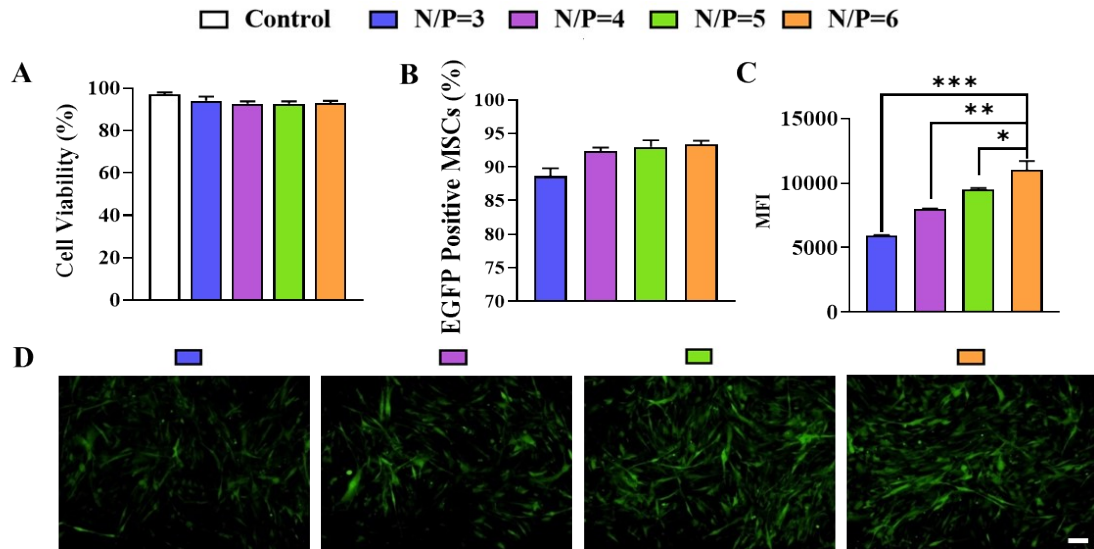Supplementary materials

FGF18 encoding circular mRNA-LNP based on glycerolipid engineering mesenchymal stem cells for efficient amelioration of osteoarthritis

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Fig. S1. ^{1}H NMR spectrum of TG6A and its intermediate products (400MHz, CDCl$_3$).

Fig. S2. Original flow cytometry data of MSC transfected with EGFP TG6A-LNP.

Fig. S3. Nitrogen and phosphorus ratio optimization of TG6A-LNP and cmRNA. (A) Cell viability, (B) percentage of EGFP positive MSC, (C) MFI, and (D) fluorescence images of MSC transfected with EGFP-LNP. Data are presented as means ± SD. *p < 0.05, **p < 0.01, ***p < 0.001, Scale bar = 100 μm.
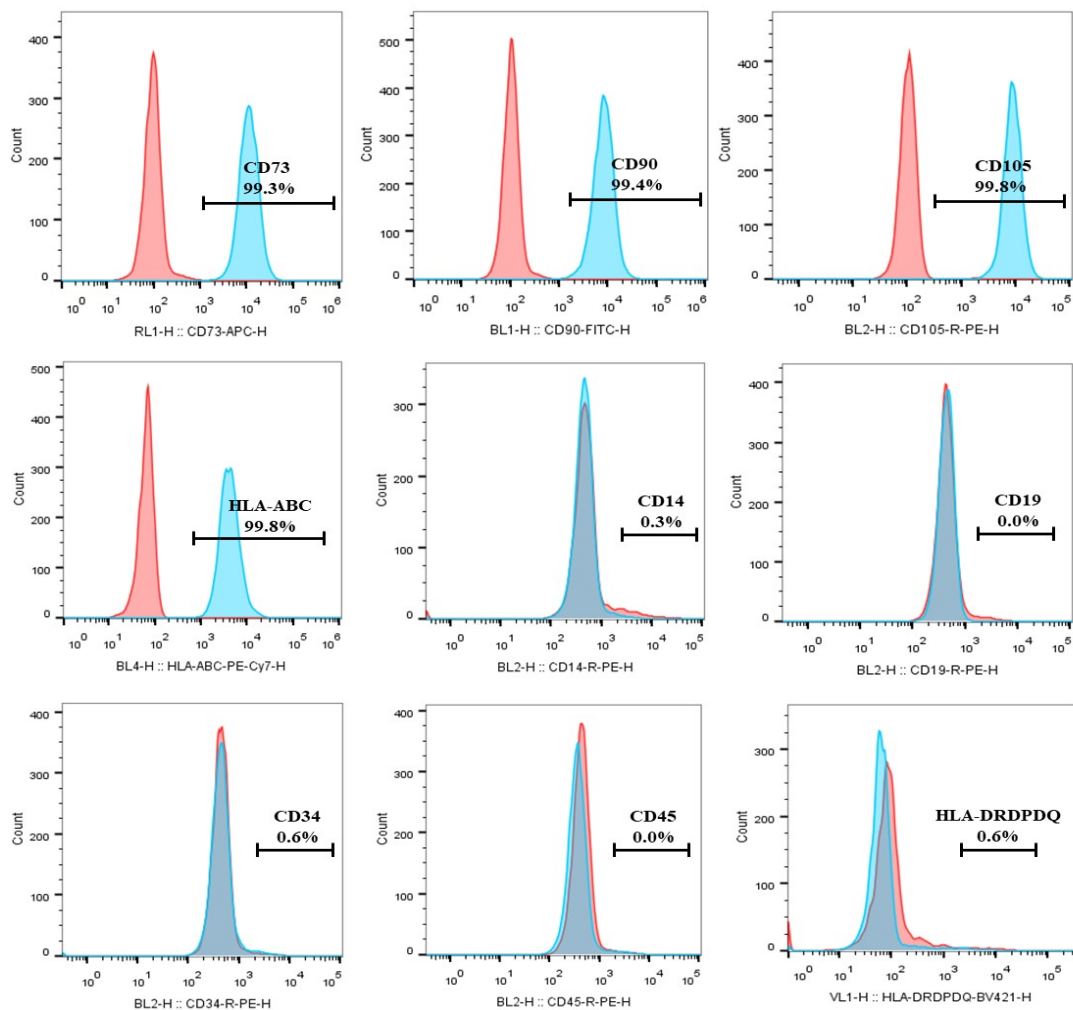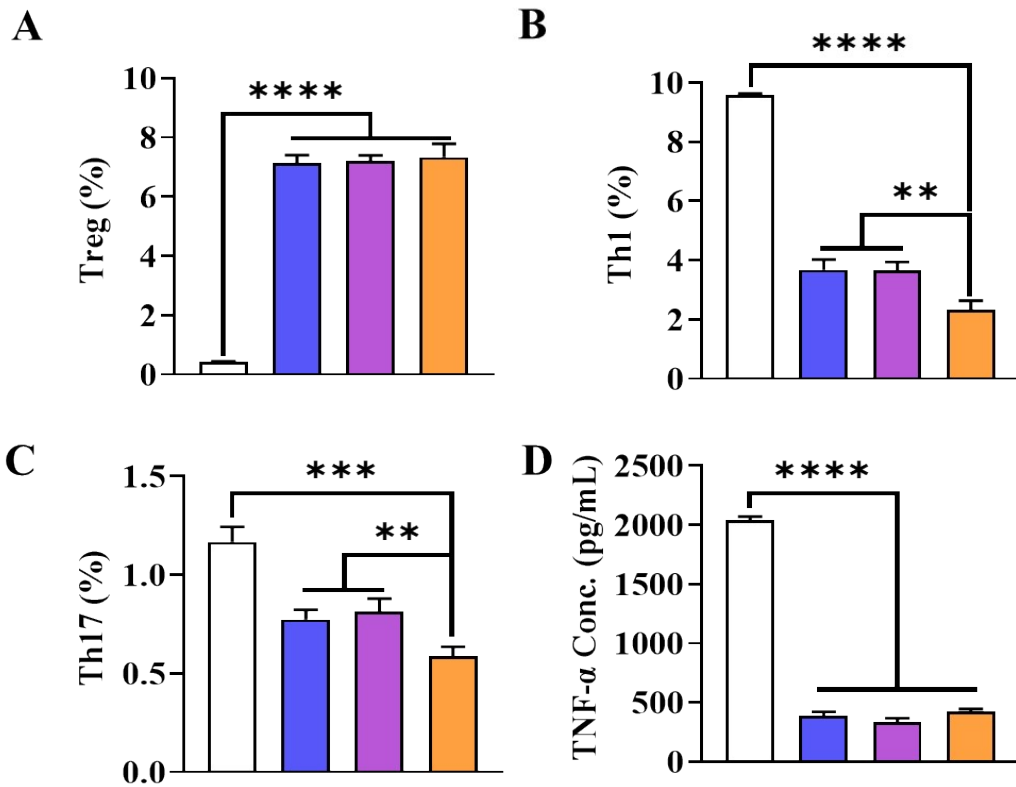
Fig. S4. Surface markers of the FGF18-MSC with antibodies (blue) and isotype-matched antibodies (red) were measured by flow cytometry.
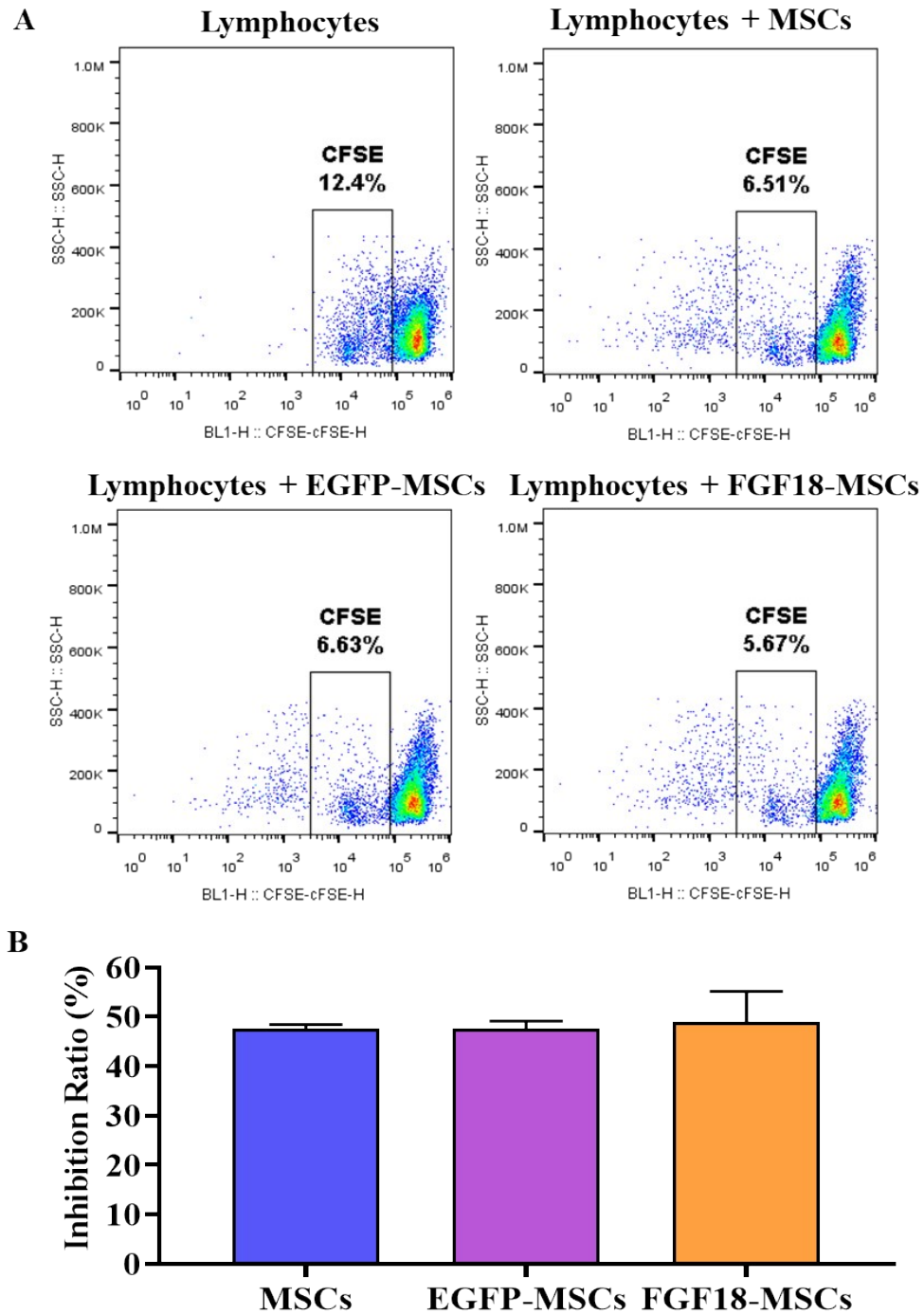
Fig. S5. Immunomodulatory effect of FGF18-MSC. (A) Level of lymphocyte proliferation co-culture with/without MSC, EGFP-MSC or FGF18-MSC. (B) Statistics of inhibition ratio of (A).

Fig. S6. Immunomodulatory effect of FGF18-MSC. L: Lymphocyte. (A) Comparative analysis of regulatory T cells (Treg) within the lymphocyte population in each group. Comparative analysis of Th1 cells (B) and Th17 cells (C) within the lymphocyte population in each group. (D) Comparative analysis of TNF-a secretion within the lymphocyte population in each group. $*p < 0.05$, $**p < 0.01$, $***p < 0.001$, $****p < 0.001$.

Table S1. Primer sequences used for real-time PCR

Gene	Sense primer (5'-3')	Antisense primer (5'-3')
β-actin	ATCATGTTTGAGACCTTCAA	CATCTCTTGCTCGAAGTCCA
Col2a1	TGGACGCCATGAAGGTTTTCT	TGGGAGCCAGATTGTCATCTC
ACAN	GTGCCTATCAGGACAAGGTCT	GATGCCTTTCACCACGACTTC
BCL-6	ACCTCCCACTCCCATGTGTC	TTGTTCTCCACCACCTCACG