

Supplemental Materials

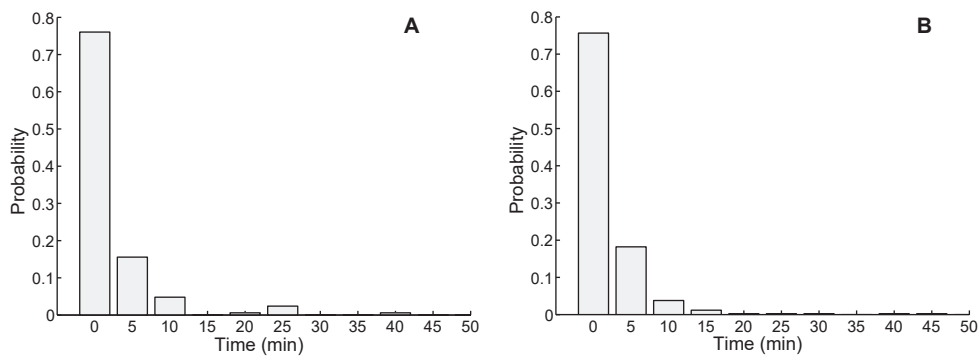


Figure S1. The maximum spot intensity mostly appears within the first 5 minutes of the movies indicating phage DNA ejection with the CRISPR of 91.6% (A) and lytic cells of 93.9% (B).

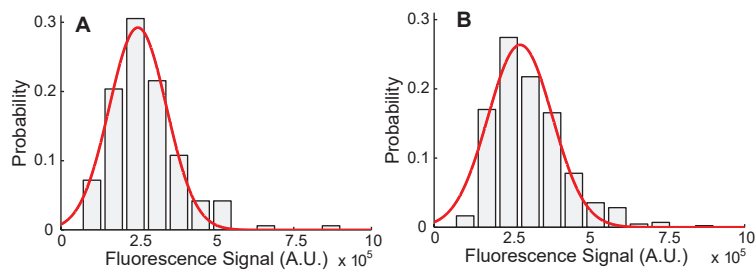


Figure S2. The histograms of initial spot intensity/maximum intensity corresponding to the phage DNA shows little difference between CRISPR cells (A, $(2.5 \pm 0.9) \times 10^5$) and lytic cells (B, $(2.8 \pm 1.0) \times 10^5$) in CRISPR movies. Experimental data (bars) were well fitted to a Gaussian function (red lines).

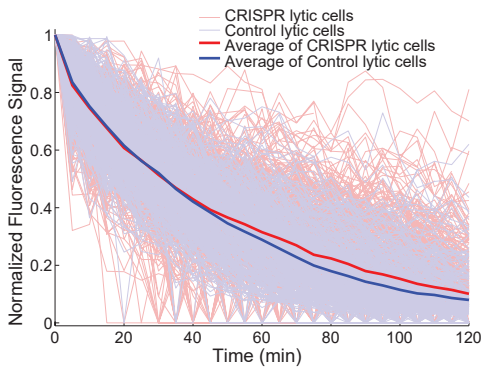


Figure S3. The phage DNA intensities decrease over time similarly for lytic cells in CRISPR movies (red line, N = 423) and control movies (blue line, N = 331). The decrease is probably just due to photobleaching, and the final disappearance may correspond to phage DNA packaging into the phage head. The averages are shown as the thick lines.

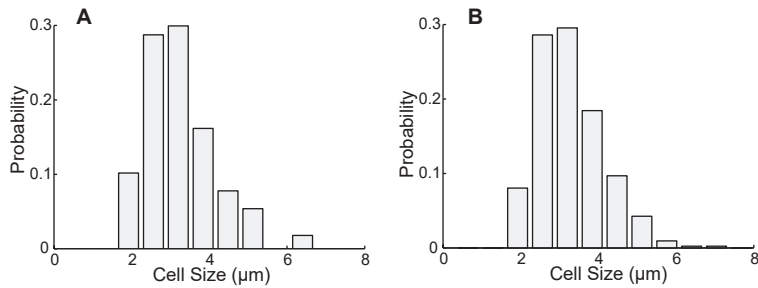


Figure S4. The cell size of CRISPR (A) and lytic (B) cells shows similar distributions.

Original Phage Stock						
	Plaque counts with the dilution factor of 10^{-6}			pfu (mean \pm SD)		
Exp #1	233		241	$2.46\pm 0.15 \times 10^{10}$		
Exp #2	235		278			
Exp #3	250		240			
	Original Cell (Dilution factor/duplicate cell counts/cfu, mean \pm SD)	Lysogen (Dilution factor/duplicate cell counts/cfu, mean \pm SD)	API	Lysogenization Frequency		
Control spacer strain						
Exp #1	10^{-7}		10^{-1}		1.06	3.36×10^{-6}
	62	54	186	203		
	$5.80\pm 0.40 \times 10^8$		$1.95\pm 0.85 \times 10^3$			
Exp #2	10^{-7}		10^{-2}		1.72	1.08×10^{-5}
	159	126	140	168		
	$1.43\pm 0.17 \times 10^9$		$1.54\pm 0.14 \times 10^4$			
Exp #3	10^{-7}		10^{-2}		3.97	6.42×10^{-6}
	58	66	32	48		
	$6.20\pm 0.4 \times 10^8$		$4.00\pm 0.08 \times 10^4$			
Exp #4	10^{-7}		10^{-4}		17.2	2.21×10^{-3}
	159	126	310	323		
	$1.43\pm 0.17 \times 10^9$		$3.17\pm 0.65 \times 10^6$			
Exp #5	10^{-7}		10^{-4}		39.7	2.19×10^{-3}
	58	66	132	140		
	$6.20\pm 0.4 \times 10^8$		$1.36\pm 0.04 \times 10^6$			
Exp #6	10^{-7}		10^{-4}		64.7	4.00×10^{-3}
	40	36	167	136		
	$3.80\pm 0.20 \times 10^8$		$1.52\pm 0.16 \times 10^6$			
CRISPR spacer strain						
Exp #1	10^{-7}		10^0		0.98	5.82×10^{-7}
	65	60	302	415		
	$6.25\pm 0.25 \times 10^8$		$3.64\pm 0.52 \times 10^2$			
Exp #2	10^{-7}		10^0		1.46	4.66×10^{-7}
	30	52	193	188		
	$4.1\pm 1.1 \times 10^8$		$1.91\pm 0.25 \times 10^2$			
Exp #1	10^{-7}		10^{-1}		4.10	3.50×10^{-7}
	58	62	21	-		
	$6.00\pm 0.20 \times 10^8$		2.1×10^2			
Exp #2	10^{-7}		10^{-1}		6.07	4.32×10^{-7}
	44	37	18	17		
	$4.05\pm 0.35 \times 10^9$		$1.75\pm 0.50 \times 10^4$			
Exp #3	10^{-7}		10^{-3}		27.0	6.48×10^{-5}
	88	94	62	56		
	$9.10\pm 0.30 \times 10^8$		$5.90\pm 0.30 \times 10^4$			
Exp #4	10^{-7}		10^{-3}		41.0	1.38×10^{-4}
	58	62	94	72		
	$6.00\pm 0.20 \times 10^8$		$8.30\pm 1.10 \times 10^4$			
Exp #5	10^{-7}		10^{-2}		49.2	5.00×10^{-5}
	53	47	256	243		
	$5.00\pm 0.30 \times 10^8$		$2.50\pm 0.65 \times 10^4$			
Exp #6	10^{-7}		10^{-2}		60.7	4.07×10^{-5}
	44	37	201	128		
	$4.05\pm 0.35 \times 10^8$		$1.65\pm 0.37 \times 10^4$			

Table S1. The counts of colony and plaque forming units, and the calculated API and lysogenization frequency in the lysogenization experiments.

Movie Legends

Movie S1. A lytic cell in a control movie. At 0 min, the DNA of the fluorescently labeled infecting phage (red spot) is ejected into the host *E. coli* cell forming a fluorescent spot (green spot). Over time, the phage DNA (green spot) intensity decreases and disappears around 110 min. At 120 min, the cell lyses.

Movie S2. A lytic cell in a CRISPR movie. At 0 min, the DNA of the fluorescently labeled infecting phage (red spot) is ejected into the host *E. coli* cell forming a fluorescent spot (green spot). Over time, the phage DNA (green spot) intensity decreases and disappears around 120 min or persists till cell lysis. At 120 min, the cell lyses.

Movie S3. A CRISPR cell (top) and uninfected cell (bottom) in a CRISPR movie. For the CRISPR cell: at 0 min, the DNA of the fluorescently labeled infecting phage (red spot) is ejected into the host *E. coli* cell forming a fluorescent spot (green spot). The green spot indicating the phage DNA disappears around 45 min. At 70 min, the cell divides, similar to that of the uninfected cell.

Movie S4. Five lytic cells in control movies. At 0 min, the phage DNA is ejected into the host *E. coli* cell forming a fluorescent spot (green spot). Over time, the phage DNA (green spot) intensity decreases and lytic reporter red fluorescence accumulates. Cells lyse (all except the 4th one from the left) or elongate (the 4th one from the left) till the end of the movies.

Movie S5. Five lytic cells in CRISPR movies. At 0 min, the phage DNA is ejected into the host *E. coli* cell forming a fluorescent spot (green spot). Over time, the phage DNA (green spot) intensity decreases and lytic reporter red fluorescence accumulates. Eventually cells lyse.

Movie S6. Five CRISPR cells in CRISPR movies. At 0 min, the phage DNA is ejected into the host *E. coli* cell forming a fluorescent spot (green spot). Over time, the phage DNA (green spot) intensity decreases and disappears. Cells remain normal growth and divide.