

**Table S1.** *E. coli* strains used in this work.

Strain	Relevant genotype	Source or reference
<b>Used for strain construction</b>		
CAG18486	<i>eda-51::Tn10</i>	CGSC <sup>a</sup>
JW2549-1	<i>ΔrecO737::kan</i>	CGSC <sup>a</sup>
LMM1672	<i>recB268::Tn10</i>	Buljubašić et al., 2013
LMM1673	<i>ΔruvABC::cam</i>	Buljubašić et al., 2013
LMM4194	<i>eda-51::Tn10 ΔruvABC::cam</i>	P1.LMM1673 × CAG18486 to Cm <sup>r</sup> Tc <sup>r</sup> UV <sup>s</sup>
N6052	<i>ΔrecG1919::apra</i>	R.G. Lloyd
N6197	<i>ΔrecB1910::dhfr</i>	R.G. Lloyd
<b>MG1655 derivatives<sup>b</sup> used for experiments</b>		
LMM2629 <sup>c</sup>	<i>rec<sup>+</sup> ruv<sup>+</sup></i>	Buljubašić et al., 2013
LMM3183	<i>recB268::Tn10</i>	P1. LMM1672 × LMM2629 to Tc <sup>r</sup> UV <sup>s</sup>
LMM3188	<i>ΔruvABC::cam</i>	P1. LMM1673 × LMM2629 to Cm <sup>r</sup> UV <sup>s</sup>
LMM3196	<i>ΔrecG1919::apra</i>	P1.N6052 × LMM2629 to Apra <sup>r</sup> UV <sup>s</sup>
LMM3545	<i>ΔrecO737::kan</i>	P1. JW2549-1 × LMM2629 to Km <sup>r</sup> UV <sup>s</sup>
LMM3599	<i>ΔrecO737::kan recB268::Tn10</i>	P1.LMM1672 × LMM3545 to Tc <sup>r</sup> UV <sup>s</sup>
LMM3600	<i>ΔrecO737::kan ΔruvABC::cam</i>	P1.LMM1673 × LMM3545 to Cm <sup>r</sup> UV <sup>s</sup>
LMM3601	<i>ΔrecO737::kan ΔrecG1919::apra</i>	P1.N6052 × LMM3545 to Apra <sup>r</sup> UV <sup>s</sup>
LMM3602	<i>ΔrecO737::kan ΔruvABC::cam recB268::Tn10</i>	P1.LMM1672 × LMM3600 to Tc <sup>r</sup> UV <sup>s</sup>
LMM3603	<i>ΔrecO737::kan ΔrecG1919::apra</i>	P1.LMM1672 × LMM3601

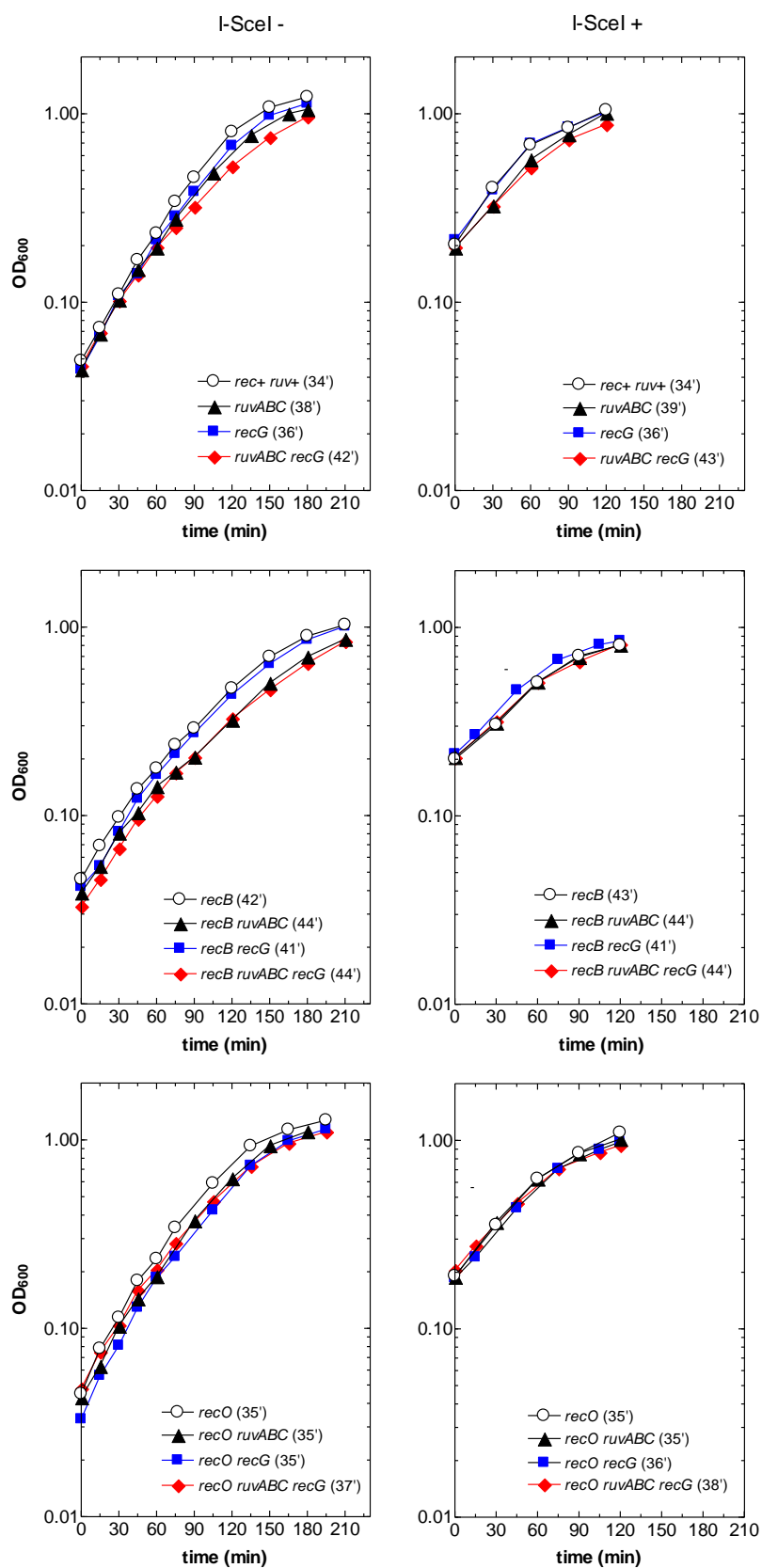
Strain	Relevant genotype	Source or reference
	<i>recB268::Tn10</i>	to Tc <sup>r</sup> UV <sup>s</sup>
LMM3604	<i>ΔrecO737::kan ΔrecG1919::apra</i> <i>ΔruvABC::cam</i>	P1.LMM1673 × LMM3601 to Cm <sup>r</sup> UV <sup>s</sup>
LMM3605	<i>ΔrecO737::kan ΔrecG1919::apra</i> <i>ΔruvABC::cam recB268::Tn10</i>	P1.LMM1672 × LMM3604 to Tc <sup>r</sup>
LMM3610	<i>ΔruvABC::cam ΔrecG1919::apra</i>	P1.N6052 × LMM3188 to Apra <sup>r</sup> UV <sup>s</sup>
LMM3625	<i>ΔruvABC::cam recB268::Tn10</i>	P1.LMM1672 × LMM3188 to Tc <sup>r</sup>
LMM3626	<i>ΔrecG1919::apra recB268::Tn10</i>	P1.LMM1672 × LMM3196 to Tc <sup>r</sup> UV <sup>s</sup>
LMM4134	<i>ΔruvABC::cam ΔrecG1919::apra</i> <i>recB268::Tn10</i>	P1.LMM1672 × LMM3610 to Tc <sup>r</sup>
TRM387	<i>ΔargE::I-SceI<sub>CS</sub>-cat ΔattB::P<sub>BAD</sub> I-SceI</i>	Meddows et al., 2004
LMM4198	as TRM387 plus <i>ΔrecB1910::dhfr</i>	P1.N6197 × TRM387 to Tm <sup>r</sup> UV <sup>s</sup>
LMM4199	as TRM387 plus <i>eda-51::Tn10</i> <i>ΔruvABC::cam</i>	P1.LMM4194 × TRM387 to Tc <sup>r</sup> UV <sup>s</sup>
LMM4201	as TRM387 plus <i>ΔrecG1919::apra</i>	P1.N6052 × TRM387 to Apra <sup>r</sup> UV <sup>s</sup>
LMM4202	as TRM387 plus <i>eda-51::Tn10</i> <i>ΔruvABC::cam ΔrecG1919::apra</i>	P1.N6052 × LMM4199 to Apra <sup>r</sup> UV <sup>s</sup>
LMM4611	as TRM387 plus <i>eda-51::Tn10</i> <i>ΔruvABC::cam ΔrecB1910::dhfr</i>	P1.N6197 × LMM4199 to Tm <sup>r</sup>
LMM4612	as TRM387 plus <i>ΔrecG1919::apra</i> <i>ΔrecB1910::dhfr</i>	P1.N6197 × LMM4201 to Tm <sup>r</sup> UV <sup>s</sup>
LMM4613	as TRM387 plus <i>eda-51::Tn10</i> <i>ΔruvABC::cam ΔrecG1919::apra</i> <i>ΔrecB1910::dhfr</i>	P1.N6197 × LMM4202 to Tm <sup>r</sup>

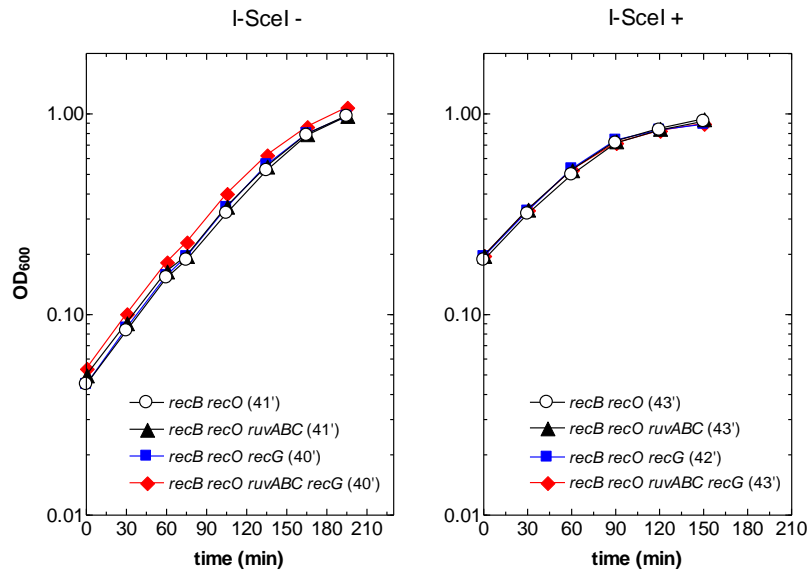
Strain	Relevant genotype	Source or reference
LMM4617	as TRM387 plus $\Delta recO737::kan$	P1. JW2549-1 $\times$ TRM387 to Km <sup>r</sup> UV <sup>s</sup>
LMM4618	as TRM387 plus $\Delta recO737::kan$ <i>eda-51::Tn10</i> $\Delta ruvABC::cam$	P1.LMM4194 $\times$ LMM4617 to Tc <sup>r</sup> UV <sup>s</sup>
LMM4619	as TRM387 plus $\Delta recO737::kan$ $\Delta recG1919::apra$	P1.N6052 $\times$ LMM4617 to Apra <sup>r</sup> UV <sup>s</sup>
LMM4620	as TRM387 plus $\Delta recO737::kan$ <i>eda-51::Tn10</i> $\Delta ruvABC::cam$ $\Delta recG1919::apra$	P1.N6052 $\times$ LMM4618 to Apra <sup>r</sup> UV <sup>s</sup>
LMM4621	as TRM387 plus $\Delta recO737::kan$ $\Delta recB1910::dhfr$	P1.N6197 $\times$ LMM4617 to Tm <sup>r</sup> UV <sup>s</sup>
LMM4658	as TRM387 plus $\Delta recO737::kan$ <i>eda-51::Tn10</i> $\Delta ruvABC::cam$ $\Delta recB1910::dhfr$	P1.N6197 $\times$ LMM4618 to Tm <sup>r</sup> UV <sup>s</sup>
LMM4659	as TRM387 plus $\Delta recO737::kan$ $\Delta recG1919::apra$ $\Delta recB1910::dhfr$	P1.N6197 $\times$ LMM4619 to Tm <sup>r</sup> UV <sup>s</sup>
LMM4660	as TRM387 plus $\Delta recO737::kan$ <i>eda-51::Tn10</i> $\Delta ruvABC::cam$ $\Delta recG1919::apra$ $\Delta recB1910::dhfr$	P1.N6197 $\times$ LMM4620 to Tm <sup>r</sup>

<sup>a</sup> Strain obtained from the *Escherichia coli* Genetic Stock Center, Yale.

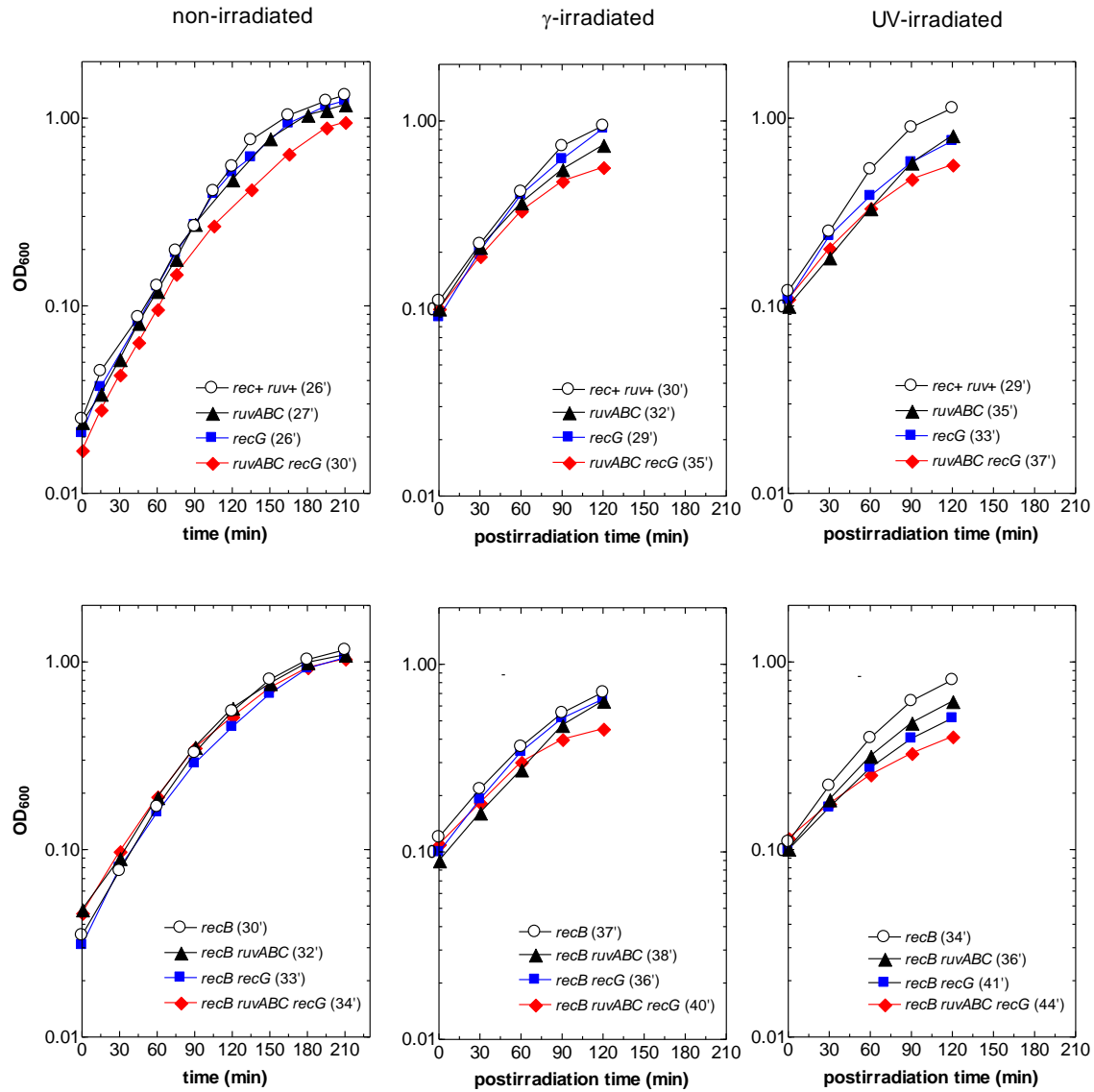
<sup>b</sup> MG1655 markers are F<sup>-</sup>  $\lambda$  *ilvG rfb-50 rph-1*.

<sup>c</sup> As MG1655 but  $\Delta proA::frr$ .





**Figure S1.** Growth of different TRM387 derivatives. Left side of the panel: normal growth in LB medium (without I-SceI expression). Right side of the panel: growth in LB medium with arabinose (induced I-SceI expression). To compare growth rates of I-SceI-induced and -noninduced cells, mass doubling times (in minutes) were calculated from the same range of growth curves (OD<sub>600</sub> of 0.2 - 0.6) and are given in parentheses. Details on growth conditions are given in Materials and Methods.



**Figure S2.** Effects of  $\gamma$ -irradiation (100 Gy) and UV-irradiation ( $5 \text{ J/m}^2$ ) on growth rates of different recombination mutants of *E. coli*. Mass doubling times (in minutes) were calculated from exponential parts of growth curves ( $\text{OD}_{600}$  of 0.1 – 0.3) and are given in parentheses. Irradiated cell cultures were adjusted to  $\text{OD}_{600}$  of  $\sim 0.1$  and their growth was then followed for next 120 min. Details on  $\gamma$ - and UV-irradiation are given in Materials and Methods.

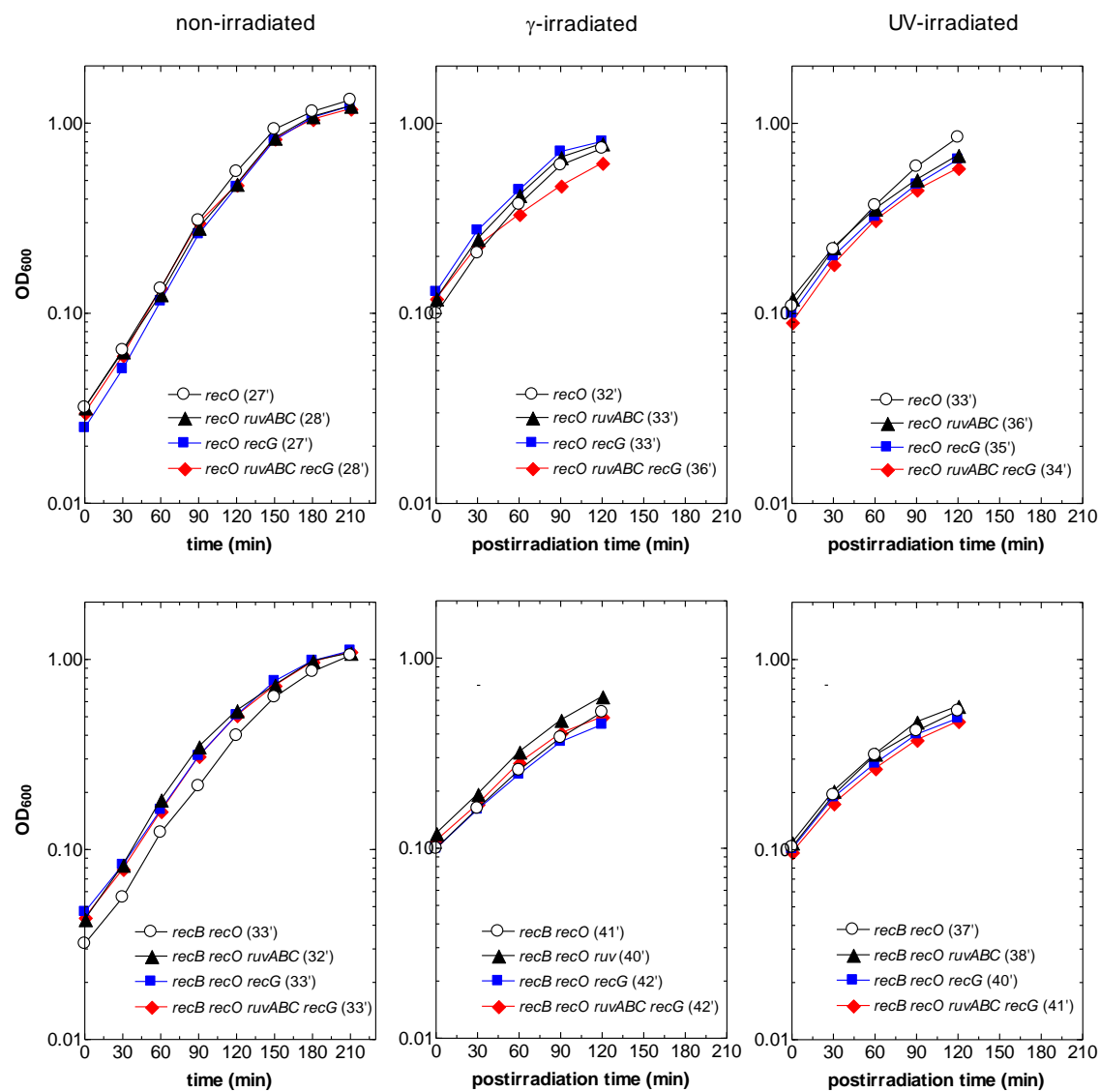
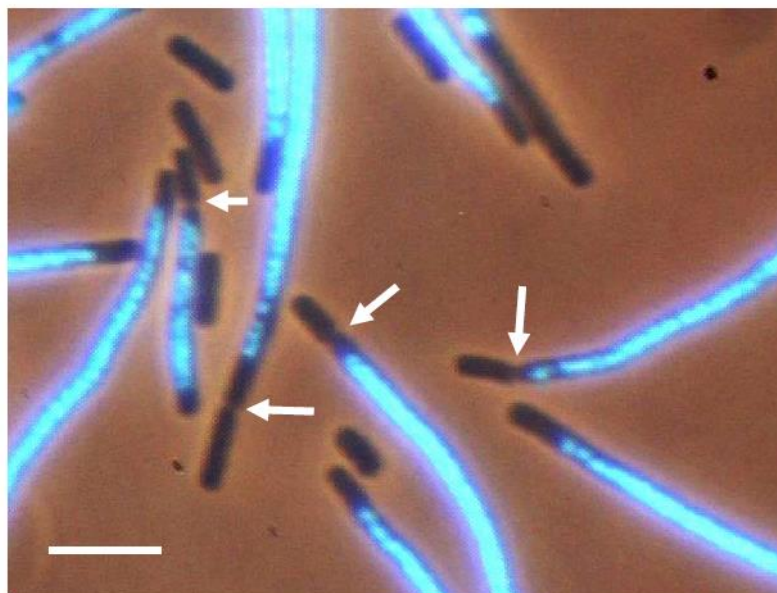


Figure S2. Continued



**Figure S3.** Formation of anucleate cells in *ruvABC* mutants after introduction of double-strand DNA breaks by I-SceI endonuclease. Arrows indicate septation events (cell constrictions) leading to segregation of anucleate cells. Bar, 5 $\mu$ m.



**Table S2.** *E. coli* strains divided into groups (Tukey HSD test,  $\alpha=0.05$ ) based on the data on survival at 60 min after I-SceI expression (Table 1). Groups labeled with identical letters don't differ significantly in mean log survival rates. The group labels are ordered by the decreasing survival rates.

Strain/genotype	Group
4618_recO_ruvABC	a
TRM387_wt	a
4617_recO	a
4199_ruvABC	a
4619_recO_recG	ab
4201_recG	b
4612_recB_recG	c
4611_recB_ruvABC	c
4198_recB	c
4660_recB_recO_ruvABC_recG	cd
4613_recB_ruvABC_recG	cd
4621_recB_recO	cd
4658_recB_recO_ruvABC	cde
4659_recB_recO_recG	cde
4620_recO_ruvABC_recG	de
4202_ruvABC_recG	e

**Table S3.** Statistical analysis of differences in survival at 60 min after I-SceI expression (Table 1) presented as pairwise p-values (p adj) from the Tukey HSD test, which controls for multiple testing.

Comparison strain1-strain2	p adj
4199_ruvABC-4198_recB	8.13E-09
4201_recG-4198_recB	0.000378
4202_ruvABC_recG-4198_recB	0.001844
4611_recB_ruvABC-4198_recB	1
4612_recB_recG-4198_recB	1
4613_recB_ruvABC_recG-4198_recB	0.999999
4617_recO-4198_recB	3.32E-09
4618_recO_ruvABC-4198_recB	1.00E-09
4619_recO_recG-4198_recB	1.18E-06
4620_recO_ruvABC_recG-4198_recB	0.049389
4621_recB_recO-4198_recB	0.999528
4658_recB_recO_ruvABC-4198_recB	0.948694
4659_recB_recO_recG-4198_recB	0.344266
4660_recB_recO_ruvABC_recG-4198_recB	1
TRM387_wt-4198_recB	2.76E-09
4201_recG-4199_ruvABC	0.026087

4202_ruvABC_recG-4199_ruvABC	2.53E-13
4611_recB_ruvABC-4199_ruvABC	1.45E-08
4612_recB_recG-4199_ruvABC	2.32E-08
4613_recB_ruvABC_recG-4199_ruvABC	1.81E-09
4617_recO-4199_ruvABC	1
4618_recO_ruvABC-4199_ruvABC	0.999931
4619_recO_recG-4199_ruvABC	0.854895
4620_recO_ruvABC_recG-4199_ruvABC	1.92E-12
4621_recB_recO-4199_ruvABC	7.00E-10
4658_recB_recO_ruvABC-4199_ruvABC	1.62E-10
4659_recB_recO_recG-4199_ruvABC	1.37E-11
4660_recB_recO_ruvABC_recG-4199_ruvABC	2.52E-09
TRM387_wt-4199_ruvABC	1
4202_ruvABC_recG-4201_recG	7.09E-10
4611_recB_ruvABC-4201_recG	0.000719
4612_recB_recG-4201_recG	0.00121
4613_recB_ruvABC_recG-4201_recG	6.77E-05
4617_recO-4201_recG	0.010346
4618_recO_ruvABC-4201_recG	0.002746
4619_recO_recG-4201_recG	0.768763
4620_recO_ruvABC_recG-4201_recG	1.58E-08
4621_recB_recO-4201_recG	2.22E-05
4658_recB_recO_ruvABC-4201_recG	3.87E-06
4659_recB_recO_recG-4201_recG	1.90E-07
4660_recB_recO_ruvABC_recG-4201_recG	9.94E-05
TRM387_wt-4201_recG	0.008489
4611_recB_ruvABC-4202_ruvABC_recG	0.000976
4612_recB_recG-4202_ruvABC_recG	0.00058
4613_recB_ruvABC_recG-4202_ruvABC_recG	0.009574
4617_recO-4202_ruvABC_recG	1.78E-13
4618_recO_ruvABC-4202_ruvABC_recG	1.30E-13
4619_recO_recG-4202_ruvABC_recG	6.91E-12
4620_recO_ruvABC_recG-4202_ruvABC_recG	0.994556
4621_recB_recO-4202_ruvABC_recG	0.026411
4658_recB_recO_ruvABC-4202_ruvABC_recG	0.113095
4659_recB_recO_recG-4202_ruvABC_recG	0.672061
4660_recB_recO_ruvABC_recG-4202_ruvABC_recG	0.00668
TRM387_wt-4202_ruvABC_recG	1.68E-13
4612_recB_recG-4611_recB_ruvABC	1
4613_recB_ruvABC_recG-4611_recB_ruvABC	0.999946
4617_recO-4611_recB_ruvABC	5.84E-09
4618_recO_ruvABC-4611_recB_ruvABC	1.74E-09
4619_recO_recG-4611_recB_ruvABC	2.20E-06

4620_recO_ruvABC_recG-4611_recB_ruvABC	0.028363
4621_recB_recO-4611_recB_ruvABC	0.995672
4658_recB_recO_ruvABC-4611_recB_ruvABC	0.872452
4659_recB_recO_recG-4611_recB_ruvABC	0.232374
4660_recB_recO_ruvABC_recG-4611_recB_ruvABC	0.999994
TRM387_wt-4611_recB_ruvABC	4.85E-09
4613_recB_ruvABC_recG-4612_recB_recG	0.999412
4617_recO-4612_recB_recG	9.31E-09
4618_recO_ruvABC-4612_recB_recG	2.74E-09
4619_recO_recG-4612_recB_recG	3.68E-06
4620_recO_ruvABC_recG-4612_recB_recG	0.017755
4621_recB_recO-4612_recB_recG	0.983568
4658_recB_recO_ruvABC-4612_recB_recG	0.779282
4659_recB_recO_recG-4612_recB_recG	0.16267
4660_recB_recO_ruvABC_recG-4612_recB_recG	0.999889
TRM387_wt-4612_recB_recG	7.71E-09
4617_recO-4613_recB_ruvABC_recG	7.60E-10
4618_recO_ruvABC-4613_recB_ruvABC_recG	2.38E-10
4619_recO_recG-4613_recB_ruvABC_recG	2.28E-07
4620_recO_ruvABC_recG-4613_recB_ruvABC_recG	0.185035
4621_recB_recO-4613_recB_ruvABC_recG	1
4658_recB_recO_ruvABC-4613_recB_ruvABC_recG	0.999433
4659_recB_recO_recG-4613_recB_ruvABC_recG	0.728385
4660_recB_recO_ruvABC_recG-4613_recB_ruvABC_recG	1
TRM387_wt-4613_recB_ruvABC_recG	6.36E-10
4618_recO_ruvABC-4617_recO	1
4619_recO_recG-4617_recO	0.64714
4620_recO_ruvABC_recG-4617_recO	9.82E-13
4621_recB_recO-4617_recO	2.99E-10
4658_recB_recO_ruvABC-4617_recO	7.14E-11
4659_recB_recO_recG-4617_recO	6.38E-12
4660_recB_recO_ruvABC_recG-4617_recO	1.05E-09
TRM387_wt-4617_recO	1
4619_recO_recG-4618_recO_ruvABC	0.337233
4620_recO_ruvABC_recG-4618_recO_ruvABC	4.32E-13
4621_recB_recO-4618_recO_ruvABC	9.61E-11
4658_recB_recO_ruvABC-4618_recO_ruvABC	2.38E-11
4659_recB_recO_recG-4618_recO_ruvABC	2.35E-12
4660_recB_recO_ruvABC_recG-4618_recO_ruvABC	3.27E-10
TRM387_wt-4618_recO_ruvABC	1
4620_recO_ruvABC_recG-4619_recO_recG	1.10E-10
4621_recB_recO-4619_recO_recG	8.01E-08

4658_recB_recO_ruvABC-4619_recO_recG	1.60E-08
4659_recB_recO_recG-4619_recO_recG	1.03E-09
4660_recB_recO_ruvABC_recG-4619_recO_recG	3.27E-07
TRM387_wt-4619_recO_recG	0.597705
4621_recB_recO-4620_recO_ruvABC_recG	0.370016
4658_recB_recO_ruvABC-4620_recO_ruvABC_recG	0.765422
4659_recB_recO_recG-4620_recO_ruvABC_recG	0.999725
4660_recB_recO_ruvABC_recG-4620_recO_ruvABC_recG	0.141082
TRM387_wt-4620_recO_ruvABC_recG	8.60E-13
4658_recB_recO_ruvABC-4621_recB_recO	0.999999
4659_recB_recO_recG-4621_recB_recO	0.918862
4660_recB_recO_ruvABC_recG-4621_recB_recO	1
TRM387_wt-4621_recB_recO	2.51E-10
4659_recB_recO_recG-4658_recB_recO_ruvABC	0.998556
4660_recB_recO_ruvABC_recG-4658_recB_recO_ruvABC	0.99777
TRM387_wt-4658_recB_recO_ruvABC	6.03E-11
4660_recB_recO_ruvABC_recG-4659_recB_recO_recG	0.642063
TRM387_wt-4659_recB_recO_recG	5.46E-12
TRM387_wt-4660_recB_recO_ruvABC_recG	8.79E-10

**Table S4.** Statistical analysis of differences in the occurrence of filamentous, anucleate and regular cells in different strains after 60 min of I-SceI expression (Table 2). P-values (p.adj.Chisq) are for the pairwise chi-square tests and are adjusted for multiple testing through the Bonferroni method. NA, not available.

Comparison strain1-strain2	p.adj.Chisq
TRM387_wt-4199_ruvABC	3.50E-177
TRM387_wt-4201_recG	1.12E-65
TRM387_wt-4202_ruvABC_recG	8.03E-202
TRM387_wt-4198_recB	2.30E-49
TRM387_wt-4611_recB_ruvABC	1.97E-26
TRM387_wt-4612_recB_recG	2.00E-40
TRM387_wt-4613_recB_ruvABC_recG	6.06E-34
TRM387_wt-4617_recO	1
TRM387_wt-4618_recO_ruvABC	2.95E-127
TRM387_wt-4619_recO_recG	1.74E-29
TRM387_wt-4620_recO_ruvABC_recG	7.78E-119
TRM387_wt-4621_recB_recO	1.54E-33
TRM387_wt-4658_recB_recO_ruvABC	3.25E-27
TRM387_wt-4659_recB_recO_recG	2.55E-31
TRM387_wt-4660_recB_recO_ruvABC_recG	1.43E-35
4199_ruvABC-4201_recG	1.87E-41

4199_ruvABC-4202_ruvABC_recG	0.00377
4199_ruvABC-4198_recB	0
4199_ruvABC-4611_recB_ruvABC	4.75E-284
4199_ruvABC-4612_recB_recG	7.62E-307
4199_ruvABC-4613_recB_ruvABC_recG	1.76E-301
4199_ruvABC-4617_recO	2.52E-205
4199_ruvABC-4618_recO_ruvABC	1.63E-07
4199_ruvABC-4619_recO_recG	1.09E-71
4199_ruvABC-4620_recO_ruvABC_recG	1.06E-12
4199_ruvABC-4621_recB_recO	0
4199_ruvABC-4658_recB_recO_ruvABC	1.99E-311
4199_ruvABC-4659_recB_recO_recG	0
4199_ruvABC-4660_recB_recO_ruvABC_recG	0
4201_recG-4202_ruvABC_recG	1.03E-53
4201_recG-4198_recB	3.07E-200
4201_recG-4611_recB_ruvABC	1.99E-152
4201_recG-4612_recB_recG	2.38E-175
4201_recG-4613_recB_ruvABC_recG	7.72E-168
4201_recG-4617_recO	9.40E-81
4201_recG-4618_recO_ruvABC	2.85E-23
4201_recG-4619_recO_recG	7.04E-07
4201_recG-4620_recO_ruvABC_recG	5.71E-10
4201_recG-4621_recB_recO	1.08E-182
4201_recG-4658_recB_recO_ruvABC	2.47E-165
4201_recG-4659_recB_recO_recG	9.25E-177
4201_recG-4660_recB_recO_ruvABC_recG	2.55E-199
4202_ruvABC_recG-4198_recB	0
4202_ruvABC_recG-4611_recB_ruvABC	7.16E-313
4202_ruvABC_recG-4612_recB_recG	0
4202_ruvABC_recG-4613_recB_ruvABC_recG	0
4202_ruvABC_recG-4617_recO	4.77E-230
4202_ruvABC_recG-4618_recO_ruvABC	1.37E-22
4202_ruvABC_recG-4619_recO_recG	1.01E-90
4202_ruvABC_recG-4620_recO_ruvABC_recG	5.94E-17
4202_ruvABC_recG-4621_recB_recO	0
4202_ruvABC_recG-4658_recB_recO_ruvABC	0
4202_ruvABC_recG-4659_recB_recO_recG	0
4202_ruvABC_recG-4660_recB_recO_ruvABC_recG	0
4198_recB-4611_recB_ruvABC	1.36E-05
4198_recB-4612_recB_recG	NA
4198_recB-4613_recB_ruvABC_recG	NA
4198_recB-4617_recO	1.00E-45
4198_recB-4618_recO_ruvABC	8.39E-274

4198_recB-4619_recO_recG	3.44E-137
4198_recB-4620_recO_ruvABC_recG	2.40E-273
4198_recB-4621_recB_recO	1.02E-07
4198_recB-4658_recB_recO_ruvABC	9.27E-12
4198_recB-4659_recB_recO_recG	4.25E-14
4198_recB-4660_recB_recO_ruvABC_recG	3.18E-14
4611_recB_ruvABC-4612_recB_recG	0.00367
4611_recB_ruvABC-4613_recB_ruvABC_recG	1
4611_recB_ruvABC-4617_recO	2.63E-23
4611_recB_ruvABC-4618_recO_ruvABC	1.92E-223
4611_recB_ruvABC-4619_recO_recG	1.44E-98
4611_recB_ruvABC-4620_recO_ruvABC_recG	4.41E-219
4611_recB_ruvABC-4621_recB_recO	1
4611_recB_ruvABC-4658_recB_recO_ruvABC	1
4611_recB_ruvABC-4659_recB_recO_recG	0.456
4611_recB_ruvABC-4660_recB_recO_ruvABC_recG	1
4612_recB_recG-4613_recB_ruvABC_recG	NA
4612_recB_recG-4617_recO	3.45E-37
4612_recB_recG-4618_recO_ruvABC	6.98E-244
4612_recB_recG-4619_recO_recG	3.58E-118
4612_recB_recG-4620_recO_ruvABC_recG	2.05E-243
4612_recB_recG-4621_recB_recO	0.000105
4612_recB_recG-4658_recB_recO_ruvABC	5.41E-08
4612_recB_recG-4659_recB_recO_recG	7.52E-10
4612_recB_recG-4660_recB_recO_ruvABC_recG	6.18E-10
4613_recB_ruvABC_recG-4617_recO	1.22E-30
4613_recB_ruvABC_recG-4618_recO_ruvABC	5.49E-239
4613_recB_ruvABC_recG-4619_recO_recG	5.21E-111
4613_recB_ruvABC_recG-4620_recO_ruvABC_recG	2.26E-236
4613_recB_ruvABC_recG-4621_recB_recO	1
4613_recB_ruvABC_recG-4658_recB_recO_ruvABC	0.0073
4613_recB_ruvABC_recG-4659_recB_recO_recG	0.000508
4613_recB_ruvABC_recG-4660_recB_recO_ruvABC_recG	0.000397
4617_recO-4618_recO_ruvABC	6.54E-152
4617_recO-4619_recO_recG	1.17E-38
4617_recO-4620_recO_ruvABC_recG	6.74E-140
4617_recO-4621_recB_recO	1.64E-29
4617_recO-4658_recB_recO_ruvABC	1.66E-23
4617_recO-4659_recB_recO_recG	4.32E-27
4617_recO-4660_recB_recO_ruvABC_recG	8.54E-31
4618_recO_ruvABC-4619_recO_recG	5.86E-40
4618_recO_ruvABC-4620_recO_ruvABC_recG	5.91E-13
4618_recO_ruvABC-4621_recB_recO	9.44E-268

4618_recO_ruvABC-4658_recB_recO_ruvABC	7.61E-249
4618_recO_ruvABC-4659_recB_recO_recG	3.99E-268
4618_recO_ruvABC-4660_recB_recO_ruvABC_recG	1.16E-301
4619_recO_recG-4620_recO_ruvABC_recG	4.07E-34
4619_recO_recG-4621_recB_recO	1.65E-120
4619_recO_recG-4658_recB_recO_ruvABC	2.48E-107
4619_recO_recG-4659_recB_recO_recG	1.61E-116
4619_recO_recG-4660_recB_recO_ruvABC_recG	1.04E-132
4620_recO_ruvABC_recG-4621_recB_recO	2.54E-258
4620_recO_ruvABC_recG-4658_recB_recO_ruvABC	6.59E-238
4620_recO_ruvABC_recG-4659_recB_recO_recG	5.62E-253
4620_recO_ruvABC_recG-4660_recB_recO_ruvABC_recG	2.06E-282
4621_recB_recO-4658_recB_recO_ruvABC	1
4621_recB_recO-4659_recB_recO_recG	1
4621_recB_recO-4660_recB_recO_ruvABC_recG	1
4658_recB_recO_ruvABC-4659_recB_recO_recG	1
4658_recB_recO_ruvABC-4660_recB_recO_ruvABC_recG	1
4659_recB_recO_recG-4660_recB_recO_ruvABC_recG	1

**Table S5.** *E. coli* strains divided into groups (Tukey HSD test,  $\alpha=0.05$ ) based on the data analysed on  $\gamma$ -survival at 200 Gy (see also Figure 4). Groups labeled with identical letters don't differ significantly in mean log survival rates. The group labels are ordered by the decreasing survival rates.

Strain/genotype	Group
2629_wt	a
3188_ruvABC	ab
3196_recG	ab
3545_recO	bc
3600_recO_ruvABC	cd
3601_recO_recG	d
3183_recB	e
3625_recB_ruvABC	e
3682_recB_recG	f
4134_recB_ruvABC_recG	f
3599_recB_recO	g
3602_recB_recO_ruvABC	g
3605_recB_recO_ruvABC_recG	g
3604_recO_ruvABC_recG	g
3603_recB_recO_recG	gh
3610_ruvABC_recG	h

**Table S6.** Statistical analysis of differences in survival after 200 Gy of  $\gamma$ -irradiation (see also Figure 4) presented as pairwise p-values (p adj) from the Tukey HSD test, which controls for multiple testing.

Comparison strain1-strain2	p adj
3183_recB-2629_wt	1,1001E-12
3196_recG-2629_wt	0,32165629
3545_recO-2629_wt	0,00041617
3599_recB_recO-2629_wt	1,1001E-12
3600_recO_ruvABC-2629_wt	5,0985E-08
3601_recO_recG-2629_wt	2,4518E-12
3602_recB_recO_ruvABC-2629_wt	1,1001E-12
3603_recB_recO_recG-2629_wt	1,1001E-12
3604_recO_ruvABC_recG-2629_wt	1,1001E-12
3605_recB_recO_ruvABC_recG-2629_wt	1,1001E-12
3610_ruvABC_recG-2629_wt	1,1001E-12
3625_recB_ruvABC-2629_wt	1,1001E-12
3682_recB_recG-2629_wt	1,1001E-12
4134_recB_ruvABC_recG-2629_wt	1,1001E-12
3188_ruvABC-3183_recB	1,1001E-12
3196_recG-3183_recB	1,1001E-12
3545_recO-3183_recB	1,1001E-12
3599_recB_recO-3183_recB	1,4956E-11
3600_recO_ruvABC-3183_recB	1,1002E-12
3601_recO_recG-3183_recB	1,1263E-12
3602_recB_recO_ruvABC-3183_recB	8,4797E-12
3603_recB_recO_recG-3183_recB	1,103E-12
3604_recO_ruvABC_recG-3183_recB	1,2135E-12
3605_recB_recO_ruvABC_recG-3183_recB	1,5792E-12
3610_ruvABC_recG-3183_recB	1,1001E-12
3625_recB_ruvABC-3183_recB	1
3682_recB_recG-3183_recB	0,00119292
4134_recB_ruvABC_recG-3183_recB	3,5438E-06
3196_recG-3188_ruvABC	1
3545_recO-3188_ruvABC	0,49711558
3599_recB_recO-3188_ruvABC	1,1001E-12
3600_recO_ruvABC-3188_ruvABC	0,00114002
3601_recO_recG-3188_ruvABC	4,5958E-08
3602_recB_recO_ruvABC-3188_ruvABC	1,1001E-12
3603_recB_recO_recG-3188_ruvABC	1,1001E-12
3604_recO_ruvABC_recG-3188_ruvABC	1,1001E-12
3605_recB_recO_ruvABC_recG-3188_ruvABC	1,1001E-12
3610_ruvABC_recG-3188_ruvABC	1,1001E-12
3625_recB_ruvABC-3188_ruvABC	1,1001E-12
3682_recB_recG-3188_ruvABC	1,1001E-12
4134_recB_ruvABC_recG-3188_ruvABC	1,1001E-12
3545_recO-3196_recG	0,67156974
3599_recB_recO-3196_recG	1,1001E-12
3600_recO_ruvABC-3196_recG	0,00252715
3601_recO_recG-3196_recG	1,0619E-07
3602_recB_recO_ruvABC-3196_recG	1,1001E-12



3603_recB_recO_recG-3196_recG	1,1001E-12
3604_recO_ruvABC_recG-3196_recG	1,1001E-12
3605_recB_recO_ruvABC_recG-3196_recG	1,1001E-12
3610_ruvABC_recG-3196_recG	1,1001E-12
3625_recB_ruvABC-3196_recG	1,1001E-12
3682_recB_recG-3196_recG	1,1001E-12
4134_recB_ruvABC_recG-3196_recG	1,1001E-12
3599_recB_recO-3545_recO	1,1001E-12
3600_recO_ruvABC-3545_recO	0,51701111
3601_recO_recG-3545_recO	0,00016229
3602_recB_recO_ruvABC-3545_recO	1,1001E-12
3603_recB_recO_recG-3545_recO	1,1001E-12
3604_recO_ruvABC_recG-3545_recO	1,1001E-12
3605_recB_recO_ruvABC_recG-3545_recO	1,1001E-12
3610_ruvABC_recG-3545_recO	1,1001E-12
3625_recB_ruvABC-3545_recO	1,1001E-12
3682_recB_recG-3545_recO	1,1001E-12
4134_recB_ruvABC_recG-3545_recO	1,1001E-12
3600_recO_ruvABC-3599_recB_recO	1,1001E-12
3601_recO_recG-3599_recB_recO	1,1001E-12
3602_recB_recO_ruvABC-3599_recB_recO	1
3603_recB_recO_recG-3599_recB_recO	0,10921846
3604_recO_ruvABC_recG-3599_recB_recO	0,96116862
3605_recB_recO_ruvABC_recG-3599_recB_recO	0,99915218
3610_ruvABC_recG-3599_recB_recO	3,2468E-05
3625_recB_ruvABC-3599_recB_recO	1,3055E-09
3682_recB_recG-3599_recB_recO	0,00065138
4134_recB_ruvABC_recG-3599_recB_recO	6,4711E-05
3601_recO_recG-3600_recO_ruvABC	0,17238577
3602_recB_recO_ruvABC-3600_recO_ruvABC	1,1001E-12
3603_recB_recO_recG-3600_recO_ruvABC	1,1001E-12
3604_recO_ruvABC_recG-3600_recO_ruvABC	1,1001E-12
3605_recB_recO_ruvABC_recG-3600_recO_ruvABC	1,1001E-12
3610_ruvABC_recG-3600_recO_ruvABC	1,1001E-12
3625_recB_ruvABC-3600_recO_ruvABC	1,1008E-12
3682_recB_recG-3600_recO_ruvABC	1,1001E-12
4134_recB_ruvABC_recG-3600_recO_ruvABC	1,1001E-12
3602_recB_recO_ruvABC-3601_recO_recG	1,1001E-12
3603_recB_recO_recG-3601_recO_recG	1,1001E-12
3604_recO_ruvABC_recG-3601_recO_recG	1,1001E-12
3605_recB_recO_ruvABC_recG-3601_recO_recG	1,1001E-12
3610_ruvABC_recG-3601_recO_recG	1,1001E-12
3625_recB_ruvABC-3601_recO_recG	1,3546E-12
3682_recB_recG-3601_recO_recG	1,1005E-12
4134_recB_ruvABC_recG-3601_recO_recG	1,1001E-12
3603_recB_recO_recG-3602_recB_recO_ruvABC	0,16689445
3604_recO_ruvABC_recG-3602_recB_recO_ruvABC	0,9874719
3605_recB_recO_ruvABC_recG-3602_recB_recO_ruvABC	0,99991888
3610_ruvABC_recG-3602_recB_recO_ruvABC	6,6079E-05
3625_recB_ruvABC-3602_recB_recO_ruvABC	7,1406E-10

3682_recB_recG-3602_recB_recO_ruvABC	0,00035136
4134_recB_ruvABC_recG-3602_recB_recO_ruvABC	3,0058E-05
3604_recO_ruvABC_recG-3603_recB_recO_recG	0,93043756
3605_recB_recO_ruvABC_recG-3603_recB_recO_recG	0,67093631
3610_ruvABC_recG-3603_recB_recO_recG	0,59003804
3625_recB_ruvABC-3603_recB_recO_recG	1,2055E-12
3682_recB_recG-3603_recB_recO_recG	1,3191E-08
4134_recB_ruvABC_recG-3603_recB_recO_recG	1,6719E-10
3605_recB_recO_ruvABC_recG-3604_recO_ruvABC_recG	0,99999994
3610_ruvABC_recG-3604_recO_ruvABC_recG	0,00877785
3625_recB_ruvABC-3604_recO_ruvABC_recG	1,1628E-11
3682_recB_recG-3604_recO_ruvABC_recG	3,6069E-06
4134_recB_ruvABC_recG-3604_recO_ruvABC_recG	1,1636E-07
3610_ruvABC_recG-3605_recB_recO_ruvABC_recG	0,00155884
3625_recB_ruvABC-3605_recB_recO_ruvABC_recG	4,9202E-11
3682_recB_recG-3605_recB_recO_ruvABC_recG	1,9731E-05
4134_recB_ruvABC_recG-3605_recB_recO_ruvABC_recG	8,9137E-07
3625_recB_ruvABC-3610_ruvABC_recG	1,1005E-12
3682_recB_recG-3610_ruvABC_recG	1,7021E-12
4134_recB_ruvABC_recG-3610_ruvABC_recG	1,1026E-12
3682_recB_recG-3625_recB_ruvABC	0,01694308
4134_recB_ruvABC_recG-3625_recB_ruvABC	0,00049422
4134_recB_ruvABC_recG-3682_recB_recG	1

**Table S7.** Statistical analysis of differences in the occurrence of filamentous, anucleate and regular cells in different strains after UV-dose of 5 J/m<sup>2</sup> (Table 3). P-values (p.adj.Chisq) are for the pairwise chi-square tests and are adjusted for multiple testing through the Bonferroni method.

Comparison strain1:strain2	p.adj.Chisq
2629_wt : 3188_ruvABC	0
2629_wt : 3196_recG	9,86E-136
2629_wt : 3610_ruvABC_recG	0
2629_wt : 3182_recB	2,84E-14
2629_wt : 3625_recB_ruvABC	1,38E-206
2629_wt : 3626_recB_recG	7,12E-16
2629_wt : 4134_recB_ruvABC_recG	1,86E-65
2629_wt : 3545_recO	8,16E-304
2629_wt : 3600_recO_ruvABC	0
2629_wt : 3601_recO_recG	0
2629_wt : 3604_recO_ruvABC_recG	0
2629_wt : 3599_recB_recO	3,88E-45
2629_wt : 3602_recB_recO_ruvABC	1,39E-44
2629_wt : 3603_recB_recO_recG	1,54E-35
2629_wt : 3605_recB_recO_ruvABC_recG	7,8E-33
3188_ruvABC : 3196_recG	4,21E-194
3188_ruvABC : 3610_ruvABC_recG	4,9E-15
3188_ruvABC : 3182_recB	0
3188_ruvABC : 3625_recB_ruvABC	1,51E-83
3188_ruvABC : 3626_recB_recG	0

3188_ruvABC : 4134_recB_ruvABC_recG	0
3188_ruvABC : 3545_recO	1,96E-163
3188_ruvABC : 3600_recO_ruvABC	1,17E-86
3188_ruvABC : 3601_recO_recG	7,34E-146
3188_ruvABC : 3604_recO_ruvABC_recG	1,79E-20
3188_ruvABC : 3599_recB_recO	3.07000000023002e-314
3188_ruvABC : 3602_recB_recO_ruvABC	0
3188_ruvABC : 3603_recB_recO_recG	0
3188_ruvABC : 3605_recB_recO_ruvABC_recG	0
3196_recG : 3610_ruvABC_recG	1,94E-232
3196_recG : 3182_recB	1,16E-182
3196_recG : 3625_recB_ruvABC	1,3E-32
3196_recG : 3626_recB_recG	2,7E-114
3196_recG : 4134_recB_ruvABC_recG	1,57E-34
3196_recG : 3545_recO	2,48E-59
3196_recG : 3600_recO_ruvABC	4,58E-104
3196_recG : 3601_recO_recG	2,62E-86
3196_recG : 3604_recO_ruvABC_recG	1,43E-115
3196_recG : 3599_recB_recO	2,9E-51
3196_recG : 3602_recB_recO_ruvABC	6,53E-55
3196_recG : 3603_recB_recO_recG	1,08E-78
3196_recG : 3605_recB_recO_ruvABC_recG	7,32E-98
3610_ruvABC_recG : 3182_recB	0
3610_ruvABC_recG : 3625_recB_ruvABC	4,58E-127
3610_ruvABC_recG : 3626_recB_recG	0
3610_ruvABC_recG : 4134_recB_ruvABC_recG	0
3610_ruvABC_recG : 3545_recO	3,4E-140
3610_ruvABC_recG : 3600_recO_ruvABC	5,87E-56
3610_ruvABC_recG : 3601_recO_recG	4,25E-113
3610_ruvABC_recG : 3604_recO_ruvABC_recG	7,04E-10
3610_ruvABC_recG : 3599_recB_recO	0
3610_ruvABC_recG : 3602_recB_recO_ruvABC	0
3610_ruvABC_recG : 3603_recB_recO_recG	0
3610_ruvABC_recG : 3605_recB_recO_ruvABC_recG	0
3182_recB : 3625_recB_ruvABC	3.19000000963269e-316
3182_recB : 3626_recB_recG	1
3182_recB : 4134_recB_ruvABC_recG	3,05E-95
3182_recB : 3545_recO	0
3182_recB : 3600_recO_ruvABC	0
3182_recB : 3601_recO_recG	0
3182_recB : 3604_recO_ruvABC_recG	0
3182_recB : 3599_recB_recO	8,69E-25
3182_recB : 3602_recB_recO_ruvABC	5,5E-30
3182_recB : 3603_recB_recO_recG	1,2E-16
3182_recB : 3605_recB_recO_ruvABC_recG	2,62E-13
3625_recB_ruvABC : 3626_recB_recG	4,46E-206
3625_recB_ruvABC : 4134_recB_ruvABC_recG	2,39E-93
3625_recB_ruvABC : 3545_recO	1,94E-74
3625_recB_ruvABC : 3600_recO_ruvABC	8,82E-78
3625_recB_ruvABC : 3601_recO_recG	4,98E-95

3625_recB_ruvABC : 3604_recO_ruvABC_recG	2,5E-53
3625_recB_ruvABC : 3599_recB_recO	1,31E-120
3625_recB_ruvABC : 3602_recB_recO_ruvABC	6,49E-134
3625_recB_ruvABC : 3603_recB_recO_recG	5,2E-170
3625_recB_ruvABC : 3605_recB_recO_ruvABC_recG	7,46E-204
3626_recB_recG : 4134_recB_ruvABC_recG	2,54E-56
3626_recB_recG : 3545_recO	1,5E-278
3626_recB_recG : 3600_recO_ruvABC	0
3626_recB_recG : 3601_recO_recG	9.47999999999849e-312
3626_recB_recG : 3604_recO_ruvABC_recG	0
3626_recB_recG : 3599_recB_recO	2,3E-12
3626_recB_recG : 3602_recB_recO_ruvABC	4,25E-15
3626_recB_recG : 3603_recB_recO_recG	9,94E-07
3626_recB_recG : 3605_recB_recO_ruvABC_recG	0,000136
4134_recB_ruvABC_recG : 3545_recO	1,24E-209
4134_recB_ruvABC_recG : 3600_recO_ruvABC	1,01E-269
4134_recB_ruvABC_recG : 3601_recO_recG	2,56E-248
4134_recB_ruvABC_recG : 3604_recO_ruvABC_recG	1,03E-251
4134_recB_ruvABC_recG : 3599_recB_recO	4,5E-40
4134_recB_ruvABC_recG : 3602_recB_recO_ruvABC	1,16E-40
4134_recB_ruvABC_recG : 3603_recB_recO_recG	1,46E-49
4134_recB_ruvABC_recG : 3605_recB_recO_ruvABC_recG	2,42E-59
3545_recO : 3600_recO_ruvABC	6,65E-19
3545_recO : 3601_recO_recG	0,00211
3545_recO : 3604_recO_ruvABC_recG	2,53E-65
3545_recO : 3599_recB_recO	5,35E-147
3545_recO : 3602_recB_recO_ruvABC	2,11E-160
3545_recO : 3603_recB_recO_recG	1,33E-206
3545_recO : 3605_recB_recO_ruvABC_recG	5,95E-243
3600_recO_ruvABC : 3601_recO_recG	3,91E-10
3600_recO_ruvABC : 3604_recO_ruvABC_recG	2,1E-19
3600_recO_ruvABC : 3599_recB_recO	1,08E-218
3600_recO_ruvABC : 3602_recB_recO_ruvABC	2,72E-236
3600_recO_ruvABC : 3603_recB_recO_recG	6,74E-289
3600_recO_ruvABC : 3605_recB_recO_ruvABC_recG	0
3601_recO_recG : 3604_recO_ruvABC_recG	2,4E-55
3601_recO_recG : 3599_recB_recO	4,34E-175
3601_recO_recG : 3602_recB_recO_ruvABC	4,2E-189
3601_recO_recG : 3603_recB_recO_recG	4,39E-237
3601_recO_recG : 3605_recB_recO_ruvABC_recG	6,07E-275
3604_recO_ruvABC_recG : 3599_recB_recO	4,94E-235
3604_recO_ruvABC_recG : 3602_recB_recO_ruvABC	2,78E-255
3604_recO_ruvABC_recG : 3603_recB_recO_recG	1,16E-307
3604_recO_ruvABC_recG : 3605_recB_recO_ruvABC_recG	0
3599_recB_recO : 3602_recB_recO_ruvABC	1
3599_recB_recO : 3603_recB_recO_recG	1
3599_recB_recO : 3605_recB_recO_ruvABC_recG	0,403
3602_recB_recO_ruvABC : 3603_recB_recO_recG	0,569
3602_recB_recO_ruvABC : 3605_recB_recO_ruvABC_recG	0,00454
3603_recB_recO_recG : 3605_recB_recO_ruvABC_recG	1

**Table S8.** Statistical analysis of differences in the occurrence of filamentous, anucleate and regular cells in different strains after  $\gamma$ -dose of 100 Gy (Table 3). P-values (p.adj.Chisq) are for the pairwise chi-square tests and are adjusted for multiple testing through the Bonferroni method.

<b>Comparison strain1:strain2</b>	<b>p.adj.Chisq</b>
2629_wt : 3188_ruvABC	1,63E-252
2629_wt : 3196_recG	5,41E-44
2629_wt : 3610_ruvABC_recG	0
2629_wt : 3182_recB	0,00000092
2629_wt : 3625_recB_ruvABC	1,86E-29
2629_wt : 3626_recB_recG	7,42E-07
2629_wt : 4134_recB_ruvABC_recG	0,0000844
2629_wt : 3545_recO	5,99E-15
2629_wt : 3600_recO_ruvABC	6,91E-280
2629_wt : 3601_recO_recG	3,18E-56
2629_wt : 3604_recO_ruvABC_recG	5,73E-285
2629_wt : 3599_recB_recO	1,25E-19
2629_wt : 3602_recB_recO_ruvABC	9,91E-20
2629_wt : 3603_recB_recO_recG	2,88E-21
2629_wt : 3605_recB_recO_ruvABC_recG	1,8E-19
3188_ruvABC : 3196_recG	1,72E-162
3188_ruvABC : 3610_ruvABC_recG	1,87E-54
3188_ruvABC : 3182_recB	7,8E-292
3188_ruvABC : 3625_recB_ruvABC	7,14E-127
3188_ruvABC : 3626_recB_recG	0
3188_ruvABC : 4134_recB_ruvABC_recG	3,38E-259
3188_ruvABC : 3545_recO	5,63E-168
3188_ruvABC : 3600_recO_ruvABC	0,376
3188_ruvABC : 3601_recO_recG	6,52E-100
3188_ruvABC : 3604_recO_ruvABC_recG	2,25E-14
3188_ruvABC : 3599_recB_recO	6,27E-205
3188_ruvABC : 3602_recB_recO_ruvABC	1,6E-239
3188_ruvABC : 3603_recB_recO_recG	1,37E-230
3188_ruvABC : 3605_recB_recO_ruvABC_recG	5,83E-300
3196_recG : 3610_ruvABC_recG	1,58E-250
3196_recG : 3182_recB	1,54E-65
3196_recG : 3625_recB_ruvABC	9,28E-15
3196_recG : 3626_recB_recG	3,17E-78
3196_recG : 4134_recB_ruvABC_recG	3,26E-37
3196_recG : 3545_recO	4,22E-25
3196_recG : 3600_recO_ruvABC	9,99E-180
3196_recG : 3601_recO_recG	1,63E-15
3196_recG : 3604_recO_ruvABC_recG	1,72E-161
3196_recG : 3599_recB_recO	5,09E-14
3196_recG : 3602_recB_recO_ruvABC	2,38E-19
3196_recG : 3603_recB_recO_recG	3,62E-17
3196_recG : 3605_recB_recO_ruvABC_recG	1,79E-25
3610_ruvABC_recG : 3182_recB	0
3610_ruvABC_recG : 3625_recB_ruvABC	1,47E-239
3610_ruvABC_recG : 3626_recB_recG	0

3610_ruvABC_recG : 4134_recB_ruvABC_recG	0
3610_ruvABC_recG : 3545_recO	5,96E-297
3610_ruvABC_recG : 3600_recO_ruvABC	1,31E-35
3610_ruvABC_recG : 3601_recO_recG	1,54E-195
3610_ruvABC_recG : 3604_recO_ruvABC_recG	2,13E-19
3610_ruvABC_recG : 3599_recB_recO	1.2400010172759e-318
3610_ruvABC_recG : 3602_recB_recO_ruvABC	0
3610_ruvABC_recG : 3603_recB_recO_recG	0
3610_ruvABC_recG : 3605_recB_recO_ruvABC_recG	0
3182_recB : 3625_recB_ruvABC	1,42E-54
3182_recB : 3626_recB_recG	1
3182_recB : 4134_recB_ruvABC_recG	0,000301
3182_recB : 3545_recO	6,83E-36
3182_recB : 3600_recO_ruvABC	1.20996676666521e-320
3182_recB : 3601_recO_recG	8,85E-86
3182_recB : 3604_recO_ruvABC_recG	0
3182_recB : 3599_recB_recO	1,04E-21
3182_recB : 3602_recB_recO_ruvABC	NA
3182_recB : 3603_recB_recO_recG	NA
3182_recB : 3605_recB_recO_ruvABC_recG	1,63E-18
3625_recB_ruvABC : 3626_recB_recG	2,64E-64
3625_recB_ruvABC : 4134_recB_ruvABC_recG	8,89E-36
3625_recB_ruvABC : 3545_recO	0,0365
3625_recB_ruvABC : 3600_recO_ruvABC	2,5E-147
3625_recB_ruvABC : 3601_recO_recG	0,00701
3625_recB_ruvABC : 3604_recO_ruvABC_recG	1,98E-144
3625_recB_ruvABC : 3599_recB_recO	3,52E-25
3625_recB_ruvABC : 3602_recB_recO_ruvABC	1,45E-31
3625_recB_ruvABC : 3603_recB_recO_recG	3,71E-30
3625_recB_ruvABC : 3605_recB_recO_ruvABC_recG	3,16E-41
3626_recB_recG : 4134_recB_ruvABC_recG	0,00000364
3626_recB_recG : 3545_recO	3,66E-42
3626_recB_recG : 3600_recO_ruvABC	0
3626_recB_recG : 3601_recO_recG	7,79E-101
3626_recB_recG : 3604_recO_ruvABC_recG	0
3626_recB_recG : 3599_recB_recO	4,26E-29
3626_recB_recG : 3602_recB_recO_ruvABC	1,72E-27
3626_recB_recG : 3603_recB_recO_recG	4,63E-30
3626_recB_recG : 3605_recB_recO_ruvABC_recG	1,5E-25
4134_recB_ruvABC_recG : 3545_recO	9,09E-24
4134_recB_ruvABC_recG : 3600_recO_ruvABC	1,19E-285
4134_recB_ruvABC_recG : 3601_recO_recG	5,91E-60
4134_recB_ruvABC_recG : 3604_recO_ruvABC_recG	1,52E-285
4134_recB_ruvABC_recG : 3599_recB_recO	9,45E-07
4134_recB_ruvABC_recG : 3602_recB_recO_ruvABC	0,00000454
4134_recB_ruvABC_recG : 3603_recB_recO_recG	2,47E-07
4134_recB_ruvABC_recG : 3605_recB_recO_ruvABC_recG	0,000199
3545_recO : 3600_recO_ruvABC	1,17E-191
3545_recO : 3601_recO_recG	1,21E-14
3545_recO : 3604_recO_ruvABC_recG	2,59E-192

3545_recO : 3599_recB_recO	1,64E-23
3545_recO : 3602_recB_recO_ruvABC	8,25E-28
3545_recO : 3603_recB_recO_recG	1,51E-27
3545_recO : 3605_recB_recO_ruvABC_recG	1,46E-34
3600_recO_ruvABC : 3601_recO_recG	3,58E-117
3600_recO_ruvABC : 3604_recO_ruvABC_recG	2,14E-07
3600_recO_ruvABC : 3599_recB_recO	6,87E-227
3600_recO_ruvABC : 3602_recB_recO_ruvABC	4,73E-263
3600_recO_ruvABC : 3603_recB_recO_recG	1,59E-253
3600_recO_ruvABC : 3605_recB_recO_ruvABC_recG	0
3601_recO_recG : 3604_recO_ruvABC_recG	7,11E-109
3601_recO_recG : 3599_recB_recO	2,28E-37
3601_recO_recG : 3602_recB_recO_ruvABC	4,79E-47
3601_recO_recG : 3603_recB_recO_recG	3,09E-44
3601_recO_recG : 3605_recB_recO_ruvABC_recG	5,67E-62
3604_recO_ruvABC_recG : 3599_recB_recO	6,2E-219
3604_recO_ruvABC_recG : 3602_recB_recO_ruvABC	1,77E-252
3604_recO_ruvABC_recG : 3603_recB_recO_recG	9,95E-243
3604_recO_ruvABC_recG : 3605_recB_recO_ruvABC_recG	2.09e-309
3599_recB_recO : 3602_recB_recO_ruvABC	1
3599_recB_recO : 3603_recB_recO_recG	1
3599_recB_recO : 3605_recB_recO_ruvABC_recG	1
3602_recB_recO_ruvABC : 3603_recB_recO_recG	NA
3602_recB_recO_ruvABC : 3605_recB_recO_ruvABC_recG	1
3603_recB_recO_recG : 3605_recB_recO_ruvABC_recG	1

**Table S9.** *E. coli* strains divided into groups (Tukey HSD test,  $\alpha=0.05$ ) based on the data on UV-survival at 50 J/m<sup>2</sup> (see also Figure 9). Groups labeled with identical letters don't differ significantly in mean log survival rates. The group labels are ordered by the decreasing survival rates

Strain/genotype	Group
2629_wt	a
3196_recG	b
3545_recO	bc
3625_recB_ruvABC	bcd
3188_ruvABC	bcd
3601_recO_recG	cd
3183_recB	de
3600_recO_ruvABC	e
3626_recB_recG	f
4134_recB_ruvABC_recG	g
3602_recB_recO_ruvABC	g
3599_recB_recO	g
3605_recB_recO_ruvABC_recG	g
3603_recB_recO_recG	gh
3610_ruvABC_recG	hi
3604_recO_ruvABC_recG	i

**Table S10.** Statistical analysis of differences in survival after 50 J/m<sup>2</sup> of UV (see also Figure 9) presented as pairwise p-values (p adj) from the Tukey HSD test, which controls for multiple testing.

<b>Comparison strain1-strain2</b>	<b>p adj</b>
3183_recB-2629_wt	1,8079E-12
3188_ruvABC-2629_wt	2,0665E-08
3196_recG-2629_wt	5,4367E-06
3545_recO-2629_wt	4,4094E-07
3599__recB_recO-2629_wt	0
3600_recO_ruvABC-2629_wt	0
3601_recO_recG-2629_wt	9,0727E-11
3602_recB_recO_ruvABC-2629_wt	0
3603_recB_recO_recG-2629_wt	0
3604_recO_ruvABC_recG-2629_wt	0
3605_recB_recO_ruvABC_recG-2629_wt	0
3610_ruvABC_recG-2629_wt	0
3625_recB_ruvABC-2629_wt	4,3616E-10
3626_recB_recG-2629_wt	0
4134_recB_ruvABC_recG-2629_wt	0
3188_ruvABC-3183_recB	0,69726016
3196_recG-3183_recB	0,00027346
3545_recO-3183_recB	0,03584529
3599__recB_recO-3183_recB	0
3600_recO_ruvABC-3183_recB	0,24161365
3601_recO_recG-3183_recB	0,99995333
3602_recB_recO_ruvABC-3183_recB	7,415E-12
3603_recB_recO_recG-3183_recB	0
3604_recO_ruvABC_recG-3183_recB	0
3605_recB_recO_ruvABC_recG-3183_recB	0
3610_ruvABC_recG-3183_recB	0
3625_recB_ruvABC-3183_recB	0,33564124
3626_recB_recG-3183_recB	1,6997E-06
4134_recB_ruvABC_recG-3183_recB	1,1737E-10
3196_recG-3188_ruvABC	0,30219522
3545_recO-3188_ruvABC	0,98777929
3599__recB_recO-3188_ruvABC	0
3600_recO_ruvABC-3188_ruvABC	0,00034155
3601_recO_recG-3188_ruvABC	0,99171242
3602_recB_recO_ruvABC-3188_ruvABC	0
3603_recB_recO_recG-3188_ruvABC	0
3604_recO_ruvABC_recG-3188_ruvABC	0
3605_recB_recO_ruvABC_recG-3188_ruvABC	0
3610_ruvABC_recG-3188_ruvABC	0
3625_recB_ruvABC-3188_ruvABC	1
3626_recB_recG-3188_ruvABC	4,0045E-10
4134_recB_ruvABC_recG-3188_ruvABC	0
3545_recO-3196_recG	0,98638171
3599__recB_recO-3196_recG	0
3600_recO_ruvABC-3196_recG	3,6165E-10
3601_recO_recG-3196_recG	0,00625197



3602_recB_recO_ruvABC-3196_recG	0
3603_recB_recO_recG-3196_recG	0
3604_recO_ruvABC_recG-3196_recG	0
3605_recB_recO_ruvABC_recG-3196_recG	0
3610_ruvABC_recG-3196_recG	0
3625_recB_ruvABC-3196_recG	0,24265865
3626_recB_recG-3196_recG	0
4134_recB_ruvABC_recG-3196_recG	0
3599__recB_recO-3545_recO	0
3600_recO_ruvABC-3545_recO	4,5736E-07
3601_recO_recG-3545_recO	0,28538958
3602_recB_recO_ruvABC-3545_recO	0
3603_recB_recO_recG-3545_recO	0
3604_recO_ruvABC_recG-3545_recO	0
3605_recB_recO_ruvABC_recG-3545_recO	0
3610_ruvABC_recG-3545_recO	0
3625_recB_ruvABC-3545_recO	0,99504396
3626_recB_recG-3545_recO	0
4134_recB_ruvABC_recG-3545_recO	0
3600_recO_ruvABC-3599__recB_recO	1,9866E-10
3601_recO_recG-3599__recB_recO	0
3602_recB_recO_ruvABC-3599__recB_recO	0,99045409
3603_recB_recO_recG-3599__recB_recO	0,89271856
3604_recO_ruvABC_recG-3599__recB_recO	7,0965E-05
3605_recB_recO_ruvABC_recG-3599__recB_recO	0,99871845
3610_ruvABC_recG-3599__recB_recO	0,00284946
3625_recB_ruvABC-3599__recB_recO	0
3626_recB_recG-3599__recB_recO	4,0627E-05
4134_recB_ruvABC_recG-3599__recB_recO	0,98806236
3601_recO_recG-3600_recO_ruvABC	0,02818402
3602_recB_recO_ruvABC-3600_recO_ruvABC	1,9294E-08
3603_recB_recO_recG-3600_recO_ruvABC	3,6675E-12
3604_recO_ruvABC_recG-3600_recO_ruvABC	0
3605_recB_recO_ruvABC_recG-3600_recO_ruvABC	4,9474E-11
3610_ruvABC_recG-3600_recO_ruvABC	0
3625_recB_ruvABC-3600_recO_ruvABC	9,7852E-06
3626_recB_recG-3600_recO_ruvABC	0,01335123
4134_recB_ruvABC_recG-3600_recO_ruvABC	2,4178E-07
3602_recB_recO_ruvABC-3601_recO_recG	0
3603_recB_recO_recG-3601_recO_recG	0
3604_recO_ruvABC_recG-3601_recO_recG	0
3605_recB_recO_ruvABC_recG-3601_recO_recG	0
3610_ruvABC_recG-3601_recO_recG	0
3625_recB_ruvABC-3601_recO_recG	0,90643227
3626_recB_recG-3601_recO_recG	6,4028E-08
4134_recB_ruvABC_recG-3601_recO_recG	6,0801E-12
3603_recB_recO_recG-3602_recB_recO_ruvABC	0,1722987
3604_recO_ruvABC_recG-3602_recB_recO_ruvABC	9,2279E-07
3605_recB_recO_ruvABC_recG-3602_recB_recO_ruvABC	0,56713899
3610_ruvABC_recG-3602_recB_recO_ruvABC	7,4233E-05

3625_recB_ruvABC-3602_recB_recO_ruvABC	0
3626_recB_recG-3602_recB_recO_ruvABC	0,00448488
4134_recB_ruvABC_recG-3602_recB_recO_ruvABC	1
3604_recO_ruvABC_recG-3603_recB_recO_recG	0,04529139
3605_recB_recO_ruvABC_recG-3603_recB_recO_recG	0,99999822
3610_ruvABC_recG-3603_recB_recO_recG	0,28138471
3625_recB_ruvABC-3603_recB_recO_recG	0
3626_recB_recG-3603_recB_recO_recG	2,8975E-07
4134_recB_ruvABC_recG-3603_recB_recO_recG	0,20109602
3605_recB_recO_ruvABC_recG-3604_recO_ruvABC_recG	0,00702183
3610_ruvABC_recG-3604_recO_ruvABC_recG	1
3625_recB_ruvABC-3604_recO_ruvABC_recG	0
3626_recB_recG-3604_recO_ruvABC_recG	0
4134_recB_ruvABC_recG-3604_recO_ruvABC_recG	2,8617E-06
3610_ruvABC_recG-3605_recB_recO_ruvABC_recG	0,07894857
3625_recB_ruvABC-3605_recB_recO_ruvABC_recG	0
3626_recB_recG-3605_recB_recO_ruvABC_recG	3,7393E-06
4134_recB_ruvABC_recG-3605_recB_recO_ruvABC_recG	0,58713941
3625_recB_ruvABC-3610_ruvABC_recG	0
3626_recB_recG-3610_ruvABC_recG	1,8721E-10
4134_recB_ruvABC_recG-3610_ruvABC_recG	0,0001372
3626_recB_recG-3625_recB_ruvABC	0
4134_recB_ruvABC_recG-3625_recB_ruvABC	0
4134_recB_ruvABC_recG-3626_recB_recG	0,01974773