



**Supplementary Figure 1 Morphological features of WJ and BM-MSCs.** Unstimulated WJ- (A) and BM- (C) MSCs exhibited a plastic adherent fibroblastic-like morphology. Stimulated WJ- (B) and BM- (D) were characterized by increased cytoplasmic granulation in comparison to unstimulated cells. Black arrows indicated the presence of cytoplasmic vacuoles in both cellular populations. Images were acquired with original magnification 20x and scale bars 50 µm.

**Supplementary Table 1 Flow cytometry analysis of WJ- and BM-MSCs.** No Statistical significant differences were observed between MSCs from both origins. Statistically significant difference was observed in HLA-ABC expression between WJ and BM-MSCs ( $p < 0.001$ ).

CDs	WJ-MSCs	BM-MSCs	<i>p-value</i>
CD73	96 ± 3 %	95 ± 4 %	0.58
CD90	97 ± 2 %	96 ± 3 %	0.26
CD105	96 ± 1 %	95 ± 2 %	0.56
CD10	98 ± 3 %	97 ± 2 %	0.16
CD29	96 ± 4 %	97 ± 2 %	0.29
CD340	95 ± 2 %	96 ± 3%	0.58
HLA-ABC	75 ± 4 %	91 ± 3 %	< 0.001
CD34	0.1 ± 0.01 %	0.1 ± 0.01 %	1
CD45	0.1 ± 0.01 %	0.1 ± 0.01 %	1
CD11b	0.2 ± 0.01 %	0.4 ± 0.01 %	1
CD31	0.5 ± 0.1 %	0.1 ± 0.1 %	1
HLA-DR	0.1 ± 0.01 %	0.1 ± 0.01 %	1

**Supplementary Table 2 Cellular proliferation of MSCs.** Statistically significant differences in cellular proliferation were observed between unstimulated and stimulated MSCs obtained from both origins ( $p = 0.0003$ ). Specifically, statistically significant differences were observed between unstimulated and stimulated WJ-MSCs ( $p = 0.0022$ ) and unstimulated and stimulated BM-MSCs ( $p = 0.0022$ ). Also, statistically significant differences were observed between stimulated WJ- and BM- MSCs ( $p = 0.0022$ ).

Unstimulated WJ-MSCs ( $\times 10^5$ )	Unstimulated BM-MSCs ( $\times 10^5$ )	Stimulated Wj-MSCs ( $\times 10^5$ )	Stimulated BM-MSCs ( $\times 10^5$ )	<i>p value</i>
3.1 ± 0.1	3.1 ± 0.1	4.8 ± 0.4	3.4 ± 0.2	0.0003

**Supplementary Table 3 Flow cytometry analysis of WJ- and BM-MSCs.** No Statistical significant differences were observed between MSCs from both origins. Statistically significant difference was observed in CD340 expression between unstimulated and stimulated WJ-MSCs ( $p = 0.008$ ) and unstimulated and stimulated BM-MSCs ( $p < 0.001$ ).

CDs	WJ-MSCs (Unstimulated)	WJ-MSCs (Stimulated)	BM-MSCs (Unstimulated)	BM-MSCs (Stimulated)	<i>p-value</i>
CD73	97 ± 2 %	96 ± 3 %	96 ± 3 %	95 ± 1 %	0.58
CD90	96 ± 2 %	95 ± 1 %	95 ± 3 %	96 ± 2 %	0.55
CD105	96 ± 1 %	95 ± 2 %	96 ± 2 %	95 ± 1 %	0.57
CD29	96 ± 4 %	96 ± 1 %	97 ± 2 %	96 ± 2 %	0.54
CD340	97 ± 2 %	93 ± 2 %	97 ± 3%	91 ± 1 %	0.001
CD45	0.1 ± 0.02 %	0.1 ± 0.03 %	0.2 ± 0.01 %	0.2 ± 0.01 %	0.45
HLA-DR	0.2 ± 0.01 %	0.1 ± 0.01 %	0.1 ± 0.01 %	0.1 ± 0.03 %	0.45

**Supplementary Table 4 Evaluation of immunomodulatory agents secreted by WJ and BM-MSCs after 12 h.**

	WJ-MSCs (Unstimulated)- pg /ml	WJ-MSCs (Stimulated)- pg /ml	<i>p-value</i>	BM-MSCs (Unstimulated)- pg /ml	BM-MSCs (Stimulated)- pg /ml	<i>p-value</i>
IL-1RA	50 ± 26	924 ± 100	< 0.001	59 ± 27	433 ± 162	< 0.001
IL-6	11 ± 6	66 ± 11	< 0.001	9 ± 4	33 ± 16	< 0.001
IL-10	28 ± 11	195 ± 51	< 0.001	28 ± 12	88 ± 24	0.0090
IL-13	24 ± 11	174 ± 23	< 0.001	22 ± 8	133 ± 24	< 0.001
TGF-β1	453 ± 84	955 ± 210	< 0.001	433 ± 59	841 ± 44	< 0.001
FGF	431 ± 100	669 ± 85	< 0.001	417 ± 68	643 ± 84	< 0.001
PDGF	446 ± 138	941 ± 108	< 0.001	439 ± 112	826 ± 145	< 0.001
VEGF	465 ± 80	801 ± 144	< 0.001	429 ± 68	790 ± 109	< 0.001
IDO	142 ± 56	1278 ± 93	< 0.001	135 ± 44	1152 ± 80	< 0.001

**Supplementary Table 5 Evaluation of immunomodulatory agents secreted by WJ and BM-MSCs after 24 h.**

	WJ-MSCs (Unstimulated)- pg /ml	WJ-MSCs (Stimulated)- pg /ml	<i>p-value</i>	BM-MSCs (Unstimulated)- pg /ml	BM-MSCs (Stimulated)- pg /ml	<i>p-value</i>
IL-1RA	50 ± 26	407 ± 57	< 0.001	59 ± 27	235 ± 50	< 0.001
IL-6	11 ± 6	44 ± 8	< 0.001	9 ± 4	21 ± 4	< 0.001
IL-10	28 ± 11	103 ± 14	< 0.001	28 ± 22	71 ± 8	0.0090
IL-13	24 ± 11	114 ± 5	< 0.001	22 ± 8	79 ± 14	< 0.001
TGF-β1	453 ± 84	813 ± 141	< 0.001	433 ± 59	652 ± 182	0.0029
FGF	431 ± 100	669 ± 85	0.0002	417 ± 68	643 ± 84	< 0.001
PDGF	446 ± 138	754 ± 74	< 0.001	439 ± 112	672 ± 108	< 0.001
VEGF	465 ± 80	646 ± 104	0.0007	429 ± 68	627 ± 107	0.0023
IDO	142 ± 56	835 ± 77	< 0.001	135 ± 44	675 ± 100	< 0.001

**Supplementary Table 6 Determination of macrophage polarization using flow cytometry analysis.**

Statistically significant differences were observed regarding CD29 and CD163 expression between macrophages M1 and M2, associated either with the WJ-MSCs or BM-MSCs ( $p < 0.001$ ).

CDs	WJs-Macrophages (M1)	WJ-Macrophages (M2)	BM-Macrophages (M2)	BM-Macrophages (M1)	<i>p-value</i>
CD14	97 ± 2 %	96 ± 1 %	96 ± 3 %	97 ± 2 %	0.58
CD45	96 ± 2 %	95 ± 2 %	95 ± 3 %	96 ± 3 %	0.55
CD11b	95 ± 1 %	95 ± 2 %	94 ± 2 %	95 ± 1 %	0.64
CD29	45 ± 1 %	91 ± 3 %	47 ± 2 %	91 ± 2 %	<0.001
CD163	12 ± 4 %	92 ± 2 %	8 ± 2 %	95 ± 3 %	<0.001