

M. extorquens AM1 ---MS-----TAQLVQVHLPYLRRYARALTGSGVAGDAYVAATLETLVNEPETLGRSTN 51
E. litoralis, ABC64135 ---MS-----ASQKIAPNLPYLRRYARALTGSGQQTGDFVRRATLEAAIADSELKQDVSE 51
C. crescentus, AAK25439 ---MS-----LKRILAPHLPLYRIRYARALTDGQTDGHDYVRVLALEALAEVLVDANLS 51
Z. mobilis, YP_163140 ---MP-----LGGQIAPYLPPLLRRYARALTDGQDTSGDRIVRATLEAITAABEIFFHDVD 51
Bradyrhiz. sp., ZP_00857197 ---MS-----RSQVVAEHLPLLRRYARALTGSGQSGDAYVGMALLEALIQDPLLDERYG 51
N. winogradskyi, ABA06024 ---MF-----RSQVVAEHLPLLRRYARALTGSGSGDAYVGMALLEALIQDPLLDEQHG 51
M. loti, NP_104753 ---MS-----LSATIAPHLPLLRFRSAVSGSQESGGDALVAAMLEAITADVDFPDASS 51
S. meliloti, CAC45311 ---MP-----LSTRIAPHLPLYRRYARAVTGSQAAAGDYVAAVLEALIDDLLEFPFAAS 51
A. tumefaciens, AAK89273 ---MS-----VSTR IAPHLPLYRRYARAVCGSQSTGDAYVAATLEALIAIDISIFPQTS 51
R. leguminosarum, CAC34399 ---MT-----LSTRIAPHLPLYRRYARALTGQTSQDAYVAAVLEAITADLSIFPD TAN 51
B. bacilliformis, ZP_00947047 ---MP-----LSTRIAPHLPLYRFRFARVGSQSGSDAYVAAMLEALITDISIFPVQSS 51
R. rubrum, YP_428367 MPATA-----VSQAVVHQLPLLRRYARALCGDQIAGDEVVKAAMLEVIVADPRVDDVT 54
R. sphaeroides, ZP_00915337 ---MTSDTTPFDLASVIGTNLPYLRRYARALTGSGQETGDRYAATLEAILEDTHIFEATES 57
P. denitrificans, ZP_00630518 ---MT-----AADLAQGISRELPYLRRYARALTGSGQTAGDNYAATLEAILTDRSLMDG-ED 53

M. extorquens AM1 VKADLFRVFTRIWNSLSVNG--HSDQV-----QHDLPAAEVRLGQITPLPRQAFLLSCLG 104
E. litoralis, ABC64135 GRVPLYKAFNALWSSS---YLEVEGDDGGDVSAKAGAGDRKAVTFLNRQALLLTLED 109
C. crescentus, AAK25439 PRVLYRVFHAIWLSGASLGHVDGQ---LHAGDD-AAQRLMRIAPRSQAFLLTAE 107
Z. mobilis, YP_163140 PRLGLYTVFHRILWQHTASLSAANHD---EGKGIATYSRLPIPTKSRQALLTAMEG 107
Bradyrhiz. sp., ZP_00857197 ARAGLFRLETQIWNVALND---DAEVA-----TLMPPPERLSNITPLPRQAFLLSLEG 104
N. winogradskyi, ABA06024 ARAGLFRLETRIWNSVSVNG--GADEV-----PTLAPTERRLTNIPTPLPRQAFLLSLE 104
M. loti, NP_104753 DRIALYKVFAKLFTSVAIRVPPQEQAQS-----AWEQRANLNIAIAPLRQAFLLVAVEG 106
S. meliloti, CAC45311 DRIGLYKLFCSLFEKLIKIDRTQLASPF-----AWEQRASANLSLIAPPQRQAFLLVALE 106
A. tumefaciens, AAK89273 DRVSYLYQLFVSIFFSSTVINIKTDENLS-----GWEKRASANLSAVPALARQAFLLTVEE 106
R. leguminosarum, CAC34399 DRIALYKLFQTFGSGTAVQIPEPTSPY-----AWEQRANLNIAIAPLRQAFLLVASVEN 106
B. bacilliformis, ZP_00947047 DRIGTYWLFCHLFDQTPNIAEPLPQF-----GFEQQANIQLSYLTPRARQAFLLIAVEG 106
R. rubrum, YP_428367 LKRVLYQLFHKVWMSAG--SLSPADSA-----ETDIQRVRSQLEPAEDRQALLLVAMEG 106
R. sphaeroides, ZP_00915337 PRVRFHFAEHLVWMSAGAPLG-EPEDSR-----LSQQRDHSMSRLFPNTRQALLLHAIEG 110
P. denitrificans, ZP_00630518 TRIGLFRFTFAHWQSSGQPVLEAQPSP-----REASAQHLRGLTPNSREALLLR TIE 107

M. extorquens AM1 FSEEDAGVILDVDSKVRDLVDEAGRELAADMAATELIIIEDEPLIAMDL EALVEGLGHNV 164
E. litoralis, ABC64135 FSVEDAAEIMGLAPADVEGLVREAVAEIDRESSTNVLIIIEDEPLISMQL EDLVRSLGHI 169
C. crescentus, AAK25439 FTPTBAQQIILD CDFEVERLIGDQAQIEIDAE LA TEVLIIIEDEPVIAADIEALVREGLHDV 167
Z. mobilis, YP_163140 FSPKDSAYLMDVSEDQI DAWLQEAISEIDRQIHSKVLVIEDEPIIAFDIESLVRDLGHDV 167
Bradyrhiz. sp., ZP_00857197 FPEEVAVLDIDVAE TRRLADAQRELAAEIATDVLIIIEDETFIAMDLES LKNGHNV 164
N. winogradskyi, ABA06024 FSEDEAAFVLEVDIAEVRRLSGIAGREMAAEIATDVLIIIEDETFIAMDLES LKNGHNV 164
M. loti, NP_104753 FSEDEAAEILDVGDQGFSELLAQASNEISRQVATDVLIIIEDEPLIAMDIEMVESLGRHV 166
S. meliloti, CAC45311 FSTEGAAEIMGLDQCAFGLKLLTSASNEISRQIATDVMIIEDEPLIADIEDMVTS LGRHV 166
A. tumefaciens, AAK89273 FTFPSETAEVLRVSEDOVSRILIDEAASEIARQVATDMITIEDEPLIAMDIEQMVTDLGHRV 166
R. leguminosarum, CAC34399 FFRVAEIAEILETEQDVMHLLDVA SQEISRQVATDMITIEDEPLIAMDIEQMVESLGRHV 166
B. bacilliformis, ZP_00947047 FNEARESEIMNIDTQTFHFLNQASLDISEQMTQILIIIEDEPLIAMDIEQMVESLGHKV 166
R. rubrum, YP_428367 FTLAEAMVIGRDDSQTAALVDQARLAMAQQESTRVLVIEDEPIIGLDIANIVESMGHRV 166
R. sphaeroides, ZP_00915337 FHHEEIGAIMQIDAAEAELIEIAQREMANSVAGRIMVIEDEAIAMDIVAIVREMGHGV 170
P. denitrificans, ZP_00630518 LRYDQIAAVMQPCPAEAEEVLQIALNEMSQALTKVMVIEDETFIAMDLKGI VQAMGHV 167

M. extorquens AM1 IGVARTREAVKIASERKPG LILADIQLADGSSGIDAVNDLLKTF-EVVFVITAYPER 223
E. litoralis, ABC64135 AGTAATRTQAQEAVA-KEKPGVLVADIQLADGSSGIDAVNDILGQF-DVPVIFITAYPER 227
C. crescentus, AAK25439 TDIAATRGEALEAVT-RRTPGLVLADIQLADGSSGIDAVKDILGRM-DVPVIFITAFPER 225
Z. mobilis, YP_163140 IGIATTRDEAVSMK--NKPGLILSDIQLADSSGIDAVDQILKEI-DVPVIFITAFPER 225
Bradyrhiz. sp., ZP_00857197 IGVARTHADAVLAK--NKPGLILADIQLADGSSGIDAVNELLRTF-EVVFVITAYPER 222
N. winogradskyi, ABA06024 IGVARTHADAIALK-TKEPGLIADIQLADGSSGIDAVNELLRVV-EVVFVITAYPER 222
M. loti, NP_104753 VGTARTHEAEVMFG-KTRPKMVLADIQLADGSSGIEAVNEILSSD-SVVFVIFITAFPER 224
S. meliloti, CAC45311 TGIARTREALNLYH-QTSPKMLVADIQLADGSSGIDAVNDILTQA-SVVFVITAFPER 224
A. tumefaciens, AAK89273 TGIARTHTFALDLFH-RTPQPKMLADIQLADGSSGIDAMKDILQMT-TLVPVIFITAFPER 224
R. leguminosarum, CAC34399 TGIARTHEAEVALYN-KTKPSMVLADIQLADGSSGIDAVNDILKTS-SVVFVIFITAFPER 224
B. bacilliformis, ZP_00947047 VGVARTSEAMAMFG-QKRPKMLADIQLADSSGIDTVNDILKNE-CIPVIFITAFPER 224
R. rubrum, YP_428367 VGIATTRAEEAMAL-KEKPGVLVADIQLADGSSGIDANSILAGA-DIPVIFITAYPER 224
R. sphaeroides, ZP_00915337 TGIARTRTEAVALAA-KEKPD LILADIQLADSSGIDAVNDIRKQFEDIPVIFITAFPER 229
P. denitrificans, ZP_00630518 TGIARTHAAAI DLAH-QSRPDLILADIQLADGSSGIEAVNELLSSMGDIPVIFITAFPER 226

M. extorquens AM1 FLTGERPEPAFLIAKPFQ PANVSAVISQALFFQ SARREAHNA-- 267
E. litoralis, ABC64135 LLTGDRPEPTYLVTKPFQESTVRTTISQALFFQNSPTAV----- 266
C. crescentus, AAK25439 LLTGERPEPTFLITKPFQPEYTKAAQIQLFFPRRTAKAA----- 266
Z. mobilis, YP_163140 LLTGERPEPTFLITKPFQVDTIKATIAQALFCNPLSLAA----- 264
Bradyrhiz. sp., ZP_00857197 FLTGERPEPAFLISKPFQ PAMVSAVASQALFFQRNSRMRMPKFAA- 267
N. winogradskyi, ABA06024 FLTGERPEPAFLISKPFQ PAMVSAVASQALFFQRNSRNRPRPAAAS 268
M. loti, NP_104753 LLTGERPEPAFLVTKPFNPDMVKALISQALFFDRQA KAAA----- 264
S. meliloti, CAC45311 LLTGKKEPEPAFLVTKPFNPETVKALISQALFFDEHAQAGAS----- 265
A. tumefaciens, AAK89273 LLTGERPEPTFLVTKPFNPDMVKALISQALFFNESSRVAA----- 264
R. leguminosarum, CAC34399 LLTGERPEPTFLVTKPFNPDMVKALISQALFFNESSRVAA----- 264
B. bacilliformis, ZP_00947047 LLTGERPEPTFLVSKPFNPDMVKALISQALFFQENASKAA----- 264
R. rubrum, YP_428367 LLTGQRPEPTYLVTKPFQAVDTKVITIAQALFFRQAQKPVAAE----- 265
R. sphaeroides, ZP_00915337 LLTGKRPEPAFLITKPYSEDOVRSVAVSQAMFFSSTETLSA----- 269
P. denitrificans, ZP_00630518 LLTGDRPEPAFLISKPYSEQVRSVAVSQAMFFFASTBGLSVA----- 267