

Supplementary File 1. Sequences of oligonucleotides

Gene	Sequences (5'-3')
<i>lncTAF15:1-1-forward</i>	TTTGCTCACT GGACGAGTAG
<i>lncTAF15:1-1-reverse</i>	AGATGGTTTGATTTTCTTCTCC
<i>CCL5-forward</i>	CCAGCAGTCGTCTTTGTCAC
<i>CCL5-reverse</i>	CTCTGGGTTGGCACACACTT
<i>ACTB-forward</i>	AAGGTGACAGCAGTCGGTT
<i>ACTB-reverse</i>	TGTGTGGACTTGGGAGAGG
<i>GAPDH-forward</i>	GGGAAGGTGAAGGTCGGAGT
<i>GAPDH-reverse</i>	GGGGTCATTGATGGCAACA
<i>lncTAF15:1-1-siRNA targeted sequence</i>	GGACTTGAGCTAGTCACTTT TTCAGTTTGCTCACTGGACG GTTTGCTCACTGGACGAGTA
<i>lncTAF15:1-1-Aso targeted sequence</i>	GGACTTGAGCTAGTCACTT GAGCTTCAGTTTGCTCACT GAGTAGGAAAGTCATTCT

ASO: antisense oligonucleotides; siRNA: small interfering RNA.

Supplementary File 2. List of differentially expressed genes in *IncTAF15:1-1* overexpressed

moDC groups compared to vector groups

Gene	logFC	P.Value
AAMP	1.808538	0.008721
ABCC3	2.18152	0.044793
ABHD3	1.217884	0.012637
ABHD8	1.269212	0.002908
ABTB1	1.180358	0.024065
ABTB2	-5.11	0.001029
ACAP1	1.236062	0.00206
ACO1	-1.11787	0.01938
ACP2	7.21738	0.029642
ACTR3	-6.1944	0.000463
ADAM19	-1.35005	0.003559
ADCY3	1.621198	0.042168
ADCY7	5.2924	0.001329
ADGRB1	2.151322	9.06E-05
ADGRE5	2.44762	0.002336
ADIPOR1	2.8174	0.021077
ADPGK	-2.07398	0.006417
AGTRAP	3.18906	0.021291
ALAS1	15.0602	0.031197
ALDH1A2	3.38046	0.001417
ALDH9A1	1.161952	0.043921
AMPD3	2.85594	0.021611
ANKRD33B	-2.19006	0.040597
ANPEP	27.3424	0.016276
ANTXR2	-2.30888	0.039679
AP1S2	-1.19148	0.034405
AP5B1	2.5335	0.043488
APIP	-1.22178	0.03372
APP	6.63484	0.012215
ARHGAP30	3.8911	0.023537
ARHGAP4	1.16634	0.005373
ARHGEF11	-2.6998	0.004642
ARID5B	-1.13907	0.043986
ARL15	1.105084	0.00152
ATG3	1.65472	0.031424
ATP1A1	2.94316	0.020479
ATP2B1	-3.4669	0.043642
ATP6V1A	5.91468	0.043472
ATP6V1B2	13.8348	0.009263

ATP8B2	1.039724	0.032173
ATXN2L	-1.5573	0.047889
BAALC	1.334674	0.002476
BAK1	5.1841	0.034229
BATF2	2.173	0.036828
BCKDK	2.72264	0.033003
BCL2A1	-97.3002	0.007766
BCL2L14	-4.52032	9.05E-05
BCL9L	-1.12405	0.043145
BEX4	2.807032	0.014888
BIRC3	-35.5552	0.020406
BLCAP	1.503282	0.002519
BPGM	1.510696	0.038448
BTG1	-5.99454	0.017645
BTG3	-2.8691	0.038317
BTK	1.64406	0.024067
C18orf32	-2.28474	0.021946
C19orf38	2.614596	0.025815
C1orf54	4.46326	0.008802
C1QA	5.038138	0.004109
C1QB	8.9924	0.016897
C1QC	8.2174	0.020851
C3	2.542498	0.045752
C5AR1	10.51698	0.014875
CA2	7.77348	0.046247
CALM1	4.91452	0.028518
CANX	5.98364	0.037147
CAPN2	4.81844	0.000274
CAPZA1	-6.0894	0.033636
CASP1	3.64652	0.041538
CAVIN1	1.481442	0.030362
CCDC69	1.07708	0.013551
CCL20	-185.987	0.018648
CCR1	9.09826	0.002425
CCT3	1.88836	0.014841
CCT6A	2.12724	0.018992
CD209	2.44732	0.039536
CD276	8.61254	0.025788
CD300LF	1.070786	0.038299
CD36	1.176547	0.009517
CD4	1.436074	0.002378
CD44	-21.2174	0.013844
CD46	-4.47586	0.041072
CD59	1.35475	0.018411

CDC42SE1	-4.5184	0.020134
CDK7	-1.04046	0.035073
CDS2	1.03923	0.012041
CEBPB	49.488	0.042267
CELF2	-3.59204	0.023853
CEP135	-1.81779	0.002209
CEPT1	1.097076	0.001535
CHST11	4.58496	0.000434
CIR1	3.52368	0.044965
CKLF	1.304898	0.033284
CLCF1	-6.48842	0.024389
CLEC2D	-2.82212	0.01361
CLINT1	-4.8471	0.014705
CLN3	1.93894	0.02877
CLN5	1.711318	0.007405
CMC2	1.427168	0.015949
COMMD5	1.280318	0.007536
CORO1C	3.2077	0.000802
COX7B	11.1036	0.038875
CS	-1.13304	0.034809
CSF1R	6.028334	0.020781
CTNNA1	-6.58264	0.025893
CTNNB1	-21.0912	0.023873
CTSL	31.05418	0.016238
CUEDC1	1.867722	0.005038
CUL1	-2.28718	0.036408
CXCL11	-353.702	0.032401
CXCR4	1.549912	0.009699
CXCR5	-1.84551	0.024691
CYB5R4	4.04248	0.037329
CYP2S1	1.1241	0.000474
CYTH4	3.963024	0.004126
DAB2	1.947652	0.003962
DAGLA	1.644318	0.006281
DAPP1	-2.10004	0.036142
DCTD	1.28542	0.009427
DCTN4	-1.2966	0.026024
DCTN6	-1.3698	0.048429
DCUN1D3	1.451586	0.010065
DDB2	1.518942	0.000931
DDIT3	1.592334	0.029095
DENND5A	-11.0685	0.009191
DHX15	-1.66812	0.04278
DLAT	-1.1603	0.034064

DLD	-1.78416	0.013673
DNAJA4	1.14289	0.014473
DNAJB1	5.106696	0.023733
DUSP23	1.023818	0.041793
DUSP3	1.51646	0.001532
DUSP5	-16.089	0.021517
DVL3	-1.33694	0.044589
EDN1	-1.51182	0.003782
EEF1A1	-27.668	0.020015
EHD4	-5.27192	0.028557
EIF2S3	1.14112	0.048342
EIF4E3	1.603066	0.001744
EIF4G1	-1.77402	0.042309
ELOVL5	-5.6161	0.003881
EMP1	16.14432	0.000778
ENG	2.69848	0.013343
ERG28	-1.18751	0.035247
EVI2B	3.82414	0.007635
EWSR1	-1.71318	0.03297
EXOSC9	-3.22066	0.016023
FAM129B	7.7339	0.008023
FAM177A1	-4.01932	0.002766
FAM241A	-1.6568	0.03973
FAM3C	1.73693	0.03122
FAM49A	-1.93484	0.041364
FAM8A1	1.484672	0.000434
FBP1	7.31914	0.035349
FDX1	2.133934	0.016024
FFAR2	-1.85626	0.025727
FGL2	9.49924	0.010591
FGR	7.31788	0.04587
FKBP15	2.43532	0.011716
FKBP4	2.435876	0.001272
FLOT1	-2.60272	0.022783
FNBP1	-3.63062	0.003266
FPR3	32.5472	0.000174
FUCA2	3.02602	0.030027
FURIN	4.47406	0.027548
G3BP1	3.75442	0.007249
GALNT6	1.231274	0.000524
GBGT1	1.187876	0.024251
GBP1	-48.6262	0.006852
GCH1	-23.0444	0.008884
GDE1	1.930186	0.00907

GIMAP2	2.27088	0.047895
GLA	4.259	0.021763
GLIPR1	3.34482	0.011011
GLMP	2.970386	0.005409
GLRX	5.00892	0.01874
GLRX5	1.364582	0.029132
GLUL	5.06004	0.017494
GNPDA1	1.101314	0.016083
GPAT3	1.337568	0.017729
GPR108	1.210796	0.041448
GPR35	4.93158	0.043742
GYG1	1.77186	0.039242
H2AFZ	4.86676	0.001758
H6PD	-2.58228	0.029876
HAVCR2	10.1603	0.011034
HINT3	1.12398	0.043109
HIRA	1.56036	0.037205
HIST1H2BD	2.860862	0.021391
HK3	11.20554	0.027727
HLA-DRA	205.044	0.021749
HMOX1	12.74666	0.040635
HNRNPK	-4.3146	0.005505
HNRNPU	-2.33112	0.001824
HSD17B11	3.11888	0.002635
HSD17B12	1.94578	0.032341
HSP90AA1	20.8962	0.011643
HSP90AB1	23.38056	0.004926
HSPA4	1.77776	0.023256
HSPA8	81.2812	0.008634
HSPB1	12.85732	0.038137
HSPD1	8.4967	0.00683
HSPE1	7.8164	0.024472
HSPH1	8.59722	0.004416
IDO2	-1.10923	0.009693
IFIT1	22.078	0.020601
IFNAR2	2.0869	0.010833
IGFBP4	-54.146	0.017667
IGSF6	40.9824	0.027466
IL10RB	2.50082	0.044927
IL12A	-8.5532	0.000409
IL12B	-110.501	0.001125
IL18	-10.853	0.026386
IL1RN	143.3264	0.002265
IL27	-23.4518	0.016499

IL27RA	2.347416	0.010653
IL6R	2.99294	0.009336
INPP5D	1.604744	0.048628
IRAK1	7.73172	0.005167
IRF2BPL	1.038284	0.049421
IRF4	-8.89484	0.013666
IRF8	-50.2198	0.004036
ITGA5	5.59706	0.041309
ITGAL	2.375654	0.045139
ITGAM	8.43312	0.014595
ITGAX	15.75904	0.025406
ITGB7	3.098366	0.02057
ITPRIPL2	-4.74346	0.03221
JUP	2.696644	0.036739
KCNAB2	1.277036	0.046378
KLF9	1.02303	0.028766
KPNA2	1.69526	0.005298
KYNU	-7.613	0.019069
LAPTM5	40.2234	0.010462
LHFPL2	4.7433	0.00317
LILRA2	1.677138	0.024203
LILRA6	4.63324	0.014392
LILRB1	6.81036	0.025836
LILRB4	9.872	0.031336
LIMK1	5.04954	0.039885
LMO2	1.927978	0.027827
LOC388813	-3.12554	0.007882
LPCAT2	2.94518	0.013717
LPGAT1	-1.45254	0.003808
LPIN2	-2.65564	0.035424
LRRC8D	1.06392	0.012837
LSM10	3.62796	0.001823
LUC7L2	1.46734	0.048233
LYSMD2	1.882248	0.019369
LYZ	136.428	0.000145
M6PR	5.42264	0.001033
MAN1A1	-3.3536	0.004606
MAP3K8	-6.8849	0.013572
MARCKS	-29.3556	0.001088
MAX	2.64606	0.038226
MBOAT7	2.333702	0.029343
MDM2	2.89552	0.019483
ME2	2.4638	0.026046
MED15	-1.09	0.035663

MESD	2.15214	0.019281
METTL9	-3.0584	0.032841
MFSD6	-1.18538	0.0244
MGRN1	-1.48662	0.008332
MGST1	2.20504	0.028094
MINPP1	1.347956	0.018038
MKNK2	1.728226	0.012631
MMP19	1.380168	0.00205
MPP1	2.88138	0.046995
MRC1	12.62098	0.009772
MRC2	1.489472	0.012906
MRPL12	2.165332	0.038045
MRPL15	1.272404	0.035311
MRPL34	2.46817	0.046846
MRPL44	1.58748	0.001168
MS4A4A	1.473522	0.037459
MSANTD3	2.99666	0.006817
MUC1	-3.11282	0.041499
MUL1	1.037126	0.019865
MYADM	-4.4067	0.016344
MYH9	-4.86132	0.007821
MYO18A	1.600722	0.015213
MYO1E	1.97237	0.011288
MYO1G	-8.18226	0.028497
MZT1	-1.24095	0.018606
N4BP2L1	-1.88208	0.02475
NAA50	1.40592	0.027144
NARS	2.21158	0.006727
NCF2	19.83888	0.002981
NCF4	1.503996	0.014288
NDUFA8	1.044444	0.046568
NDUFB5	2.41822	0.026859
NFKB1	-13.536	0.036804
NFKB2	-7.34644	0.042059
NIPA2	1.31164	0.037539
NPC1	2.45962	0.011186
NR1H3	6.561792	0.007596
NR4A3	-24.0262	0.022507
NREP	-1.9866	0.031698
NRIP3	1.969214	0.002776
NRP1	1.959846	0.000122
NRROS	4.83748	0.004091
NSUN2	1.15962	0.022768
NT5C2	1.1302	0.008271

NUDT22	1.207774	0.029691
ODC1	1.6257	0.003693
OGDH	2.8063	0.037173
OPN3	3.76366	0.003226
OSGIN1	1.745838	0.035999
OSTM1	1.51984	0.00901
P2RY11	2.366824	0.019699
PABPC1	-11.5792	0.03263
PAPSS1	1.63017	0.010864
PCNA	2.126878	0.021526
PDCD1LG2	1.502822	0.001514
PDE4B	-5.28482	0.045763
PDXK	1.79378	0.034931
PECAM1	3.3035	0.010284
PFDN1	1.3205	0.010049
PHLDA3	1.164734	0.014215
PIK3CD	-2.60406	0.001466
PIK3R5	-2.31888	0.012919
PILRA	14.72446	0.016496
PIP5K1A	-1.04054	0.005805
PLA1A	-1.0217	0.037335
PLA2G15	1.39625	0.003187
PLA2G4C	1.178814	0.000642
PLEKHB2	2.65844	0.023203
PLEKHM2	2.7378	0.038844
PLXNB2	1.880942	0.014264
PNP	2.21485	0.031448
PNPT1	-1.4911	0.025259
POGLUT1	-1.0957	0.005366
POLR3K	1.49621	0.038978
PPA1	-5.28378	0.032541
PPA2	1.209048	0.031174
PPM1G	1.2538	0.024493
PPM1M	1.860192	0.020423
PPP2R5C	1.215688	0.023355
PRDM4	1.003704	0.023996
PRNP	4.63534	0.000634
PRPF3	-3.11206	0.010782
PSMC5	1.7836	0.006747
PSMD9	1.158852	0.02728
PSTPIP2	-10.1097	0.011221
PTAFR	7.51678	0.001314
PTGER2	3.27382	0.047693
PTPN6	8.99038	0.02036

PTPRE	1.40052	0.036808
QDPR	1.019644	0.039962
QPCT	8.12554	0.019702
RAB24	3.049718	0.010592
RAB29	-7.5325	0.001457
RAB2B	-1.42954	0.004852
RAB5A	-5.63888	0.00036
RAC2	19.16022	0.002509
RAP1GDS1	1.007724	0.009726
RAP2C	-6.58502	0.006741
RARS	1.372	0.011492
RASA3	1.020282	0.004731
RASGEF1B	2.5695	0.0424
RFK	1.71144	0.011368
RGCC	9.237528	0.043218
RHBDF2	2.10758	0.011337
RIN2	2.053652	0.026452
RIT1	2.10806	0.008278
RMC1	1.39538	0.009311
RNASE6	2.329678	0.002391
RNF13	3.09624	0.017527
RNF149	1.647074	0.044379
RPP25	1.121132	0.018896
RPS27L	2.5405	0.033951
RRAGC	-2.30736	0.042329
RSAD2	160.9676	0.022334
RSL24D1	1.9015	0.022863
S100A4	10.50158	0.033792
SAMSN1	-10.6811	0.002819
SDC4	-13.5492	0.033349
SDCBP	6.393	0.016491
SDHB	3.34032	0.014216
SELENOF	2.7655	0.026615
SEP11	-2.28164	0.016184
SERP1	2.29216	0.001765
SERPINB1	-7.90926	0.003763
SERPINB9	-22.9066	0.000838
SERPINH1	1.914026	0.02003
SFPQ	-1.40766	0.038554
SFT2D1	2.63498	0.045874
SFXN3	1.988182	0.023961
SGPP1	1.23308	0.047714
SGPP2	-3.4105	0.002827
SGTB	1.914128	0.015152

SH2B3	-2.2782	0.009972
SH3BP5	1.267172	0.002444
SIGLEC10	2.32406	0.006324
SIGLEC7	2.166622	0.006924
SIGMAR1	1.003	0.011132
SINHCAF	-4.09332	0.027911
SLC11A2	1.4434	0.025684
SLC17A5	3.92214	0.049441
SLC1A2	-1.90836	0.024589
SLC20A1	1.106384	0.025768
SLC26A11	3.460322	0.029835
SLC30A5	1.116318	0.023011
SLC30A9	1.101012	0.026734
SLC31A2	1.52128	0.034695
SLC35F6	1.143478	0.020798
SLC37A2	2.509172	0.02888
SLC38A2	4.47068	0.02439
SLC3A2	21.18482	0.007914
SLC43A3	10.3425	0.012819
SLC7A7	19.61594	0.006808
SLC7A8	5.629518	0.030329
SLC8B1	1.37874	0.013519
SMAP2	-2.46194	0.030358
SMARCD2	1.16224	0.015384
SMIM14	1.068848	0.014474
SMYD2	1.079958	0.046134
SNX5	1.182294	0.028906
SPG21	4.68974	0.002067
SPP1	71.534	0.013084
SPR	2.193186	0.023566
SRGN	-21.3668	0.015967
SRSF3	-2.26074	0.038658
ST13	3.81928	0.015206
STARD4	-4.66008	0.018527
STARD7	4.08004	0.013585
STAT2	-4.2008	0.001981
STIP1	4.84304	0.01553
STK17B	-1.26378	0.016811
STOM	5.6976	0.027121
SUN2	2.38924	0.01238
SYK	1.575104	0.001226
TAGAP	1.578208	0.041929
TBCA	1.01738	0.011231
TCEAL8	1.470786	0.045998

TCP1	2.9115	0.034015
TEX261	1.15136	0.036166
TFRC	-17.2166	0.020128
TGFB1	4.77774	0.038089
TGFBI	7.0896	0.001205
TIPARP	-2.11198	0.021728
TJP2	-1.12146	0.025167
TLR8	4.90438	0.04638
TM4SF19	25.35826	0.039999
TMEM109	2.10854	0.037455
TMEM120A	-1.26723	0.008058
TMEM123	-39.2326	0.021305
TMEM140	11.83922	0.046681
TMEM206	1.177994	0.023238
TMEM251	4.696206	0.001415
TMEM255A	1.24816	0.002243
TNFAIP8L2	1.769344	0.012628
TNFRSF21	1.17344	0.041192
TNFSF14	1.135924	0.021016
TNFSF15	-7.72555	0.026789
TNS3	2.77062	0.029808
TOR3A	3.41238	0.021651
TP53BP2	-1.41936	0.017056
TP53I3	1.501044	0.010002
TPD52L2	3.44282	0.041571
TRA2A	-1.3499	0.03664
TRAK2	1.029542	0.010955
TRAM1	4.11706	0.018499
TRIM47	1.256462	0.03215
TRIP10	-3.49018	0.044497
TSNAX	1.29572	0.023232
TSPAN3	4.78524	0.024018
TTC39B	1.716164	0.021046
TTYH3	8.27762	0.001242
TUBA4A	1.194976	0.009686
TWF2	5.51468	0.044642
TXNIP	8.699	0.009994
UAP1L1	1.033578	0.019036
UBAC1	1.112386	0.019484
UBE2Q1	1.60498	0.014185
UNC119	1.020906	0.032479
UNC50	1.84168	0.015935
UQCRC2	1.21388	0.022398
VMP1	4.56666	0.016996

VPS26A	-1.51304	0.006355
WSB2	-2.21854	0.004691
XAF1	-3.18444	0.03878
YWHAZ	-3.3542	0.016071
ZBTB7B	1.086672	0.028028
ZCRB1	1.11576	0.009849
ZDHHC7	1.13792	0.0337
ZFAND5	2.44862	0.019957
ZMPSTE24	1.96472	0.02747

Supplementary File 3. Regulation of *IncTAF15:1-1* did not affect other functions of moDCs, including viability, surface markers expressions and inflammation-related cytokines mRNA levels.

(A) The mRNA expression levels of a couple of inflammation-related cytokines in vector and overexpression group were measured and plotted.

(B) Viability of moDCs was assessed by CCK-8 assay at six time points after transfection and compared between blank, vector and overexpression groups.

(C-D) Both MFI values and positive cell percentages of surface markers CD11c, CD40, CD83, CD86 and HLA-DR were compared by flow cytometry.

(E) The CCR5 expressions were evaluated using flow cytometry between adeno-V vs. adno-OE, NC vs. SS.

P values for two sample comparisons were determined by t-test (two-tailed); two-way ANOVA was applied here for the viability curve comparisons. Data were from at least three independent experiments and shown as the mean \pm SEM. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$. ns, not significant; moDCs, monocyte-derived dendritic cells.

