Table S1. List of all strains used in this study.

Strain	Genotype*	Source / Description / Construction
E. coli K-12 MG1655	F⁻ λ⁻ *ilvG⁻ rfb-50 rph-1*	our laboratory collection; K-12 wildtype strain
… Δ1TA	K-12 MG1655 Δ*chpB* **λ_def(+)**	also known as SC31 (originally from S. K. Christensen, et al. (1)); used by E. Maisonneuve, et al. (2)
… Δ2TA	K-12 MG1655 Δ*mazF* Δ*chpB* **λ_def(+)**	also known as SC301 (originally from S. K. Christensen, et al. (3)); used by E. Maisonneuve, et al. (2)
… Δ3TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* **λ_def(+)**	also known as SC3410 (originally from S. K. Christensen, et al. (3)); used by E. Maisonneuve, et al. (2)
… Δ4TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* **λ_def(+)**	also known as SC30146 (originally from S. K. Christensen, et al. (3)); used by E. Maisonneuve, et al. (2)
… Δ5TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* **λ_def(+) φ80(+)**	also known as SC301467 (originally from S. K. Christensen, et al. (3)); used by E. Maisonneuve, et al. (2)
… Δ6TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* Δ*higBA* **λ_def(+) φ80(+)**	also known as MGJ59; constructed and used by E. Maisonneuve, et al. (2)
… Δ7TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* Δ*higBA* Δ*prlF-yhaV* **λ_def(+) φ80(+)**	also known as MGJ598; constructed and used by E. Maisonneuve, et al. (2)
… Δ8TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* Δ*higBA* Δ*prlF-yhaV* Δ*yafNO* **λ_def(+) φ80(+)**	also known as MGJ5987; constructed and used by E. Maisonneuve, et al. (2)
… Δ9TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* Δ*higBA* Δ*prlF-yhaV* Δ*yafNO* Δ*mqsRA* **λ_def(+) φ80(+) φ80h(80)imm(λ)(+)**	also known as MGJ59876; constructed and used by E. Maisonneuve, et al. (2)
… Δ10TA	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* Δ*higBA* Δ*prlF-yhaV* Δ*yafNO* Δ*mqsRA* Δ*hicAB* **λ_def(+) φ80(+) φ80h(80)imm(λ)(+)**	also known as EJM43; constructed and used by E. Maisonneuve, et al. (2)
… Δ10 TA *attB(+)*	K-12 MG1655 Δ*mazF* Δ*chpB* Δ*relBE* Δ*dinJ-yafQ* Δ*yefM-yoeB* Δ*higBA* Δ*prlF-yhaV* Δ*yafNO* Δ*mqsRA* Δ*hicAB* **φ80(+) φ80h(80)imm(λ)(+)**	this study; Δ10TA in which the defective lambda prophage had been cured (see *STAR Methods*)
… Δ5'TA	K-12 MG1655 Δ*hicAB::FRT* Δ*mqsR::FRT* Δ*yafO:::FRT* Δ*yhaV::FRT* Δ*higB::FRT*	also known as EJM46789; constructed and used by E. Maisonneuve, et al. (2)
… Δ10'TA	K-12 MG1655 Δ*hicAB::FRT* Δ*mqsR::FRT* Δ*yafO:::FRT* Δ*yhaV::FRT* Δ*higB::FRT* Δ*yefM-yoeB* Δ*dinJ-yafQ* Δ*relBE* Δ*chpBS* Δ*mazF*	this study; also known as AHK250
… λ(+)	K-12 MG1655 *lamB λ(+)*	also called JMT1; single lambda lysogen of S. Semsey, et al. (4)
… φ80(+)	K-12 MG1655 *φ80(+)*	this study; also called AHK031; K-12 MG1655 wildtype lysogenized with φ80 from culture supernatant of Δ10TA *attB(+)*
… *lamB*	K-12 MG1655 *lamB::camR*	obtained from Sine Lo Svenningsen
… *fhuA*	K-12 MG1655 *fhuA::kanR*	this study; *fhuA::kanR* allele transduced from the KEIO collection (5)
… *relA spoT* (original)	K-12 MG1655 *relA::kanR(251) spoT::: cat(207) λ(+) φ80(+)*	also called CF1693 (originally from H. Xiao, et al. (6)); used by E. Maisonneuve, et al. (7) as stock EJM48; no indication that the lambda prophage is defective
… *relA spoT* (new)	K-12 MG1655 *relA::FRT spoT::cat(207)*	this study; also called PDC47
… *lon*	K-12 MG1655 *lon::tetR*	our laboratory collection; used by E. Maisonneuve, et al. (7)
… *sulA*	K-12 MG1655 *sulA::kanR*	constructed and used by E. Maisonneuve, et al. (7)
… *sulA* Δ*lon*	K-12 MG1655 *sulA::FRT* Δ*lon*	this study; also called AHK173
… Δ*ppk-ppx* (old)	K-12 MG1655 Δ*ppk ppx::kanR* **φ80(+)**	also called CF5802 (originally from A. Kuroda, et al. (8)), used by E. Maisonneuve, et al. (7) as EJM47
… Δ*ppk-ppx* (new)	K-12 MG1655 Δ*ppk-ppx*	this study; also known as AHK062
BW25113	K-12 MG1655 F⁻ Δ*(araD-araB)567* Δ*lacZ4787(::rrnB-3)* λ⁻ *rph-1* Δ*(rhaD-rhaB)568 hsdR514*	our laboratory collection; commonly used lab strain derivative of K-12 MG1655
Δ9CP	BW25113 Δ*rac* Δ*CP4-57* Δ*CPS-53* Δ*DLP12* Δ*Qin* Δ*e14* Δ*CP4-6* Δ*CPZ-55*Δ*CP4-44* Δ*kanR*	derivative of BW25113 lacking all nine cryptic prophages; constructed by X. Wang, et al. (9)
HME71	W3110 *galK_{tyr145UAG}* Δ*lacU169* [λ cI857 Δ*(cro-bioA)*] Δ*(srlA-recA)301::Tn10*	our laboratory collection; *E. coli* K-12 stain carrying the temperature-sensitive λRED prophage; constructed by J. A. Sawitzke, et al. (10)

MAS889	W3110 galK$_{tyr145UAG}$ ΔlacU169 [λ cI857 Δ(cro-bioA)] srl⁺ rec⁺ tet^S	this study; derivative of HME71 cured for the Δ(srlA-recA)301::Tn10) insertion
MAS242	K-12 MG1655 Δ(proAB-lac) cys Ilv(val^R) str^R thi mini-Tn10 close to galE	our laboratory collection
MAS902	W3110 galK$_{tyr145UAG}$ ΔlacU169 [λ cI857 Δ(cro-bioA)] srl⁺ rec⁺ tet^S tn10 close to galE	this study; tn10 close to galE transduced from MAS242 into MAS889
Bacteriophages		
T4D	wildtype strain	obtained from Kenneth Kreutzer
φ80vir	obligately lytic mutant of φ80	obtained from Sine Lo Svenningsen
lambda cI$_{b221}$	obligately lytic mutant of lambda (cI mutant)	our laboratory collection

1 * newly discovered genotypic features of previously published strains are highlighted in bold font; the defective lambda

2 prophage of some strains is indicated as λ$_{def}$

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4 ## References cited in Table S1

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