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Supplementary Materials for Article

pH-induced Modulation of *Vibrio fischeri* Population Life Cycle

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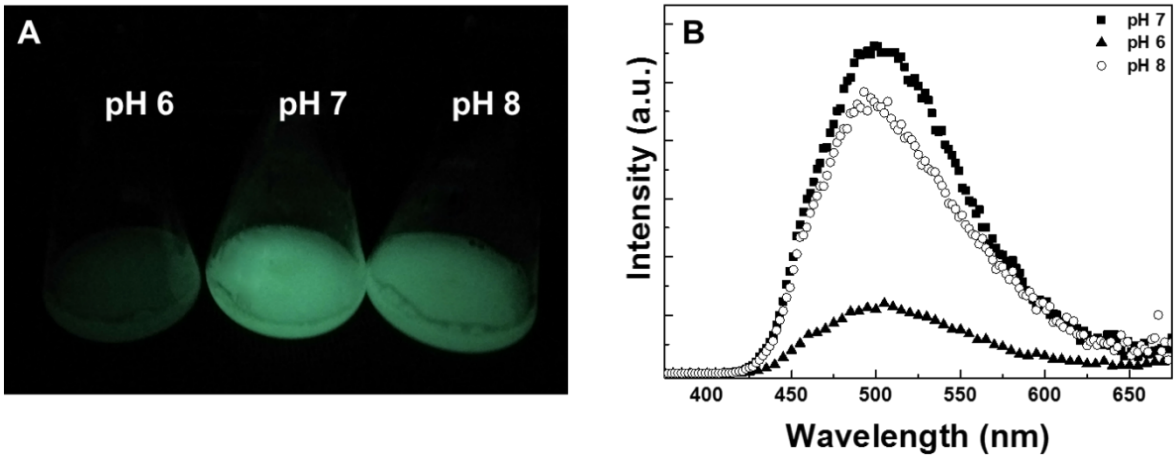

Figure S1. Comparison of *V. fischeri* bioluminescence emission at different pH. The bioluminescence intensity during the exponential phase of batch-grown cultures is visibly different when observed in the dark (**A**). Bioluminescence spectra measured at pH 6, 7, and 8 (**B**) differ in intensity, but have similar shapes of the spectral envelopes.

Table S1. Viability assays for *V. fischeri*.[1]

Dilution factor	1st assay (log_{10} CFU mL^{-1})	2nd assay (log_{10} CFU mL^{-1})	3rd assay (log_{10} CFU mL^{-1})
1.28×10^{-5}	8.1 ± 0.03	8.3 ± 0.06	7.4 ± 0.9
2.56×10^{-6}	8.1 ± 0.08	8.5 ± 0.02	8.5 ± 0.04
5.12×10^{-7}	8.5 ± 0.03	8.8 ± 0.09	7.6 ± 0.9
1.02×10^{-7}	8.5 ± 0.09	8.6 ± 0.09	7.2 ± 0.3

[1] Each assay performed in triplicate, values are presented as 95% confidence intervals.

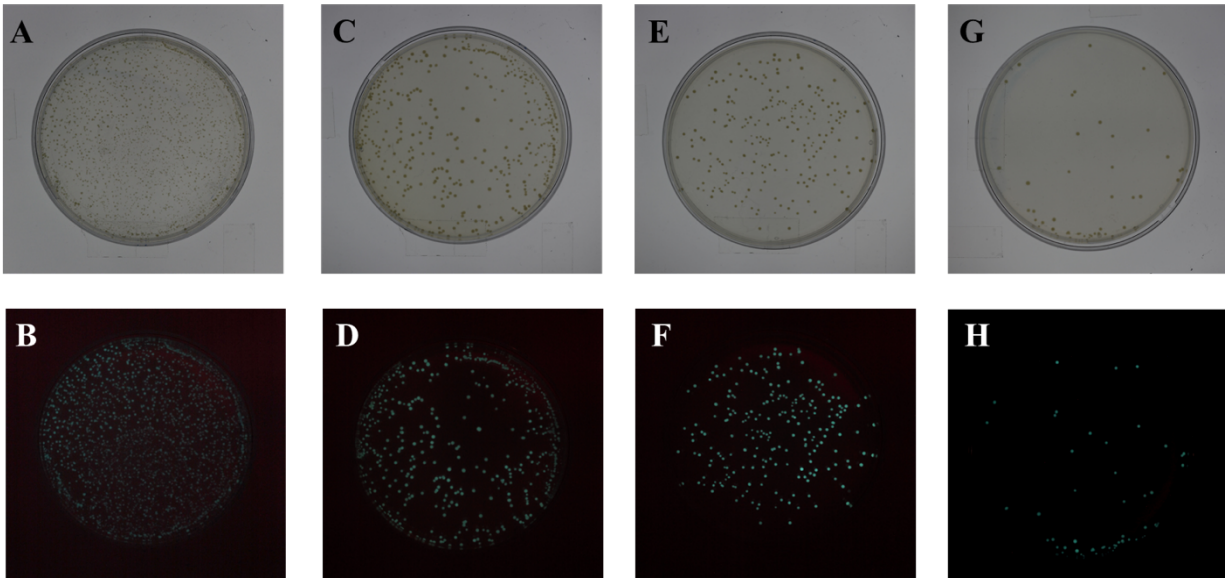

Figure S2. Plates with a dilution series of *V. fischeri* for colony forming unit (CFU) counting. In each pair of images, colonies are visualized under normal illumination and via bioluminescence in the dark, for each dilution factor: 1.28×10^{-5} (**A**, **B**), 2.56×10^{-6} (**C**, **D**), 5.12×10^{-7} (**E**, **F**), and 1.02×10^{-7} (**G**, **H**).

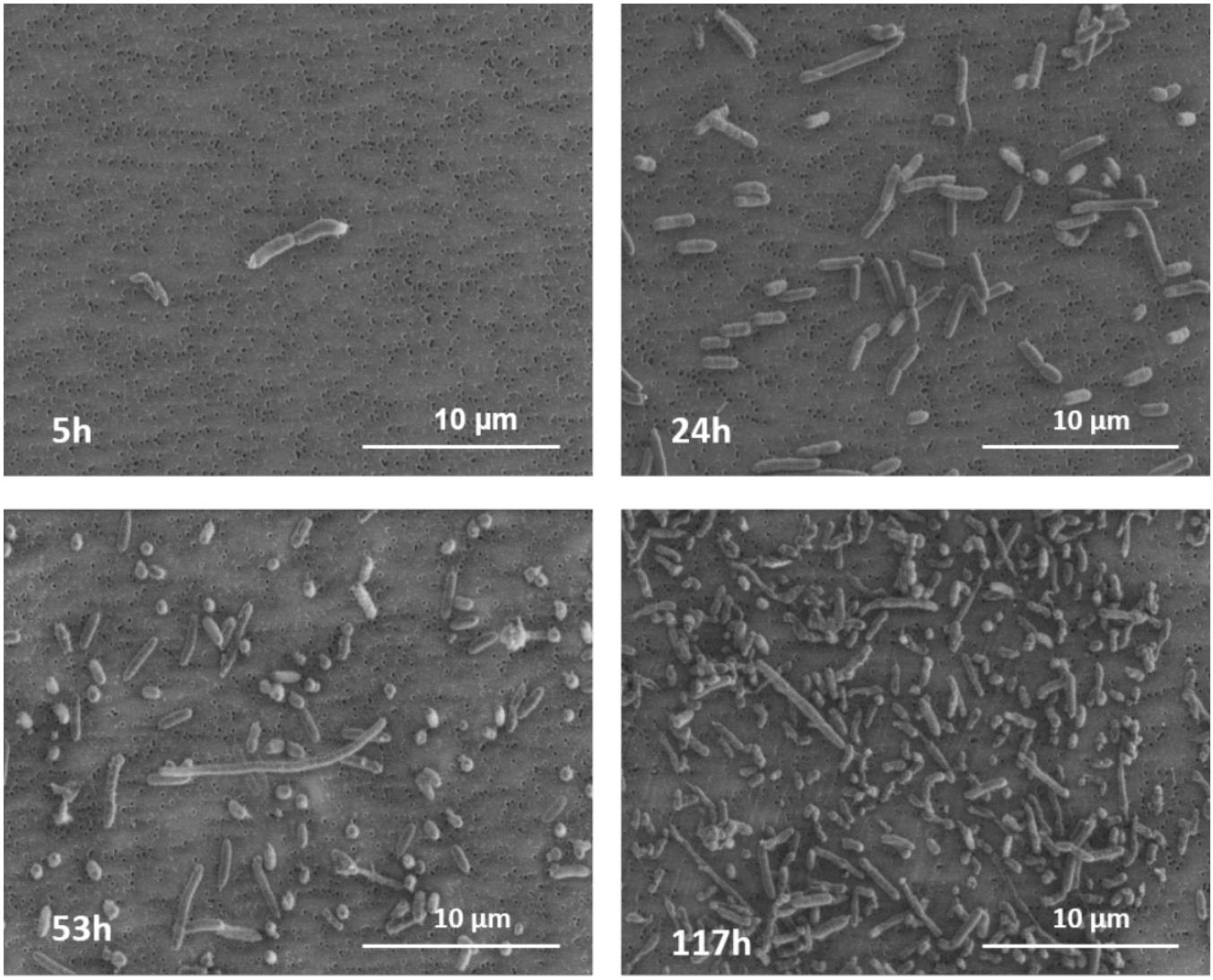

Figure S3. Scanning electron microscopy (SEM) images illustrating morphological changes throughout the life cycle of a *V. fischeri* population. Field-of-view of the same size is imaged for each of the four discrete timepoints, to simplify the direct comparison of cell densities and cell sizes. Dark round features in the background are *ca*. 0.2 µm pores in the supporting polycarbonate filter; their density and size can be used as respective internal references. As expected, in the lag phase (5 h) only few cells are present. Multiple dividing cells are clearly observed in the exponential phase (24 h), but not in the stationary phase (53 h). Lysed cells appear in the death phase (117 h). In the stationary (53 h) and death (117 h) phases, two extreme features are also present: extra-long rods (>10 µm in length) and apparently round small features (<1 µm in diameter).

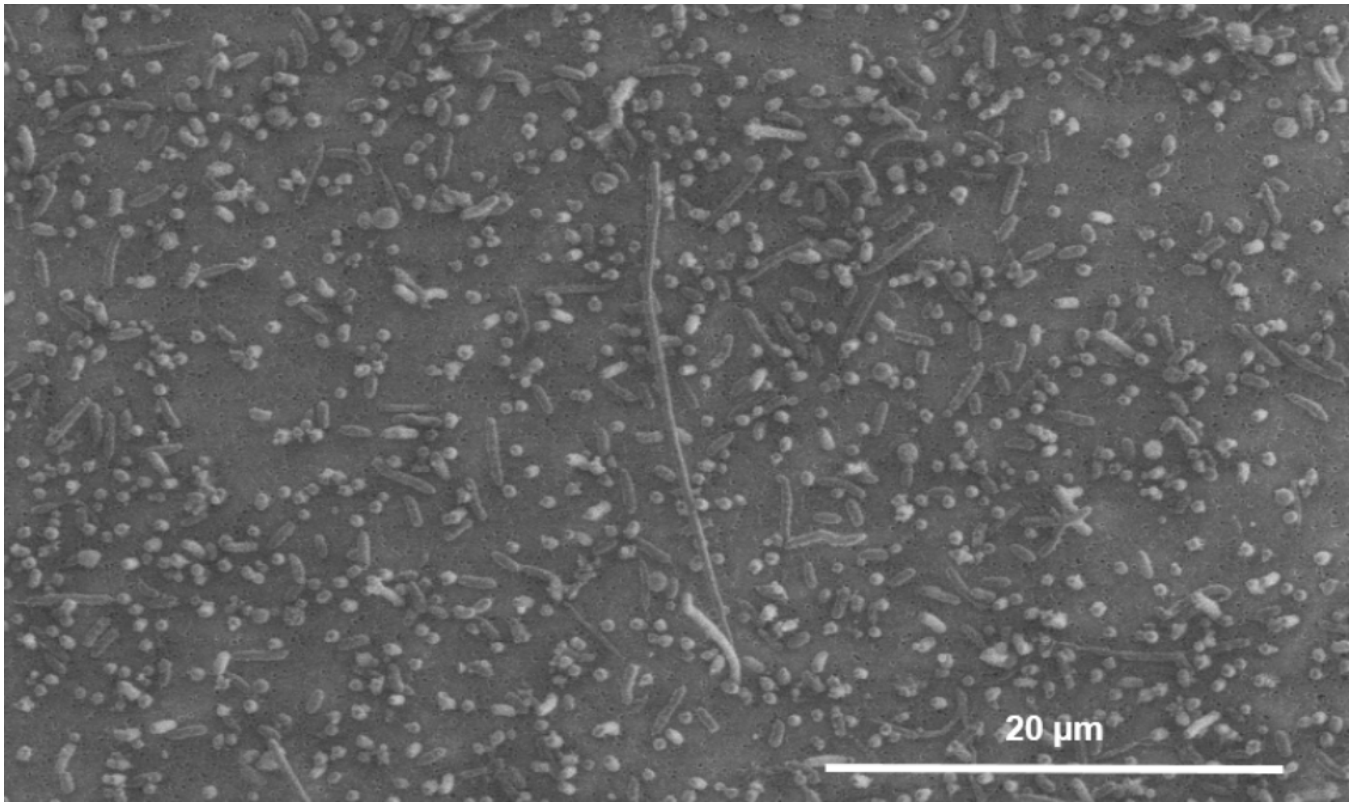

Figure S4. SEM image of *V. fischeri* in the stationary phase (53 h timepoint). An example of an extra-long rod morphology (*ca*. 25 µm in length) is clearly visible near the center of the image. Dark round features in the background are *ca*. 0.2 µm pores in the supporting polycarbonate filter. In agreement with the 53-h timepoint in Figure S3, there are some lysed cells and no dividing cells in this image; apparently round small features (<1 µm in diameter) are also observed in this image.

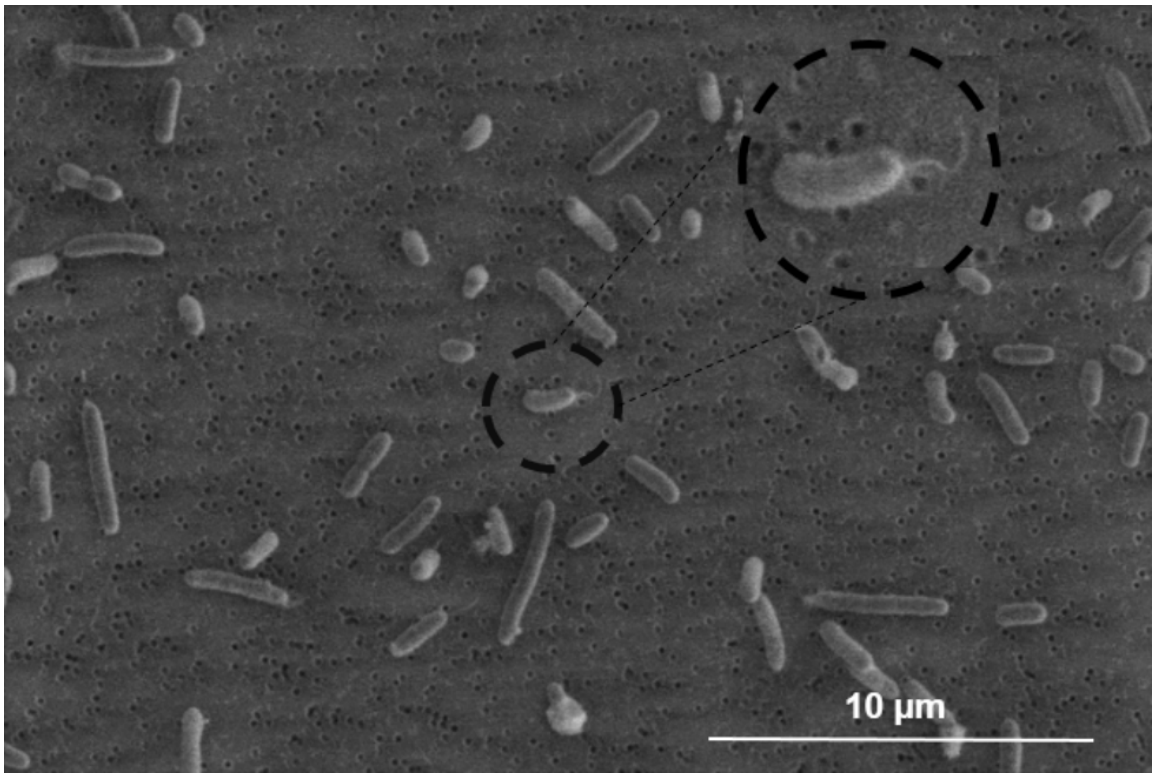

Figure S5. SEM image of *V. fischeri* in the exponential phase (24-h timepoint). Flagella are clearly observed for several bacteria in this image, including the one highlighted and enlarged in the inset. Dark round features in the background are *ca*. 0.2 µm pores in the supporting polycarbonate filter.