Electronic Supplementary Material (ESI) for Integrative Biology.

Supplemental Material

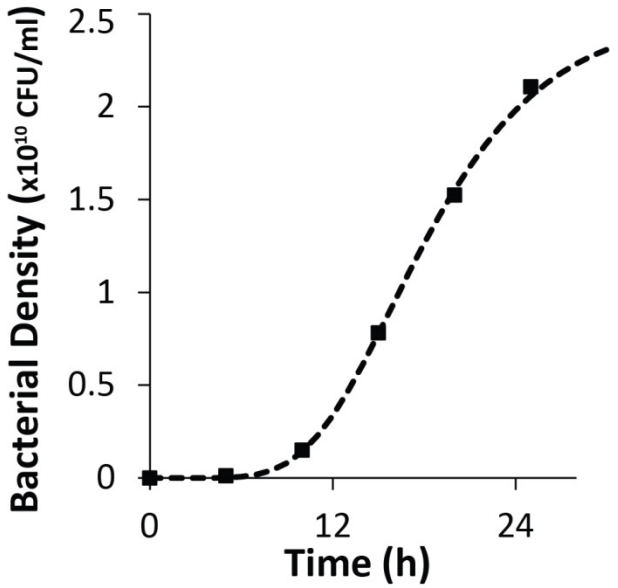

Figure S1. Bacterial growth within cell masses in microfluidic chambers. A Gompertz function[1] was fit to bacterial growth data acquired previously. [2] The growth rate (μ_m) was found to be 1.65x10^9 CFU·ml^{-1}·h^{-1} and the lag time (λ) was 10.3 hours (see Eq. 2). By simultaneously solving equations (1) and (2) the maximum density ($C_{B,max}$) was found to be 3.34 x10^9 CFU·ml^{-1}.

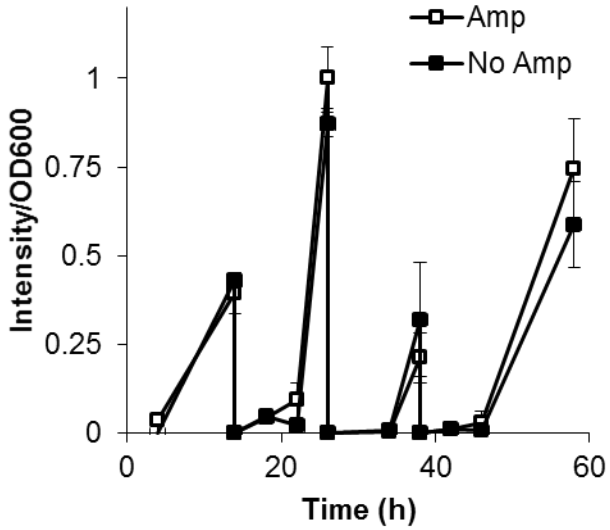

Figure S2. Stability of plasmid pDF02. Fluorescence ratio of *Salmonella* cultures transformed with pDF02, and cultured with and without antibiotic (ampicillin). The control set (n=4) was maintained with 100 µg/ml ampicillin (Amp), and the other set (n=4) was not (No Amp). Cultures were diluted approximately every 12 hours. Fluorescence intensities were normalized by culture density and by the maximum intensity measured. Cultures without ampicillin maintained the same expression as cultures with ampicillin. There was no significant difference in expression levels over 58 hours (average P=0.54), and the average relative difference between the intensities of the two groups was 2.6%.

Supplemental Methods

Plasmid Stability

Two groups of liquid LB cultures were inoculated with *Salmonella* transformed with pDF02. Both groups were grown at 37°C and 225 rpm in media supplemented with received 2 mg/ml L-arabinose and 100 µg/ml ampicillin for 12 hours. After this period, two cultures were inoculated with 5,000 bacteria. The antibiotic-free group was resuspended in media with only L-arabinose, and the control group received both L-arabinose and ampicillin. Resuspension was repeated approximately every 12 hours. Fluorescence and bacterial density (at 600 nm) were measured periodically throughout. Background fluorescence was subtracted from all measurements. Expression ratios were determined by normalizing fluorescence intensities by culture density and the maximum measured intensity.

References

1 M. H. Zwietering, I. Jongenburger, F. M. Rombouts, and K. van ’t Riet, Modeling of the bacterial growth curve, *Appl. Environ. Microbiol.*, 1990, **56**, 1875–81.

2 B. J. Toley and N. S. Forbes, Motility is critical for effective distribution and accumulation of bacteria in tumor tissue, *Integr. Biol. (Camb).*, 2012, **4**, 165–76.