Supplementary Information

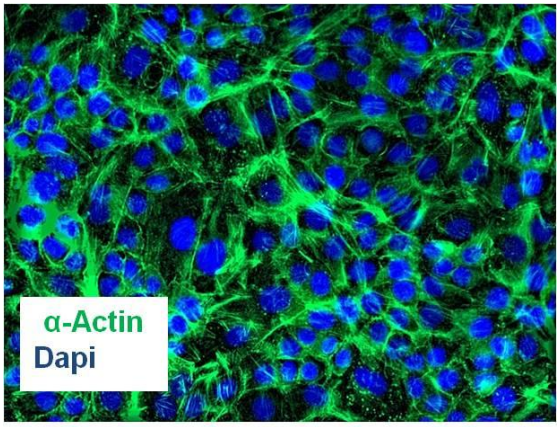

Figure S1. A representative fluorescent micrograph α-actin (green) and Dapi (blue) staining of keratinocytes cultured with hydrogels containing pH responsive beads.

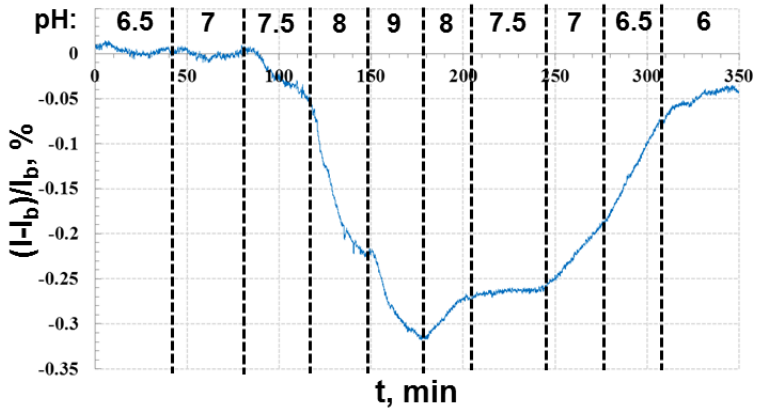

Figure S2: Representative example of sensor response to different pH environments at wavelength of 600 nm. The responses of sensor arrays based on 570μm aligned fibers composed of microbeads doped with brilliant yellow.

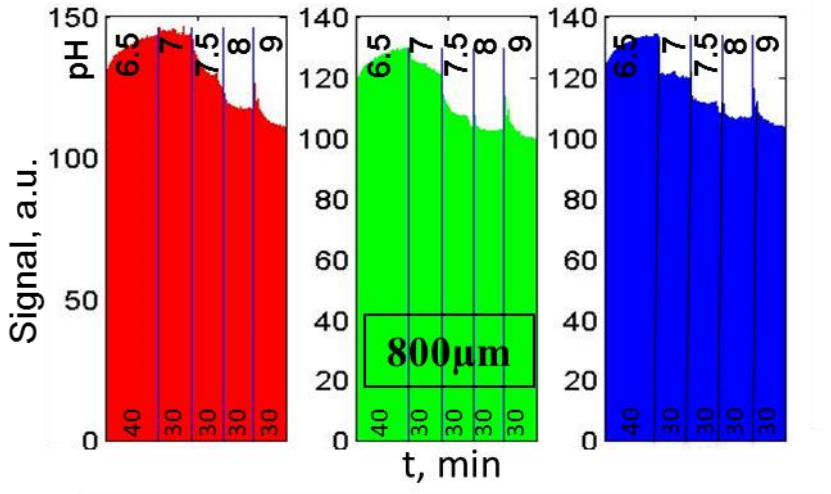

Figure S3: Representative example of iPhone signal (RGB) versus time at different pH environments. The responses of sensor arrays based on 800µm aligned fibers composed of microbeads doped with brilliant yellow.

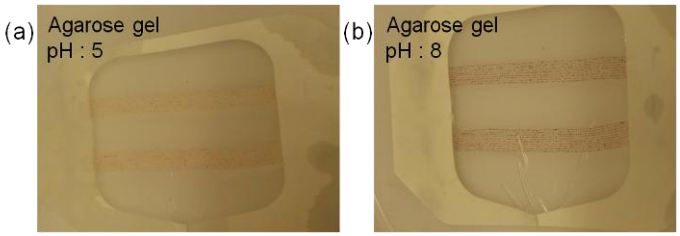

Figure S4. The fabricated wound dressing was placed on agarose hydrogel with various pH values to simulate its topical application. The color change is clear by placing the patch on two different agarose gels with different pH values.