Nanomechanical Phenotype of Chondroadherin-Null Murine Articular Cartilage
(Supplementary Materials)

Michael A. Batista a, Hadi T. Nia b, Patrik Önnerfjord c, Karen A. Cox d, Christine Ortiz a, Alan J. Grodzinsky a,e,f, Dick Heinegård c, Lin Han a,g,*

Departments of aMaterials Science and Engineering, bMechanical Engineering, eBiological Engineering, and fElectrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA 02139, United States
dDepartment of Clinical Sciences, Lund University, Lund 22184, Sweden
cDepartment of Developmental Biology, Harvard School of Dental Medicine, Boston, MA 02115, United States
gSchool of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA 19104, United States

Fig. S1 Comparison of effective indentation modulus, $E_{\text{ind}}$, obtained on both the left and right knees of one animal from each WT and CHAD $^{-/-}$ mouse at 11 weeks old. No statistical difference was found between the knees via Mann-Whitney U test ($p > 0.05$) at all tested z-piezo displacement rates.

Fig. S2 Effective indentation modulus, $E_{\text{ind}}$, for WT and CHAD $^{-/-}$ murine cartilage middle/deep zone as a function of z-piezo displacement rate and mouse age (mean ± SEM of the average from each mouse, $n = 5$ animals for each model at 11 weeks age, and $n = 4$ animals for each model at 4 months age).

Fig. S3 Ratios of $E_{\text{ind}}$ measured at 1 and 10 $\mu$m/s versus $E_{\text{ind}}$ measured at 0.1 $\mu$m/s for WT and CHAD $^{-/-}$ murine cartilage superficial layer at different ages (mean ± SEM of the average from each mouse, $n = 4$ animals for each model and age, except that $n = 5$ for WT at 4 months age). No statistical difference was found between the knees via Mann-Whitney U test ($p > 0.05$) between the rate dependence of WT and CHAD $^{-/-}$ mice at all ages.