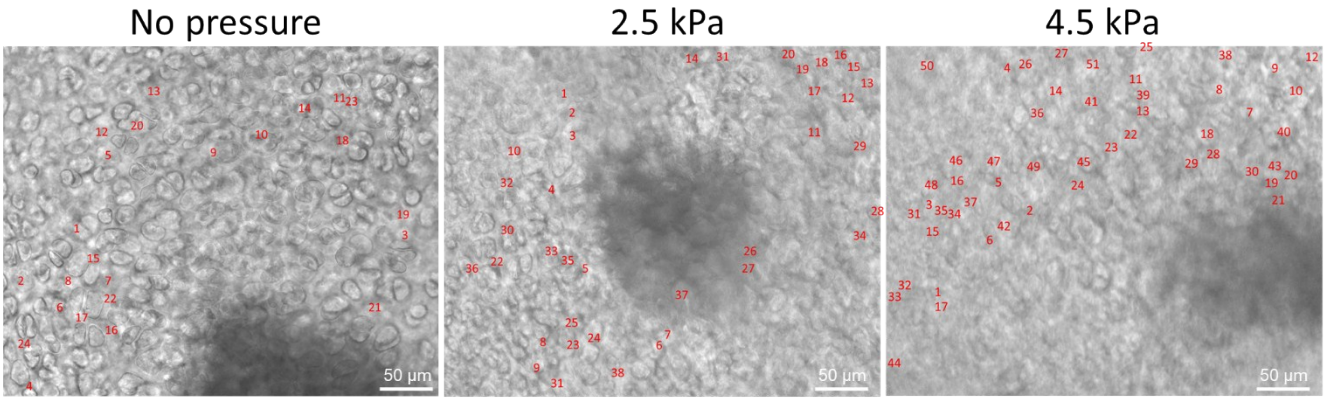
Electronic Supplementary Material (ESI) for Integrative Biology.

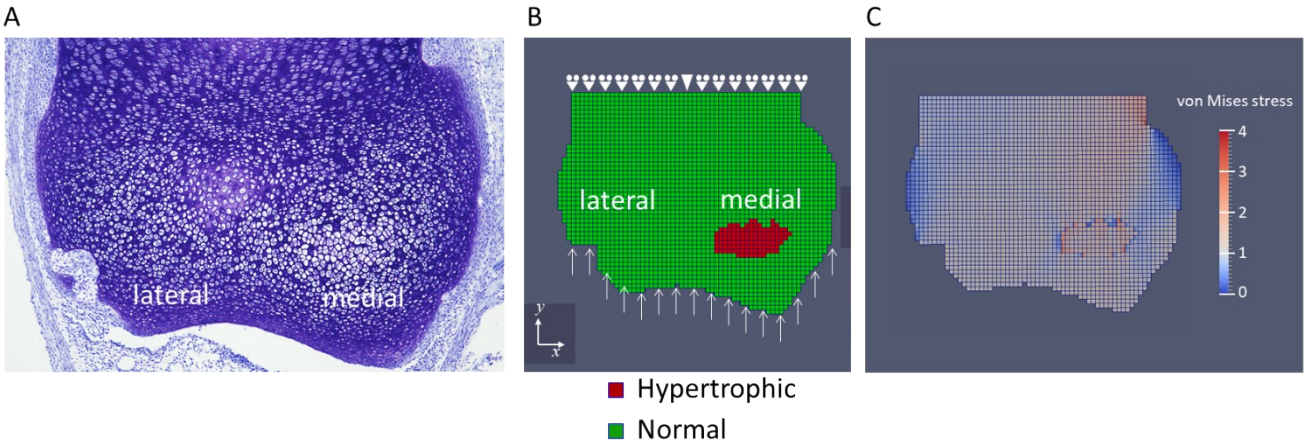

**Legends to Supplemental Figures**

**Supplemental Figure S1.** Figures show the number of chondrocyte burst upon different mechanical pressures.




**Suppl. Fig. S1**. Figures show the number of chondrocyte burst upon different mechanical pressures.

**Supplemental Figure S2. A)** P5 toluidine blue-stained tissue cross section used to capture the 2D image data. **B)** A 2D quadrilateral model (2785 nodes and 2667 elements) showing the hypertrophic region in the medial side of the epiphysis. **C)** Result of FEA predicting a higher stress to be applied onto hypertrophic cell region that appear in the medial part of femur epiphysis.



**Supplemental Figure S3. A)** No vesicles were observed in chondrocytes in non-mineralized area. **B)** Numerous intracellular vesicles were observed in hypertrophic chondrocytes near the mineralized area. Intracellular vesicles were associated with increase in chondrocyte size (hypertrophy), and could be a mechanically facilitating factor of chondrocyte burst.