

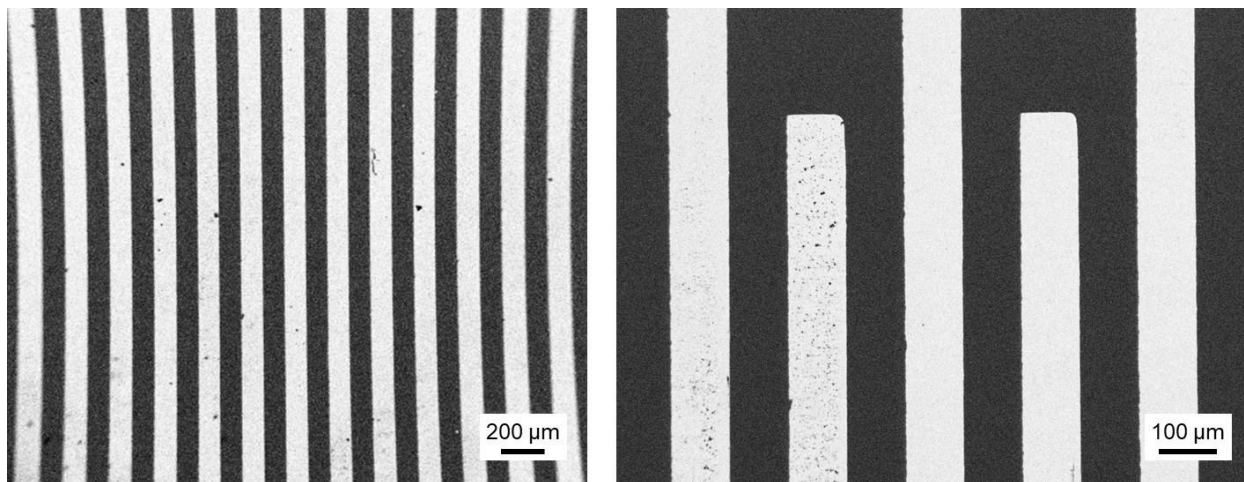
Supporting Information

Inhibitory Effect to Smooth Muscle Cells Adhesion and Proliferation from Oscillating Electric Fields by Nanogenerators

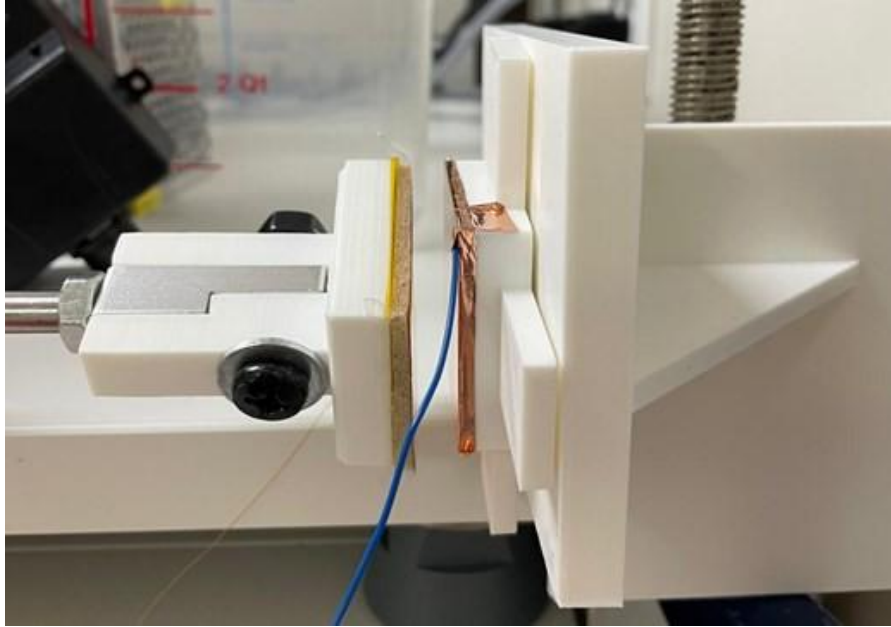
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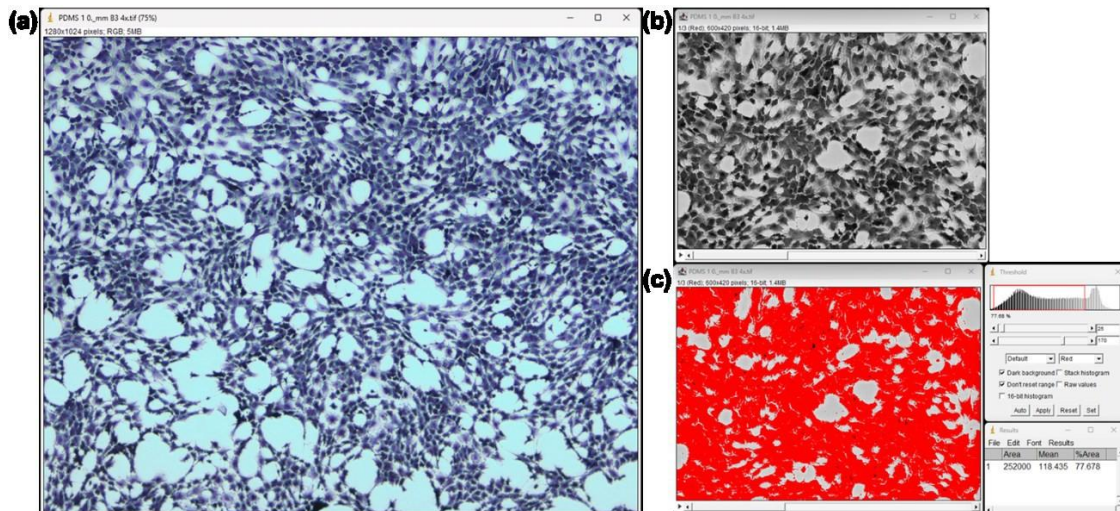
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Supplemental Figure S1. Au evaporated interdigitated electrode size and spacing. SEM images showing the thickness (100μm) and distance (100μm) between the Au evaporated electrodes (bright contrast) on the glass substrate (dark contrast).

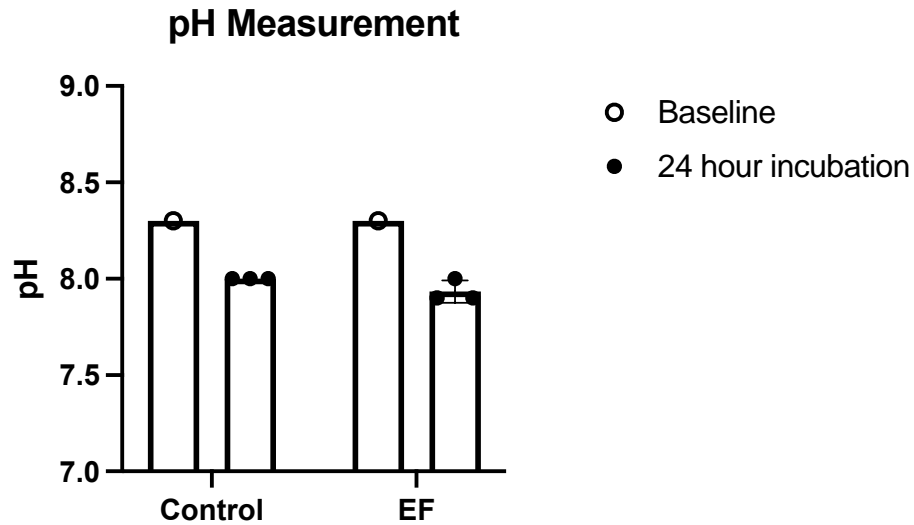


Supplemental Figure S2. Nanogenerator oEF supply. Image of NG setup to produce oscillating EF showing the 3D printed mounts and unrestricted movement of the NG parallel to the ground.

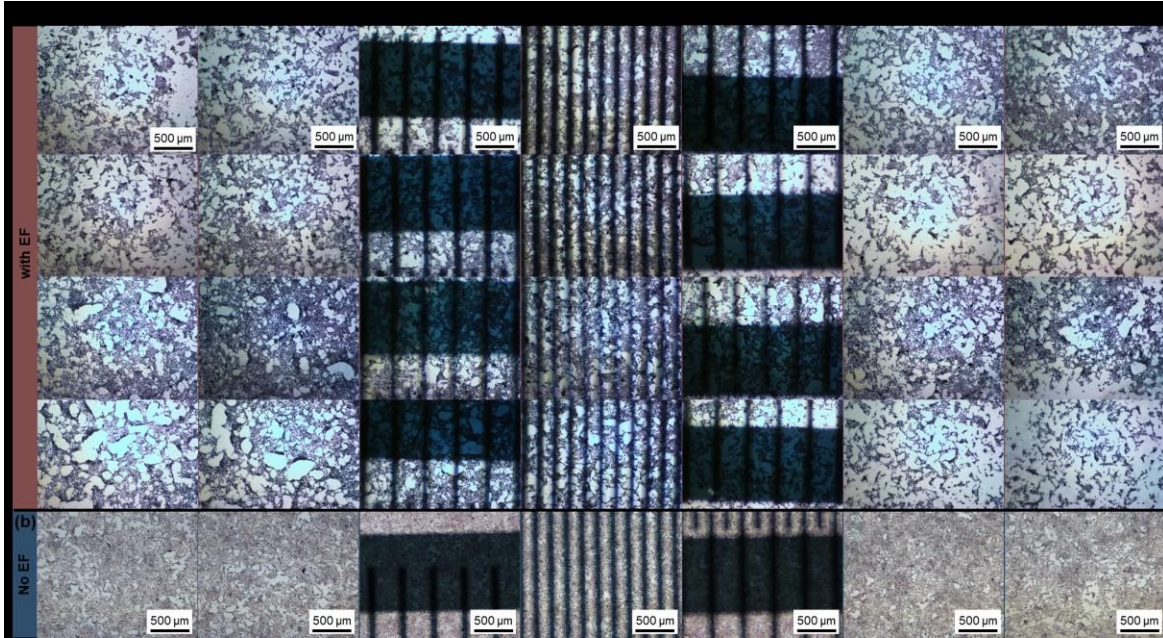


Supplemental Figure S3. ImageJ analysis of optical images. Example of the control group (PDMS, no EF), (a) showing the selection of a 600 x 420 area on the image. (b) The cropped image is converted to an RGB stack and transformed to a 16-bit format. (c) The threshold minimum and maximum are then adjusted manually until an individualized and accurate percentage of cell area coverage is obtained using the "measure" tool.

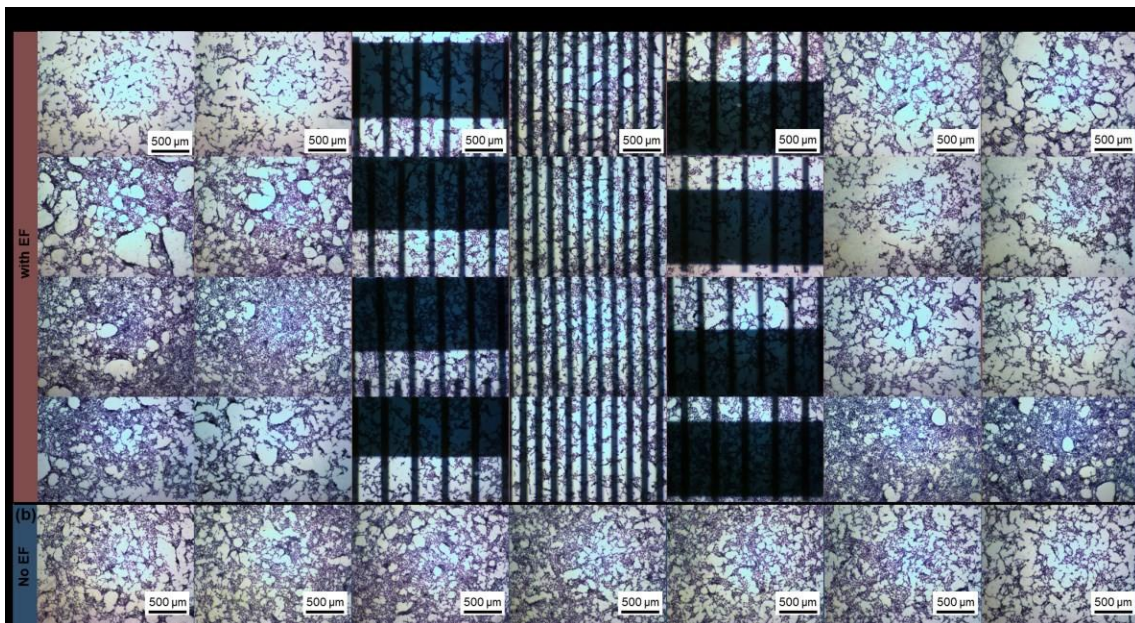
| Condition | Before (pH) | After 24 hours (pH) |
|----------------|-------------|---------------------|
| Control | 8.3 | 8.0, 8.0, 8.0 |
| Electric Field | 8.3 | 8.0, 7.9, 7.9 |



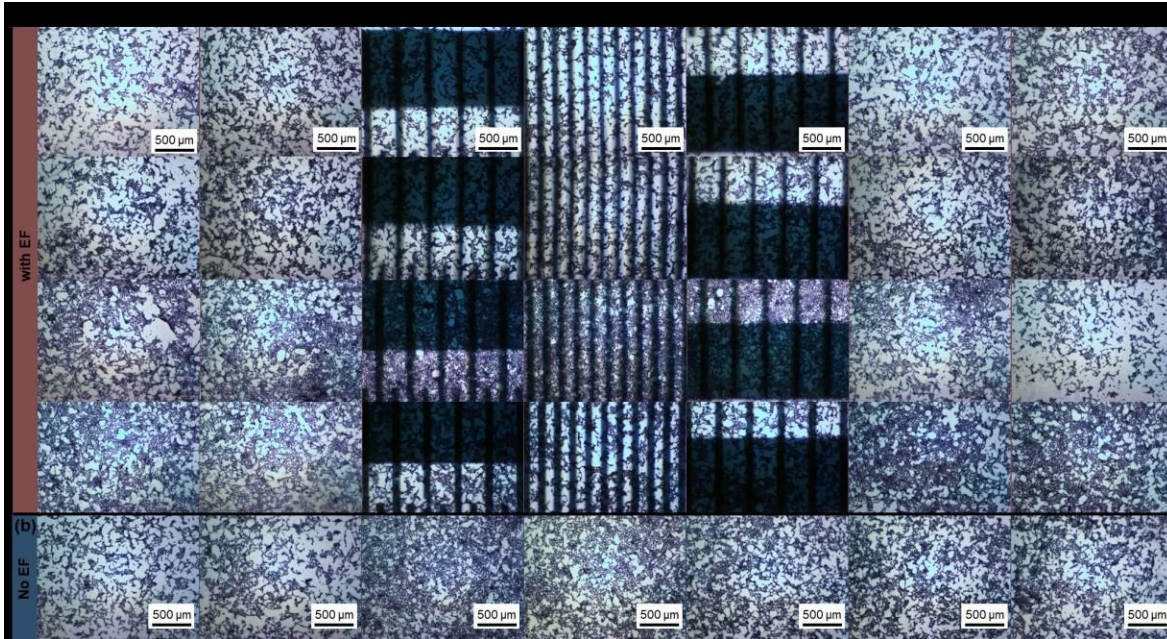
Supplemental Figure S4. pH measurements. Statistical significance was determined at a predefined threshold ($p < 0.05$). The mean pH for the control group (8.00 ± 0.00) did not significantly differ from the electric field (EF) group (7.93 ± 0.06) after 24 hours of incubation at 37°C with 5% CO_2 ($p > 0.05$).



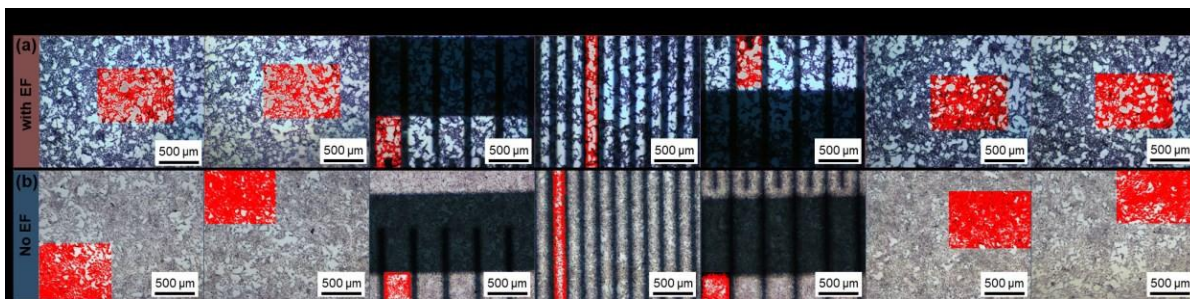
Supplemental Figure S5. MOVAS cell distribution over fabricated substrates in response to 1V. Microscope images showing the stained cells on the surface of the layered substrates (a) exposed to EF of a peak-to-peak voltage of 1V for 24h and (b) control slides with Au electrodes and PDMS layer but no applied EF.



Supplemental Figure S6. MOVAS cell distribution over fabricated substrates in response to 3V. Microscope images showing the stained cells on the surface of the layered substrates (a) exposed to EF of a peak-to-peak voltage of 3V for 24h and (b) control slides with only PDMS layer and no applied EF.



Supplemental Figure S7. MOVAS cell distribution over fabricated substrates in response to 4V. Microscope images showing the stained cells on the surface of the layered substrates (a) exposed to EF of a peak-to-peak voltage of 4V for 24h and (b) control slides with only PDMS layer and no applied EF.



Supplemental Figure 8. Example of microscope image analysis through coverage/contrast correlation showing the selected areas on the surface of the layered substrates (a) exposed to oEF of a peak-to-peak voltage of 4V for 24h and (b) control slides with Au electrodes and PDMS layer but no applied EF.