

Breaking the Barrier – Potent Anti-Inflammatory Activity following Efficient Topical Delivery of Etanercept using Thermoresponsive Nanogels

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Supporting Information

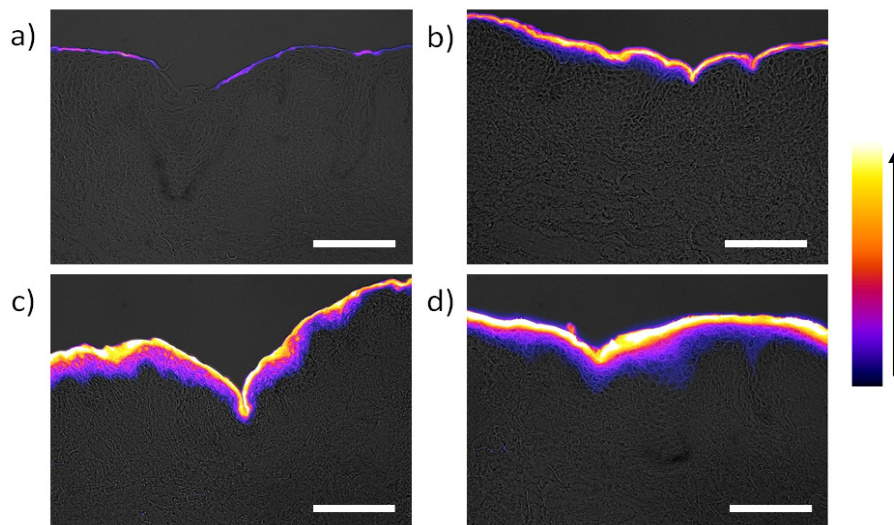
Table S1. The synthesised nanogels and their properties.

Nanogel	Size [nm] (PDI) ^a	ζ potential [mV] ^b	T _{cp} [°C] ^c	Loading capacity [wt.%]
tNG_pNIPAM	88.36 (0.231)	-2.540	34.6	-
tNG_pNIPAM_ETR	83.99 (0.243)	-3.040	34.7	10
tNG_tPG	182.7 (0.125)	1.900	32.0	-
tNG_tPG_ETR	185.3 (0.150)	0.341	32.7	10

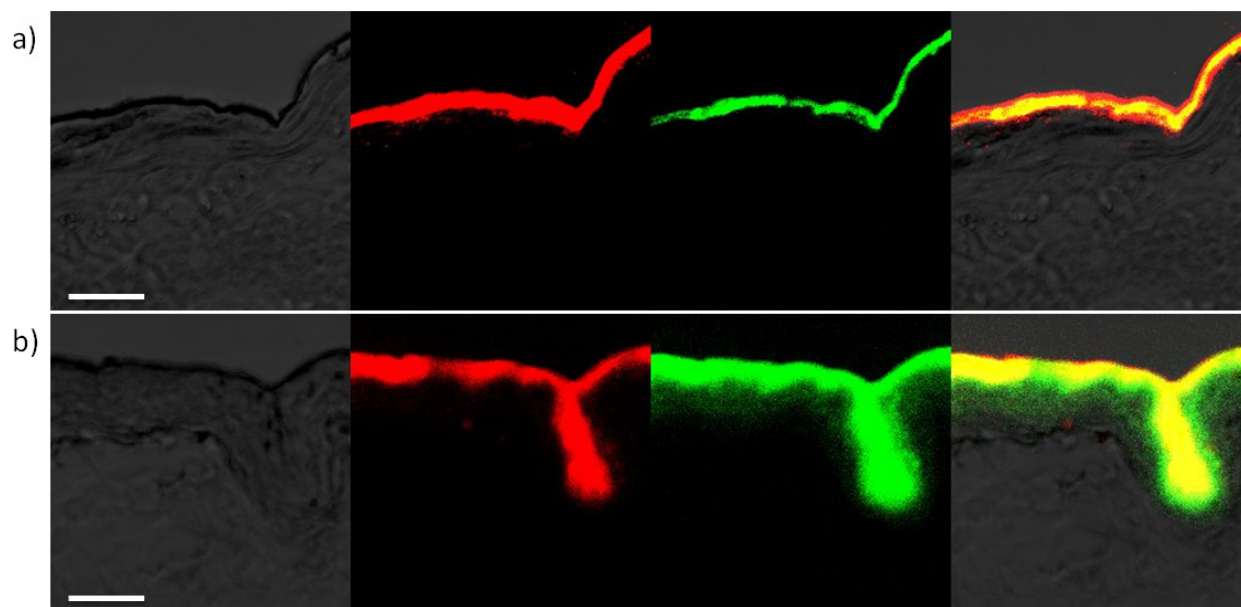
^a Size and polydispersity index (PDI) by DLS in PBS at 25 °C. Measurements were performed in triplicates; intensity average mean value presented.

^b ζ potential determined by Zeta-sizer in PBS. Measurements were performed in triplicates; intensity average mean value presented.

^c Cloud point temperature determined as the temperature at 50% transmittance by UV-Vis ($\lambda = 500$ nm).



Supplemental Figure S1. Representative fluorescence imaging of FITC-BSA in human skin biopsies (tape stripped 50x) following 6 h topical application in PBS (a), tNG_pNIPAM (b), tNG_pNIPAM_ETR (c), tNG_tPG (d). Temperature was increased from 32 to 37 °C in the first 3 h and held there for the remaining incubation. Images show FITC-BSA staining pseudo temperature coloured (scale and direction of intensity indicated to the right) overlaid on differential interference contrast (DIC) images (scale bar = 100 μ m).



Supplemental Figure S2. IDCC-tNG_tPG (a, b) loaded with FITC-BSA were topically applied to normal (a) and TNF α (b) treated skin equivalents over 3 hours (3 h topical application with temperature ramp). Images show (from left to right) bright field images (grey), tNG staining (red), BSA staining (green) and the overlay of these three images. Scale bar = 25 μ m.