Draft #1

Supporting information:

Using confined bacteria as building blocks to generate fluid flow

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Abstract

This document contains supporting information for an article titled "Using confined bacteria as building blocks to generate fluid flow"

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Movie Captions

Movie S1 shows a bacterium swims into a cavity and gets captured. A instantaneous frame of the movie is shown in Fig. 1(b). The movie (and all movies below) is played at the acquired speed and compressed in MJPG format.

Movie S2 shows trajectories of fluorescent tracers in the vicinity of a structure containing a bacterium. The white rectangle shows the boundary of the structure. The corresponding flow field is shown in Fig. 2(b).

Movie S3 shows trajectories of fluorescent tracers in the vicinity of a linear structure containing five bacteria. The white rectangle shows the boundary of the structure. The corresponding flow field is shown in Fig. 3(b).

Movie S4 shows trajectories of fluorescent tracers in the vicinity of a circular structure containing fifteen bacteria. The corresponding flow field is shown in Fig. 5(b).

Movie S5 shows bacteria confined in a linear structure transport a silica particle. An instantaneous frame of the movie is shown in Fig. 6(a).

Movie S6 shows bacteria confined in a square structure transport a silica particle. An instantaneous frame of the movie is shown in Fig. 6(b).

Movie S7 shows bacteria confined in a sprial structure transport a silica particle. An instantaneous frame of the movie is shown in Fig. 6(c).

Figures

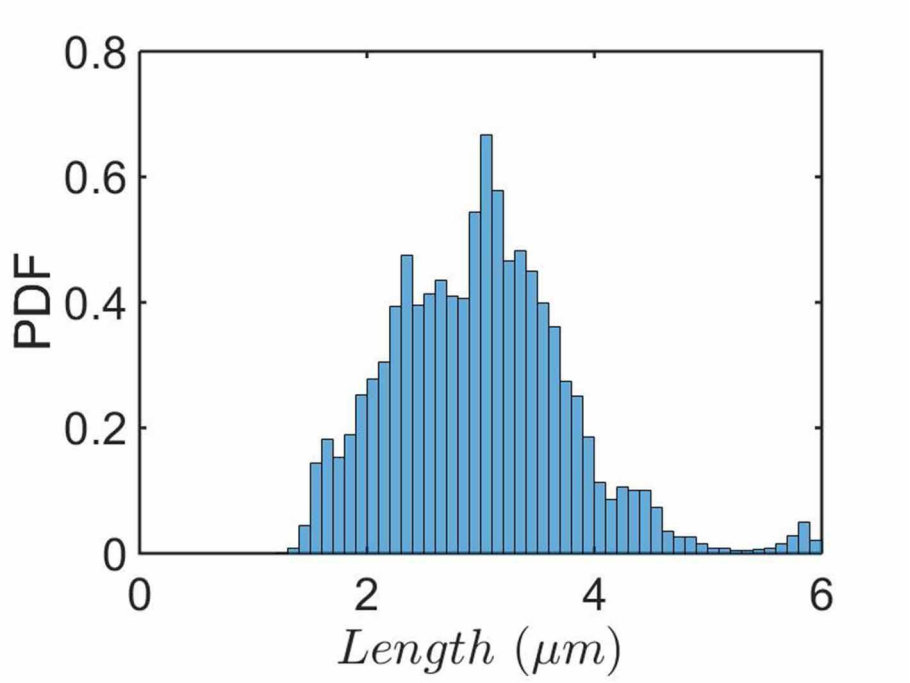

FIG. S1. Probability distribution of bacteria body length.

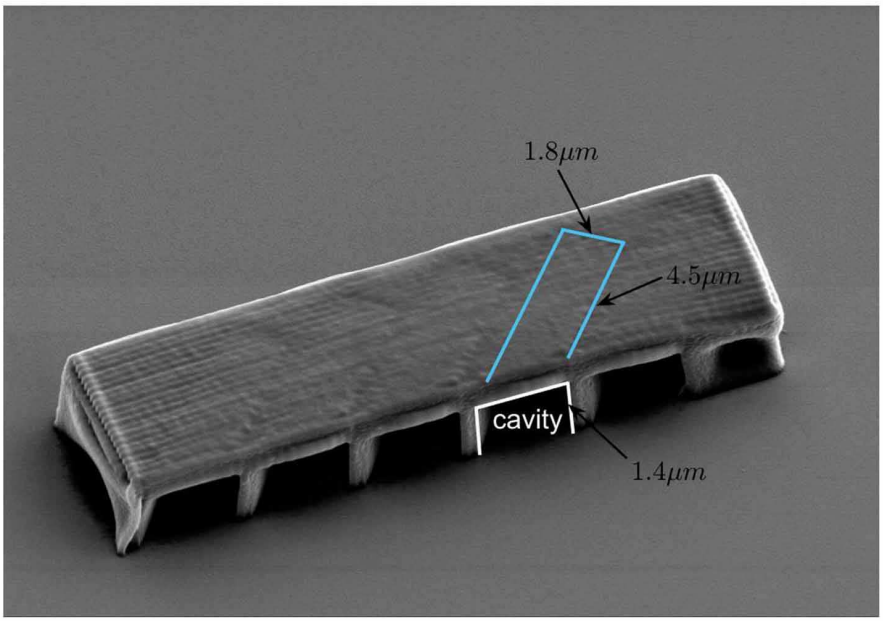

FIG. S2. Scanning electron micrograph of a linear structure with five cavities.

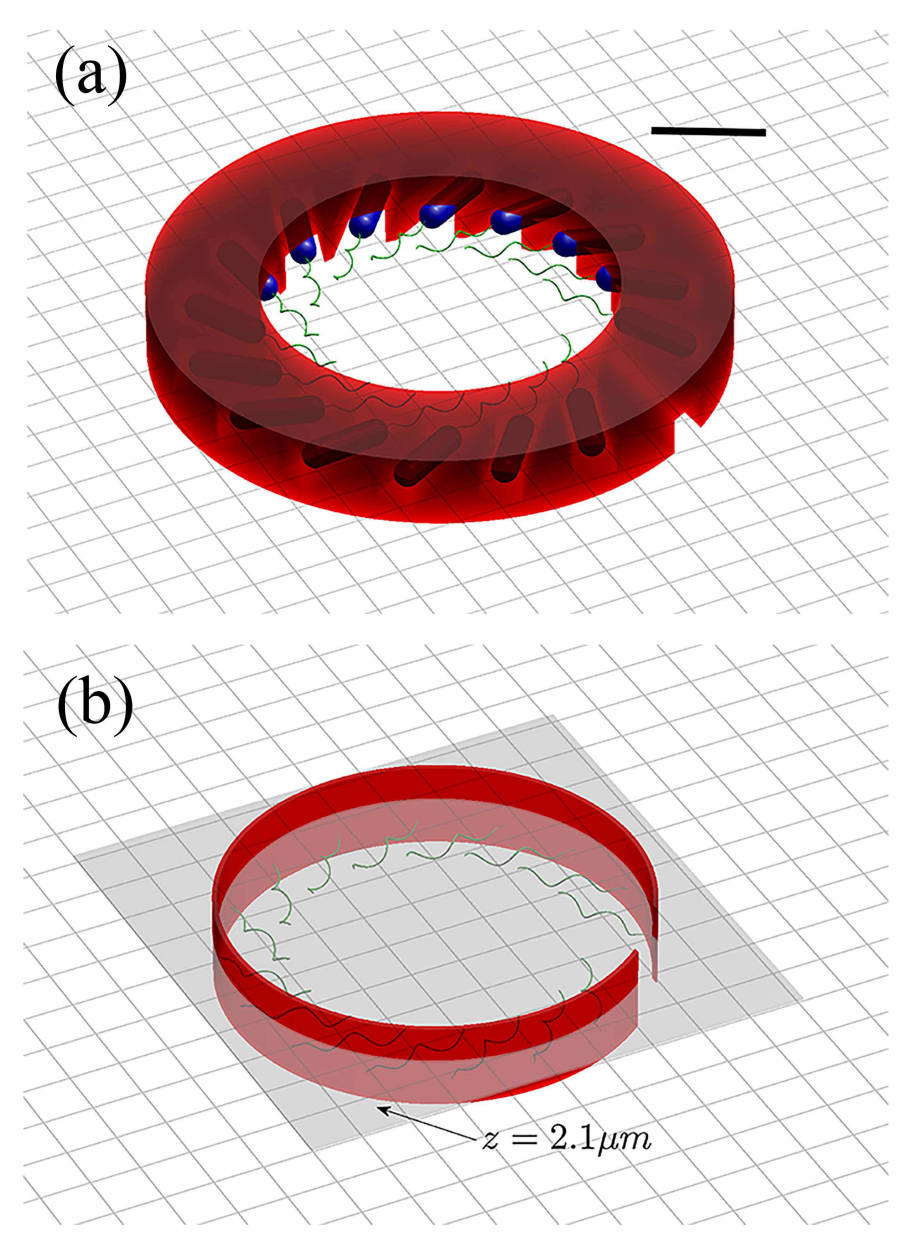

FIG. S3. (a) Illustration of 15 motile bacteria confined in a circular structure. (b) Model used in simulation. The structure and bacteria bodies are represented by a wall. Flagella are oriented with a tilting angle α= 40° respecting to the local tangent of the circular boundary. Scale bar: $5\mu m$.