Supporting Information

Tung et al. 10.1073/pnas.1500541112

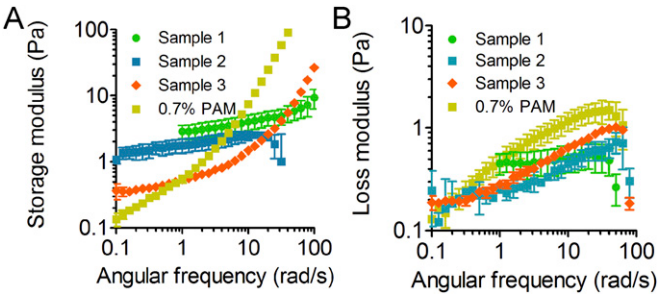
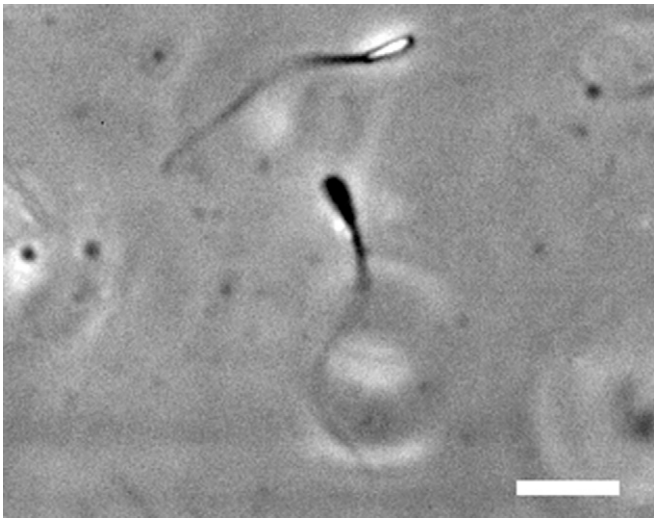
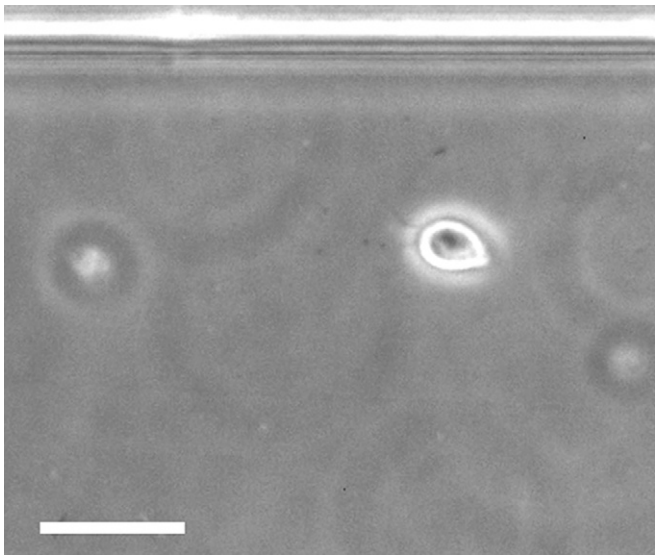


Fig. S1. Rheology measurements of bovine cervical mucus samples and our high-viscoelasticity medium (0.7% PAM) sample. (*A*) Storage modulus describes the elasticity of the samples. (*B*) Loss modulus describes the viscosity of the samples. Given the variability of the biological samples, our high-viscoelasticity medium resembles the bovine cervical mucus reasonably well.



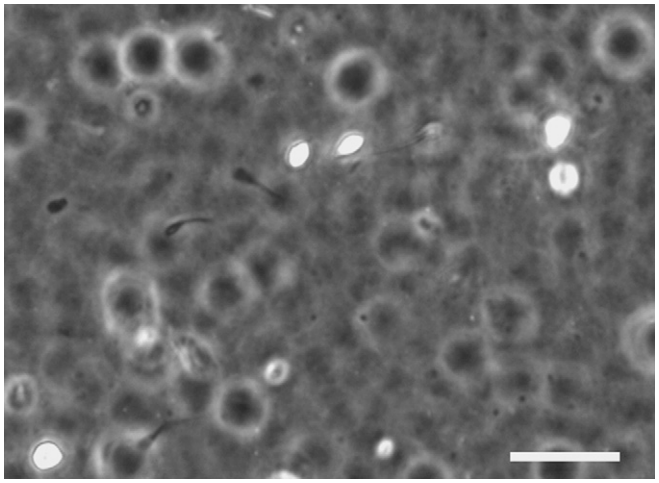
Movie S1. Sperm motility in TALP. Sperm swam via the self-rolling of its body in TALP. Recorded at 200 FPS, replayed at 10 FPS. (Scale bar: 20 μm.)

Movie S1



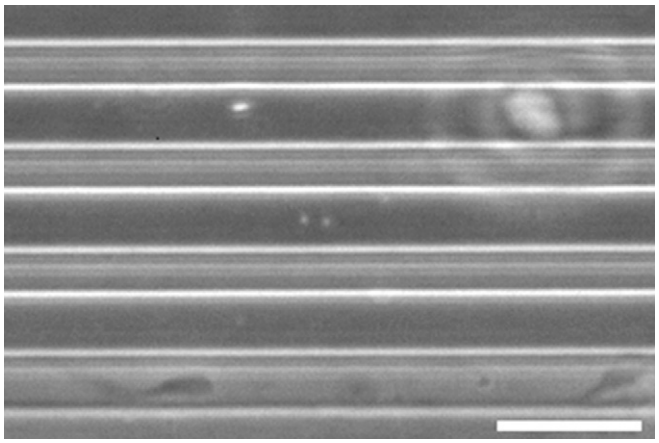
Movie S2. *T. foetus* motility in TALP. *T. foetus* swam via coordinated wave motion of the three anterior flagella. Recorded at 20 FPS, replayed at 10 FPS. (Scale bar: 20 μm.)

Movie S2



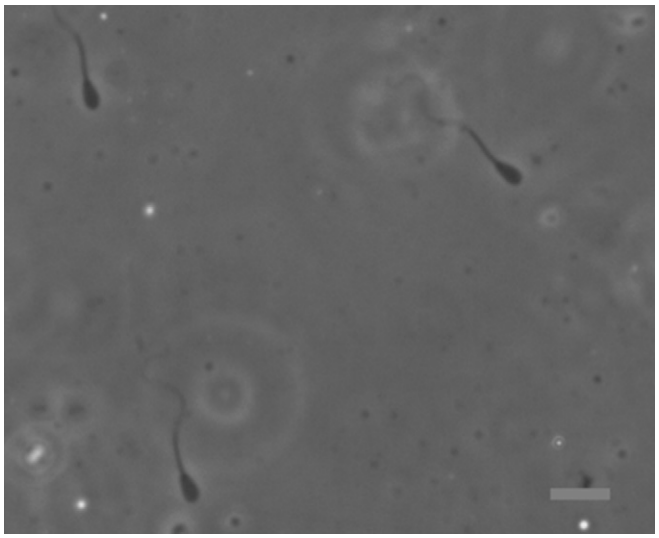
Movie S3. Differential swimming behaviors of sperm and *T. foetus* in the presence of fluid flow. With 1 μL/min of flow, sperm were able to migrate against the flow, whereas *T. foetus* were brought downstream. Recorded at 18 FPS, replayed at 9 FPS. (Scale bar: 50 μm.)

Movie S3



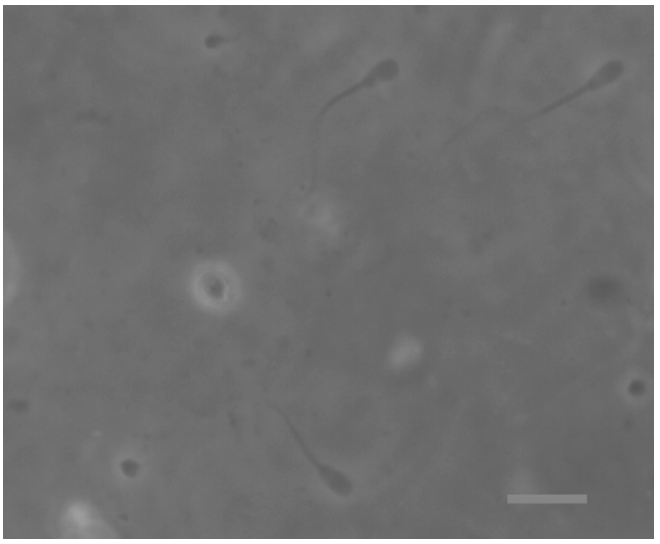
Movie S4. Sperm used microgrooves to swim upstream, whereas *T. foetus* did not. With 1 μL/min of flow, sperm used the microgrooves and migrated upstream (flow from the right), whereas *T. foetus* were brought downstream. Recorded at 18 FPS, replayed at 5 FPS. (Scale bar: 50 μm.)

Movie S4



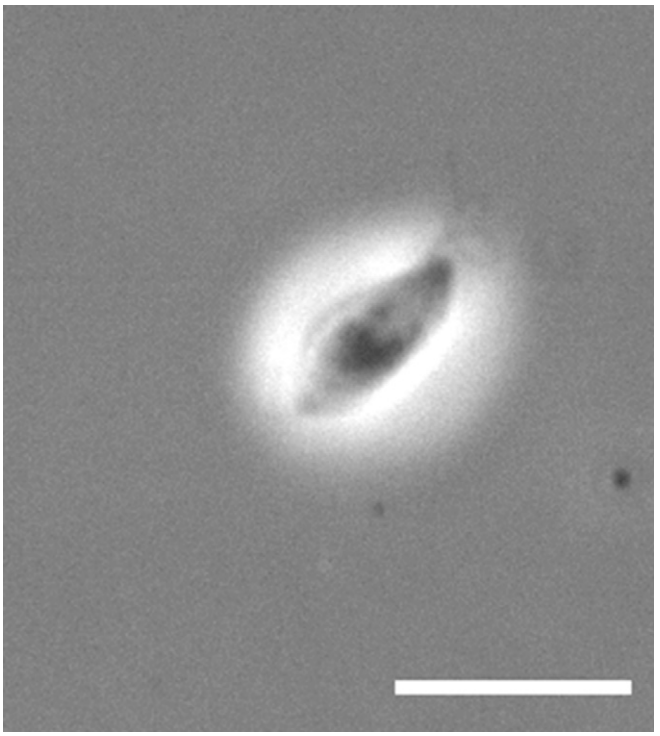
Movie S5. Sperm motility in high-viscoelasticity medium. Sperm swam via the planar beating of the flagellum in viscoelastic medium. Recorded at 71 FPS and replayed at 10 FPS. (Scale bar: 20 μm.)

Movie S5



Movie S6. Sperm motility in bovine cervical mucus. Sperm motility in bovine cervical mucus was similar to that in high viscoelasticity medium. Recorded at 100 FPS, replayed at 10 FPS. (Scale bar: 20 μm.)

Movie S6



Movie S7. *T. foetus* motility in high-viscoelasticity medium PAM. Recorded at 20 FPS, replayed at 10 FPS. (Scale bar: 20 μm.)

Movie S7