



Supplementary Figure 1 Preparation and mechanical loading system for nanofiber scaffolds. A: Photographs showing the aligned and random nanofiber scaffolds, with a ruler for scale to indicate the dimensions of each scaffold type; B: Images of the CFILLOAD-300 mechanical loading cell culture system and parameter modulator, designed to apply tensile strain to scaffolds seeded with BMSCs. Key system components are labeled, including the tensile device, membrane fixation clamp, silicone petri dish, and auxiliary sliding device, which facilitate controlled mechanical loading conditions for cell culture.

Supplementary Table 1 Mechanical properties of polylactic acid nanofibers

	Modulus of elasticity (MPa)	Fracture strength (MPa)	Fracture elongation (%)
Aligned (axial)	161.92 ± 6.46	18.02 ± 1.12	42.04 ± 5.12
Aligned (transverse)	9.16 ± 1.93	1.04 ± 0.22	147.59 ± 8.25
Random	35.09 ± 3.27	4.05 ± 0.43	81.82 ± 4.18