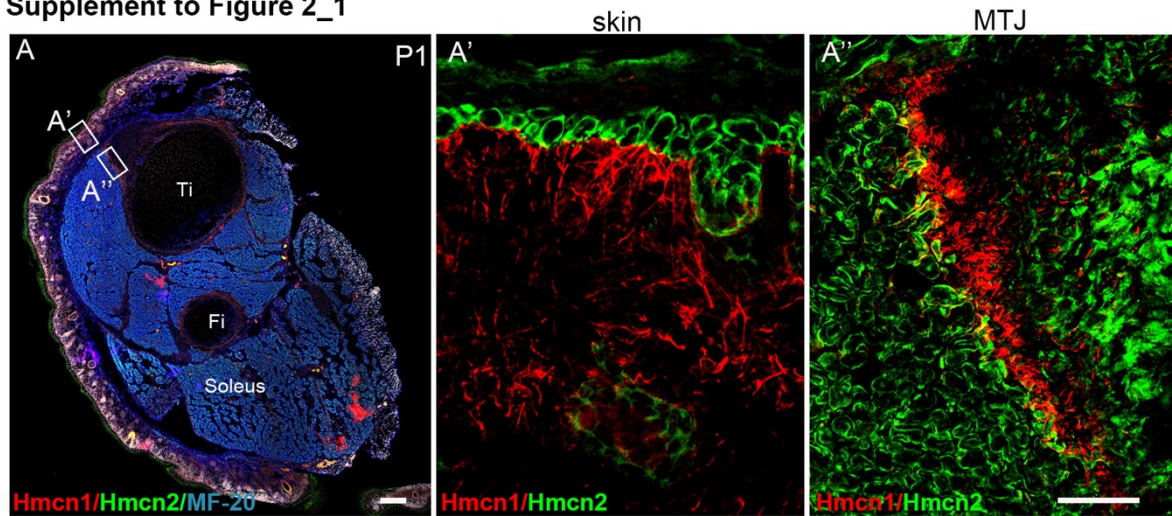


Supplemental Information

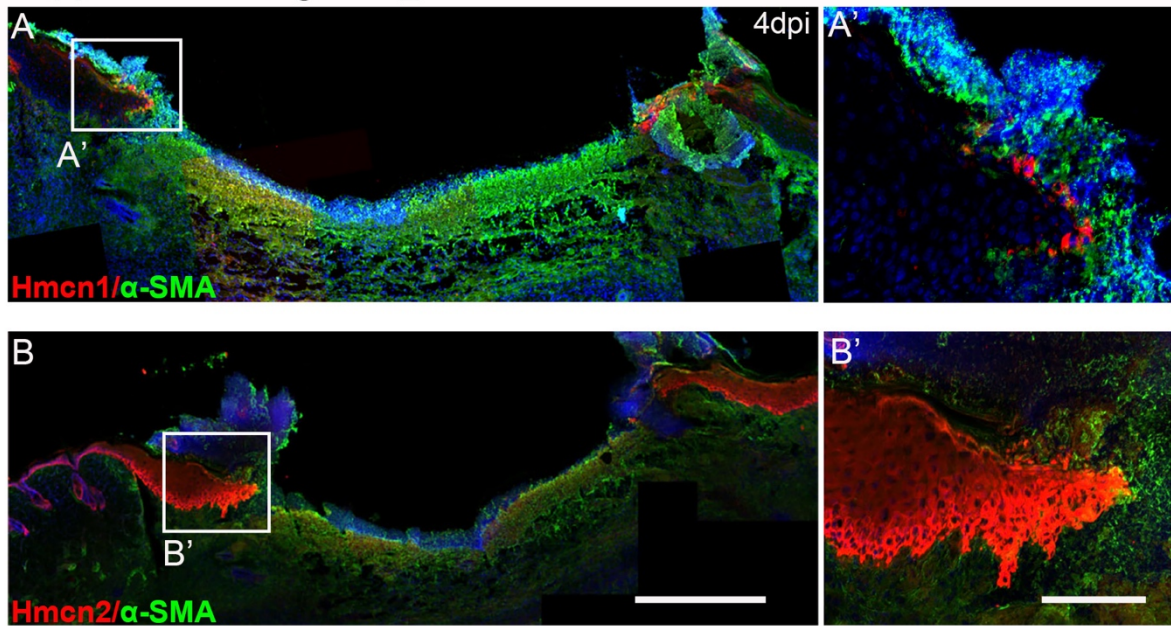
Supplement to Figure 2_1



Supplementary Figure S2_1. Differential localization of mouse Hmcn1 and Hmcn2 at the dermal-epidermal junction (DEJ) and muscle-tendon junction (MTJ).

(A) Representative cross section through calf of neonate, immuno-stained with antibodies against Hmcn1 (red), Hmcn2 (green), MF-20 (blue). Higher magnification images of DEJ (A') and MTJ (A'') show clear differential expression of Hmcn2 in epithelial (epidermis, skeletal muscle) and Hmcn1 in mesenchymal (dermis, tendon) tissue. Scale bars A= 200 μ m; A', A''= 50 μ m.

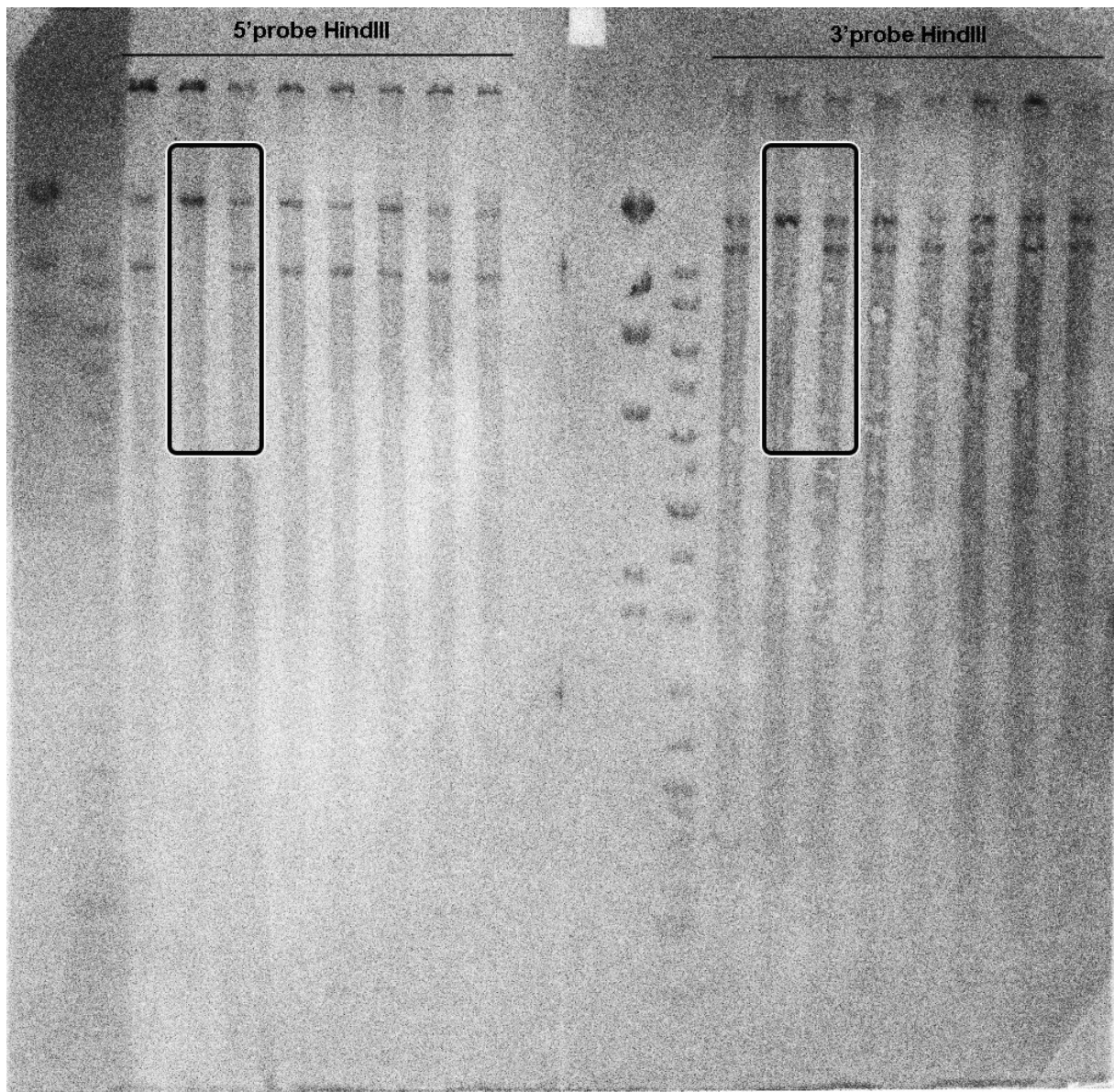
Supplement to Figure 2_2



Supplementary Figure S2_2. Hmcn1 and Hmcn2 protein localization during cutaneous wound healing.

(A) Hmcn1 (red) is up-regulated in the dermis adjacent to the epidermal tongues of closing wounds. (B) Hmcn2 (red) is strongly up-regulated in the basal keratinocytes within the epidermal tongues of closing wound. α -SMA (green), marker for myofibroblast differentiation and DAPI (blue) counterstains nuclei. Scale bars: A, B= 500 μ m; A', B'= 100 μ m.

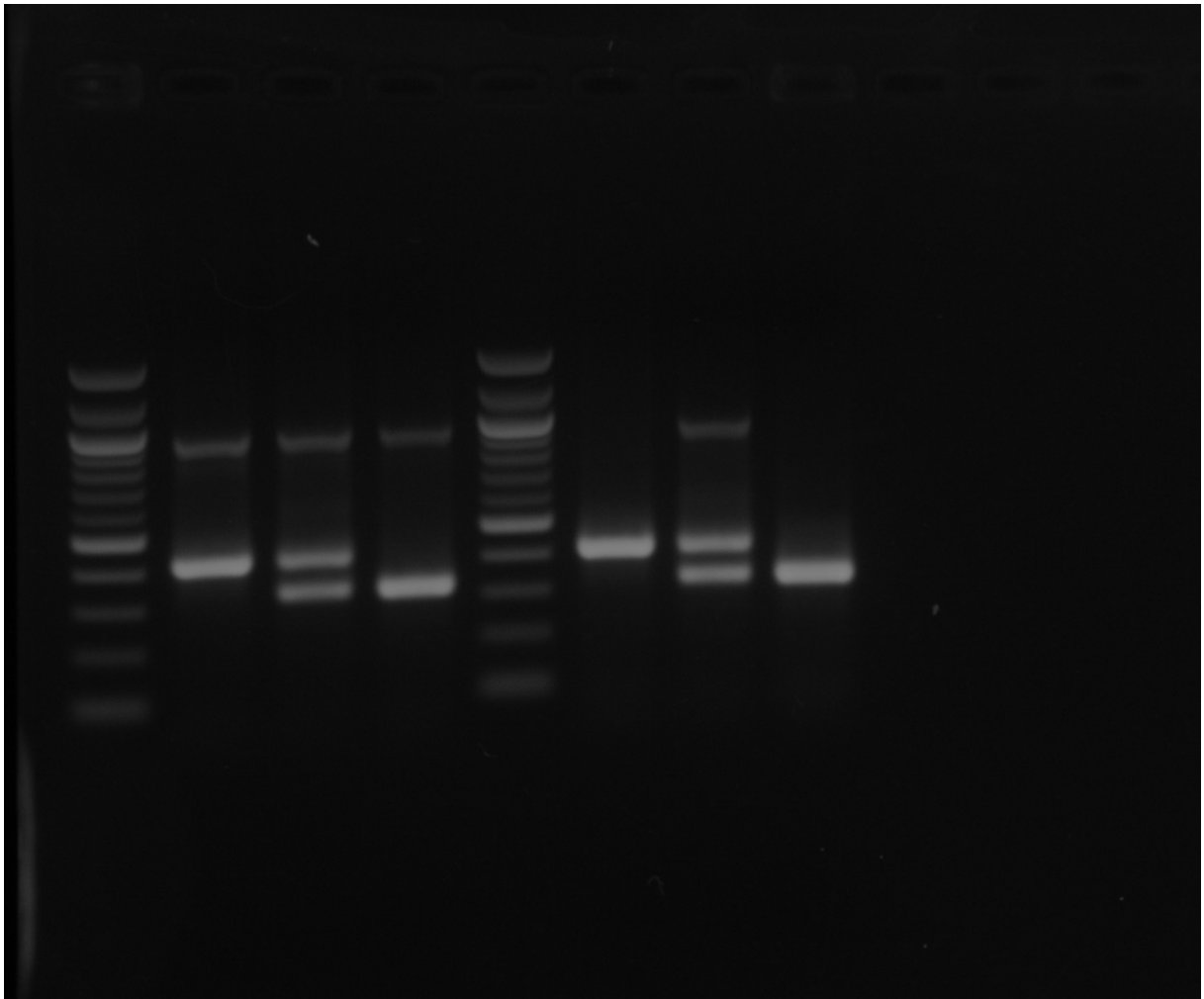
Supplement to Figure 3_1



Full-size Southern blots of *HindIII*-digested genomic DNA from ES cells using 5' and 3' *Hmcn1* probes.

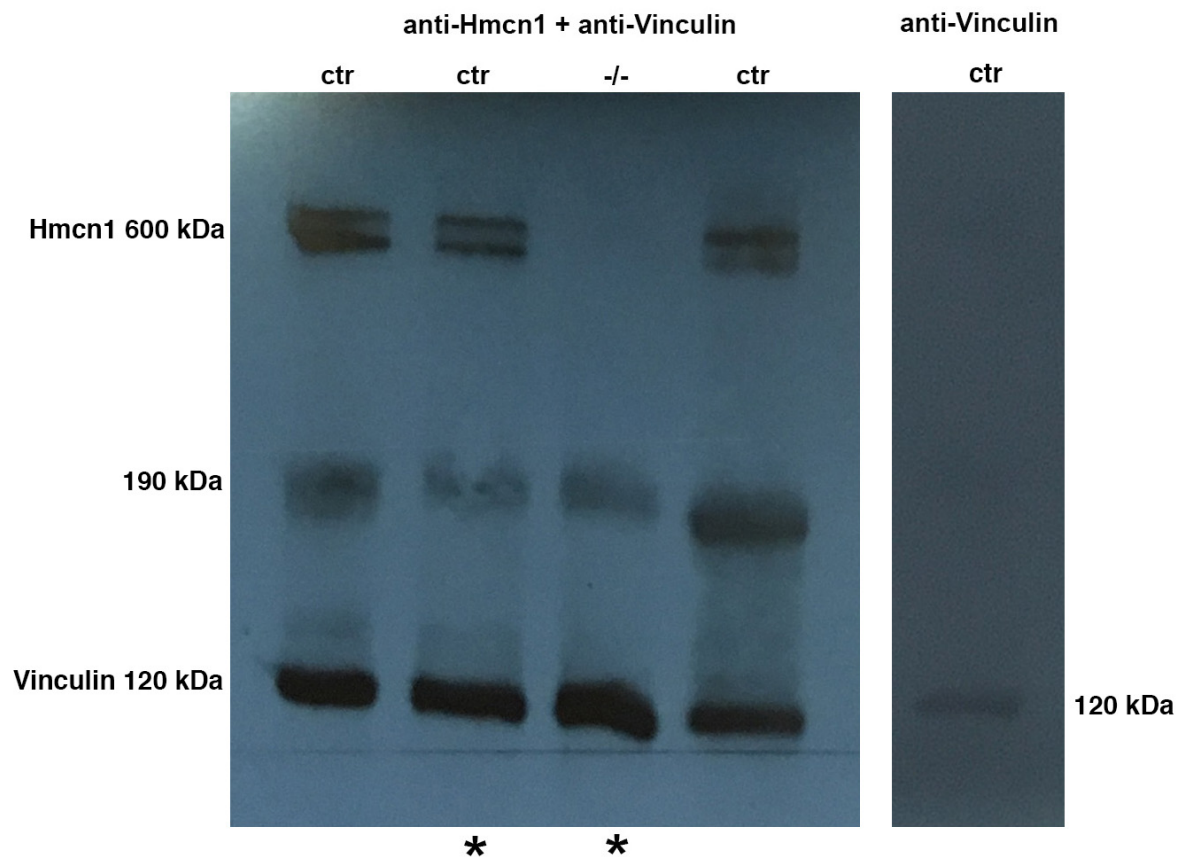
The regions shown in Fig. 3b are boxed.

Supplement to Figure 3_2



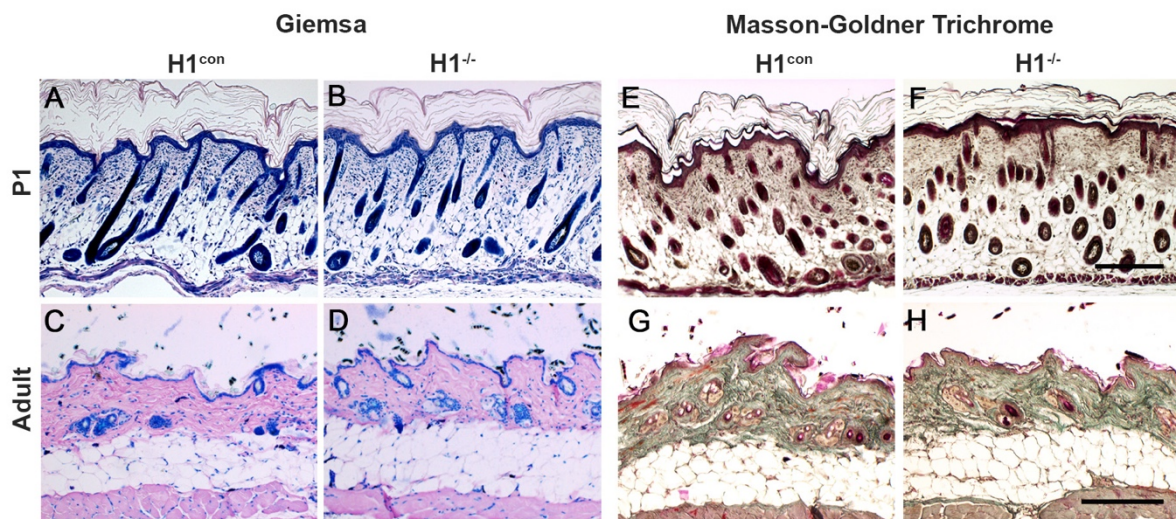
Full-size and unprocessed image of ethidium bromide gel of PCR products for genotyping of *Hmcn1* mutant mice, parts of which are shown in reverse black and white as Fig. 3C.

Supplement to Figure 3_3



Western blot of protein extracts from *Hmcn1* mutant (-/-) and control siblings (ctr) probed with anti-*Hmcn1* and anti-Vinculin antibodies (left panel). The 120 kDa Vinculin band was absent in blots solely probed with the anti-*Hmcn1* antibody (not shown), but present in blots solely probed with the anti-Vinculin antibody (right panel). The lanes shown in Fig. 3D are marked by asterisks.

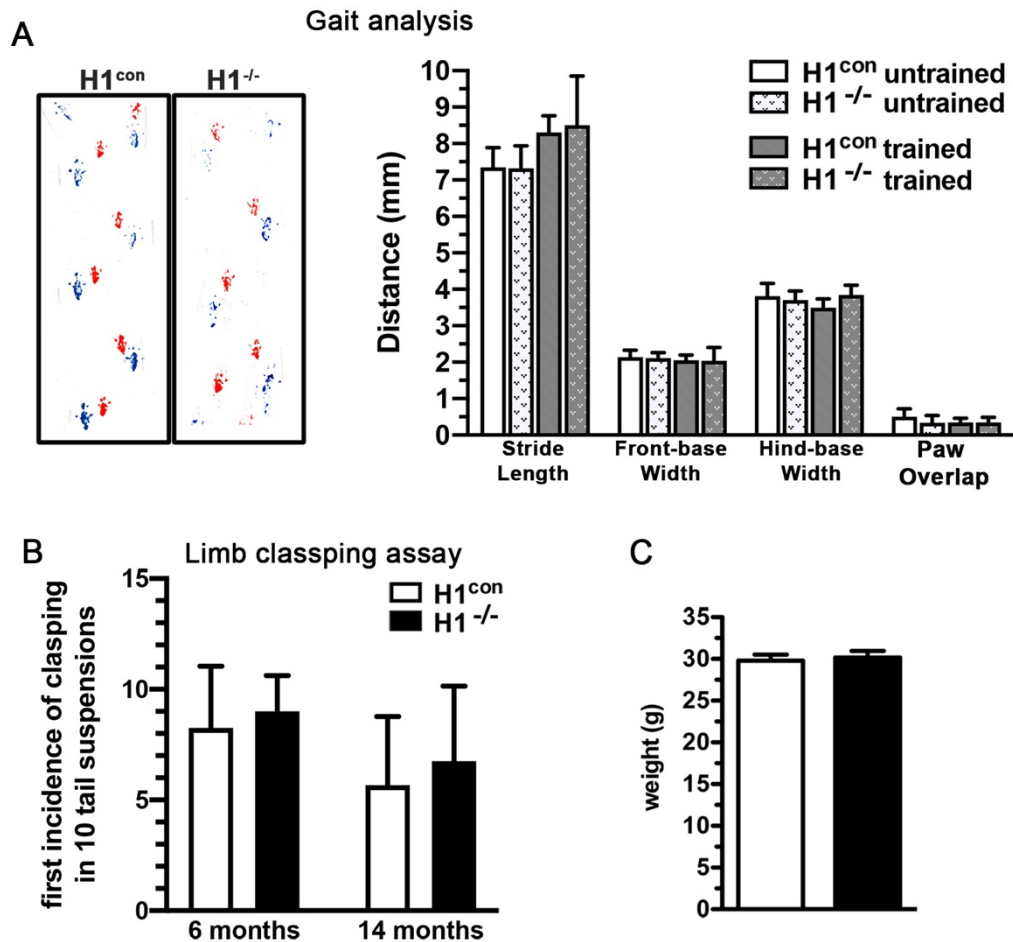
Supplement to Figure 5_1



Supplementary Figure S5_1. Histological analysis of the back skin in newborn and adult mice.

(A-D) Giemsa and (E-H) Masson-Goldner Trichrome staining show comparable dermal/ epidermal morphology, including skin appendages and collagen content between H1^{con} and H1^{-/-} mice. Scale bar represents 200 μ m. Abbreviations: H1^{-/-}, *Hmcn1*^{-/-} mutants; H1^{con}, sibling controls of *Hmcn1*^{-/-} mutants.

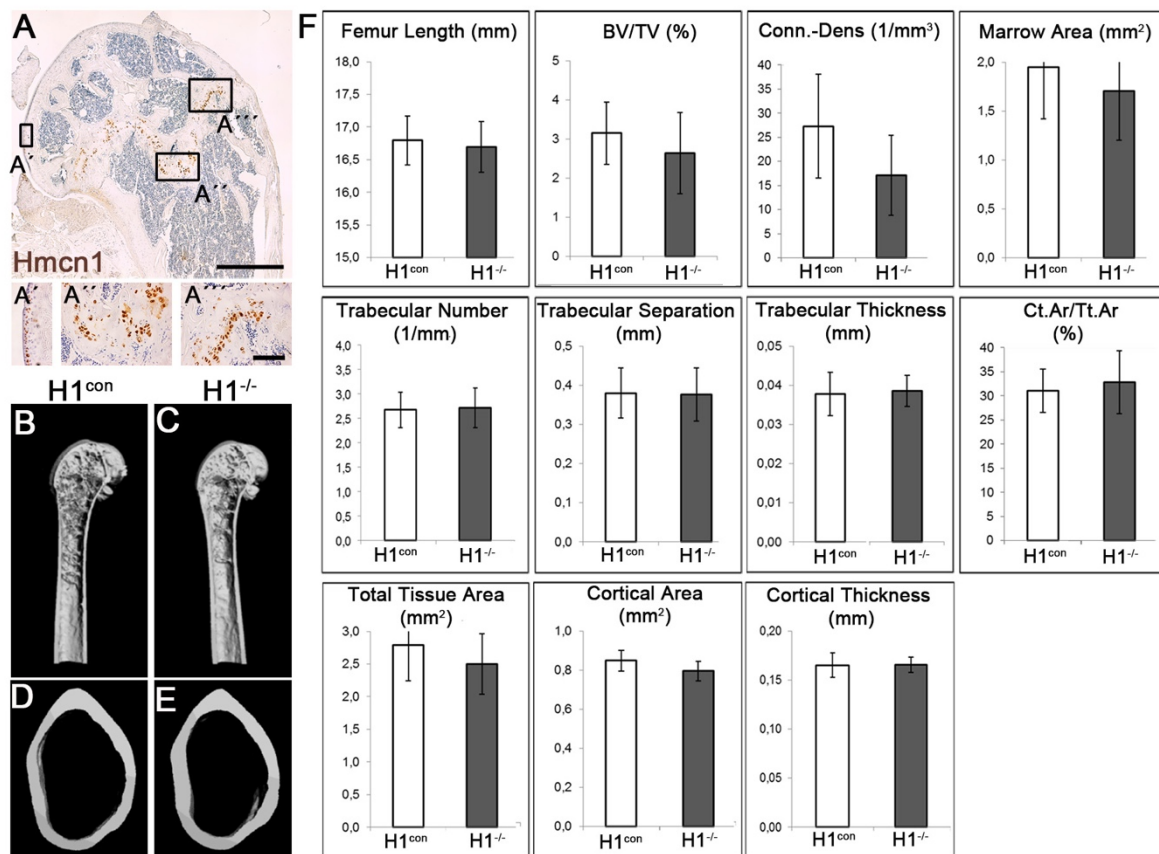
Supplement to Figure 5_2.



Supplementary Figure S5_2. Locomotion tests

(A) Footprint gait analysis of $H1^{con}$ and $H1^{-/-}$ mice that were trained or untrained. Non-toxic paint was applied to record the footprint placement pattern. Stride length, stride width, hind-base width and paw overlap were measured as specified in Materials and Methods, revealing no significant differences between 14-months old control and $H1^{-/-}$ mice. (B) Hindlimb clasping assay was tested in control ($n=9$) and $H1^{-/-}$ ($n=9$) mice of age of 6- and 14-months. Tail suspensions were performed up to ten times and stopped at first clear incidence of hindlimb clasping, revealing no significant differences between control and $H1^{-/-}$ mice. (C) No significant difference in body weights of tested 14-months old control and $H1^{-/-}$ mice. Abbreviations: $H1^{-/-}$, *Hmcn1*^{-/-} mutants; $H1^{con}$, sibling controls of *Hmcn1*^{-/-} mutants.

Supplement to Figure 5_3



Supplementary Figure S5_3. μ CT analysis of trabecular and cortical area of the femur

(A) Immunohistological staining against mouse *Hmcn1* (brown) shows the localization in the articular cartilage (A') and in the hypertrophic chondrocytes of the growth plate (A'', A'''). Nuclei were counterstained with hematoxylin. (B-E) Representative μ CT 3D images of the femur of 15 months-old mice revealed no difference in bone structure between H1^{con} controls and H1^{-/-} mutants. Images show sagittal view of femur (B, C) or top view of the cortical bone of femur; 0.75mm around middiaphysis (D, E). (F) Quantification of the femur length, BV/TV (bone volume fraction), Conn.-Dens (connectivity density), marrow area, trabecular (Tt.Ar) and cortical area (Ct.Ar) of H1^{-/-} mice (n=7) and H1^{con} control siblings (n=9), as shown in (B-E). Scale bars A=500 μ m; A', A'', A'''=25 μ m. Abbreviations: H1^{-/-}, *Hmcn1*^{-/-} mutants; H1^{con}, sibling controls of *Hmcn1*^{-/-} mutants.