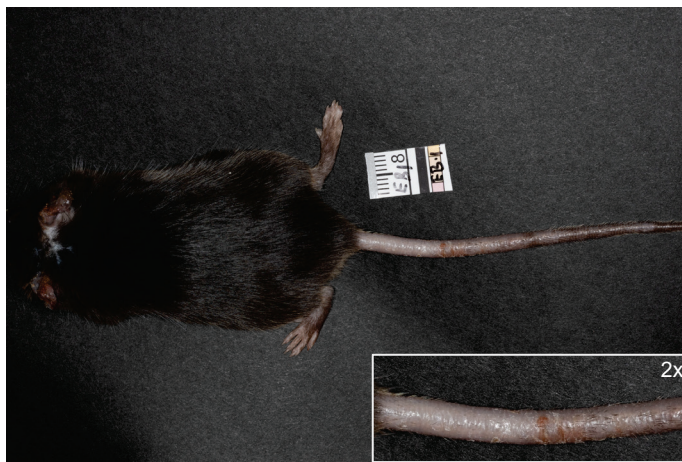
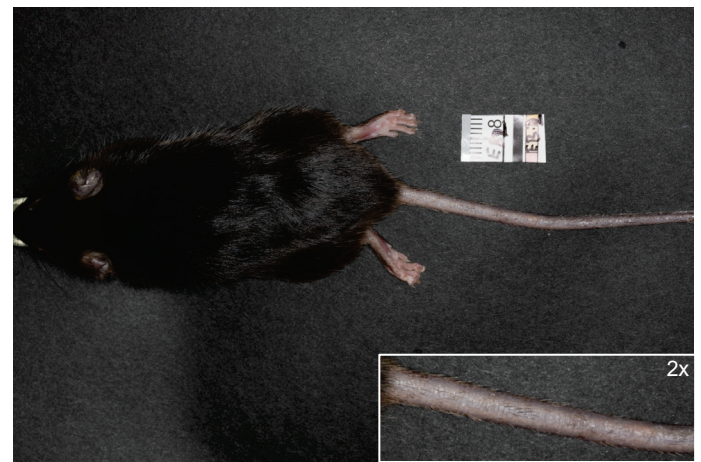


*LAMC2*<sup>jeb</sup> (Severe)

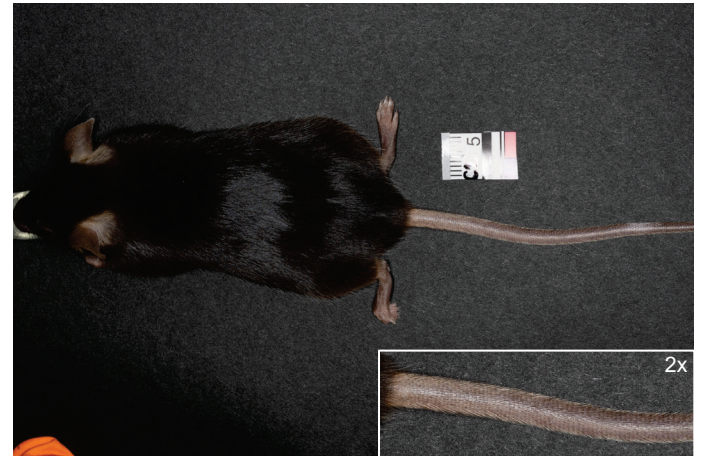
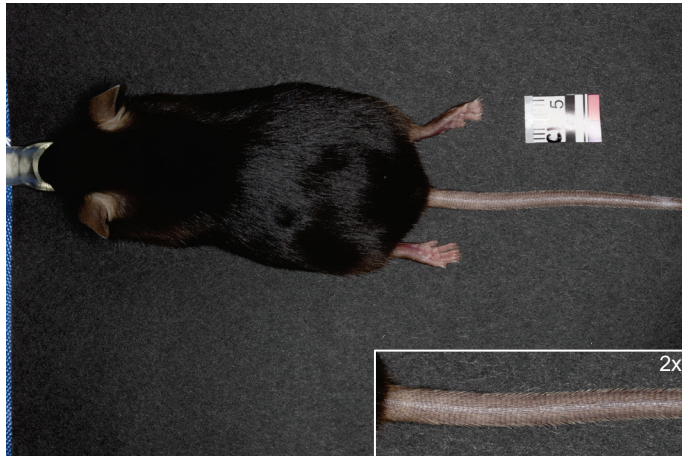
*LAMC2*<sup>jeb</sup> (Less Severe)



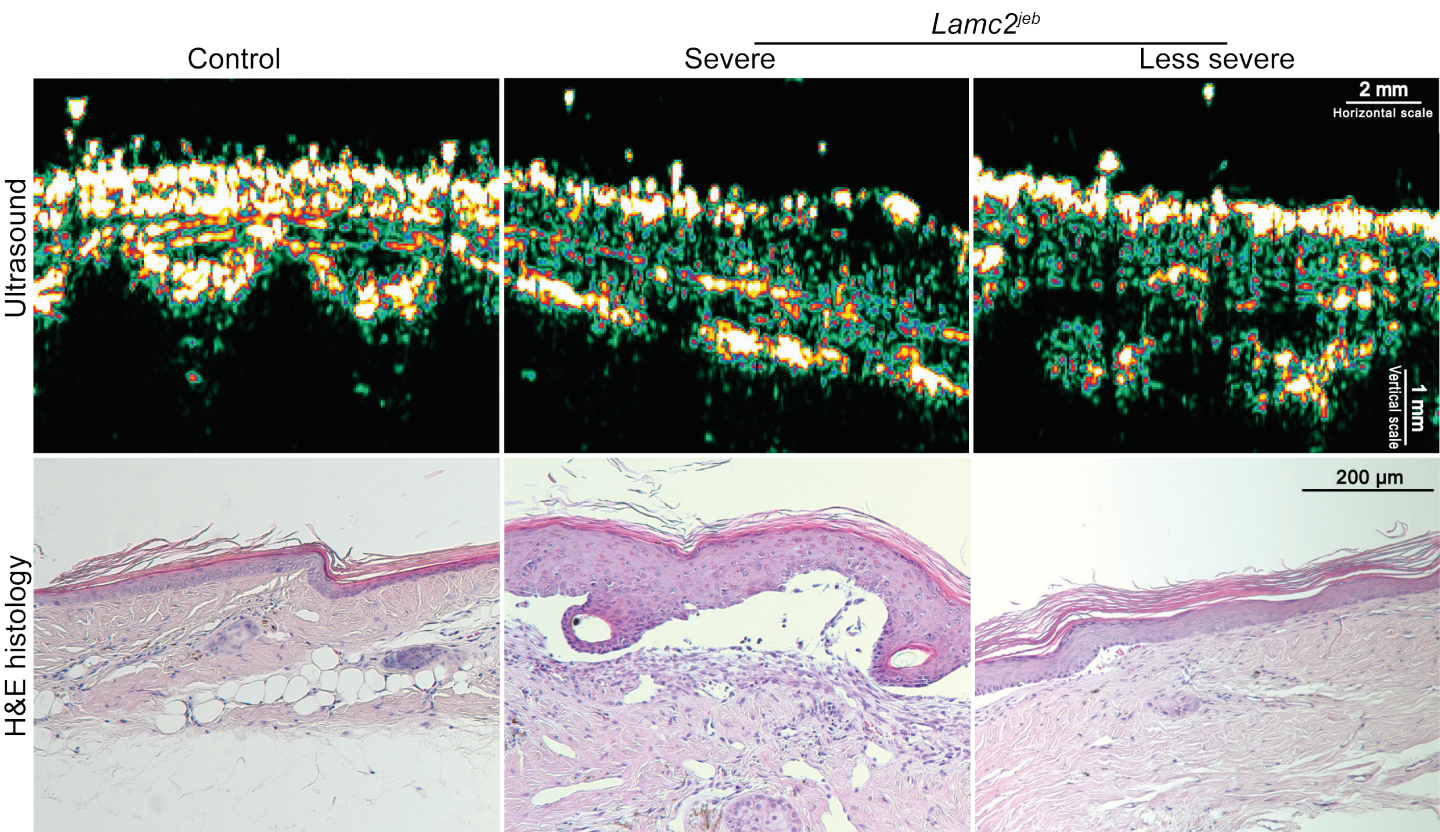
Control 1



Control 2



**Supplementary Figure 1.** Photographs of mouse specimens utilized for comparative histopathological and high-frequency ultrasound analyses. Two *LAMC2*<sup>jeb</sup> mice aged 15–16 weeks were examined: one exhibiting a severe junctional epidermolysis bullosa (JEB) phenotype characterized by extensive hair loss and tail ulcerations, and another presenting a milder phenotype with less hair loss and no tail ulcerations. Age-matched wild-type control mice showed no visible pathological features. Inserts represents a 2x digital zoom of the proximal tail. Images were captured with a Canon EOS R7 camera (Canon, Tokyo, Japan) equipped with a Canon EF-S 60/2.8 Macro USM lens (Canon, Tokyo, Japan). Photographic parameters, including distance and camera settings, were standardized across all images.



**Supplementary Figure 2.** Correspondence of high-frequency ultrasound (HFUS) and histopathology. Representative HFUS images and corresponding hematoxylin and eosin (H&E)-stained sections from matched regions in 15–16-week-old, age-matched mice: two *LAMC2<sup>ieb</sup>* mice (one with a severe phenotype and one with a less severe phenotype) and one wild-type control mouse. The wild-type controls generally displayed a homogeneous epidermal entry echo on HFUS and a corresponding intact epidermal-dermal junction with no signs of immune cell infiltration on H&E. In the severe junctional epidermolysis bullosa (JEB) phenotype, HFUS generally showed an irregular epidermal entry echo and a prominent subepidermal low-echogenic band (SLEB). This corresponded to marked epidermal hyperplasia, near-complete detachment at the epidermal-dermal junction, and prominent subepidermal immune cell infiltration on H&E. In the less severe JEB phenotype, HFUS generally showed a thicker but uniform epidermal entry echo and a less pronounced SLEB, corresponding to mild epidermal hyperplasia with only focal dermal detachment and visible but less pronounced immune infiltration on histology.