

# ADVANCED HEALTHCARE MATERIALS

## Supporting Information

for *Adv. Healthcare Mater.*, DOI 10.1002/adhm.202302128

Mesenchymal Stem Cell-Derived Mitochondria Enhance Extracellular Matrix-Derived Grafts  
for the Repair of Nerve Defect

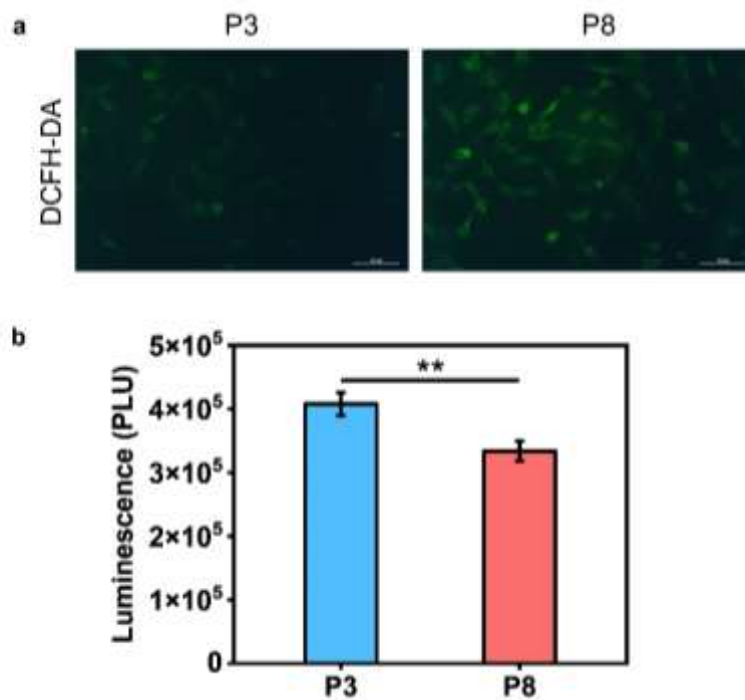
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Xiangyu Song, Zhibo Jia, Tianqi Su, Benzhang Tao, Haihao Gao, Boyao Yang, Lijing Liang, Xing  
Xiong, Xingyu Zhou, Lan Yin, Jiang Peng\*, Aijia Shang\* and Yu Wang\**

## Supplementary information

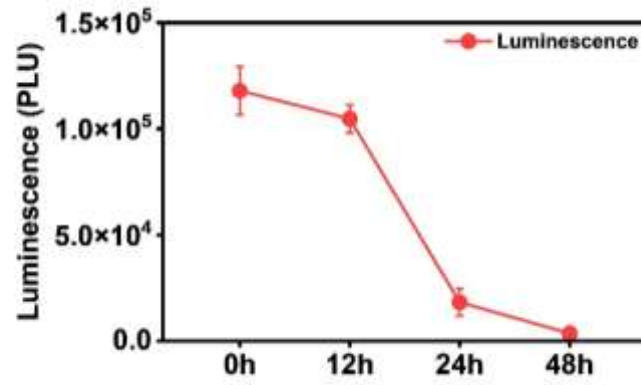


# SCs internalized hUCMSC-Mitos.w

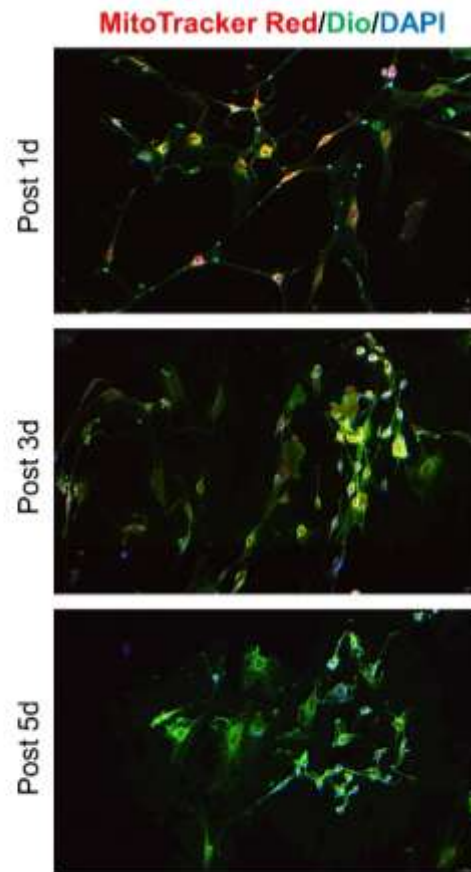
**Mov.S1.** Dynamic process of SCs internalizing hUCMSC-Mitos. (The cell contour was observed under bright field and mitochondria were labeled with red fluorescent dye.)



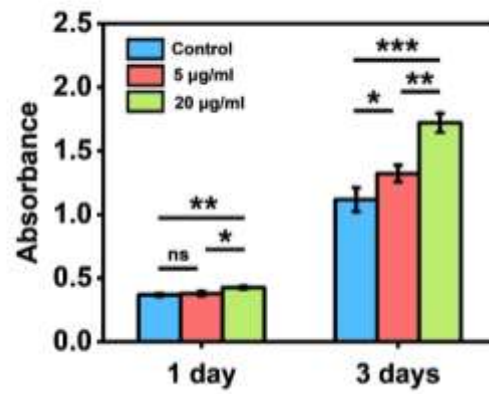
**Fig. S1.** Comparison of mitochondrial function in low-passage (P3) hUCMSCs and high-passage (P8) hUCMSCs. (a) ROS staining of hUCMSCs (ROS: DCFH-DA ) (b) Detection of ATP content within hUCMSCs. Significantly different (one-way analysis of variance [ANOVA]): \*\*p < 0.01.



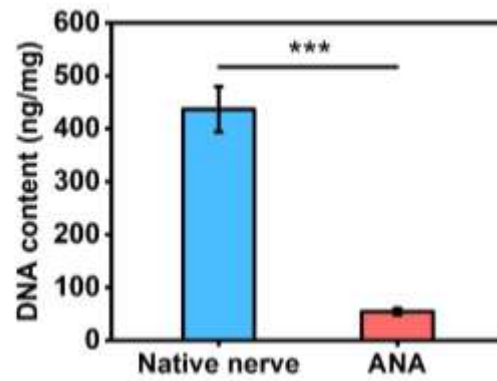
**Fig. S2.** Quantification of ATP on extracellular mitochondria. (The detection time points were 0 h, 12 h, 24 h and 48 h.)



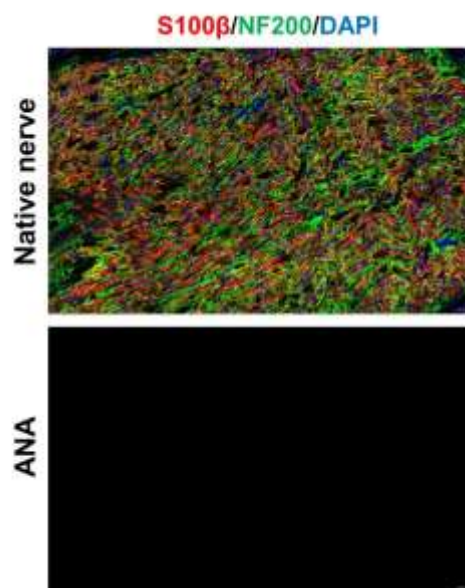
**Fig. S3.** Uptake of hUCMSC-Mitos by SCs (Cell membrane: DiO; hUCMSC-Mitos: MitoTracker Red; Nucleus: DAPI). (The detection time points were day 1, day 3 and day 5.)



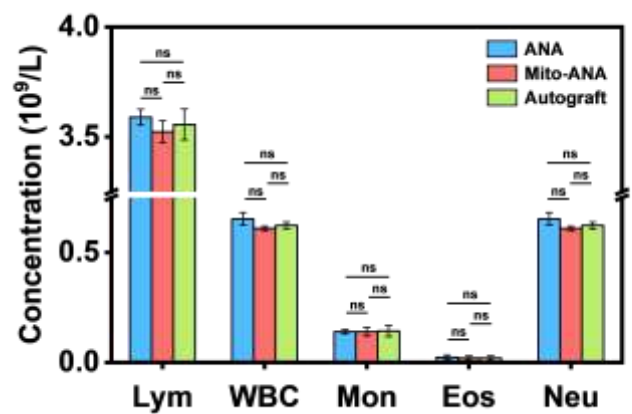
**Fig. S4.** CCK8 cell proliferation assay. (The detection time points were day 1 and day 3, and the concentrations of mitochondria were high and low.) Significantly different (one-way analysis of variance [ANOVA]): ns, not significant, \*p < 0.05, \*\*p < 0.01 and \*\*\*p < 0.001.



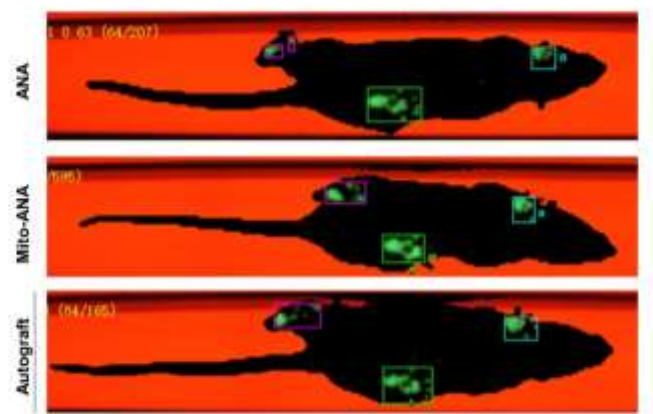
**Fig. S5.** DNA content of native nerve and ANA. Significantly different (one-way analysis of variance [ANOVA]): \*\*\*p < 0.001.



**Fig. S6.** Antigen detection of native nerve and ANA. (SCs: S100-β; Axons: NF200; DNA: DAPI)



**Fig. S7.** Routine blood tests for inflammation and immune response after graft implantation. Lym: lymphocytes ( $\times 10^9 L^{-1}$ ); WBC: white blood cell ( $\times 10^9 L^{-1}$ ); Mon: monocytes ( $\times 10^9 L^{-1}$ ); Eos: eosinophils ( $\times 10^9 L^{-1}$ ); Neu: neutrophils ( $\times 10^9 L^{-1}$ ). Significantly different (one-way analysis of variance [ANOVA]): ns, not significant.



**Fig. S8.** Representative 2D plantar profile of gait. (The inside outline of the purple frame is the injured side foot.)