



Supplemental figure S1

Immunohistochemical staining of **(A)** Ccn3 and **(B)** Aggrecan neo epitope in femoral head of 3 month-old Ccn3 Tg and WT mice. The black framed photos are magnification of the dashed box in the photos above. **(C)** X-ray images of (C-1) lower extremity) and (C-2) femoral head of the 2 month-old Ccn3 tg and WT. Bar: 100 $\mu$ m