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Supplemental Information

Pulmonary Silicosis Alters MicroRNA Expression in Rat Lung and miR-411-3p Exerts Anti-fibrotic Effects by Inhibiting MRTF-A/SRF Signaling

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Table S1 The expression profile of differential miRNAs

NO.	miRNA name	Control group content	Silicosis group content	log^2 (fold change)	P-value
1	rno-miR-292-5p	0	11.2832	10.14	8.19E-12
2	rno-miR-292-3p	0	7.0492	9.4613	1.91E-10
3	rno-miR-295-3p	0	4.8306	8.9161	1.86E-07
4	rno-miR-291a-3p	0	3.0555	8.2553	4.51E-06
5	rno-miR-155-3p	0	2.1326	7.7365	2.35E-06
6	rno-miR-881-3p	0	2.1158	7.7251	0.013444
7	rno-miR-135b-5p	0	2.0126	7.6529	0.014651
8	rno-miR-293-5p	0.3523	50.9127	7.1751	1.32E-11
9	rno-miR-188-5p	0	1.3404	7.0665	7.90E-05
10	rno-miR-743b-5p	0	1.2385	6.9525	0.027306
11	rno-miR-743a-3p	0	1.1869	6.8911	0.029526
12	rno-miR-743b-3p	0	1.1611	6.8593	0.032019
13	rno-miR-291b	0	1.1205	6.808	0.008127
14	rno-miR-466b-5p	0	1.1102	6.7947	0.000167
15	rno-miR-471-5p	0	1.0837	6.7598	0.036316
16	rno-miR-466b-3p	0	0.9125	6.5118	0.008404
17	rno-miR-212-3p	0.5432	3.9932	2.878	0.00791
18	rno-miR-466b-4-3p	0.6435	3.669	2.5114	0.010213
19	rno-miR-466b-2-3p	0.6435	3.669	2.5114	0.010695
20	rno-miR-212-5p	0.7567	3.9403	2.3805	0.017963
21	rno-miR-132-5p	1.0726	5.2891	2.3019	7.98E-05
22	rno-miR-146b-5p	4229.006	20182.08	2.2547	9.47E-13
23	rno-miR-21-5p	15450.34	70581.41	2.1916	1.53E-16
24	rno-miR-146b-3p	22.5817	101.3028	2.1654	8.25E-10
25	rno-miR-132-3p	9.2137	40.5865	2.1391	7.93E-07
26	rno-miR-21-3p	3.1898	12.0515	1.9177	0.000108
27	rno-miR-155-5p	33.3228	124.4713	1.9012	4.45E-07
28	rno-miR-653-5p	1.9307	7.2058	1.9	0.000237
29	rno-miR-206-3p	6.0933	17.2657	1.5026	0.00096
30	rno-miR-148a-3p	23546.11	63418.52	1.4294	1.07E-05
31	rno-miR-466c-5p	7.6952	20.1652	1.3898	0.000576
32	rno-miR-452-5p	13.0802	32.1135	1.2958	0.000652
33	rno-miR-183-5p	529.7892	1239.862	1.2267	8.34E-05
34	rno-miR-224-5p	200.458	462.1928	1.2052	0.00026
35	rno-miR-501-3p	3.9363	8.8657	1.1714	0.004559
36	rno-miR-96-5p	107.0636	240.4405	1.1672	4.19E-05
37	rno-miR-130b-5p	3.529	7.7496	1.1349	0.020522
38	rno-miR-146a-3p	5.1955	11.1303	1.0992	0.010418
39	rno-miR-182	428.3515	905.7955	1.0804	0.000499
40	rno-miR-148a-5p	105.0684	211.9542	1.0124	0.000277
41	rno-miR-18a-5p	2.984	5.9862	1.0044	0.047177

42	rno-miR-139-3p	10.6866	5.1788	-1.0451	0.047487
43	rno-miR-30a-5p	53536.88	25708.52	-1.0583	0.000802
44	rno-miR-99a-3p	5.4691	1.5003	-1.8661	0.049114
45	rno-miR-411-5p	13.514	3.2698	-2.0472	4.17E-06
46	rno-miR-379-5p	31.6637	7.5567	-2.067	1.63E-07
47	rno-miR-300-3p	4.5614	1.0699	-2.092	0.027216
48	rno-miR-127-3p	178.2171	41.3409	-2.108	5.97E-09
49	rno-miR-434-3p	5.6852	1.1114	-2.3548	0.012532
50	rno-miR-136-3p	6.2556	1.1888	-2.3956	0.009609
51	rno-miR-494-3p	3.1062	0.4386	-2.8242	0.041879
52	rno-miR-337-5p	3.2686	0.4128	-2.9852	0.030617
53	rno-miR-134-5p	9.8534	1.0837	-3.1847	0.006719
54	rno-miR-382-5p	2.7582	0.2838	-3.2808	0.016499
55	rno-miR-541-5p	7.6002	0.4386	-4.1151	0.000103
56	rno-miR-6318	0.476	0	-5.5729	0.040156
57	rno-miR-376c-3p	0.6206	0	-5.9556	0.029422
58	rno-miR-369-3p	0.6657	0	-6.0568	0.024472
59	rno-miR-379-3p	0.6862	0	-6.1006	0.021997
60	rno-miR-129-5p	0.7806	0	-6.2865	0.001175
61	rno-miR-124-3p	0.7878	0	-6.2998	0.017929
62	rno-miR-431	0.8276	0	-6.3709	0.000868
63	rno-miR-873-3p	0.9494	0	-6.5689	0.000483
64	rno-miR-325-3p	0.9519	0	-6.5727	0.01378
65	rno-miR-137-3p	1.0415	0	-6.7025	0.000338
66	rno-miR-1193-3p	1.0433	0	-6.705	0.000301
67	rno-miR-433-3p	1.1145	0	-6.8003	0.000205
68	rno-miR-409a-5p	1.3919	0	-7.1209	9.55E-05
69	rno-miR-370-3p	2.5195	0	-7.977	1.17E-06
70	rno-miR-411-3p	2.547	0	-7.9927	9.76E-07

Table S2 The sequences of miRNAs and siRNAs

Mimic/inhibitor	Sense: （5'-3'）	Antisense: (5'-3')
mimic Negative Control	UUUGUACUACACAAAAGUACUG	CAGUACUUUUGUGUAGUACAAA
rno-miR-1193-3p mimic	UAGGUCACCCGUUUUACUAUCC	GGAUAGUAAAACGGGUGACCUA
rno-miR-155-3p mimic	CUCCUACCUGUUAGCAUUAAC	GUUAAUGCUAACAGGUAGGAG
rno-miR-291a-3p mimic	AAAGUGCUUCCACUUUGUGUGCC	GGCACACAAAGUGGAAGCACUUU
rno-miR-292-3p mimic	AAGUGCCGCCAGGUUUUGAGUGU	ACACUCAAAACCUGGCGGCACUU
rno-miR-292-5p mimic	ACUCAAACUGGGGGCUCUUUUG	CAAAAGAGCCCCCAGUUUGAGU
rno-miR-295-3p mimic	AAGUGCUACUACUUUUGGGUGU	ACACCCAAAAGUAGUAGCACUU
rno-miR-370-3p mimic	GCCUGCUGGGGUGGAACCUGGU	ACCAGGUUCCACCCCAGCAGGC
rno-miR-409a-5p mimic	AGGUUACCCGAGCAACUUUGCAU	AUGCAAAGUUGCUCGGGUAACCU
rno-miR-411-3p mimic	UAUGUAACACGGUCCACUAA	UUAGUGGACCGUGUUACAUA
rno-miR-433-3p mimic	AUCAUGAUGGGCUCCUCGGUGU	ACACCGAGGAGCCCAUCAUGAU
inhibitor Negative Control	CAGUACUUUUGUGUAGUACAAA	-
rno-miR-1193-3p inhibitor	GGAUAGUAAAACGGGUGACCUA	-
rno-miR-155-3p inhibitor	GUUAAUGCUAACAGGUAGGAG	-
rno-miR-291a-3p inhibitor	GGCACACAAAGUGGAAGCACUUU	-
rno-miR-292-3p inhibitor	ACACUCAAAACCUGGCGGCACUU	-
rno-miR-292-5p inhibitor	CAAAAGAGCCCCCAGUUUGAGU	-
rno-miR-295-3p inhibitor	ACACCCAAAAGUAGUAGCACUU	-
rno-miR-370-3p inhibitor	ACCAGGUUCCACCCCAGCAGGC	-
rno-miR-409a-5p inhibitor	AUGCAAAGUUGCUCGGGUAACCU	-
rno-miR-411-3p inhibitor	UUAGUGGACCGUGUUACAUA	-
rno-miR-433-3p inhibitor	ACACCGAGGAGCCCAUCAUGAU	-
mmu-miR-411-3P agomir	UAUGUAACACGGUCCACUAACC	GGUUAGUGGACCGUGUUACAUA
agomir Negative Control	UUUGUACUACACAAAAGUACUG	CAGUACUUUUGUGUAGUACAAA
siRNA-Negative Control	UUCUCCGAACGUGUCACGUdTdT	ACGUGACACGUUCGGAGAAdTdT
siRNA *Mrtfa*_001	CCACACUCAUCAAGCAAAGdTdT	CUUUGCUUGAUGAGUGUGGdTdT
siRNA *Mrtfa*_002	UAGUGCCACCUCCAUAUCAdTdT	UGAUAUGGAGGUGGCACUAdTdT
siRNA *Mrtfa*_003	CACUACAGAUCGUGAAGGAdTdT	UCCUUCACGAUCUGUAGUGdTdT

Table S3 The primers of miRNAs

NO.	primer
miR8002818	Bulge-loopTM rno-miR-292-5P RT primer
miR8002820	Bulge-loopTM rno-miR-292-3P RT primer
miR8000181	Bulge-loopTM rno-miR-291a-3P RT primer
ssD115584401	Bulge-loopTM rno-miR-155-3P RT primer
miR8002822	Bulge-loopTM rno-miR-295-3P RT primer
miR8000175	Bulge-loopTM rno-miR-1193-3P RT primer
miR8002824	Bulge-loopTM rno-miR-411-3P RT primer
ssD809230338	Bulge-loopTM rno-miR-370-3P RT primer
ssD809230358	Bulge-loopTM rno-miR-409a-5P RT primer
ssD809230371	Bulge-loopTM rno-miR-433-3P RT primer
ssD0904071008	Bulge-loopTM U6 RT primer
miR8002819	Bulge-loopTM rno-miR-292-5P Forward primer
miR8002821	Bulge-loopTM rno-miR-292-3P Forward primer
miR8000182	Bulge-loopTM rno-miR-291a-3P Forward primer
ssD115584402	Bulge-loopTM rno-miR-155-3P Forward primer
miR8002823	Bulge-loopTM rno-miR-295-3P Forward primer
miR8000176	Bulge-loopTM rno-miR-1193-3P Forward primer
miR8002825	Bulge-loopTM rno-miR-411-3P Forward primer
ssD809231030	Bulge-loopTM rno-miR-370-3P Forward primer
ssD809231050	Bulge-loopTM rno-miR-409a-5P Forward primer
ssD809231063	Bulge-loopTM rno-miR-433-3P Forward primer
ssD089261711	Bulge-loopTM miR-Reverse primer
ssD0904071006	Bulge-loopTM U6 Forward primer
ssD0904071107	Bulge-loopTM U6 Reverse primer

Table S4 The primer sequences of genes

Gene	Species	Primer sequence(5'-3')
Col 1a1	Mouse	Forward: GCTCCTCTTAGGGGCCACT
		Reverse: CCACGTCTCACCATTGGGG
Acta2	Mouse	Forward: GACGTACAACTGGTATTGTG
		Reverse: TCAGGATCTTCATGAGGTAG
Srf	Mouse	Forward: GGCCGCGTGAAGATCAAGAT
		Reverse: CACATGGCCTGTCTCACTGG
Mrtfa	Mouse	Forward: GGCCAGGACCGAGGACTATT
		Reverse: CCACAATGATAGCCTCCTTCAG
Gapdh	Mouse	Forward: CCTGCACCACCAACTGCTTA
		Reverse: GCCCCACGGCCATCACGCCA
Col 1a1	Rat	Forward: ACCTCAGGGTATTGCTGGAC
		Reverse: GACCAGGGAAGCCTCTTTCT
Acta2	Rat	Forward: CAATGGCTCCGGGCTCTGTA
		Reverse: CTCTTGCTCTGCGCTTCGTC
Srf	Rat	Forward: GTGGGGAAACCAAGGACACA
		Reverse: GTTGGTGATGGGGAAGGAGG
Mrtfa	Rat	Forward: CGAACGAGGCGGTTACCATCA
		Reverse: CGGTTCCTCATCATTTTCGCC
Gapdh	Rat	Forward: GGTGAAGGTCGGTGTGAACG
		Reverse: CTCGCTCCTGGAAGATGGTG

Table S5 The respiratory parameters of lung function measured by FinePointe WBP

	Respiratory parameters	Unit
f	Respiratory Rate	BPM
TVb	Tidal volume (volume inhaled) estimated from the Box Flow signal. It is equal to the product of the volume measured from the Box Flow and Comp	mL
MVb	Minute volume (the rate of ventilation) estimated from the Box Flow signal. It is equal to the product of the volume measured from the Box Flow, f, and Comp	mL/min
Penh	Index of constriction.	None
PAU	Index of constriction.	None
Rpef	The location into expiration where the peak occurs as a fraction of Te	None
Comp	The factor applied to box flow to estimate animal's flow	None
PIFb	Estimated peak inspiratory flow	mL/s
PEFb	Estimated peak expiratory flow	mL/s
Ti	Inspiratory time	S
Te	Expiratory time	S
EF50	Expiratory flow at 50% expired volume (Uncompensated)	mL/s
EIP	End inspiratory pause. Time it takes to transition from inspiration to expiration	ms
EEP	End expiratory pause. Time it takes to transition from expiration to inspiration	ms
Tr	Relaxation time.	S
TB	Duration of breaking. Percentage of the breath occupied by transitioning from inspiration to expiration	%
TP	Duration of pause before inspiration. Percentage of the breath occupied by transition from expiration to inspiration	%
Tbody	Body temperature. Either assumed or measured using telemetry	C
Tc	Chamber temperature. Either assumed or measured using digital temperature sensor in the chamber	C
RH	Relative humidity. Either assumed or measured using digital humidity sensor in the chamber	%
Rinx	Rejection index. Percentage of breaths rejected before a breath is accepted.	%