

# Macrophage-Derived Extracellular Vesicle Promotes Hair Growth

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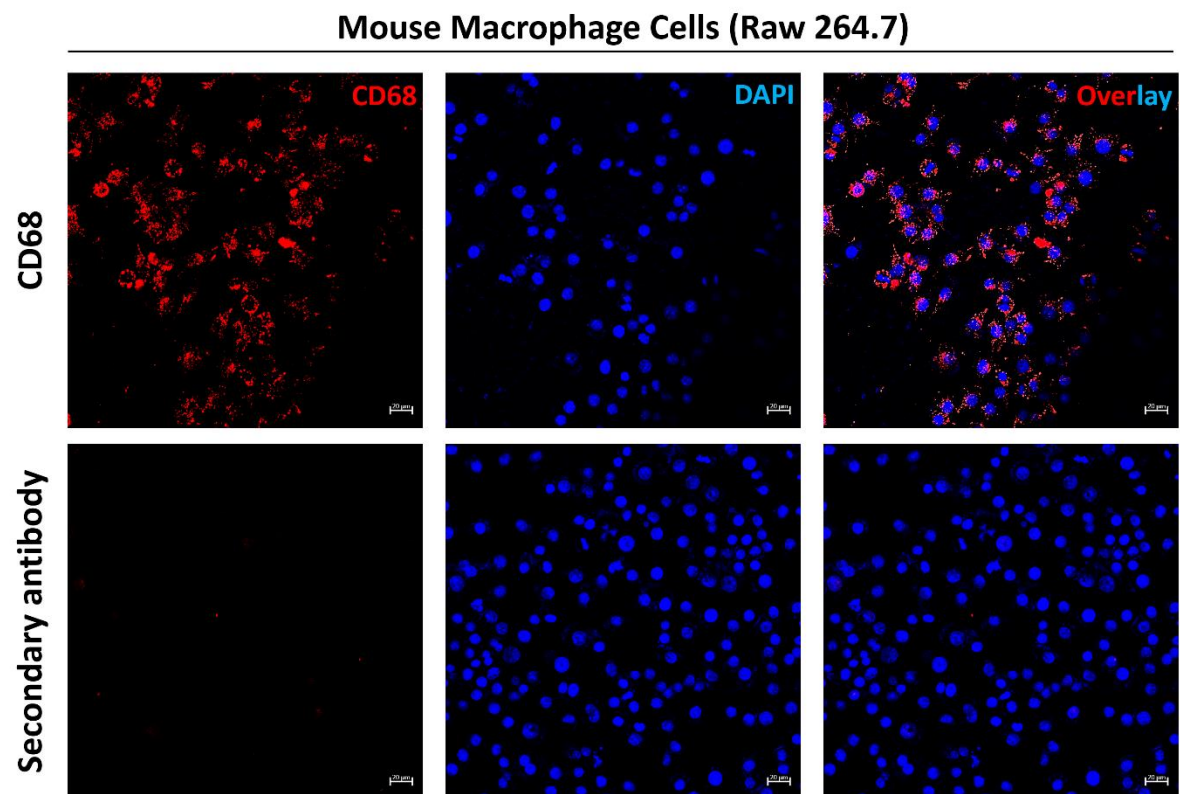
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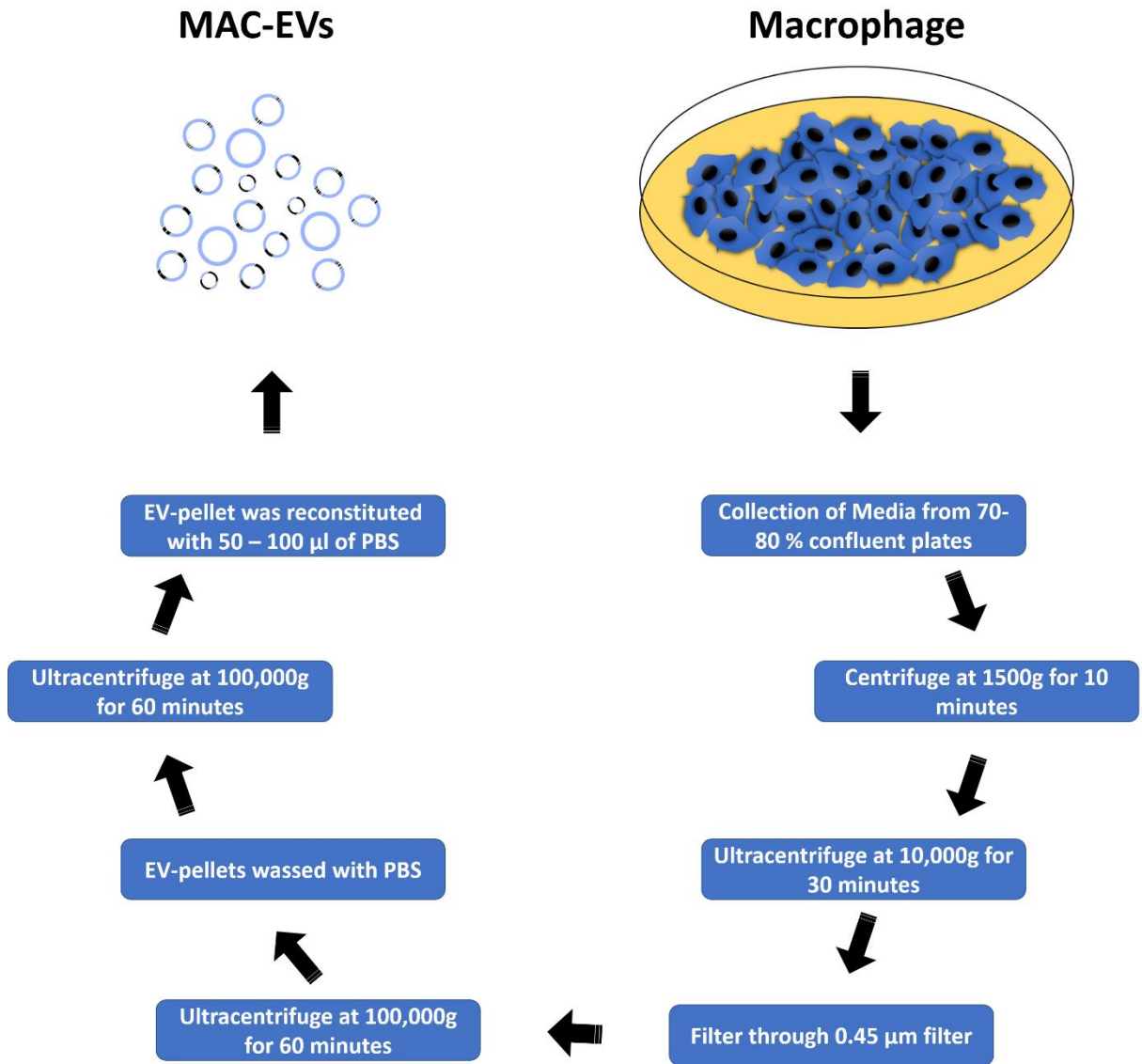
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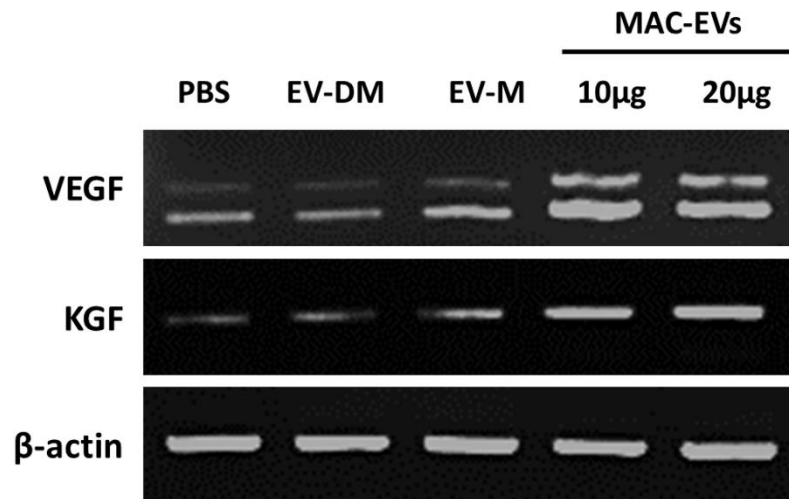
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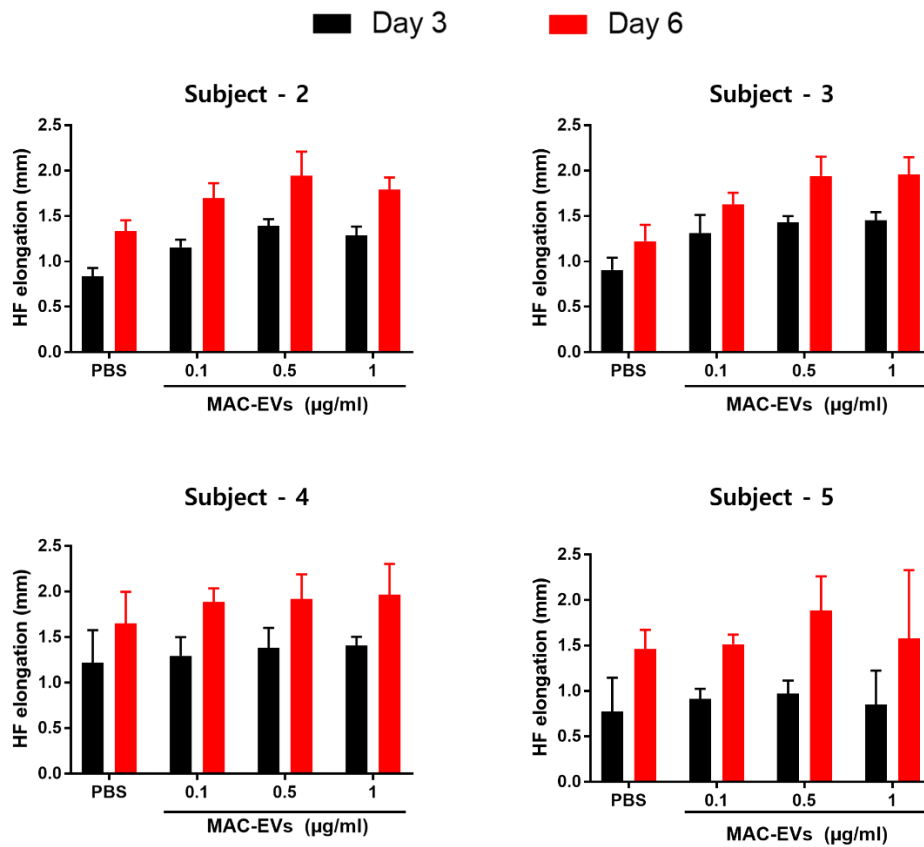
**Figure S1.** Immunofluorescence analysis of CD68 in murine macrophage cell (Raw 264.7) (scale bar, 20  $\mu$ m).



**Figure S2.** Schematic diagram of the generation and purification of MAC-EVs.

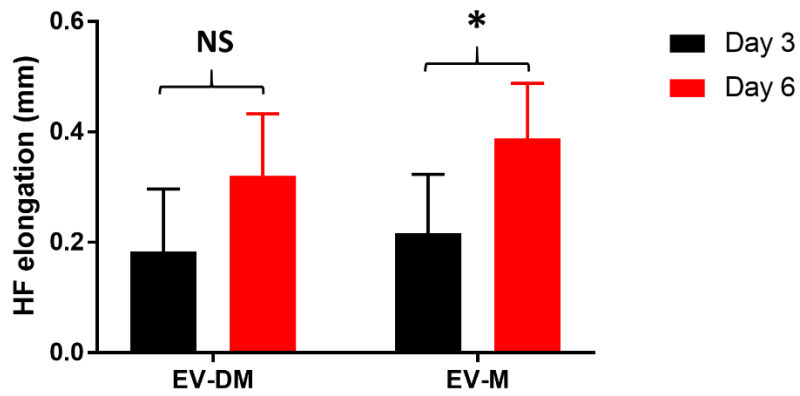


**Figure S3.** Effects of MAC-EVs expression of growth factors in DP cells. Gel image of reverse transcription polymerase chain reaction (RT-PCR) gene expression of DP cells treated with MAC-EVs for 24 h.

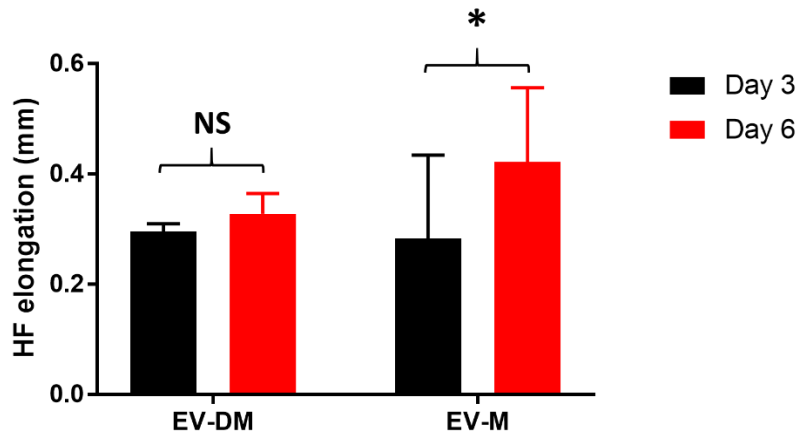


**Figure S4.** MAC-EVs promotes the hair follicle shaft elongation in human. Quantified data of hair shaft elongation ( $n = 5-8$ ) in day 3 and day 6. Mean  $\pm$  SD of experiments are shown. Two-way ANOVA was used.

### Subject - 2



### Subject - 3



**Figure S5.** EV-M promotes the shaft elongation in human hair follicles. Quantified data of hair shaft elongation ( $n = 5-8$ ) in day 3 and day 6. Mean  $\pm$  SD of experiments are shown. *Student-t-test* was used. EV-DM: EV depleted Media, EV-M: media contains EVs.

**Table1.** List of antibodies used in this study.

Antibody	Company	Dilution	
		Western blotting	Immunofluorescence
ALIX	Abcam	1:5000	
CD63	Abcam	1:5000	
TSG101	Abcam	1:8000	
GM130	Abcam	1:4000	
Calnexin	Abcam	1:4000	
Cytochrome C	Abcam	1:4000	
$\beta$ -catenin	Cell signaling	1:4000	1: 500
Versican	Abcam	1:4000	1: 400
ALP	Abcam	1:4000	1: 400
pAKT	Cell signaling	1:5000	
AKT	Cell signaling	1:5000	
Bcl-2	Cell signaling	1:8000	
PCNA	Cell signaling	1:6000	
GAPDH	Cell signaling	1:10000	
$\beta$ -actin	Cell signaling	1:6000	
Wnt3a	Abcam	1:4000	1 :200
Wnt7b	GeneTex	1:4000	1 :200
CD68	Abcam		1: 200
HRP conjugated anti-mouse	Cell signaling	1:10000	
HRP conjugated anti-rabbit	Cell signaling	1:10000	
Alexa Fluor 555 conjugated anti-rabbit	Cell signaling		1:200
Anti-goat rabbit -FITC	Cell signaling		1:400

**Table 2.** RT-PCR primers list.

Gene	Forward	Reverse
VEGF	GCGAGTCTGTGTTTTTGCAG	TCTTCAAGCCATCCTGCGTG
KGF	AATTCCAAC TGCCACTGTCC	GACATGGATCCTGCCAACTT
$\beta$ -actin	GGGAAATCGTGCGTGACATT	GGAGTTGAAGGTAGTTTCGT

**Table 3.** Quantitative PCR primers list.

Gene	Forward	Reverse
Axin2	AGCTAGGAGTGCGTTCATGGTT	GGAGGGACGTAGTGCAAAGC
LEF1	CAGGAGCCCTACCACGACAA	CCTCCATCTGGATGCTTTCC
$\beta$ -actin	GGGAAATCGTGCGTGACATT	GGAGTTGAAGGTAGTTTCGT