

Supplementary Data 3. Primary and secondary antibody for WB, IP, IHC, FC, CHIP and IF

Antibody	Information	Application
USP51	orb338790, Biorbyt, Cambridge, UK	WB
USP51	DF9994, Affbiotech, Liyang, China	WB
USP51	NBP1-86167, Novus Biologicals, CO, USA	IF, IHC
HIF1A	66730-1-Ig, Proteintech, NJ, USA	IF
HIF1A	ab179483, Abcam, Cambridge, UK	WB
HIF1A	ab1, Abcam, Cambridge, UK	IP
HIF1A	ab51608, Abcam, Cambridge, UK	IHC
HIF2A	ab8365, Abcam, Cambridge, UK	WB
HIF2A	ab207607, Abcam, Cambridge, UK	IP
HK2	22029-1-AP, Proteintech, NJ, USA	WB
LDHA	21799-1-AP, Proteintech, NJ, USA	WB
Alpha Tubulin	11224-1-AP, Proteintech, NJ, USA	WB
ubiquitin	Ab134953, Abcam, Cambridge, UK	WB
ubiquitin	10201-2-AP, Proteintech, NJ, USA	WB
ubiquitin	ab303664, Abcam, Cambridge, UK	WB
VEGFA	19003-1-AP, Proteintech, NJ, USA	WB
CUL2	10981-2-AP, Proteintech, NJ, USA	WB
ELOB	10779-1-AP, Proteintech, NJ, USA	WB
ELOC	68164-1-Ig, Proteintech, NJ, USA	WB
ELOC	12450-1-AP, Proteintech, NJ, USA	WB, IF
RBX1	14895-1-AP, Proteintech, NJ, USA	WB
VHL	24756-1-AP, Proteintech, NJ, USA	WB
Ki67	27309-1-AP, Proteintech, NJ, USA	IHC
SENP1	ab108981, Abcam, Cambridge, UK	WB
SENP2	ab124724, Abcam, Cambridge, UK	WB
SENP3	ab124790, Abcam, Cambridge, UK	WB
CD31	ab134168, Abcam, Cambridge, UK	IHC
SUMO1	sc-5308, Santa Cruz Biotechnology, CA, USA	WB, IP, IF
SUMO2/3/4	sc-393144, Santa Cruz Biotechnology, CA, USA	WB, IP

Antibody	Information	Application
UBC9	ab75854, Abcam, Cambridge, UK	WB
P53	10442-1-AP, Proteintech, NJ, USA	WB
CD44	60224-1-Ig, Proteintech, NJ, USA	FC
CD133	18470-1-AP, Proteintech, NJ, USA	FC
Myc tag	ab32, Abcam, Cambridge, UK	IP
Myc tag	ab9106, Abcam, Cambridge, UK	WB, IF
Flag tag	20543-1-AP, Proteintech, NJ, USA	WB
Flag tag	F1804, Sigma-Aldrich, MA, USA	IP
Flag tag	66008-4-Ig, Proteintech, NJ, USA	IF
GFP tag	ab290, Abcam, Cambridge, UK	WB
GFP tag	ab291, Abcam, Cambridge, UK	IP
HA tag	ab1424, Abcam, Cambridge, UK	IP
HA tag	ab9110, Abcam, Cambridge, UK	WB
HIF1A	NB100-105, Novus Biologicals, CO, USA	CHIP
HIF2A	NB100-122, Novus Biologicals, CO, USA	CHIP
Fluorescein-conjugated Goat Anti-Mouse	SA00003-1, Proteintech, NJ, USA	Secondary antibody, FC
PE-Cy7-conjugated Goat Anti-Rabbit	K0034G-PE-Cy7, Solarbio, Beijing, China	Secondary antibody, FC
Goat anti-rabbit IgG-HRP	ab205718, Abcam, Cambridge, UK	Secondary antibody, IHC
goat anti-mouse IgG-HRP	abs20001, Absin, Shanghai, China	Secondary antibody, WB
Goat anti-rabbit IgG-HRP	abs20147, Absin, Shanghai, China	Secondary antibody, WB
Cy3-conjugated Goat Anti-Rabbit IgG	SA00009-2, Proteintech, NJ, USA	Secondary antibody, IF
FITC-conjugated Goat Anti-Mouse IgG	SA00003-1, Proteintech, NJ, USA	Secondary antibody, IF
FITC-conjugated Goat Anti-Rabbit IgG	SA00003-2, Proteintech, NJ, USA	Secondary antibody, IF
Cy3-conjugated Goat Anti-Mouse IgG	SA00009-1, Proteintech, NJ, USA	Secondary antibody, IF