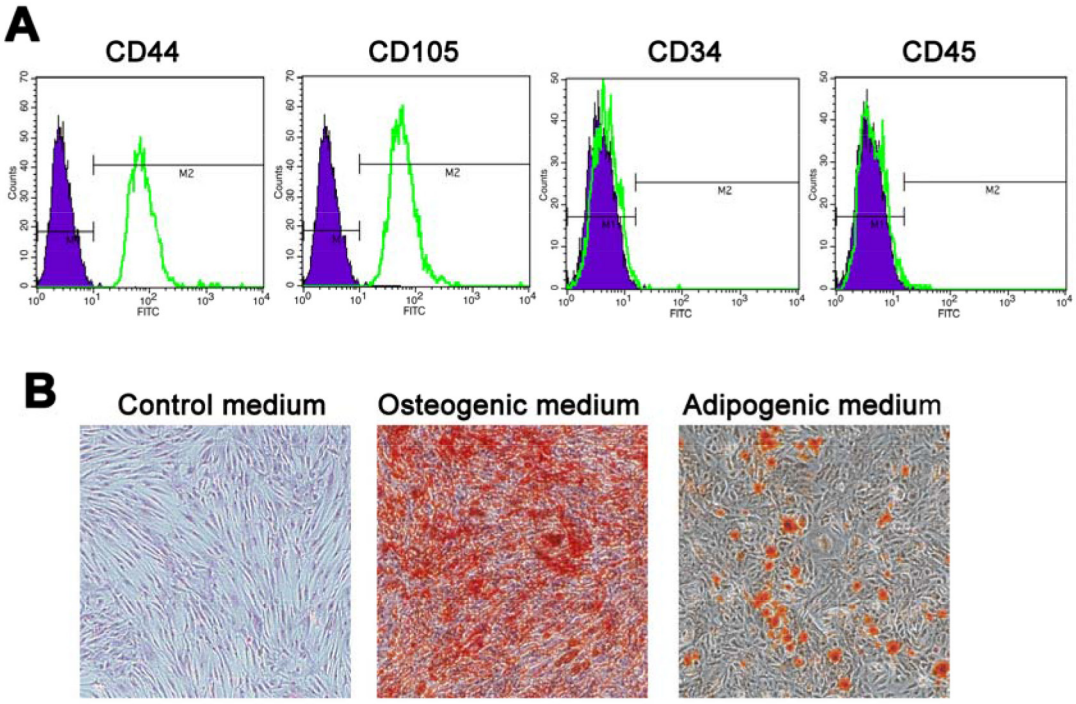
Mesenchymal stem cells promote osteosarcoma cell survival and drug resistance through activation of STAT3

SUPPLEMENTARY TABLE AND FIGURES

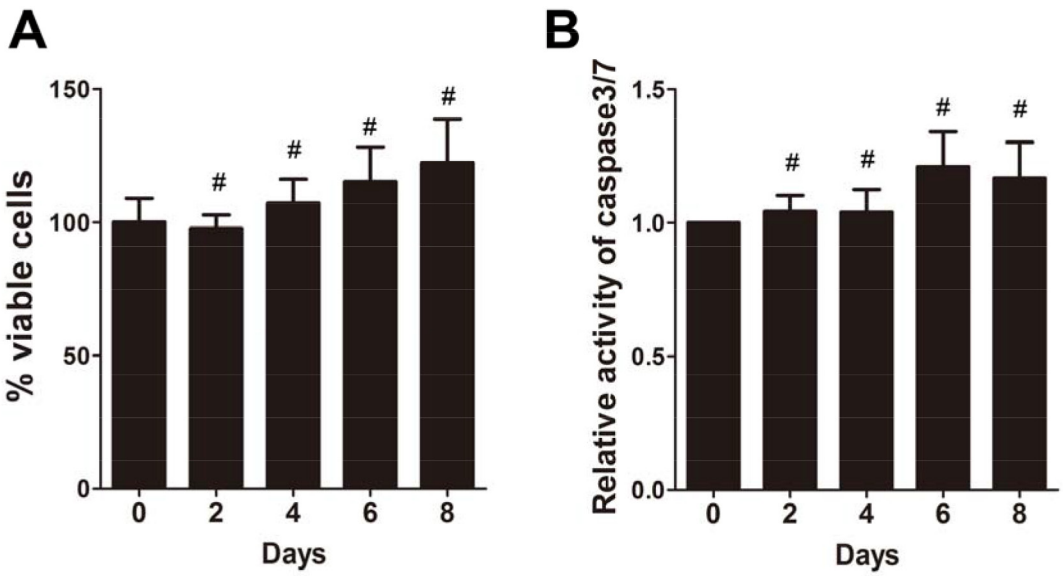
Supplementary Table S1: Drugs sensitivity was tested by ATP tumor chemosensitivity assay (ATP-TCA)

Patients		Sex	Age	IC50(%)	IC90(%)
Sensitive	**1**	F	15	5.6	88.9
	2	F	17	20.6	149.7
	3	M	20	13.5	133.5
	4	M	23	30.9	89.3
	5	M	24	23.5	128.5
	6	F	38	4.8	77.4
	7	F	51	10.8	95.3
	8	M	58	14.4	57.7
	9	M	64	9.3	54.39
Resistant	**1**	M	15	70.6	179.5
	2	M	16	37.6	145.3
	3	F	19	57.4	141.2
	4	M	22	28.5	138.7
	5	M	23	39.2	115.1
	6	F	27	65.3	125.2
	7	F	27	34.6	162.7
	8	M	36	46.4	119.5
	9	M	53	50.3	130.6
	10	M	60	28.37	105.7
	11	F	63	36.5	143.2
	12	F	63	41.2	162.1
	13	F	66	26.3	109.2
	14	M	68	37.3	127.2

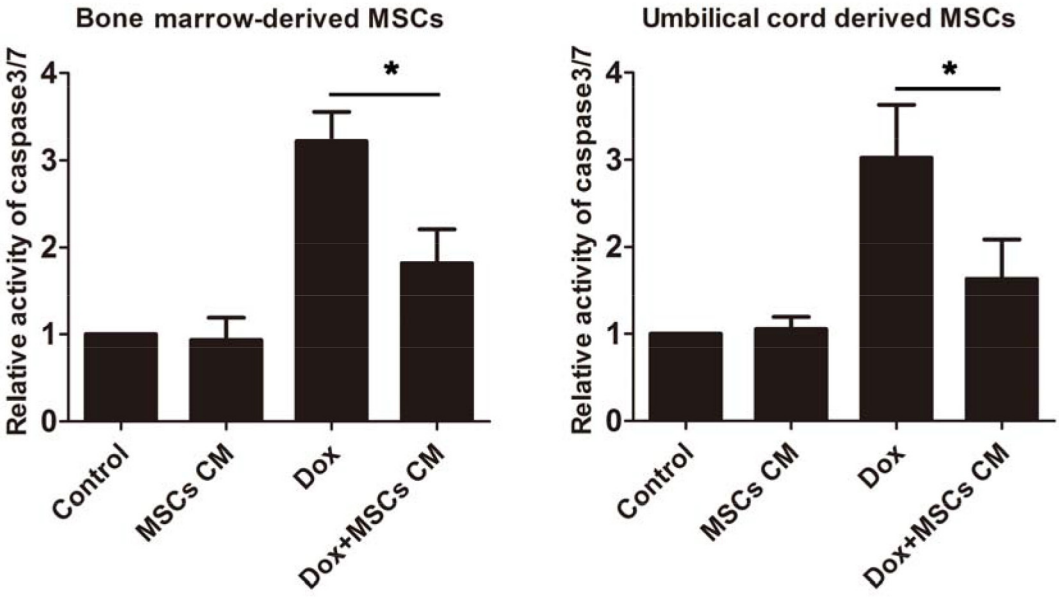
Tumor specimens (1-2 cm^3) were taken during primary surgery. The chemosensitivity was determined by the ATP-TCA kit (DCS Innovative Diagnostik Systeme, Hamburg, Germany) according to the manufacture's instructions. Sensitive: IC50<25% TDC or IC90<100% TDC; Resistant: IC50>25% test drug concentration (TDC) and IC90>100% TDC.



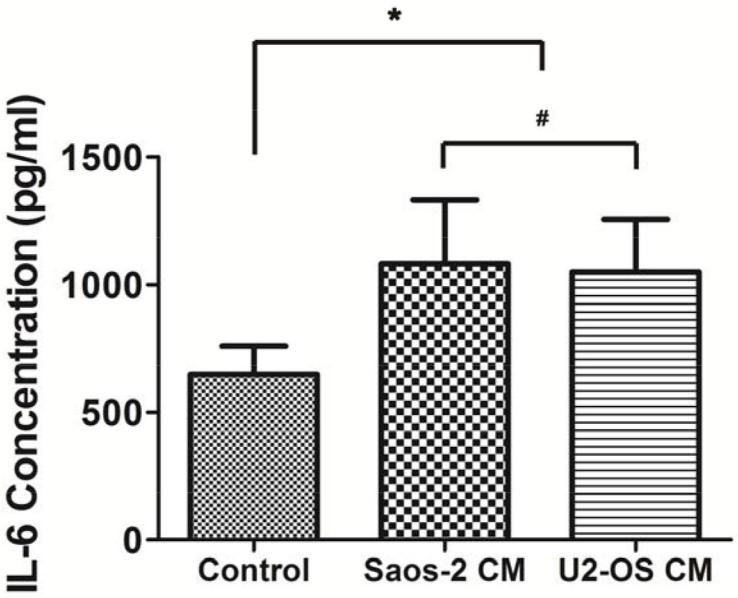
Supplementary Figure S1: Characterization of MSCs. A. Expression of cell surface markers in MSCs. The filled histogram curves represents the autofluorescent control. The open histogram curves show the staining with respective primary and secondary antibodies. **B.** Left: undifferentiated MSCs; Middle: Osteogenic differentiation of MSCs staining with Alizarin Red S at week 2; Right:, Adipogenic differentiation of MSCs staining with Oil Red O at week 2.



Supplementary Figure S2: 1% FBS has no effect on the proliferation and apoptosis of tumor. MSCs were cultured in DMEM containing 1% FBS for 8 days. **A.** Cell proliferation was evaluated by the CCK-8 assay. **B.** caspase 3/7 activity was examined at the indicated times. #, $p>0.05$.



Supplementary Figure S3: MSCs from different tissues protect Saos-2 cells from doxorubicin-induced apoptosis. Saos-2 cells were treated with MSCs CM and/or doxorubicin for 48h, caspase 3/7 activity in the cells was detected. Left: Bone marrow-derived MSCs CM. Right: Umbilical cord derived MSCs CM. The human umbilical cord derived MSCs were purchased from Chinese Academy of Sciences, Shanghai, China. *, $p<0.05$.



Supplementary Figure S4: The osteosarcoma cells promote the IL-6 expression in MSCs. MSCs were incubated in Saos-2 CM or U2-OS CM for 48h. Then the medium was replaced with DMEM without FBS and cultured for another 24h. The IL-6 concentration in the MSCs supernatant was detected by ELISA. *, $p<0.05$; #, $p>0.05$.