

SM 1: Primer sequences used for qRT-PCR analysis

Gene symbol	Gene name	Forward primer sequence (5'–3')	Reverse primer sequence (5'–3')	Product size
CDH1	E-cadherin	TGCCCAGAAAATGAAAAAG G	GTGTATGTGGCAATGCGTTC	108 bp
CDH2	N-cadherin	ACAGTGGCCACCTACAAAG G	CCGAGATGGGGTTGATAATG	112 bp
VIM	Vimentin	GACGCCATCAACACCGAGT T	CTTTGTCGTTGGTTAGCTGGT	135 bp
SNAI1	Snail	TCGGAAGCCTAACTACAGC GA	AGATGAGCATTGGCAGCGA G	124 bp
SNAI2	Slug	TCGGACCCACACATTACCTT	CAGATGAGCCCTCAGATTTG AC	118 bp
TWIST 1	Twist-related protein 1	GTCCGCAGTCTTACGAGGA G	GCTTGAGGGTCTGAATCTTG CT	121 bp
MMP2	Matrix metalloproteinase-2	CTTCCAAGTCTGGAGCGATG T	TACCGTCAAAGGGGTATCCA T	132 bp
MMP9	Matrix metalloproteinase-9	TGTACCGCTATGGTTACACT CG	GGCAGGGACAGTTGCTTCT	126 bp
TGFB1	Transforming growth factor beta 1	CAATTCCTGGCGATACCTCA G	GCACAACTCCGGTGACATCA A	143 bp
SMAD 3	SMAD family member 3	GAGGCTGTCTACCAGTTGAC C	CAGGAGGAGATGTTGGAAG G	137 bp
GAPDH	Glyceraldehyde- 3-phosphate dehydrogenase	GAAGGTGAAGGTCGGAGTC	GAAGATGGTGATGGGATTTC	226 bp

Note: Primer sequences are presented in the 5'–3' direction. GAPDH was used as the internal reference gene for normalization, and relative gene expression was calculated using the $2^{-\Delta\Delta C_t}$ method.

SM 2: Antibodies used for Western blotting and immunofluorescence analyses

Target protein	Host species/clonality	Application	Dilution	Expected molecular weight	Supplier/catalogue number
E-cadherin	Rabbit monoclonal	Western blot, immunofluorescence	WB: 1:1000; IF: 1:200	~135 kDa	Cell Signaling Technology / Cat. No. 3195
N-cadherin	Rabbit monoclonal	Western blot	WB: 1:1000	~140 kDa	Cell Signaling Technology / Cat. No. 13116
Vimentin	Rabbit monoclonal	Western blot, immunofluorescence	WB: 1:1000; IF: 1:200	~57 kDa	Cell Signaling Technology / Cat. No. 5741
Snail	Rabbit monoclonal	Western blot	WB: 1:1000	~29 kDa	Cell Signaling Technology / Cat. No. 3879
Slug	Rabbit monoclonal	Western blot	WB: 1:1000	~30 kDa	Cell Signaling Technology / Cat. No. 9585
Twist	Rabbit polyclonal	Western blot	WB: 1:1000	~21 kDa	Abcam / Cat. No. ab50581
TGF- β 1	Rabbit monoclonal	Western blot	WB: 1:1000	~44 kDa	Cell Signaling Technology / Cat. No. 3711
Phospho-SMAD3	Rabbit monoclonal	Western blot, immunofluorescence	WB: 1:1000; IF: 1:200	~52 kDa	Cell Signaling Technology / Cat. No. 9520
Total SMAD3	Rabbit monoclonal	Western blot	WB: 1:1000	~52 kDa	Cell Signaling Technology / Cat. No. 9523
Phospho-SMAD2	Rabbit monoclonal	Western blot	WB: 1:1000	~58 kDa	Cell Signaling Technology / Cat. No. 3108
MMP-2	Rabbit monoclonal	Western blot	WB: 1:1000	~72 kDa	Cell Signaling Technology / Cat. No. 40994
MMP-9	Rabbit monoclonal	Western blot, immunohistochemistry	WB: 1:1000; IHC: 1:200	~92 kDa	Cell Signaling Technology / Cat. No. 13667
Ki-67	Rabbit monoclonal	Immunohistochemistry	IHC: 1:200	~345 kDa	Cell Signaling Technology / Cat. No. 9027
GAPDH	Rabbit monoclonal	Western blot	WB: 1:5000	~37 kDa	Cell Signaling Technology / Cat. No. 5174

Target protein	Host species/clonality	Application	Dilution	Expected molecular weight	Supplier/catalogue number
Goat anti-rabbit IgG-HRP	Secondary antibody	Western blot	WB: 1:5000	—	Cell Signaling Technology / Cat. No. 7074
Goat anti-rabbit IgG Alexa Fluor 488	Secondary antibody	Immunofluorescence	IF: 1:500	—	Invitrogen / Cat. No. A-11008
Goat anti-rabbit IgG Alexa Fluor 594	Secondary antibody	Immunofluorescence	IF: 1:500	—	Invitrogen / Cat. No. A-11012

Note: WB = Western blotting; IF = immunofluorescence; IHC = immunohistochemistry. Antibody dilutions were optimized according to sample type, protein abundance, membrane type, blocking reagent, and manufacturer's recommendations.