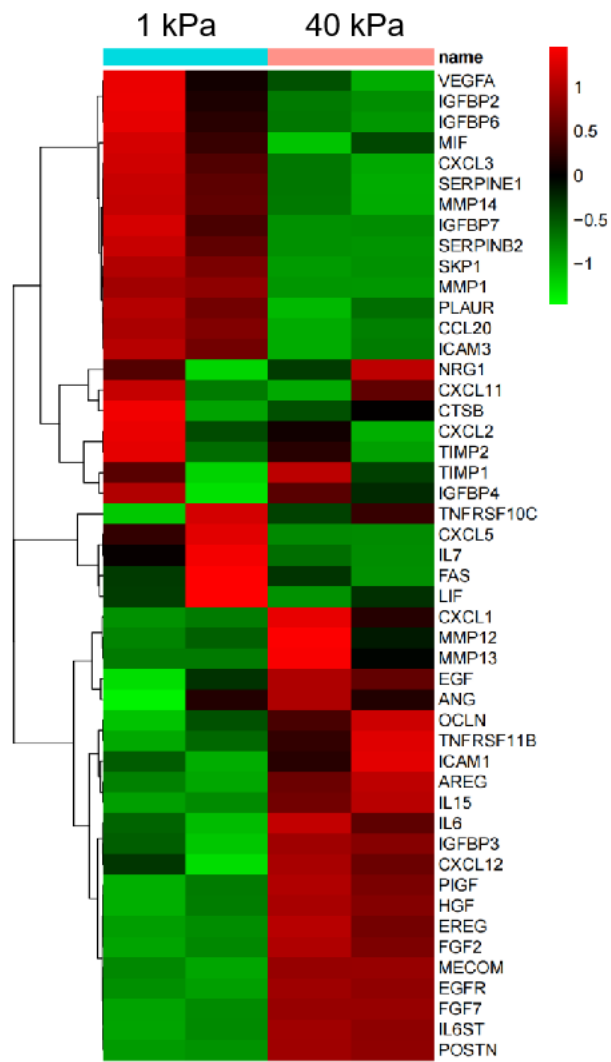


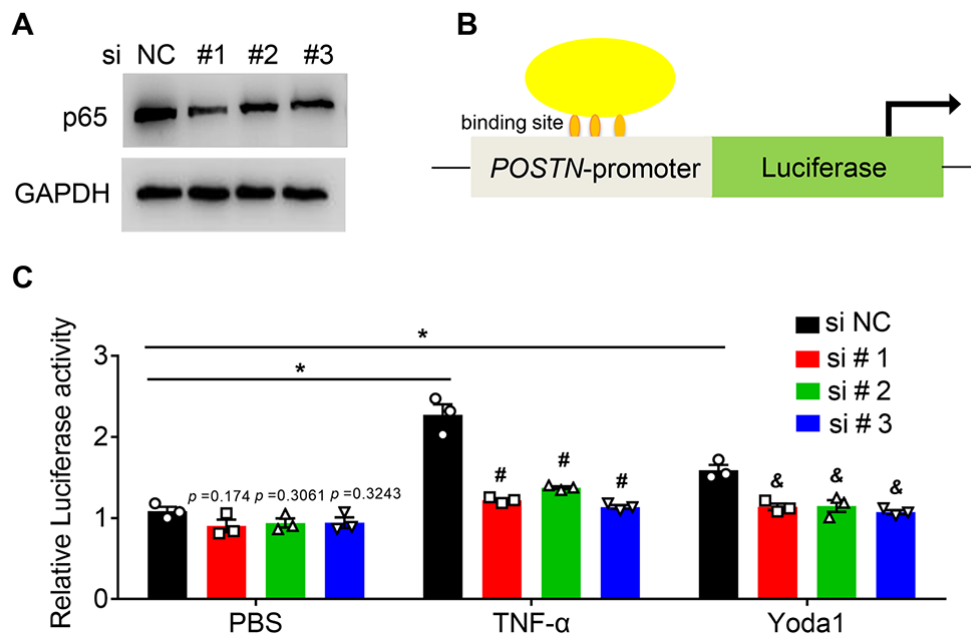
Supplemental Information

**Self-amplifying loop of NF- κ B and periostin
initiated by PIEZO1 accelerates mechano-
induced senescence of nucleus pulposus
cells and intervertebral disc degeneration**

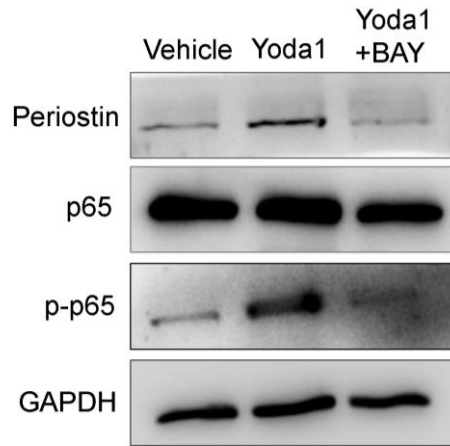
Jinna Wu, Yuyu Chen, Zhiheng Liao, Hengyu Liu, Shun Zhang, Dongmei Zhong, Xianjian Qiu, Taiqiu Chen, Deying Su, Xiaona Ke, Yong Wan, Taifeng Zhou, and Peiqiang Su



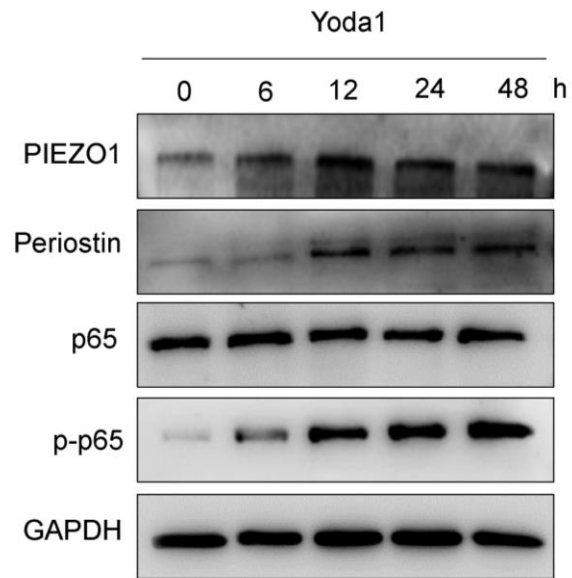
Supplemental Figure 1. Heatmap of the expression of cytokines and secretory proteins in 1 kPa and 40 kPa hNPCs.



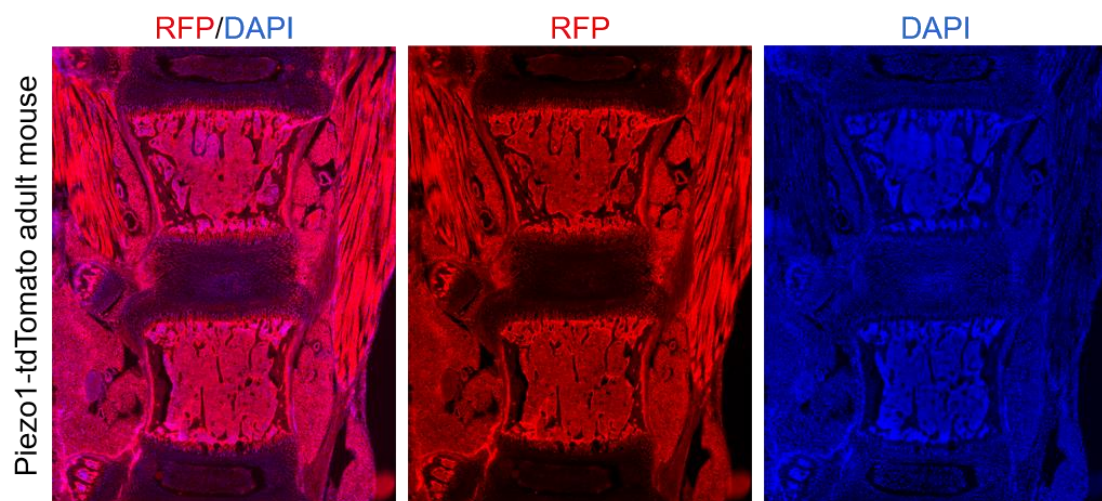
Supplemental Figure 2. **A.** Immunoblotting of p65 in hNPCs transfected with siRNAs targeting p65 for 48 h. **B.** The schematics of the *POSTN* promoter dual-luciferase reporter assay. **C.** The dual-luciferase reporter assay in hNPCs were conducted after transfection with siRNAs targeting p65 and firefly luciferase constructs containing the *POSTN* promoter (-2042 to -1 bp), followed by treatment with PBS, TNF- α , or Yoda1 for 24 h. Data were presented as the mean \pm SD. *represented $p < 0.05$, compared to PBS group. #represented $p < 0.05$, compared to si NC + TNF- α group. &represented $p < 0.05$, compared to si NC + Yoda1 group.



Supplemental Figure 3. Immunoblotting of periostin, p-p65, and p65 in hNPCs treated with vehicle, Yoda1, or Yoda1 and BAY for 24 h.



Supplemental Figure 4. Immunoblotting of PIEZO1, periostin, p-p65, and p65 in hNPCs treated with 5 μ M Yoda1 for different time periods.



Supplemental Figure 5. Immunostaining of red fluorescent protein (RFP) and DAPI in the IVD of Piezo1-tdTomato adult mouse.

Supplemental Table 1. The sequences of siRNAs targeting p65.

siRNA	Sequences
p65-siRNA #1	Forward: 5'-GAUUGAGGAGAAACGUAAA-3' Reverse: 5'-UUUACGUUUCUCCUCAAC-3'
p65-siRNA #2	Forward: 5'-CCCACGAGCUUGUAGGAAA-3' Reverse: 5'-UUUCCUACAAGCUCGUGGG-3'
p65-siRNA #3	Forward: 5'-GCAUCCAGACCAACAACAA-3' Reverse: 5'-UUGUUGUUGGUCUGGAUGC-3'

Video 1. Video of Ca²⁺ influx in hNPCs after Yoda1 stimulation. The fluorescence baseline was set using the first 10 s of the video. After 10 s, hNPCs were treated with 5 μ M Yoda1 and significant intracellular Ca²⁺ influx was immediately observed. The fluorescence intensities of hNPCs decreased gradually over time.