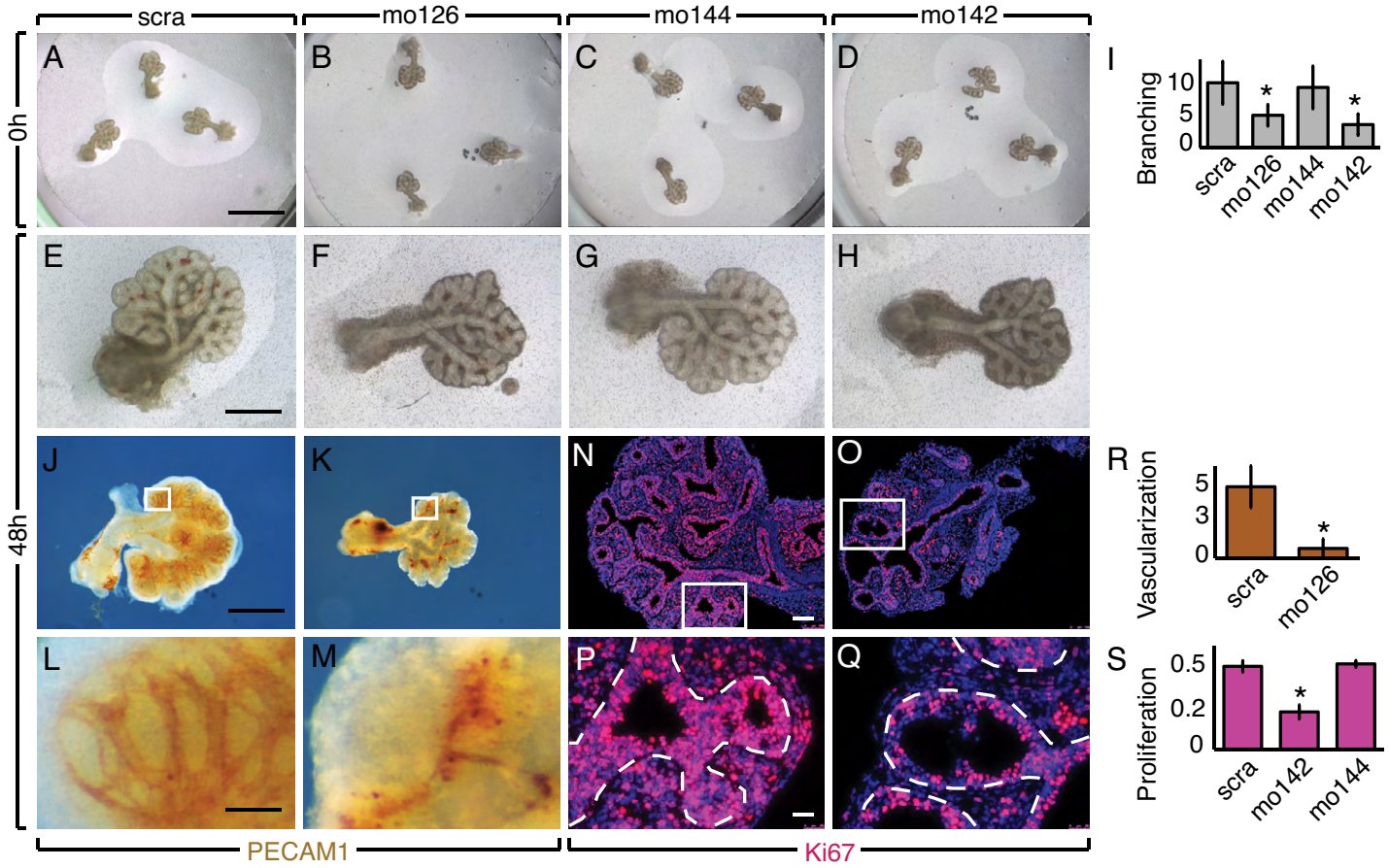


Figure S1. Validation of the vivo-morpholino LOF assay. (A-H) Morphometric changes on E11.5 lung explants administrated with scramble (scra; A,E), mo126 (B,F), mo144 (C,G), mo142 (D,H), and its relative quantification of branching (I). (J-M) Immunostaining for PECAM1 showing vasculature formation in E11.5 lung explants treated with scra (J,L) and mo126 (K,M). (R) Quantification of the vasculature ramification calculated as numbers of intercepts across terminal buds. (N-Q) Immunostaining for KI67 showing cell proliferation in mo144 (N,P) and mo142 (O,Q) treated lungs. White boxes indicate the magnified areas in the lower panels. Dashed lines demarcate the epithelium-mesenchyme boundary. (S) Quantification of proliferation in the mesenchyme of mo144 and mo142 treated lungs. Scale bars: 1.2 mm (A-D); 250 µm (E-H,J,K); 35 µm (L,M); 100 µm (N,O); 50 µm (P,Q); Data are means ± s.d.

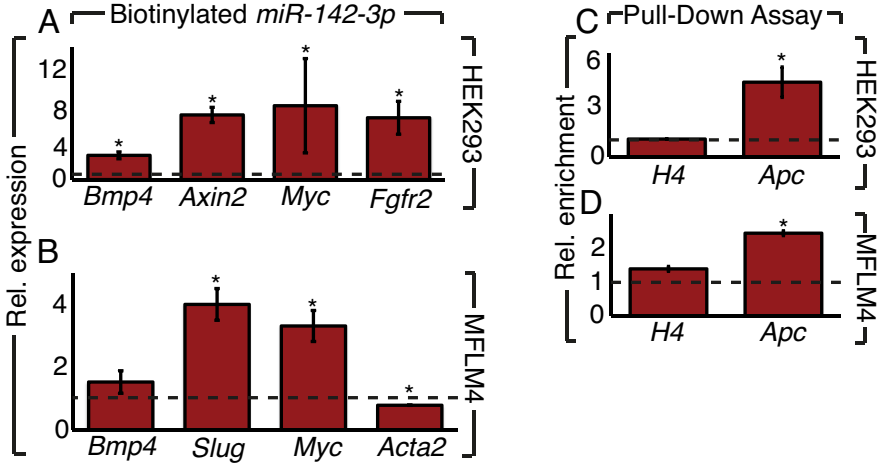


Figure S2. Pull-down assay for *miR-142-3p* on HEK293 and MFLM4 cells. (A,B) WNT signaling related gene expression is shown by qPCR after transfection of HEK293 cells (A) and MFLM4 cells (B) with biotinylated *miR-142-3p*. Data are normalized against biotinylated scramble. (C,D) *Apc* enrichment after pull-down assay on HEK293 cells and MFLM4 cells is shown by qPCR. Data are means ± s.d.

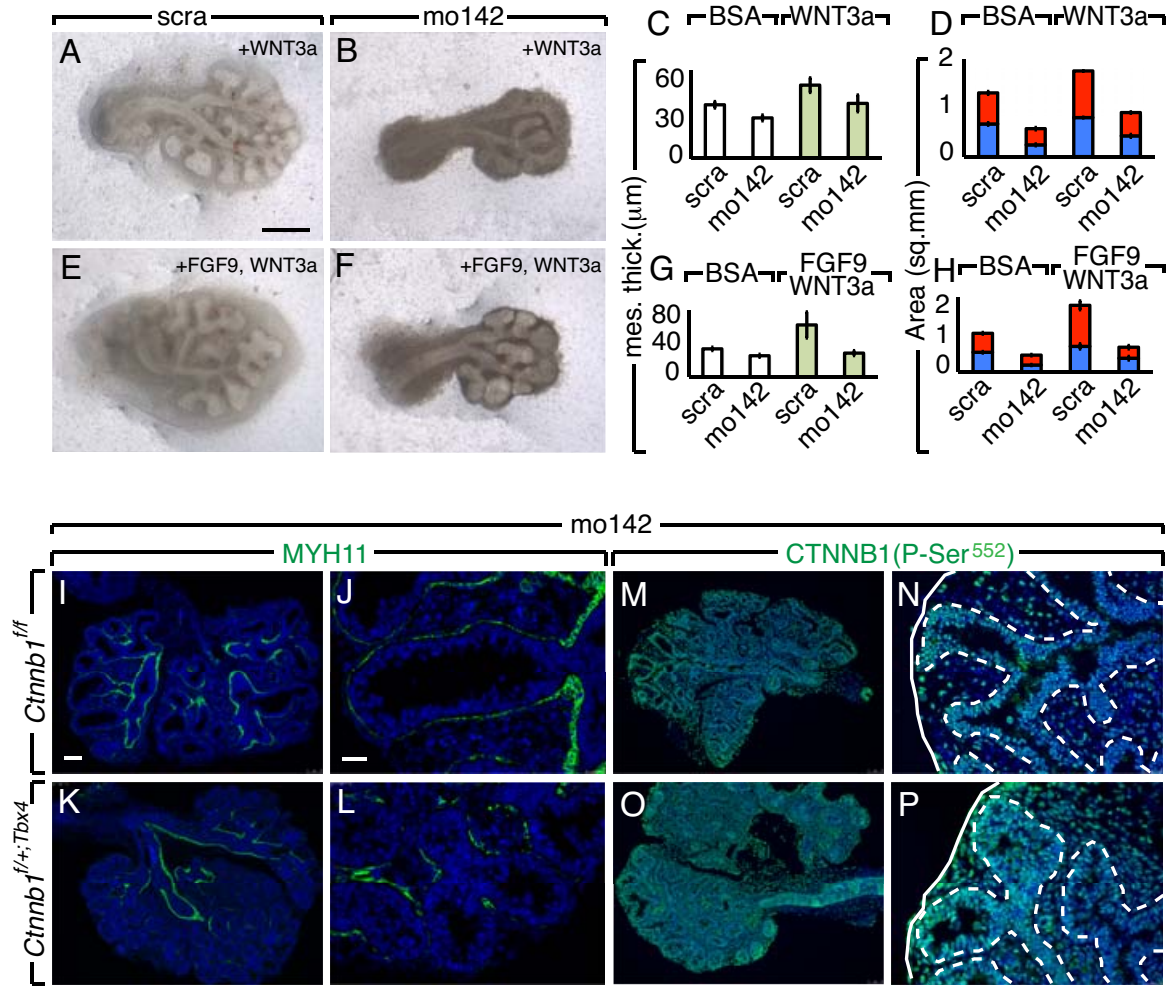
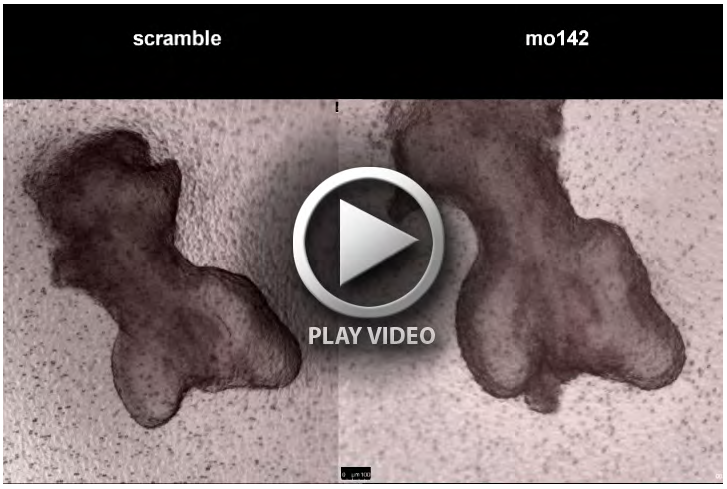
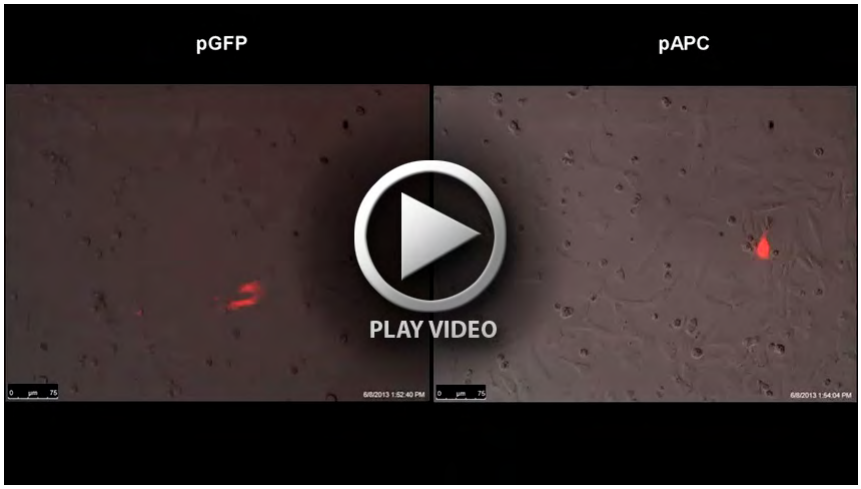


Figure S3. Rescue experiments for *miR-142-3p* LOF assay. (A-H) Analysis of the effect of FGF9 and WNT3a during *miR-142-3p* LOF assay. Bright field images of E11.5 lung explants (A,B,E,F) and morphometric analysis (C,D,G,H) are shown after treatment with WNT3a or a combination of FGF9 and WNT3a. Immunofluorescence for MYH11 (I-L) and CTNNB1 phosphorylated at serine-552 (M-P) are shown after *miR-142-3p* LOF assay performed on E11.5 lung explants harboring activated CTNNB1. Dashed lines demarcate the epithelium-mesenchyme boundary. Scale bars: 250 µm (A,B,E,F); 75 µm (I,K,M,O); 25 µm (J,L,N,P). Data are means ± s.d.



Movie 1. Bright field time-lapse microscopy of the branching lung is shown in control (scramble) and after *miR-142-3p* knockdown (mo142). Scramble and mo142 treated lungs were analyzed for 45 hours**.**

Movie 2. Fluorescence time-lapse microscopy of *Fgf10*^{RFP} lungs explants after *miR-142-3p* LOF assay is shown. Control (scramble) and treated (mo142) lungs were analyzed for 20 hours (top row). Scramble and mo142 treated lungs are shown in high magnification for an additional 20 hours (bottom row).



Movie 3. Bright field and fluorescence time-lapse microscopy of primary culture of mesenchymal cells isolated from *Fgf10*^{RFP} lungs electroporated with *Apc* (pAPC) or control *Gfp* (pGFP) plasmids.