Supporting Information

3D printed reduced graphene oxide-GelMA hybrid hydrogel scaffolds for potential neuralized bone regeneration

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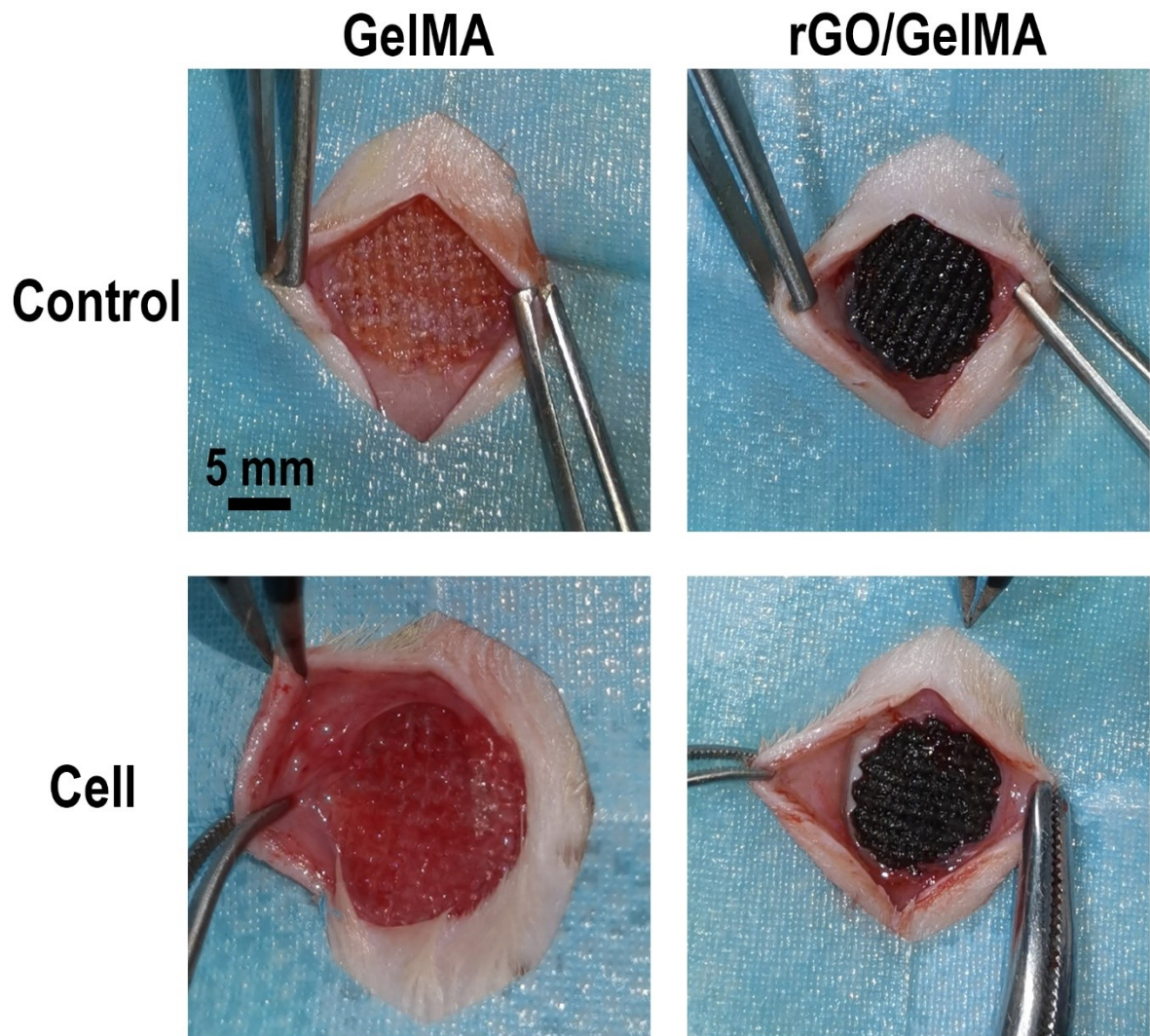
      zhouym@jlu.edu.cn(Yanmin Zhou)

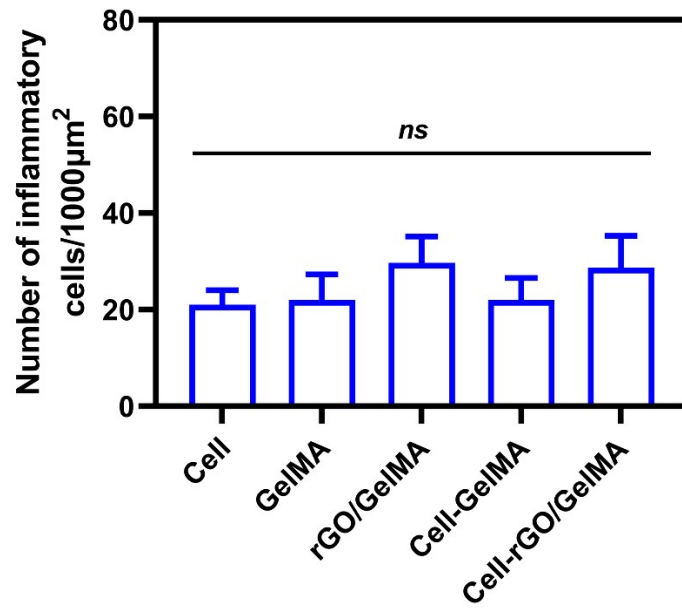**Figure. S1** Photographs of the rat subcutaneous transplantation model.

Figure. S2 The number of inflammatory cells in the tissue sections of each group (*n*=3, *ns* = not significant).
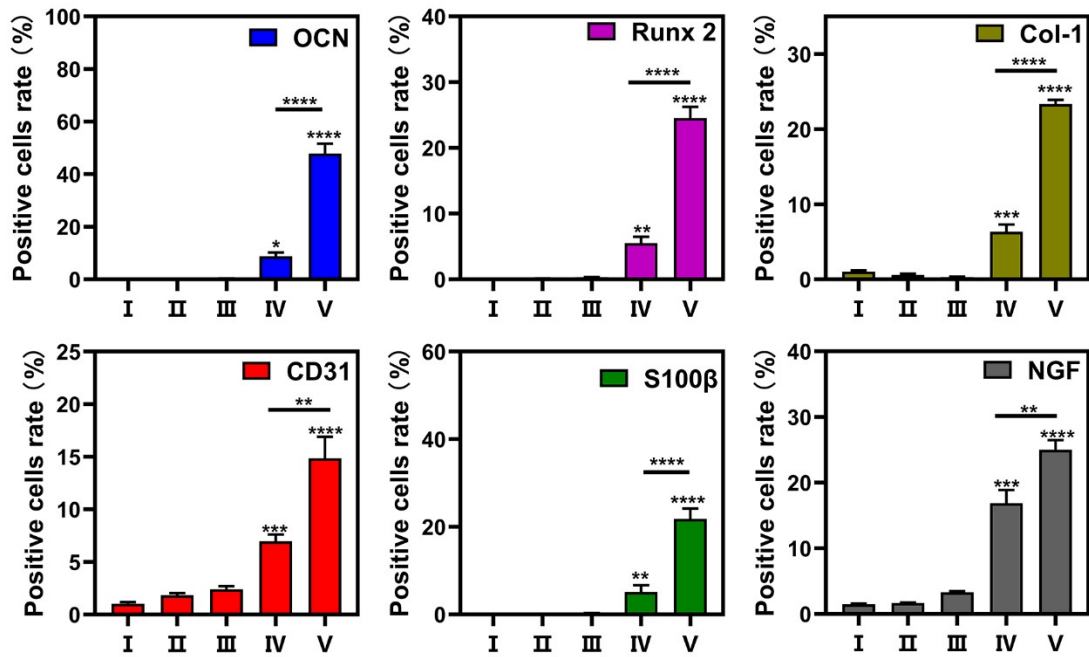
Figure. S3 Statistical charts of immunohistochemistry and immunofluorescence positive cells in each group 8 weeks after operation. $p < 0.05$ indicates a significant difference ($n=3$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$, $****p < 0.0001$, ns = not significant).
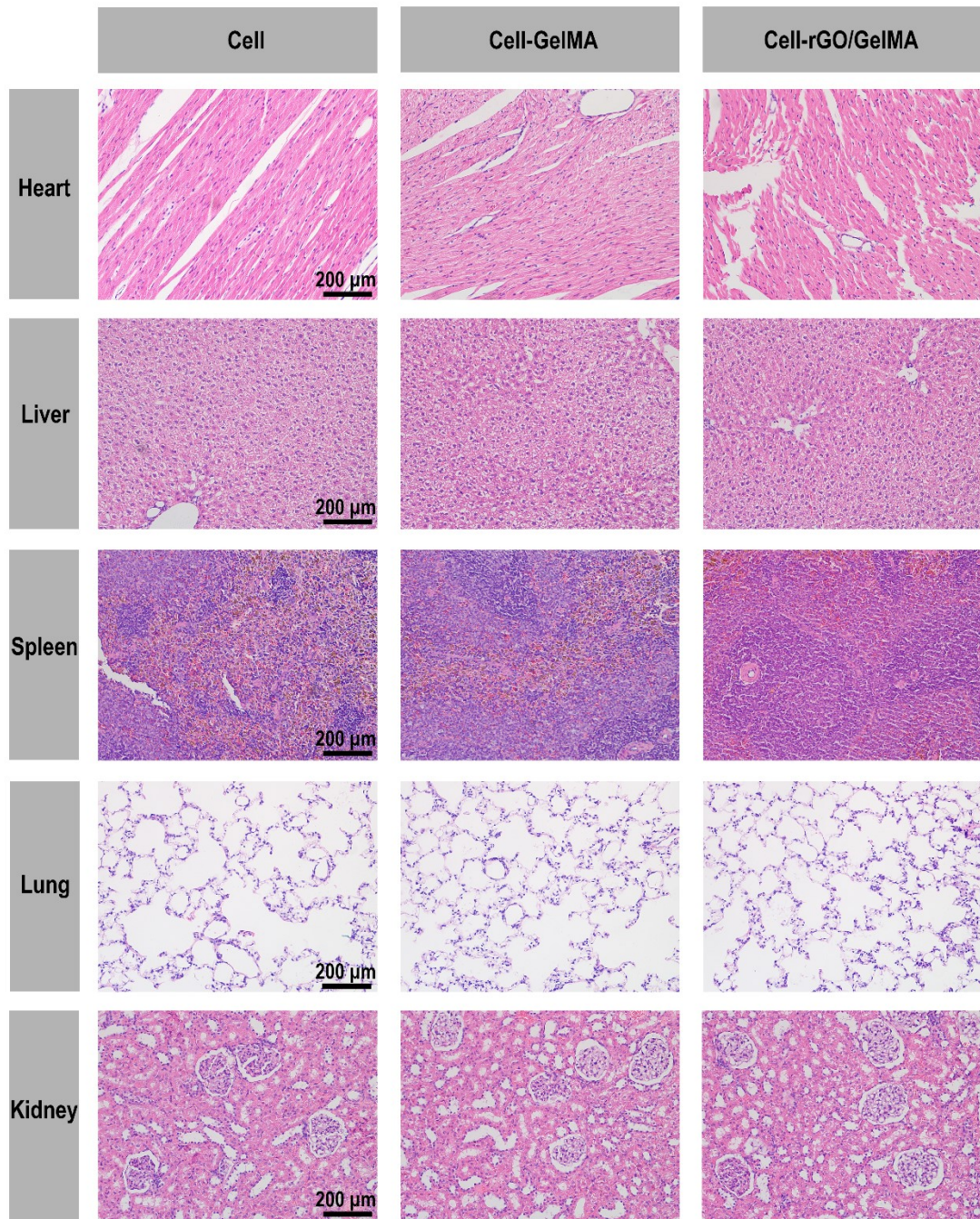
Figure. S4 H&E staining of heart, liver, spleen, lung and kidney of experimental animals in each group at 8 weeks after operation.

Table S1. Primer sequences of the genes for qRT-PCR analysis.

Primers	Forward sequence (5'-3')	Reverse sequence (5'-3')
NGF	TGATCGGCGTACAGGCAGA	GAGGGCTGTGTCAAGGGAAT
PMP22	TGTACCACATCCGCCTTGG	GAGCTGGCAGAAGAACAGGAAC
NCAM	TTCAGTGACGACAGTTCGGAGC	TGCGAAGACCTTGAGGTGGAT
Krox20	TTTTTCCATCTCCGTGCCA	GAACGGCTTTCGATCAGGG
RUNX2	CATGGCCGGGAATGATGAG	TGTGAAGACCGTTATGGTCAAAGTG
OCN	AAGCAGGAGGGCAATAAGGT	CCGTAGATGCGTTTGTAGGC
ALP	CATCGCCTATCAGCTAATGCACA	ATGAGGTCCAGGCCATCCAG
Col-1	GACATGTTCAGCTTTGTGGACCTC	AGGGACCCTTAGGCCATTGTGTA
GAPDH	AGGTCGGTGTGAACGGATTTG	TGTAGACCATGTAGTTGAGGTCA

Table S2. Specific values of each group of compression strain tests.

	Limiting Stress (kPa)		Limiting Strain (%)		Compressive modulus (kPa)	
Groups	Mean ± SD	*p* Value	Mean ± SD	*p* Value	Mean ± SD	*p* Value
GelMA	90.52 ± 8.94		63.33 ± 5.14		29.33 ± 0.91	
0.03rGO/G	125.90 ± 9.29	$p > 0.05$	73.33 ± 4.71	$p > 0.05$	32.40 ± 1.64	$p > 0.05$
0.05rGO/G	174.26 ± 23.78	$p < 0.05$	79.17 ± 1.18	$p < 0.05$	34.87 ± 2.19	$p < 0.05$
0.1rGO/G	51.01 ± 7.95	$p > 0.05$	70.67 ± 4.92	$p > 0.05$	15.27 ± 1.84	$p < 0.05$

Table S3. Specific values of storage modulus under 405 nm illumination for 60 seconds.

Groups	Mean ± SD	*p* Value
GelMA	12.40 ± 0.46	
0.03rGO/G	16.75 ± 1.49	$p > 0.05$
0.05rGO/G	22.49 ± 5.49	$p < 0.05$
0.1rGO/G	8.96 ± 2.42	$p > 0.05$