516 plant pathogenic *R. solanacearum* using (A) NucPred prediction software (3) and (B) cNLS Mapper (4). GenBank accession numbers are given in brackets.

A	Species (Gen. Bank Acc. No)	NLS motif (monopartite)	Position in protein¹	NucPred Score²	Specificity³	Sensitivity (coverage)⁴
	<i>Ralstonia solanacearum</i> (BAH47286.1) AWR1	GATRRRRNSG	38 – 45	0.75	0.81	0.44
	<i>Paraburkholderia graminis</i> (WP 006047106.1)	TRRRM	36 – 40	0.62	0.71	0.53
	<i>Burkholderia glumae</i> (WP 012733093.1)	QARRRQG	78 – 84	0.55	0.70	0.62
	<i>Burkholderia</i> sp. CCGE1003 (ADN59567.1)	DPQRRRRFVDD	693 – 693	0.62	0.71	0.53
	<i>Mycetohabitans rhizoxinica</i> HKI-454 (M1)	KRSRKRKATV	577 – 586	0.68	0.71	0.53
	<i>Mycetohabitans</i> sp. strain HKI-512 (M2)	KRSRKRKATV	577 – 586	0.68	0.71	0.53
	<i>Mycetohabitans</i> sp. strain HKI-455 (M3)	KRSRKRKATV	572 – 581	0.75	0.81	0.44
	<i>Mycetohabitans</i> sp. strain HKI-402 (M4)	KRSRKRKATV	572 – 581	0.75	0.81	0.44
	<i>Mycetohabitans endofungorum</i> HKI-456 (M5)	KRSRKRKATV	572 – 581	0.68	0.71	0.53
	<i>Mycetohabitans</i> sp. strain HKI-513 (M6)	KRSRKRKATV	577 – 586	0.69	0.71	0.53
	<i>Mycetohabitans</i> sp. strain HKI-403 (M7)	KRSRKRKATV	572 – 581	0.73	0.81	0.44
	<i>Mycetohabitans</i> sp. strain HKI-404 (M8)	KRSRERKATV	559 – 568	0.62	0.71	0.53

517

B	Species (Gen. Bank Acc. No)	NLS motif (monopartite)	Position in protein ¹	cNLS Score ⁵	NLS motif (bipartite)	Position in protein ¹	cNLS Score ⁵
	<i>Ralstonia solanacearum</i> (BAH47286.1) AWR1	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Paraburkholderia graminis</i> (WP 006047106.1)	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Burkholderia glumae</i> (WP 012733093.1)	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Burkholderia</i> sp. CCGE1003 (ADN59567.1)	N/A	N/A	N/A	N/A	N/A	N/A
	<i>Mycetohabitans rhizoxinica</i> HKI-454 (M1)	RSRKRKATVQ	578 – 587	13	KATKATKATKLPKLPKLPKLPKLPKLP	1083 – 1096	5.5
KATKATKATKLPKLPKLPKLPKLPKLPKLP					1083 – 1112	6.1	
KATKATKLPKLPKLPKLPKLPKLPKLPKG					1086 – 1114	5.6	
	<i>Mycetohabitans</i> sp. strain HKI-512 (M2)	RSRKRKATVQ	578 – 587	13	FMGKPVAATKATKLPKLPKLPKLPKLPKLP	1061 – 1090	5.5
KATKLPKLPKLPKLPKLPKLPKLPKG					1070 – 1095	5.5	
	<i>Mycetohabitans</i> sp. strain HKI-455 (M3)	RSRKRKATVQ	573 – 582	13	N/A	N/A	N/A
	<i>Mycetohabitans</i> sp. strain HKI-402 (M4)	RSRKRKATVQ	573 – 582	13	N/A	N/A	N/A
	<i>Mycetohabitans</i> <i>endofungorum</i> HKI-456 (M5)	RSRKRKATVQ	573 – 582	13	N/A	N/A	N/A
	<i>Mycetohabitans</i> sp. strain HKI-513 (M6)	RSRKRKATVQ	578 – 587	13	KATKATKATKLPKLPKLPKLPKLPKLP	1070 – 1096	5.5
KATKATKATKLPKLPKLPKLPKLPKLPKG					1070 – 1098	5.5	
	<i>Mycetohabitans</i> sp. strain HKI-403 (M7)	RSRKRKATVQ	573 – 582	13	N/A	N/A	N/A
	<i>Mycetohabitans</i> sp. strain HKI-404 (M8)	N/A	N/A		N/A	N/A	N/A

518 ¹ Amino acid position of predicted NLS within AWR peptide sequence.

519 ² Fraction of proteins predicted to be nuclear that actually are nuclear.

520 ³ Fraction of true nuclear proteins that are predicted (coverage).

521 ⁴ cNLS score: > 10: protein exclusively localized to the nucleus; 7 – 8: partially localized to the nucleus; 3 – 5: localized to both the nucleus and the cytoplasm; 1 – 2: localized to the cytoplasm.

522 N/A: not available.

Table S3. GenBank accession numbers of genes identified in this study.

Gene	Locus Tag	Strain	GenBank Acc. No.
<i>awr</i>	RBRH 02721	<i>Mycetohabitans rhizoxinica</i> HKI-512 (M2)	MN840555
<i>awr</i>	RBRH 00074	<i>Mycetohabitans rhizoxinica</i> HKI-455 (M3)	MN840550
<i>awr</i>	RBRH 00457	<i>Mycetohabitans rhizoxinica</i> HKI-402 (M4)	MN840552
<i>awr</i>	RBRH 01365	<i>Mycetohabitans endofungorum</i> HKI-456 (M5)	MN840553
<i>awr</i>	RBRH 02790	<i>Mycetohabitans rhizoxinica</i> HKI-513 (M6)	MN840556
<i>awr</i>	RBRH 03309	<i>Mycetohabitans rhizoxinica</i> HKI-403 (M7)	MN840551
<i>awr</i>	RBRH 02340	<i>Mycetohabitans rhizoxinica</i> HKI-404 (M8)	MN840554
<i>*mtal1</i>	*RBRH 01844	<i>Mycetohabitans</i> sp. HKI-512 (M2)	*MN891944
<i>mtal1</i>	RBRH 01585	<i>Mycetohabitans rhizoxinica</i> HKI-402 (M4)	MN840538
<i>*mtal1</i>	*RBRH 01844	<i>Mycetohabitans endofungorum</i> HKI-456 (M5)	*MN891945
<i>mtal1</i>	RBRH 01580	<i>Mycetohabitans rhizoxinica</i> HKI-513 (M6)	MN840537
<i>mtal1</i>	RBRH 01934	<i>Mycetohabitans rhizoxinica</i> HKI-403 (M7)	MN840539
<i>mtal1</i>	RBRH 02907	<i>Mycetohabitans rhizoxinica</i> HKI-403 (M7)	MN840540
<i>mtal1</i>	RBRH 00422	<i>Mycetohabitans rhizoxinica</i> HKI-404 (M8)	MN840541
<i>mtal2</i>	RBRH 00895	<i>Mycetohabitans</i> sp. HKI-512 (M2)	MN840542
<i>mtal2</i>	RBRH 01901	<i>Mycetohabitans rhizoxinica</i> HKI-455 (M3)	MN840545
<i>mtal2</i>	RBRH 01694	<i>Mycetohabitans rhizoxinica</i> HKI-513 (M6)	MN840543
<i>mtal2</i>	RBRH 02271	<i>Mycetohabitans rhizoxinica</i> HKI-403 (M7)	MN840544
<i>mtal3</i>	RBRH 00894	<i>Mycetohabitans</i> sp. HKI-512 (M2)	MN840547
<i>mtal3</i>	RBRH 01581	<i>Mycetohabitans rhizoxinica</i> HKI-402 (M4)	MN840549
<i>mtal3</i>	RBRH 01695	<i>Mycetohabitans rhizoxinica</i> HKI-513 (M6)	MN840546
<i>mtal3</i>	RBRH 01772	<i>Mycetohabitans rhizoxinica</i> HKI-403 (M7)	MN840548

* Sequences identified via amplification and Sanger sequencing.

527
528
529
530
531
532
533

Table S4. (A) Primers used for the amplification of *mtal1* partial coding sequences in polymerase chain reactions. **(B)** Primers used for generating a T3SS-associated *awr* mutant strain (*M. rhizoxinica* Δawr) or *M. rhizoxinica mta1* mutant strains (*M. rhizoxinica* $\Delta mta12$ or *M. rhizoxinica* $\Delta mta13$). Control primers used in colony PCRs to confirm mutant strains are also listed. **(C)** Primers used for generating genetically complemented *M. rhizoxinica mta1* mutant strains (*M. rhizoxinica* $\Delta mta12$ pBBR-*mta12* and *M. rhizoxinica* $\Delta mta13$ pBBR-*mta13*) or *M. rhizoxinica mta1* mutant strains containing a relevant empty control vector (*M. rhizoxinica* $\Delta mta12$ pBBR \emptyset and *M. rhizoxinica* $\Delta mta13$ pBBR \emptyset).

534
535

A				
Gene	GenBank acc. no.	Primer Sequence (5' - 3')		Predicted amplicon size (bp)
<i>mtal1</i>	RBRH_01844	GCTACCACCTTGCGTTTTAT	Forward	3100 bp
		TACTTTGCGCGTAACAGCAC	Reverse	
B				
Gene	Type	Name	Oligo sequence (5' -> 3')	
RBRH 03012 (<i>awr</i>)	Vector construction	Awr ArmA Fw	ctatagggcgaattgggtacgttgatccatgatgtagacgg	
		Awr ArmA Rv	acattcatccctggctgagaatgtcaacgg	
		Awr ArmB Fw	gttctctgaaaatttagtcgacaagcgcg	
		Awr ArmB Rv	ctcgagggggggcccggtacaacgttgccaagcggataaaatg	
		Kan Awr Fw	tctcagccagggatgaatgtcagctactgg	
		Kan Awr Rv	gactaaatttcagaagaactcgtaagaag	
	Control Primers	Awr CA fw	aatactgctggaggccaatg	
		Awr C rv	gcttaccacgaagatggacg	
		Awr D fw	gttcaccaccgcttcgaaac	
		Awr DB rv	aattgtcgaccgaaatcagc	
		Kan B Fw	agtgacaacgtcgagcacag	
		Kan A Rv	cgttggctaccctgatatt	
RBRH 01776 (<i>mta12</i>)	Vector construction	Tal1776 ArmA Fw (SpeI)	gatcactagtgccggaccgatattgtaaag	
		Tal1776 ArmA Rv	cggaatgaattcactactgggtcaaaccgatgccgaac	
		Tal1776 ArmB Fw	gctgagaattcagtagtaggcagcggttaccagcattg	
		Tal1776 ArmB Rv (KpnI)	ctagggtagcagtgctgcatagtcgtg	
		Kan Tal Fw	agtagtgaattcattccggggatcagaagaactcgtaagaaggc	
		Kan Tal Rv	actactgaattctcagccaatcggatgaatgtcagctactgggc	
	Control Primers	77 D Fw	taacgagcgcgactacagtg	
		76 C Rv	gttcgagtgggctgaggta	
		76 D Fw	caatcgagcagtagtatcgta	
		76 DB Rv	cacgcatatgtcatcgttc	
		Kan B Fw	cgttggctaccctgatatt	

		Kan A Rv	agtgacaacgctgagcacag
RBRH 01777 (<i>mtal3</i>)	Vector construction	Tal1777 ArmA Fw(SpeI)	gatcactagtcctgcagcgccttactattc
		Tal1777 ArmA Rv	cggaatgaattcactactaatcccactgacgttgggtcattc
		Tal1777 ArmB Fw	gctgagaattcagtagtcgaaagatggctgcacaattgtc
		Tal1777 ArmB Rv (KpnI)	ctagggtaccaacgctcaagcaccgaatac
		Kan Tal Fw	agtagtgaattcattccggggatcagaagaactcgtaagaaggc
		Kan Tal Rv	actactgaattctcagccaatcggatgaatgtcagctactgggc
	Control Primers	77 CA Fw	cgtgatgtcgggtcaacac
		77 C Rv	gccattgttatcggcaatct
		77 D Fw	taacgagcgcgactacagtg
		77 DB Rv	ctggttaagctgagcccaaac
		Kan B Fw	cgtggctaccctgatatt
		Kan A Rv	agtgacaacgctgagcacag

536

537

C

Gene	Type	Name	Oligo binding sequence with <u>overhang</u> (5' → 3')
RBRH 01776 (<i>mtal2</i>)	Vector construction	<i>mtal2</i> fw	<u>GCTTCGAAAGGACAAGCATATGCCGGCGACGTCTATGCATC</u>
		<i>mtal2</i> rv	<u>TGGTCCTCGCGCCAGCTTAAGCTATTGCCGCTCCAGCAAGAGTG</u>
RBRH 01777 (<i>mtal3</i>)	Vector construction	<i>mtal3</i> fw	<u>GCTTCGAAAGGACAAGCATATGCCGGTGACGTCTGTGTATC</u>
		<i>mtal3</i> rv	<u>TGGTCCTCGCGCCAGCTTAAGCTATTGCCGCCCGACAATTG</u>
<i>gfp</i>	Vector construction	<i>gfp</i> fw	<u>GCGGCAATAGCTGACAATCGGATCGAGCTTCG</u>
		<i>gfp</i> rv	<u>TGGTCCTCGCGCCAGCTTAAGTTATTTGTATAGTTTCATCCATGCCATG</u>

Insert	Control Primers	<i>cmf</i> seq fw	GGGTATGTGGTCGAAGGC
		BBR seq rv	GCAAGGCGACAAGGTGCTG

Colony PCR	Control Primer	pBBR_verif_fw	ATTAATTATCCACAGAATCAGGG
		pBBR_verif_rv	CGGCTACATCATTCACTTTTTTC

538

539

540
541**Table S5.** Predicted nuclear localisation signal (NLS) within TAL effector proteins from endofungal *Mycetohabitans* species (MTALs) using the NucPred prediction software (3).

Species	MTAL protein	NucPred Predictions ¹			NLS
		Score	Specificity ²	Sensitivity ³	
<i>Mycetohabitans rhizoxinica</i> HKI-454 (M1)	MTAL1	0.23	0.52	0.83	RIRK
	MTAL2	0.27	0.52	0.83	RIRK
	MTAL3	0.08	N/A	N/A	QIRK
<i>Mycetohabitans</i> sp. strain HKI-512 (M2)	MTAL1	0.22	0.52	0.83	RIRK
	MTAL2	0.27	0.52	0.83	RIRK
	MTAL3	0.08	N/A	N/A	QIRK
<i>Mycetohabitans</i> sp. strain HKI-455 (M3)	MTAL2	0.14	0.45	0.88	RIRK
<i>Mycetohabitans</i> sp. strain HKI-402 (M4)	MTAL1	0.23	0.52	0.83	RIRK
	MTAL3	0.09	N/A	N/A	QIRK
<i>Mycetohabitans endofungorum</i> HKI-456 (M5)	MTAL1	0.22	0.52	0.83	RIRK
<i>Mycetohabitans</i> sp. strain HKI-513 (M6)	MTAL1	0.23	0.52	0.83	RIRK
	MTAL2	0.27	0.52	0.83	RIRK
	MTAL3	0.08	N/A	N/A	QIRK
<i>Mycetohabitans</i> sp. strain HKI-403 (M7)	MTAL1	0.17	0.45	0.88	RIRK
	MTAL2	0.16	0.45	0.88	RIRK
	MTAL3	0.05	N/A	N/A	QIRK
<i>Mycetohabitans</i> sp. strain HKI-404 (M8)	MTAL1	0.12	0.45	0.88	RIRK

542 ¹ Nuclear localisation predicted with NucPred (3).543 ² Fraction of proteins predicted to be nuclear that actually are nuclear.544 ³ Fraction of true nuclear proteins that are predicted (coverage).

545 N/A: not available.

546

547

548 **Table S6.** (A) Approximate probabilities (p) of Brown-Forsythe test, (B) one-way analysis of variance (ANOVA), and (C)
549 Tukey HSD Post Hoc Test for fungal spore counts following co-cultivation of apo-symbiotic *R. microsporus* (RMapo) with
550 *M. rhizoxinica* wild type (M1WT), *M. rhizoxinica mta1* mutant strains (*M. rhizoxinica Δmta1*, *M. rhizoxinica Δmta2*, and *M.*
551 *rhizoxinica Δmta3*), or a T3SS-associated *awr* mutant strain (*M. rhizoxinica Δawr*). Homogeneous data (non-significant
552 Brown-Forsythe) is shown in black numbers. P-values with $p < 0.05$ were considered statistically significant (marked in grey).

553

A

Brown-Forsythe Test	
F (DFn, DFd)	1.135 (5, 18)
P value	0.378
P value summary	ns
Are SDs significantly different (P < 0.05)?	No

554

B

ANOVA Summary					
F	202.4				
P value	<0.0001				
P value summary	****				
Significant diff. among means (P<0.05)?	Yes				
R squared	0.9825				
ANOVA Table	SS	DF	MS	F (DFn, DFd)	P value
Treatment (between columns)	1E+18	5	2E+17	F (5, 18) = 202.4	P<0.0001
Residual (within columns)	1.78E+16	18	9.89E+14		
Total	1.02E+18	23			

555

C

Strain Comparison		Mean Diff.	95% CI			Summary	P value
RMapo	M1WT	-4.96E+08	-5.67E+08	to	-4.26E+08	****	<0.0001
	<i>Δawr</i>	-4.49E+08	-5.20E+08	to	-3.78E+08	****	<0.0001
	<i>Δmta1</i>	-3.26E+07	-1.03E+08	to	3.81E+07	ns	0.6895
	<i>Δmta2</i>	-8.66E+07	-1.57E+08	to	-1.59E+07	*	0.0116
	<i>Δmta3</i>	-5.66E+07	-1.27E+08	to	1.41E+07	ns	0.1631
M1WT	<i>Δawr</i>	4.74E+07	-2.33E+07	to	1.18E+08	ns	0.3159
	<i>Δmta1</i>	4.64E+08	3.93E+08	to	5.34E+08	****	<0.0001
	<i>Δmta2</i>	4.10E+08	3.39E+08	to	4.80E+08	****	<0.0001
	<i>Δmta3</i>	4.40E+08	3.69E+08	to	5.10E+08	****	<0.0001
<i>Δawr</i>	<i>Δmta1</i>	4.16E+08	3.46E+08	to	4.87E+08	****	<0.0001
	<i>Δmta2</i>	3.62E+08	2.92E+08	to	4.33E+08	****	<0.0001
	<i>Δmta3</i>	3.92E+08	3.22E+08	to	4.63E+08	****	<0.0001
<i>Δmta1</i>	<i>Δmta2</i>	-5.40E+07	-1.25E+08	to	1.67E+07	ns	0.1982
	<i>Δmta3</i>	-2.40E+07	-9.47E+07	to	4.67E+07	ns	0.8833
<i>Δmta2</i>	<i>Δmta3</i>	3.00E+07	-4.07E+07	to	1.01E+08	ns	0.7549

556

Abbreviations: SS: sum of squares, DF: degrees of freedom, MS: mean square, Mean Diff.: mean difference.

557

558
559
560
561
562
563
564
565
566

Table S7. (A) Approximate probabilities (p) of Brown-Forsythe test, (B) one-way analysis of variance (ANOVA), and (C) Tukey HSD Post Hoc Test for fungal spore counts following co-cultivation of apo-symbiotic *R. microsporus* with *M. rhizoxinica* wild type (M1WT), *M. rhizoxinica mta1* mutant strains (*M. rhizoxinica Δmta1*, *M. rhizoxinica Δmta2*, and *M. rhizoxinica Δmta3*), *M. rhizoxinica mta1* mutant strains containing the relevant empty vector (*M. rhizoxinica Δmta1* pBBRØ, *M. rhizoxinica Δmta2* pBBRØ, and *M. rhizoxinica Δmta3* pBBRØ), or *M. rhizoxinica mta1* mutant strains expressing a plasmid-borne copy of the relevant *mta1* gene (*M. rhizoxinica Δmta1* pBBR-*mta1*, *M. rhizoxinica Δmta2* pBBR-*mta2*, and *M. rhizoxinica Δmta3* pBBR-*mta3*). Homogeneous data (non-significant Brown-Forsythe) is shown in black numbers. P-values with $p < 0.05$ were considered statistically significant (marked in grey).

567

A

Brown-Forsythe Test	
F (DFn, DFd)	1.425 (9, 30)
P value	0.2217
P value summary	ns
Are SDs significantly different (P < 0.05)?	No

B

ANOVA Summary	
F	75.57
P value	<0.0001
P value summary	****
Significant diff. among means (P<0.05)?	Yes
R squared	0.9578

ANOVA Table	SS	DF	MS	F (DFn, DFd)	P value
Treatment (between columns)	1.193E+18	9	1.325E+17	F (9, 30) = 75.57	P<0.0001
Residual (within columns)	5.262E+16	30	1.754E+15		
Total	1.246E+18	39			

568

C

Strain Comparison		Mean Diff.	95% CI		Summary	P value
M1WT	<i>Δmta1</i>	4.64E+08	3.63E+08	to 5.65E+08	****	<0.0001
	<i>Δmta2</i>	4.10E+08	3.09E+08	to 5.11E+08	****	<0.0001
	<i>Δmta3</i>	4.40E+08	3.39E+08	to 5.41E+08	****	<0.0001
	<i>Δmta1</i> pBBR- <i>mta1</i>	1.21E+08	2.02E+07	to 2.22E+08	**	0.0094
	<i>Δmta2</i> pBBR- <i>mta2</i>	1.46E+08	4.52E+07	to 2.47E+08	***	0.001
	<i>Δmta3</i> pBBR- <i>mta3</i>	1.21E+08	2.02E+07	to 2.22E+08	**	0.0094
	<i>Δmta1</i> pBBRØ	3.94E+08	2.93E+08	to 4.95E+08	****	<0.0001
	<i>Δmta2</i> pBBRØ	4.74E+08	3.73E+08	to 5.75E+08	****	<0.0001
	<i>Δmta3</i> pBBRØ	4.53E+08	3.52E+08	to 5.54E+08	****	<0.0001
<i>Δmta1</i>	<i>Δmta2</i>	-5.40E+07	-1.55E+08	to 4.70E+07	ns	0.7161
	<i>Δmta3</i>	-2.40E+07	-1.25E+08	to 7.70E+07	ns	0.9978
	<i>Δmta1</i> pBBR- <i>mta1</i>	-3.42E+08	-4.43E+08	to -2.41E+08	****	<0.0001
	<i>Δmta2</i> pBBR- <i>mta2</i>	-3.17E+08	-4.18E+08	to -2.16E+08	****	<0.0001
	<i>Δmta3</i> pBBR- <i>mta3</i>	-3.42E+08	-4.43E+08	to -2.41E+08	****	<0.0001
	<i>Δmta1</i> pBBRØ	-6.96E+07	-1.71E+08	to 3.15E+07	ns	0.3892
	<i>Δmta2</i> pBBRØ	9.99E+06	-9.10E+07	to 1.11E+08	ns	>0.9999
<i>Δmta3</i> pBBRØ	-1.08E+07	-1.12E+08	to 9.02E+07	ns	>0.9999	

	$\Delta mta3$	3.00E+07	-7.10E+07	to	1.31E+08	ns	0.9891
$\Delta mta2$	$\Delta mta1$ pBBR- $mta1$	-2.88E+08	-3.89E+08	to	-1.87E+08	****	<0.0001
	$\Delta mta2$ pBBR- $mta2$	-2.63E+08	-3.64E+08	to	-1.62E+08	****	<0.0001
	$\Delta mta3$ pBBR- $mta3$	-2.88E+08	-3.89E+08	to	-1.87E+08	****	<0.0001
	$\Delta mta1$ pBBR \emptyset	-1.56E+07	-1.17E+08	to	8.55E+07	ns	>0.9999
	$\Delta mta2$ pBBR \emptyset	6.40E+07	-3.70E+07	to	1.65E+08	ns	0.5027
	$\Delta mta3$ pBBR \emptyset	4.32E+07	-5.78E+07	to	1.44E+08	ns	0.8973
	$\Delta mta3$	$\Delta mta1$ pBBR- $mta1$	-3.18E+08	-4.19E+08	to	-2.17E+08	****
$\Delta mta2$ pBBR- $mta2$		-2.93E+08	-3.94E+08	to	-1.92E+08	****	<0.0001
$\Delta mta3$ pBBR- $mta3$		-3.18E+08	-4.19E+08	to	-2.17E+08	****	<0.0001
$\Delta mta1$ pBBR \emptyset		-4.56E+07	-1.47E+08	to	5.55E+07	ns	0.8657
$\Delta mta2$ pBBR \emptyset		3.40E+07	-6.70E+07	to	1.35E+08	ns	0.9749
$\Delta mta3$ pBBR \emptyset		1.32E+07	-8.78E+07	to	1.14E+08	ns	>0.9999
$\Delta mta1$ pBBR- $mta1$	$\Delta mta2$ pBBR- $mta2$	2.50E+07	-7.60E+07	to	1.26E+08	ns	0.9971
	$\Delta mta3$ pBBR- $mta3$	0.00E+00	-1.01E+08	to	1.01E+08	ns	>0.9999
	$\Delta mta1$ pBBR \emptyset	2.73E+08	1.72E+08	to	3.74E+08	****	<0.0001
	$\Delta mta2$ pBBR \emptyset	3.52E+08	2.51E+08	to	4.53E+08	****	<0.0001
	$\Delta mta3$ pBBR \emptyset	3.32E+08	2.31E+08	to	4.33E+08	****	<0.0001
$\Delta mta2$ pBBR- $mta2$	$\Delta mta3$ pBBR- $mta3$	-2.50E+07	-1.26E+08	to	7.60E+07	ns	0.9971
	$\Delta mta1$ pBBR \emptyset	2.48E+08	1.47E+08	to	3.49E+08	****	<0.0001
	$\Delta mta2$ pBBR \emptyset	3.27E+08	2.26E+08	to	4.28E+08	****	<0.0001
	$\Delta mta3$ pBBR \emptyset	3.07E+08	2.06E+08	to	4.08E+08	****	<0.0001
$\Delta mta3$ pBBR- $mta3$	$\Delta mta1$ pBBR \emptyset	2.73E+08	1.72E+08	to	3.74E+08	****	<0.0001
	$\Delta mta2$ pBBR \emptyset	3.52E+08	2.51E+08	to	4.53E+08	****	<0.0001
	$\Delta mta3$ pBBR \emptyset	3.32E+08	2.31E+08	to	4.33E+08	****	<0.0001
$\Delta mta1$ pBBR \emptyset	$\Delta mta2$ pBBR \emptyset	7.96E+07	-2.15E+07	to	1.81E+08	ns	0.2242
	$\Delta mta3$ pBBR \emptyset	5.88E+07	-4.22E+07	to	1.60E+08	ns	0.615
$\Delta mta2$ pBBR \emptyset	$\Delta mta3$ pBBR \emptyset	-2.08E+07	-1.22E+08	to	8.03E+07	ns	0.9993

Abbreviations: SS: sum of squares, DF: degrees of freedom, MS: mean square, Mean Diff.: mean difference.

571

572

References

573

574

575

576

577

578

579

580

581

582

1. Lange, O. et al. Programmable DNA-binding proteins from *Burkholderia* provide a fresh perspective on the TALE-like repeat domain. *Nucleic Acids Res.* **42**, 7436-7449 (2014).
2. Lackner, G. et al. Global distribution and evolution of a toxinogenic *Burkholderia-Rhizopus* symbiosis. *Appl. Environ. Microbiol.* **75**, 2982-2986 (2009).
3. Brameier, M., Krings, A. & MacCallum, R. M. NucPred-predicting nuclear localization of proteins. *Bioinformatics (Oxford, England)* **23**, 1159-1160 (2007).
4. Kosugi, S., Hasebe, M., Tomita, M. & Yanagawa, H. Systematic identification of cell cycle-dependent yeast nucleocytoplasmic shuttling proteins by prediction of composite motifs. *Proc. Natl. Acad. Sci. U.S.A.* **106**, 10171-10176 (2009).

583