

## Supplementary Materials

### Supplementary Table 1. DNA oligonucleotides used in study

#### $\lambda$ -red primers (5'→3'):

##### *ΔdinB*

A: atgcgtaaaatcattcatgtggatatggactgcttttcgcagcgggtgggtgtaggctggagctgcttc

B: tcataatcccagcaccagttgtctttccatttgcgggtcaagcaacgtcacatgggaattagccatggctc

##### *ΔumuDC*

A: atgtgtttatcaagcctgcggatcctccgcaaatgtgacttttccgctatgtgtaggctggagctgcttc

B: ttatttgaccgcagtaaatcagaacttcgctgtgataacatggtgaaagatgggaattagccatggctc

##### *ΔmutL*

A: ttgatgccaattcaggctctaccgccacaactggcgaaccagattgccgcgtgtaggctggagctgcttc

B: tcactcatctttcagggttttatcgccggatgtaaatcaacagattgtaaatgggaattagccatggctc

##### *ΔimpCA*

A: atgatccgcattgaaattcttttcgaccgccagagcacaaaaaacctcagtgtaggctggagctgcttc

B: aatcagccagcatgactcctgccttcatatagcgggtacccttcacgccagaatgggaattagccatggctc

##### *ΔproAB*

A: ttgatacattttctctaaaattgaatggcagagaatcatgagtacaggtgtaggctggagctgcttc

B: ttacgcacgaatggtgtaataccaatgccgatccacttgaagtggtcagatgggaattagccatggctc

#### Diagnostic primers (5'→3'):

##### *dinB*

A1: *mbhA1L* atgcgatggcctacaaaaac

A2: *dinB2R* taaggaataaggatgcgggt

B1: *dinB1L* acgcctacaaagaagcctca

B2: *dinB6R* acgatttcagcaaaccacc

##### *umuDC*

A1: *umuDCL1* caggatgatattttcctttctgc

A2: *umuDCR1* tggctgctcggatattttatc

##### *mutL*

A1: *amiBL* taccaacaacagctggcaga

A2: *miaAR* agctcaatggetaacgetgt

*impCA*

A1: *impCL*            tccctctcatgtaaaaagagaca

A2: *impAR*            gatagcatttcccgttcatt

*proAB*

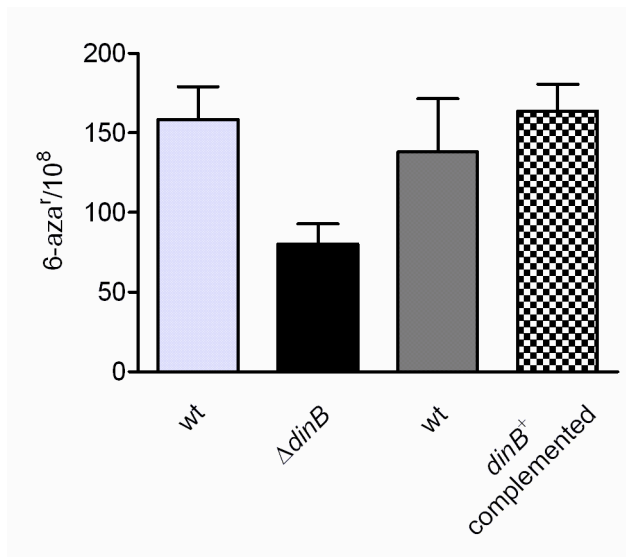
A1: *phoEL*            atgtcgatgttggtgctacg

A2: *C0286R*            acgctgtcccgtgtagagac

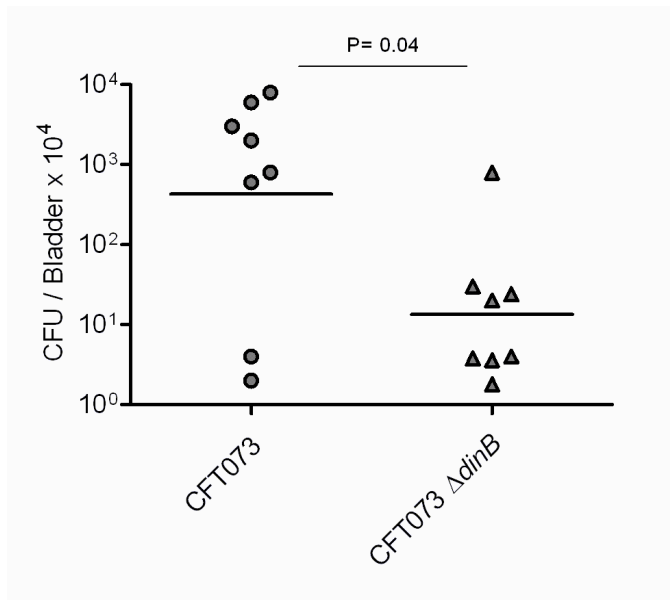
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## Supplemental Figures

**Supplementary Figure 1. Restoration of the wild-type *in vitro* mutation frequency through chromosomal complementation of  $\Delta dinB$ .** Mutation frequencies for *wt*,  $\Delta dinB$ , and complemented strains under *in vitro* growth conditions. The *wt dinB* gene was restored in UTI89  $\Delta dinB$  via P1 transduction of the *wt* locus from UTI89 into its original location on chromosome, resulting in *dinB*<sup>+</sup> (complemented). Means are shown based on 8 independent cultures. Error bars show standard error (SE).



**Supplementary Figure 2. Pol IV enhances survival of UPEC CFT073 strain during UTI.** Female C3H/HeN mice were infected with CFT073 or the isogenic mutant  $\Delta dinB$  by transurethral inoculation. Bacterial CFU/Bladder  $\times 10^4$  at 48 hpi.



**Supplementary Figure 3. A Pol IV mutant has a fitness defect in C57BL/6 mice.**

*Panel A:* Enumeration of bacteria in the bladder after 48 hpi (CFU/Bladder x 10<sup>4</sup>) for

UTI89 (showed as circles) and UTI89 *dinB* (showed as triangles) strains. *Panel B:*

mutation frequency per 10<sup>8</sup> cells measured for 6-aza<sup>r</sup> in bacteria collected after 48 hpi.

