B

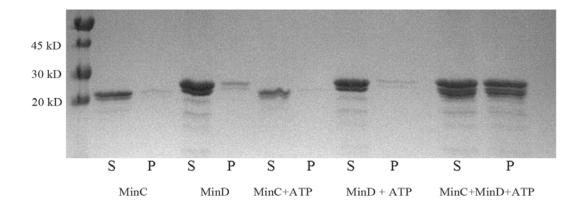
```
mariivvtsgkggvgkttssaaiatglaqkgkktvvidfdiglrnldlimgcerrvvydf 60
E. coli
               mariivvtsgkggvgkttssaaiatglaqkgkktvvidfdiglrnldlimgcerrvvydf 60
K. pneumoniae
P. aeruginosa
               makilvvtsgkggvgktttsaaigtglalrgfktvivdfdvglrnldlimgcerrvvydf 60
B. subtilis
               mgeaivitsgkggvgktttsanlgtalailgkrvclvdtdiglrnldvvmglenriiydl 60
Listeria
               mgeaivitsgkggvgkttstanlgtalalqgkkvclidmdiglrnldvvlglenriiydl 60
M. tuberculosis
               maeiivvtsgkggvgkttssaslacglarrgkkvavidfdvglrnldlimgcerrvvydf 60
               maivytitsgkggygkstttanlaiglaesgkkyvavdfdiglrnldmilglenrivfdv 60
H. pylori
               *. :.:*******:*::* :. .** * :. :* *:*****:::* *.*:::*.
E. coli
               vnviggdatlngalikdkrtenl-yilpasgtrdkdaltregvakvlddlkamdfefivc 119
K. pneumoniae
               vnviqgdatlnqalikdkrtenl-yilpasqtrdkdaltregvdkvleelkkmefdfivc 119
P. aeruginosa
               vnvvngeatltqalikdkrlenl-hvlaasqtrdkdaltkegvekvmaelr-kdfeyiic 118
B. subtilis
               vdvvegrckmhqalvkdkrfddllylmpaaqtsdktavapeqiknmvqelk-qefdyvii 119
Listeria
               vdvvegrckihqamikdkrfddllfllpaaqttdknavsgeqmielinqlr-pdydyili 119
M. tuberculosis
               vnvvhgeatlkqalikdkrfdnl-yvlaasqtrdkdaltqegvrkvlddliadgfeyvic 119
H. pylori
               vdvmekncnlsqalitdkktknl-sflaasqskdknildkekvailinalr-vdfdyili 118
               *:*:. ..: **::. **: .: *:*: ** : *: :: *
E. coli
               dspagietgalmalyfadeaiittnpevssvrdsdrilgilasksrraengeepikehll 179
K. pneumoniae
               dspagietgalmalyfadeaiittnpevssvrdsdrilgilasksrraengeepikehll 179
P. aeruginosa
               dspagiekgahlamyfadeaivvtnpevssvrdsdrmlgllasksqraekgeepikehll 178
B. subtilis
               dcpagieqgyknavsgadkaivvttpeisavrdadriiglleqe----eniepprlv 172
Listeria
               dcpagietgyknavagadkaivvttpeisavrdadriigllek-----edieppkli 171
M. tuberculosis
               dspagiekgaflamyyadravvvvnpevssvrdsdriiglldskthkaesgkn-vpafll 178
H. pylori
               dspagiesgfehailhadmalvvvtpevsslrdsdrvigiidaksnrakrgee-vhkhli 177
               * ***** *
                           *: ** *::...**:*::**::*::
E. coli
               ltrynpgrvsrgdmlsmedvleilriklvgvipedqsvlrasnqgepvildinadagkay 239
K. pneumoniae
               ltrynpgrvnkgdmlsmedvleilrinlvgvipedqsvlrasnqgepvildaasdagkay 239
P. aeruginosa
               ltrynpervtkgemlgvddveeilairllgvipesqavlkasnqgvpvildeqsdagqay 238
B. subtilis
               vnrirnhlmkngdtmdideivqhlsidllgivadddevikasnhgepiamdpknrasiay 232
Listeria
               inrirtqmmvngdvmdideitthlsiellgiiidddevirssnsgdpvamlpnnrasqgy 231
M. tuberculosis
               ltryspvrvesgemlsitdveevlglkaigvvpesgdvlnasnkgepvildpesaagqay 238
H. pylori
               inrlkpelvangemisieevlkilclpligiipedshiisatnkgepvirt-dcesakay 236
                       : *: :.: ::
                                      * : :*:: :: :: ::* * *:
E. coli
               adtverllgeerpfrfieeekkgflkrlfgg---- 270
K. pneumoniae
               adtverllgeerpfrfieeekkgflkrlfgg---- 270
P. aeruginosa
               sdavdrllgkeiphrfldvqkkgflqrlfggre--- 271
B. subtilis
               rniarrilgesvplqvleeqnkgmmakiksffgvrs 268
Listeria
               rniarrilgesiplmsieakkpgfftrlkqlfggk- 266
M. tuberculosis
               edavgrilgeerpmrfttvekkgffsklfgg---- 269
               qritrrilgeeveyvefk-akrgffgalkgifs--- 268
H. pylori
                  . *:**:.
                                    : *:: :
               100.00
                        95.56
                                75.09
                                         43.13
                                                 45.21
                                                         69.14
                                                                  50.00
E. coli
K. pneumoniae
                95.56
                       100.00
                                75.46
                                        44.27
                                                 44.83
                                                         67.66
                                                                  49.62
P. aeruginosa
                75.09
                        75.46
                               100.00
                                        43.56
                                                 43.73
                                                         70.52
                                                                  48.51
B. subtilis
                43.13
                        44.27
                                43.56
                                        100.00
                                                 72.56
                                                         45.98
                                                                  44.06
Listeria
                                         72.56
                                                100.00
                                                         44.62
                                                                  48.85
                45.21
                        44.83
                                43.73
M. tuberculosis
                        67.66
                                         45.98
                69.14
                                70.52
                                                 44.62
                                                         100.00
                                                                 49.25
H. pylori
                50.00
                        49.62
                                48.51
                                         44.06
                                                 48.85
                                                         49.25
                                                                100.00
```

**Supplement Figure S1.** Sequence comparison of MinD of different bacteria (A) and their similarity percentage analysis (B) using Clustal Omaga software. MinD conserves well and there is about 43% identity between *B. subtilis* and *P. aeruginosa*.

## A.

```
E. coli
                ----msntpielkgssftlsvvhlheaepkvihqaledkiaqapaflkhapvvlnvs 53
 K. pneumoniae
                -----msntpielkgssftlsvvhlhdanpevirqaledkiaqapaflrhapvvvnia 53
 P. aeruginosa
                msqadlldqdpvfqlkgsmlavtilelahndlarlerqladkvaqapnffrdtplvmald 60
B. subtilis
               ----mktkkqqyvtikgtkng---ltlhlddacsfdelldg----lqnml------sie 42 -----mkknvqikgtksg---isiflsdkasiselqqe----lsqll------adq 38
Listeria
M. tuberculosis
                ----mspspidlkgsnftlsvlhlnnedpqiieqavrekvsqapaffqnapvvlnvs 53
H. pylori
                ----mlktnqknvha-----feiekqepeavmefleknhallqyfl-----iif 40
                                        . : : . .
 E. coli
                aledpv---nwsamhkavsatglrvigvsgckdaqlkaeiekmglpilteg-kek---- 104
                sieeev---ewraineaiaatglrimgvsgckiprlkteidragipllteg-kek---- 104
K. pneumoniae
P. aeruginosa
                klpegegrldlpallevyrrhglrtlairagreediaaa-qaldlpvlppsgarerpldi 119
B. subtilis
                qytdgkgq----kisvhvklgnrfl--ykeqeeqlteliaskkdlfvhsi----- 86
Listeria
                kqnpysge----klevqvqignrlf--seeeereistiihnnsqmkisaf----- 82
M. tuberculosis
                qissga---nlkiicravtdaglrivgisgcqdekmrrvatrsglpllneg-ksa---- 104
H. pylori
                ky-----diepevkailrkhqllfletn---rtlng 68
 E. coli
                ---apr----papapqa-ptqnttpvtktrlidtpvrsgqriyapqcdli 146
                ---asr----papsdptppppvasqitktrlidqpvrsgqriyaphcdli 147
K. pneumoniae
P. aeruginosa
                kdstprkpaeepspsagearpepak-aeekpaepvsrptkvvktpvrggmqiyaaggdli 178
B. subtilis
                -dsevitk-k----eaqq----ireeaeiisvskivrsgqvlqvk-gdll 125
                -ysnvmsk-d-----eakk------wkendqifsmatiirsgqvvqvp-gdfl 121
Listeria
                ---rvaep-ea----pepetpavssaadsscrktrlinvpvrsgqriyapnsdli 151
M. tuberculosis
H. pylori
                rhiktmslkee----tdhakpnh----sktepkttiyerhirsgeeiysa-nhli 114
                                                             ·* * ·
                vtshvsagaeliadgnihvygmmrgralagasgdretqifctnlmaelvsiageywlsdq 206
 E. coli
K. pneumoniae
                vtnhvsagaeliadgnihvygmmrgralagaggdrdaqifcthlaaelvsiageywlsdn 207
P. aeruginosa
                vlaavspgaelladgnihvygpmrgralagvkgdatarifcqqlaaelvsiagnykvaed 238
B. subtilis
                ligdvnpggtvraggnifvlgslkgiahagfngnnqaviaasemlptqlrinhvlnrspd 185
Listeria
                ligdvnpggqirsngnvfvlgnikgiihagfegdenavvagkflypsqvriagkvygfds 181
M. tuberculosis
                vtanvsagaeliadgnihiyglmrgrvlagaagdtesqifcthlhaelisiagqywlsdq 211
                flgnihngakiisegcvsvygvcegaivcf-----gerlilkevksaqivfqnki 164
H. pylori
                   : *. : : * : : * .*
                ip-aefygkaarlqlvenaltv--qpln----- 231
E. coli
                ip-aefygkaarlrlgesalai-qpln-----232
K. pneumoniae
                lrrspqwgkavhvslsgdvlni--trl----- 263
P. aeruginosa
B. subtilis
                ---hiqkgnemecayldtdgnmvierlqhlahlrpdltrleggm 226
Listeria
                edykevadtdlfsafvndageivideihkirkirpeisnfqggr 225
                ip-gefagkaaklslvnnelti--nnli----- 236
M. tuberculosis
                ls----lkeverllvnkniki-itknddildikevl----- 195
H. pylori
B.
                                                          58.87
 E. coli
                100.00
                         75, 76
                                          18.69
                                 38. 16
                                                  17.59
                                                                  21.69
 K. pneumoniae
                        100.00
                 75. 76
                                 37.99
                                         18.69
                                                  18, 59
                                                          56, 90
                                                                  21.08
 P. aeruginosa
                 38. 16
                         37.99
                                 100.00
                                         23.30
                                                  20.98
                                                          39.06
                                                                  21.86
 B. subtilis
                 18.69
                         18.69
                                 23.30 100.00
                                                          17.91
                                                  36.94
                                                                  15.82
 Listeria
                                                          17.82
                 17.59
                         18.59
                                  20.98
                                         36.94
                                                 100.00
                                                                  22.29
 M. tuberculosis
                 58.87
                         56.90
                                  39.06
                                          17.91
                                                  17.82
                                                         100.00
                                                                  17.65
H. pylori
                 21.69
                         21.08
                                  21.86
                                          15.82
                                                  22.29
                                                          17.65
                                                                 100.00
```

**Supplement Figure S2.** Sequence comparison of MinC of different bacteria (A) and their similarity percentage analysis (B) using Clustal Omaga software. MinC shares only about 23% identity between *B. subtilis* and *P. aeruginosa*.



Supplement Figure S3. SDS-PAGE analysis of co-sedimentation of BsMinC and BsMinD proteins. After centrifugation at 50,000 rpm at 20 minutes, no protein were observed in the pellet for BsMinC and BsMinD alone. For the mixture of BsMinC and BsMinD with ATP, the ratio of MinC and MinD of the pellet is 1:1. The concentration of BsMinC and BsMinD is 10  $\mu$ M and ATP is 1 mM.