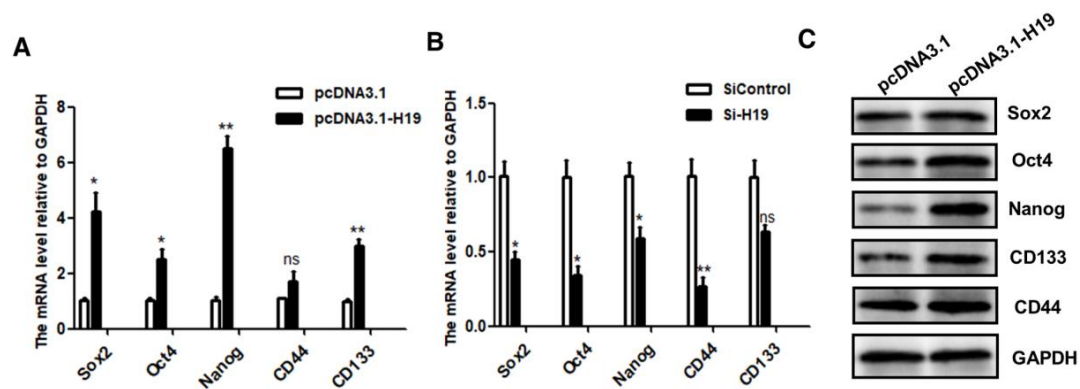


Supplementary materials

Carcinoma associated fibroblasts promote the stemness and chemoresistance of colorectal cancer by transferring exosomal lncRNA H19

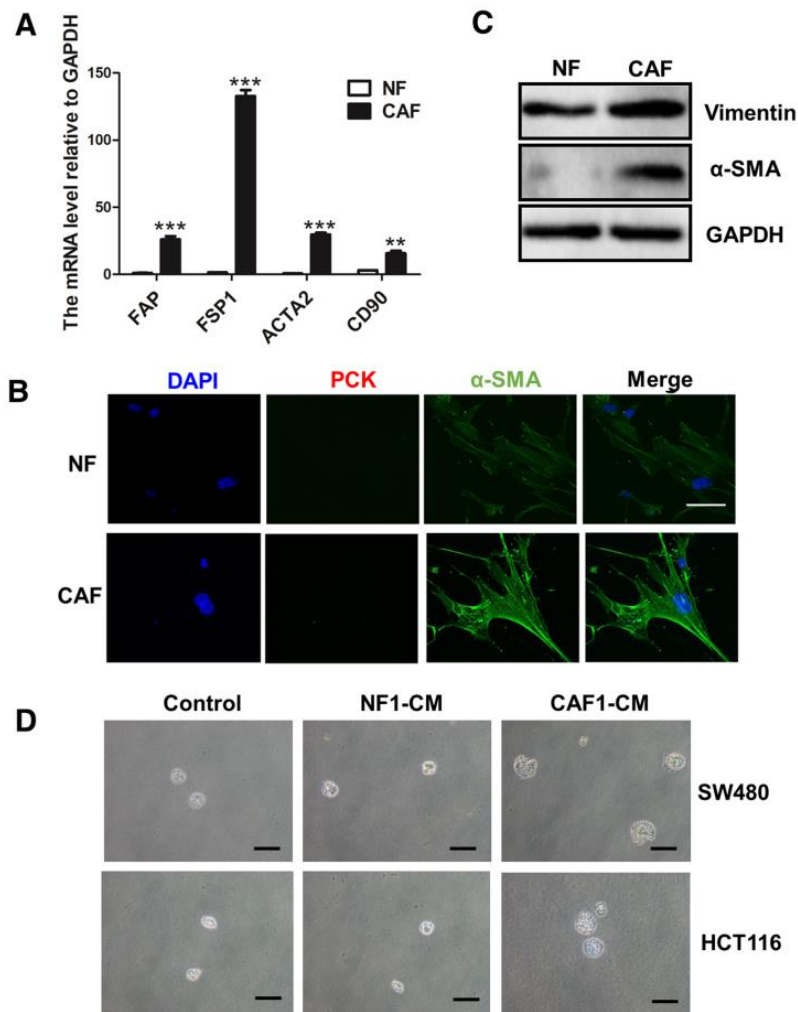
Supplementary Figures

Supplementary Figure1



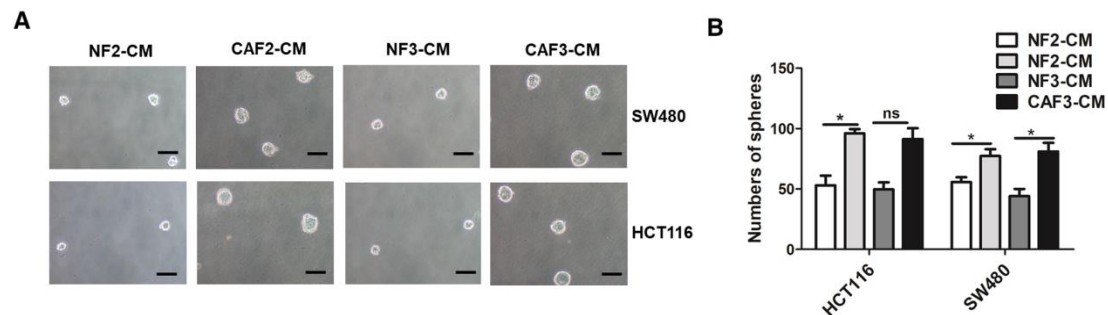
(A) The mRNA levels of Sox2, Oct4, Nanog, CD44 and CD133 in SW480 cells with overexpression of lncRNA H19 were analyzed by qRT-PCR. (B) The mRNA levels of Sox2, Oct4, Nanog, CD44 and CD133 in HCT116 cells with knockdown of lncRNA H19 were analyzed. (C) The protein levels of Sox2, Oct4, Nanog, CD44 and CD133 in SW480 cells with overexpression of lncRNA H19 were analyzed by western blot. Data were shown as mean \pm S.D. from three independent experiments. * $p < 0.05$, ** $p < 0.01$.

Supplementary Figure2



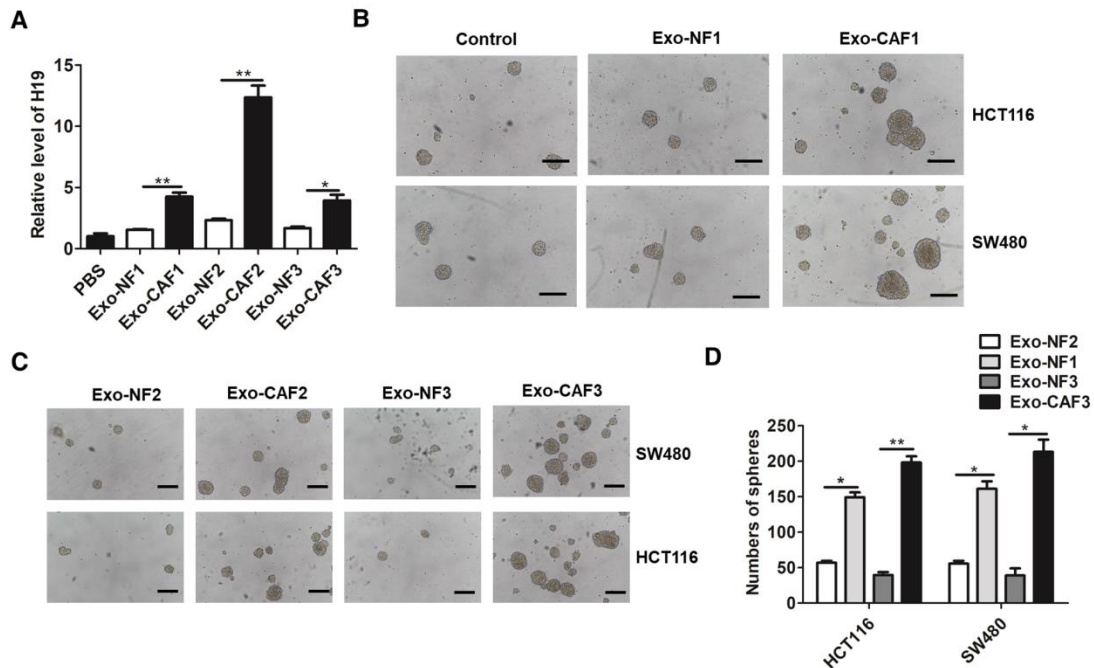
(A) qRT-PCR analyzed the mRNA expression levels of FAP, FSP1, ACTA2 and CD90 in isolated CAFs and NFs. (B) Immunofluorescence staining showed the subcellular location and the expression of Pan cytokeratins and α -SMA in isolated CAFs and NFs. Scale bar, 10 μ M. (C) The protein levels of vimentin and α -SMA were detected Western blot in isolated CAFs and NFs. (D) The capacity of cells to form spheres was assessed. Representative images are presented. Scale bars, 200 μ m. Data were shown as mean \pm S.D. from three independent experiments. **P < 0.01, ***P < 0.001.

Supplementary Figure3



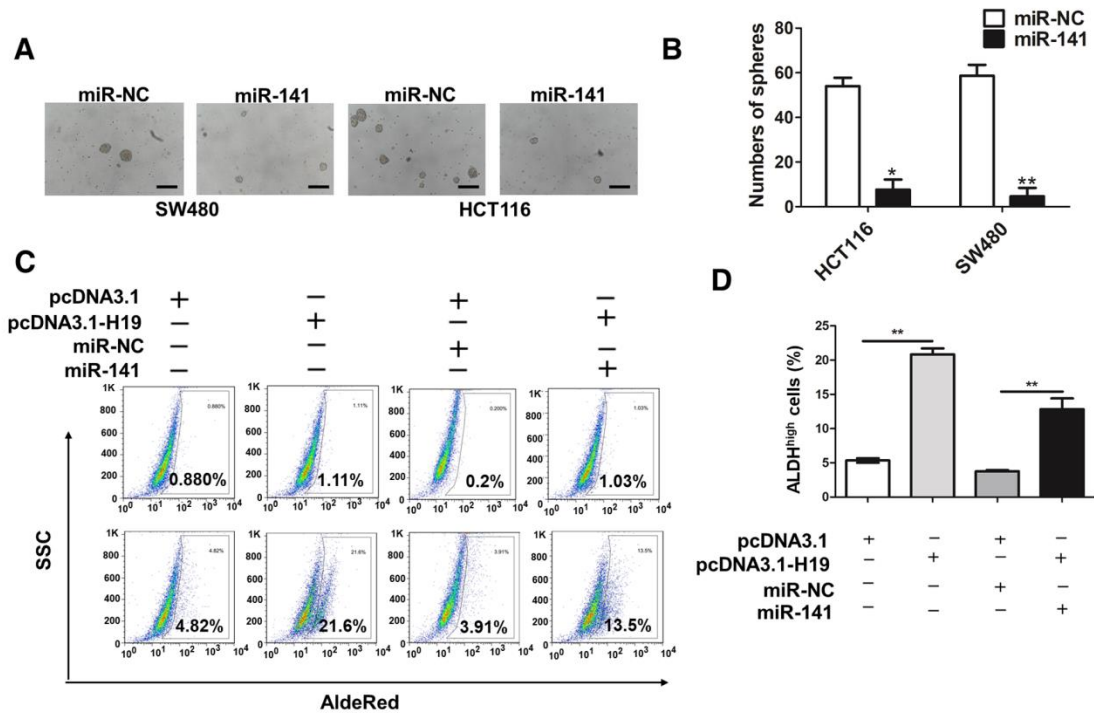
(A) The SW480 and HCT116 cells were incubated with CM from CAFs or NFs of other patients (#2 and #3) for 24 hour, and the capacity of cells to form spheres was assessed. Representative images were presented. Scale bars, 200 μm . (B) The size and numbers of mammospheres were counted. Data were shown as mean \pm S.D. from three independent experiments. * $p < 0.05$.

Supplementary Figure4



(A) The HCT116 cells were incubated with indicated exosomes or PBS for 48 h, and the level of H19 was analyzed by qRT-PCR.(B) The SW480 and HCT116 were incubated with exosomes (10 $\mu\text{g}/\text{mL}$ from CAF1 or NF1 for 24 h, and the capacity of cells to form spheres was assessed. Representative images were presented. Scale bars, 200 μm .(C)The SW480 and HCT116 cells were incubated with exosomes from CAFs or NFs of other patients (#2 and #3) for 24 hour, and the capacity of cells to form spheres was assessed. Representative images were presented. Scale bars, 200 μm . (D) The size and numbers of mammospheres were counted. Data were shown as mean \pm S.D. from three independent experiments. * $p < 0.05$, ** $p < 0.01$.

Supplementary Figure5



(A-B) The overexpression of miR-141 significantly decreased sphere forming capacities of SW480 and HCT116 cells. Scale bars, 200 μ m. (C-D) The SW480 cells were transfected with plasmids with overexpression of lncRNA H19 (pcDNA3.1-H19), an empty vector (pcDNA3.1), miR-NC (mimic control) or miR-141 (mimic). AldeRed ALDH detection assay was performed. Data were shown as mean \pm S.D. from three independent experiments. * $P < 0.05$, ** $P < 0.01$.

Supplemental Tables

Supplemental Table 1. Primers used for real-time quantitative PCR analysis

Gene	Sequence
Human H19	Forward: GCACCTTGGACATCTGGAGT
	Reverse: TTCTTCCAGCCCTAGCTCA
Mouse H19	Forward: GAACAGAAGCATTCTAGGCTGG
	Reverse: TTCTAAGTGAATTACGGTGGGTG
Human FAP	Forward: ATGAGCTTCCTCGTCCAATTCA
	Reverse: AGACCACCAGAGGCATATTTTG
Human FSP1	Forward: GATGAGCAACTTGGACAGCAA
	Reverse: CTGGGCTGCTTATCTGGGAAG
Human ACTA2	Forward: GTGTTGCCCTGAAGAGCAT
	Reverse: GCTGGGACATTGAAAGTCTCA
Human CD90	Forward: ATCGCTCTCTGCTAACAGTC
	Reverse: CTCGTA CTGGATGGGTGAACT
Human β -catenin	Forward: AAAGCGGCTGTTAGTCACTGG
	Reverse: CGAGTCATTGCATACTGTCCAT
Human c-Myc	Forward: GGCTCCTGGCAAAGGTCA
	Reverse: CTGCGTAGTTGTGCTGATGT
Human CCDN1	Forward: GCTGCGAAGTGAAACCATC
	Reverse: CCTCCTTCTGCACACATTGAA
Human CD44	Forward: CTGCCGCTTTGCAGGTGTA
	Reverse: CATTGTGGGCAAGGTGCTATT
Mouse GAPDH	Forward: GGTGAAGGTCGGTGTGAACG
	Reverse: CTCGCTCCTGGAAGATGGTG
Human GAPDH	Forward: AGAAGGCTGGGGCTCATTG
	Reverse: AGGGGCCATCCACAGTCTTC

Supplemental Table 2. The upregulated expression of lncRNAs in colon tissues identified from NGS data

AccID	Tumor	Control	Fold Change	Log2FC	P-Value	FDR
LOC102633776	84.07427917	0	Inf	20	3.03E-20	2.32E-17
LOC102640510	70.41941376	0	Inf	20	9.78E-19	5.62E-16
LOC102640929	114.4780345	0	Inf	20	1.63E-18	8.67E-16
LOC102637941	65.51798588	0	Inf	20	2.70E-17	1.33E-14
2700046A07Rik	148.0410745	0	Inf	20	3.32E-16	1.21E-13
LOC102635396	55.55351096	0	Inf	20	1.25E-15	4.31E-13
9330117O12Rik	106.3546416	0	Inf	20	1.89E-12	3.72E-10
LOC102638539	51.9181919	0	Inf	20	3.29E-12	5.97E-10
LOC102636276	35.05291829	0	Inf	20	4.22E-10	5.11E-08
LOC102632850	41.63857362	0	Inf	20	1.33E-09	1.39E-07
4930432O09Rik	36.94746158	0	Inf	20	1.61E-08	1.41E-06
Gm6522	62.13687203	0	Inf	20	7.47E-08	5.60E-06
Mcpt-ps1	25.82825489	0	Inf	20	2.78E-07	1.78E-05
LOC102637960	18.65951061	0	Inf	20	6.10E-07	3.59E-05
LOC102632377	21.13628274	0	Inf	20	7.06E-07	4.06E-05
Defa-ps6	77.75127673	0	Inf	20	1.02E-06	5.61E-05
LOC102638649	16.65652332	0	Inf	20	1.76E-06	8.54E-05
LOC102637134	16.07716152	0	Inf	20	2.60E-06	1.19E-04
2210409E12Rik	9.80462062	0	Inf	20	1.38E-05	4.82E-04
Tpsab1	40.84069161	0	Inf	20	3.53E-05	0.0010595
Gm3103	11.59482177	0	Inf	20	3.73E-05	0.0010992
Gm10872	23.40119485	0	Inf	20	4.84E-05	0.0013669
Gm12202	12.22996044	0	Inf	20	5.11E-05	0.0014165
LOC102640323	11.27764948	0	Inf	20	1.12E-04	0.0026797
LOC102636076	9.698205544	0	Inf	20	2.66E-04	0.005517

LOC102633899	9.276117714	0	Inf	20	5.10E-04	0.0092652
Gm17793	9.433391687	0	Inf	20	9.86E-04	0.0157375
Gm5966	7.378994097	0	Inf	20	0.001189	0.0180525
LOC102635800	8.065895784	0	Inf	20	0.00142	0.0202808
Olfr755-ps1	6.957744371	0	Inf	20	0.001753	0.023935
LOC102632516	6.008873853	0	Inf	20	0.00183	0.0247158
Gm12603	7.115018344	0	Inf	20	0.002031	0.0264758
LOC102634083	7.378685388	0	Inf	20	0.002087	0.0269027
4930425O10Rik	7.430161704	0	Inf	20	0.002178	0.0277047
LOC102633064	7.538274993	0	Inf	20	0.002195	0.0278238
LOC102640363	6.641454198	0	Inf	20	0.003019	0.0352939
Gm16063	11.90934771	0	Inf	20	0.003269	0.0377079
LOC102635376	11.96772691	0	Inf	20	0.003274	0.0377079
LOC102640066	6.957722365	0	Inf	20	0.003327	0.0380427
D230030E09Rik	6.747251856	0	Inf	20	0.003815	0.0421047
Gm18622	6.482151296	0	Inf	20	0.004221	0.0453515
Gm11978	368.1168678	0.331065	1111.918	10.11883475	6.86E-13	1.58E-10
4921525O09Rik	205.246391	0.331065	619.9585	9.276027749	3.48E-28	4.80E-25
Gm8714	1576.32309	4.051349	389.086	8.603945121	4.80E-13	1.14E-10
H19	4100.680424	10.93021	375.1693	8.551398048	2.50E-10	3.19E-08
1500009C09Rik	256.3800207	0.989924	258.9897	8.016750757	1.42E-31	4.89E-28
LOC102638971	225.7463663	1.084588	208.1402	7.701411756	7.30E-25	8.39E-22
Gm15304	47.32767285	0.329429	143.6656	7.166570469	1.59E-05	5.31E-04
Pla2g2a	5268.673289	40.38827	130.4506	7.027359523	4.66E-43	3.22E-39
LOC102632099	35.63058188	0.329429	108.1584	6.757002528	1.28E-10	1.74E-08
1700020N18Rik	33.36081782	0.329429	101.2685	6.66204114	7.56E-10	8.84E-08
LOC102635136	52.54543491	0.658859	79.75217	6.317451913	7.39E-13	1.64E-10
LOC102637628	24.71752314	0.329429	75.0313	6.229420667	6.18E-06	2.46E-04
LOC102635855	41.27316677	0.660494	62.48831	5.965514357	4.10E-11	5.89E-09

LOC102632387	41.53173918	0.706191	58.8109	5.878011738	6.30E-11	8.68E-09
LOC102634552	18.71149432	0.329429	56.79969	5.827811262	0.001939	0.0256798
LOC102635415	125.386594	2.354974	53.24331	5.734528256	2.02E-19	1.39E-16
LOC100505034	136.4719887	2.739912	49.8089	5.638331605	5.12E-06	2.10E-04
5730457N03Rik	513.3585499	10.43461	49.19768	5.620518447	3.77E-23	3.71E-20
LOC102637557	16.18154766	0.329429	49.11991	5.618236083	2.17E-05	7.02E-04
Gm2373	14.49427714	0.331065	43.78079	5.452226185	2.96E-05	9.17E-04
BC023105	309.3306035	7.45313	41.50345	5.375159337	2.26E-10	2.94E-08
A730046J19Rik	81.4875415	1.976577	41.2266	5.365503488	8.70E-10	9.83E-08
Gm15302	43.00234238	1.082953	39.70842	5.311372966	1.73E-04	0.0037976
Gm807	13.01838124	0.329429	39.51796	5.304436553	9.72E-05	0.0023963
4930461G14Rik	89.82085285	2.309277	38.89566	5.281537318	2.44E-09	2.34E-07
LOC102634943	12.64887253	0.329429	38.3963	5.262895278	8.10E-04	0.0133025
LOC102636017	12.38694771	0.329429	37.60121	5.232707218	1.69E-04	0.0037242
LOC101055851	395.5687012	10.67428	37.05812	5.211717703	3.38E-07	2.12E-05
LOC102640561	24.40584223	0.660494	36.95088	5.207536759	1.97E-06	9.36E-05
LOC102633000	11.54389686	0.331065	34.869	5.123873115	4.62E-04	0.0086602
Gm9640	80.59096277	2.35988	34.15045	5.093832895	3.93E-14	1.13E-11
LOC102639975	33.77893582	1.037256	32.56567	5.025280117	5.03E-04	0.0092257
LOC102635721	10.59476164	0.329429	32.16094	5.007237614	8.64E-04	0.0140228
Gm5970	139.2592289	4.382153	31.77872	4.989989119	6.40E-12	1.08E-09
Gm4827	10.1215062	0.331065	30.57259	4.934166797	0.004005	0.043634
Gm5486	28.67235213	0.993194	28.86883	4.85144056	9.95E-08	7.15E-06
Gm21188	57.7759886	2.02718	28.50068	4.832924211	1.74E-06	8.51E-05
LOC102638237	140.9314155	4.988775	28.24971	4.820163971	1.13E-09	1.25E-07
Trbj2-3	10.59246802	0.376762	28.11451	4.813242804	2.95E-04	0.0059584
LOC628062	54.23687395	1.978212	27.41712	4.777004938	4.08E-11	5.89E-09
Gm17250	37.73645579	1.415653	26.65658	4.73641954	1.04E-06	5.67E-05
LOC102631660	8.697616019	0.329429	26.40206	4.722578407	0.001621	0.0224074

LOC102637355	9.224398706	0.376762	24.48338	4.613730809	9.57E-04	0.0154137
LOC102638459	8.064462268	0.329429	24.48009	4.613536727	0.002075	0.0269004
Tbx3os2	113.247942	4.76055	23.78883	4.572212644	4.10E-04	0.0079144
LOC102638456	139.2998998	5.983604	23.28027	4.541035709	1.13E-07	7.94E-06
LOC102632463	22.92849081	0.988288	23.2002	4.53606538	1.19E-06	6.36E-05
Gm10768	170.4628738	7.351925	23.18616	4.53519177	3.83E-17	1.76E-14
LOC102634481	8.116225287	0.376762	21.54207	4.429084848	0.004091	0.0443678
Gm11658	27.30020296	1.320988	20.6665	4.369221897	8.89E-07	4.98E-05
LOC102633661	15.44515458	0.753523	20.49725	4.357358341	1.06E-04	0.002594
Gm7469	284.7256293	14.00937	20.32395	4.345108853	3.79E-19	2.38E-16
4933436C20Rik	25.720715	1.317718	19.51914	4.286817232	6.06E-05	0.0016255
LOC102640711	12.38813854	0.662129	18.70954	4.225702222	0.002083	0.0269027
LOC102638159	100.086688	5.369067	18.64136	4.220434849	5.79E-09	5.32E-07
Serpina3h	36.79058434	1.978212	18.5979	4.2170675	4.94E-09	4.60E-07
LOC102631497	53.07726823	3.015468	17.60167	4.137640248	1.27E-09	1.35E-07
5830416119Rik	42.27230078	2.403941	17.58458	4.136239076	3.23E-07	2.04E-05
B930018H19Rik	12.1764772	0.707826	17.20263	4.104557413	7.34E-04	0.0123418
LOC102635203	11.33115473	0.660494	17.15557	4.10060511	0.001169	0.0178389
LOC102631883	21.92589436	1.369956	16.00482	4.000434338	1.10E-05	3.93E-04
LOC102637410	26.61927802	1.743447	15.26819	3.932456994	2.92E-06	1.28E-04
Gpr31a	25.98449208	1.743447	14.90409	3.89763641	6.52E-06	2.56E-04
Gad1-ps	20.34477422	1.368321	14.86843	3.894180026	1.37E-05	4.81E-04
LOC102632005	19.39614639	1.322624	14.6649	3.874295455	5.26E-05	0.0014506
LOC102640080	19.02729911	1.324259	14.36826	3.844813588	9.68E-05	0.0023963
D630010B17Rik	39.21643155	2.780703	14.10306	3.81793673	1.67E-07	1.13E-05
Marcks11-ps5	27.24989546	1.983118	13.74094	3.780408294	1.66E-06	8.15E-05
Gm6970	14.12708406	1.035621	13.64118	3.769896186	6.09E-04	0.0106093
LOC102636919	19.1876828	1.415653	13.55395	3.760641104	8.74E-05	0.0022007
Cxcl11	157.778249	11.82384	13.34408	3.738128179	5.32E-06	2.16E-04

Gata5os	17.70803776	1.366685	12.95692	3.695651283	1.37E-04	0.0031502
LOC102632303	60.40736634	4.85685	12.43756	3.636631658	1.20E-09	1.29E-07
LOC102636934	25.35588157	2.071241	12.24188	3.613752908	1.58E-05	5.31E-04
LOC102640849	12.43785062	1.035621	12.01005	3.586169669	0.001437	0.0204414
4930412O13Rik	12.7550009	1.082953	11.77798	3.55802072	0.001552	0.0215877
LOC102638195	32.10200861	2.731736	11.75151	3.554773856	2.68E-06	1.20E-04
Gad1os	15.28386676	1.36505	11.19656	3.48498375	4.25E-04	0.0081246
Gm830	870.5822716	78.91517	11.03187	3.463606101	3.32E-16	1.21E-13
Gm2379	10.85787729	1.035621	10.48442	3.390174558	0.003747	0.0416815
Gm7582	19.18658	1.983118	9.674956	3.274255174	2.58E-04	0.0054044
Gm14230	22.77097415	2.358244	9.655901	3.271410886	1.05E-04	0.0025791
Gm5960	26.35477288	2.731736	9.64763	3.270174546	3.09E-05	9.45E-04
F830208F22Rik	12.70266448	1.317718	9.639896	3.269017628	0.001156	0.0176749
C030034L19Rik	39.79290431	4.19472	9.486426	3.245864612	3.68E-06	1.57E-04
LOC102631796	156.3387008	16.50307	9.473313	3.243869038	1.60E-11	2.57E-09
Gm379	188.798684	20.923	9.0235	3.173687095	4.56E-12	7.87E-10
Gm7676	87.1780076	10.03986	8.68319	3.118225232	2.17E-08	1.84E-06
AI427809	336.4807471	38.83354	8.664694	3.11514877	8.62E-13	1.86E-10
Rpl19-ps3	103.7812464	12.16334	8.5323	3.09293464	1.41E-09	1.46E-07
Marcks11-ps3	46.32920028	5.474918	8.462081	3.081012565	3.94E-06	1.67E-04
Csf1r-ps	28.46274173	3.39223	8.39057	3.068768851	0.001298	0.01925
Slfn10-ps	339.0184121	40.76089	8.317247	3.056106149	3.20E-12	5.96E-10
Gm6545	45.54481533	5.518979	8.252398	3.044813407	1.20E-06	6.38E-05
Gm4983	47.80445675	5.794536	8.24992	3.044380136	8.15E-07	4.61E-05
AW112010	6489.677158	806.7199	8.044524	3.00800702	7.03E-14	1.94E-11
Gm7803	1429.129017	179.3171	7.96984	2.994550832	5.24E-04	0.0094605
LOC102632805	23.77242378	3.014093	7.88709	2.979493036	5.76E-05	0.001557
9430021M05Rik	20.97872206	2.687674	7.805531	2.964496813	2.63E-04	0.0054859
1110028F11Rik	117.8551779	15.36297	7.67138	2.939486212	2.67E-09	2.52E-07

LOC102640883	38.42463632	5.036107	7.62983	2.931650856	4.76E-06	1.98E-04
LOC102634528	80.17037447	10.52738	7.615418	2.928923185	5.99E-06	2.40E-04
G930009F23Rik	80.59325639	11.27927	7.145258	2.836986052	9.57E-08	6.95E-06
Gm9172	77.05958911	10.9939	7.009306	2.809271587	1.51E-07	1.03E-05
Gm7192	51.33139782	7.689791	6.675266	2.738825281	1.93E-05	6.39E-04
5930412G12Rik	22.19156833	3.348168	6.627973	2.728567767	6.94E-04	0.0118457
A930038B10Rik	19.02954872	2.873732	6.621894	2.727243909	5.80E-04	0.0102221
Tubb2a-ps2	75.06125509	11.59234	6.475072	2.694896344	3.50E-07	2.18E-05

Supplemental Table 3. The pathway enrichment analysis of differentially expressed mRNAs

PathwayID	PathwayTerm	P-Value	FDR	Enrichment
PATH:04514	Cell adhesion molecules (CAMs)	4E-08	1.07E-05	2.245662
PATH:05150	Staphylococcus aureus infection	3.18E-06	0.000426	3.000506
PATH:00980	Metabolism of xenobiotics by cytochrome P450	0.000148	0.013228	2.055642
PATH:05321	Inflammatory bowel disease (IBD)	0.000236	0.015818	2.357871
PATH:00982	Drug metabolism - cytochrome P450	0.000361	0.017635	1.967274
PATH:00053	Ascorbate and aldarate metabolism	0.000395	0.017635	3.091431
PATH:01100	Metabolic pathways	0.000508	0.019444	1.256052
PATH:00040	Pentose and glucuronate interconversions	0.000632	0.01977	2.727733
PATH:00640	Propanoate metabolism	0.000786	0.01977	2.753306
PATH:00983	Drug metabolism - other enzymes	0.000814	0.01977	2.140221
PATH:05140	Leishmaniasis	0.000814	0.01977	2.140221
PATH:00500	Starch and sucrose metabolism	0.000885	0.01977	2.274827
PATH:04380	Osteoclast differentiation	0.001114	0.022973	1.752622
PATH:05323	Rheumatoid arthritis	0.001333	0.023583	1.932144
PATH:04020	Calcium signaling pathway	0.001397	0.023583	1.595577
PATH:01200	Carbon metabolism	0.001408	0.023583	1.803335
PATH:05204	Chemical carcinogenesis	0.001542	0.024314	1.854859

PATH:05144	Malaria	0.001709	0.02435	2.22583
PATH:04512	ECM-receptor interaction	0.001726	0.02435	1.8757
PATH:04940	Type I diabetes mellitus	0.001905	0.024997	2.086716
PATH:04060	Cytokine-cytokine receptor interaction	0.001959	0.024997	1.475456
PATH:02010	ABC transporters	0.002687	0.03185	2.217766
PATH:04976	Bile secretion	0.002794	0.03185	1.932144
PATH:05414	Dilated cardiomyopathy	0.002852	0.03185	1.823597
PATH:05330	Allograft rejection	0.003083	0.032657	2.09984
PATH:04978	Mineral absorption	0.003288	0.032657	2.170579
PATH:05416	Viral myocarditis	0.00329	0.032657	1.803335
PATH:04970	Salivary secretion	0.003616	0.034612	1.866903
PATH:05332	Graft-versus-host disease	0.004441	0.041038	2.023482
PATH:04145	Phagosome	0.006088	0.054386	1.510385
PATH:05133	Pertussis	0.006374	0.055104	1.81726
PATH:00071	Fatty acid degradation	0.007271	0.059962	2.028752
PATH:00330	Arginine and proline metabolism	0.007383	0.059962	1.918819
PATH:04080	Neuroactive ligand-receptor interaction	0.007834	0.060618	1.381278
PATH:04260	Cardiac muscle contraction	0.007917	0.060618	1.760942
PATH:00280	Valine, leucine and isoleucine degradation	0.008235	0.061303	1.96187
PATH:04360	Axon guidance	0.008784	0.063623	1.557251
PATH:05145	Toxoplasmosis	0.00944	0.066254	1.557515
PATH:05410	Hypertrophic cardiomyopathy (HCM)	0.009641	0.066254	1.711328
PATH:04390	Hippo signaling pathway	0.009993	0.066953	1.505567
PATH:05412	Arrhythmogenic right ventricular cardiomyopathy (ARVC)	0.010385	0.067881	1.754596
PATH:00140	Steroid hormone biosynthesis	0.010952	0.069883	1.691195
PATH:04612	Antigen processing and presentation	0.01262	0.078658	1.702244
PATH:05217	Basal cell carcinoma	0.013364	0.0788	1.854859
PATH:04610	Complement and coagulation cascades	0.013549	0.0788	1.708422

PATH:00410	beta-Alanine metabolism	0.013583	0.0788	2.173662
PATH:04911	Insulin secretion	0.014008	0.0788	1.652317
PATH:04932	Non-alcoholic fatty liver disease (NAFLD)	0.014113	0.0788	1.475456
PATH:04672	Intestinal immune network for IgA production	0.016075	0.087918	1.915343
PATH:01212	Fatty acid metabolism	0.017718	0.094967	1.854859
PATH:00564	Glycerophospholipid metabolism	0.01984	0.101707	1.597239
PATH:00830	Retinol metabolism	0.01984	0.101707	1.597239
PATH:00860	Porphyrin and chlorophyll metabolism	0.020114	0.101707	1.897014
PATH:04151	PI3K-Akt signaling pathway	0.021052	0.104479	1.285152
PATH:04650	Natural killer cell mediated cytotoxicity	0.022274	0.108533	1.494617
PATH:04974	Protein digestion and absorption	0.023907	0.114412	1.580845
PATH:04972	Pancreatic secretion	0.027333	0.128515	1.502779
PATH:04930	Type II diabetes mellitus	0.029635	0.134491	1.762116
PATH:04668	TNF signaling pathway	0.030071	0.134491	1.488992
PATH:00920	Sulfur metabolism	0.030192	0.134491	2.45496
PATH:04725	Cholinergic synapse	0.030612	0.134491	1.477321
PATH:00650	Butanoate metabolism	0.032175	0.139079	2.00943
PATH:05310	Asthma	0.035651	0.149729	2.125359
PATH:01230	Biosynthesis of amino acids	0.03632	0.149729	1.56579
PATH:00380	Tryptophan metabolism	0.036736	0.149729	1.73893
PATH:03320	PPAR signaling pathway	0.037395	0.149729	1.545715
PATH:05152	Tuberculosis	0.037432	0.149729	1.354672
PATH:04350	TGF-beta signaling pathway	0.039278	0.15335	1.51098
PATH:04261	Adrenergic signaling in cardiomyocytes	0.039482	0.15335	1.381931
PATH:00512	Mucin type O-Glycan biosynthesis	0.040885	0.154862	1.987348
PATH:00480	Glutathione metabolism	0.041027	0.154862	1.656124
PATH:05340	Primary immunodeficiency	0.04246	0.158044	1.854859
PATH:05320	Autoimmune thyroid disease	0.04606	0.169097	1.568447
PATH:00340	Histidine metabolism	0.048741	0.176521	1.918819

PATH:00010	Glycolysis / Gluconeogenesis	0.049916	0.177436	1.569496
PATH:04340	Hedgehog signaling pathway	0.050318	0.177436	1.631589
PATH:04960	Aldosterone-regulated sodium reabsorption	0.056412	0.196342	1.686235
PATH:00524	Butirosin and neomycin biosynthesis	0.05892	0.200839	3.709717
PATH:00514	Other types of O-glycan biosynthesis	0.059203	0.200839	1.642323
PATH:04146	Peroxisome	0.060498	0.202669	1.470315
PATH:00590	Arachidonic acid metabolism	0.06332	0.206949	1.419535
PATH:04713	Circadian entrainment	0.06332	0.206949	1.419535
PATH:00190	Oxidative phosphorylation	0.065366	0.211062	1.338894
PATH:04664	Fc epsilon RI signaling pathway	0.066446	0.211993	1.4526
PATH:05200	Pathways in cancer	0.070493	0.222261	1.212142
PATH:05020	Prion diseases	0.072043	0.222582	1.722369
PATH:05010	Alzheimer's disease	0.072256	0.222582	1.288096
PATH:04621	NOD-like receptor signaling pathway	0.073157	0.222797	1.520376
PATH:04726	Serotonergic synapse	0.080192	0.241476	1.311193
PATH:04510	Focal adhesion	0.08254	0.245787	1.254494
PATH:04730	Long-term depression	0.084694	0.249179	1.441275
PATH:04015	Rap1 signaling pathway	0.085723	0.249179	1.24516
PATH:00051	Fructose and mannose metabolism	0.086469	0.249179	1.623001
PATH:05166	HTLV-I infection	0.095185	0.271377	1.204668
PATH:00565	Ether lipid metabolism	0.097817	0.275947	1.583416
PATH:05143	African trypanosomiasis	0.1031	0.287822	1.63664
PATH:04964	Proximal tubule bicarbonate reclamation	0.109381	0.298675	1.854859
PATH:04620	Toll-like receptor signaling pathway	0.110087	0.298675	1.331458
PATH:04062	Chemokine signaling pathway	0.110331	0.298675	1.228844
