Abstract Submitted
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Development of a microfluidics model for studying migration of sperm in the female reproductive tract[1] CHIH-KUAN TUNG, Department of Biological and Environmental Engineering, Cornell University, FLORENCIA ARDÓN, Department of Biomedical Sciences, Cornell University, MINGMING WU, Department of Biological and Environmental Engineering, Cornell University, SUSAN S. SUÁREZ, Department of Biomedical Sciences, Cornell University — Infertility is a significant issue, both for humans and dairy cattle. In order for fertilization to happen, sperm must migrate through the female reproductive tract to reach the egg in the oviduct (fallopian tube). There is strong evidence that sperm interact with the female tract via both chemical and physical mechanisms. In this work, we focus on how the physical environment of the female tract influences the migration of bull sperm, which also serve as models for human sperm. In order for bull and human sperm to pass from the vagina into the uterus, they must swim through the cervical canal, which is lined by microchannels. Then, sperm must swim through the uterotubal junction, which also contains microchannels, in order to reach the oviduct. In both passageways, sperm must swim against a fluid flow, which would be less in the microchannels than in the central passageways. We have developed a microfluidic model for studying the sperm migration effects of the geometry of the cervix and uterotubal junction and the fluid flow within.

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