**Nanoscale cell-matrix adhesions modulate gap junction intercellular communication of mesenchymal cell condensates during chondrogenesis (Supplementary Files)**

Diagram

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**Fig. S1: Analysis of Cx43 expression and intercellular communication network architecture**. **a)** Representative chondrogenic cell condensate stained for Cx43 (red) and cell nuclei (blue). **b)** Threshold selecting Cx43 expression. **c)** Skeletonizing of the Cx43 network, from which end-point voxels and mean branch length were quantified. **a-c)** Scale bar = 50 μm. **d)** Schematic of network connectivity quantification as the inverse of the amount of end-point voxels. White lines represent theoretical networks, red dots indicate end-point voxels, yellow dots indicate new end-point voxels as a results of network splitting. The network on the left is more extensively connected than the one on the right, and thus contains fewer end-point voxels. **e)** Zoomed-in section from the red square in **c**.

Qr code

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**Fig. S2: Substrates of tunable local surface adhesiveness obtained by nanopatterning RGD-functionalized dendrimers on PLLA**. **a)** Representative 3D AFM images (5x5 µm) of the nanopatterns’ topography. **b)** Corresponding dmin probability contour plots showing high-density RGD regions (dmin < 70 nm) in dark red (dendrimer positions are superimposed in black for clarity). Adapted with permission from [30] © Tsinghua University Press and Springer-Verlag Berlin Heidelberg (2016).

Table

Description automatically generated**Table S1: Nanopatterns adherent area**

Imagen que contiene foto, estrella, parada

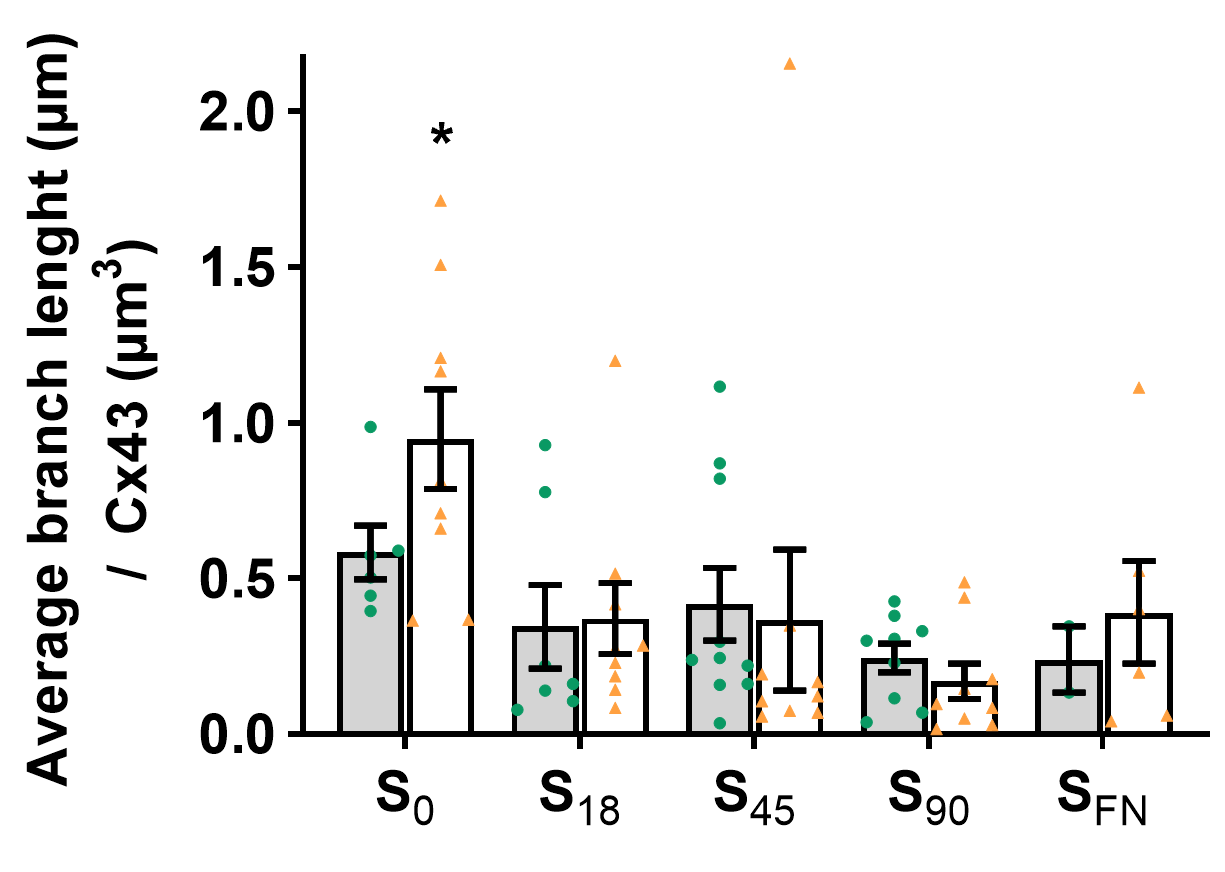
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**Fig. S3:** Representative confocal z-projections of Cx43 immunostaining at day 6, scale bar = 40 µm.

A picture containing graphical user interface

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**Fig. S4: a)** Western blot quantification forvinculin at day 6 of chondrogenesis. **b)** Western blot and corresponding quantification for Cx43 at day 6 of chondrogenesis.



**Fig. S5:** Average length of Cx43 network branches in chondrogenic cell condensates (n≥2). Gray and white bars correspond to 6 and 9 days of chondrogenic induction, respectively. Green dots and orange triangles correspond to individual sample values at day 6 and day 9, respectively. Results given as the mean ± SEM., \**p* < 0.05

A picture containing timeline

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**Fig. S6:** Confocal z-projections showing neurobiotin tracer (red) after 10 min of exposure at day 6 of chondrogenic induction**.** Scale bar = 80 µm.