SUPPLEMENTAL METHODS

Additional Bacterial Strains

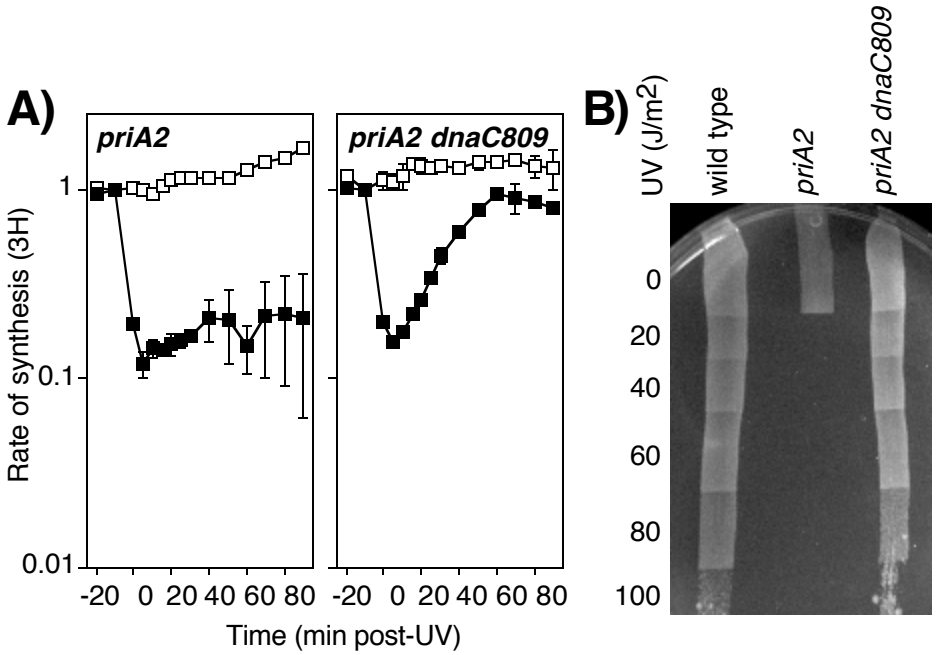
DM4000 and its derivatives DM4000 *priA2::kan* (JC18983) and DM4000 *priA2::kan dnaC809* (JC19008) have been described previously {Sandler et al., 1996, Genetics 143, 5-13}. In brief, the genotype for DM4000 is *Δ(lac-pro)XIII hisG4 argE3 thr-1 ara-14 xyl-5 mtl-1 rpsL3l sulA::Mu-d*(Ap, *lac,* B::Tn*9*). On testing, this strain appears to require biotin and thiamine for growth.

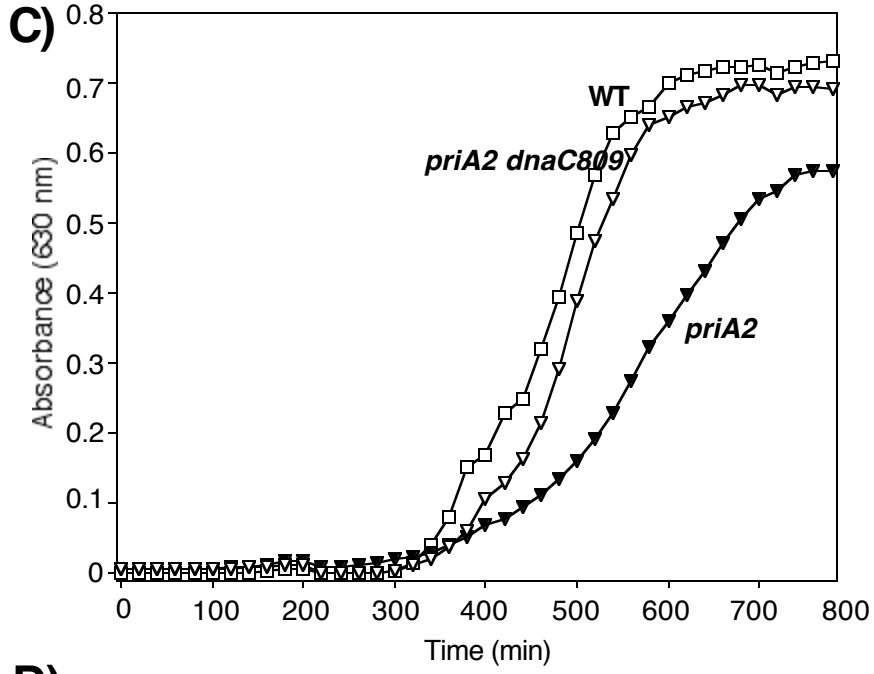
DNA Synthesis

For *thy*+ strains, overnight cultures were diluted 1:100 and grown in DGC medium supplemented with 1 μg/ml each of thiamine and biotin to an OD_{600} of precisely 0.3, at which point half of the culture was mock irradiated, while the other half received an incident dose of 27 J/m^2. At the times indicated, duplicate 0.5-ml aliquots of culture were pulse-labeled with 1 μCi/ml ^{3}H-thymidine for 2 min at 37°C. Cells were then lysed and the DNA precipitated in cold 5% TCA. The precipitate was collected on Millipore glass fiber filters and the amount of ^{3}H on each filter was determined by scintillation counting.

Growth Rates

Fresh overnight cultures were serially diluted by 10-fold in DGC medium supplemented with 1 μg/ml each of thiamine and biotin, and 0.2-ml aliquots were then plated in duplicate into the wells of a sterile 96-well microtiter dish. The microtiter cultures were then agitated at 37°C and the OD_{600} for each culture was measured over time using a BIO-Whittaker EL_x808 plate-reader. The number of viable colonies per ml in each overnight culture was determined at the start of every experiment.





D)

Strain	Viable cells (cfu x 10^6/ml)	Viable cells (cfu x 10^6/OD)
wild-type	1567 (± 88)	706 (± 54)
priA2	52 (± 25)	106 (± 80)
priA2 dnaC809	1200 (± 115)	537 (± 101)

Figure S1 *dnaC809* suppresses the poor replication recovery of *priA2* cells following UV irradiation and restores wild-type growth to these cells. (A) ^{3}H-thymidine was added to cultures for 2 min at the indicated times following either 27 J/m^2 UV irradiation (filled symbols) or mock irradiation (open symbols) at time 0. The amount of DNA synthesis/2min at each time point relative to -10 min post-UV, ^{3}H (□), is plotted. Graphs represent an average of at least three independent experiments. Error bars represent one standard deviation. (B) Survival of parental (wild type), *priA2* and *priA2 dnaC809* cells following UV irradiation with the indicated dose. (C) The OD_{600} of wild-type (□), *priA2* (▼), and *priA2 dnaC809* (▽) strains is plotted over time. (D) The number of viable cells in overnight cultures of wild-type, *priA2*, and *priA2 dnaC809* strains is indicated in cfu x 10^6/ml and cfu x 10^6/OD.

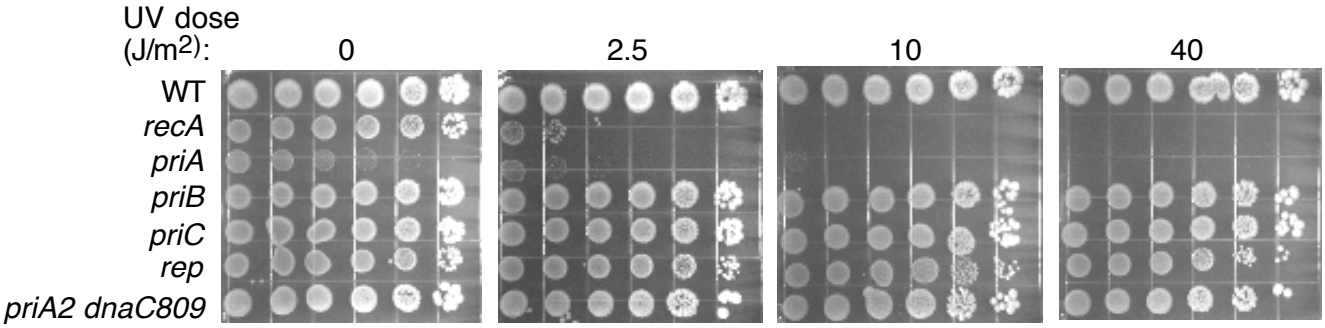


Figure S2 Survival of wild-type, *recA*, *priA2*, *priB302*, *priC*, *rep* and *priA2 dnaC809* strains following UV irradiation. Serial 10-fold dilutions of each strain were applied as 10-µl spots onto LBthy plates. Strains were exposed to the indicated dose of UV irradiation and allowed to grow at 37°C for 24 h.