**Supplementary File S2:**

**Retrieved sequences of MCR-1 and MCR-1 like proteins.**

>*Escherichia coli*\_1.17

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPTLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.20

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGALLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.7

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASTPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.3

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKVSQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.4

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDNFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.9

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPACEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.8

MMRHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.16

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDSLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.5

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTYSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.22

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQFLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.12

MMHHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.21

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTSVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-1.11

MMQHTSVVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPV

LILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLG

LIVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRL

VVFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRL

GVSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAY

FKRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHG

MPNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia coli*\_MCR-2.1

MTSHHSWYRYSINPFVLMGLVALFLAATANLTFFEKAMAVYPVSDNLGFIISMAVAVMGAMLLIVVLLSYRYVLKPVLIL

LLIMGAVTSYFTDTYGTVYDTTMLQNAMQTDQAESKDLMNLAFFVRIIGLGVLPSVLVAVAKVNYPTWGKGLIQRAMTWG

VSLVLLLVPIGLFSSQYASFFRVHKPVRFYINPITPIYSVGKLASIEYKKATAPTDTIYHAKDAVQTTKPSERKPRLVVF

VVGETARADHVQFNGYGRETFPQLAKVDGLANFSQVTSCGTSTAYSVPCMFSYLGQDDYDVDTAKYQENVLDTLDRLGVG

ILWRDNNSDSKGVMDKLPATQYFDYKSATNNTICNTNPYNECRDVGMLVGLDDYVSANNGKDMLIMLHQMGNHGPAYFKR

YDEQFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAKSIDWLKTHEANYDVAMLYVSDHGESLGENGVYLHGMPN

AFAPKEQRAVPAFFWSNNTTFKPTASDTVLTHDAITPTLLKLFDVTAGKVKDRAAFIQ

>*Escherichia coli*\_MCR-2.3

MTSHHSWYRYSINPFVLMGLVALFLAATANLTFFEKAMAVYPVSDNLGFIISMAVAVMGAMLLIVVLLSYRYVLKPVLIL

LLIMGAVTSYFTDTYGTVYDTTMLQNAMQTDQAESKDLMNLAFFVRIIGLGVLPSLLVAVAKVGYPTWGKSLIQRAMTWG

VSLVLLLVPIGLFSSQYASFFRVHKPVRFYINPITPIYSVGKLASIEYKKATAPTDTIYHAKDAVQTTKPSERKPRLVVF

VVGETARADHVQFNGYSRETFPQLAKVDGLANFSQVTSCGTSTAYSVPCMFSYLGQDDYDVDTAKYQENVLDTLDRLGVG

ILWRDNNSDSKGVMDKLPATQYFDYKSATNNTICNTNPYNECRDVGMLVGLDDYVSANNGKDMLIMLHQMGNHGPAYFKR

YDEQFTKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAKSIDWLKTHEANYDVAMLYVSDHGESLGENGVYLHGMPN

AFAPKEQRAVPVFFWSNNTTFKPTASDTALTHDAITPTLLKLFDVTADKVKDRTAFIQ

>*Gammaproteobacteria*\_MCR-1.1

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Raoultella planticola*\_MCR-1.3

MMQHTSVWYRRSVSPLVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Citrobacter amalonaticus*\_MCR-1

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTYSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Klebsiella pneumoniae\_*MCR-1.14

MMQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKVSQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIIPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Enterobacteriaceae*\_MCR-1.2

MMLHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Klebsiella pneumoniae*\_MCR-1.15

MQHTSVWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVLI

LLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGLI

VASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLVV

FVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVKSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLGV

SILWRDNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYFK

RYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGMP

NAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Moraxella* sp. MSG13-C03\_MCR-1.10

MVQHTSVWYRCSVSPFVLVASVSVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVL

ILLLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLVRRLGL

IVASLALILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDTRKPRLV

VFVVGETARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLG

VSILWRDNNSDSKGVMDKLPKAQFADYKSATNNTICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYF

KRYDEKFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFITQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGM

PNAFAPKEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Citrobacter braakii*\_MCR-1

MWYRRSVSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVLILLLIM

GAVTSYFTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGLIVASLA

LILLPVVAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLVVFVVGE

TARADHVSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLGVSILWR

DNNSDSKGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYFKRYDEK

FAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGMPNAFAP

KEQRSVPAFFWTDKQTGITPMATDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Escherichia albertii*\_MCR-1

VSPFVLVASVAVFLTATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVLILLLIMGAVTSY

FTDTYGTVYDTTMLQNALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGLIVASLALILLPV

VAFSSHYASFFRVHKPLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLVVFVVGETARADH

VSFNGYERDTFPQLAKIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLGVSILWRDNNSDS

KGVMDKLPKAQFADYKSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYFKRYDEKFAKFTP

VCEGNELAKCEHQSLINAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGMPNAFAPKEQRSV

PAFFWTDKQTGITPMATDTVLTHDAITPTLLKLL

>*Providencia stuartii*\_MCR-1

ATANLTFFDKISQTYPIADNLGFVLTIAVVLFGAMLLITTLLSSYRYVLKPVLILLLIMGAVTSYFTDTYGTVYDTTMLQ

NALQTDQAETKDLLNAAFIMRIIGLGVLPSLLVAFVKVDYPTWGKGLMRRLGLIVASLALILLPVVAFSSHYASFFRVHK

PLRSYVNPIMPIYSVGKLASIEYKKASAPKDTIYHAKDAVQATKPDMRKPRLVVFVVGETARADHVSFNGYERDTFPQLA

KIDGVTNFSNVTSCGTSTAYSVPCMFSYLGADEYDVDTAKYQENVLDTLDRLGVSILWRDNNSDSKGVMDKLPKAQFADY

KSATNNAICNTNPYNECRDVGMLVGLDDFVAANNGKDMLIMLHQMGNHGPAYFKRYDEKFAKFTPVCEGNELAKCEHQSL

INAYDNALLATDDFIAQSIQWLQTHSNAYDVSMLYVSDHGESLGENGVYLHGMPNAFAPKEQRSVPAFFWTDKQTGITPM

ATDTVLTHDAITPTLLKL

>*Moraxella* sp. MSG47-C17\_MCR1

MTQHSPWYRRPVNPYLLMSVVALFLSATANLTFFDKITNTYPMAQNAGFVISTALVLFGAMLLITVLLSYRYVLKPVLIL

LLIMGAVTSYFTDTYGTVYDTTMLQNALQTDQAESKDLMNMAFFVRIIGLGVLPSILVAWVKVDYPTLGKSLIQRAMTWG

VAVVMALVPILAFSSHYASFFREHKPLRSYVNPVMPIYSVGKLASIEYKKATAPKDTIYHAKDAVQTTTPAERKPRLVVF

VVGETARADHVQFNGYSRETFPQLAKIDNLANFSQVTSCGTSTAYSVPCMFSYLGQDDYDVDTAKYQENVLDTLDRLGVG

ILWRDNNSDSKGVMDKLPASQYFDYKSATNNTICNTNPYNECRDVGMLVGLDDYVSTNQGKDMLIMLHQMGNHGPAYFKR

YDEQFAKYTPVCEGNELAKCEHQSLINAYDNALLATDDFIAKSIDWLKTHQANYDVAMLYVSDHGESLGENGVYLHGMPN

AFAPKEQRAVPAFFWSNNPSFTPTASDTVLTHDAITPTLLKLFDVTADKVKDRTAFIR

>*Moraxella pluranimalium*\_MCR-2.2

MTSQHSWYRYSINPFVLMGLVALFLAATANLTFFEKAMAVYPVSDNLGFIISMAVALMGAMLLIVVLLSYRYVLKPVLIL

LLIMGAVTSYFTDTYGTVYDTTMLQNAMQTDQAESKDLMNLAFFVRIIGLGVLPSVLVAFAKVNYPTWGKGLIQRAMTWG

VSLVLLLVPIGLFSSQYASFFRVHKPVRFYINPITPIYSVGKLASIEYKKATAPTDTIYHAKDAVQTTKPSERKPRLVVF

VVGETARADHVQFNGYGRETFPQLAKVDGLANFSQVTSCGTSTAYSVPCMFSYLGQDDYDVDTAKYQENVLDTLDRLGVD

ILWRDNNSDSKGVMDKLPTTQYFDYKSATNNTICNTNPFNECRDVGMLVGLDDYVSANNGKDMLIMLHQMGNHGPAYFKR

YDEQFAKFTPVCEGNELAKCEHQSLINAYDNALLATDDFIAKSIDWLKTHEANYDVAMLYVSDHGESLGENGVYLHGMPN

AFAPKEQRAVPAFFWSNNTTFKPTASDTVLTHDAITPTLLKLFDVTADKVKDRTAFIQ

>*Moraxella osloensis\_*MCR-1

MVHLDKVSNRMSVNNSRWLAWRQQGINAYVMMGIVALFLTLTANITFFDKATEVYPFAQHIGFIGSLPLVLFGVMLLVIV

LLSYRYTLKAVLIFLLLTAAVTAYFTDTYGTVYDVNMLQNALQTDKAESADLFNVNFILRILLLGVLPSVWVAWQKVTFP

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VSNPTTRKPKLVVFVVGETARGDHVQLNGYNRTTFPQMAATAGVTNFNQVIACGTSTAYSVPCMFSYVGMKDYDVDTANY

QENVLDTLHRLKVNILWRDNNSSSKGVTNRLPAADFVDYKTARNNTMCNTNPYGECRDVGMLVGLDDYVKQQANQNTLNQ

DTLIVLHQMGNHGPAYFKRYDKQFEKFTPVCQSNELAKCDPQSVINAFDNALLATDDFLAKTVNWLDKYDSTHQVAMLYV

SDHGESLGENGIYLHGMPYKIAPKAQKHVASMFWAGKHSGIQAVPSNTELTHDAITPTLLKLFDVRAQTVQGKPLFIK

>*Moraxellaceae bacterium*\_MCR-1

MSVNNSRWVAWRQQGINAYVMMGIVALFLTLTANVTFFDKATEVYPFAQHIGFIGSLPLVLCGVMLLVIVLLSYRYTLKA

VLIFLLLTAAVTAYFTDTYGTVYDVNMLQNALQTDKAESADLFNVNFILRILLLGVLPSVWVVWQKVTFPPIKRSILQRG

LTYLVSLGLVVLPILAMSKNYASFFREHKQLRSYTNPATPVYALGKLASIQLKQAQAPKTQIMHATDAVQVSNPSTRKPK

LVVLVVGETARGDHVQLNGYNRTTFPQMAATAGVTNFNQVIACGTSTAYSVPCMFSYVGMKDYDVDTANYQENVLDTLHR

LKVNILWRDNNSSSKGVTNRLPAADFVDYKTARNNTMCNTNPYGECRDVGMLVGLDDYVKQLANQNTLNQDTLIVLHQMG

NHGPAYFKRYDKQFEKFTPVCQSNELAKCDPQSVINAFDNALLATDDFLAKTVNWLGKYDSTHQVAMLYVSDHGESLGEN

GIYLHGMPYKIAPKAQKHVASMFWAGKHSGIQAVPSNTELTHDAITPTLLKLFDVRAQTVQGKPLFIK

>*Enhydrobacter aerosaccus*\_MCR-1

MSVNNSRWVAWRQQGINTKSVSTQGISTQGINAYVMMGIVALFLTLTANITFFDKATAVYPFAQHIGFIGSLPLVLCGVM

LLVIVLLSYRYTLKVVLIFLLLTAAVTAYFTDTYGTVYDVNMLQNALQTDKAESADLFNVNFILRILLLGVLPSVWVAWQ

KVTFPPIKRSILQRGLTYLVSIGLVVLPILAMSKNYASFFREHKQLRSYTNPATPVYALGKLASIQLKQAQAPKTQIMHA

TDAVQVSNPTTRKPKLVVLVVGETARGDHVQLNGYNRTTFPQMAATAGVTNFNQVIACGTSTAYSVPCMFSYVGMKDYDV

DTANYQENVLDTLNRLKVNILWRDNNSSSKGVTNRLPAADFVDYKTARNNTMCNTNPYGECRDVGMLVGLDDYVKQLANQ

NTLNQDTLIVLHQMGNHGPAYFKRYDKQFEKFTPVCQSNELAKCDPQSVINAFDNALLATDDFLAKTVNWLDKYDSTHQV

AMLYVSDHGESLGENGIYLHGMPYKIAPKAQKHVASMFWAGKHSGIQAVPSNTELTHDAITPTLLKLFDVRAQTVQGKPL

FIK

>*Leucothrix* sp. C3212\_MCR-1

MMGIVALFLTLTANITFFDKATEVYPFAQHIGFIGSLPLVLFGVMLLVIVLLSYRYTLKAVLIFLLLTAAVTAYFTDTYG

TVYDVNMLQNALQTDKAESADLFNVNFILRILLLGVLPSVWVAWQKVTFPPIKRSLLQRGLTYLVSLGLVVLPILAMSKN

YASFFREHKQLRSYTNPATPVYALGKLASIQLKQAQAPKTQIMHATDAVQVKNPTTRKPKLMVLVVGETARGDHVQLNGY

NRTTFPQMAAMAGVTNFNQVIACGTSTAYSVPCMFSYVGMKDYDVDTANYQENVLDTLHRLKVNILWRDNNSSSKGVTNR

LPAENFVDYKTARNNTMCNTNPYGECRDVGMLVGLDDYVKQQANQDTLNQDTLIVLHQMGNHGPAYFKRYDKQFEKFTPV

CQTNELAKCDPQSVINAFDNALLATDDFLAKTVNWLDKYDSTHQVAMLYVSDHGESLGENGIYLHGMPYKIAPKAQKHVA

SMFWAGKHSGIQAVPSNTELTHDAITPTLLKLFDVRAQTVQGKPLFIK

>*Bacterium* M00.F.Ca.ET.230.01.1.1\_MCR-1

MMGIVALFLTLTANVTFFDKATEVYPFAQHIGFIGSLPLVLCGVMLLVIVLLSYRYTLKAVLIFLLLTAAVTAYFTDTYG

TVYDVNMLQNALQTDKAESADLFNVNFILRILLLGVLPSVWVAWQKVTFPPIKRSLLQRGLTYLVSLGLVVLPILAMSKN

YASFFREHKQLRSYTNPATPVYALGKLASIQLKQAQAPKTQIMHATDAVQVSNPTTRKPKLVVLVVGETARGDHVQLNGY

NRTTFPQMAATAGVTNFNQVIACGTSTAYSVPCMFSYVGMKDYDVDTANYQENVLDTLHRLKVNILWRDNNSSSKGVTNR

LPAADFVDYKTARNNTMCNTNPYGECRDVGMLVGLDDYVKQQANQNTLNQDTLIVLHQMGNHGPAYFKRYDKQFEKFTPV

CQSNELAKCDPQSVINAFDNALLATDDFLAKTVNWLGKYDSTHQVAMLYVSDHGESLGENGIYLHGMPYKIAPKAQKHVA

SMFWAGKHSGIQAVPSNTELTHDAITPTLLKLFDVRAQTVQGKPLFIK

>*Enhydrobacter* sp. H5\_MCR-1

MMGIVALFLTLSANVTFFDKATAVYPFAQHIGFIGSLPLVLCGVMLLVIVLLSYRYTLKVVLIFLLLTAAVTAYFTDTYG

TVYDVNMLQNALQTDKAESADLFNVNFILRILLLGVLPSVWVAWQKVTFPPIKRSILQRGLTYLVSLGLVVLPILAMSKN

YASFFREHKQLRSYTNPATPVYALGKLASIQLKQAQAPKTQIMHATDAVQVSNPTTRKPKLVVLVVGETARADHVQLNGY

NRTTFPQMAATAGVTNFNQVIACGTSTAYSVPCMFSYVGMKDYDVDTANYQENVLDTLNRLKVNILWRDNNSSSKGVTNR

LPAENFVDYKTARNNTMCNTNPYGECRDVGMLVGLDDYVKQQANQNTLNQDTLIVLHQMGNHGPAYFKRYDKQFEKFTPV

CQSNELAKCDPQSVINAFDNALLATDDFLAKTVNWLDKYDSTHQVAMLYVSDHGESLGENGIYLHGMPYKIAPKAQKHVA

SMFWAGKHSGIQAVPSNTELTHDAITPTLLKLFDVRAQTVQGKPLFIQ

>*Moraxella porci\_*MCR-1

MLNFLHPKHRSINPYLLMLIVAVFLTISANVTFFKQVVLVYPIADHLLFVASLTVVLCGVLALVIGLFSYRYTLKFVLIF

MIMVAAITSYFTDTYGTVYDTNMLQNALQTDSSETKDLLNLGFLVRILLLGVLPSLLILKLPVHFANFKTNAFQRLGYLL

LSLGLILVPILSFSEAFASFFREHKPLRSYTNPAMPIYAVGKLASIEYKKATAPKDLTYHAKDAAQTTTSTQRKPKLIVM

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VLWRDNNSDSKGVMDKLPADLYQNYKTSDLNHECTNAHQECRDIGMLIGLDDYVAQTAKNSNQDVLIVLHQMGNHGPAYY

KRYNEAFEKFTPVCRDNDLAKCDTSHVINAYDNALVATDDFLKQTIDWLKTHQASHDVTLLYVSDHGESLGENGVYLHGM

PNTFAPKAQKHVAAFLWTANPAIHAVSNQAPLTHDAITPTLLRLFDVKTKATENQAMFIE

>*Neisseria*\_LptA

MIKPNLRPKLGSSALIAFLSLYSSLVLNYAFFAKVVELRPFNDTGADIFLYTMPVVLFFLSNFVFHVIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

VSFLCALGIAMLQYQDYASFFRNNKSVTHLIVPSNFIGAGVSKYKDWKRSNIPYTQLDMAVVQNRPAGSLRRFVVLVVGE

TTRAANWGLNGYSRQTTPLLAARGDEIVNFPQVRSCGTSTAHSLPCMFSTFDRTDYDEIKAEHQDNLLDIVQRAGVEVTW

LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEALNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEIDKCARATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESAVYYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKEMDILAACRRPR

>*Neisseria gonorrhoeae*\_LptA

MIKPNLRPKLGSSALIAFLSLYSSLVLNYAFFAKVVELRPFNDTGADIFLYTMPVVLFFLSNFVFHVIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

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TTRAANWGLNGYSRQTTPLLAARGDEIVNFPQVRSCGTSTAHSLPCMFSTFDRTDYDEIKAEHQDNLLDIVQRAGVEVTW

LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEALNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEIDKCARATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESAVYYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKEMDILAACRRPR

>Neisseria bergeri\_ LptA

MIKPNLRPKLGSSVLIAFLSLYSSLVLNYAFFSKVVELRPFNGTGADIFLYTMPVVLFFLSNFVFHVIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

VSFLCALGIAMLQYQDYASFFRNNKSVTHLIVPSNFIGAGVSKYKDWKRSNIPYTQLDMAVVQNRPVGSLRRFVVLVVGE

TTRAANWGLNGYSRQTTPLLAARGDEIVNFPQVRSCGTSTAHSLPCMFSTFDRTDYDEIKAEHQDNLLDIVQRAGVEVTW

LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEALNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEIDKCARATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESVVHYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKEMDILAACRRPR

>*Neisseria polysaccharea*\_ LptA

MIKPNLRPKLGSSVLIAFLSLYSSLVLNYAFFTKVVELHPFNGTGADIFLYTMPVVLFFLSNFVFHVIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

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TTRAANWGLNGYSRQTTPLLAARGDEIVNFPQVRSCGTSTAHSLPCMFSTFDRTDYDEIKAEHQDNLLDIVQRAGVEVTW

LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEALNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEIDKCARATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESAVHYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKDMDILAACRRPR

>*Neisseria lactamica*\_ LptA

MIKPNLRPKLGSSALIAFLSLYFSLVLNYAFFAKVVELHPFNGTGADIFLYTMPVVLFFLSNFVFHAIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

VSFLCALGIAMLQYQDYASFFRNNKSVTHLIVPSNFIGAGVSKYKDWKRSNIPYTQLDMAVVQNRPAGSLRRFVVLIVGE

TTRAANWGLNGYSRQTTPLLAARGDEIVNFPQVRSCGTSTAHSLPCMFSTFDRTDYDEIKAEHQDNLLDIVQRAGVEVTW

LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEALNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEIDKCARATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESAVHYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKDMDILAACRRPR

>*Neisseria meningitides*\_LptA

MIKPNLRPKLGSSALIAFLSLYSSLVLNYAFFAKVVELHPFNGTGADIFLYTMPVVLFFLSNFVFHVIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

VSFLCALGIAMLQYQDYASFFRNNKSVTHLIVPSNFIGAGVSKYKDWKRSNIPYTQLDMAVVQNRPTGSLRRFVVLVVGE

TTRAANWGLNGYSRQTTPLLAARGDEIVNFPQVRSCGTSTAHSLPCMFSTFDRTDYDEIKAEHQDNLLDIVQRAGVEVTW

LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEVLNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEINKCTRATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESVVHYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKEMDILAACRRPR

>*Proteobacteria*\_ LptA

MIKPNLRPKLGSSALIAFLSLYSSLVLNYAFFAKVVELHPFNGTGADIFLYTMPVVLFFLSNFVFHVIALPFVHKVLIPL

ILVISAAVSYQEIFFNIYFNKSMLNNVLQTTAAESARLITPGYVLWIVCLGVLPALAYIAVKVKYRVWYKELLTRLVLAA

VSFLCALGIAMLQYQDYASFFRNNKSVTHLIVPSNFIGAGVSKYKDWKRSNIPYTQLDMAVVQNRPVGSLRRFVVLVVGE

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LENDSGCKGVCGKVPNTDVTSLNLPEYCRNGECLDNILLTKFDEVLNKNDKDAVLILHTIGSHGPTYYERYTEAERKFTP

TCDTNEINKCTRATLVNTYDNTVLYVDQFIDKVIRKLENRDDLESVVHYVSDHGESLGENGMYLHAAPYAIAPSGQTHIP

MVMWFSKAFRQHGGIDFQCLKQKAAENEYSHDHYFSTVLGLMDISNSQTYRKEMDILAACRRPR

>*Lautropia* sp.\_ LptA

MRLNRLHASSATLIAVVSLYFTVAFNIAFYKKVVELNGGADWFVYSLPVLLFFLLNGVFQLLAAPLLHKVVIPALLVIGA

AISYQSLFFNIYFDKHMLTNVLITGWAESSRLMTPAYLGWIAGLGVVPALLYLMVKVDYRRWYKEIAQRAVLIVLSVLVI

GGVARYFYQDYASFFRNNRDVTHLIVPTNLIVAGGSKLKTWHRARMPYMQLDLAVTQAKPDNHRHFVVLIVGETTRAQNW

GLNGYARQTTPRLAKRGDEVINFHDVSSCGTSTAHSVPCMFSNMNRVGYNDARAARQDNLLDILQRAGVDISWLDNDTGC

KGVCKNVAATVDLTALNLPEFCRNGECLDDILLPAFDEILNKESGKDTLVVLHTMGSHGPTYYERYTAEDRTFTPTCDTN

EINRCSKEQLVNTYDNTIVYVDRFIDRVIGRLEKRDDLESAVLYVSDHGESLGENGVYLHGTPYGIATKEQTQVPMIMWF

SKAFRQNEGVDFQCLADNARKNTYSHDNYFSTVFGMMDMALALSETYRQDMDILAPCRTPRPQATGKDARADRHPAAQR

>*Lautropia mirabilis*\_ LptA

MYSLPVLLFFLLNGVFQLLAAPLLHKVVIPALLVIGAAISYQSLFFNIYFDKHMLTNVLITGWAESSRLMTPAYLGWIAG

LGVVPALLYLMVKVDYRRWYKEIAQRAVLIVLSVLVIGGVARYFYQDYASFFRNNRDVTHLIVPTNLIVAGGSKLKTWHR

ARMPYMQLDLAVTQAKPDNHRHFVVLIVGETTRAQNWGLNGYARQTTPRLAKRGDEVINFHDVSSCGTSTAHSVPCMFSN

MNRVGYNDARAARQDNLLDILQRAGVDISWLDNDTGCKGVCKNVAATVDLTALNLPEFCRNGECLDDILLPAFDEILNKE

SGKDTLVVLHTMGSHGPTYYERYTAEDRTFTPTCDTNEINKCSKEQLVNTYDNTIVYVDRFIDRVIGRLEKRDDLESAVL

YVSDHGESLGENGVYLHGTPYGIATKEQTQVPMVMWFSKAFRQNEGVDFQCLADHARKNTYSHDHYFSTVFGMMDMALAL

SETYRQDMDILAPCRTPRPQVPGKDARADRHPAAQR

>*Gallibacterium anatis*\_ LptA

MQKIALSMRSSTLMALVALYFTLILNYAFYAKVLSIHPFTGAAGDYFLLTVPFFVFFVLNAVFQILALPLLHKVLIPALL

IISAAIGYSEVFLDVYFTTDMLENVLQTNFAESSRMMTLPYIAWIIGFGVVPALLYLLVKVDYRVWYKEIAYRIGLILLS

VVVIVGIAKVFYQDYAGFVRNNKSVPALIVPSNFISAGINEIKRIREANMPYTQLGLDAAQEKPDDYRHFTVLVVGETTR

AQNWGLNGYQPQTTPLLAARGKQIINFRNVSSCGTATALSVPCMFSGMGRDGYDAVKASHQDNILDVLQRAGVEVIWLDN

DSGCKGVCERVLNKDITATNDPQYCKDGECLDNILLSYIDDVIKKTHKDTVLVLHTIGSHGPTYYERYSEQYRRFTPTCD

TNEIQKCSNEQLVNTYNNGILYIDQFLDKVIAKVEAHPELEAAVYYLSDHGESLGENGVYLHGTPYAIAPEQQTRIPMIM

WFSDRFRQNENIDFDCLERNAQQQSYSHDNLYSTLFGLMDMNPNTSVYKKELDIITQCKKP