Expanded View Figures

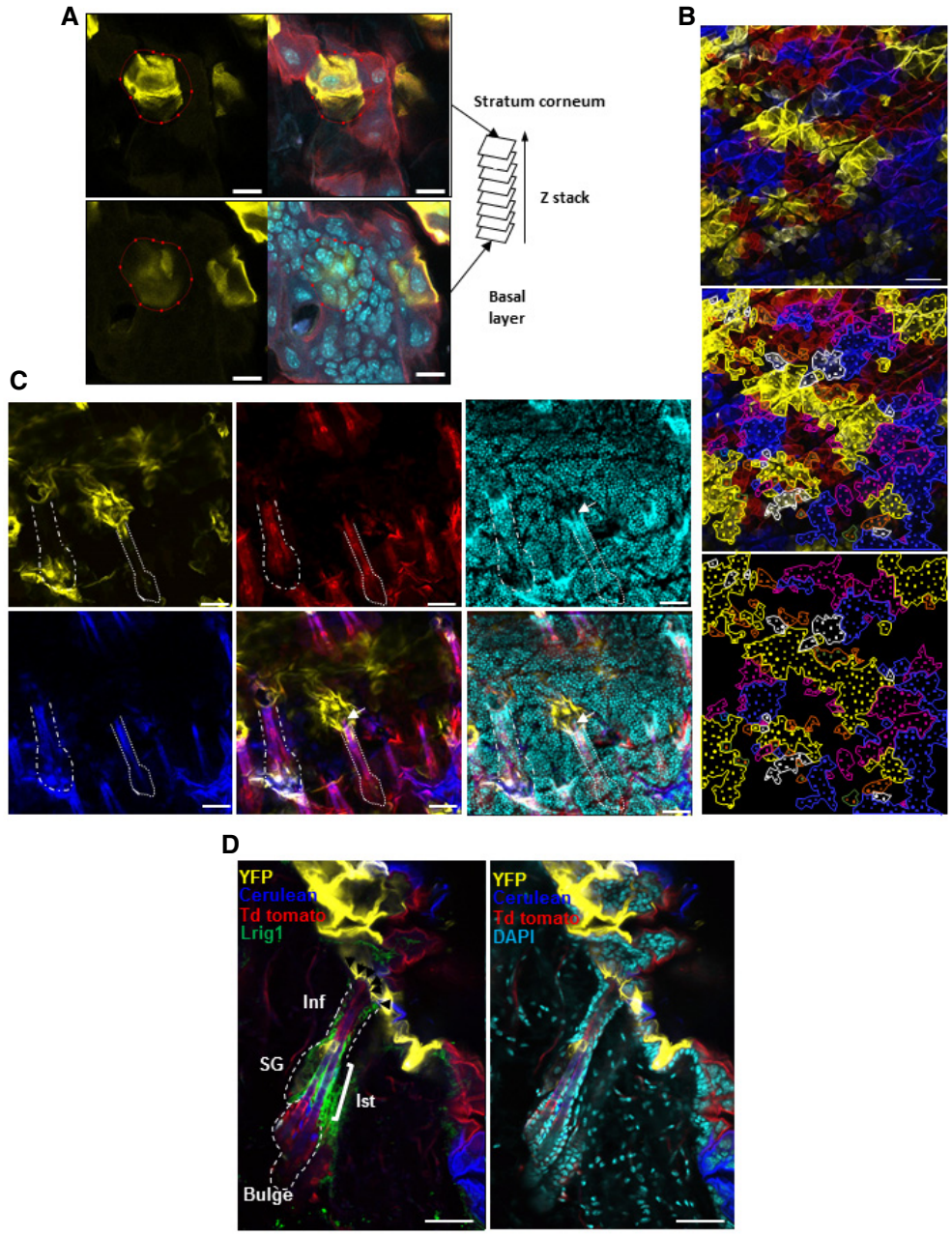

Figure EV1. Scoring and sample analysis.
Surface corneocytes are in relation with underlying basal epidermal cells.

A Photomicrograph represents a 2D optical section from a *Z*-stack acquisition of whole-mounted skin displaying the stratum corneum (top images) and basal epidermal layer (bottom images). The red circle delimits a yellow clone sharing corneocytes and basal epidermal cells (scale bar represents 20 μm).

B Using individual sections from *Z*-stacks, limits of clones (lines) were identified and cells (dots) within each clone were counted (scale bar represents 100 μm).

C 2D compiled images from *Z*-stack acquisition of whole-mounted skin. The white arrow shows a yellow clone in contact with a hair follicle shaft. This clone is considered attached to a hair follicle (scale bars represent 50 μm). Contact between IFE clones and HF.

D Photomicrographs represent 2D optical sections from a *Z*-stack acquisition of a 0.5-mm skin section displaying IFE and HF harbouring multiple clones of different colours at 12 weeks. The permanent portion of the hair follicle (isthmus and infundibulum) is labelled with Lrig1 (green). The yellow clone in the IFE immediately adjacent to the HF is considered as attached to the HF. Black arrows show the contact between the yellow clone and the HF. B, bulge; Inf, infundibulum; Ist, isthmus; SG, sebaceous gland; IFE, interfollicular epidermis (scale bar represents 50 μm).

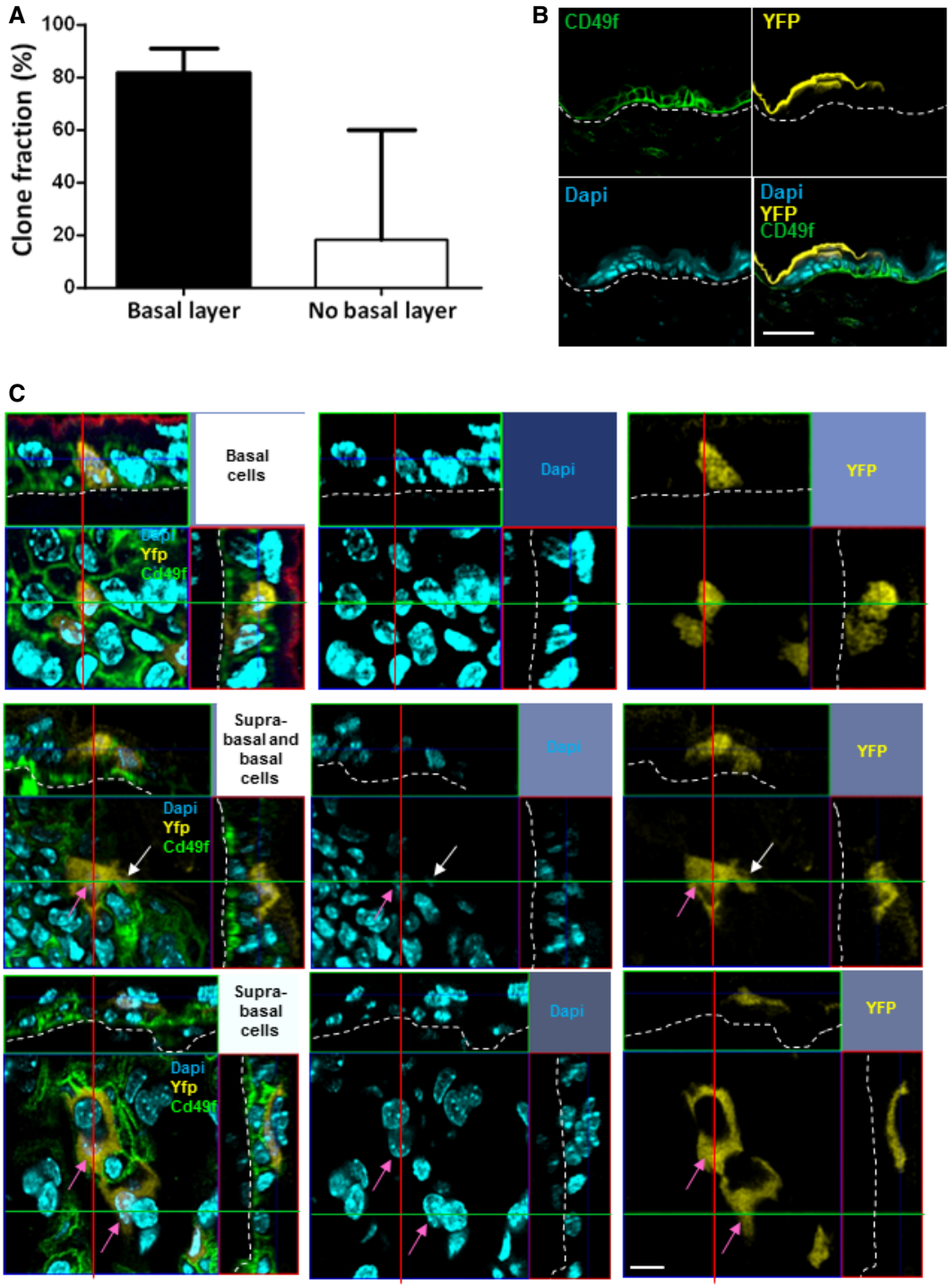

Figure EV2. Small clones remaining at 24 weeks harbour cells in the basal layer.

A Histogram chart showing the relative frequency of small clones observed at 24 weeks with or without cells in the basal layer. Clones without cells in the basal layer are considered as dying clones entering fully terminal differentiation. About 80% of small clones had cells in the basal layer of the epidermis (black bar), while 20% did not (white bar). n = 41 clones were counted from 4 mice. Data are represented as median with interquartile range.

B Confocal analysis of alpha-6 integrin staining to identify basal epidermal cells. An optical section of a Z-stack transversal acquisition demonstrates the presence of YFP^+ cells above the basal layer stained with alpha-6 integrin. This YFP^+ cell is therefore suprabasal (scale bar represents 50 μm).

C Photomicrographs represent 2D optical section from a Z-stack acquisition in of whole-mounted skin displaying representative basal (white arrows) and suprabasal (pink arrows) clones at D3 of tamoxifen injection (scale bar represents 20 μm).

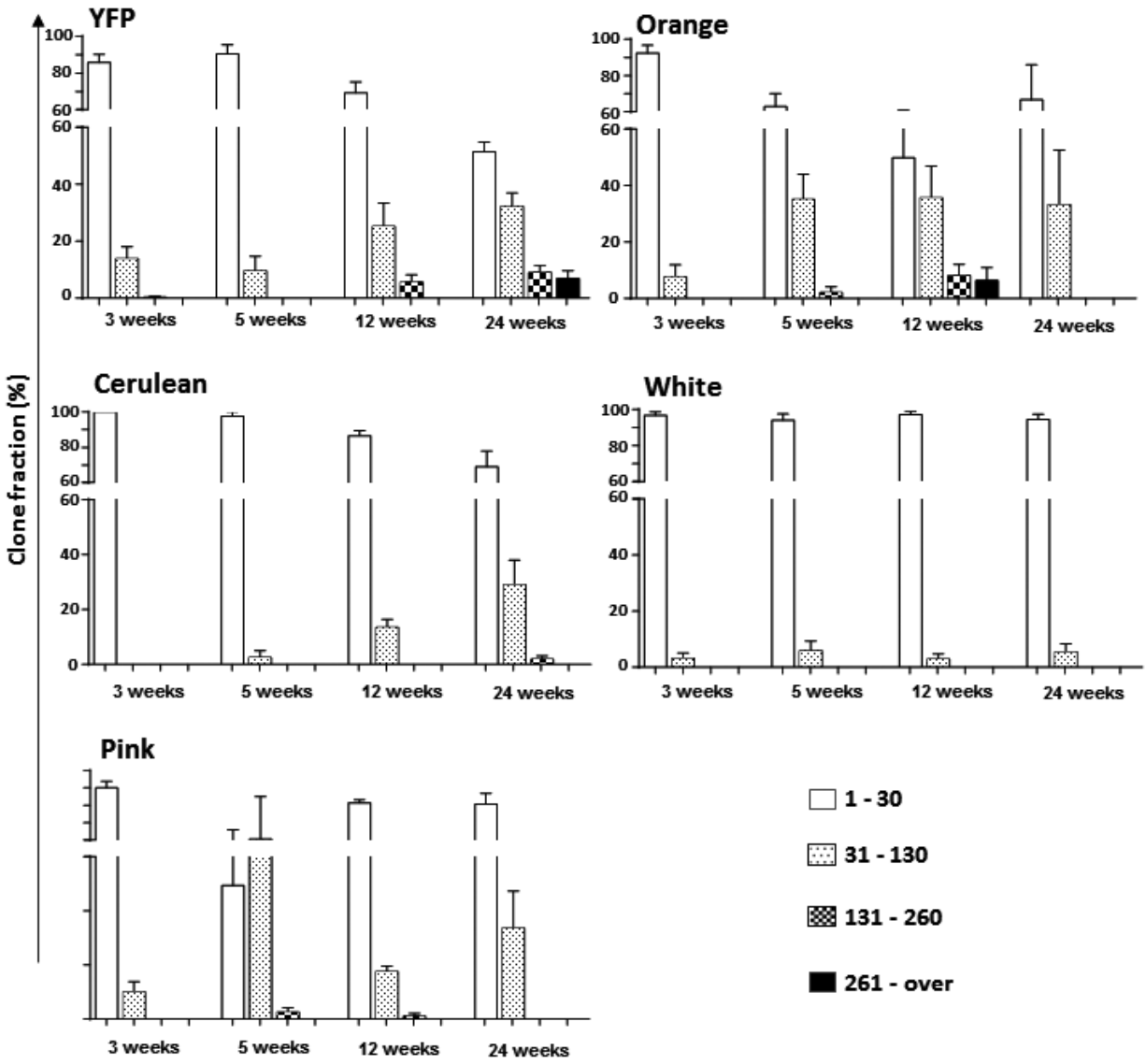

Figure EV3. Single-colour analysis of IFE renewal shows continued clonal growth.
Labelled clones were grouped based on their colour, and each group was separately analysed for size progression over time. Histogram chart showing the relative frequency of clone sizes obtained for each colour between 3 and 24 weeks. The frequency of larger clones increased over time for all five colours. Continued growth was also observed for rare colours such as orange or pink, arguing against the possibility that this growth was only due to contact between clones of a same colour. Data are represented as mean ± s.e.m.

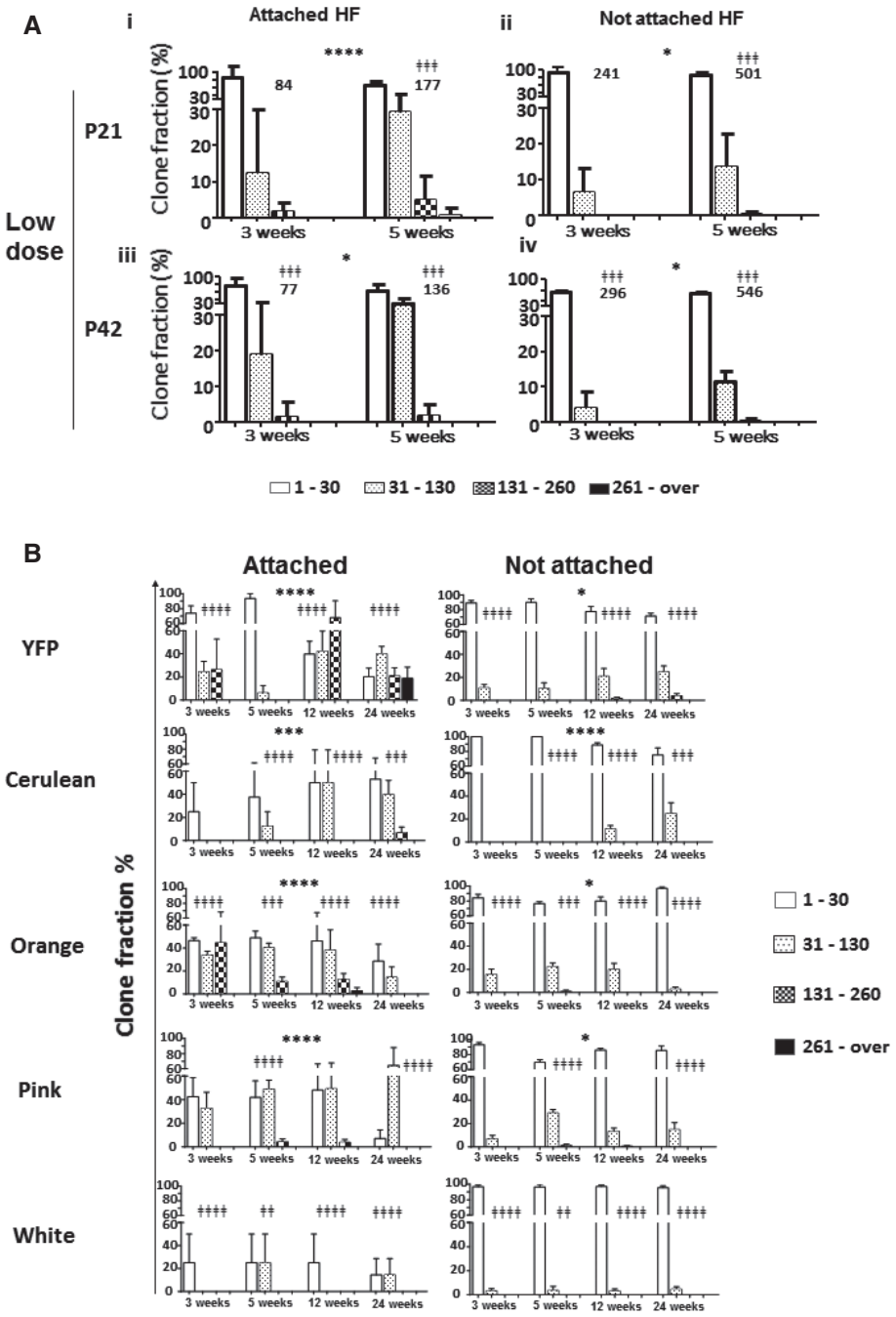

Figure EV4. Low-density labelling and single-colour lineage tracing confirm increased size of clones attached to HF.

A Bar charts showing the relative frequency of clone sizes at 3 and 5 weeks after recombination in groups injected at P21 or P42 with a single low dose of tamoxifen to perform a low-density staining. In the P21 group, clones attached to HF (i) were more likely to be bigger than those not attached (ii) at 5 weeks. The same result is found in the P42 group at 3 and 5 weeks (iii and iv). Chi-square test, $^{\ddagger\ddagger\ddagger}P < 0.001$. The number of clones analysed is indicated on the graph. Of note, whether attached or not clones continued to grow over time. Chi-square test, $^{****}P < 0.0001$, $^{*}P < 0.05$. Data are represented as mean ± s.e.m.

B Labelled clones were grouped based on their colour, and each group was separately analysed for size distribution difference between clones attached to HF or and non-attached. Histogram chart showing the relative frequency of clone sizes obtained for each colour between 3 and 24 weeks. The frequency of larger clones attached to HF increased more steadily in over time for all five colours. Continued growth was also observed for rare colours such as orange, white or pink, arguing against the possibility that this growth was only due to contact between clones of a same colour. Chi-square test indicated where significant difference was identified, $^{\ddagger\ddagger}P < 0.01$, $^{\ddagger\ddagger\ddagger}P < 0.001$, $^{\ddagger\ddagger\ddagger\ddagger}P < 0.0001$, $^{*}P < 0.05$, $^{***}P < 0.001$, $^{****}P < 0.0001$. Data are represented as mean ± s.e.m.

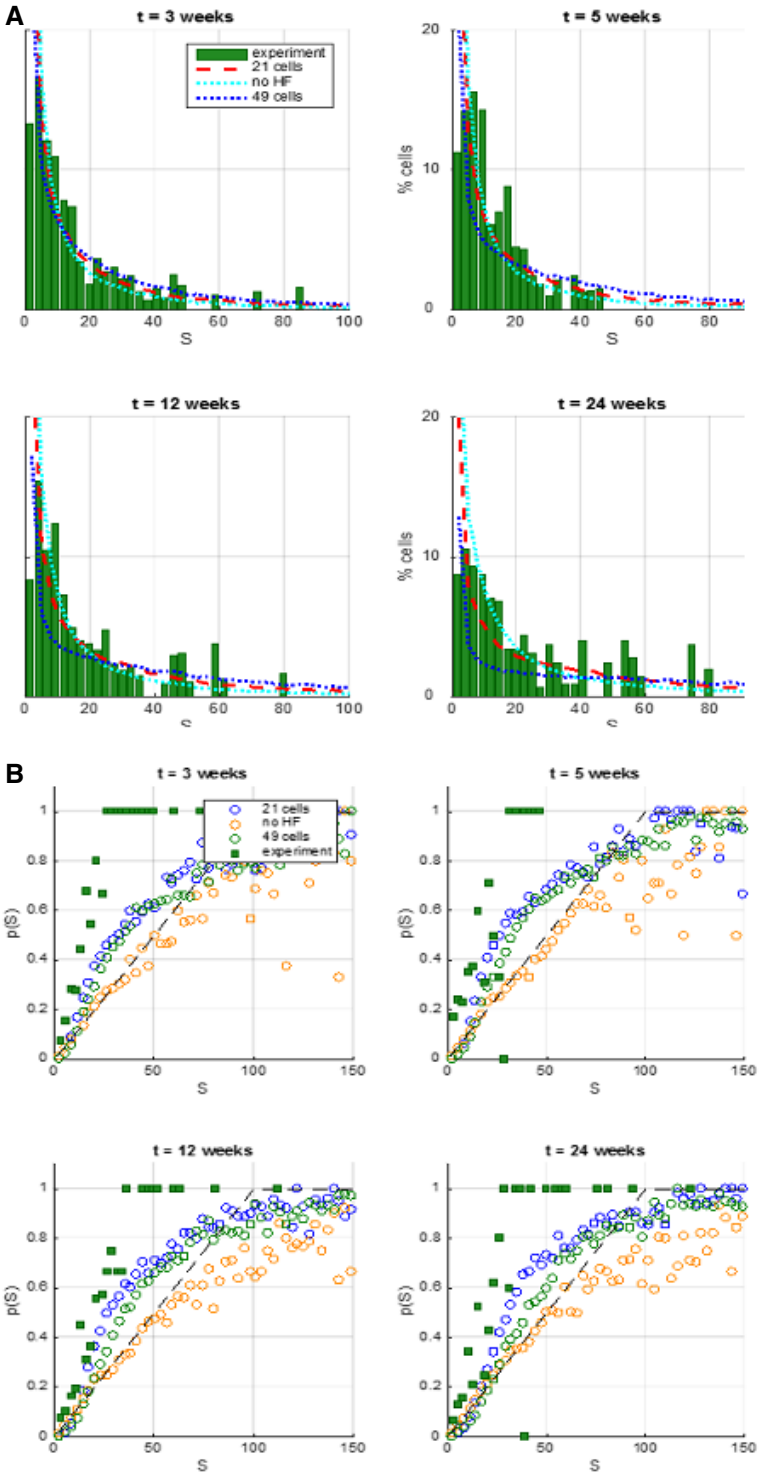

Figure EV5. Sensitivity analysis of the proposed model.

Computer simulation on 2D lattices representing the basal layer and hair follicles. In this analysis, the area of the IFE under the influence of HF cycling is changed from 21 cells (red line) to 49 cells (blue line).

A Plots show the probability for an individual keratinocyte to belong to a clone of a given size. Experimental data are represented in green bars. Theoretical curves take into account the possibility of colour overlap.

B The panels show the probability for a clone to be attached to hair follicles (p(S)) as a function of its size (S). At each time point, three sets of data were figured: values detected experimentally (green squares) versus values produced by simulating the Klein model (orange circles) and values obtained from simulations of the extended model, including the periodic activation of HFs enhancing the rate of migration of post-mitotic cells in a circular neighbourhood of 21 cells (blue circles) or 49 cells (green circles) around the active HFs.