Supporting Information

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Fig. S1. dps expression under carbon-starvation and nitrogen-starvation conditions. Induction of the dps promoter in wild-type, crl, rsd, and ssr strains under nitrogen-starvation and carbon-starvation conditions. Error bars represent the SEM.



Fig. S2. Crl is a stable protein. Western blot of the Crl protein from MC4100 grown in M63 media supplemented with glucose (A) and from strain AZ-360 under nitrogen limiting conditions M63 (Arg+) (B). Cells were grown to midlog phase, and growth was stopped by adding chloramphenicol (250 μ g/mL). Cells were collected at the time points indicated and resuspended in sample buffer, boiled, and loaded on an SDS gel.



Fig. S3. crl expression in different strains of E. coli, MC4100 and MG1655. (A) Induction of crl transcription in strain MG1655 measured under nitrogen-limiting conditions relative to nonlimited cells. Error bars represent the SEM. (B) Western blot analysis of Crl in nitrogen-limited and nonlimited cells.



Fig. 54. Percentage survival of MC4100 and an isogenic *rpoS::kan* mutant following heat challenge at 55 °C. Samples were grown to midlog phase in M63 (Arg⁺) media and diluted in M63 media lacking a nitrogen or carbon source. Samples were removed at the indicated times after heat challenge, and viable cell counts were determined. Shown is the result of one of the four independent experiments carried out.

Table S1. List of strains used in this study

Strain/plasmid	Relevant genotype or phenotype	Source
MC4100	F^- araD139 Δ (argF-lac)U169 rpsL150	(1)
MG1655	$F^- \lambda^-$ ilv G^- rfb-50 rph-1	(2)
HME6mutS	W3110Δ(argF-lac)U169 { λcl1857 Δcrl-bioA} galK _{TYR145UAG} mutS::amp	(3)
AZ-9	MC4100 crl::kan	This study
AZ-35	MC4100 ∆crl	This study
AZ246	MG1655 crl::kan	This study
AZ-309	MC4100 rpoS::kan	This study
AZ-310	MC4100 ∆crl, rpoS::kan	This study
AZ-14	MC4100 ntrC::tn5	(4)
VC-67	MC4100 rsd::kan	This study
VC-167	MC4100 rpoN::kan	This study
MJM-106	MC4100 ssr-1	(5)
MJM-372	MC4100 crl _{C285 C375 C415} (crl-serine)	This study
AZ-400/pZS*11	AZ-35 Amp ^R	This study
AZ-360/pZS*11crl-1000	AZ-35 <i>crl</i> ⁺ Amp ^R	This study
AZ-362/ pZS*11crl-1000 gc-12AT	AZ-35 cr/ ⁺ Amp ^R	This study
pCP20	<i>FLP</i> ⁺ λcl857 ⁺ λp _R Rep ^{ts} Amp ^R Cam ^R	(6)

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3. Costantino N, Court DL (2003) Enhanced levels of lambda Red-mediated recombinants in mismatch repair mutants. Proc Natl Acad Sci USA 100(26):15748–15753.

4. Backman K, Chen YM, Magasanik B (1981) Physical and genetic characterization of the gInA—gInG region of the Escherichia coli chromosome. Proc Natl Acad Sci USA 78(6):3743–3747. 5. Lee CA, Fournier MJ, Beckwith J (1985) Escherichia coli 65 RNA is not essential for growth or protein secretion. J Bacteriol 161(3):1156–1161.

6. Cherepanov PP, Wackernagel W (1995) Gene disruption in Escherichia coli: TcR and KmR cassettes with the option of Flp-catalyzed excision of the antibiotic-resistance determinant. Gene 158(1):9-14.

Table S2. List of primers used in this study

VAS PNAS

Primer name	Sequence $(5' \rightarrow 3')$	
5′ompA-RT	TACGCGATCACTCCTGAAATC	
3'ompA-RT	GTAGGAAACACCCAGGCTCA	
5′crl beg-RT	CACCCGAAGAGCAGATTGAT	
3′crl beg-RT	GTTTCACGTTGACGCATACAG	
5′dps-RT	ACCTGAAAGAACTGGCTGACC	
3'dps-RT	AGGATATCTGCGGTGTCGTC	
3′Crl-RT	GTTAACTTCACCGGCTCGTC	
MJM335ss	CCGGTGCCGGTTTCACGTTGACGC <u>T</u> TACAGCCAGAC <u>T</u> ATC	
	GAAAAAGAATCGATTATCTTTGCTCTTACCTTCACGAATATACGGGCC	
MJM67F	GAGCATGTCCATATGACGTTACCGAGTGGACACC	
MJM68R	GTGACGTCAGTCGACTCACGCCGTTAACTTCACCGG	
pZS-KpnI-Crl-c-terminal	GG <u>GGTACC</u> TCACGCCGTTAACTTCACCGGC	
pZS-Xbal-crl-1000upstream	CC <u>TCTAGA</u> GCCACCCAGGCGATGGTGTGGC	
Crl-200-F	TCAGCCCGGAAGAGGACTCACGC	
Crl(-)gc-AT	TTGCTATCTCCTGTTGTGAT <u>AT</u> AACTGTTTTACCAAATTGGC	
Crl(+)gc-AT	GCCAATTTGGTAAAACAGTT <u>AT</u> ATCACAACAGGAGATAGCAA	

Underlined sequences are either substitutions or restriction sites.