

Table S1.
Molecular mechanism of cellular transition

MECHANISM	CELLULAR EFFECT	MODEL	REFERENCE
KL-6 (inhibition of HGF)	differentiation of fibroblast stimulation of collagen III and V	human embryonic lung fibroblasts	KL-6 regulated the expression of HGF, collagen and myofibroblast differentiation.
LPA1	differentiation of blood mesenchymal stem cells	bleomycin	Lysophosphatidic acid accelerates lung fibrosis by inducing differentiation of mesenchymal stem cells into myofibroblasts.
IGF-1	differentiation of fibroblasts	bleomycin	Role of IGF-1 pathway in lung fibroblast activation.
microRNA-21	EMT	bleomycin/ murine epithelial cells	The increase of microRNA-21 during lung fibrosis and its contribution to epithelial-mesenchymal transition in pulmonary epithelial cells.
NOX-4	differentiation of fibroblasts	bleomycin/ human lung fibroblasts	An Inhibitor of NADPH Oxidase-4 Attenuates Established Pulmonary Fibrosis in a Rodent Disease Model.
LPA2	differentiation of fibroblasts and apoptosis of alveolar and bronchial epithelial cells	bleomycin/ human lung fibroblasts	Lysophosphatidic Acid Receptor-2 Deficiency Confers Protection against Bleomycin-Induced Lung Injury and Fibrosis in Mice.
Oncostatin M	gel contraction, chemotaxis, and α -SMA expression of fibroblasts	human lung fibroblasts	Oncostatin M modulates fibroblast function via signal transducers and activators of transcription proteins-3.
Adrenomedullin	attenuates expression of SMA, collagen-1, fibronectin, gel contractility in pre-differentiated myofibroblasts. No effect on initial differentiation of quiescent fibroblasts in response to TGF- β	bleomycin/ human lung fibroblast	Regulation of myofibroblast differentiation and bleomycin-induced pulmonary fibrosis by adrenomedullin.

mDia2	differentiation of fibroblasts	human lung fibroblasts	Control of myofibroblast differentiation by microtubule dynamics through a regulated localization of mDia2.
25-hydroxycholesterol/NF- κ B	differentiation of fibroblasts	human fetal lung fibroblasts	25-hydroxycholesterol promotes fibroblast-mediated tissue remodeling through NF- κ B dependent pathway.
focal adhesion kinase-related nonkinase (FRNK)	reduces fibroblast migration and differentiation	mouse model	FAK-related nonkinase is a multifunctional negative regulator of pulmonary fibrosis.
PGE2	reversal of myofibroblasts differentiation, collagen I expression and α -SMA expression	Fetal and adult lung fibroblasts induced to differentiate into myofibroblasts by transforming growth factor (TGF)- β 1 or endothelin-1	Reversal of myofibroblast differentiation by prostaglandin E(2).
Mitogen-activated protein kinase-activated protein kinase-2 (MAPKAPK2, or MK2)	myofibroblast differentiation, the secretion of collagen type I, fibronectin, and the activation of focal adhesion kinase	bleomycin	Peptide-mediated inhibition of mitogen-activated protein kinase-2 ameliorates bleomycin-induced pulmonary fibrosis.
miR-199a-5p/caveolin 1	increased in myofibroblasts from injured mouse lungs and fibroblastic foci, induces fibroblasts proliferation, migration, invasion, and differentiation	murine lung fibroblast	miR-199a-5p Is upregulated during fibrogenic response to tissue injury and mediates TGF β -induced lung fibroblast activation by targeting caveolin-1.
miR-145	miR-145 deficiency diminishes TGF- β 1 induced α -SMA expression. miR-145(-/-) mice are protected from bleomycin-induced pulmonary fibrosis	miR-145(-/-) mice /murine lung fibroblasts	miR-145 regulates myofibroblast differentiation and lung fibrosis.
Rho/Rho kinase (Rho/ROCK)	myofibroblasts survival	bleomycin/human lung fibroblasts	Inhibition of mechanosensitive signaling in myofibroblasts ameliorates experimental pulmonary fibrosis.

TGF beta/smad2	pleural mesothelial cell differentiation into myofibroblasts	Human pleural mesothelial cells	Pleural mesothelial cell transformation into myofibroblasts and haptotactic migration in response to TGF- β 1 in vitro
PI3K p110 γ	fibroblasts proliferation rate and α -SMA expression	IPF fibroblasts	PI3K p110 γ overexpression in idiopathic pulmonary fibrosis lung tissue and fibroblast cells: in vitro effects of its inhibition.
Glycogen synthase kinase-3 (GSK-3)	stimulates TGF- β 1-induced myofibroblast differentiation of fibroblasts	primary human lung fibroblasts	Glycogen synthase kinase-3 (GSK-3) regulates TGF- β 1-induced differentiation of pulmonary fibroblasts.
HIF1 α , LDH5, lactic acid	fibroblast differentiation (TGF dependent)	human lung fibroblasts	Lactic acid is elevated in idiopathic pulmonary fibrosis and induces myofibroblast differentiation via pH-dependent activation of transforming growth factor- β .
hedgehog pathway	fibroblasts differentiation (TGF dependent)	normal and IPF fibroblasts	The hedgehog system machinery controls transforming growth factor- β -dependent myofibroblastic differentiation in humans: involvement in idiopathic pulmonary fibrosis.
ET-1/FAK axis	myofibroblasts formation	bleomycin/murine lung fibroblasts	Adenoviral gene transfer of endothelin-1 in the lung induces pulmonary fibrosis through the activation of focal adhesion kinase.
neuronal Wiskott-Aldrich syndrome protein (N-WASP)	maturation of α -SMA-containing cytoplasmic filaments	primary human lung fibroblasts	Neuronal Wiskott-Aldrich syndrome protein (N-WASP) is critical for formation of α -smooth muscle actin filaments during myofibroblast differentiation.
nuclear factor erythroid 2-related factor 2 (Nrf2)	dedifferentiation of myofibroblasts	normal and IPF fibroblasts	Nuclear factor erythroid 2-related factor 2 nuclear translocation induces myofibroblastic dedifferentiation in idiopathic pulmonary fibrosis.
Galectin-3	EMT and fibroblasts differentiation	galectin-3 ^{-/-} mice/ murine Primary Lung Fibroblasts and Primary Type II AECs	Regulation of transforming growth factor- β 1-driven lung fibrosis by galectin-3.
CCR2 ligand chemokine	fibrocyte proliferation, differentiation into myofibroblasts and chemotactic response	human and murine fibrocyte isolation	Chemokine (C-C motif) ligand 2 mediates direct and indirect fibrotic responses in human and murine cultured fibrocytes.

Notch	EMT	rat alveolar epithelial cells	Notch induces myofibroblast differentiation of alveolar epithelial cells via transforming growth factor- β -Smad3 pathway.
TGF- β 1 and CTGF	up-regulation of TGF- β 1 and CTGF in pulmonary microvascular endothelial cells induces differentiation of co-cultured fibroblasts	co-culture system with rat PMVECs and fibroblasts	Pulmonary microvascular endothelial cells from bleomycin-induced rats promote the transformation and collagen synthesis of fibroblasts.
PDE4B	TGF- β induced fibroblasts (PDE4B knockdown) differentiation into myofibroblasts	mRNA silencing and a knockdown of the expressed PDE4 of primary normal human lung fibroblast	The differential impact of PDE4 subtypes in human lung fibroblasts on cytokine-induced proliferation and myofibroblast conversion.
MeCP2	myofibroblast differentiation	MeCP2 gene expression by siRNA and MeCP2 deficiency in lung fibroblasts isolated from MeCP2 knockout mice	Essential role of MeCP2 in the regulation of myofibroblast differentiation during pulmonary fibrosis.
Wnt-inducible signaling protein 1 (wisp-1)/hyaluran	EMT	primary murine AEC2	Mechanical stretch induces epithelial-mesenchymal transition in alveolar epithelia via hyaluronan activation of innate immunity.
Peroxisome proliferator-activated receptor- γ (PPAR- γ) ligands	inhibits TGF β -mediated differentiation of human lung fibroblasts	human lung fibroblasts	PPARgamma agonists inhibit TGF-beta induced pulmonary myofibroblast differentiation and collagen production: implications for therapy of lung fibrosis.
TLR9	increased in fibroblasts by IL-4 and IL-13, promotes differentiation of myofibroblasts	normal human and IPF fibroblasts	TLR9 is expressed in idiopathic interstitial pneumonia and its activation promotes in vitro myofibroblast differentiation.
Serum Amyloid P	M2 macrophage differentiation of monocyte	IPF patients	TGF-beta driven lung fibrosis is macrophage dependent and blocked by Serum amyloid P.

IL-15	myofibroblast differentiation	human fetal lung fibroblasts	Interleukin-15 attenuates transforming growth factor- β 1-induced myofibroblast differentiation in human fetal lung fibroblasts.
NOX-4	α -SMA expression by controlling activation of Smad2/3 and PDGF-induced fibroblast migration.	normal human and IPF fibroblasts	NOX4/NADPH oxidase expression is increased in pulmonary fibroblasts from patients with idiopathic pulmonary fibrosis and mediates TGF β 1-induced fibroblast differentiation into myofibroblasts.
THY-1	Thy-1 expression prevents fibroblast contraction-induced, integrin α (v) β 5-dependent latent TGF- β 1 activation and TGF- β 1-dependent lung myofibroblast differentiation	RFL-6 rat lung fibroblasts	Thy-1-integrin α v β 5 interactions inhibit lung fibroblast contraction-induced latent transforming growth factor- β 1 activation and myofibroblast differentiation.
FXa	myofibroblast differentiation via TGF- β 1 activation	primary human lung fibroblasts	Increased local expression of coagulation factor X contributes to the fibrotic response in human and murine lung injury.
ET-1	ET-1 and TGF- β 1 independently promote fibroblast resistance to apoptosis via p38 MAPK and PI3K/AKT	Normal primary human fetal lung fibroblasts	Endothelin-1 and transforming growth factor- β 1 independently induce fibroblast resistance to apoptosis via AKT activation.
Unc119	myofibroblast differentiation by activating Fyn and the p38 MAPK pathway	human fetal lung fibroblast	Unc119 regulates myofibroblast differentiation through the activation of Fyn and the p38 MAPK pathway.
FIZZ1	induction of myofibroblast differentiation and prolonged survival of myofibroblasts	mouse lung fibroblasts	Antiapoptotic effect of found in inflammatory zone (FIZZ)1 on mouse lung fibroblasts.
TGF β 1	EMT	bronchial epithelial cells	Detection of epithelial to mesenchymal transition in airways of a bleomycin induced pulmonary fibrosis model derived from an α -smooth muscle actin-Cre transgenic mouse.

MK2	reduced α -SMA expression	mouse embryonic fibroblasts (MEF) from MK2 knockout mice	Smooth muscle alpha-actin expression and myofibroblast differentiation by TGFbeta are dependent upon MK2.
FAK/AKT	anoikis resistance of fibroblasts	Normal primary human fetal lung fibroblasts	Combinatorial activation of FAK and AKT by transforming growth factor-beta1 confers an anoikis-resistant phenotype to myofibroblasts.
FGF-1	apoptosis in fibroblasts and myofibroblasts and inhibits the effect of TGF-beta1 on myofibroblast differentiation.	Primary human lung fibroblasts	Acidic fibroblast growth factor decreases alpha-smooth muscle actin expression and induces apoptosis in human normal lung fibroblasts.
PTEN	inhibits myofibroblast differentiation	embryonic mouse fibroblasts	Negative regulation of myofibroblast differentiation by PTEN (Phosphatase and Tensin Homolog Deleted on chromosome 10).
H2O2	death signal for lung epithelial cells produced by myofibroblasts	IPF fibroblasts and small airway epithelial cells	Hydrogen peroxide is a diffusible paracrine signal for the induction of epithelial cell death by activated myofibroblasts.
CCR-2	decreases α -SMA expression induced by TGF-beta1	CCR2 knockout (ko) mice fibroblasts	CC-chemokine receptor 2 required for bleomycin-induced pulmonary fibrosis.
Wt1	MMT	PMCs were obtained from IPF lung explants	Wilms' tumor 1 (Wt1) regulates pleural mesothelial cell plasticity and transition into myofibroblasts in idiopathic pulmonary fibrosis.
Snail	EMT	murine bronchial epithelial cells	Transforming growth factor- β 1 induces bronchial epithelial cells to mesenchymal transition by activating the Snail pathway and promotes airway remodeling in asthma.
microRNA-21	EMT	lung alveolar type II cells	The increase of microRNA-21 during lung fibrosis and its contribution to epithelial-mesenchymal transition in pulmonary epithelial cells.
Thrombin	EMT	human A549 alveolar epithelial cells	Thrombin induces epithelial-mesenchymal transition via PAR-1, PKC, and ERK1/2 pathways in A549 cells.

IL-22	reduces epithelial to mesenchymal transition (EMT)	alveolar epithelial cell line A549 cells	Interleukin-22 inhibits bleomycin-induced pulmonary fibrosis.
miR-200	inhibits transforming growth factor- β 1-induced epithelial-mesenchymal transition of AECs	murine AEC	Participation of miR-200 in pulmonary fibrosis.
S1P	EMT	human AEC	Sphingosine-1-phosphate is increased in patients with idiopathic pulmonary fibrosis and mediates epithelial to mesenchymal transition.
Cadherin-11	EMT	human A549 alveolar epithelial cells	Cadherin-11 contributes to pulmonary fibrosis: potential role in TGF- β production and epithelial to mesenchymal transition.
c-Abl and PKC δ	endo-MT	Primary mouse pulmonary ECs	Protein kinase C δ and c-Abl kinase are required for transforming growth factor β induction of endothelial-mesenchymal transition in vitro.
FGF-1	reverse EMT through MAPK/ERK kinase pathway	A549 and RLE-6TN (human and rat) alveolar epithelial-like cell lines	FGF-1 reverts epithelial-mesenchymal transition induced by TGF- β 1 through MAPK/ERK kinase pathway.
Twist	EMT	murine lung epithelial cells	Twist: a regulator of epithelial-mesenchymal transition in lung fibrosis.
ROS/HIF	EMT	primary human, rat, and mouse AEC	Hypoxia-induced alveolar epithelial-mesenchymal transition requires mitochondrial ROS and hypoxia-inducible factor 1.
HGF/Smad 7	inhibits EMT	primary murine alveolar epithelial cells	Hepatocyte growth factor inhibits epithelial to myofibroblast transition in lung cells via Smad7.
NO	inhibits EMT	primary human alveolar epithelial cells	Nitric oxide attenuates epithelial-mesenchymal transition in alveolar epithelial cells.
IGFBP-5	fibroblasts differentiation, EMT and mononuclear cell infiltration	primary fibroblasts and alveolar epithelial cells	Insulin-like growth factor-binding protein-5 induces pulmonary fibrosis and triggers mononuclear cellular infiltration.

LRP-6	pericyte MT	mice pericytes	LRP-6 is a coreceptor for multiple fibrogenic signaling pathways in pericytes and myofibroblasts that are inhibited by DKK-1.
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