SUPPLEMENTARY MATERIALS

Penetration enhancers strengthen tough hydrogel bioadhesion and modulate locoregional drug delivery

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Supplementary Figures

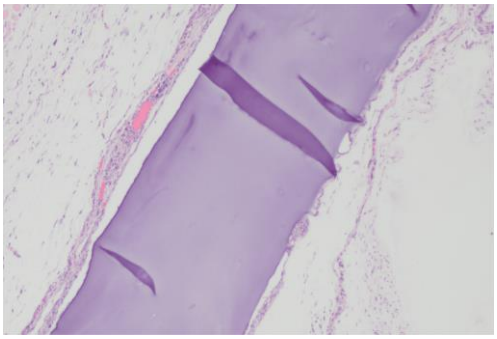

Figure S1. H&E staining of the hydrogel adhesives disk after 28-day implantation.

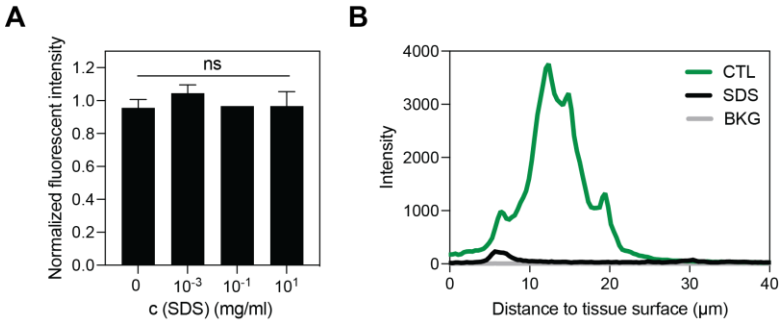

Figure S2. Penetration enhancers elevated the penetration of FITC-chitosan into porcine skin. (A) The presence of SDS does not affect the fluorescence intensity of FITC-chitosan. Data reported as means ± SD for n = 3 independent experiments. Statistical significance is determined by one-way ANOVA test. “ns” indicates not significant. (B) Representative fluorescence intensity gradient of FITC-chitosan in the tissue from the porcine skin surface to the deeper tissue characterized using cryosectioned hydrogel-tissue samples with or without SDS treatment. CTL: control; BKG: background.

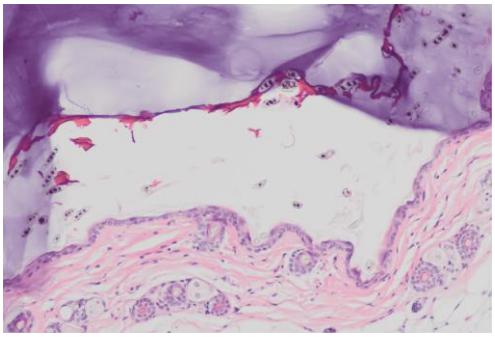

Figure S3. H&E staining of the hydrogel-skin hybrid reveals strong biointegration between the hydrogel adhesive polymer and the stratum corneum layer of the freshly excised mice skin. During the tissue sectioning, pulling the gel by the shear force resulted in splitting the stratum corneum from the underlying layer of the epidermis.

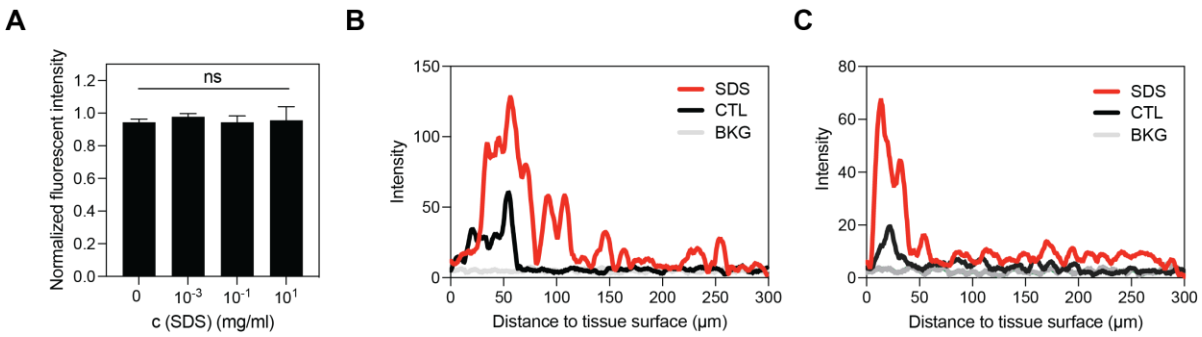

Figure S4. Penetration enhancers elevated the penetration of DOX into porcine skin and patient derived prostate cancer tumour tissues. (A) The presence of SDS does not affect the fluorescence intensity of DOX. Data reported as means ± SD for n = 3 independent experiments. Statistical significance is determined by one-way ANOVA test. “ns” indicates not significant. Representative fluorescence intensity gradient of DOX in the tissue from the (B) porcine skin surface and (C) patient derived prostate cancer tumour surface to the deeper tissue characterized using cryosectioned hydrogel-tissue samples with or without SDS treatment. CTL: control; BKG: background.

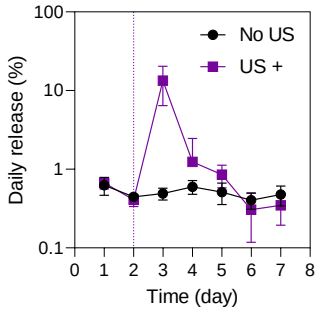

Figure S5. Ultrasound stimulation triggers the short-term and high-dose burst release of DOX. Ultrasound is applied on DOX-loaded nanocomposite hydrogels on day 2. Dashed line indicates US triggering for 15 seconds on day 2.