

Supplementary table 1. *E. coli* strains used in this study

Strains	Relevant genetic alterations	Genetic backgrounds	References or Sources
S6	<i>Wild type</i>	<i>MG1655</i>	
S7	Δ <i>dinB</i>	Δ <i>dinB::frt-kan-frt</i>	1
S185	<i>ptet-dinB</i>	<i>JEK522</i> Δ <i>lamB::ptet-dinB-frt-kan-frt</i>	This study
S315	<i>dinB</i> ⁺	<i>dinB::dinB-frt-kan-frt</i>	This study
S380	<i>ptet-dinB</i>	<i>JEK522</i> Δ <i>dinB::frt-cm-frt</i> Δ <i>lamB::ptet-dinB-frt-kan-frt</i>	This study
S383	<i>ptet-dinB</i> ^{ΔC6}	<i>JEK522</i> Δ <i>dinB::frt-cm-frt</i> Δ <i>lamB::ptet-dinB</i> ^{ΔC6} <i>-frt-kan-frt</i>	This study
S385	<i>ptet-dinB</i> ^{T120P}	<i>JEK522</i> Δ <i>dinB::frt-cm-frt</i> Δ <i>lamB::ptet-dinB</i> ^{T120P} <i>-frt-kan-frt</i>	This study
S398	Δ <i>dinB::frt-cm-frt</i> <i>ptet-flag-mypet</i>	<i>JEK522</i> Δ <i>dinB::frt-cm-frt</i> Δ <i>lamB::ptet-flag-mypet-frt-kan-frt</i>	This study
S490	Δ <i>lafU</i>	Δ <i>lafU::frt-kan-frt</i>	This study
S519	<i>dinBp</i> ^{lexA} <i>sulAp-gfp-mut2</i>	Δ <i>attB::sulAp-gfp-mut2-frt-cm-frt</i> Δ <i>lafU::frt-kan-frt</i> <i>dinBp</i> ^{lexA}	This study
S530	<i>sulAp-gfp-mut2</i>	Δ <i>attB::sulAp-gfp-mut2-frt-cm-frt</i> Δ <i>lafU::frt-kan-frt</i>	1
S532	<i>dnaQ</i> (e _L)	Δ <i>dnaQ::dnaQ</i> (e _L) Δ <i>yafT::frt-cm-frt</i>	1
S611	<i>dinB</i> ^{T120A}	<i>dinB::dinB</i> ^{T120A} <i>-frt-kan-frt</i>	This study
S612	<i>dinB</i> ^{T120S}	<i>dinB::dinB</i> ^{T120S} <i>-frt-kan-frt</i>	This study
S613	<i>dinB</i> ^{T120V}	<i>dinB::dinB</i> ^{T120V} <i>-frt-kan-frt</i>	This study
S614	<i>dinB</i> ^{T120D}	<i>dinB::dinB</i> ^{T120D} <i>-frt-kan-frt</i>	This study
S644	<i>dinB</i> ^{T120P,Rim, ΔC6} - <i>PAmCherry</i> <i>ssb-mypet</i>	Δ <i>dinB::dinB</i> ^{T120P,Rim, ΔC6} <i>-</i> <i>PAmCherry-frt-kan-frt</i> Δ <i>lacZ::ssb-mypet-frt</i> <i>lexA51</i>	This study
S673	<i>ptet-flag-polB</i>	<i>JEK522</i> Δ <i>lamB::ptet-flag-polB-frt-kan-frt</i>	This study
S685	<i>ptet-flag-recQ</i>	<i>JEK522</i> Δ <i>lamB::ptet-flag-recQ-frt-kan-frt</i>	This study
S687	<i>ptet-flag-recQ</i> ^{WH}	<i>JEK522</i> Δ <i>lamB::ptet-flag-recQ</i> ^{WH} <i>-frt-kan-frt</i>	This study
S742	<i>sulAp-gfp-mut2</i> Δ <i>dinB</i>	Δ <i>attB::sulAp-gfp-mut2-frt-cm-frt</i> Δ <i>dinB::frt-kan-frt</i>	1
S800	<i>dinB</i> ^{T120P}	Δ <i>lafU::frt-kan-frt</i> <i>dinB</i> ^{T120P}	This study
S802	<i>ptet-dinB</i> ¹⁻²³⁰	<i>JEK522</i> Δ <i>dinB::frt-cm-frt</i> <i>ptet-dinB</i> ¹⁻²³⁰ <i>-frt-kan-frt</i>	This study
S804	<i>ptet-dinB</i> ^{LF}	<i>JEK522</i> Δ <i>dinB::frt-cm-frt</i> <i>ptet-dinB</i> ^{LF} <i>-frt-kan-frt</i>	This study
S852	<i>sulAp-gfp-mut2</i> <i>dinB</i> ^{T120P}	Δ <i>attB::sulAp-gfp-mut2-frt-cm-frt</i> Δ <i>lafU::frt-kan-frt</i> <i>dinB</i> ^{T120P}	This study
S853	<i>sulAp-gfp-mut2</i> <i>dinBp</i> ^{lexA} <i>dinB</i> ^{T120P}	Δ <i>attB::sulAp-gfp-mut2-frt-cm-frt</i> Δ <i>lafU::frt-kan-frt</i> <i>dinBp</i> ^{lexA} <i>dinB</i> ^{T120P}	This study

S929	<i>recQ^{WH}-dinB^{LF}-PamCherry</i>	Δ <i>dinB::recQ^{WH}-dinB^{LF}-PAmCherry-frt-kan-frt</i>	This study
S930	<i>recQ^{WH}-dinB^{LF}-PamCherry-flag ssb-mypet</i>	Δ <i>dinB::recQ^{WH}-dinB^{LF}-PAmCherry-flag-frt-kan-frt lacZ::ssb-mypet-frt lexA51</i>	This study
S937	<i>pVP135</i>	<i>EVP22b ΔyafT::frt-cm-frt ΔlafU::frt pVP135</i>	This study
S939	<i>dinB^{T120P} pVP135</i>	<i>EVP22b ΔyafT::frt-cm-frt ΔlafU::frt dinB-T120P pVP135</i>	This study
S952	<i>recQ^{WH,R503A}-dinB^{LF}-PAmCherry</i>	Δ <i>dinB::recQ^{WH,R503A}-dinB^{LF}-PAmCherry-frt-kan-frt</i>	This study
S983	<i>recQ^{WH(R503A)}-dinB^{LF} ssb-mypet</i>	Δ <i>dinB::recQ^{WH(R503A)}-dinB^{LF}-PAmCherry-frt-kan-frt ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
S984	<i>recQ^{WH}-dinB^{LF(Rim, ΔC6)}-PAmCherry ssb-mypet</i>	Δ <i>dinB::recQ^{WH}-dinB^{LF(Rim, ΔC6)}-PAmCherry-frt-kan-frt ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
SU000	<i>AB1157</i>	<i>AB1157</i>	2
IL05	<i>lacO₂₅₀-kan</i>	<i>AB1157 tetO₂₄₀-gm ori1 (@3908 kb) lacO₂₅₀-kan ter2 (@ 1801 kb)</i>	3
S989	<i>lacO₂₅₀-kan pBAD24-lacI^{AC11}-ssb-ct</i>	<i>IL05 pBAD24-lacI^{AC11}-ssb-ct</i>	This study
S990	<i>lacO₂₅₀-kan pBAD24-lacI^{AC11}-ssb-ct^{DA, ΔF}</i>	<i>IL05 pBAD24-lacI^{AC11}-ssb-ct^{DA, ΔF}</i>	This study
S1022	Δ <i>recQ</i>	Δ <i>recQ::frt-cm-frt</i>	This study
S1069	<i>ptet-flag-recQ^{R448A}</i>	<i>JEK522 ΔlamB::ptet-flag-recQ^{R448A}-frt-kan-frt</i>	This study
S1071	<i>ptet-flag-recQ^{R503A}</i>	<i>JEK522 ΔlamB::ptet-flag-recQ^{R503A}-frt-kan-frt</i>	This study
S1074	<i>ptet-flag-exol</i>	<i>JEK522 ΔlamB::ptet-flag-exol-frt-kan-frt</i>	This study
S1075	<i>ptet-flag-topoIII</i>	<i>JEK522 ΔlamB::ptet-flag-topoIII-frt-kan-frt</i>	This study
S1088	<i>ptet-flag-exoI^{Q311A}</i>	<i>JEK522 ΔlamB::ptet-flag-exoI^{Q311A}-frt-kan-frt</i>	This study
S1089	<i>ptet-flag-exoI^{R316A}</i>	<i>JEK522 ΔlamB::ptet-flag-exoI^{R316A}-frt-kan-frt</i>	This study
S1090	<i>ptet-flag-exoI^{R414A}</i>	<i>JEK522 ΔlamB::ptet-flag-exoI^{R414A}-frt-kan-frt</i>	This study
S1091	<i>ptet-flag-polA</i>	<i>JEK522 ΔlamB::ptet-flag-polA-frt-kan-frt</i>	This study
S1093	<i>polA-recQ^{WH}</i>	<i>polA::polA-recQ^{WH}-frt-kan-frt</i>	This study
S1094	<i>polA-recQ^{WH(R425A, R503A)}</i>	<i>polA::polA-recQ^{WH(R425A, R503A)}-frt-kan-frt</i>	This study
S1095	<i>polA⁺</i>	<i>polA::polA-frt-kan-frt</i>	This study
S1133	Δ <i>dinB ΔrecQ</i>	Δ <i>dinB::frt-kan-frt ΔrecQ::frt-cm-frt</i>	This study
S1158	<i>recQ^{WH}-dinB^{LF(Rim, ΔC6)}-PAmCherry-flag ssb-mypet</i>	Δ <i>dinB::recQ^{WH}-dinB^{LF(Rim, ΔC6)}-PAmCherry-</i>	This study

		<i>flag-frt-kan-frt lacZ::ssb-mypet-frt lexA51 sulA211</i>	
S1162	<i>recQ^{WH(R503A)}-dinB^{LF}-PAmCherry-flag ssb-mypet</i>	Δ <i>dinB::recQ^{WH(R503A)}-dinB^{LF}-PAmCherry-flag-frt-kan-frt lacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
S1168	<i>dinB^{ΔC6}</i>	Δ <i>lafU::frt-kan-frt ΔdinB::dinB^{ΔC6}</i>	This study
S1171	<i>dinB^{T120P,ΔC6}</i>	Δ <i>lafU::frt-kan-frt ΔdinB::dinB^{T120P,ΔC6}</i>	This study
S1177	<i>ptet-flag-pola-recQ^{WH}</i>	<i>JEK522 ΔlamB::ptet-flag-pola-recQ^{WH}-frt-kan-frt</i>	This study
S1178	<i>ptet-flag-pola-recQ^{WH(R425A,R503A)}</i>	<i>JEK522 ΔlamB::ptet-flag-pola-recQ^{WH(R425A,R503A)}-frt-kan-frt</i>	This study
S1179	<i>ptet-flag-recQ^{WH}-dinB^{LF(ΔC6)}</i>	<i>JEK522 ΔlamB::ptet-flag-recQ^{WH}-dinB^{LF(ΔC6)}-frt-kan-frt</i>	This study
S1205	<i>dnaQ(e_L) dinB^{T120P}</i>	<i>dnaQ::dnaQ(e_L) ΔyafT::frt-cm-frt ΔlafU::frt-kan-frt dinB^{T120P}</i>	This study
S1252	<i>hda-recQ^{WH}</i>	<i>hda::hda-recQ^{WH}-frt-kan-fr</i>	This study
S1253	<i>hda-recQ^{WH(R425A,R503A)}</i>	<i>hda::hda-recQ^{WH(R425A,R503A)}-frt-kan-fr</i>	This study
S1254	<i>hda⁺</i>	<i>hda::hda-frt-kan-fr</i>	This study
S1280	Δ <i>dinB pola-recQ^{WH}</i>	Δ <i>dinB::frt-cm-frt pola-recQ^{WH}-frt-kan-frt</i>	This study
S1281	Δ <i>dinB hda-recQ^{WH}</i>	Δ <i>dinB::frt-cm-frt hda-recQ^{WH}-frt-kan-frt</i>	This study
S1295	<i>ptet-crfc</i>	<i>JEK522 ΔlamB::ptet-crfc-frt-kan-frt</i>	This study
S1317	<i>ptet-crfc-recQ^{WH}</i>	<i>JEK522 ΔlamB::ptet-crfc-recQ^{WH}-frt-kan-frt</i>	This study
S1318	<i>ptet-crfc-recQ^{WH(R425A,R503A)}</i>	<i>JEK522 ΔlamB::ptet-crfc-recQ^{WH(R425A,R503A)}-frt-kan-frt</i>	This study
S1359	<i>pola-recQ-WH-PAmCherry-flag-frt-kan-frt</i>	<i>pola::pola-recQ-WH-PAmCherry-flag-frt-kan-frt ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
S1361	<i>pola-recQ-WH-R503A-PAmCherry-flag-frt-kan-frt</i>	<i>pola::pola-recQ-WH-R503A-PAmCherry-flag-frt-kan-frt ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
S1501	<i>lacO₂₅₀-kan pBAD24-lacI^{ΔC11}-ssb^{DL}-ct</i>	<i>IL05 pBAD24-lacI^{ΔC11}-ssb^{DL}-ct</i>	This study
S1515	<i>lacO₂₅₀-kan pBAD24-lacI</i>	<i>IL05 pBAD24-lacI</i>	This study
S1526	<i>sulAp-gfp-mut2-frt-cm-frt lacO₂₅₀-kan</i>	Δ <i>attB::sulAp-gfp-mut2-frt-cm-frt lacO₂₅₀-kan</i>	This study
S1532	<i>lacO₂₅₀-kan pBAD24-lacI^{ΔC11}-ssb^{DL}-ct^{DA,ΔF}</i>	<i>IL05 pBAD24-lacI^{ΔC11}-ssb^{DL}-ct^{DA,ΔF}</i>	This study
S1539	Δ <i>dinB</i>	<i>AB1157 ΔdinB::frt-cm-frt</i>	This study
S1549	Δ <i>dinB lacO₂₅₀-kan</i>	<i>IL05 ΔdinB::frt-cm-frt</i>	This study
S1552	<i>lacO₂₅₀-kan pBAD24</i>	<i>IL05 pBAD24</i>	This study
S1555	Δ <i>dinB lacO₂₅₀-kan pBAD24</i>	<i>IL05 ΔdinB::frt-cm-frt pBAD24</i>	This study

S1557	<i>pBAD24-lacI^{ΔC11}-ssb-ct</i>	AB1157	This study
S1605	<i>sulAp-gfp-mut2-frt-cm-frt lacO²⁵⁰-kan pBAD24-lacI^{ΔC11}-ssb-ct</i>	<i>ΔattB::sulAp-gfp-mut2-frt-cm-frt lacO²⁵⁰-kan pBAD24-lacI^{ΔC11}-ssb-ct</i>	This study
S1608	<i>ΔdinB lacO²⁵⁰-kan pBAD24-lacI^{ΔC11}-ssb-ct</i>	IL05 <i>ΔdinB::frt-cm-frt pBAD24-lacI^{ΔC11}-ssb-ct</i>	This study
S1609	<i>ΔattB::sulAp-gfp-mut2-frt</i>	<i>ΔlafU::frt ΔattB::sulAp-gfp-mut2-frt</i>	This study
S1610	<i>ΔdinB ΔattB::sulAp-gfp-mut2-frt</i>	<i>ΔdinB::frt ΔattB::sulAp-gfp-mut2-frt</i>	This study
S1611	<i>dinB^{T120}</i>	<i>ΔlafU::frt dinB^{T120} ΔattB::sulAp-gfp-mut2-frt</i>	This study
S1612	<i>dinBp-lexA-mut3 dinB⁺</i>	<i>ΔlafU::frt dinBp-lexA-mut3 dinB⁺ ΔattB::sulAp-gfp-mut2-frt</i>	This study
S1613	<i>dinBp-lexA-mut3 dinB^{T120}</i>	<i>ΔlafU::frt dinBp-lexA-mut3 dinB^{T120} ΔattB::sulAp-gfp-mut2-frt</i>	This study
S1620	<i>lacO₂₅₀-kan pBAD24-lacI^{ΔC11}</i>	AB1157 <i>lacO₂₅₀-kan pBAD24-lacI^{ΔC11}</i>	This study
S1633	<i>dinB^{T120}</i>	<i>ΔlafU::frt dinB^{T120}</i>	This study
S1634	<i>dinB^{ΔC6}</i>	<i>ΔlafU::frt dinB^{ΔC6}</i>	This study
S1635	<i>dinB^{T120P,ΔC6}</i>	<i>ΔlafU::frt dinB^{T120P,ΔC6}</i>	This study
EVP22b	<i>ΔuvrA ΔmutS pVP135</i>	FBG151 <i>ΔuvrA::frt ΔmutS::frt pVP135</i>	4,5
EVP23b	<i>ΔuvrA ΔmutS pVP135</i>	FBG152 <i>ΔuvrA::frt ΔΔmutS::frt pVP135</i>	4,5
EVP886	<i>ΔdinB pVP135</i>	EVP22b <i>ΔdinB::frt pVP135</i>	This study
EVP887	<i>ΔdinB pVP135</i>	EVP23b <i>ΔdinB::frt pVP135</i>	This study
S1106	<i>pVP135</i>	EVP22b <i>ΔlafU::FRT pVP135</i>	This study
S1107	<i>dinB^{T120P} pVP135</i>	EVP22b <i>ΔlafU::FRT dinB^{T120P} pVP135</i>	This study
EVP957	<i>dinB^{T120P} pVP135</i>	EVP23b <i>ΔlafU::FRT dinB^{T120P} pVP135</i>	This study
EVP392	<i>ΔumuDC ΔpolB ΔdinB pVP135</i>	EVP22b <i>ΔumuDC::frt polB::frt dinB::frt pVP135</i>	This study
EVP415	<i>ΔumuDC ΔpolB ΔdinB pVP135</i>	EVP23b <i>ΔumuDC::frt ΔpolB::frt ΔdinB::frt pVP135</i>	This study
JEK458	<i>ΔdinB</i>	<i>ΔdinB::frt</i>	This study
JEK515	<i>ΔattB::(lacI tetR)</i>	MG1655 <i>rph⁺ DE(lacZYA) ΔattB::(lacI tetR)(Z2)</i>	6
JEK522	<i>ΔattB::(lacI tetR)</i>	MG1655 <i>ΔattB::(lacI tetR)(Z2)</i>	This study
JEK687	<i>ptet-flag-mypet</i>	JEK522 <i>ΔlamB::ptet-flag-mypet-frt-kan-frt</i>	This study
JEK762	<i>ssb-mypet</i>	<i>ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	7
JEK766	<i>dinB-PAmCherry ssb-mypet</i>	<i>ΔdinB::dinB-PAmCherry-frt-kan-frt ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	7
JEK781	<i>dinB-PAmCherry-flag ssb-mypet</i>	<i>ΔdinB::dinB-PAmCherry-flag-frt-kan-frt ΔlacZ::ssb-mypet-frt lexA51 sulA211</i>	7

JEK790	<i>dinB^{Rim,ΔC6}-PAmCherry ssb-mypet</i>	Δ <i>dinB::dinB^{Rim, ΔC6}-PAmCherry-frt-kan-frt</i> Δ <i>lacZ::ssb-mypet-frt lexA51 sulA211</i>	7
ET215	<i>dinB^{T120P}-PAmCherry</i>	Δ <i>dinB::dinB^{T120P}-PAmCherry-frt-kan-frt</i>	This study
ET216	<i>dinB^{T120P}-PAmCherry-flag</i>	Δ <i>dinB::dinB^{T120P}-PAmCherry-flag-frt-kan-frt</i>	This study
ET227	<i>dinB^{T120P}-PAmCherry ssb-mypet</i>	<i>dinB::dinB^{T120P}-PAmCherry-frt-kan-frt</i> Δ <i>lacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
ET230	<i>dinB^{T120P}-PAmCherry-flag ssb-mypet</i>	<i>dinB::dinB^{T120P}-PAmCherry-flag-frt-kan-frt</i> Δ <i>lacZ::ssb-mypet-frt lexA51 sulA211</i>	This study
SU001/RRL361	<i>polA-PAmCherry-frt-kan-frt</i>	AB1157 <i>polA-PAmCherry-frt-kan-frt</i>	2
ET242	<i>polA-PAmCherry-frt-kan-frt</i>	<i>polA::polA-PAmCherry-frt-kan-frt</i> Δ <i>lacZ::ssb-mypet-frt lexA51 sulA211</i>	This study

Supplementary table 2. Plasmids used in this study

Plasmids	Relevant inserts	References or Sources
pVP135	Expression of phage lambda integrase/excisionase	4
pVP146	Internal control for transformation efficiency	4
pAP1	Parental plasmid for construction of N ² -furfuryl dG-containing plasmid	This study
pGP22	Parental plasmid for construction of N ² -furfuryl dG-containing plasmid	This study
pBAD24	Arabinose-inducible expression plasmid	Commercial
pBAD24-lacI	Expression plasmid for LacI	This study
pBAD24-lacI ^{ΔC11}	Expression plasmid for LacI ^{ΔC11}	This study
pBAD24-lacI ^{ΔC11} -ssb-ct	Expression plasmid for LacI ^{ΔC11} -SSB-Ct	This study
pBAD24-lacI ^{ΔC11} -ssb ^{IDL} -ct	Expression plasmid for LacI ^{ΔC11} -SSB ^{IDL} -Ct	This study
pBAD24-lacI ^{ΔC11} -ssb-ct ^{DA,ΔF}	Expression plasmid for LacI ^{ΔC11} -SSB-Ct ^{DA,ΔF}	This study
pBAD24-lacI ^{ΔC11} -ssb ^{IDL} -ct ^{DA,ΔF}	Expression plasmid for LacI ^{ΔC11} -SSB ^{IDL} -Ct ^{DA,ΔF}	This study

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