

## Electronic Supplementary Information

Movie S1: Sperm swim against a  $5 \mu\text{L min}^{-1}$  flow in the grooves, as shown in Fig. 5A1. Original video was recorded at 100 FPS with DIC, replayed at 10 FPS. Flow from the right. Scale bar: 20  $\mu\text{m}$ .

Movie S2: A sperm being swept away by a  $5 \mu\text{L min}^{-1}$  flow on a flat surface, as shown in Fig. 5A2. Flow from the right. Original video was recorded at 200 FPS with phase contrast, replayed at 10 FPS. Scale bar: 10  $\mu\text{m}$ .