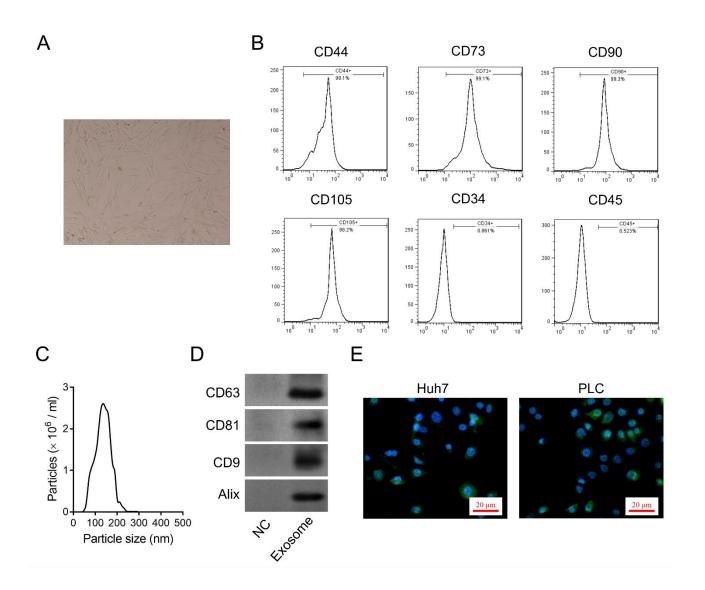
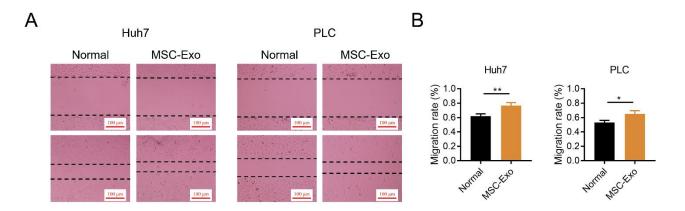
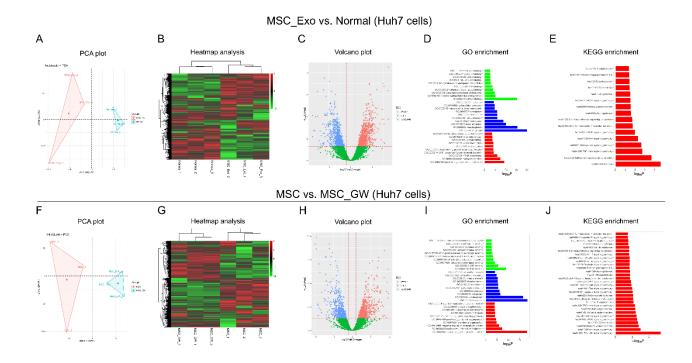
Supplementary Material



Supplementary Figure 1. Characterization of HCC-MSCs and their derived exosomes. HCC-MSCs under bright field (**A**); surface markers of HCC-MSCs (**B**); particle size analysis of HCC-MSCs derived exosomes (**C**); exosome marker analysis (**D**); observation of exosomes absorbed by HCC cells (**E**).



Supplementary Figure 2. Effect of HCC-MSCs on migration of HCC cells. Representative images of migration detection (**A**); Comparison of migration rate between groups (**B**).



Supplementary Figure 3. RNA sequencing in Huh7 cells. PCA (**A**), heatmap (**B**) and volcano plot (**C**) analyses between MSC_Exo group and normal group; GO (**D**) and KEGG (**E**) enrichment of DEGs between MSC_Exo group and normal group. PCA (**F**), heatmap (**G**) and volcano plot (**H**) analyses between MSC group and MSC_GW group; GO (**I**) and KEGG (**J**) enrichment of DEGs between MSC group and MSC_GW group.

GO enrichment

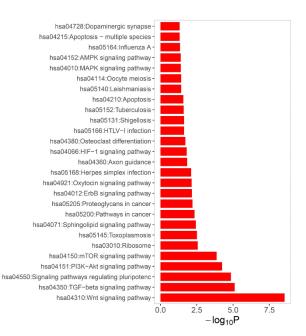
GO:0045296~cadherin binding-GO:0008201~heparin binding - GO:0003735~structural constituent of ribosome -GO:0032403~protein complex binding GO:0070411~I-SMAD binding GO:0004674~protein serine/threonine kinase activit GO:0005524~ATP binding GO:0008013~beta-catenin binding-GO:0003723~RNA binding -GO:0005515~protein binding -GO:0016363~nuclear matrix GO:0016020~membrane GO:0070062~extracellular exosome GO:0005765~lysosomal membrane GO:0005634~nucleus GO:0005737~cytoplasm GO:0031012~extracellular matrix -GO:0005925~focal adhesion GO:0005654~nucleoplasm GO:0005829~cytosol -GO:0016055~Wnt signaling pathway -GO:0060333~interferon-gamma-mediated signaling pat-GO:0016477~cell migration -GO:0043547~positive regulation of GTPase activity GO:0030509~BMP signaling pathway GO:0001657~ureteric bud development -GO:0043066~negative regulation of apoptotic proces -GO:0006468~protein phosphorylation - GO:0007179~transforming growth factor beta recepto -

ò

 $-\log_{10}P$

GO:0008284~positive regulation of cell proliferati

KEGG enrichment



Supplementary Figure 4. GO and KEGG enrichment of DEGs between MSC_Exo versus normal groups and MSC versus MSC_GW group.

Supplementary table 1. Primers' sequence

Gene	Forward Primer (5'-3')	Reverse Primer (5'-3')
TMBIM6	AGCAGCACCTGAAGAAGGTC	TCAATATCAGGGAGCCCAAG
EEF2	ATGAGGGCAAGATGAAGCTG	ATGAAGGACGGGATGTTCAC
PRDX1	TCCCAAGCGCACCATTGCTCA	CACAGAGCGGCCAACGGGAA
GAPDH	GAGTCCACTGGCGTCTTCAC	ATCTTGAGGCTGTTGTCATACTTCT

Supplementary table 2. Antibodies applied in western blot.

Antibody	Company	Dilution		
Primary Antibody				
CD63 antibody	Abcam (UK)	1:1000		
CD81 antibody	Abcam (UK)	1:1000		
CD9 antibody	Abcam (UK)	1:2000		
Alix antibody	Abcam (UK)	1:2000		
TMBIM6 antibody	Abcam (UK)	1:1000		
EEF2 antibody	Abcam (UK)	1:1000		
PRDX1 antibody	Abcam (UK)	1:10000		
E-cadherin antibody	CST (USA)	1:1000		
N-cadherin antibody	CST (USA)	1:1000		
Vimentin antibody	CST (USA)	1:1000		
Slug antibody	CST (USA)	1:1000		
p-PI3K antibody	Abcam (UK)	1:500		
PI3K antibody	Abcam (UK)	1:1000		
p-AKT antibody	Abcam (UK)	1:1000		
AKT antibody	Abcam (UK)	1:1000		
GAPDH antibody	Abcam (UK)	1:5000		
Secondary Antibody				
Goat Anti-Rabbit IgG-HRP	Abcam (UK)	1:5000		