Supplementary file 1a: Primary antibodies used for immunochemistry & western blot

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| Antibody name | Vendor | Catolog # |
| Goat anti-Bmpr1a | Santa Cruz,  | sc-5676 |
| Mouse anti-Cytokeratin | Sigma | C2562 |
| Rat anti-E-cadherin | ThermoFisher Scientific | 13-1900 |
| Mouse anti-SMA | Sigma | A2547 |
| Rabbit anti-Elastin | Generated by Dr. Robert Mecham at Washington University, St. Louis (Luo et al., 2018; Young et al., 2020) |  |
| Goat anti-Pecam | Santa Cruz | Sc-1506 |
| Rabbit anti-NG2 chondroitin sulfate proteoglycan | Millipore | AB5320 |
| Rabbit anti-Laminin  | ThermoFisher Scientific | RB-082 |
| Goat anti-Collagen III alpha 1 | Novus Biologicals | NBP1-26547 |
| Mouse anti-Foxj1 | Seven Hills Bioregeants | WMAB-319 |
| Rabbit anti-Sox2 | Seven Hills Bioregeants | WRAB-1236 |
| Rabbit anti-Sox9 | Cell Signaling Technology | 82630 |
| Rabbit anti-Sftpc | Seven Hills Bioregeants | WRAB-9337 |
| T1α  | Developmental Studies Hybridoma Bank | 8.1.1 |
| Rabbit anti-Myh11 | Millipore | MABT464 |
| Rabbit anti-phospho-Smad1/5 | Cell Signaling Technology | 9516 |
| Rabbit anti-Smad1 | Cell Signaling Technology | 6944 |
| Rabbit anti-phospho-p38  | Cell Signaling Technology | 4511 |
| Rabbit anti-p38 | Cell Signaling Technology | 9212 |
| Rabbit anti-phospho-Erk1/2 | Cell Signaling Technology | 4370 |
| Rabbit anti-Erk1/2 | Cell Signaling Technology | 4695 |
| Rabbit anti-phospho-Jnk | Cell Signaling Technology | 4668 |
| Rabbit anti-Jnk  | Cell Signaling Technology | 9252 |
| Mouse anti-GAPDH  | Fitzgerald | 10R-G109a |
| Mouse BMP-4 Antibody  | R&D Systems  | MAB5020 |

Supplementary file 1b: Primers used for real-time RT-PCR

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| Gene | Oligonucleotide DNA sequence |
| *Bmpr1a*-△exon2 | 5’- GGG AGC CTG TCT GTT CAT CA -3’  |
| 5’- TTT CGG TGA ATC CTT GCA TT -3’ |
| *Cspg4* | 5’- CCT TCA CGA TCA CCA TCC TTC -3’ |
| 5’- AAT CAT TGT CTG TTC CCC TGA G -3’ |
| *PECAM1* | 5’- GAG ATG TCC AGG CCA GCT G -3’ |
| 5’- CTC ACT GTA CAC CGT CTC TG -3’ |
| *Lama1* | 5’- AAA GGA AAG TGT CAG TAC CAG G-3’ |
| 5’-TTC TCT AAG CAT CGC AAG GG-3’ |
| *Lama2* | 5’-GTC TGG GAT CAT TCT CTT GGG-3’ |
| 5’-TTT CCT CAT TGT CCG TGT CC-3’ |
| *Col3a1* | 5’-GAA GTC TCT GAA GCT GAT GGG-3’ |
| 5’-TTG CCT TGC GTG TTT GAT ATT C-3’ |
| *Eln* | 5’- ACT TTC TCC CAT TTA TCC AGG TG -3’ |
| 5’- AAG ATC ACT TTC TCT TCC GGC -3’ |
| *Acta2*  | 5’- AAT GCA GAA GGA GAT CAC GG -3’ |
| 5’- TCC TGT TTG CTG ATC CAC ATC -3’ |
| *Myh11* | 5’- AGA AGG AGC GAA ACA CAG AC -3’ |
| 5’- TGT CAC ATT AAT CCC CAC GAG -3’ |
| *Bmp4* | 5’- AGG AGG AGG AGG AAG AGC AG -3’ |
| 5’- CAC TGG TCC CTG GGA TGT TC -3’ |
| *Myocd* | 5’- CGA TCA GTC TTA CAG TTA CGG C -3’ |
| 5’- CTC AGG GAA TCT TCA GTC TTG G-3’ |
| *Gapdh* | 5’-GGT GGA GCC AAA AGG GTC AT-3’ |
| 5’-AGT TGT CAT ATT TCT CGT GGT TCA-3’ |