Supplement Figures

Figure.S1

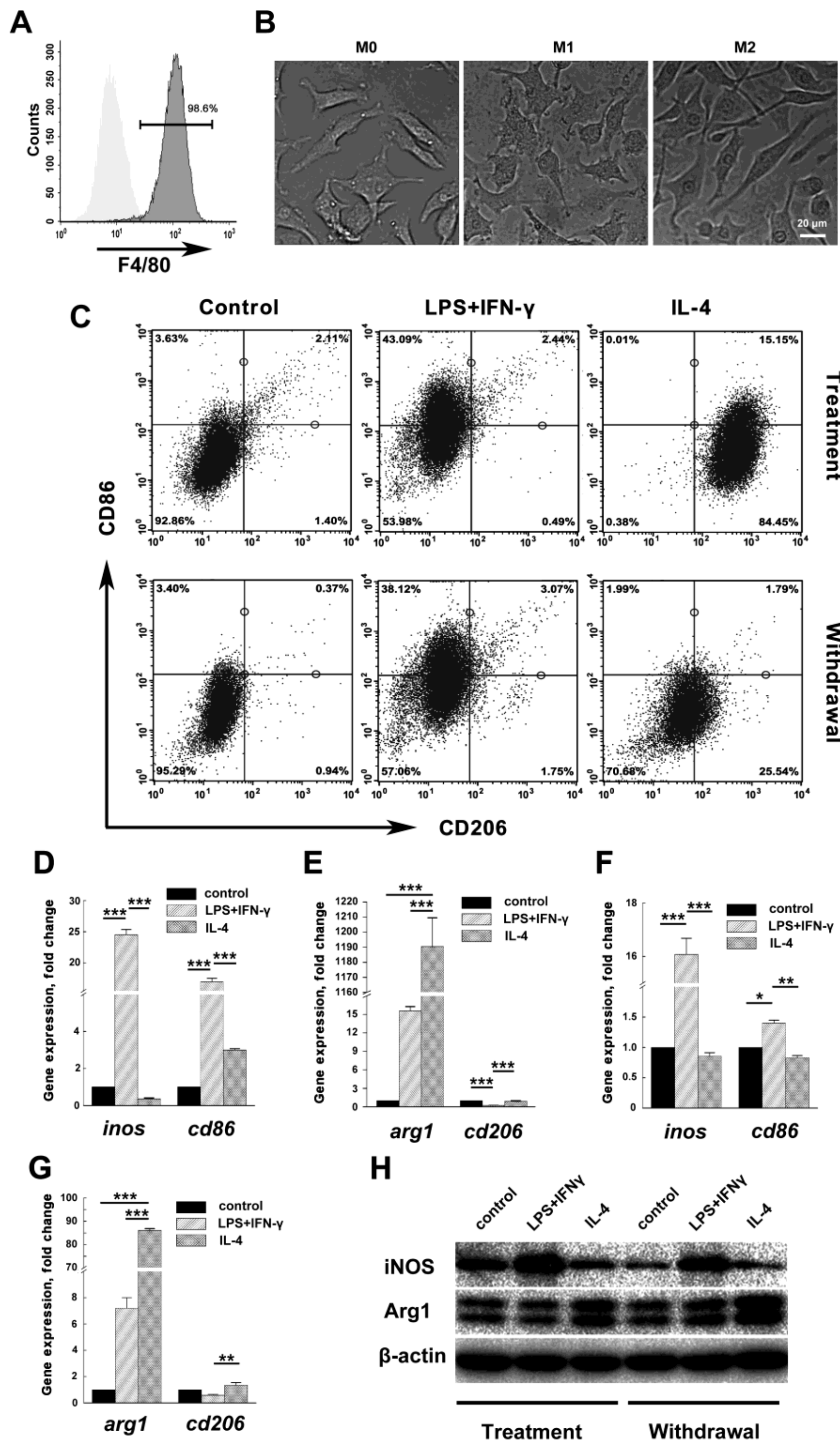

Fig. S1. Polarization states of BMDM-derived macrophages *in vitro*. (A) Following induction of BMDMs from the bone marrow, approximately 99% of the

cells were F4/80-positive. **(B)** The morphologies of M0, M1 and M2 macrophages are shown under phase contrast microscopy. Space bar = 20 μm. **(C)**Flow cytometry analysis of CD86/CD206 expression in macrophage cells with or withdrawal the LPS plus IFN-γ or IL-4. **(D–E)** The mRNA expression levels of (D) *inos* and *cd86* and (E) *arg1* and *cd206* are shown in the polarized macrophages after 24 h in culture with LPS plus IFN-γ or IL-4. **(F–G)** The mRNA expression levels of (F) *inos* and *cd86* and (G) *arg1* and *cd206* are shown in the polarized macrophages at 24 h in culture after the withdrawal of LPS plus IFN-γ or IL-4. **(H)** The protein expression levels of iNOS and Arg1 are shown under polarizing conditions (LPS plus IFN-γ or IL-4 stimulation) during the first 24 h of culture, followed by withdrawal of the polarizing stimuli for another 24 h in culture. Data in (A), (B),(C) and (H) are representative of three independent experiments; data in (D–G) were pooled from three independent experiments (*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$).

Figure.S2

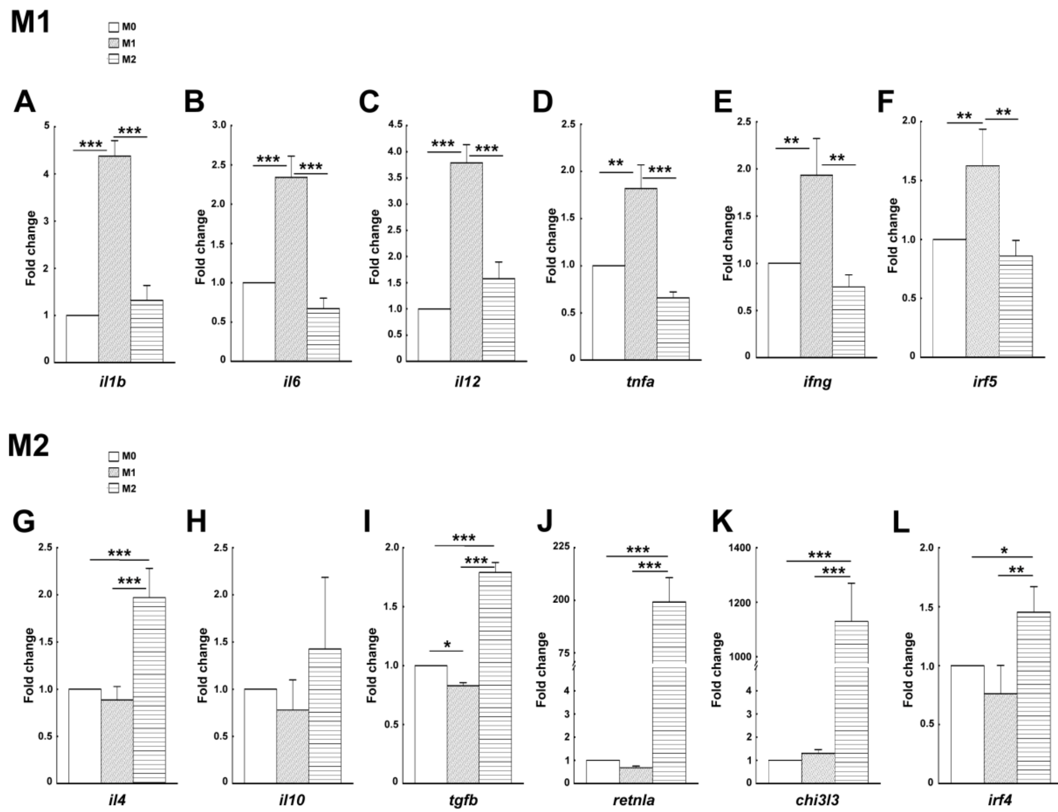

Fig. S2. Gene-specific expression patterns in M1 and M2 macrophages. (A–F) show the mRNA expression levels of M1-specific markers, while **(G–L)** show the mRNA expression levels of M2-specific markers (*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$).

Figure.S3

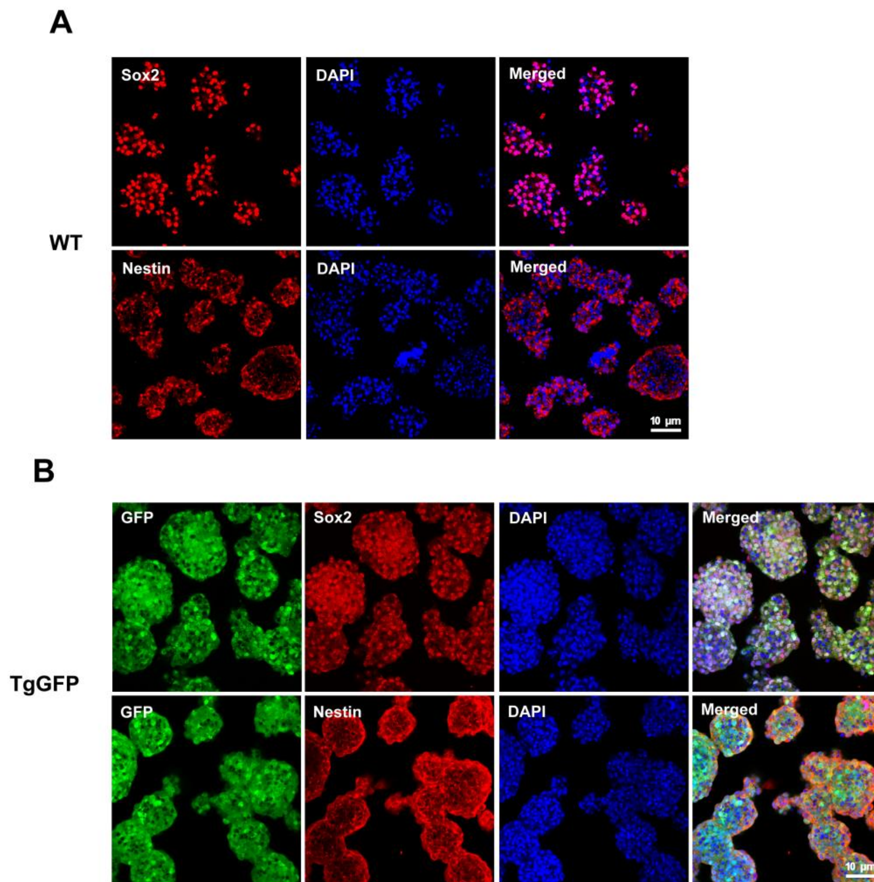

Fig. S3. Confirmation of NS/PC identity. (A and B) NS/PCs isolated at E14 from wild-type (WT) B6 or TgGFP/B6 mice expressed the NS/PC-specific markers, Sox2 and nestin.

Figure.S4

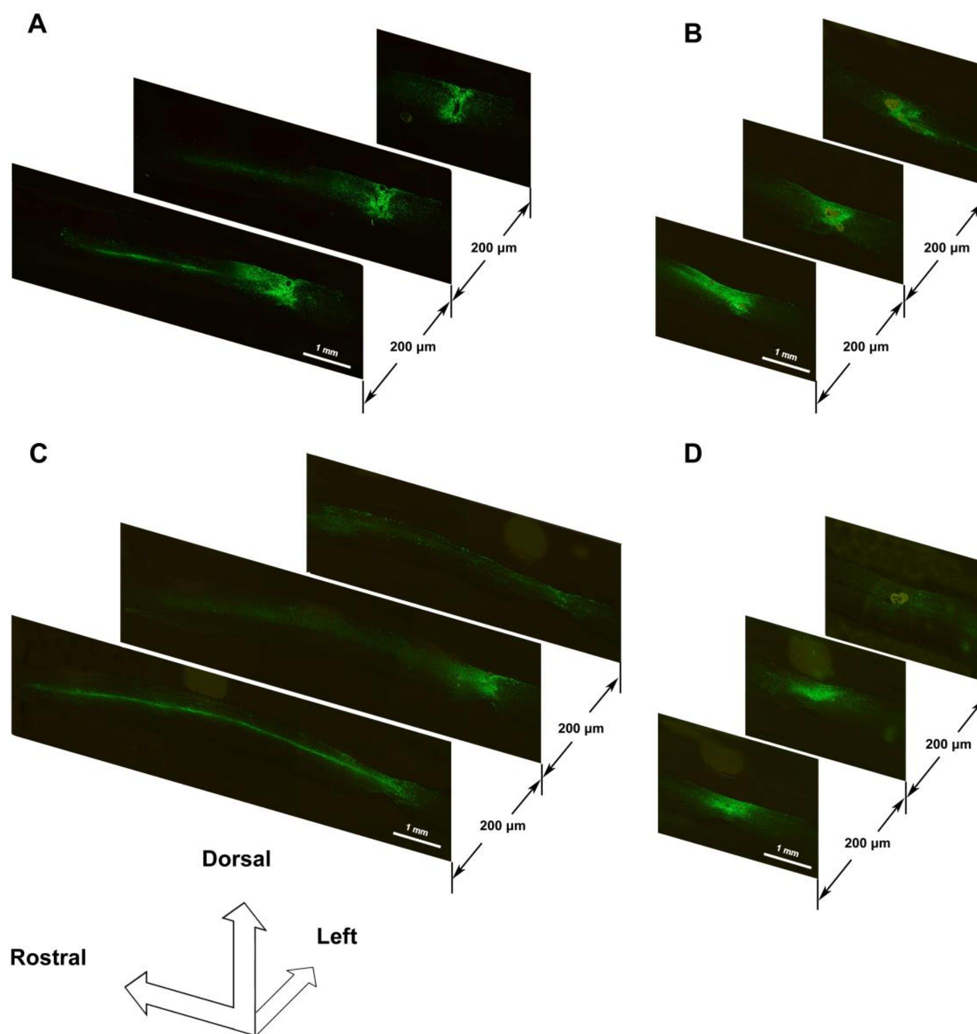

Fig. S4. Migratory patterns of engrafted NS/PC-derived cells after injection of NS/PCs with and without co-transplanted macrophages into the injured spinal cord. Serial sections display the migration stream of NS/PC-derived GFP-positive cells transplanted alone **(A)** or co-transplanted with M0 **(B)**, M1 **(C)** or M2 **(D)** cells. Adjacent sections were taken at 200-µm intervals.

Figure.S5

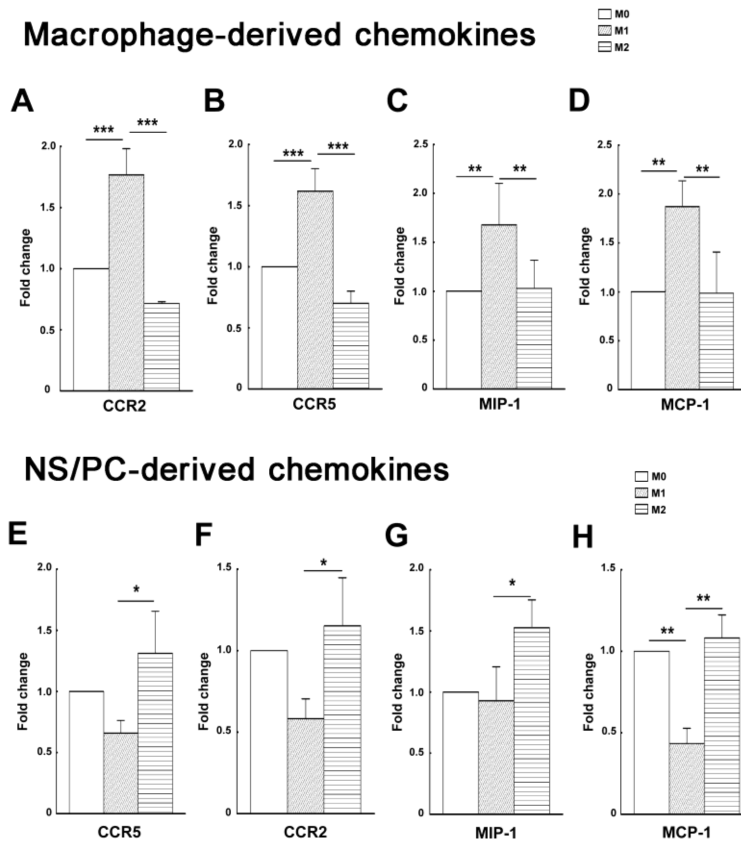

Fig. S5. Chemokine expression patterns in macrophages and NS/PCs. The expression patterns are shown for macrophages **(A–D)** and NS/PCs simulated with CM derived from M0, M1, or M2 macrophages **(E–H)** (*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$).

Figure.S6

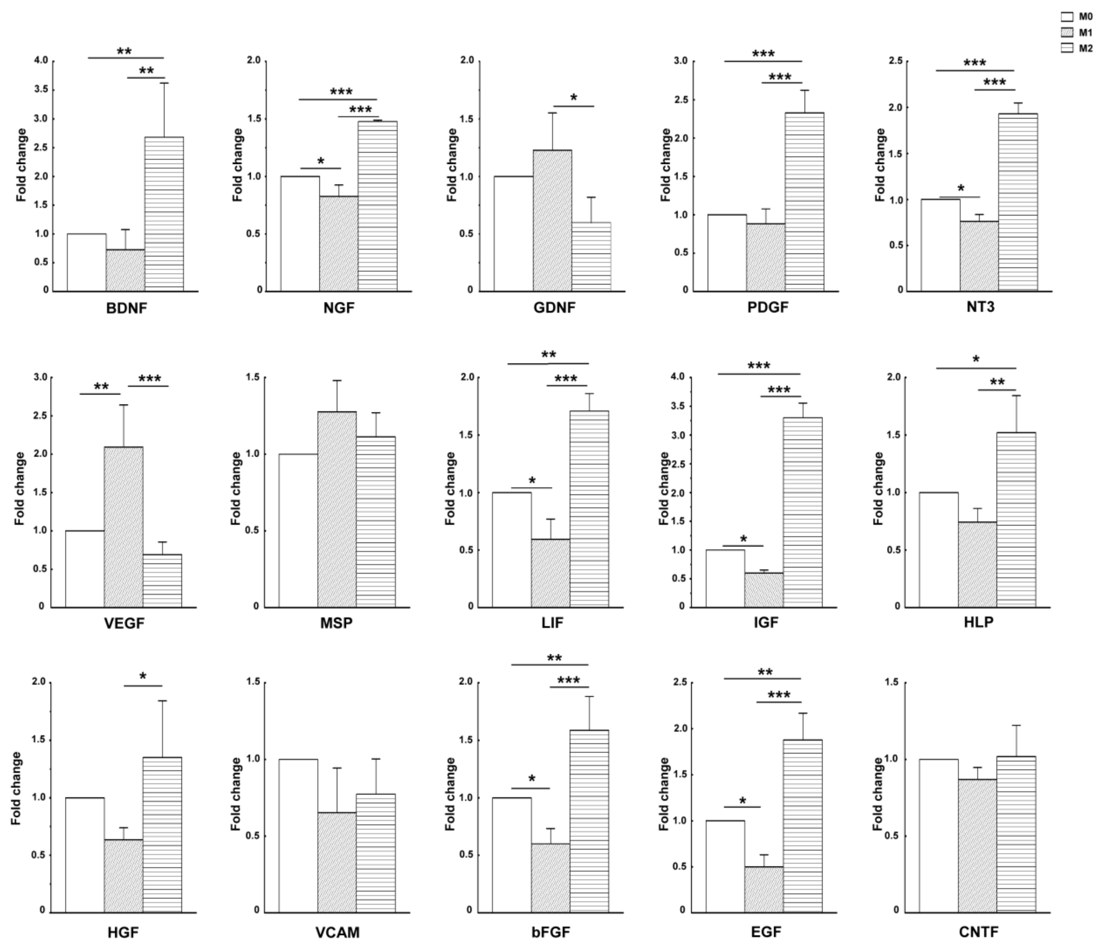

Fig. S6. Expression patterns of growth factors and VCAM in cultured macrophages (*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$).

Figure.S7

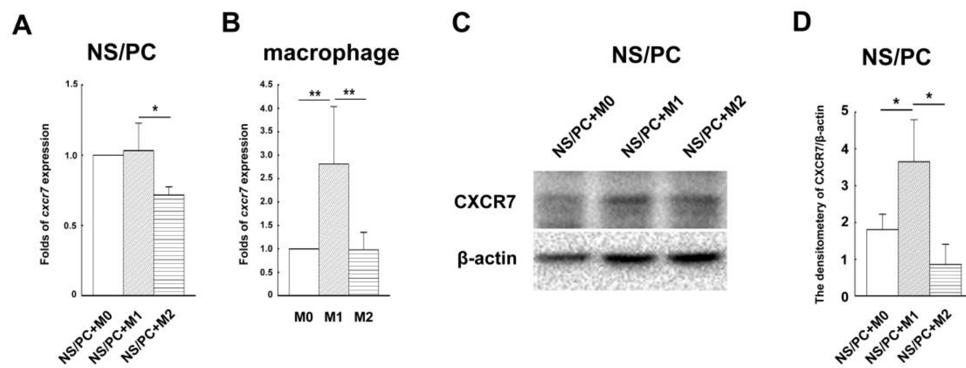

Fig. S7. In vitro expression patterns of CXCR7 in NS/PCs and macrophages. (A and B) The mRNA expression levels of CXCR7 are shown in (A) NS/PCs stimulated with M0-, M1- or M2-CM and (B) M0, M1 and M2 macrophages. **(C and D)** The protein expression levels of CXCR7 are shown in NS/PCs stimulated with M0-, M1- or M2-CM by (C) Western blotting and (D) quantitative densitometric analysis. Data in (A–D) were pooled from three independent experiments (*$p < 0.05$, **$p < 0.01$).

Figure.S8

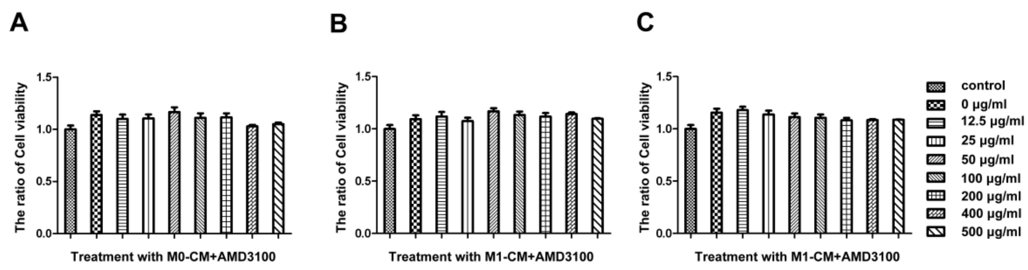

Fig.S8. Cytotoxicity analysis of AMD3100. A dose-dependent assessment was conducted for NS/PCs treated with M0-, M1- or M2-CM and AMD3100. No cytotoxicity was observed.

Figure.S9

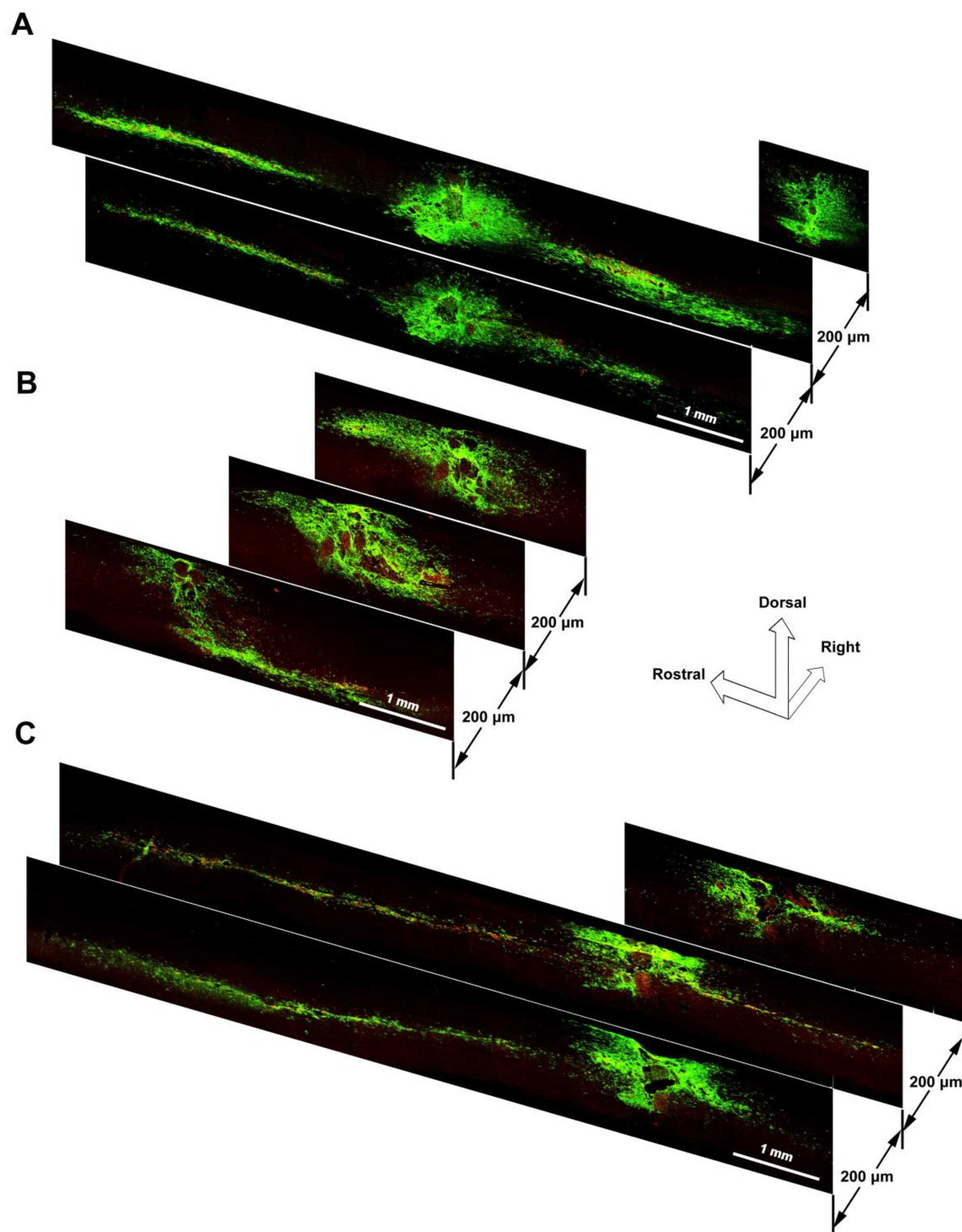

Fig.S9. Migratory patterns of engrafted NS/PC-derived cells after co-transplantation of AMD3100-treated NS/PCs and macrophages. Serial sections display the migratory patterns of NS/PC-derived GFP-positive cells co-transplanted with M0 **(A)**, M1 **(B)** or M2 **(C)** macrophages. Adjacent sections were taken at 200-μm intervals.

Table S1. Antibodies for IHC

Antibodies	Host	Vendor	Dilution
iNOS	Rabbit	abcam	1:200
Arginase 1	Goat	Santa Cruz Biotechnology	1:200
GFAP	Rabbit	DakoCytomation	1:500
Oligo2	Rabbit	abcam	1:1000
β-tubulinIII	Mouse	R &D Systems	1:500
NeuN	Mouse	Millipore	1:500
MBP	Rat	Millipore	1:500
Synapsin-1	Rabbit	abcam	1:500
CXCR4	Goat	abcam	1:200
CXCR7	Goat	Santa Cruz Biotechnology	1:200
CXCL12	Rabbit	abcam	1:500
F4/80	Rat	AbD Serotec	1:100
Ibal1	Rabbit	Wako	1:1000
Nestin	Rabbit	abcam	1:500
Sox2	Rabbit	Millipore	1:500

Table S2. The primer sequences for QRT-PCR analysis

Gene	Forward primer(5'- 3')	Reverse primer(5'- 3')
bactin	AGAAGGACTCCTATGTGGGTGA	CATGAGCTGGGTCATCTTTTCA
gfap	TCTCGAATGACTCCTCCACTC	CCAGACCGAACACTGTCCA
btubulinIII	CCCAGCGGCAACTATGTAGG	AAGCTCCGCCTGGTAGACAT
pdgfra	GGAGACTCAAGTAACCTTGCAC	TCAGTTCTGACGTTGCTTTCAA
il1b	CTTCAGGCAGGCAGTATCAC	CCAGCAGGTTATCATCATCATCC
il6	TAGTCCTTCCTACCCCAATTTCC	TTGGTCCTTAGCCACTCCTTC
il4	GGTCTCAACCCCCAGCTAGT	GCCGATGATCTCTCTCAAGTGAT
il10	GCTCTTACTGACTGGCATGAG	CGCAGCTCTAGGAGCATGTG
mip1	ACTGTTACTCTTGGCATCATCA	CCTTCTTCTCACTGGGTCTTC
ccr5	TCCCTGGTATTCATCTTTGGTT	CAATGTGATAGAGCCCTGTGA
mcp1	CTCTCTTCCTCCACCACCAT	GCTCTCCAGCCTACTCATTG
ccr2	GCTGTGTTTGCCTCTCTACC	CTGTGCCTCTTCTTCTCATTCC
cxcr4	CTACAGCAGCGTTCTCATCC	TTTCAGCCAGCAGTTTCCTT
cxcl12	CTGTAGCCTGACGGACCAAT	GAGCCCATAGAGCCACTGTT
cxcr7	CCGAGCACAGCATCAAGGA	GCAGCCAACATACCAGGAAG
bdnf	TTCACAGGAGACATCAGCAAT	ACAAGAGACCACAGCAAGAC
nt3	GCCCCCTCCCTTATACCTAATG	CATAGCGTTTCCTCCGTGGT
gdnf	GCCACCATTAAAAGACTGAAAAGG	GCCTGCCGATTCCTCTCTCT
igf1	GATACACATCATGTCGTCTTCACA	CAGTACATCTCCAGTCTCCTCAGA
pdgfa	TGTAACACCAGCAGCGTCAAG	CTGGACCTCTTTCAATTTTGGC
vcam1	ATTATGCCGTCGCGAGGTT	CAGTCCAAGCAACACTCTCTGATT
vegf	CATCTTCAAGCCGTCCTGTGT	CTCCAG-GGCTTCATCGTTACA
bfgf	CCCAC-CAGGCCACTTCAA	GATGGATGCGCAGGAAGAA
lif	TGCTCTCTTCATTTCCTATTACAC	AACTTGGTCTTCTCTGTCC
hgf	TCACACAGAATCAGGCAAGACT	AAGGGGTGTCAGGGTCAAG
msp	AGTTAAGGAACCTGTTACAC	ACCATGGCTGCTCATGTTGT
ngf	TGGGCTTCAGGGACAGAGTC	CAGCTTTCTATACTGGCCGCAG
cntf	AGGCAGAGCGACTCCAAGA	GGTAGGCGAAGGCAGAAACT
egf	TTGCCTGGTTGTGCCTGT	GCTGTGACGCTGAGTATGC
hlp	ACACCTGCCCACCAGTATT	AGTCTCCATAGCCATGAACCA
retnla	CCAATCCAGCTAACTATCCCTCC	ACCCAGTAGCAGTCATCCCA
chi3l3	CAGGTCTGGCAATTCTTCTGAA	GTCTTGCTCATGTGTGTAAGTGA
irf4	TCCGACAGTGGTTGATCGAC	CCTCACGATTGTAGTCCTGCTT
irf5	GGTCAACGGGGAAAAGAAACT	CATCCACCCCTTCAGTGTACT
stat1	TCACAGTGGTTCGAGCTTCAG	GCAAACGAGACATCATAGGCA
stat6	CTCTGTGGGGCCTAATTTCCA	CATCTGAACCGACCAGGAACT
cd86	TTGTGTGTGTTCTGGAAACGGAG	AACTTAGAGGCTGTGTTGCTGGG
inos	CCCTTCAATGGTTGGTACATGG	ACATTGATCTCCGTGACAGCC
arginase1	GAACACGGCAGTGGCTTTAAC	TGCTTAGCTCTGTCTGCTTTGC
cd206	TCTTTGCCTTTCCCAGTCTCC	TGACACCCAGCGGAATTTC

Materials and Methods

Flow cytometry analysis of surface antigens: BMDMs were incubated in blocking solution (rat serum, 20 min at 4°C) and were subsequently stained with FITC-conjugated anti- F4/80 , APC-conjugated anti- CD86 and PE-conjugated anti-CD206 in the dark for 20 min at 4°C. Acquisitions were performed on a Millipore flow cytometer (Guawa 6HT). Subsequent data analyses were completed using FlowJo software version 7.6.2 (Tree Star, Ashland, OR, USA). Results are expressed as % of positive cells.

MTT assay： The cytotoxic effect of AMD3100 in NS/PCs was evaluated by the MTT assay . Briefly, NS/PCs grown in 200 μL M-CM containing different concentrations (0, 12.5,25, 50, 100, 200, 400 and 500 μg/mL) of AMD3100 (Sigma) were seeded in 96-well plates and incubated for 24 hrs. Then 20 μL of MTT solution (5 mg/mL in PBS; Sigma) was added to each well and incubated for 4 h at 37 °C. The supernatant was then discarded, and 150 μL dimethyl sulfoxide (DMSO; Guanghua Co., Ltd) was added. Absorbance was read at 490 nm using an automated enzyme immunoassay instrument (Bio-Rad, Hercules, CA, USA).