Supporting information

Gelatin Microcartridges for Onboard Activation and Antioxidant Protection of Sperm

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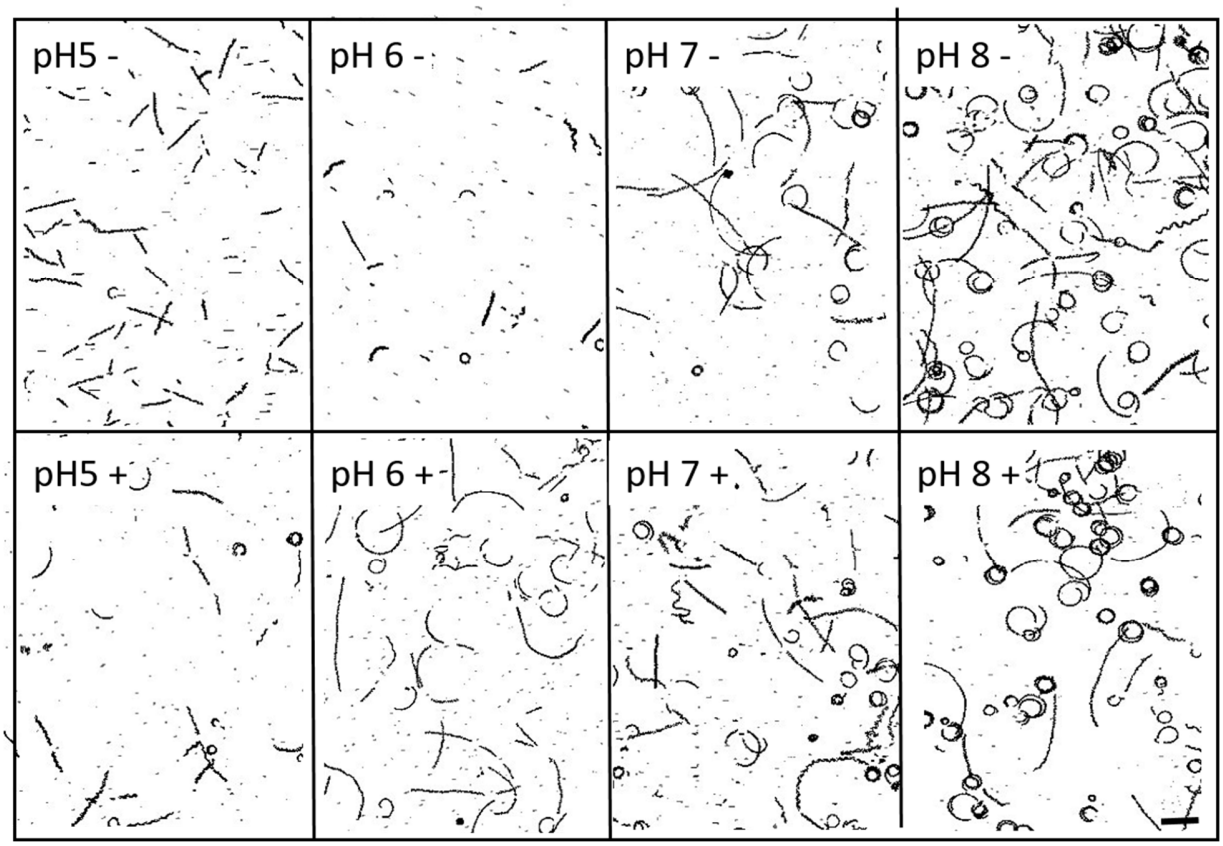

Figure S1: Trajectories of freely swimming bovine sperm cells at different pH without (-, top row) and with (+, bottom row) heparin in the medium. Scale bar is 100µm. The trajectories are obtained from 4 s (400 frames recorded with 100fps) video sequences.

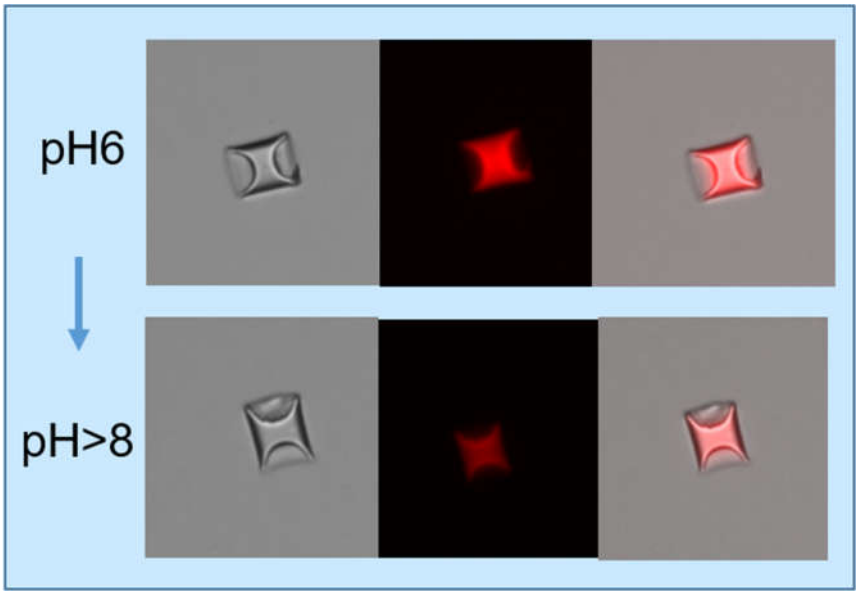

Figure S2: pH response of gelatin structures loaded with the fluorescent dye propidium iodide: bright field, fluorescent and merged images of gelatin microcartridges at pH6 (top row) and pH8>8 (bottom row).

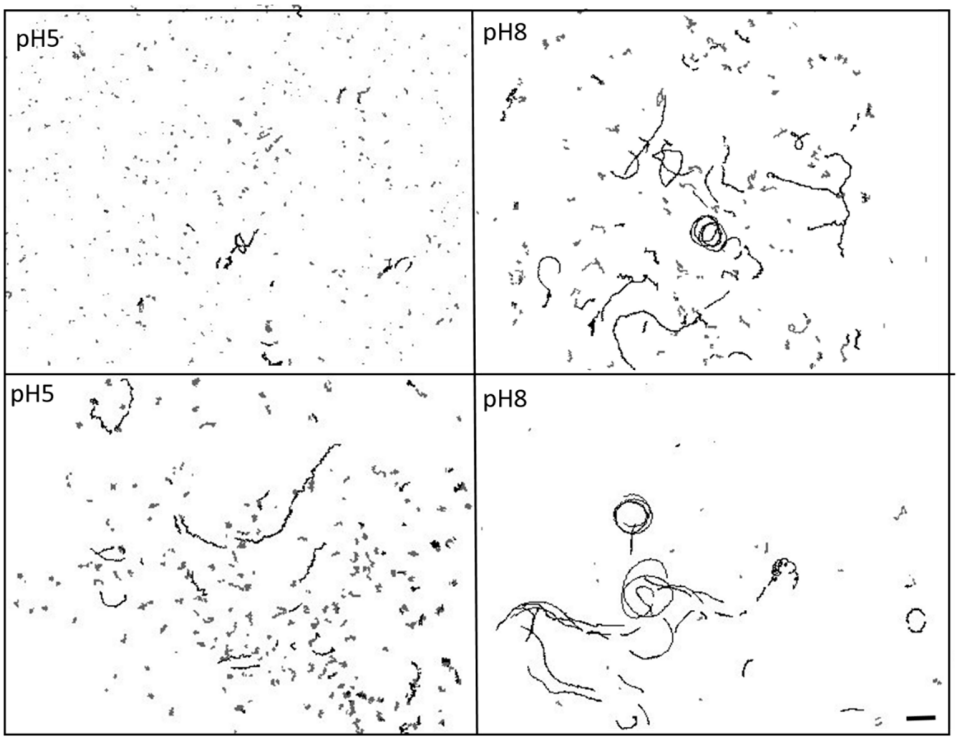

Figure S3: Spermbot trajectories at pH5(left images) and pH8 (right images) over 25 seconds (600 frames recorded with 24 fps). Scale bar is 100µm.

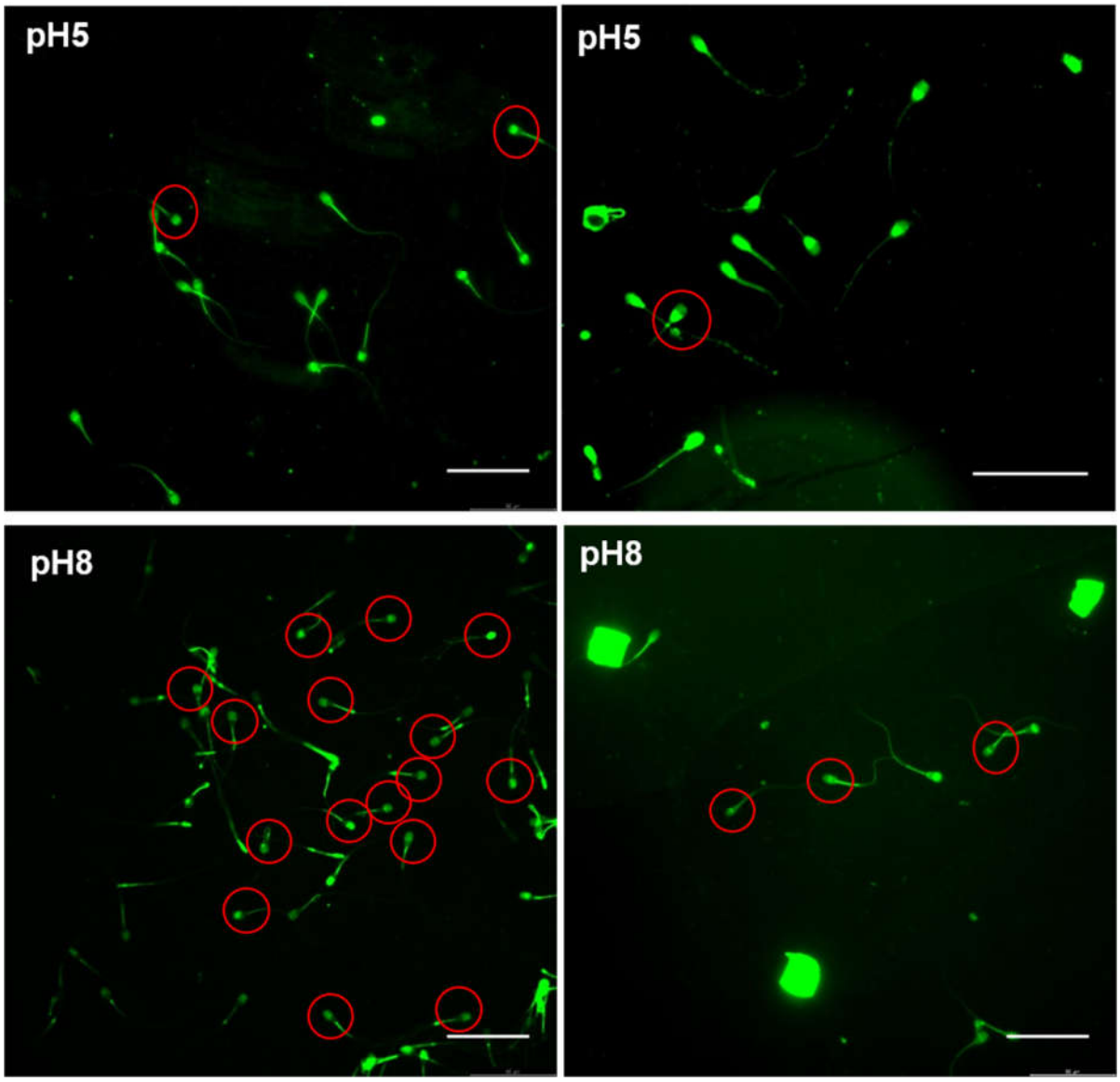

Figure S4: CTC assay of bovine sperm cells. Bovine sperm cells with heparin-loaded microcartridges at pH5 (top row) and pH8 (bottom row). The red circles mark sperm that show the capacitated stain pattern (see also Figure 3B. The bright green squares show the gelatin structures due to autofluorescence of gelatin. Scale bars are 50µm.

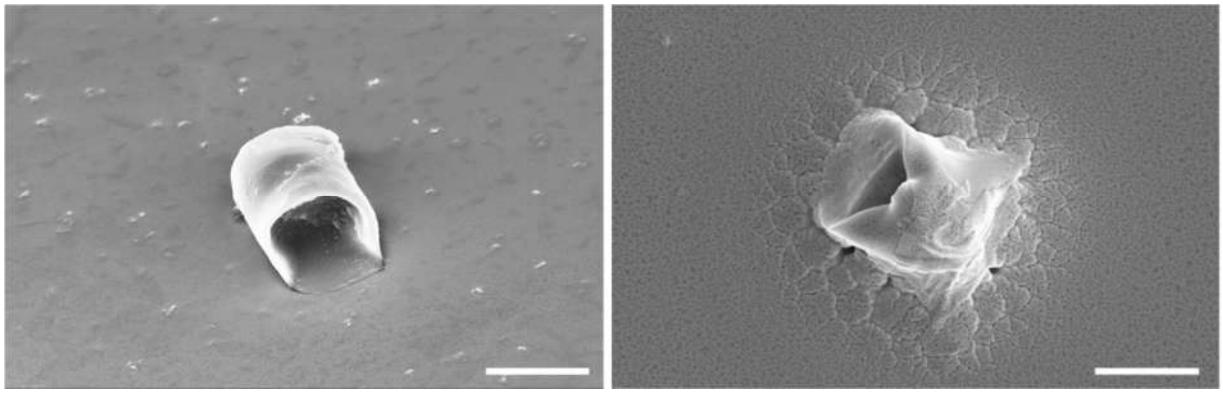

Figure S5: Cryo-scanning electron microscopic images of gelatin structures before (left) and after (right) coincubation with endometrial cell culture for 30 days. Scale bars are 10 µm.

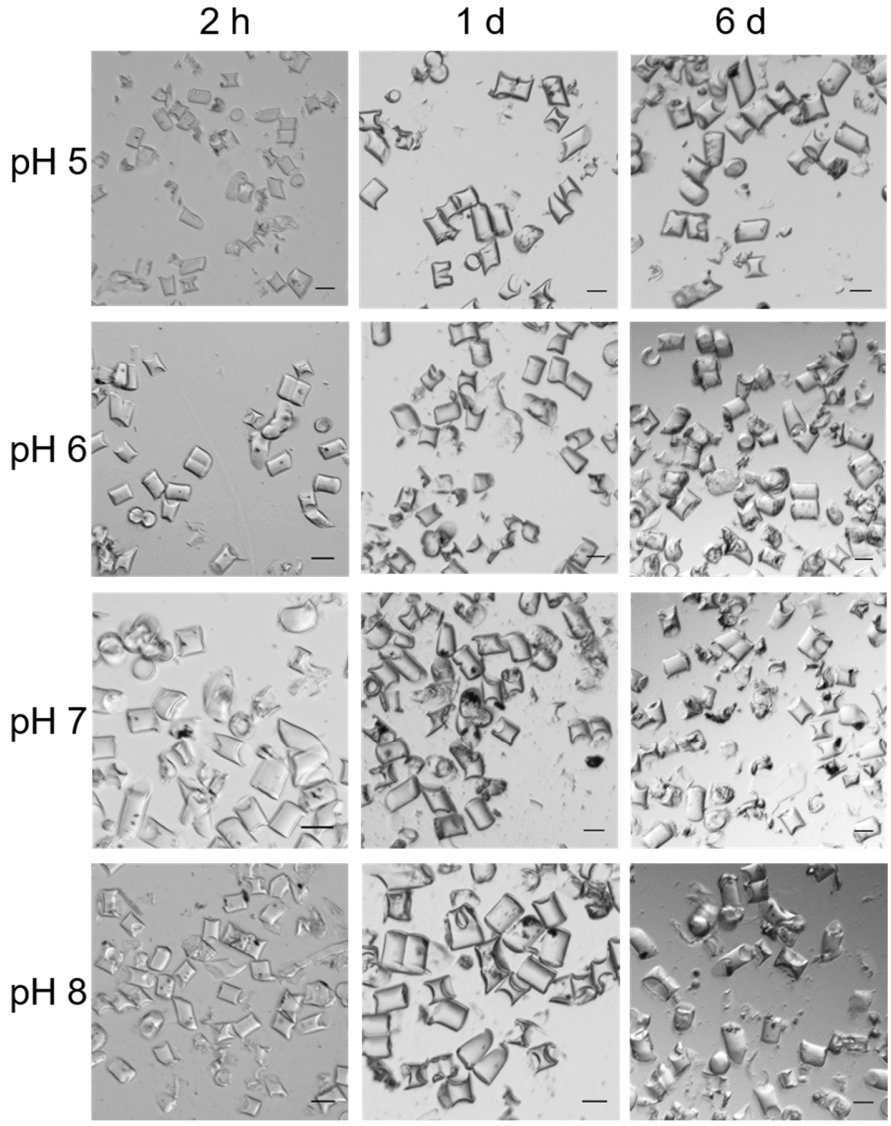

Figure S6: Stability of gelatin microcartridges in SP-TALP medium at different pH at 2 hours, one day and 6 days. Scale bars are 10 µm.

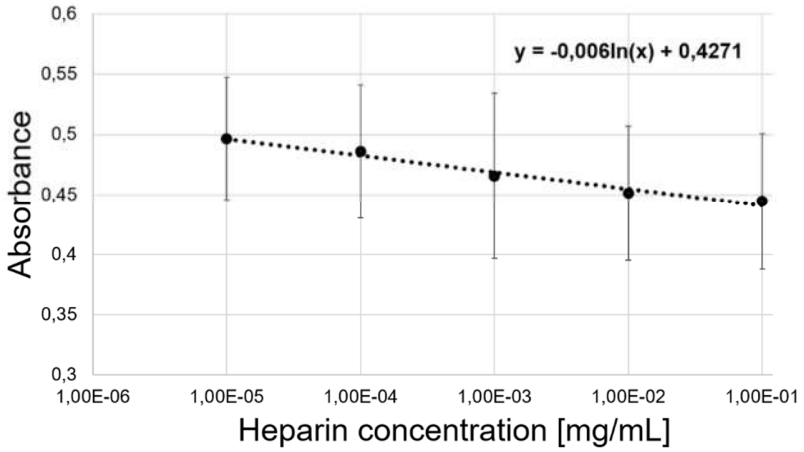

Figure S7: Standard curve for absorbance of heparin in toluidine assay.

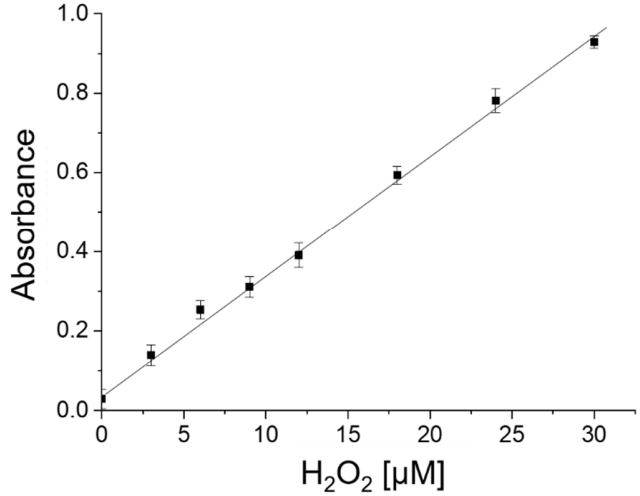

Figure S8: Standard curve for absorbance of hydrogen peroxide in peroxide assay.