**Supplementary file 1: Strains**

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| **Strain name** | **Genotype** | **Strain construction** |
| CB15N | NA1000 |  |
| NABC2 | *CB15N; ∆recA* | (Modell et al., 2014) |
| NABC29 | *CB15N; ∆dnaE2* | CB15N was transformed with pNABC148 plasmid to generate deletion of *dnaE2* through two-step recombination procedure (Skerker et al., 2005).  |
| NABC149 | *CB15N;dnaE2 (D377A;D379A)* | CB15N was transformed with pNABC132 plasmid to generate specific mutations in the catalytic domain of *dnaE2* through two-step recombination procedure.  |
| NABC413NABC439 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus)*CB15N; ∆recN* | (Badrinarayanan et al., 2015)(Badrinarayanan et al., 2015) |
| NABC190 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *dnaN*-*YFP*::*specR* | NABC413 was transformed with pNABC198 plasmid to integrate *dnaN-YFP* linked to *specR* at endogenous locus. |
| NABC191 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *dnaE*-*mNeonGreen*::*specR* | NABC413 was transformed with pNABC199 plasmid to integrate *dnaE-mNeonGreen* linked to *specR* at endogenous locus. |
| NABC193 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *holB*-YFP::*specR* | NABC413 was transformed with pNABC188 plasmid to integrate *holB-YFP* linked to *specR*at endogenous locus. |
| NABC206 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆dnaE2* | NABC413 was transformed with pNABC148 plasmid to generate deletion of *dnaE2* through two-step recombination procedure.  |
| NABC215 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆dnaE2*; *dnaE*-*mNeonGreen*::*specR* | NABC206 strain was transformed with pNABC199 plasmid to integrate *dnaE-mNeonGreen* linked to *specR*at the endogenous locus.  |
| NABC216 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆dnaE2*; *dnaN-YFP*::spec*R* | NABC206 strain was transformed with pNABC198 plasmid to integrate *dnaN-YFP* linked to *specR*at the endogenous locus.  |
| NABC217 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆dnaE2*; P*xyl*-*ssb*-*YFP*::*kanR* | NABC206 strain was transformed with pNABC419 plasmid to integrate *ssb-YFP* linked to *kanR*underthe P*xyl* locus.  |
| NABC218 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); Pxyl-*ssb-YFP*::*kanR* | NABC413 was transformed with pNABC419 plasmid to integrate *ssb-YFP* linked to *kanR*under P*xyl* promoter. |
| NABC240 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆uvrA* | NABC413 was transformed with pNABC417 plasmid to generate deletion of *uvrA* through two-step recombination procedure.  |
| NABC247 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); Pxyl-*ssb-GFP*::*specR*; *dnaN*-*mCherry*::*kanR* | NABC413 was transformed with pNABC415 plasmid to integrate *ssb-GFP* linked to *specR* under P*xyl* promoter. Resultant strain was transduced with lysate of a CB15N strain with *dnaN-mCherry* linked to *kanR* integrated at the endogenous locus. |
| NABC263 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *dnaE2-3X-flag*::*specR* | NABC413 strain transformed with pNABC273 plasmid to integrate *dnaE2-3X-flag* linked to *specR* at the endogenous locus. |
| NABC271 | *PlacI-lacI (hfA locus); Plac-dnaA (dnaA locus); ∆uvrA; Pxyl-dnaN-YFP::specR* | NABC240 strain was transformed with pNABC418 plasmid to integrate *dnaN-YFP* linked to *specR* at the P*xyl* locus.  |
| NABC272 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); P*xyl*-*dnaN-YFP*::*specR* | NABC413 was transformed with pNABC418 plasmid to integrate *dnaN-YFP* linked to *specR* under P*xyl* promoter. |
| NABC295A | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); P*sidA*-*YFP*::*kanR* | NABC413 strain was transformed with pNABC420 plasmid to integrate P*sidA*-YFP at the *xyl* locus.  |
| NABC295 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *dnaE2 (D377A;D379A)*; *dnaN-YFP*::spec*R* | NABC190 strain was transformed with pNABC132 plasmid to generate specific mutations in the catalytic domain of *dnaE2* through two-step recombination procedure.  |
| NABC356 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆uvrA*; P*xyl*-*ssb*-*YFP*::*kanR* | NABC240 strain was transformed with pNABC419 to integrate *ssb-YFP* linked to *kanR* under P*xyl* promoter.  |
| NABC357 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆mutL*; *dnaN-mCherry*::*kanR* | NABC413 was transformed with pNABC416 plasmid to generate deletion of *mutL* through two-step recombination procedure. Resultant strain was transduced with lysate of a CB15N strain with *dnaN-mCherry* linked to *kanR* integrated at the endogenous locus. |
| NABC400 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆uvrA*; P*sidA*-*YFP*::*kanR* | NABC240 strain was transformed with pNABC420 plasmid to integrate P*sidA*-*YFP* at the *xyl* locus.  |
| NABC414NABC435  | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆recA*::kan*R*;*dnaN-YFP*::spec*R*P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆imuB* | NABC190 strain was transduced with lysate of a strain harboring *recA* deletion and selected for *kanR* that is linked to deletion. NABC413 was transformed with pNABC438 plasmid to generate deletion of *imuB* through two-step recombination procedure.  |
| NABC436 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆imuB*; *dnaN-YFP*::spec*R* | NABC435 strain was transformed with pNABC198 plasmid to integrate *dnaN-YFP* linked to *specR*at the endogenous locus.  |
| NABC437 | P*lacI*-*lacI* (*hfA* locus); P*lac*-*dnaA* (*dnaA* locus); *∆recN*::gent*R*; *dnaN-YFP*::spec*R* | NABC190 strain was transduced with lysate of a strain harboring *recN* deletion (NABC439) and selected for *gentR* that is linked to deletion. |

**References**

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