

Supporting information

Collagen-based Materials Combined with MicroRNA for Repair

Cornea Wound and Inhibit Scar Formation

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Materials and methods

Integrity of miR-133b in collagen solution

The integrity of naked miR-133b in different concentrations of collagen solution was tested with 1% agarose gel electrophoresis after incubation at room temperature for 24 h and 48 h.

Cellular Uptake of AuNP/miR-133b of Col-AMS and Col-AMI

AuNP/ Cy3-labeled miR-133b was used to prepare Col-AMS and Col-AMI in order to test the cellular uptake after materials preparation. Col-AMS and Col-AMI were co-culture with rabbit corneal stromal cells by transwell (BD Biosciences). Cells were observed using confocal laser scanning microscopy (CLSM, Leica TCS SP8, Germany) after incubation for 8 h.

Release of AuNP/miR-133b of Col-AMS and Col-AMI *in vivo*

AuNP/ FAM-labeled miR-133b was used to prepare Col-AMS and Col-AMI to test the release ability in LKP model in New Zealand white rabbits. The operating procedure was same as 2.11 in the main text. The rabbit was sacrificed at 3 days after operation. Frozen section was made to examine the release of AuNP/miR-133b of Col-AMS and Col-AMI. Nuclei were localized by staining with DAPI (10 µg/mL). Images of sections were captured on confocal laser scanning microscopy (CLSM, Leica TCS SP8, Germany).

Figures

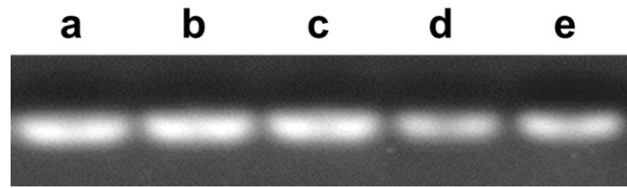


Figure 1S. Characterization of combination of PEI-capped AuNP and miR-133b: Integrity of naked miR-133b in collagen solution, a: Control; b: miR-133b mixed with collagen solution (0.1 g/L) for 24 h; c: miR-133b mixed with collagen solution (0.05 g/L) for 24 h; d: miR-133b mixed with collagen solution (0.1 g/L) for 48 h; e: miR-133b mixed with collagen solution (0.05 g/L) for 48 h.

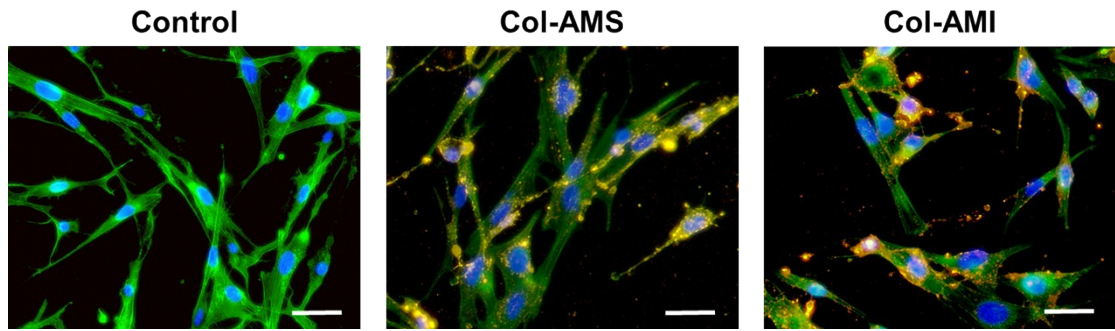


Figure 2S. Cellular uptake ability of AuNPs/miR-133b complexes released from Col-AMS and Col-AMI into corneal stromal cells (scale bar = 20 μm).

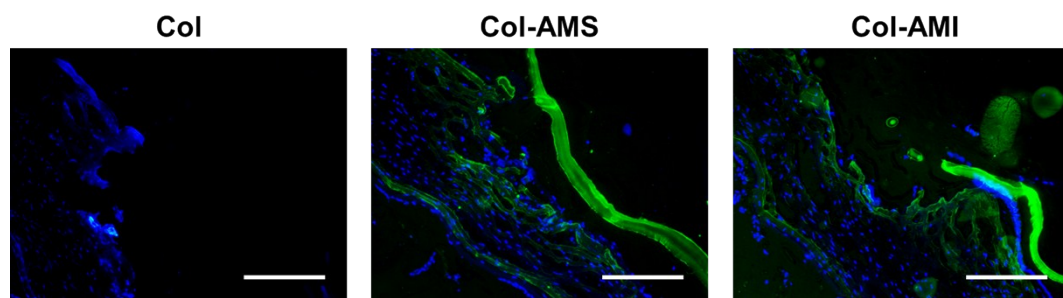


Figure 3S. Frozen section of different membranes transplanted into the ocular surface in rabbits. AuNP/ FAM-labeled miR-133b was used to prepare Col-AMS and Col-AMI (scale bar = 200 μm).

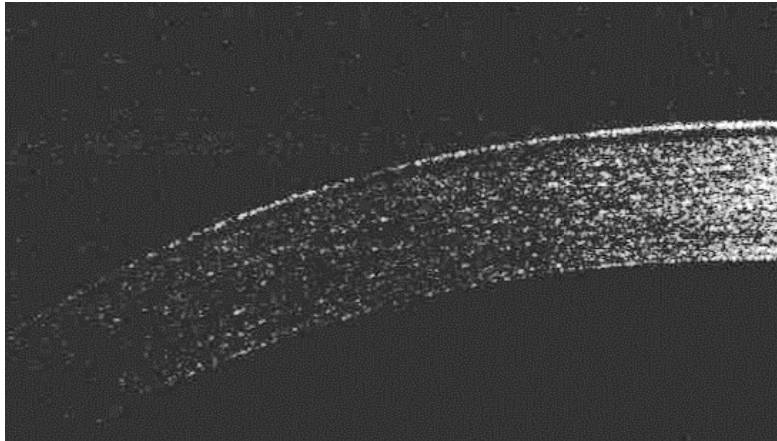


Figure 4S. OCT imaging of healthy cornea.