

Supplemental Data

Jia, et al, "Early events marking lung fibroblast transition to profibrotic state in idiopathic pulmonary fibrosis"

TABLES

Supplementary Table S1. Human Samples

Experimental ID/ Sample ID	Age	Gender	Application
SC56-NOR/ 2017-025-NOR	57	F	scRNA-seq
SC59-NOR/ 2017-029-NOR	18	M	scRNA-seq
SC155-NOR-low/ 2017-105-NOR	23	F	scRNA-seq
SC156-NOR-up/ 2017-105-NOR			scRNA-seq
SC87-IPF-low/ 2017-064-IPF	70	F	scRNA-seq
SC88-IPF-up/ 2017-064-IPF			scRNA-seq
SC93-IPF-low/ 2017-067-IPF	69	M	scRNA-seq
SC94-IPF-up/ 2017-067-IPF			scRNA-seq
SC153-IPF-low/ 2017-100-IPF	69	F	scRNA-seq
SC154-IPF-up/ 2017-100-IPF			scRNA-seq
Figure 4D_control/ Core-025-NOR	57	F	Immunofluorescence
Figure 4D_IPF donor-2 /Core-022-IPF-low	61	F	Immunofluorescence
Figure 4D_IPF donor-1/ Core-067-IPF-low	69	M	Immunofluorescence
Core-015-NOR	23	F	Cell culture, Immunofluorescence
Core-009-NOR	68	F	Cell culture, Immunofluorescence
Core-31-IPF-low	64	F	Cell culture, Immunofluorescence
Core-14-IPF-up	66	M	Cell culture, Immunofluorescence

Supplementary Table S2. Immunostaining antibody list

Primary antibody	Secondary antibody
MOXD1 (1:100) (Sigma)	Anti rabbit-647 (1:500) (Thermo Fisher)
MOXD1 (1:100) Bioss	Anti-rabbit Alexa Fluor 647 goat (1:300)
α -SMA (1:1000) (DAKO)	Anti mouse-555 (1:500) (ThermoFisher)
α -SMA (1:200) (Santa Cruz Biotechn)	Anti-mouse Alexa Fluor 555 goat (1:300)
P-p53 (1:400) (Cell Signaling)	Anti mouse-555 (1:500) (ThermoFisher)
P16 (1:100) (BD)	Anti mouse-555 (1:500) (ThermoFisher)
PDGFR α (1:100) eBioscience	Anti-rat Alexa Fluor 488 goat (1:300)

Supplementary Table S3. Differentially expressed genes (upregulated) in each of the four fibroblasts subclusters. The top 16 genes (according to average fold change) are listed in bold.

GeneSymbol	avg_FC	p_val	p_val_adj	CLUSTER
PTX3	2.36587758	2.21E-122	7.43E-118	1
CXCL8	1.93111571	2.87E-150	9.68E-146	1
IL6	1.85552638	2.69E-144	9.05E-140	1
CXCL2	1.76951581	9.32E-146	3.14E-141	1
CCL2	1.76467289	6.38E-92	2.15E-87	1
CXCL1	1.52891309	1.35E-103	4.55E-99	1
SOD2	1.3721351	7.04E-137	2.37E-132	1
ICAM1	1.36542222	8.41E-159	2.84E-154	1
GADD45B	1.28125224	8.62E-97	2.90E-92	1
THBS1	1.25051032	5.84E-132	1.97E-127	1
CXCL3	1.23154164	1.52E-140	5.11E-136	1
IER3	1.21331222	3.37E-98	1.13E-93	1
NFKBIA	1.17631579	9.16E-120	3.09E-115	1
ADM	1.08866149	1.01E-100	3.41E-96	1
MT1A	1.04788844	3.88E-86	1.31E-81	1
CH25H	1.01896576	1.68E-81	5.66E-77	1
NAMPT	0.99202619	9.70E-165	3.27E-160	1
GPX3	0.98838742	5.22E-88	1.76E-83	1
SOCS3	0.92881241	1.03E-82	3.47E-78	1
RGCC	0.89812617	8.16E-56	2.75E-51	1
HSPA1B	0.89704349	1.25E-34	4.23E-30	1
G0S2	0.87825078	4.12E-29	1.39E-24	1
CYR61	0.87518304	2.58E-33	8.68E-29	1
SRGN	0.86303231	1.03E-134	3.46E-130	1
C11orf96	0.83416118	2.98E-68	1.00E-63	1
SAT1	0.83244217	2.60E-104	8.76E-100	1
IRF1	0.83124369	1.05E-104	3.53E-100	1
MT1M	0.81106881	6.24E-62	2.10E-57	1
HES1	0.7957278	1.24E-66	4.19E-62	1
MT2A	0.77667449	3.20E-63	1.08E-58	1
CEBPB	0.76957941	1.15E-108	3.88E-104	1
LMCD1	0.75086255	1.16E-28	3.89E-24	1
HSPA1A	0.74120463	4.46E-20	1.50E-15	1
RGS2	0.74043228	4.75E-69	1.60E-64	1
SFTPC	0.7344558	9.98E-120	3.36E-115	1

BIRC3	0.7294614	3.19E-149	1.07E-144	1
RGS16	0.71386118	1.27E-81	4.29E-77	1
MYC	0.7077958	2.24E-60	7.53E-56	1
MALAT1	0.69209451	6.02E-73	2.03E-68	1
CSRP2	0.68847529	3.72E-95	1.25E-90	1
AREG	0.67241131	1.35E-113	4.55E-109	1
ADAMTS4	0.671993	2.73E-118	9.20E-114	1
CDKN1A	0.67109262	4.87E-111	1.64E-106	1
TNFAIP3	0.66392633	5.92E-130	1.99E-125	1
CYP4B1	0.66198684	3.44E-80	1.16E-75	1
NFKBIZ	0.66044285	1.84E-103	6.21E-99	1
TNFAIP2	0.65820221	9.14E-108	3.08E-103	1
CCNL1	0.65382153	7.32E-139	2.47E-134	1
PLAUR	0.64075834	6.10E-129	2.06E-124	1
PTGS2	0.64017027	9.74E-82	3.28E-77	1
CEBPD	0.61413236	9.03E-53	3.04E-48	1
JUNB	0.60976395	3.58E-55	1.21E-50	1
PNRC1	0.6042063	1.18E-99	3.97E-95	1
NABP1	0.60278856	1.80E-159	6.05E-155	1
MACF1	0.57549836	9.54E-71	3.22E-66	1
MAFF	0.56942318	1.63E-130	5.48E-126	1
ZFP36	0.56647645	7.20E-44	2.43E-39	1
HLA-DRA	0.55984227	1.42E-105	4.80E-101	1
FABP4	0.5468096	2.36E-114	7.94E-110	1
FIGF	0.54660362	3.03E-59	1.02E-54	1
FMO2	0.54558637	4.79E-53	1.61E-48	1
CLDN5	0.54533667	2.34E-127	7.89E-123	1
PPP1R15A	0.54394795	1.58E-91	5.34E-87	1
SAA1	0.54240319	1.67E-103	5.64E-99	1
REL	0.5300019	1.40E-157	4.73E-153	1
CRISPLD2	0.5271223	4.71E-40	1.59E-35	1
S100A9	0.52191081	3.38E-136	1.14E-131	1
CCL4	0.50811931	1.20E-98	4.03E-94	1
XBP1	0.50455752	5.18E-114	1.75E-109	1
MT1X	0.50156475	5.47E-10	1.84E-05	1
TNFAIP6	0.50085669	4.37E-13	1.47E-08	1
PRELP	0.49882153	1.64E-13	5.54E-09	1
THUMPD3- AS1	0.49736298	6.25E-129	2.11E-124	1
ARID5B	0.49239879	2.27E-36	7.66E-32	1

HLA-E	0.49109298	1.08E-116	3.64E-112	1
C8orf4	0.48986074	2.91E-24	9.81E-20	1
USP53	0.48968097	1.11E-66	3.76E-62	1
ARID5A	0.48384306	1.20E-191	4.03E-187	1
IER2	0.48086841	2.58E-30	8.69E-26	1
ZC3H12A	0.4796793	1.77E-150	5.97E-146	1
ANGPTL4	0.47474595	5.68E-56	1.92E-51	1
MCL1	0.47191571	2.64E-119	8.89E-115	1
KDM6B	0.46587959	4.90E-147	1.65E-142	1
CXCR4	0.46528447	2.40E-89	8.10E-85	1
TRIB1	0.46406927	7.13E-86	2.40E-81	1
CRYAB	0.46049081	0.00031378	1	1
BAZ1A	0.45952845	1.41E-192	4.74E-188	1
CD52	0.45758224	1.24E-100	4.18E-96	1
SCGB1A1	0.45485819	2.17E-43	7.32E-39	1
MAP3K8	0.45437703	5.08E-150	1.71E-145	1
TM4SF1	0.44717669	2.75E-71	9.28E-67	1
DDX21	0.44629363	6.30E-151	2.12E-146	1
ETS2	0.44209865	6.46E-148	2.18E-143	1
GEM	0.43882813	2.04E-15	6.88E-11	1
TNFRSF12A	0.43872326	7.69E-59	2.59E-54	1
SERTAD1	0.43111565	2.35E-80	7.93E-76	1
BTG1	0.43021595	2.93E-72	9.89E-68	1
CYP1B1	0.43011311	1.13E-13	3.81E-09	1
GPM6B	0.42694038	1.05E-48	3.53E-44	1
HSPE1	0.42662256	5.39E-75	1.81E-70	1
ADAMTS1	0.42660966	6.26E-41	2.11E-36	1
ZNF331	0.42229387	9.29E-148	3.13E-143	1
WTAP	0.42176563	5.94E-130	2.00E-125	1
DNAJA1	0.421392	9.42E-79	3.17E-74	1
S100A8	0.42021121	2.08E-111	7.02E-107	1
SFTPB	0.41954204	7.27E-113	2.45E-108	1
SOX4	0.41691108	5.33E-28	1.80E-23	1
CD14	0.41574186	2.38E-123	8.03E-119	1
CD74	0.41416248	7.58E-59	2.56E-54	1
C1QA	0.4123415	2.95E-107	9.92E-103	1
LYZ	0.41064819	3.34E-111	1.13E-106	1
MT-ND3	0.40762542	3.47E-29	1.17E-24	1
CSF3	0.40215208	3.02E-143	1.02E-138	1
FCER1G	0.40134922	3.67E-122	1.24E-117	1

CITED2	0.39977401	9.39E-43	3.16E-38	1
SPINT2	0.39849867	3.96E-79	1.33E-74	1
TCEB1	0.3924259	1.37E-72	4.61E-68	1
C1QB	0.39181774	1.55E-108	5.24E-104	1
MIR22HG	0.38677725	9.58E-140	3.23E-135	1
CREM	0.3834248	2.19E-161	7.37E-157	1
RSRP1	0.38066411	1.31E-94	4.40E-90	1
ADAMTS9	0.37619347	2.28E-111	7.68E-107	1
KLF10	0.37572671	2.08E-45	7.02E-41	1
SLC2A3	0.37408946	1.45E-76	4.89E-72	1
EPAS1	0.37396926	4.04E-103	1.36E-98	1
CFLAR	0.37307352	5.54E-121	1.87E-116	1
BAG3	0.37206327	1.84E-73	6.21E-69	1
CD69	0.3708325	4.26E-113	1.43E-108	1
CYCS	0.37061349	2.21E-117	7.44E-113	1
DDX3X	0.3678882	2.38E-148	8.02E-144	1
SCN7A	0.36390954	1.64E-07	0.0055344	1
NEDD9	0.36251133	5.06E-83	1.70E-78	1
SLC25A37	0.36199209	4.21E-124	1.42E-119	1
LDLR	0.3615974	2.44E-149	8.23E-145	1
H3F3B	0.36068897	1.59E-89	5.35E-85	1
NR4A2	0.36011317	5.99E-94	2.02E-89	1
LIF	0.35935812	1.38E-84	4.64E-80	1
PTGIR	0.35841496	9.17E-33	3.09E-28	1
CSRNP1	0.35832394	1.22E-78	4.10E-74	1
HBEGF	0.35702656	1.23E-147	4.15E-143	1
CDH13	0.35580477	1.89E-36	6.36E-32	1
XIST	0.3551116	3.74E-22	1.26E-17	1
IFRD1	0.35447549	9.18E-71	3.09E-66	1
TYROBP	0.35444006	1.08E-97	3.64E-93	1
CTGF	0.35263765	9.55E-10	3.22E-05	1
CTSC	0.35263654	9.18E-30	3.09E-25	1
BTG3	0.35175	2.52E-78	8.49E-74	1
LITAF	0.34932298	3.17E-50	1.07E-45	1
GMFG	0.3483106	6.22E-133	2.10E-128	1
CTD-3252C9.4	0.34444418	2.22E-72	7.48E-68	1
SRSF7	0.34439817	9.85E-69	3.32E-64	1
WSB1	0.3435438	4.35E-66	1.47E-61	1
DNAJB1	0.34042281	8.88E-18	2.99E-13	1

SON	0.3401524	3.39E-104	1.14E-99	1
VWF	0.339502	4.49E-109	1.51E-104	1
PIM1	0.33848937	1.13E-74	3.82E-70	1
FABP5	0.33772185	1.26E-80	4.25E-76	1
LAPTM5	0.33756679	1.01E-122	3.40E-118	1
SFPQ	0.33751547	5.40E-163	1.82E-158	1
HEXIM1	0.3364138	6.63E-108	2.23E-103	1
IDI1	0.33598871	6.68E-166	2.25E-161	1
HSPD1	0.33567292	2.93E-65	9.87E-61	1
HSP90AB1	0.33545442	8.71E-36	2.93E-31	1
IL7R	0.33036306	2.08E-151	7.00E-147	1
HSP90AA1	0.32971137	5.38E-24	1.81E-19	1
ATP1B3	0.32912629	5.66E-104	1.91E-99	1
APOC1	0.3284283	2.76E-61	9.31E-57	1
AOC3	0.32772526	2.47E-13	8.32E-09	1
LINC00152	0.32541792	2.64E-53	8.89E-49	1
HNRNPH1	0.32541519	2.32E-67	7.83E-63	1
PIM3	0.32516098	1.55E-121	5.22E-117	1
GPC3	0.32399375	3.71E-23	1.25E-18	1
ACKR1	0.32396986	8.75E-77	2.95E-72	1
DDX5	0.32185008	8.40E-63	2.83E-58	1
SAMSN1	0.32153248	1.98E-172	6.68E-168	1
PLIN2	0.32148155	8.86E-52	2.99E-47	1
TUBB4B	0.32073038	3.93E-79	1.32E-74	1
ELL2	0.32056713	1.25E-142	4.20E-138	1
UPP1	0.31903524	8.09E-170	2.73E-165	1
CHIC2	0.31902184	1.19E-112	4.02E-108	1
TSPYL2	0.31817	3.89E-105	1.31E-100	1
MT1E	0.31583262	8.54E-10	2.88E-05	1
INMT	0.31555403	3.33E-13	1.12E-08	1
IL1B	0.31410341	1.37E-165	4.62E-161	1
CCBE1	0.31370597	1.99E-51	6.71E-47	1
EIF5	0.31285266	6.32E-104	2.13E-99	1
EIF4A1	0.31267278	1.11E-98	3.72E-94	1
CA3	0.31148537	9.63E-42	3.24E-37	1
EIF4A3	0.30925761	1.11E-82	3.75E-78	1
VMP1	0.30846366	1.97E-45	6.64E-41	1
MIDN	0.30762275	3.68E-120	1.24E-115	1
HSPH1	0.3073917	2.47E-41	8.32E-37	1
CXCL10	0.30525174	1.35E-18	4.54E-14	1

SERPIN9	0.30504094	2.53E-158	8.52E-154	1
CCL20	0.30408159	2.95E-170	9.93E-166	1
RNASE1	0.3039461	9.59E-99	3.23E-94	1
STX11	0.30248317	1.20E-177	4.04E-173	1
ALOX5AP	0.3018099	1.60E-99	5.40E-95	1
UBC	0.3014861	3.35E-27	1.13E-22	1
HLA-DPA1	0.30029034	7.47E-92	2.52E-87	1
CRIM1	0.30008874	2.54E-88	8.54E-84	1
CD83	0.30005094	1.11E-142	3.73E-138	1
KMT2E	0.29958592	6.59E-105	2.22E-100	1
SVEP1	0.29844991	8.02E-38	2.70E-33	1
ATF3	0.29841542	1.54E-19	5.20E-15	1
SLC25A25	0.29633749	4.16E-127	1.40E-122	1
FSTL3	0.29421793	9.89E-35	3.33E-30	1
PLSCR1	0.29413666	1.73E-109	5.83E-105	1
UBE2D3	0.29411123	3.53E-118	1.19E-113	1
ID2	0.29350482	9.98E-17	3.36E-12	1
EMP2	0.29229129	9.60E-20	3.23E-15	1
MAP2K3	0.2915011	3.10E-132	1.04E-127	1
ZFAND5	0.29111983	1.85E-49	6.25E-45	1
ICAM4	0.29026084	4.63E-108	1.56E-103	1
SLIT2	0.29013777	1.73E-08	0.00058298	1
FGFR4	0.2893808	1.93E-40	6.50E-36	1
SRSF3	0.28918224	7.46E-94	2.52E-89	1
SGK1	0.28410965	1.05E-72	3.53E-68	1
FCN3	0.28356439	4.34E-95	1.46E-90	1
STAT3	0.28268956	4.51E-63	1.52E-58	1
PLK3	0.28268849	2.79E-84	9.40E-80	1
AASS	0.2820472	8.94E-65	3.01E-60	1
DNAJB9	0.2792101	3.85E-65	1.30E-60	1
CHI3L2	0.27904028	4.10E-77	1.38E-72	1
HLA-DRB5	0.27834271	3.34E-84	1.13E-79	1
RCAN1	0.27674957	7.49E-69	2.52E-64	1
MT1G	0.27672788	2.86E-84	9.62E-80	1
NFKB1	0.27623641	5.53E-150	1.86E-145	1
RBM39	0.27588646	5.76E-110	1.94E-105	1
INSIG1	0.27496929	7.76E-104	2.62E-99	1
RBM8A	0.27403045	9.81E-128	3.31E-123	1
IL1RL1	0.27360029	6.00E-83	2.02E-78	1
DLC1	0.27337124	4.66E-110	1.57E-105	1

NNMT	0.27279509	3.12E-09	0.00010511	1
YBX3	0.27139718	5.41E-54	1.82E-49	1
RND1	0.27116017	1.19E-132	3.99E-128	1
LRRFIP1	0.27018673	6.67E-85	2.25E-80	1
MIR222HG	0.26986997	3.36E-82	1.13E-77	1
MAOA	0.26894162	5.18E-69	1.74E-64	1
RAPGEF5	0.26861143	9.92E-111	3.34E-106	1
NFKB2	0.26830933	1.31E-154	4.42E-150	1
NR4A1	0.26800635	1.42E-15	4.79E-11	1
MT-ND2	0.26733181	1.50E-12	5.07E-08	1
STOM	0.26595836	2.48E-46	8.36E-42	1
SDCBP	0.26592379	3.29E-74	1.11E-69	1
NCOA7	0.2645763	1.16E-105	3.92E-101	1
BRD2	0.26404424	3.74E-88	1.26E-83	1
ARC	0.26386915	2.71E-123	9.12E-119	1
HLA-DRB1	0.26322571	5.60E-47	1.89E-42	1
TGIF1	0.26144074	2.69E-99	9.05E-95	1
SELK	0.26122476	1.90E-94	6.40E-90	1
TRA2B	0.26076651	2.82E-91	9.52E-87	1
ARGLU1	0.2604307	1.21E-71	4.08E-67	1
RGS1	0.25975289	3.89E-64	1.31E-59	1
EIF1B	0.25792634	6.58E-59	2.22E-54	1
NFE2L2	0.25792606	5.12E-62	1.72E-57	1
SRSF2	0.25769667	1.53E-89	5.15E-85	1
THBD	0.25670672	2.24E-93	7.55E-89	1
TOP1	0.25577647	2.26E-77	7.61E-73	1
ARL4D	0.25433181	3.50E-17	1.18E-12	1
EMP1	0.25371148	0.00015496	1	1
PPP1R10	0.25315442	2.17E-84	7.32E-80	1
LACTB	0.25247594	2.86E-128	9.63E-124	1
FOSL2	0.25117989	6.36E-114	2.14E-109	1
ELF3	0.25116014	3.08E-71	1.04E-66	1
PLA2G2A	2.31113158	9.03E-54	3.04E-49	2
MFAP5	1.84107062	4.10E-68	1.38E-63	2
SFRP2	1.77915435	5.72E-53	1.93E-48	2
SLPI	1.65779807	9.52E-39	3.21E-34	2
CFD	1.52137547	7.26E-65	2.45E-60	2
IGFBP6	1.50802676	1.08E-63	3.65E-59	2
C3	1.27572745	1.65E-82	5.54E-78	2
CCDC80	1.26627051	5.75E-68	1.94E-63	2

GSN	1.23841183	1.60E-56	5.39E-52	2
EFEMP1	1.21500913	9.91E-77	3.34E-72	2
CLU	1.19240065	3.54E-58	1.19E-53	2
SCARA5	1.12033548	1.84E-81	6.19E-77	2
SFRP4	1.10595268	1.28E-19	4.31E-15	2
PI16	1.10252189	1.40E-63	4.73E-59	2
PCOLCE2	0.97719807	7.42E-63	2.50E-58	2
CXCL14	0.90894905	2.78E-31	9.38E-27	2
UAP1	0.90117706	2.35E-21	7.92E-17	2
FBLN1	0.88609573	2.41E-55	8.11E-51	2
APOD	0.8844281	1.29E-21	4.36E-17	2
MYOC	0.83938068	1.41E-15	4.74E-11	2
RARRES1	0.83886931	1.17E-15	3.95E-11	2
SFRP1	0.83853073	1.75E-65	5.91E-61	2
DCN	0.83460986	3.18E-64	1.07E-59	2
WISP2	0.77795869	2.52E-40	8.48E-36	2
HAS1	0.75931895	2.57E-58	8.67E-54	2
ADH1B	0.72123785	5.11E-34	1.72E-29	2
CST3	0.71562253	1.76E-62	5.93E-58	2
CPE	0.69402211	2.59E-46	8.74E-42	2
SERPINF1	0.69019128	3.02E-49	1.02E-44	2
HTRA3	0.68360971	2.02E-23	6.81E-19	2
MGST1	0.68084206	1.76E-58	5.93E-54	2
IGFBP7	0.67542159	1.52E-28	5.13E-24	2
PODN	0.66348036	1.18E-54	3.98E-50	2
C1R	0.65158676	3.98E-44	1.34E-39	2
C1QTNF3	0.63956369	9.32E-54	3.14E-49	2
RSPO3	0.63217311	7.43E-47	2.50E-42	2
FBLN2	0.62569861	2.57E-45	8.66E-41	2
IGF2	0.62278912	4.94E-56	1.66E-51	2
IGFBP5	0.61911704	2.37E-12	7.97E-08	2
C7	0.60874929	3.49E-13	1.17E-08	2
CADM3	0.60775943	1.46E-67	4.91E-63	2
PDGFRL	0.59348065	6.63E-57	2.23E-52	2
OGN	0.59130431	9.11E-36	3.07E-31	2
ITM2A	0.58756492	7.48E-36	2.52E-31	2
SRPX	0.54088454	8.04E-36	2.71E-31	2
MGP	0.5257938	2.20E-12	7.41E-08	2
SOD3	0.52555854	1.81E-39	6.09E-35	2
FGL2	0.49599369	6.19E-37	2.09E-32	2

AOX1	0.49232679	5.35E-65	1.80E-60	2
FSTL1	0.48727344	6.53E-24	2.20E-19	2
NUPR1	0.4805077	1.58E-29	5.31E-25	2
FBN1	0.47272032	9.82E-18	3.31E-13	2
CRYAB1	0.44777864	3.28E-13	1.11E-08	2
ABCA8	0.43980319	2.11E-34	7.11E-30	2
TXNIP	0.43873575	2.82E-16	9.51E-12	2
IFI27	0.43024447	8.19E-07	0.02759205	2
OMD	0.42459598	4.99E-42	1.68E-37	2
GAS1	0.42067367	1.51E-53	5.10E-49	2
GPNMB	0.41967712	5.82E-22	1.96E-17	2
SERPING1	0.41832162	1.15E-25	3.88E-21	2
AKAP12	0.41693227	4.31E-19	1.45E-14	2
PTGIS	0.41017804	1.81E-44	6.11E-40	2
CYBRD1	0.39758645	1.58E-43	5.32E-39	2
F10	0.39447835	1.31E-49	4.41E-45	2
ADIRF	0.39291168	2.26E-19	7.63E-15	2
CD55	0.38981469	3.77E-13	1.27E-08	2
C1S	0.38869057	6.20E-23	2.09E-18	2
IGFBP4	0.3800829	8.83E-13	2.97E-08	2
GALNT15	0.37519391	6.25E-35	2.11E-30	2
SCRG1	0.37227647	2.99E-11	1.01E-06	2
CHRDL1	0.36724768	8.12E-44	2.74E-39	2
C16orf89	0.36252409	1.32E-17	4.45E-13	2
MYC1	0.3608868	6.36E-15	2.14E-10	2
PLAC9	0.35601617	1.34E-16	4.51E-12	2
S100A4	0.35393108	3.61E-12	1.22E-07	2
KLF4	0.35340896	2.58E-09	8.71E-05	2
SLIT3	0.35022104	3.60E-25	1.21E-20	2
PLAT	0.3385448	3.74E-14	1.26E-09	2
PID1	0.33483271	5.07E-41	1.71E-36	2
MEDAG	0.33442809	1.71E-29	5.75E-25	2
CD34	0.32630086	1.08E-22	3.65E-18	2
LHFP	0.32038173	1.23E-18	4.14E-14	2
ITM2B	0.31922476	7.86E-23	2.65E-18	2
RHOB	0.31596885	1.38E-13	4.65E-09	2
PRSS23	0.31468644	4.11E-07	0.01384804	2
GPX31	0.3145912	3.40E-13	1.15E-08	2
CTSK	0.31221866	5.70E-15	1.92E-10	2
GNG11	0.30815124	1.25E-20	4.21E-16	2

CD59	0.30790657	4.19E-23	1.41E-18	2
CTSF	0.30691292	6.20E-21	2.09E-16	2
IGF1	0.30451617	2.82E-06	0.09501885	2
TSPAN8	0.30222144	2.03E-13	6.84E-09	2
CD248	0.29748534	1.49E-14	5.02E-10	2
PHGDH	0.2932529	1.11E-42	3.75E-38	2
FAM180B	0.29197351	6.27E-34	2.11E-29	2
F3	0.2872674	2.26E-14	7.60E-10	2
GPRC5A	0.28633573	6.17E-09	0.00020799	2
LEPR	0.28046248	3.21E-27	1.08E-22	2
MT1M1	0.27985174	3.86E-06	0.12990258	2
CILP	0.27922089	3.11E-23	1.05E-18	2
PRRX1	0.27843016	3.19E-25	1.07E-20	2
LRRN4CL	0.27814733	6.32E-47	2.13E-42	2
NFIA	0.27390102	1.04E-32	3.50E-28	2
PRELP1	0.27332831	8.60E-15	2.90E-10	2
TNXB	0.27294773	2.12E-15	7.16E-11	2
ADD3	0.27140974	4.04E-22	1.36E-17	2
BTG2	0.27063526	2.11E-08	0.00070933	2
LRP1	0.26385769	3.77E-24	1.27E-19	2
VIT	0.26298801	2.74E-50	9.24E-46	2
PROCR	0.26243272	8.89E-33	3.00E-28	2
FBLN5	0.26204632	5.93E-18	2.00E-13	2
CKB	0.26012304	3.07E-15	1.03E-10	2
GGT5	0.25939787	2.18E-31	7.33E-27	2
RTN4	0.25790425	9.60E-23	3.23E-18	2
EBF1	0.25760721	3.15E-42	1.06E-37	2
LGALS3BP	0.25735455	7.80E-15	2.63E-10	2
PLTP	0.25708178	2.65E-12	8.93E-08	2
AKR1C1	0.25695129	1.24E-19	4.18E-15	2
IFITM3	0.25487799	1.74E-11	5.86E-07	2
ANGPTL5	0.25278709	8.30E-33	2.80E-28	2
COMP	1.37546936	2.36E-138	7.97E-134	3
ASP	1.20474859	6.91E-91	2.33E-86	3
PENK	1.03696441	1.47E-108	4.96E-104	3
COL8A1	1.01877441	4.04E-175	1.36E-170	3
LTBP1	0.85105941	1.05E-175	3.55E-171	3
COL3A1	0.80106364	9.75E-94	3.28E-89	3
DPT	0.7969568	2.66E-75	8.97E-71	3
LTBP2	0.79171426	1.40E-143	4.70E-139	3

TSC22D1	0.78099701	8.35E-82	2.81E-77	3
MMP2	0.77349981	3.02E-171	1.02E-166	3
BGN	0.75674066	1.45E-96	4.88E-92	3
POSTN	0.71544463	6.14E-67	2.07E-62	3
MFAP4	0.70076561	2.67E-106	9.00E-102	3
A2M	0.69456588	8.23E-65	2.77E-60	3
MOXD1	0.68476318	1.05E-140	3.52E-136	3
VCAN	0.68116192	1.59E-115	5.36E-111	3
SPARC	0.67402494	4.05E-84	1.37E-79	3
LUM	0.66273183	2.13E-88	7.16E-84	3
CES1	0.65285008	1.94E-81	6.52E-77	3
COL1A2	0.64711674	3.22E-95	1.08E-90	3
NBL1	0.63314831	2.59E-126	8.74E-122	3
ITIH5	0.63235684	1.77E-171	5.97E-167	3
COL6A3	0.62324101	5.62E-98	1.89E-93	3
ITGBL1	0.6091158	2.16E-84	7.27E-80	3
SPARCL1	0.60400918	6.36E-92	2.14E-87	3
DIO2	0.58350276	1.42E-137	4.80E-133	3
CCL13	0.58268694	2.54E-41	8.56E-37	3
COL14A1	0.58053292	7.69E-97	2.59E-92	3
PLPP1	0.57435929	5.59E-146	1.88E-141	3
SSPN	0.57380993	8.87E-145	2.99E-140	3
DKK3	0.56115058	7.20E-106	2.43E-101	3
ELN	0.56065061	1.98E-45	6.67E-41	3
PTGDS	0.54947229	1.71E-37	5.76E-33	3
IGFBP3	0.54778889	4.84E-48	1.63E-43	3
APCDD1	0.54388534	1.68E-129	5.66E-125	3
CFH	0.54078668	6.05E-62	2.04E-57	3
INHBA	0.53389836	2.60E-39	8.76E-35	3
EID1	0.52489847	3.83E-148	1.29E-143	3
SPON2	0.5166527	2.53E-50	8.54E-46	3
BMP5	0.51396461	1.98E-146	6.68E-142	3
ECM1	0.51251169	2.48E-121	8.35E-117	3
PLAC91	0.50724509	3.94E-78	1.33E-73	3
COL5A2	0.50607265	4.50E-105	1.52E-100	3
CDH11	0.49617314	4.42E-114	1.49E-109	3
IGFBP41	0.49345962	7.56E-57	2.55E-52	3
MFAP2	0.49223015	3.45E-129	1.16E-124	3
IGF11	0.49008591	8.12E-72	2.74E-67	3
LEPR1	0.48866548	7.88E-35	2.66E-30	3

THY1	0.48861807	3.82E-68	1.29E-63	3
TGFBI	0.48460942	6.65E-74	2.24E-69	3
ITGA8	0.48451182	4.23E-108	1.42E-103	3
SPON1	0.46927194	1.97E-156	6.64E-152	3
11-Sep	0.46375063	8.75E-146	2.95E-141	3
PPIC	0.45534875	4.14E-101	1.39E-96	3
CXCL141	0.4539239	6.14E-24	2.07E-19	3
ACTA2	0.45233389	2.44E-05	0.82368305	3
F2R	0.45167873	4.35E-45	1.47E-40	3
COL5A1	0.44834332	1.95E-85	6.56E-81	3
PLPP3	0.44722228	1.92E-39	6.47E-35	3
MGP1	0.44717267	1.39E-49	4.67E-45	3
COL6A2	0.43926399	6.72E-83	2.27E-78	3
MMP23B	0.43467264	5.24E-93	1.77E-88	3
TCF21	0.43432596	3.73E-49	1.26E-44	3
CAV1	0.43159439	3.61E-37	1.22E-32	3
COL15A1	0.43058021	5.15E-151	1.74E-146	3
COL1A1	0.42575339	1.08E-68	3.64E-64	3
FBLN21	0.42242181	2.26E-66	7.62E-62	3
MMP11	0.42138982	5.45E-87	1.84E-82	3
IGFBP51	0.41994805	6.73E-05	1	3
COL6A1	0.41984342	2.55E-93	8.59E-89	3
ANTXR1	0.4141106	8.66E-143	2.92E-138	3
OLFML3	0.41347629	2.37E-92	7.98E-88	3
OGN1	0.40955996	1.37E-74	4.61E-70	3
MAP1B	0.40737727	6.60E-74	2.22E-69	3
MXRA8	0.40729018	7.46E-99	2.51E-94	3
PCOLCE	0.4045321	1.78E-70	6.01E-66	3
TSPAN81	0.404335	4.63E-37	1.56E-32	3
CTHRC1	0.39927702	6.05E-57	2.04E-52	3
LMO4	0.39912529	4.07E-136	1.37E-131	3
FHL1	0.39673521	1.60E-47	5.38E-43	3
RCN3	0.39603018	2.34E-110	7.89E-106	3
TPPP3	0.3959484	8.52E-60	2.87E-55	3
TSC22D3	0.39573605	1.91E-46	6.45E-42	3
CLEC11A	0.39367014	4.47E-104	1.51E-99	3
ST3GAL4	0.39212984	2.87E-129	9.67E-125	3
ECM2	0.39147168	2.16E-153	7.28E-149	3
NDN	0.38641294	1.48E-124	4.97E-120	3
TAGLN	0.38620104	3.80E-08	0.00128085	3

EMILIN1	0.38091657	5.92E-58	2.00E-53	3
PLXDC2	0.38024483	2.04E-143	6.89E-139	3
P4HA2	0.37977831	4.01E-131	1.35E-126	3
GLT8D2	0.37505465	1.39E-111	4.67E-107	3
FBXO32	0.37405026	4.85E-84	1.64E-79	3
GUCY1A3	0.37403809	7.78E-131	2.62E-126	3
CTSK1	0.37140453	1.01E-58	3.41E-54	3
LSAMP	0.37082739	2.33E-117	7.85E-113	3
NUCKS1	0.36988296	1.11E-143	3.74E-139	3
PAPPA	0.36885065	5.69E-79	1.92E-74	3
HMCN1	0.3608555	2.07E-152	6.96E-148	3
ALDH2	0.35780462	9.20E-41	3.10E-36	3
GOLIM4	0.35497663	2.09E-139	7.04E-135	3
PTN	0.35408152	1.47E-99	4.95E-95	3
SERPINE2	0.35177658	4.66E-44	1.57E-39	3
MRC2	0.35131158	1.12E-130	3.77E-126	3
TMEM204	0.35008524	1.17E-85	3.94E-81	3
ZBTB20	0.34670476	5.17E-94	1.74E-89	3
NR2F1	0.34576149	1.43E-97	4.82E-93	3
MEOX2	0.34488611	1.26E-86	4.23E-82	3
TIMP2	0.34435526	3.76E-98	1.27E-93	3
CYGB	0.34317663	6.80E-103	2.29E-98	3
LOXL1	0.34221873	2.89E-80	9.75E-76	3
COL10A1	0.34131718	9.73E-147	3.28E-142	3
GPNMB1	0.3407451	5.30E-82	1.79E-77	3
LAMB1	0.33759256	1.02E-80	3.43E-76	3
STEAP1	0.33700375	1.12E-79	3.78E-75	3
EFEMP2	0.33536395	6.88E-87	2.32E-82	3
ANGPTL1	0.33497534	8.13E-107	2.74E-102	3
TMEM98	0.33341843	2.97E-109	9.99E-105	3
PLTP1	0.33341776	5.81E-65	1.96E-60	3
CPQ	0.33223725	8.18E-134	2.76E-129	3
LGALS3BP1	0.33007503	2.66E-79	8.95E-75	3
SSC5D	0.32741548	1.64E-156	5.52E-152	3
FBLN11	0.32677512	1.66E-46	5.59E-42	3
NGFRAP1	0.32378886	7.16E-85	2.41E-80	3
PEBP1	0.32291193	3.53E-127	1.19E-122	3
PDLIM3	0.32267069	6.96E-58	2.34E-53	3
ARL6IP5	0.32244234	7.93E-109	2.67E-104	3
SCPEP1	0.32195315	1.55E-111	5.24E-107	3

MYLK	0.31678879	2.27E-63	7.66E-59	3
TUBA1A	0.31669978	2.54E-27	8.57E-23	3
SFRP41	0.3166604	1.05E-28	3.53E-24	3
ZNF106	0.31653943	2.46E-90	8.29E-86	3
PALLD	0.31610416	2.90E-85	9.78E-81	3
FMO3	0.31591833	1.14E-58	3.84E-54	3
MYL9	0.31583732	1.68E-33	5.65E-29	3
CERCAM	0.31437749	1.53E-83	5.15E-79	3
LIMCH1	0.31422816	8.74E-48	2.95E-43	3
USP18	0.31418235	8.67E-155	2.92E-150	3
TNFSF13B	0.31385925	5.94E-48	2.00E-43	3
SPRY1	0.31329674	2.34E-44	7.88E-40	3
CD81	0.31196949	2.79E-96	9.41E-92	3
CLMP	0.31065367	1.23E-118	4.15E-114	3
FBN11	0.31040931	5.31E-76	1.79E-71	3
LAPTM4A	0.30991314	2.54E-64	8.56E-60	3
CALD1	0.30967835	2.57E-42	8.66E-38	3
ANGPTL2	0.30950862	3.38E-88	1.14E-83	3
ITM2B1	0.30540928	5.49E-61	1.85E-56	3
CALU	0.30534989	4.51E-110	1.52E-105	3
MDK	0.30490493	2.33E-69	7.84E-65	3
C1QTNF2	0.30427513	3.11E-128	1.05E-123	3
ROBO2	0.30397113	5.37E-125	1.81E-120	3
PLEKHA5	0.3030438	4.22E-109	1.42E-104	3
LRRC17	0.3027368	1.16E-91	3.89E-87	3
NKD2	0.30192046	5.33E-74	1.80E-69	3
FHL2	0.30122191	3.86E-90	1.30E-85	3
CXCL12	0.3002285	6.54E-51	2.20E-46	3
RUNX1T1	0.29985516	3.47E-118	1.17E-113	3
RAB34	0.29955585	2.91E-116	9.82E-112	3
AEBP1	0.2961943	8.70E-34	2.93E-29	3
SAMHD1	0.29491251	4.94E-63	1.67E-58	3
PMP22	0.29485104	7.93E-39	2.67E-34	3
ANXA6	0.29466759	5.22E-104	1.76E-99	3
C1S1	0.29089894	1.04E-40	3.50E-36	3
7-Sep	0.29031115	4.68E-113	1.58E-108	3
ANGPT1	0.29027965	2.35E-55	7.92E-51	3
APP	0.289141	4.21E-78	1.42E-73	3
TMEM119	0.28605384	2.85E-101	9.60E-97	3
FZD1	0.28604302	5.51E-100	1.86E-95	3

PIK3R1	0.28590581	7.88E-72	2.66E-67	3
LAMA2	0.28515716	6.43E-57	2.17E-52	3
CD9	0.2834372	7.81E-20	2.63E-15	3
ENC1	0.28297047	9.56E-118	3.22E-113	3
PSAP	0.28172855	3.08E-82	1.04E-77	3
SDC2	0.28029875	2.20E-32	7.42E-28	3
RHOBTB3	0.27932853	1.12E-75	3.78E-71	3
CHN1	0.2773863	3.30E-92	1.11E-87	3
GDF10	0.27702581	1.14E-51	3.83E-47	3
HTRA1	0.27676311	2.96E-59	9.96E-55	3
SERPINF11	0.27654186	1.41E-37	4.75E-33	3
NFIX	0.27585416	1.04E-126	3.51E-122	3
TMEM100	0.27542843	1.08E-15	3.64E-11	3
LTBP3	0.2749463	2.75E-126	9.25E-122	3
PLEKHH2	0.27416062	4.20E-44	1.42E-39	3
LAMP5	0.27313763	1.84E-141	6.19E-137	3
TTC3	0.2718449	2.97E-96	1.00E-91	3
FN1	0.27180637	2.42E-39	8.15E-35	3
RBMS3	0.27155719	3.24E-84	1.09E-79	3
PAM	0.26927847	4.87E-120	1.64E-115	3
LAMP1	0.26828939	2.00E-101	6.74E-97	3
FSTL11	0.26788322	1.08E-47	3.64E-43	3
BICC1	0.26712775	1.17E-102	3.95E-98	3
RERG	0.26693626	1.14E-95	3.83E-91	3
PMEDA1	0.26626676	6.69E-109	2.25E-104	3
TCEAL7	0.26601608	3.37E-106	1.14E-101	3
PLXDC1	0.26584621	1.33E-123	4.48E-119	3
CAPZB	0.26545113	1.24E-113	4.17E-109	3
C1QTNF7	0.26526723	1.02E-113	3.43E-109	3
TNXB1	0.26278891	6.16E-25	2.07E-20	3
PRG4	0.26255619	3.70E-65	1.25E-60	3
BMP4	0.26254228	6.97E-84	2.35E-79	3
FKBP7	0.26190399	2.36E-105	7.96E-101	3
FAM114A1	0.26078088	4.94E-100	1.67E-95	3
GPX8	0.26028524	2.85E-81	9.60E-77	3
MAGED2	0.25995343	3.25E-103	1.09E-98	3
ENAH	0.25867907	4.33E-83	1.46E-78	3
LEPROT	0.25828747	1.72E-75	5.80E-71	3
ITM2C	0.25745452	8.09E-78	2.73E-73	3
MXRA5	0.25657413	2.85E-103	9.61E-99	3

TMEM45A	0.2562141	9.26E-104	3.12E-99	3
CST1	0.25608478	6.02E-44	2.03E-39	3
PRDX2	0.25599201	4.88E-92	1.65E-87	3
OSR2	0.25533126	5.99E-64	2.02E-59	3
PDZRN3	0.25460258	7.35E-161	2.48E-156	3
DPYSL3	0.25451616	3.89E-85	1.31E-80	3
EPHX1	0.25364004	1.96E-61	6.59E-57	3
ATP6AP2	0.25179988	1.20E-106	4.03E-102	3
CTSF1	0.2513371	7.60E-82	2.56E-77	3
TSPAN13	0.25132961	1.73E-78	5.82E-74	3
FKBP10	0.25090697	5.64E-73	1.90E-68	3
JADE1	0.25068187	2.51E-48	8.46E-44	3
SH3BGRL	0.25037376	3.34E-107	1.12E-102	3
COL1A11	1.29844505	1.49E-51	5.02E-47	4
TIMP1	1.20696335	2.24E-46	7.54E-42	4
CTHRC11	1.19785846	4.62E-51	1.56E-46	4
LGALS1	0.94428925	8.05E-78	2.71E-73	4
ISLR	0.92833726	4.52E-41	1.52E-36	4
CRABP2	0.89380691	1.86E-25	6.28E-21	4
SH3BGRL3	0.87993533	8.54E-64	2.88E-59	4
TNC	0.87359963	4.46E-24	1.50E-19	4
POSTN1	0.8630085	1.35E-30	4.56E-26	4
TPM2	0.84250308	3.14E-39	1.06E-34	4
FN11	0.8215858	1.14E-19	3.85E-15	4
SPARC1	0.8071698	5.02E-39	1.69E-34	4
S100A16	0.80470324	9.83E-61	3.31E-56	4
COL3A11	0.78367491	7.33E-35	2.47E-30	4
TUBA1B	0.73733309	2.91E-09	9.82E-05	4
COL1A21	0.71075013	1.49E-31	5.02E-27	4
IGFL2	0.68778325	5.82E-35	1.96E-30	4
TUBB	0.67329056	2.09E-55	7.04E-51	4
RP11-400N13.3	0.67186789	4.59E-45	1.55E-40	4
RPL22L1	0.6672537	6.36E-61	2.14E-56	4
MYL91	0.6625687	2.57E-22	8.66E-18	4
PFN1	0.66071242	2.78E-66	9.38E-62	4
SULF1	0.61894377	6.58E-33	2.22E-28	4
TPM4	0.60834844	2.71E-61	9.14E-57	4
GAPDH	0.60218613	3.73E-62	1.26E-57	4
PKM	0.60100998	8.09E-51	2.73E-46	4

MXRA51	0.60081368	2.47E-33	8.31E-29	4
PDLIM4	0.57363731	5.47E-56	1.84E-51	4
CERCAM1	0.57339347	7.79E-32	2.62E-27	4
P4HB	0.56972356	9.95E-56	3.35E-51	4
KDELR3	0.56722476	7.44E-40	2.51E-35	4
LOXL11	0.5559075	3.65E-39	1.23E-34	4
COL5A21	0.54293287	1.51E-28	5.09E-24	4
RPS19	0.54280805	8.65E-62	2.91E-57	4
MDK1	0.54266528	3.47E-24	1.17E-19	4
RPS18	0.53733205	2.38E-67	8.03E-63	4
TMSB10	0.53688914	7.07E-63	2.38E-58	4
SERPINE1	0.53390327	1.19E-18	4.00E-14	4
RPL28	0.53117169	1.06E-75	3.59E-71	4
S100A10	0.53024548	5.30E-32	1.79E-27	4
KDELR2	0.52993359	2.50E-57	8.41E-53	4
TAGLN1	0.5185172	1.84E-07	0.00620004	4
VIM	0.51505608	1.50E-40	5.05E-36	4
COL5A11	0.51148438	5.10E-31	1.72E-26	4
ANXA2	0.50827359	2.90E-30	9.79E-26	4
COL6A11	0.50567618	6.82E-20	2.30E-15	4
LY6E	0.49156986	1.68E-51	5.64E-47	4
ADAM12	0.48636955	5.08E-38	1.71E-33	4
IGFBP2	0.48480091	2.03E-14	6.83E-10	4
RPS2	0.47970487	6.65E-57	2.24E-52	4
SERF2	0.47691659	1.78E-53	6.01E-49	4
ACTB	0.47145348	1.26E-24	4.24E-20	4
LRRC171	0.47116928	1.51E-33	5.07E-29	4
RAB13	0.46726407	5.73E-61	1.93E-56	4
RPSA	0.46383756	9.69E-59	3.26E-54	4
ISG15	0.46354687	2.05E-07	0.00690455	4
CKAP4	0.46207419	1.48E-62	4.98E-58	4
NME1	0.46199302	4.09E-60	1.38E-55	4
ARPC1B	0.46142237	5.39E-69	1.82E-64	4
ACTA21	0.45983593	1.04E-07	0.00348772	4
EIF5A	0.45636617	1.00E-31	3.39E-27	4
IL32	0.45152785	5.38E-20	1.81E-15	4
YBX1	0.44885056	2.08E-63	7.02E-59	4
TMSB4X	0.44710546	1.09E-27	3.68E-23	4
FKBP101	0.44644192	9.05E-34	3.05E-29	4
PRKCDBP	0.44516244	2.09E-29	7.05E-25	4

EEF1B2	0.44147067	1.46E-64	4.93E-60	4
S100A6	0.44083209	1.61E-18	5.43E-14	4
OST4	0.4405114	1.95E-67	6.55E-63	4
TMED3	0.44020114	4.13E-58	1.39E-53	4
VKORC1	0.43842735	7.02E-40	2.36E-35	4
S100A11	0.4374615	3.74E-35	1.26E-30	4
RPL18A	0.43540376	7.84E-64	2.64E-59	4
RCN1	0.43313659	3.30E-43	1.11E-38	4
ACTG1	0.43157312	1.70E-32	5.71E-28	4
RPL12	0.43082721	1.41E-56	4.74E-52	4
RPS12	0.42981082	3.75E-50	1.27E-45	4
RPL4	0.42933164	1.93E-58	6.49E-54	4
RPS17	0.42633846	2.98E-58	1.00E-53	4
SRM	0.4251288	3.65E-64	1.23E-59	4
AP2S1	0.42404162	1.13E-69	3.81E-65	4
ARPC2	0.42343053	1.10E-53	3.71E-49	4
COL6A31	0.42309412	2.48E-19	8.36E-15	4
ACTG2	0.42120217	0.00356516	1	4
RPS3	0.42060428	1.36E-53	4.57E-49	4
BGN1	0.42017526	1.47E-18	4.96E-14	4
RPS26	0.41971596	4.01E-39	1.35E-34	4
SERPINH1	0.41835486	1.84E-28	6.19E-24	4
MEDAG1	0.41472273	3.03E-44	1.02E-39	4
RPL29	0.40998353	4.54E-58	1.53E-53	4
SEC61G	0.40955005	2.66E-46	8.97E-42	4
TUBA1C	0.40876363	2.23E-19	7.50E-15	4
GAP43	0.40531549	2.34E-46	7.88E-42	4
TPM1	0.40361484	8.40E-14	2.83E-09	4
RPL36	0.4029367	2.64E-51	8.91E-47	4
RPL27	0.40172483	3.17E-74	1.07E-69	4
RPL41	0.39796936	1.89E-59	6.35E-55	4
RPLP0	0.39750107	3.28E-43	1.11E-38	4
RPL37	0.39580768	2.17E-52	7.31E-48	4
RHOC	0.39300021	4.30E-49	1.45E-44	4
RPL7A	0.39271166	2.03E-49	6.84E-45	4
RPS4X	0.38773104	8.13E-35	2.74E-30	4
SLC12A8	0.38758725	1.44E-47	4.86E-43	4
EMP3	0.38522209	6.82E-13	2.30E-08	4
RPL8	0.3841066	1.61E-61	5.43E-57	4
RPS24	0.38113771	1.11E-55	3.74E-51	4

FKBP11	0.38105649	4.68E-38	1.58E-33	4
THY11	0.38105283	8.31E-21	2.80E-16	4
FKBP1A	0.38033669	3.16E-56	1.07E-51	4
RPS5	0.37800244	1.74E-50	5.85E-46	4
PRDX4	0.37797368	2.73E-45	9.20E-41	4
OSTC	0.3776751	4.39E-56	1.48E-51	4
RPL35	0.37556482	6.20E-53	2.09E-48	4
RPL10A	0.37505066	9.55E-48	3.22E-43	4
RPL37A	0.37502107	2.92E-48	9.82E-44	4
PDPN	0.37475298	9.78E-42	3.30E-37	4
PPIB	0.3732019	1.30E-35	4.38E-31	4
RPL27A	0.37089741	1.89E-54	6.37E-50	4
C9orf16	0.36822703	4.64E-52	1.56E-47	4
ENO1	0.3648622	9.13E-11	3.08E-06	4
PDLIM7	0.3630391	6.09E-34	2.05E-29	4
CHPF	0.36024928	8.98E-27	3.02E-22	4
RPLP1	0.35958731	6.76E-55	2.28E-50	4
PHPT1	0.35854721	2.86E-40	9.63E-36	4
TGFBI1	0.35852971	8.05E-24	2.71E-19	4
RPS7	0.35555465	1.02E-57	3.44E-53	4
ATP5E	0.35459659	5.23E-56	1.76E-51	4
YIF1A	0.35398324	6.62E-49	2.23E-44	4
PGAM1	0.35263119	1.96E-51	6.62E-47	4
RCN31	0.35047247	4.46E-25	1.50E-20	4
RPS6	0.35029303	5.09E-42	1.72E-37	4
CFL1	0.34983903	1.63E-39	5.48E-35	4
UQCRH	0.34796152	1.47E-75	4.94E-71	4
PYCR1	0.34728811	4.53E-44	1.53E-39	4
ALDH1A3	0.34611501	1.14E-28	3.85E-24	4
PPIC1	0.3419434	1.95E-21	6.57E-17	4
PRAF2	0.3417437	1.00E-47	3.39E-43	4
THBS2	0.34166097	3.87E-27	1.30E-22	4
GUK1	0.34154632	9.63E-60	3.24E-55	4
TCEB2	0.33974566	3.74E-57	1.26E-52	4
PTMS	0.33835659	5.03E-38	1.69E-33	4
SSR4	0.33720162	4.01E-38	1.35E-33	4
TPPP31	0.33681742	0.00475518	1	4
SEC61B	0.33622503	8.09E-50	2.73E-45	4
RPL13	0.33222258	1.51E-41	5.09E-37	4
GNB2L1	0.33216236	4.24E-43	1.43E-38	4

DPYSL31	0.33182561	8.27E-28	2.79E-23	4
RPL39	0.3316017	2.98E-38	1.00E-33	4
RPL32	0.33159256	1.04E-42	3.51E-38	4
RPL6	0.32863541	6.87E-43	2.32E-38	4
PRELID1	0.32856789	5.24E-66	1.77E-61	4
UQCQRQ	0.32695477	2.39E-56	8.05E-52	4
RPS15A	0.32670429	6.49E-42	2.19E-37	4
RPS14	0.32204961	3.29E-44	1.11E-39	4
MYDGF	0.32134103	1.44E-35	4.86E-31	4
HMG2	0.3210372	1.29E-17	4.36E-13	4
NDUFS5	0.31767904	5.61E-61	1.89E-56	4
CD99	0.31716275	1.01E-25	3.41E-21	4
UBA52	0.31627582	8.63E-61	2.91E-56	4
NDUFB2	0.31458815	9.49E-53	3.20E-48	4
RPL15	0.31398325	7.16E-44	2.41E-39	4
ATOX1	0.31198777	7.85E-59	2.64E-54	4
RPS3A	0.31151348	3.71E-36	1.25E-31	4
C12orf75	0.31038521	5.61E-27	1.89E-22	4
RPL3	0.30985103	2.32E-29	7.81E-25	4
UCHL1	0.30842806	1.24E-33	4.18E-29	4
MINOS1	0.30795236	6.40E-52	2.16E-47	4
RPL19	0.30761989	1.35E-47	4.56E-43	4
SLC25A6	0.30713931	2.08E-44	7.00E-40	4
RPLP2	0.30621181	3.72E-43	1.25E-38	4
RPS21	0.30539039	5.40E-39	1.82E-34	4
MYL6	0.30529078	2.54E-21	8.57E-17	4
RBP1	0.30526845	2.56E-21	8.62E-17	4
CLEC11A1	0.30501779	1.17E-22	3.96E-18	4
PLP2	0.30401898	2.03E-21	6.86E-17	4
TYMS	0.30248585	3.48E-20	1.17E-15	4
ALDOA	0.30187222	4.37E-47	1.47E-42	4
RPS10	0.29939209	3.91E-48	1.32E-43	4
RPS29	0.29875795	6.81E-36	2.29E-31	4
RPS15	0.29853655	2.59E-44	8.71E-40	4
TSPO	0.29830292	1.77E-29	5.98E-25	4
RPL23	0.29790666	3.87E-41	1.30E-36	4
IFI27L2	0.2960139	2.87E-44	9.66E-40	4
RPS8	0.29588297	7.01E-31	2.36E-26	4
PPP1CC	0.29512341	3.71E-40	1.25E-35	4
PDLIM2	0.29490457	5.23E-33	1.76E-28	4

RPL18	0.29324552	1.35E-38	4.56E-34	4
RBM3	0.29180076	1.10E-50	3.70E-46	4
RANBP1	0.29124028	8.83E-42	2.97E-37	4
TSPAN2	0.28917244	4.02E-42	1.36E-37	4
AP2M1	0.28782722	7.62E-48	2.57E-43	4
COX8A	0.28759022	4.05E-55	1.36E-50	4
APRT	0.28711977	2.47E-69	8.32E-65	4
EEF2	0.28704439	3.53E-28	1.19E-23	4
SDC21	0.28687419	3.56E-10	1.20E-05	4
RPS11	0.28548841	5.51E-46	1.86E-41	4
ISOC2	0.28539479	3.64E-55	1.23E-50	4
RPL26	0.28521882	5.54E-30	1.87E-25	4
RPL7	0.28406287	2.61E-28	8.79E-24	4
RPL13A	0.28373432	5.03E-30	1.69E-25	4
CD2481	0.28361733	3.53E-24	1.19E-19	4
ANAPC11	0.28326632	1.17E-60	3.94E-56	4
SH3PXD2A	0.28183214	3.98E-24	1.34E-19	4
EEF1A1	0.28118629	1.62E-23	5.45E-19	4
SSR3	0.28085731	2.28E-55	7.69E-51	4
RAMP1	0.28063436	1.05E-12	3.52E-08	4
RPL14	0.28056359	3.15E-32	1.06E-27	4
SPATS2L	0.27552316	4.54E-45	1.53E-40	4
MIF	0.27397043	3.52E-43	1.19E-38	4
FAP	0.27387197	2.26E-25	7.61E-21	4
RPS28	0.27282035	6.24E-28	2.10E-23	4
NME4	0.27097092	4.96E-47	1.67E-42	4
RPL5	0.27060993	5.59E-25	1.88E-20	4
IFI271	0.26998631	0.00045364	1	4
GTF3A	0.2699861	8.62E-64	2.90E-59	4
GPC1	0.26919033	2.15E-49	7.25E-45	4
CALU1	0.26888378	9.40E-28	3.17E-23	4
RAN	0.2682272	1.72E-24	5.78E-20	4
HDLBP	0.26685978	6.00E-39	2.02E-34	4
GSTP1	0.26646919	2.20E-20	7.43E-16	4
SSR2	0.26568697	1.33E-48	4.47E-44	4
C19orf53	0.26483295	1.27E-80	4.27E-76	4
NDUFA4	0.26394317	8.54E-36	2.88E-31	4
RHOA	0.26331747	3.25E-33	1.09E-28	4
RPL11	0.26242144	6.28E-30	2.12E-25	4
TPI1	0.26141372	1.09E-22	3.66E-18	4

RPL30	0.26135426	4.09E-33	1.38E-28	4
KIAA0101	0.2609236	0.00120446	1	4
HINT1	0.26058066	1.66E-54	5.58E-50	4
GDI2	0.26004092	3.20E-52	1.08E-47	4
FSCN1	0.25937837	2.66E-41	8.98E-37	4
GPX81	0.25924628	2.51E-22	8.45E-18	4
HMGN1	0.257853	7.38E-39	2.49E-34	4
ATP5D	0.2576277	5.66E-68	1.91E-63	4
PSME2	0.25718662	8.65E-25	2.92E-20	4
MARCKSL1	0.25580118	1.37E-17	4.62E-13	4
TMEM167A	0.25569589	9.71E-46	3.27E-41	4
JTB	0.25526618	5.70E-63	1.92E-58	4
HCFC1R1	0.25525054	8.00E-36	2.70E-31	4
TMEM230	0.25484905	1.37E-34	4.62E-30	4
TPT1	0.25478134	1.15E-18	3.89E-14	4
ATP5G1	0.25459971	2.08E-56	7.00E-52	4
RPL38	0.25457332	6.18E-32	2.08E-27	4
RPS20	0.25357129	3.27E-30	1.10E-25	4
ETHE1	0.25323922	7.08E-56	2.38E-51	4
RPL36A	0.25198007	4.54E-34	1.53E-29	4
C1orf122	0.25185452	1.69E-34	5.69E-30	4
NPM1	0.25123509	6.70E-24	2.26E-19	4
RPL24	0.25088454	2.01E-34	6.78E-30	4

Supplementary Table S4. List of genes related to inflammation and fibrosis with references.

	GeneSymbol	Gene Name	REF
Fibroblasts Cluster-1	ICAM1	Intercellular Adhesion Molecule 1	(1)
	CXCL1	C-X-C Motif Chemokine Ligand 1	(2)
	CXCL2	C-X-C Motif Chemokine Ligand 2	(2)
	CXCL3	C-X-C Motif Chemokine Ligand 3	(2)
	CXCL8	C-X-C Motif Chemokine Ligand 8	(2)
	CCL2	C-C Motif Chemokine Ligand 2	(2)
	IL6	Interleukin 6	(3)
	PTX3	Pentraxin 3	(4)
	IER3	Immediate Early Response 3	(5)
	GADD45B	Growth Arrest And DNA Damage Inducible Beta	(6)
	THBS1	Thrombospondin 1	(7)
	SOD2	Superoxide Dismutase 2	(8)
	NFKBIA	NFKB Inhibitor Alpha	(9)
Fibroblasts Cluster-2	CXCL14	C-X-C Motif Chemokine Ligand 14	(10)
	SFRP2	Secreted Frizzled Related Protein 2	(11)
	SFRP4	Secreted Frizzled Related Protein 4	(11)
Fibroblasts Cluster-3	POSTN	Periostin	(12)
	ASPN	Asporin	(13)
	LTBP2	Latent Transforming Growth Factor Beta Binding Protein 2	(14)
	LTBP1	Latent Transforming Growth Factor Beta Binding Protein 1	(15)
	BGN	Biglycan	(16)
	DPT	Dermatopontin	(17, 18)
	COL3A1	Collagen Type III Alpha 1 Chain	(19)
	COL8A1	Collagen Type VIII Alpha 1 Chain	(12)
	MFAP4	Microfibril Associated Protein 4	(18)
	VCAM	Vascular Cell Adhesion Molecule 1	(20)
	COMP	Cartilage Oligomeric Matrix Protein	(21)
MMP2	Matrix Metalloproteinase 2	(22)	
Fibroblasts Cluster-4	TNC	Tenascin C	(23)
	SPARC	Secreted Protein Acidic And Cysteine Rich	(24-26)
	POSTN	Periostin	(12)
	FN1	Fibronectin 1	(27)
	TPM2	Tropomyosin 2	(28)

Supplementary Table S5. Ribosomal protein mRNAs are globally downregulated in C2G2 compared to C2G1 cells in Cluster-2.

GeneSymbol	avg_logFC	p_val	p_val_adj
RPS27	0.52	5.91E-13	1.99E-08
RPS28	0.45	2.61E-10	8.79E-06
RPS18	0.45	7.25E-11	2.44E-06
RPS2	0.45	1.87E-09	6.31E-05
RPLP0	0.44	2.22E-07	7.47E-03
RPS29	0.43	7.39E-08	2.49E-03
RPL34	0.42	1.51E-12	5.09E-08
RPSA	0.42	5.22E-10	1.76E-05
RPL31	0.42	4.50E-12	1.52E-07
RPL32	0.42	1.91E-12	6.45E-08
RPS12	0.42	3.77E-08	1.27E-03
RPL18A	0.42	2.43E-11	8.19E-07
RPS8	0.41	3.99E-10	1.34E-05
RPS5	0.41	2.11E-10	7.09E-06
RPS19	0.41	3.83E-08	1.29E-03
RPS14	0.40	1.07E-12	3.60E-08
RPL7	0.40	4.93E-10	1.66E-05
RPL39	0.40	4.74E-10	1.60E-05
RPL13	0.39	4.38E-11	1.48E-06
RPL41	0.39	2.82E-10	9.50E-06
RPS6	0.39	9.39E-10	3.16E-05
RPL11	0.39	7.46E-12	2.51E-07
RPL37A	0.39	2.25E-09	7.59E-05
RPL18	0.39	6.82E-11	2.30E-06
RPS3	0.39	2.56E-09	8.64E-05
RPL13A	0.39	5.63E-10	1.90E-05
RPLP2	0.38	1.16E-11	3.90E-07
RPL10A	0.38	3.35E-10	1.13E-05
RPL37	0.38	4.85E-11	1.63E-06
RPL36	0.38	6.35E-09	2.14E-04
RPL35A	0.38	2.76E-12	9.29E-08
RPL26	0.38	5.70E-11	1.92E-06
RPL3	0.37	1.68E-09	5.65E-05
RPL10	0.37	9.58E-11	3.23E-06
RPS25	0.37	3.27E-12	1.10E-07
RPL21	0.37	4.30E-11	1.45E-06
RPL5	0.37	2.81E-09	9.46E-05
RPS15A	0.37	2.71E-10	9.14E-06
RPL23A	0.37	8.01E-11	2.70E-06
RPS3A	0.36	2.38E-09	8.02E-05

RPL23	0.36	4.85E-11	1.63E-06
RPS23	0.36	7.21E-10	2.43E-05
RPL27A	0.36	1.84E-10	6.19E-06
RPL35	0.36	6.08E-10	2.05E-05
RPS16	0.35	3.17E-10	1.07E-05
RPL30	0.35	2.29E-11	7.70E-07
RPL14	0.35	1.65E-09	5.55E-05
RPL38	0.35	1.42E-11	4.80E-07
RPL29	0.35	2.51E-10	8.45E-06
RPS20	0.34	1.29E-10	4.34E-06
RPL28	0.34	9.03E-08	3.04E-03
RPS27A	0.34	1.56E-09	5.24E-05
RPL7A	0.34	9.06E-09	3.05E-04
RPS13	0.34	7.25E-11	2.44E-06
RPLP1	0.34	4.39E-10	1.48E-05
RPL4	0.34	3.90E-09	1.31E-04
RPS24	0.34	1.80E-08	6.06E-04
RPS17	0.34	8.59E-09	2.90E-04
RPL6	0.33	5.91E-09	1.99E-04
RPS7	0.33	6.23E-09	2.10E-04
RPL12	0.33	9.73E-09	3.28E-04
RPS21	0.32	9.06E-09	3.05E-04
RPL9	0.32	1.65E-09	5.55E-05
RPL8	0.32	1.18E-09	3.96E-05
RPS15	0.32	3.13E-09	1.06E-04
RPL19	0.32	2.02E-10	6.82E-06
RPL15	0.32	4.15E-10	1.40E-05
RPS9	0.30	5.29E-08	1.78E-03
RPL27	0.29	1.20E-09	4.04E-05
RPS11	0.27	7.19E-09	2.42E-04
RPL22	0.27	8.29E-09	2.79E-04
RPL36A	0.27	4.27E-09	1.44E-04
RPL24	0.27	3.02E-09	1.02E-04
RPS10	0.26	3.37E-09	1.14E-04

Supplementary Table S6A. Differential gene expression for copper-binding genes between Cluster 1 (normal) and Cluster 3 (fibrotic) cells. Part I: upregulated genes in Cluster 3; part II: downregulated genes in Cluster 3; part III: genes not differentially expressed.

GeneSymbol	avg_logFC	p_val	p_val_adj
SPARC	-1.3377614	6.38E-129	8.29E-128
MOXD1	-0.805859	5.14E-138	8.92E-137
LOXL1	-0.6321814	3.42E-147	1.78E-145
APP	-0.3934383	7.56E-93	3.93E-92
S100A13	-0.3868142	3.37E-79	1.35E-78
PAM	-0.3627751	3.22E-145	8.38E-144
PARK7	-0.2816728	1.78E-127	1.85E-126
MT-CO1	-0.2427346	9.02E-20	1.30E-19
HEPH	-0.2400801	1.34E-126	1.16E-125
CCS	-0.2338949	2.75E-124	2.05E-123
LOX	-0.1978914	1.61E-55	3.64E-55
PRNP	-0.1937362	9.28E-49	2.01E-48
SOD1	-0.1786077	1.04E-47	2.00E-47
ATOX1	-0.1583605	4.79E-48	9.57E-48
COX11	-0.126048	1.46E-106	9.46E-106
CUTA	-0.1195893	1.18E-37	2.11E-37
GPC1	-0.1080996	2.76E-67	7.54E-67
LOXL2	-0.0680043	2.78E-70	8.03E-70
COMMD1	-0.0600248	1.34E-48	2.79E-48
F5	-0.0380839	4.23E-67	1.10E-66
CUTC	-0.0373513	1.44E-10	1.79E-10
LOXL3	-0.0172311	8.70E-72	2.66E-71
SCO1	-0.0131812	5.80E-19	8.15E-19
CP	-0.0130793	6.53E-11	8.28E-11
AFP	-0.010591	8.69E-09	1.04E-08
SLC31A1	-0.010361	9.00E-14	1.20E-13
S100B	-0.0092444	2.24E-24	3.53E-24
TYRP1	-0.0089608	1.68E-12	2.19E-12
ENOX1	-0.0085989	4.63E-78	1.72E-77
ATP7B	-0.0073743	1.18E-60	2.78E-60
LOXL4	-0.0054964	3.23E-75	1.12E-74
ENOX2	-0.0044788	7.96E-21	1.18E-20
ATP7A	-0.0010764	8.83E-09	1.04E-08
TYR	-0.0008232	3.62E-32	6.07E-32
DBH	-0.0006459	4.58E-41	8.51E-41

ALB	-0.0005889	1.87E-33	3.25E-33
AOC1	-0.0004768	0.00286679	0.00324071
S100A5	-0.0004363	1.53E-05	1.77E-05
MEMO1	-4.96E-05	0.04242307	0.0450204
HEPHL1	0.00017238	1.18E-23	1.81E-23
AOC2	0.00621501	4.38E-17	5.99E-17
S100A12	0.02496471	6.04E-106	3.49E-105
SOD3	0.06287363	0.01147174	0.01269214
SCO2	0.0657051	6.48E-80	3.06E-79
SLC31A2	0.0680623	1.03E-62	2.55E-62
MT-CO2	0.08048577	0.01913214	0.02072649
MAP2K1	0.08635951	7.15E-72	2.32E-71
COX17	0.09373701	1.24E-25	2.01E-25
SNCA	0.13475549	1.71E-79	7.41E-79
MT3	0.00097683	0.13337185	0.13870672
LTF	0.00167063	0.44786085	0.44786085
AOC3	0.04512818	0.40558582	0.41353848
MT4	0	NA	NA

Supplementary Table S6B. Differential gene expression for copper-binding genes between Cluster 2 C2G1 (velocity towards normal SS1) and C2G2 (velocity towards fibrotic SS2). Part I: upregulated genes in C2G2; part II: downregulated genes in C2G2; part III: genes not differentially expressed.

GeneSymbol	avg_FC	P_value	P.adj
SPARC	-0.5614634	2.76E-05	0.00035846
MOXD1	-0.3481906	7.33E-06	0.00012698
PAM	-0.2663576	1.11E-06	5.80E-05
APP	-0.2206723	0.00069975	0.0045484
MT-CO1	-0.2196486	0.00877742	0.02535698
LOXL1	-0.1920861	0.00139077	0.00657453
HEPH	-0.1615404	4.83E-06	0.00012555
MT-CO2	-0.1596061	0.01862497	0.04524043
PRNP	-0.1549761	0.00196865	0.00853082
CCS	-0.1272404	0.00111046	0.00577442
SLC31A1	-0.0229862	0.00024172	0.00179562
LOXL2	-0.0229013	0.01914018	0.04524043
TYRP1	-0.020903	0.00413171	0.01432328
ENOX1	-0.0162381	0.00013166	0.00114103
LOXL3	-0.0137429	0.0048972	0.01591591
SCO1	-0.0123905	0.01779322	0.04524043
LTF	-0.0058866	0.00084124	0.00486051
ATP7B	-0.0029025	0.00641786	0.01963111
LOXL4	-0.0027467	0.00288503	0.0115401
MT3	-0.0019358	5.34E-05	0.00055549
SNCA	0.05013874	0.01397206	0.03823934
S100A12	0.00212072	0.00371018	0.01378066
SOD3	-0.1361267	0.17589636	0.26901796
SOD1	-0.0889612	0.03582971	0.07763104
AOC3	-0.0705918	0.02705952	0.06117805
LOX	-0.0682892	0.11792244	0.18581718
ATOX1	-0.0657198	0.05452029	0.10500204
PARK7	-0.0511217	0.10282424	0.1670894
S100A13	-0.050502	0.43285367	0.60833488
GPC1	-0.0414486	0.04399324	0.09150595
COMMD1	-0.0226403	0.08013685	0.14369366
S100B	-0.0205516	0.08370808	0.145094

CP	-0.0144214	0.23503534	0.33949549
F5	-0.0091696	0.0492151	0.09843021
AFP	-0.006177	0.52962218	0.70616291
MEMO1	-0.0025619	0.78505882	0.87268967
SLC31A2	-0.0016043	0.97162219	0.97162219
CUTC	-0.0014663	0.7565607	0.87268967
ALB	-0.0002586	0.57999371	0.7380756
TYR	-8.69E-05	0.87934616	0.92371236
AOC1	-4.89E-05	0.91769833	0.93569242
DBH	-3.54E-05	0.78877721	0.87268967
HEPHL1	8.11E-05	0.20653738	0.30685553
S100A5	0.00030837	0.68060346	0.82305535
AOC2	0.00116352	0.58194422	0.7380756
ATP7A	0.00175059	0.8164784	0.88451827
ENOX2	0.00493781	0.6292467	0.77906734
COX17	0.00941984	0.72584635	0.85781842
CUTA	0.01286898	0.88818497	0.92371236
COX11	0.0180965	0.47155816	0.64529012
SCO2	0.02267734	0.09655187	0.16195797
MAP2K1	0.03435245	0.06860074	0.12740138
MT4	0	NA	NA

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SUPPLEMENTAL FIGURE LEGENTS

Figure S1. (A) Histology of the tissue used for sequencing showing preserved lung architecture in the control lungs, extensive scar tissue in the IPF lower lobes and a relatively unaffected histology in two of the IPF upper lobe samples. Age and gender are listed following the sample ID name. **(B)** tSNE plot of lung cells colored by sample ID.

Figure S2. tSNE plot of lung cells showing fibroblast Cluster-5, neighboring B-cell cluster. This cluster was found to contain cells expressing mainly HLA type II family genes and was excluded from our fibroblast analysis.

Figure S3. tSNE plot of lung fibroblasts colored by sample ID.

Figure S4. UMAP plot depicting alveolar and adventitial fibroblasts **(A)** and CTHRC1+ fibroblasts **(B)**.

Figure S5. UMAP_1 plots of lung fibroblasts after re-analysis using raw data from a published IPF study (Reyfman et al., 2019). **(A)** UMAP_1 plot showing fibroblast sub-cluster 2 (green) with distinct sub-populations originating from Control, and IPF samples as well as a mixed Control/IPF subpopulation. **(B)** UMAP_1 plot showing the contribution of each sample type in the different fibroblast sub-clusters.

Figure S6. MOXD1 detection in cultured human lung fibroblasts. Cells were isolated from different donors (donor replicas). Adjacent IPF_UP and IP_LOW images show cells isolated from the same donor's upper and lower lung lobes respectively. This is a high-resolution image of Figure 8D.

Figure S7. MOXD1 detection in human lung cells. Cells were isolated as in Fig. S6. This image includes IHC staining. **(A)** MOXD1 immunofluorescence staining in lung parenchyma frozen tissue, obtained from age-matched control and IPF lungs (x20 magnification, 50µm). Red: MOXD1; green: α -SMA (myofibroblast marker). **(B)** IHC staining of MOXD1 in lung parenchyma tissue from patients with age-matched control and IPF. Yellow arrows highlight the MOXD1 expression in fibroblast foci (x20 magnification, 50µm).