**Supplementary Information**

**Figure S1. CCR2 overexpression did not alter the intrinsic characteristics of MSCs.**

(A) Plasmid constructs.

(B) The green fluorescence of MSCvector and MSCCCR2 was observed using fluorescence microscopy. Scale bar: 200 μm.

(C) The expression levels of CD29, CD34, CD44, CD45, CD73, CD90, CD105 and CD166 on the surface of MSCvector and MSCCCR2 were detected by flow cytometry. The experiment was performed three times.

(D) Alizarin red S staining and oil red O staining were used to evaluate the osteogenic and adipogenic differentiation capacities, respectively, of MSCvector and MSCCCR2. Scale bar: 200 μm; 50 μm, respectively.

**Figure S2.** **Quantitative analysis of the fluorescence signal intensities of the heart, spleen, and kidneys.**

(A-C) n = 5 per group. All data are presented as the mean±SD. \**p*<0.05, \*\**p*<0.01, \*\*\**p*<0.001, and n.s. means nonsignificant.

**Table S1. Sequence (5′ to 3′) of specific primers used for qRT-PCR** **analysis**

Human:

|  |  |  |
| --- | --- | --- |
| Genes | Forward Sequence | Reverse Sequence |
| 18s | GTAACCCGTTGAACCCCATT | CCATCCAATCGGTAGTAGCG |
| CXCL1 | CAGGGAATTCACCCCAAGAACA | GGATGCAGGATTGAGGCAAGC |
| CXCL10 | AACTGTACGCTGTACCTGCAT | ACACGTGGACAAAATTGGCTT |
| CXCL12 | ATTCTCAACACTCCAAACTGTGC | ACTTTAGCTTCGGGTCAATGC |
| CXCL13 | GCTTGAGGTGTAGATGTGTCC | CCCACGGGGCAAGATTTGAA |
| CXCL16 | GACATGCTTACTCGGGGATTG | GGACAGTGATCCTACTGGGAG |
| CCL2 | GAAAGTCTCTGCCGCCCTT | GGTGACTGGGGCATTGATTG |
| CCL17 | TCCAGGGATGCCATCGTTTT | CCTCTCAAGGCTTTGCAGGTA |
| CCL19 | CATCCCTGGGTACATCGTGAG | TCTGGATGATGCGTTCTACCC |
| CCL21 | GTTGCCTCAAGTACAGCCAAA | AGAACAGGATAGCTGGGATGG |
| CCL22 | ATTACGTCCGTTACCGTCTGC | TCCCTGAAGGTTAGCAACACC |
| CCL27 | TCAGCTCTACCGAAAGCCAC | GATGCAGATGCTGCGTTGAG |
| GAPDH | ACAACTTTGGTATCGTGGAAGG | GCCATCACGCCACAGTTTC |
| CCR1 | GACTATGACACGACCACAGAGT | CCAACCAGGCCAATGACAAATA |
| CCR2 | TGCAAAAAGCTGAAGTGCTTG | CAGCAGAGTGAGCCCACAAT |
| CCR3 | TGGCATGTGTAAGCTCCTCTC | CCTGTCGATTGTCAGCAGGATTA |
| CCR4 | CCTTGCCATCTCGGATCTGC | AGACCTAGCCCAAAAACCCAC |
| CCR5 | TTGCCAAACGCTTCTGCAAAT | AGTGGATCGGGTGTAAACTGA |
| CCR6 | TTCAGCGATGTTTTCGACTCC | GCAATCGGTACAAATAGCCTGG |
| CCR7 | CAACATCACCAGTAGCACCTGTG | TGCGGAACTTGACGCCGATGAA |
| CCR8 | CTGTCTGACCTGCTTTTTGTCT | CCACTTTGCACATTACAGTCCC |
| CCR9 | ATGTCAGGCAGTTTGCGAG | TGCAGTACCAGTAGACAAGGAT |
| CCR10 | GCAAACGCAAGGATGTCGC | CGTAGAGAACGGGATTGAGGC |
| CXCR1 | CTGACCCAGAAGCGTCACTTG | CCAGGACCTCATAGCAAACTG |
| CXCR2 | CCTGTCTTACTTTTCCGAAGGAC | TTGCTGTATTGTTGCCCATGT |
| CXCR3 | CCACCTAGCTGTAGCAGACAC | AGGGCTCCTGCGTAGAAGTT |
| CXCR4 | ACTACACCGAGGAAATGGGCT | CCCACAATGCCAGTTAAGAAGA |
| CXCR5 | CACGTTGCACCTTCTCCCAA | GGAATCCCGCCACATGGTAG |
| CXCR6 | GACTATGGGTTCAGCAGTTTCA | GGCTCTGCAACTTATGGTAGAAG |
| CXCR7 | CTATGACACGCACTGCTACATC | CTGCACGAGACTGACCACC |
| CX3CR1 | AGTGTCACCGACATTTACCTCC | AAGGCGGTAGTGAATTTGCAC |
| CD29 | GTAACCAACCGTAGCAAAGGA | TCCCCTGATCTTAATCGCAAAAC |
| CD44 | CTGCCGCTTTGCAGGTGTA | CATTGTGGGCAAGGTGCTATT |
| CD73 | CCAGTACCAGGGCACTATCTG | TGGCTCGATCAGTCCTTCCA |
| CD90 | TCACCCATCCAGTACGAGTTC | GGAGCGGTATGTGTGCTCAG |
| CD105 | GCATCCTTCGTGGAGCTACC | GAGGAGTGGTCTGGATCGG |
| CD166 | ACTTGACGTACCTCAGAATCTCA | CATCGTCGTACTGCACACTTT |

Mouse:

|  |  |  |
| --- | --- | --- |
| Genes | Forward Sequence | Reverse Sequence |
| GAPDH | AGGTCGGTGTGAACGGATTTG | GGGGTCGTTGATGGCAACA |
| CXCL1 | ACTGCACCCAAACCGAAGTC | TGGGGACACCTTTTAGCATCTT |
| CXCL10 | CCAAGTGCTGCCGTCATTTTC | TCCCTATGGCCCTCATTCTCA |
| CXCL12 | TGCATCAGTGACGGTAAACCA | CACAGTTTGGAGTGTTGAGGAT |
| CXCL13 | ATTCTGGAAGCCCATTACACA | TTTGGCACGAGGATTCACAC |
| CXCL16 | ACCCTTGTCTCTTGCGTTCTT | CAAAGTACCCTGCGGTATCTG |
| CCL2 | TAAAAACCTGGATCGGAACCAAA | GCATTAGCTTCAGATTTACGGGT |
| CCL17 | TACCATGAGGTCACTTCAGATGC | GCACTCTCGGCCTACATTGG |
| CCL19 | ACCACACTAAGGGGCTATCAG | TTCTTCAGTCTTCGGATGATGC |
| CCL21 | ACCAAGTTTAGGCTGTCCCAT | ACTTAGAGGTTCCCCGGTTC |
| CCL22 | CTCTGCCATCACGTTTAGTGAA | GACGGTTATCAAAACAACGCC |
| CCL27 | GGTACAGTCCCTTGGAGCCT | GACTGTCACCTCCAGGCTGT |
| TNF-α | GGTCTGGGCCATAGAACTGA | CAGCCTCTTCTCATTCCTGC |
| IL-6 | TGATGGATGCTACCAAACTGGA | TCTGTGACTCCAGCTTATCTCTTG |
| IL-1β | GAAATGCCACCTTTTGACAGTG | TGGATGCTCTCATCAGGACAG |

**Table S2. Primary and secondary antibodies**

|  |  |  |
| --- | --- | --- |
| Product | Catalogue Number | Supplier |
| WB:Primary antibodies:rabbit anti-human MCP1 | ab151538 | Abcam |
| rabbit anti-mouse MCP1 | ab25124 | Abcam |
| rabbit anti-human CCR2 | 12199S | Cell Signaling Technology |
| mouse anti-β-actin | BM0627 | Boster |
| Secondary antibodies: |  |  |
| anti-rabbit IgG HRP-linked Ab | AS014 | ABclonal |
| anti-mouse IgG HRP-linked Ab | AS003 | ABclonal |
| IHC: |  |  |
| Primary antibodies:rabbit anti-human MCP1 | ab151538 | Abcam |
| rabbit anti-mouse MCP1 | ab25124 | Abcam |
| rabbit anti-mouse F4/80 | 70076S | Cell Signaling Technology |
| rabbit anti-mouse Cleaved Caspase-3 | ab214430 | Abcam |
| rabbit anti-mouse Ki67 | ab15580 | Abcam |

**Table S3. Antibodies for flow cytometry analysis**

|  |  |  |
| --- | --- | --- |
| Product | Catalogue Number | Supplier |
| APC anti-human CCR2 | 357207 | BioLegend |
| PE anti-human CD29 | 303003 | BioLegend |
| PE/Cy7 anti-human CD34 | 343515 | BioLegend |
| APC anti-human CD44 | 338805 | BioLegend |
| PE/Cy7 anti-human CD45 | 368531 | BioLegend |
| PE anti-human CD73 | 344003 | BioLegend |
| APC anti-human CD90 | 328113 | BioLegend |
| PE anti-human CD105 | 323205 | BioLegend |
| PE anti-human CD166 | 343903 | BioLegend |