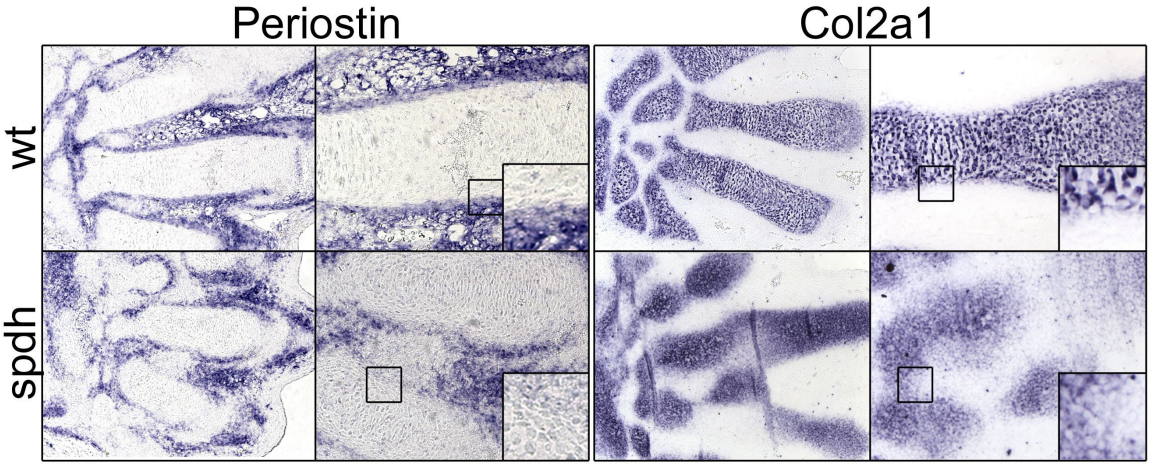
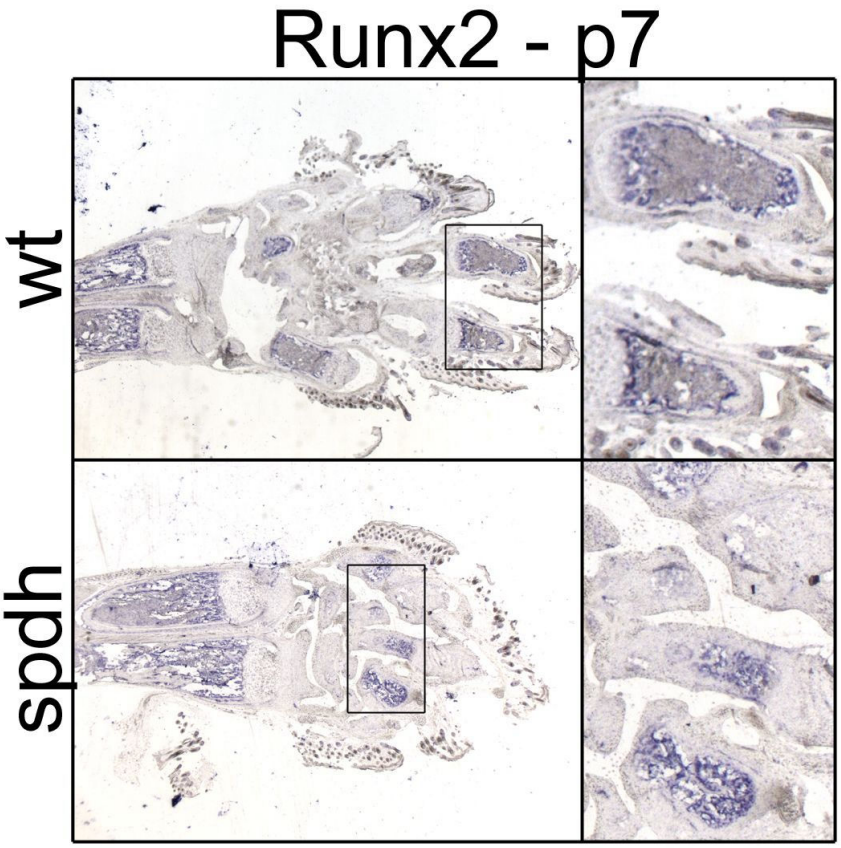
Supplementary Figures

Suppl. Figure 1



Expression of periostin and collagen type 2 (Col2a1) mRNA in wt and *spdh* limbs. In the mutant the clear border between cartilage (marked by Col2a1 expression) and perichondrium (marked by periostin expression) is lost.

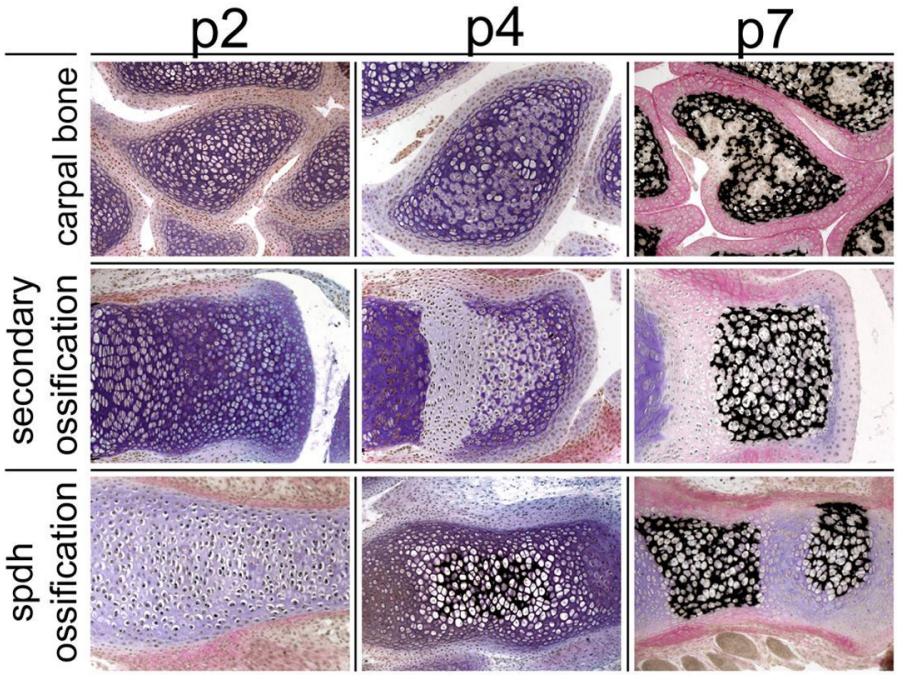
Suppl. Figure 2



Expression of *Runx2* in sections of P7 limbs in wt and *spdh* mutant. Note expression in bone of radius/ulna as well as in the digits. Magnification of boxed area is shown on left. In the mutant, expression is seen predominantly in hypertrophic chondrocytes.

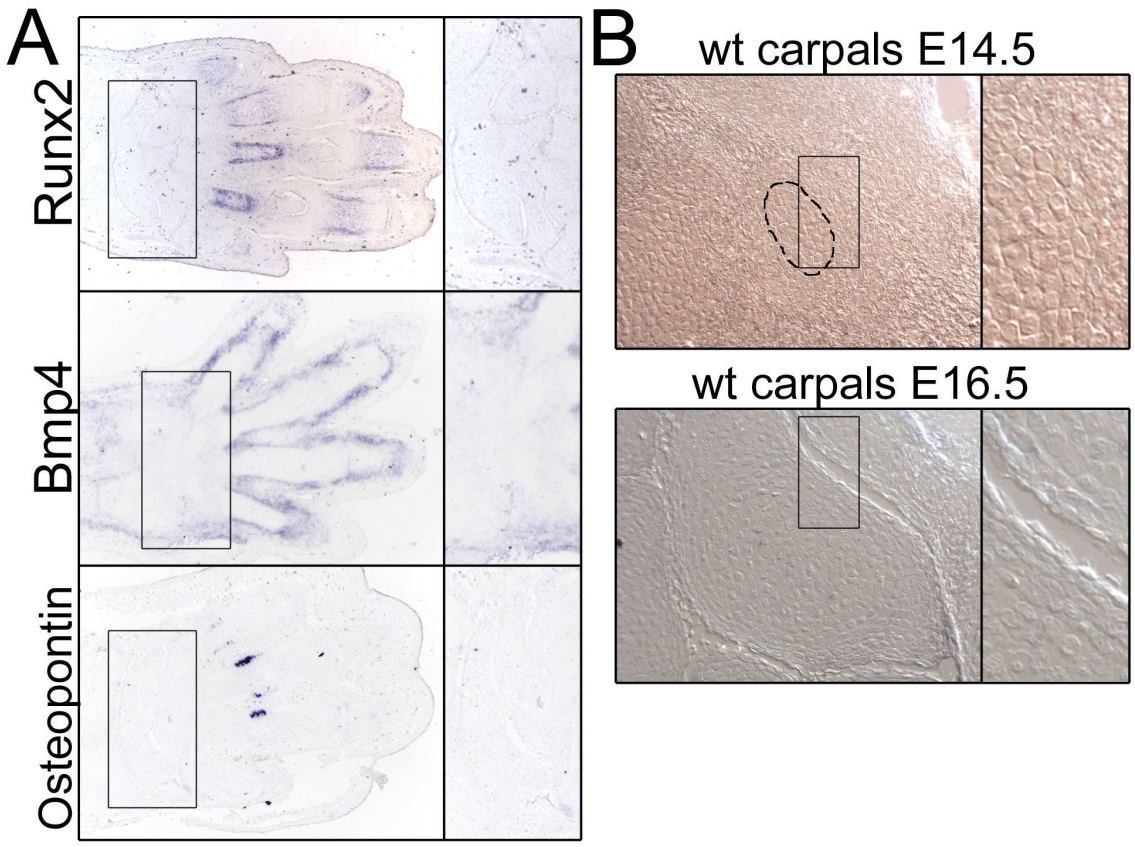
Suppl. Figure 3

Postnatal ossification of carpal bones and secondary ossification centers



Histological van Kossa staining on plastic limb sections of WT and *spdh/spdh* postnatal stages P2, P4 and P7. Chondrocytes in carpal bones and secondary ossification centers of metacarpals become hypertrophic and mineralize (black) after birth. They are surrounded by joint tissue (pink) (upper and middle panel). Chondrocytes in metacarpal bones of *spdh/spdh* animals mineralize in the same manner at the same time points (lower panel).

Suppl. Figure 4



(A) Expression of Runx2, Bmp4 and osteopontin in developing (E16.5) wt limbs. Magnification of boxed area corresponding to the carpal region is shown on right. Note strong expression in the perichondrium of the long bones (metacarpals and digits) but not in carpals.

(B) Nomarski pictures of developing wt carpals at E145. and E16.5. Note that the cells surrounding the carpal anlagen are not flat like long bone perichondrial cells. Once a joint surface is formed, they retain their roundish shape and do not orient like perichondrial cells.