



**Supplementary Fig. S1** Correlation of six mRNAs levels between mRNA microarray and real-time PCR analyses. (A) The expression levels were independently assessed by microarray and real-time PCR, and (B) the results in both methods demonstrated very high internal consistency with a correlation coefficient ( $R^2$ ) of 0.904, and  $p$ -value  $< 0.01$  (Pearson's test). PCR, polymerase chain reaction.

<b>Supplementary Table S1</b> The differentially expressed miRNAs				
<b>Upregulated miRNA</b>				
<b>Upregulated miRNA</b>	<b>FC</b>	<b>Air control normalization</b>	<b>BPD normalization</b>	<b>Direction</b>
mmu-miR-205_st	23.86741	−0.542082872	4.034887368	+
mmu-miR-431_st	11.8417	−0.019171314	3.546632638	+
mmu-miR-449c_st	10.9538	−0.285238285	3.168121453	+
mmu-miR-203_st	10.45745	0.189370837	3.57583072	+
mmu-miR-133a_st	9.414993	2.203425336	5.438385428	+
mmu-miR-300_st	8.166388	−0.556378532	2.473319638	+
mmu-miR-350_st	5.921157	−0.060420339	2.50545879	+
mmu-let-7d-star_st	5.338742	−0.171619447	2.244880293	+
mmu-miR-128_st	4.993825	−0.472652926	1.847492318	+
mmu-miR-382_st	4.974728	1.876366299	4.190983932	+
mmu-miR-433_st	4.861074	1.710573596	3.991848685	+
mmu-miR-337-5p_st	4.603862	1.190326009	3.393170602	+
mmu-miR-467a-star_st	3.987896	−0.046157619	1.949470113	+
mmu-miR-421_st	3.922882	1.398622452	3.370536552	+
mmu-miR-148b_st	3.467084	−0.025802312	1.767920547	+
mmu-let-7b-star_st	3.440348	0.11118163	1.893736099	+
mmu-miR-411_st	3.412249	1.671731508	3.442454433	+
mmu-miR-148a_st	3.38919	0.357993437	2.118933759	+
mmu-miR-708_st	3.34077	3.034514213	4.774694737	+
mmu-miR-155_st	3.30236	0.793687596	2.517185004	+
mmu-miR-379_st	3.128022	4.419873501	6.06512422	+
mmu-miR-342-5p_st	2.977844	3.569226661	5.143494646	+
mmu-miR-551b_st	2.855219	−0.727106226	0.786495237	+
mmu-miR-24-1-star_st	2.851703	1.148868286	2.660691937	+
mmu-miR-206_st	2.806383	−0.546578581	0.94213321	+
mmu-miR-678_st	2.786149	−0.541359979	0.936912549	+
mmu-miR-770-3p_st	2.740491	0.554064412	2.008498679	+
mmu-miR-184_st	2.694188	2.304890156	3.734740664	+
mmu-miR-696_st	2.692003	−1.175668251	0.253011992	+
mmu-miR-666-5p_st	2.68987	−0.053400994	1.374135525	+
mmu-miR-331-3p_st	2.657866	1.360173597	2.770441983	+
mmu-miR-466a-3p_st	2.627899	−0.113912803	1.279996947	+
mmu-miR-449a_st	2.589685	4.677788188	6.050564597	+
mmu-miR-689_st	2.581385	2.476068331	3.84421377	+
mmu-miR-154_st	2.566276	−0.008884414	1.350791884	+
mmu-miR-466i_st	2.540065	0.135679873	1.480545217	+
mmu-miR-704_st	2.462904	−0.394896161	0.905463952	+
mmu-miR-125b-star_st	2.439993	1.195088863	2.481965863	+
mmu-miR-669a_st	2.409134	−0.331123559	0.937390871	+
mmu-miR-183_st	2.388645	1.228171904	2.484364644	+
mmu-miR-1_st	2.376031	0.359691746	1.608245658	+
mmu-miR-503-star_st	2.375877	0.948366845	2.196826985	+
mmu-miR-499_st	2.369011	−1.088926573	0.155358147	+
mmu-let-7f_st	2.347813	7.166296039	8.397613839	+

(Continued)

**Supplementary Table S1** (Continued)

mmu-miR-191-star_st	2.321385	−0.104284535	1.110701082	+
mmu-miR-711_st	2.320652	1.846724852	3.061254802	+
mmu-miR-467h_st	2.186073	−0.977642671	0.150698971	+
mmu-miR-675-3p_st	2.166913	−0.273508891	0.84213261	+
mmu-miR-214-star_st	2.158228	1.361159488	2.471006749	+
mmu-miR-691_st	2.156622	1.028094719	2.13686812	+
mmu-miR-133b_st	2.136828	3.154100831	4.249571473	+
mmu-miR-466c-3p_st	2.130741	0.147528749	1.238883952	+
mmu-miR-467b-star_st	2.127209	0.917324456	2.006285942	+
mmu-miR-15a-star_st	2.119156	0.697132016	1.780621776	+
mmu-miR-299-star_st	2.095139	0.264018435	1.331064412	+
mmu-miR-434-3p_st	2.074434	0.702968846	1.755686379	+
mmu-miR-181a-1-star_st	2.041354	2.61971551	3.649241615	+
mmu-miR-291b-3p_st	2.034026	−0.779177953	0.24515983	+
mmu-miR-409-5p_st	2.029876	0.836289398	1.857681133	+
mmu-miR-378-star_st	2.013526	2.92863223	3.938356349	+
mmu-miR-22-star_st	1.990533	−0.171619447	0.821535104	+
mmu-miR-719_st	1.966859	−0.377790291	0.598103218	+
mmu-miR-127_st	1.964816	6.762797414	7.737191789	+
mmu-miR-21_st	1.959581	4.469628397	5.440173384	+
mmu-miR-670_st	1.949167	−0.434182521	0.528675333	+
mmu-miR-30e-star_st	1.934297	0.14214251	1.09395174	+
mmu-miR-469_st	1.934063	−0.639203037	0.31243171	+
mmu-miR-301a_st	1.927641	0.99672951	1.943566141	+
mmu-miR-139-3p_st	1.917791	0.862872998	1.802318214	+
mmu-miR-141-star_st	1.912311	1.866379153	2.801696684	+
mmu-miR-140_st	1.893952	2.599802653	3.521202599	+
mmu-miR-718_st	1.871974	−0.287622595	0.616937661	+
mmu-miR-698_st	1.861737	−0.4364799	0.460169249	+
mmu-miR-135a-star_st	1.85125	0.53577514	1.424274966	+
mmu-miR-325_st	1.84585	−0.599178161	0.285106974	+
mmu-miR-676-star_st	1.829672	0.313365691	1.184950686	+
mmu-miR-329_st	1.807521	0.244455531	1.098467777	+
mmu-miR-760_st	1.790927	−0.019171314	0.821535104	+
mmu-miR-34c-star_st	1.785949	6.16556824	7.002259083	+
mmu-miR-434-5p_st	1.758786	−0.610129623	0.204450062	+
mmu-miR-882_st	1.755506	−0.335746703	0.476140051	+
mmu-miR-124_st	1.728317	−0.884379679	−0.095012154	+
mmu-miR-362-3p_st	1.713306	−0.324544872	0.45223808	+
mmu-miR-466b-3p_st	1.706697	0.133181255	0.904387785	+
mmu-miR-876-3p_st	1.701658	−1.082451922	−0.315511119	+
mmu-miR-380-5p_st	1.682676	0.025803189	0.7765606	+
mmu-miR-467b_st	1.677025	−0.735041204	0.010863188	+
mmu-miR-183-star_st	1.676965	−0.128686744	0.61716575	+
mmu-miR-467c_st	1.672703	−1.051819646	−0.309638341	+
mmu-miR-1193_st	1.670991	−0.061943352	0.67876092	+

Supplementary Table S1 (Continued)

mmu-miR-431-star_st	1.670991	0.094421098	0.83512537	+
mmu-miR-30c-1-star_st	1.666095	0.454093845	1.190564403	+
mmu-miR-297a-star_st	1.659654	−0.586533516	0.144348901	+
mmu-miR-208a_st	1.632494	−0.586798411	0.120279092	+
mmu-miR-872_st	1.631528	−0.510147289	0.196076102	+
mmu-miR-467f_st	1.621184	0.795030534	1.49207861	+
mmu-miR-10b_st	1.620401	0.721954694	1.418305838	+
mmu-miR-298_st	1.613164	3.469261201	4.159154246	+
mmu-miR-322_st	1.611511	3.490639877	4.179053706	+
mmu-miR-200b-star_st	1.602067	3.621524244	4.301459163	+
mmu-miR-122_st	1.600044	0.726229669	1.404341142	+
mmu-miR-101a-star_st	1.589627	−0.201765687	0.466922259	+
mmu-miR-9-star_st	1.569791	−0.813635916	−0.163062986	+
mmu-miR-883b-3p_st	1.565988	2.544200477	3.191273351	+
mmu-miR-679_st	1.55547	−0.445861644	0.191488698	+
mmu-miR-324-3p_st	1.55518	3.720767732	4.357848929	+
mmu-miR-137_st	1.545242	−0.715736333	−0.08790319	+
mmu-miR-190_st	1.542597	−0.971198301	−0.345837531	+
mmu-miR-199b-star_st	1.541927	2.421465617	3.046199927	+
mmu-miR-721_st	1.533819	−0.140303554	0.476824943	+
mmu-miR-92a-star_st	1.533495	−0.028428595	0.588395245	+
mmu-miR-192_st	1.525819	2.138014482	2.747598299	+
mmu-miR-296-3p_st	1.522465	1.553402419	2.159811157	+
mmu-miR-697_st	1.519634	−0.605472735	−0.001749162	+
mmu-miR-598_st	1.506431	−0.493974147	0.097160277	+
mmu-miR-29c_st	1.505833	0.534810791	1.125372798	+
mmu-miR-132_st	1.505108	4.164721767	4.754588961	+
mmu-miR-134_st	1.504042	3.115899296	3.704744527	+
<b>Downregulated miRNA</b>				
<b>Downregulated miRNA</b>	<b>1/FC</b>	<b>air control normalization</b>	<b>BPD normalization</b>	<b>Direction</b>
mmu-let-7c-1-star_st	4.236293189	1.497967396	−0.584835044	−
mmu-miR-466f_st	3.463282422	4.107740212	2.315600171	−
mmu-miR-299_st	3.447046657	1.517584702	−0.267776124	−
mmu-miR-220_st	3.386209916	1.104992997	−0.654678414	−
mmu-miR-686_st	3.325743599	1.119630569	−0.614046378	−
mmu-miR-759_st	2.966872908	1.90729863	0.338355502	−
mmu-miR-302b_st	2.774357756	0.398258376	−1.073895461	−
mmu-miR-384-5p_st	2.657178076	0.812978642	−0.596916273	−
mmu-miR-452_st	2.594065471	0.911549518	−0.463665374	−
mmu-let-7i-star_st	2.567532807	1.999909188	0.639526477	−
mmu-miR-1187_st	2.543187294	4.308581283	2.961943569	−
mmu-miR-653_st	2.513129161	0.244455531	−1.085029288	−
mmu-miR-466g_st	2.505623899	1.208200625	−0.116969253	−
mmu-miR-489_st	2.435917542	3.897067531	2.612602234	−
mmu-miR-875-3p_st	2.392448205	0.59958883	−0.658898862	−
mmu-miR-290-5p_st	2.392448205	1.11726466	−0.141223032	−

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**Supplementary Table S1** (Continued)

mmu-let-7f-star_st	2.358511189	1.038895004	−0.198981441	—
mmu-miR-293_st	2.314584782	0.591379635	−0.619373774	—
mmu-miR-376b_st	2.225978374	5.884361367	4.72992179	—
mmu-miR-29b_st	2.216925184	1.843544849	0.694984765	—
mmu-miR-346_st	2.176654267	4.484229436	3.362117164	—
mmu-miR-875-5p_st	2.176384361	0.396903664	−0.725029702	—
mmu-miR-877-star_st	2.136315884	2.586063764	1.490938778	—
mmu-miR-197_st	2.111987248	1.20232219	0.123721066	—
mmu-let-7c-2-star_st	2.107021771	0.420721761	−0.65448346	—
mmu-miR-196b_st	2.106318587	0.258297986	−0.816425679	—
mmu-miR-150-star_st	2.100119561	3.49949373	2.429022266	—
mmu-miR-142-5p_st	2.06706419	0.823954085	−0.223629106	—
mmu-miR-720_st	2.04749841	6.728823241	5.69496091	—
mmu-miR-335-5p_st	2.010334743	3.219417543	2.211981797	—
mmu-miR-744_st	2.005960928	7.40372832	6.399434815	—
mmu-miR-669e_st	1.976729264	0.14214251	−0.840972781	—
mmu-miR-1196_st	1.892600635	7.748575958	6.828205943	—
mmu-miR-700_st	1.864590219	5.99475689	5.095898286	—
mmu-miR-376c-star_st	1.834114007	0.51964079	−0.355442528	—
mmu-miR-763_st	1.830687041	1.281348608	0.408963427	—
mmu-miR-702_st	1.828353853	2.847543164	1.976997852	—
mmu-miR-29c-star_st	1.826373173	1.484359209	0.615377636	—
mmu-miR-363_st	1.806399961	0.396903664	−0.456213696	—
mmu-miR-377_st	1.793046265	0.334522052	−0.507890661	—
mmu-miR-302b-star_st	1.791753043	0.541561795	−0.29981001	—
mmu-let-7g-star_st	1.779096702	0.943528065	0.112383136	—
mmu-miR-291b-5p_st	1.776185987	0.465393224	−0.363389432	—
mmu-miR-485-star_st	1.776185987	0.477560576	−0.35122208	—
mmu-miR-96_st	1.776185987	0.607535734	−0.221246922	—
mmu-miR-297c-star_st	1.776185987	1.171654393	0.342871737	—
mmu-miR-374_st	1.760618724	0.966781487	0.150698971	—
mmu-miR-574-5p_st	1.722778687	5.459043785	4.674306404	—
mmu-miR-542-5p_st	1.720559428	6.282743757	5.499866033	—
mmu-miR-27a-star_st	1.717129611	3.502916567	2.722917627	—
mmu-miR-330-star_st	1.715327102	5.68377967	4.905295955	—
mmu-miR-323-3p_st	1.694619891	−0.272390615	−1.033352323	—
mmu-miR-484_st	1.693490875	3.89181405	3.131813837	—
mmu-miR-762_st	1.683237198	7.91336867	7.162130177	—
mmu-miR-543_st	1.66478437	0.303456334	−0.431878992	—
mmu-miR-380-3p_st	1.65458526	0.14214251	−0.584327125	—
mmu-miR-33_st	1.654457971	0.129442369	−0.596916273	—
mmu-miR-18a-star_st	1.650193479	0.186730099	−0.535905087	—
mmu-miR-17-star_st	1.643508513	7.079375843	6.362596914	—
mmu-miR-187_st	1.641296645	5.862527217	5.147691204	—
mmu-miR-29b-star_st	1.631114872	0.039012623	−0.666845766	—
mmu-miR-296-5p_st	1.617393175	2.627729304	1.934058875	—

**Supplementary Table S1** (Continued)

mmu-miR-707_st	1.603832729	−0.171619447	−0.853143131	—
mmu-miR-467e-star_st	1.595973705	3.495446599	2.821009717	—
mmu-miR-491_st	1.586028668	4.053467906	3.388049057	—
mmu-miR-717_st	1.570017445	0.46519607	−0.18558452	—
mmu-miR-215_st	1.56323067	2.135004698	1.49047402	—
mmu-miR-450b-5p_st	1.551280965	−0.067537856	−0.700997864	—
mmu-miR-138_st	1.535920715	4.491724361	3.872620615	—
mmu-miR-125b-3p_st	1.517904317	3.926720176	3.324639325	—
mmu-miR-376a_st	1.515412882	0.153125489	−0.446585429	—
mmu-miR-703_st	1.513990556	0.14214251	−0.456213696	—
mmu-miR-150_st	1.513246707	6.984242406	6.386595194	—
mmu-miR-667_st	1.503339549	1.876366299	1.288195401	—

Abbreviations: BPD, bronchopulmonary dysplasia; FC, fold change; miRNA, microRNA.

**Supplementary Table S2** The differentially expressed genes

Upregulated genes					
Gene ID	Gene symbol	FC	Air control normalization	BPD normalization	Direction
230899	Nppa	199.469578	−2.492102082	5.147922841	+
18843	Plunc	110.497928	0.242829383	7.030704888	+
16429	Itln1	95.0600777	−1.629985387	4.940782288	+
228801	U46068	58.1507419	−0.714346486	5.147379206	+
19695	Reg3g	55.7865767	−0.113495095	5.688351024	+
23844	Clca3	44.698445	−2.769844277	2.712308463	+
67133	Gp2	21.7363815	−2.794975454	1.647064432	+
11459	Acta1	19.5810365	−0.547907368	3.743477863	+
101918	BB144871	14.4774363	−2.943157966	0.912576273	+
11450	Adipoq	10.8608106	0.916853098	4.357912982	+
93726	Ear11	10.0554923	−1.529906101	1.800005713	+
11537	Cfd	9.99695277	1.572088776	4.893577182	+
57262	Retnla	9.64684725	4.029126691	7.299184214	+
18158	Nppb	9.18774218	−0.872172623	2.327537751	+
433766	Trim63	8.96770028	−1.213521108	1.951216953	+
69564	Itgb1bp3	8.47130327	−0.228788582	2.853795357	+
21785	Tff2	8.46264961	0.169623293	3.250732727	+
104183	Chi3l4	7.83268736	−0.430947348	2.538560028	+
20259	Scin	7.53850136	−1.754553769	1.159723977	+
16516	Kcnj15	6.95813204	−1.627762356	1.170937701	+
68662	Scgb3a1	6.94715265	4.638369964	7.434791762	+
74180	Muc5b	6.8462815	0.396838599	3.172159212	+
104522	AU040972	6.27337061	1.867416313	4.516657108	+
17897	Myl3	6.22765246	0.233355212	2.872043649	+
56012	Pgam2	6.11114077	0.908172128	3.519613841	+
66106	Smpx	6.0250207	0.657974977	3.248941174	+
17022	Lum	5.84684436	2.789341565	5.336999752	+
68753	Mybphl	5.80028123	−0.110840338	2.425282514	+
76722	Ckmt2	5.70172244	1.104377534	3.615775345	+
107765	Ankrd1	5.65389449	2.264178466	4.763423426	+
22227	Ucp1	5.23614816	−1.433409543	0.955096375	+
70405	Calml3	5.02337755	−1.624712231	0.703945479	+
12350	Car3	4.95911402	−0.089632751	2.220449645	+
21954	Tnni3	4.91172938	2.752681018	5.048912095	+
100040086	Gm2590	4.89627687	−3.683056548	−1.391371408	+
12683	Cidea	4.84462537	−0.238069826	2.038315282	+
21924	Tnnc1	4.84292679	2.934584232	5.210463426	+
11752	Anxa8	4.75836675	0.653937649	2.90440412	+
11472	Actn2	4.73198043	0.373524918	2.615969024	+
381339	Tmem182	4.70684483	−1.122449364	1.112310927	+
18821	Pln	4.67163514	0.437919632	2.661847234	+
93677	Lmod2	4.47210453	−0.503501969	1.657451942	+
12865	Cox7a1	4.43850593	0.505832172	2.655906296	+
68460	Dhrs7c	4.41178199	−0.659191022	1.48217048	+

Supplementary Table S2 (Continued)

57738	Slc15a2	4.41123184	1.162429221	3.303610805	+
17901	Myl1	4.41019651	0.628213057	2.769055998	+
21957	Tnnt3	4.35752448	−1.057921174	1.065587594	+
13009	Csrp3	4.32838425	2.071023922	4.1848525	+
14560	Gdf10	4.23923298	1.048638192	3.132441448	+
17002	Ltf	4.16876963	2.110730641	4.170352293	+
59006	Myoz2	4.1245818	1.322972308	3.367220155	+
96875	Prg4	4.12403741	−1.327339817	0.716717603	+
12331	Cap1	4.1210907	2.613628053	4.656654269	+
654824	Ankrd37	4.09615312	1.104885173	3.13915482	+
29818	Hspb7	4.06815514	0.245768813	2.27014351	+
13874	Ereg	4.06191732	−2.946617083	−0.924456207	+
53315	Sult1d1	4.05655499	0.538911603	2.559166647	+
75799	4930444P10Rik	4.04432417	−2.549228975	−0.533330334	+
13808	Eno3	4.03972329	1.618903511	3.633159986	+
100042588	Gm3916	4.03850995	−1.881117121	0.132705972	+
232983	Cxcl17	3.98094745	2.850623965	4.843735792	+
19737	Rgs5	3.91759923	−0.226169523	1.743800293	+
106393	Srl	3.91209803	0.926066717	2.894009238	+
235135	Tmem45b	3.90594	−2.195665629	−0.229995842	+
170780	Cd209e	3.85707364	−1.566316764	0.381189926	+
18300	Oit1	3.795942	−0.920356592	1.004101358	+
17898	Myl7	3.78711531	4.336187501	6.257286852	+
56264	Cpxm1	3.77801668	1.133795485	3.051424555	+
193217	BC018473	3.75142473	−2.643497127	−0.736058515	+
14167	Fgf12	3.74420586	−1.625789842	0.278869915	+
24131	Ldb3	3.74348585	0.0583792	1.962761503	+
21946	Pglyrp1	3.69711982	1.387471144	3.273872944	+
69642	2310046A06Rik	3.67428085	−1.293749569	0.583712337	+
22437	Xirp1	3.66597797	−1.38535648	0.488841637	+
17888	Myh6	3.65712115	−0.869613539	1.001094882	+
13850	Ephx2	3.63904504	0.201645418	2.065205324	+
20292	Ccl11	3.63901059	−0.495539916	1.368006333	+
23985	Slc26a4	3.61592549	0.015227235	1.869592183	+
232400	BC048546	3.61309226	−1.076216946	0.777017147	+
228003	Kbtbd10	3.60655622	−2.876911204	−1.02628929	+
20307	Ccl8	3.60644386	0.878324342	2.728901307	+
215384	Fcgbp	3.6019581	0.91728633	2.766067729	+
12869	Cox8b	3.57328784	1.386266751	3.223518885	+
67473	Slc47a1	3.56874532	−1.236215401	0.599201548	+
332934	Zmynd12	3.56123214	−0.925575276	0.906801204	+
18703	Pigr	3.53430759	1.666883846	3.488311448	+
69634	Clybl	3.50594204	−0.861355212	0.948446934	+
18546	Pcp4	3.50593629	−0.586538221	1.223261561	+
239318	Plcx3	3.47346875	−1.701120582	0.095256537	+
76469	Cmya5	3.47265044	−0.816907923	0.979129273	+

(Continued)



**Supplementary Table S2** (Continued)

381823	Apold1	3.45052021	−0.157185358	1.629628523	+
234593	Ndrp4	3.42545512	0.331810756	2.108106441	+
17189	Mb	3.41070872	0.874236364	2.644307914	+
11770	Fabp4	3.39558526	−0.068171357	1.695488902	+
380698	Obscn	3.37842352	−0.964105393	0.792244804	+
18534	Pck1	3.37313466	−3.021136427	−1.267046514	+
57264	Retn	3.36030436	1.033725638	2.782317548	+
93735	Wnt16	3.31455904	−2.135256481	−0.40643953	+
219151	Scara3	3.18883319	−0.119233987	1.553794646	+
76571	Styl1	3.18756658	−1.628713151	0.043742326	+
215772	9130014G24Rik	3.18727224	−2.320340388	−0.648018135	+
19126	Prom1	3.17723069	2.707600752	4.375370595	+
12819	Col15a1	3.17119078	0.209137681	1.874162352	+
67405	Nts	3.15452743	−2.044104559	−0.386680664	+
12373	Casq2	3.15206767	0.658055286	2.314353793	+
116939	Pnpla3	3.13903256	−0.403775076	1.246544919	+
66898	Baiap2l1	3.13461158	1.676541177	3.324827863	+
69442	1700023H06Rik	3.10758085	−1.70470355	−0.068911624	+
18160	Npr1	3.10138554	−0.380296397	1.252616485	+
21826	Thbs2	3.10118935	−1.553611045	0.079210571	+
75040	Efcab10	3.09465448	0.43403422	2.06381256	+
99132	AI956758	3.09217433	1.103497226	2.732118883	+
20210	Saa3	3.0884321	0.593228533	2.220103146	+
223513	Abra	3.06000429	−1.285698157	0.327835518	+
69398	Cdhr4	3.03946468	−0.221440736	1.382376515	+
68311	Lypd2	3.03465873	2.22922882	3.830763103	+
100039528	1110002E22Rik	3.00095984	−1.377572586	0.207851427	+
225288	Fhod3	2.99893626	−1.484542113	0.099908747	+
71860	Wdr16	2.98968015	−0.124926966	1.455064179	+
66889	Rnf128	2.97070843	0.611416981	2.182223997	+
67800	Dgat2	2.96919469	0.963243034	2.533314727	+
15109	Hal	2.94119251	−0.660912551	0.895488665	+
69329	1700003M02Rik	2.94041645	−0.208478123	1.347542374	+
84506	Hamp	2.91823602	−0.139389772	1.405706795	+
69797	1600029I14Rik	2.91208778	0.198652489	1.74070633	+
320502	Lmod3	2.90422985	−2.951338373	−1.413182738	+
69428	1700016C15Rik	2.89918924	−2.723633878	−1.187984373	+
17381	Mmp12	2.89416379	0.468196652	2.001343223	+
11468	Actg2	2.893396	2.895466305	4.428230093	+
23795	Agr2	2.86519784	−2.338657406	−0.820022647	+
75495	Morn5	2.86429046	−0.213812063	1.30436574	+
433470	AA467197	2.8624216	−1.411117714	0.106118463	+
66402	Sln	2.86167492	−0.122421635	1.394438157	+
26968	Islr	2.85752256	1.683219695	3.197984582	+
241230	St8sia6	2.85596552	−0.454969476	1.059009086	+
81799	C1qtnf3	2.8503222	−3.199933525	−1.688808513	+

Supplementary Table S2 (Continued)

219170	AU021034	2.84157665	1.182043394	2.688735024	+
70358	Steap1	2.81971596	−1.536193875	−0.040644032	+
57435	Plin4	2.80885824	0.022051297	1.512035111	+
17528	Mpz	2.79721824	−0.929510869	0.554481947	+
74354	Lrguk	2.7873286	−1.180483858	0.298399234	+
21825	Thbs1	2.76722274	2.870961051	4.339399824	+
27273	Pdk4	2.76296472	0.296850555	1.763067696	+
12643	Chad	2.75241455	1.875267152	3.335964928	+
30956	Aass	2.72717783	−0.208274463	1.239134314	+
384061	Fndc5	2.72205059	−0.488781868	0.955912013	+
73301	Ttc29	2.70676231	0.073081105	1.509649311	+
270150	Ccdc153	2.70503447	2.037415196	3.473062177	+
72614	Pih1d2	2.70447176	−1.198106751	0.23724008	+
22138	Ttn	2.69965169	−1.446873692	−0.014100411	+
69585	Hfe2	2.69668954	−1.957511745	−0.526322306	+
75784	1700007G11Rik	2.69492965	−1.276677526	0.153570088	+
381107	Tmem232	2.68669084	−1.494916422	−0.069086102	+
58522	Trim54	2.67843224	−0.942874456	0.478514341	+
12903	Crabp1	2.67612554	−1.449465432	−0.029319634	+
54562	Lrrc6	2.65091553	−1.946851075	−0.540360372	+
17349	MLf1	2.64990488	1.707640835	3.113581408	+
13370	Dio1	2.64970569	−2.468225649	−1.062393525	+
110935	Atp6v1b1	2.64388682	−1.031063139	0.37159728	+
17930	Myom2	2.62677772	−1.161714682	0.231579443	+
73333	Slc25a31	2.62504392	−4.095596012	−2.703254454	+
74230	1700016K19Rik	2.6184794	1.269462624	2.658191881	+
20391	Sgca	2.5893219	−0.208274463	1.164299869	+
378431	Txlnb	2.58924969	−1.951613979	−0.579079886	+
17181	Matn2	2.58563051	−1.181995226	0.188520901	+
75573	2310007L24Rik	2.58443287	−0.550307102	0.819540629	+
17833	Muc5ac	2.56714681	−0.509753033	0.85041277	+
53419	Corin	2.56522812	−1.291838011	0.067249114	+
69707	lqcg	2.55713029	−0.525991734	0.828533937	+
21393	Tcap	2.55081981	1.379808944	2.730769935	+
13614	Edn1	2.54946367	2.834100192	4.184293971	+
67483	1700028P14Rik	2.54284379	−1.243494069	0.102948772	+
21835	Thrsp	2.53799979	0.817130709	2.160822656	+
104362	Meig1	2.53529361	0.365021666	1.707174501	+
73075	Ppil6	2.53054609	0.569030221	1.908478973	+
24053	Sgcg	2.52580929	−0.618072638	0.718673076	+
74685	4930451C15Rik	2.52516349	−1.580765493	−0.244388693	+
242253	Wdr63	2.52510096	−0.698187573	0.6381535	+
228778	6820408C15Rik	2.51661374	0.118315204	1.449799009	+
12797	Cnn1	2.50963221	3.607654343	4.935130297	+
216225	Slc5a8	2.50276465	−3.076894831	−1.753372199	+
210762	Gm70	2.50092742	1.125311281	2.447774471	+

(Continued)

Supplementary Table S2 (Continued)

226866	Gm106	2.49852543	0.326245845	1.647322744	+
78801	Ak7	2.494752	1.960999436	3.279895844	+
68764	Cdhr3	2.4936675	−0.138688592	1.179580523	+
83965	Enpp5	2.48601286	1.357579333	2.67141309	+
13628	Eef1a2	2.48533834	1.133551116	2.446993383	+
67211	Armc10	2.47349868	−0.102913833	1.203639299	+
22092	Rsph1	2.47325321	1.895577697	3.201987648	+
269437	Plch1	2.47242548	−1.678411236	−0.372484199	+
403205	Agr3	2.4646753	0.444042185	1.745439782	+
14089	Fap	2.45914107	−1.003032862	0.295121635	+
12427	Ccna1	2.45705877	−0.651199255	0.645733108	+
71877	Efhc1	2.45457933	0.986987564	2.282463356	+
11464	Actc1	2.44994789	5.303589794	6.596340855	+
19124	Procr	2.44937657	0.674490118	1.966904709	+
18619	Penk	2.4410613	0.456911787	1.744420309	+
13506	Dsc2	2.43136314	−2.612976666	−1.331211281	+
71840	Tekt4	2.43111908	0.455491734	1.737112292	+
76963	2310076G05Rik	2.42807213	−1.67018085	−0.390369573	+
384198	Fam47e	2.42754637	−0.190352276	1.089146579	+
75563	Dnali1	2.42421561	0.901362701	2.178880721	+
68797	Pdgfrl	2.41974446	1.627831417	2.902686114	+
21689	Tekt1	2.4192433	0.126517696	1.401073564	+
11910	Atf3	2.41030309	0.959863898	2.229078474	+
76757	Trdn	2.40207826	−1.875709435	−0.611426279	+
268729	Gm626	2.39481614	−1.237147311	0.022767589	+
75472	1700009P17Rik	2.39135189	2.350719805	3.608546243	+
12069	Bex2	2.37481514	3.047878102	4.295693317	+
20686	Spa17	2.36798936	0.919593976	2.163256576	+
212892	Rsph4a	2.36547919	0.137510244	1.379642715	+
11722	Amy1	2.36014881	−1.155915901	0.082961925	+
15370	Nr4a1	2.35915073	2.250461522	3.488729118	+
16578	Kif9	2.35808049	−0.429360329	0.808252636	+
12842	Col1a1	2.34039201	4.079831661	5.306581859	+
100342	Fam46b	2.3401584	−0.42188723	0.804718959	+
16007	Cyr61	2.33901134	1.344321817	2.570220675	+
70370	Fbln7	2.33428844	−1.259652254	−0.036669412	+
246747	Adig	2.33118708	−0.962409001	0.258655785	+
21956	Tnnt2	2.32738574	1.17275684	2.39146718	+
19362	Rad51ap1	2.32504739	−0.815407945	0.401852178	+
11754	Aoc3	2.32430991	0.564170369	1.780972813	+
13038	Ctsk	2.3242885	2.223563887	3.440353038	+
75533	Nme5	2.3178136	1.793218965	3.005983511	+
227736	1700019L03Rik	2.31654875	−1.409390764	−0.197413721	+
234964	Ccdc67	2.31220043	0.430759836	1.640026295	+
68760	Synpo2l	2.30013179	−1.753334424	−0.551617899	+
18405	Orm1	2.29605994	−0.770567941	0.428592363	+

Supplementary Table S2 (Continued)

20618	Sncg	2.29271775	0.007836306	1.204895066	+
26549	Itgb1bp2	2.28909998	0.139610096	1.334390572	+
21955	Tnnt1	2.28811787	0.3119042	1.506065575	+
384214	Ephx4	2.28607811	−2.565473776	−1.372599077	+
103767	A530047J11Rik	2.28381942	−0.525945685	0.665502895	+
244608	Ccdc113	2.28227683	0.100738693	1.291212489	+
76668	Mdh1b	2.28081773	−0.228584922	0.960966237	+
17436	Me1	2.27694887	2.647930428	3.835032321	+
226691	Al607873	2.26828016	−2.838982304	−1.657383462	+
20528	Slc2a4	2.26715142	0.362995647	1.543876397	+
72535	Aldh1b1	2.26690242	−1.704308745	−0.523586455	+
20317	Serpinf1	2.26682848	2.48220426	3.662879494	+
110958	D6Mm5e	2.2638299	−0.369750466	0.809015092	+
66107	1100001G20Rik	2.25848146	0.498977264	1.674330335	+
69479	1700029J07Rik	2.25771679	−0.683426927	0.491437598	+
17450	Morc1	2.25407298	−3.107387669	−1.934853444	+
12140	Fabp7	2.25317047	−1.589445338	−0.417488867	+
16977	Lrrc23	2.24016891	1.862282948	3.025890462	+
71998	Slc25a35	2.23836974	0.070378122	1.232826485	+
66353	2310007A19Rik	2.23639845	0.145459909	1.306637159	+
67492	Anubl1	2.23031285	−1.463831171	−0.306585078	+
107272	Psat1	2.21603876	0.310833923	1.45881704	+
114602	Zmynd10	2.21387524	0.386110322	1.532684246	+
19716	Bex1	2.21130931	1.721917477	2.866818315	+
53376	Usp2	2.2111437	0.617687597	1.762480385	+
53608	Map3k6	2.21101425	0.828333406	1.973041727	+
100041194	Ahnak2	2.21001584	0.643536641	1.787593355	+
68016	Murc	2.20860281	−1.812862065	−0.669728073	+
74424	Tmc5	2.20733754	−1.385026328	−0.24271907	+
11687	Alox15	2.19910621	−1.417623171	−0.280705887	+
17868	Mybpc3	2.19850839	0.482656463	1.619181499	+
624957	H2afb3-ps	2.18754833	−0.80824723	0.321067665	+
242646	Tctex1d4	2.18711242	−0.05698544	1.072041937	+
110083	Dnahc12	2.18132882	0.233707376	1.358914638	+
72873	2900006K08Rik	2.17360529	−0.432402099	0.687687885	+
228564	Frmd5	2.173338	−0.511380491	0.608532067	+
93732	Acox2	2.17298249	−0.539861089	0.579815458	+
20648	Snta1	2.17046947	1.353786392	2.47179352	+
75429	Fam183b	2.16701701	2.105914038	3.221624518	+
170779	Cd209d	2.15862424	−0.74818753	0.361924597	+
99946	6720422M22Rik	2.15804662	−2.968845063	−1.859119031	+
57442	Kcne3	2.15785923	−1.236933223	−0.127332471	+
20293	Ccl12	2.15244102	0.146666924	1.252640632	+
15118	Has3	2.14887913	−1.888120198	−0.784535862	+
20322	Sord	2.14871652	0.795130256	1.898605417	+
208613	Tmem212	2.14840188	3.011421684	4.114685576	+

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Supplementary Table S2 (Continued)

74407	Ttc25	2.14821897	−0.855880551	0.247260505	+
71827	Lrrc34	2.14520231	0.698892004	1.800005713	+
209027	Pycr1	2.13805807	−0.520847914	0.575453123	+
75600	Calml4	2.13708583	1.870572212	2.96621706	+
242939	Cpz	2.12544743	−0.718396108	0.369370468	+
17196	Mbp	2.12478352	−0.328957236	0.758358628	+
68870	1190002A17Rik	2.11744655	−0.445035517	0.637290038	+
20191	Ryr2	2.11712832	−1.711106519	−0.628997803	+
69987	1700026L06Rik	2.11165051	1.13193314	2.210304223	+
69574	Cmb1	2.10610271	1.838178453	2.91275425	+
20674	Sox2	2.10412013	1.324574313	2.397791385	+
70884	Ccdc81	2.08777203	−1.628428088	−0.566463902	+
17896	Myl4	2.08657834	1.722222535	2.783361619	+
13170	Dbp	2.08202828	−0.375513614	0.682476047	+
66269	Tmed6	2.07497902	−1.650325039	−0.597228287	+
14718	Got1	2.07333146	2.061835205	3.113785978	+
272158	Poln	2.06513153	−1.602588452	−0.556354781	+
213234	Zbbx	2.06476914	−1.46971563	−0.423735147	+
16763	Lad1	2.06157829	0.085565643	1.129314894	+
217122	Gm11545	2.0601959	−0.122724019	0.920057509	+
18605	Enpp1	2.05356304	−1.373274131	−0.335144897	+
12654	Chi3l1	2.04843894	3.290541734	4.325066623	+
14873	Gsto1	2.04568497	4.056384904	5.088968893	+
234912	9230110C19Rik	2.0431182	−0.485280979	0.545491688	+
213393	8430408G22Rik	2.04144949	3.255215479	4.284809354	+
17117	Amacr	2.04135874	−1.044586458	−0.015056717	+
12575	Cdkn1a	2.04033724	3.928651642	4.957459271	+
433700	Spag8	2.03857912	−0.33822112	0.689342829	+
71233	Enkur	2.03734139	0.939742428	1.966430177	+
109245	Lrrc39	2.03015051	−3.140064611	−2.118477922	+
93671	Cd163	2.02970384	−0.463880654	0.557388579	+
68802	Mypn	2.02932086	−0.719714264	0.301282726	+
12716	Ckmt1	2.02698334	1.459934576	2.479268809	+
228576	Mall	2.0263116	−0.030421901	0.988434147	+
75973	Ccdc162	2.02351861	−0.27858405	0.738282065	+
74934	Armc4	2.02266109	−0.138572013	0.877682593	+
71870	Ccdc19	2.02024598	−0.343205035	0.671325928	+
75568	Ankrd23	2.02000124	1.353877425	2.368233604	+
78321	Capsl	2.02000124	0.037532419	1.051888598	+
80891	Fcrls	2.01953051	1.512345517	2.526365455	+
235345	4833427G06Rik	2.01600252	0.833713501	1.845210943	+
66968	Plin5	2.01494124	−0.46900024	0.541737529	+
68810	Nexn	2.01231672	1.866475261	2.875332649	+
17427	Mns1	2.00807289	0.631471221	1.637282858	+
18787	Serpine1	2.00680605	2.136923051	3.141824244	+
77037	Mrap	2.00594906	−1.980150646	−0.975865676	+

Supplementary Table S2 (Continued)

12740	Cldn4	2.00591218	−0.488405147	0.515853297	+
17312	Clec10a	2.00385154	0.847201555	1.849977181	+
77836	Mlana	2.00352935	−0.194924261	0.807619381	+
50525	Spag6	2.0025046	0.667821264	1.669626819	+
68655	Fndc1	1.99693451	1.171583698	2.169370716	+
24117	Wif1	1.98882889	0.275941707	1.267860865	+
11529	Adh7	1.98552785	−1.010164973	−0.020642378	+
30794	Pdlim4	1.98398455	0.930659221	1.919060013	+
19736	Rgs4	1.98194096	1.14889084	2.135804828	+
11815	Apod	1.9752559	1.616966234	2.599005805	+
242377	Pm20d2	1.97360224	−1.385026328	−0.404195073	+
12032	Bcan	1.97323639	−1.543771864	−0.563208062	+
68794	Flnc	1.97291184	0.46472881	1.445055303	+
218035	Vps41	1.9729031	1.645579195	2.625899292	+
71911	Bdh1	1.96799406	−0.699287438	0.277438427	+
381738	Gm1060	1.96761443	0.662096866	1.63854441	+
73721	1110017D15Rik	1.96338089	2.604489477	3.577829557	+
14733	Gpc1	1.9595211	0.471534113	1.442035223	+
26458	Slc27a2	1.95919503	−0.372789858	0.597471159	+
15223	Foxj1	1.95772255	1.176964063	2.146140384	+
270091	Lrrc36	1.95564394	−0.753664745	0.213978983	+
12862	Cox6a2	1.95497688	2.342981139	3.310132686	+
330355	Dnahc6	1.95449631	0.927591897	1.894388758	+
74166	Tmem38a	1.95334555	−0.09788001	0.868067177	+
213435	Mylk3	1.95154547	−0.136335142	0.828281933	+
73845	Ankrd42	1.95124506	−2.189889269	−1.225494292	+
270162	Elmod1	1.95000058	0.109434306	1.072908862	+
18113	Nnmt	1.94805781	1.214536467	2.176572956	+
69327	1700007K13Rik	1.94775615	1.926403895	2.888216966	+
380842	Gm1574	1.94694981	1.894959061	2.856174754	+
654796	9530036O11Rik	1.9462839	−1.805884902	−0.84516273	+
237823	Pfas	1.9443398	−0.220382518	0.738897852	+
17392	Mmp3	1.9438612	1.359946007	2.318871212	+
14226	Fkbp1b	1.94343451	0.874503341	1.833111836	+
68394	Ccdc163	1.94209949	−1.213488707	−0.255871599	+
11501	Adam8	1.94161939	0.443824837	1.401085254	+
66805	Tspan1	1.93872932	1.254726276	2.209837669	+
243078	Tecrl	1.93450626	−0.208274463	0.743690933	+
214425	Cilp	1.93243197	−0.09315505	0.857262573	+
12715	Ckm	1.92989057	0.475056267	1.423575315	+
67896	Ccdc80	1.9289173	2.287261117	3.235052407	+
338348	Ttc16	1.92541526	−1.011455178	−0.066285547	+
238564	Mylk4	1.92303331	−0.406459626	0.536924126	+
14229	Fkbp5	1.92234605	−0.190063921	0.752804143	+
100503311	LOC100503311	1.92171095	2.127698461	3.070089812	+
75136	Rsph10b2	1.92026437	0.171358608	1.11266355	+

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Supplementary Table S2 (Continued)

241688	6330439K17Rik	1.91892667	−1.072021159	−0.131721575	+
66717	Ccdc96	1.91254738	−0.884374455	0.051121035	+
103712	6330403K07Rik	1.9070422	0.945507746	1.876844517	+
14234	Foxc2	1.90434998	−0.716444892	0.212853752	+
217166	Nr1d1	1.90353669	1.003707133	1.93238951	+
16612	Klk1	1.90332454	−1.629018447	−0.700496868	+
66098	Chchd6	1.90260495	1.33678011	2.264756145	+
66788	5430414B12Rik	1.90230869	0.003879957	0.931631331	+
239554	Foxred2	1.89985998	−2.234452567	−1.308559475	+
58860	Adamdec1	1.89346201	0.967523544	1.888550022	+
11609	Agtr2	1.89249277	−3.750861386	−2.830573596	+
209378	Itih5	1.89027975	0.276950089	1.195549848	+
17750	Mt2	1.88691847	3.124380423	4.040412514	+
71236	Rtdr1	1.88639692	−0.364250169	0.551383102	+
76187	Adhfe1	1.88219695	−0.775061847	0.137355749	+
68241	Fam195a	1.87950668	1.280830729	2.191184772	+
14205	Figf	1.87810511	2.750118665	3.659396471	+
21857	Timp1	1.87805917	2.214504665	3.123747186	+
71206	Katnal2	1.87391279	−1.515531914	−0.6094781	+
75564	Rsph9	1.8720867	1.313145421	2.217792668	+
15245	Hhip	1.87191833	0.045036385	0.949553879	+
432611	Dnaic2	1.87107941	−1.295665839	−0.391795053	+
209195	Clic6	1.87105103	1.937902585	2.841751493	+
240638	Slc16a12	1.8701654	0.662925994	1.566091866	+
66611	Ribc1	1.86758461	−0.259025356	0.642148246	+
244091	Fsd2	1.86724933	−0.077161062	0.823753519	+
17242	Mdk	1.86712479	1.100481129	2.001299482	+
77127	A930001A20Rik	1.86644179	−1.405894206	−0.505603692	+
320078	Olfml2b	1.86370555	1.295292701	2.193466645	+
244198	Olfml1	1.86250095	1.742602022	2.639843187	+
226049	Dmrt2	1.86002544	−2.429426073	−1.534103722	+
75504	1700013F07Rik	1.85606094	−0.901453245	−0.009209168	+
15377	Foxa3	1.85416243	−1.870711414	−0.979943779	+
14464	Gata5	1.85389237	−0.644760225	0.24579726	+
234564	Ces1f	1.85131173	−0.331018186	0.557529653	+
19227	Pthlh	1.84913507	−1.001104655	−0.114254046	+
378462	Morn2	1.84833514	1.328049199	2.214275567	+
15464	Hrc	1.84721038	0.887025191	1.772373373	+
13214	Defb1	1.84537948	−2.869235048	−1.98531753	+
226265	Eno4	1.8384995	0.729128077	1.607656862	+
626870	Gm11992	1.83810586	−4.259898154	−3.381678297	+
14077	Fabp3	1.83597623	0.944154907	1.820702291	+
73287	1700040L02Rik	1.83408218	0.339740393	1.214798673	+
75465	Dynlrb2	1.83379121	4.046445594	4.921274983	+
17929	Myom1	1.83216643	1.185026744	2.058577302	+
19017	Ppargc1a	1.83179794	−0.998129911	−0.124869537	+

Supplementary Table S2 (Continued)

112407	Egln3	1.83141808	−0.869094552	0.003866615	+
56429	Dpt	1.83031402	4.9295284	5.801619585	+
67564	Tmem35	1.82808535	−0.028075091	0.842258338	+
211577	Mrgprf	1.82786343	0.131083909	1.001242193	+
67752	4930579J09Rik	1.82669212	−0.231908586	0.637324908	+
12696	Cirbp	1.82617254	1.491042949	2.359866026	+
27660	1700088E04Rik	1.825146	0.507465246	1.37547712	+
70717	6330406I15Rik	1.82292373	0.111494342	0.977748543	+
207607	Ccdc40	1.82186895	0.028072293	0.893491479	+
53972	Ngef	1.82167927	−0.130847952	0.734421027	+
18626	Per1	1.81891795	1.279850205	2.142930669	+
209012	Ulk4	1.81127879	−1.107911706	−0.250903084	+
64435	Fcamr	1.81042885	−1.966268466	−1.109936989	+
17133	Maff	1.80715527	2.140643192	2.994363656	+
26938	St6galnac5	1.80365552	−1.307864603	−0.456940781	+
15277	Hk2	1.80226777	1.79594057	2.645753944	+
74052	Ttc21a	1.79745788	−0.33728912	0.508668842	+
240660	Tmem20	1.79723845	−0.334944714	0.510837121	+
234199	Fgl1	1.79714855	−1.604580811	−0.758871145	+
320438	Alg6	1.79714855	−1.431759022	−0.586049357	+
70129	Slc44a4	1.79531671	1.074422694	1.918661068	+
434756	Akap14	1.79495573	0.149172616	0.993120877	+
56710	Vwa3b	1.79396681	−1.737854487	−0.894701289	+
70853	Dbc1	1.79396681	−2.937143301	−2.093990103	+
19337	Rab33a	1.79313916	−1.265281797	−0.422794343	+
209692	Dhtkd1	1.78959763	−1.840130456	−1.000495202	+
22160	Twist1	1.78959763	−2.88055151	−2.040916256	+
11565	Adssl1	1.78576815	1.496125907	2.332670689	+
72927	Hepacam	1.78481035	−0.60159888	0.234171908	+
68270	Lrrc50	1.78419355	−1.095121787	−0.259849661	+
246316	Lgi2	1.78353535	−0.22012819	0.614611619	+
114886	Cygb	1.78283753	1.844064932	2.678240164	+
242894	Actr3b	1.78200112	−1.292712554	−0.459214312	+
20671	Sox17	1.78000912	3.791281407	4.623166037	+
14198	Fhit	1.77445487	0.732719794	1.560095676	+
55987	Cpxm2	1.77119771	−1.269151748	−0.444426486	+
74453	Ccdc11	1.77116278	0.253044697	1.077741504	+
71820	Wdr34	1.7685186	0.022602076	0.845143473	+
74091	Npl	1.76639945	−0.488553809	0.332257821	+
107770	Tm6sf2	1.76495781	−1.103821014	−0.284187318	+
403183	4832428D23Rik	1.76379505	1.516333625	2.335016557	+
11504	Adamts1	1.76376691	3.156298857	3.974958774	+
19309	Pygm	1.76095261	1.162243107	1.978599188	+
66931	1700010I14Rik	1.76061424	−2.003883721	−1.18780488	+
11829	Aqp4	1.75999293	−0.287514903	0.528054733	+
16922	Phyh	1.75890712	2.685240804	3.499920108	+

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**Supplementary Table S2** (Continued)

57814	Kcne4	1.75705998	1.309396287	2.122559729	+
16665	Krt15	1.75608384	−0.752151397	0.060210326	+
20198	S100a4	1.75598251	3.046252489	3.858530966	+
76670	Ttc18	1.75090713	−1.923011865	−1.114909305	+
102448	Xylb	1.75083076	−2.228981403	−1.42094177	+
271844	Pla2g4f	1.74789293	−1.362956633	−0.557339824	+
66337	1700025K23Rik	1.7470491	0.203355471	1.008275628	+
71227	Wdr69	1.74567852	−0.820708569	−0.01692067	+
65256	Asb2	1.74488988	0.731454116	1.534590104	+
68226	Efcab2	1.74238272	−0.880208664	−0.07914711	+
71733	Susd2	1.73914038	0.720331641	1.518706027	+
16485	Kcna1	1.73519551	−1.821850738	−1.026752511	+
71281	Apobec4	1.73362334	−1.781840367	−0.988049887	+
14268	Fn1	1.7331214	2.453241498	3.24661421	+
20771	Muc11	1.73276707	−2.452365952	−1.659288224	+
230603	Ttc39a	1.73053296	0.518808985	1.310025403	+
75860	4930588N13Rik	1.73031493	−0.510629361	0.28040528	+
78896	1500015O10Rik	1.73007008	−2.035290561	−1.244460086	+
170733	Klra17	1.72967837	−0.415989901	0.374513895	+
12831	Col5a1	1.72829208	2.066192574	2.855539622	+
16638	Klra7	1.72809453	−2.727146255	−1.937964115	+
100038746	LOC100038746	1.72726159	−2.408051493	−1.619564902	+
66425	Pcp4l1	1.72638643	2.425931265	3.213686695	+
11602	Angpt4	1.72583315	−0.466193924	0.321099068	+
235330	Ttc12	1.72537057	0.223235864	1.010142121	+
268860	Abat	1.72495794	−0.631290657	0.155270525	+
70192	Cd209g	1.72469658	−0.831196337	−0.044853765	+
219148	Fam167a	1.72452201	0.404739186	1.190935729	+
243912	Hspb6	1.7216523	1.859283669	2.643077482	+
105349	Akr1c18	1.72133367	−0.488405147	0.295121635	+
66695	Aspn	1.7203098	1.797473214	2.58014161	+
17748	Mt1	1.71678159	1.734548662	2.514255169	+
73863	4930415O20Rik	1.71321645	−1.681328259	−0.904620826	+
216725	Adamts2	1.71301527	0.786801387	1.563339403	+
22239	Ugt8a	1.71271893	−1.564521294	−0.788232876	+
14584	Gfpt2	1.71160441	1.194915257	1.970264558	+
104601	Mycbpap	1.70987938	−1.311352176	−0.537457616	+
105833	Ccdc65	1.70987938	−1.586602751	−0.81270819	+
320869	4732415M23Rik	1.70877929	−0.501897793	0.271068275	+
66758	Zfp474	1.70876396	−0.200553435	0.572399687	+
75579	2310034G01Rik	1.70875601	0.316664914	1.089611328	+
98932	Myl9	1.70716925	4.934416364	5.706022459	+
207175	Cetn4	1.70307176	0.512422581	1.280561808	+
69810	Clec4b1	1.70195169	0.42411801	1.191308099	+
12496	Entpd2	1.70021636	1.18732743	1.953045777	+
12873	Cpa3	1.69804186	−0.615566737	0.148305287	+

Supplementary Table S2 (Continued)

239273	Abcc4	1.697924	0.686193659	1.449965543	+
20305	Ccl6	1.69674158	3.718666823	4.481433678	+
18175	Nrap	1.69379115	−0.286176565	0.474079431	+
54720	Rcan1	1.69378803	2.794931139	3.555184481	+
235505	Cd109	1.69347231	−1.409012822	−0.649028428	+
23888	Gpc6	1.68788796	−0.368672156	0.386546984	+
71907	Serpina9	1.68746364	−1.566036348	−0.811179935	+
12825	Col3a1	1.68743996	5.55451217	6.309348339	+
117229	Stk33	1.68725657	−1.031937104	−0.27725773	+
19256	Ptpn20	1.68638532	−3.321538768	−2.567604558	+
54216	Pcdh7	1.68633796	−1.576267536	−0.822373843	+
66793	Efcab1	1.68593582	−0.303768223	0.44978139	+
23967	Osr1	1.6858792	1.454941889	2.208443056	+
73472	Spata18	1.68577023	−1.337629917	−0.584222008	+
170442	Bbox1	1.68561682	−1.131682951	−0.378406336	+
70021	Nt5dc2	1.68413123	1.92124174	2.673246301	+
232313	Gxylt2	1.68396316	−0.490941122	0.260919457	+
74155	Errfi1	1.6839556	3.758517736	4.510371833	+
11997	Akr1b7	1.68376467	−1.638738788	−0.887048276	+
64058	Perp	1.68335002	2.008774223	2.760109408	+
320752	Dpy19l2	1.68282292	−3.716466455	−2.96558308	+
74145	F13a1	1.68087216	2.179499312	2.928709318	+
103149	Upb1	1.67978504	−1.278594606	−0.530317985	+
18631	Pex11a	1.67501615	1.423438774	2.16761378	+
14960	H2-Aa	1.67493796	3.984062465	4.728170128	+
64075	Smoc1	1.67472088	0.504804425	1.248725092	+
320840	Negr1	1.67445422	0	0.743690933	+
240776	Kcnt2	1.67275106	−4.365471787	−3.623249029	+
233899	Gm166	1.671333	0.471889579	1.212888783	+
552874	LOC552874	1.67133151	0.181343272	0.922341197	+
74918	Iqca	1.66984039	0.354786527	1.094496736	+
14219	Ctgf	1.66969423	5.85690337	6.596487299	+
76219	6530401D17Rik	1.66838558	0.336288381	1.074741131	+
14230	Fkbp10	1.66801702	1.754648502	2.49278251	+
23955	Nek4	1.66637131	−0.766075409	−0.029365505	+
214791	Sertad4	1.66546295	−0.132018275	0.603904988	+
213539	Bag2	1.66492879	1.273578921	2.009039397	+
23850	Pappa2	1.66239347	−1.719609681	−0.986347791	+
57263	Retnlb	1.66239347	−1.908765011	−1.175503121	+
110920	Hspa13	1.66150245	1.85804003	2.590528453	+
118449	Synpo2	1.66141893	0.499630242	1.232046139	+
192897	Itgb4	1.65860641	0.211641605	0.941613174	+
17540	Mrvi1	1.65824598	0.144235294	0.873893324	+
74747	Ddit4	1.65778695	2.143250617	2.87250923	+
106267	Al844685	1.65578318	−0.495938852	0.23157492	+
75556	1700026D08Rik	1.65549334	1.302659084	2.029920288	+

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**Supplementary Table S2** (Continued)

59012	Moxd1	1.65444877	−1.511779289	−0.785428666	+
15512	Hspa2	1.65417904	1.363600013	2.089715403	+
57816	Tesc	1.65135455	0.20621318	0.929863082	+
381218	4430402I18Rik	1.64639836	0.108244147	0.827557595	+
320214	4932425I24Rik	1.64513493	−0.270938942	0.44726697	+
14570	Arhgdig	1.64067707	2.154137172	2.86842848	+
209558	Enpp3	1.63914604	−1.70288213	−0.989937729	+
235180	Fez1	1.63609935	−0.290840712	0.419419642	+
235542	Ppp2r3a	1.63609671	−0.333374984	0.376883049	+
666794	Rbm24	1.63420791	−1.136561935	−0.427970399	+
14066	F3	1.63365614	1.465364821	2.173469175	+
66153	Fbxo36	1.63309283	0.88077247	1.588379271	+
50530	Mfap5	1.63281861	3.774513565	4.481878091	+
14190	Fgl2	1.63074149	1.361473561	2.067001661	+
14114	Fbln1	1.62951044	1.759915912	2.464354507	+
330695	Ctxn1	1.62865163	1.361973157	2.065651199	+
103210	D630004K10Rik	1.62713994	0.932499334	1.634837672	+
227325	Dner	1.6260027	−1.050481179	−0.349151529	+
93843	Pnck	1.62595624	−0.900916137	−0.199627709	+
18675	Phex	1.62494574	−0.733326759	−0.032935217	+
71934	Car13	1.62444515	−2.63646101	−1.936513978	+
15018	H2-Q7	1.62424429	2.308193454	3.007962091	+
66277	Klf15	1.62216503	2.118483283	2.816403879	+
76286	1110006E14Rik	1.62215937	−2.045633287	−1.34771772	+
218630	Ccno	1.62174411	0.711862233	1.40940843	+
67092	Gatm	1.62163521	0.785109894	1.482559213	+
69297	Lrrc46	1.62162927	−0.313892719	0.383551311	+
209966	Pgbd5	1.62009947	−1.547705943	−0.85162355	+
406217	Bex4	1.61601186	3.470036581	4.162474367	+
68828	Sync	1.61580103	−0.922365593	−0.230116041	+
71886	2310002L09Rik	1.61563397	−2.711458305	−2.019357919	+
19662	Rbp4	1.61514831	3.06493282	3.756599463	+
103511	Fam26e	1.61489793	0.613733176	1.305176161	+
212516	BC060267	1.6145374	−2.663019913	−1.971899051	+
20203	S100b	1.61415513	−1.44187479	−0.751095554	+
71354	Wdr31	1.61394294	−0.946020646	−0.255431073	+
100115	Al428898	1.61382046	−1.83805786	−1.147577771	+
21345	Tagln	1.61366284	5.867955308	6.55829448	+
22351	Vill	1.61331811	0.425166413	1.115197346	+
66910	Tmem107	1.61212186	1.216773961	1.905734762	+
69387	Dnajb13	1.61187402	1.391689426	2.08042842	+
76260	Ttc8	1.61103859	0.981130215	1.669121269	+
12834	Col6a2	1.60961314	4.881904241	5.568618229	+
353025	Caps2	1.60799527	−2.496153917	−1.810890752	+
432720	Akr1c19	1.60703706	−0.362808518	0.321594685	+
74186	Ccdc3	1.60703706	0.569198103	1.253601306	+

Supplementary Table S2 (Continued)

56078	Car5b	1.60676441	−0.550544545	0.133613865	+
67694	Ift74	1.60557106	1.807000778	2.490087299	+
17863	Myb	1.60384745	0.926653735	1.608190661	+
20429	Shox2	1.60153636	−2.75547843	−2.076021876	+
66469	2810405K02Rik	1.60065963	1.622023861	2.300690421	+
22340	Vegfb	1.60048602	1.829730273	2.508240344	+
72287	Plekhf1	1.60042953	1.356500811	2.034959964	+
69480	Ttc9	1.60026507	0.276632478	0.954943372	+
71973	Rbpms2	1.59998313	1.2882712	1.966327892	+
68854	Asb11	1.59956132	−0.405731944	0.271944352	+
70882	Armc3	1.59741391	−0.130622365	0.545115814	+
207686	A330021E22Rik	1.59579114	−0.427989251	0.246282586	+
18217	Ntsr2	1.5954944	−2.145653529	−1.471649981	+
109264	Me3	1.59512134	−0.366528929	0.307137247	+
231871	Daglb	1.594681	0.263903745	0.937171604	+
17300	Foxc1	1.59428315	−0.996698142	−0.323790264	+
20306	Wnt11	1.59350609	−1.14981081	−0.477606275	+
22411	Ccl7	1.59350609	−0.249598609	0.422605926	+
20928	Abcc9	1.59299665	0.164120549	0.83586378	+
242584	Wdr78	1.59235246	0.784964788	1.456124492	+
54635	Pdgfc	1.59201572	−0.476573589	0.194280992	+
30937	Lmcd1	1.59121894	3.269500352	3.939632709	+
50759	Fbxo16	1.58957465	−0.819903573	−0.151262802	+
52377	Rcn3	1.58648435	2.624256833	3.290090118	+
71242	Spata24	1.58592117	−0.32545628	0.339864779	+
76507	Abp1	1.58567673	−0.174712246	0.49038643	+
12558	Cdh2	1.5835522	0.214376826	0.877541253	+
74770	Hhatl	1.5829773	−0.480744254	0.181896309	+
68236	Gtsf1l	1.58268043	−1.757448483	−1.095078501	+
70113	Odf3b	1.5817592	1.026846499	1.688376484	+
13400	Dmpk	1.58017284	−0.304925916	0.35515645	+
381337	Fam178b	1.57949036	−0.915038722	−0.255579592	+
74895	4930455F23Rik	1.57909318	0.767817864	1.426914172	+
210108	D130043K22Rik	1.5790269	−2.374171647	−1.715135897	+
12818	Col14a1	1.57772925	0.832061025	1.489910673	+
100503463	Al256396	1.57681624	2.066489072	2.723503613	+
264134	Ttc26	1.57639148	0.188988424	0.845614278	+
76365	Tbx18	1.57631997	−2.40769418	−1.751133767	+
211482	Efhb	1.57610832	−1.960629376	−1.304262688	+
14871	Gstt1	1.57590806	4.439729504	5.09591287	+
225724	Mapk4	1.57535681	−1.852433325	−1.196754697	+
14555	Gpd1	1.57520846	−0.971881362	−0.316338597	+
117147	Acsm1	1.57416182	0.831262704	1.485846561	+
94216	Col4a6	1.57307384	1.126311562	1.779897953	+
14012	Mpzl2	1.57248013	−0.154969083	0.498072702	+
94352	Loxl2	1.5693838	1.912677782	2.562875998	+

(Continued)

Supplementary Table S2 (Continued)

14311	Cidec	1.56814213	0.946565484	1.595621812	+
64074	Smoc2	1.56677014	0.228279073	0.876072613	+
16846	Lep	1.56607329	−2.670889416	−2.023737682	+
100048534	D19Ert652e	1.56472849	−0.665065941	−0.019153597	+
68957	Paqr6	1.56447109	−0.094543816	0.551131182	+
329872	Frem1	1.56317967	0.201696148	0.84617976	+
74511	Lrrc17	1.56314201	−0.909892743	−0.265443888	+
433904	Ociad2	1.56281971	2.682092522	3.326243882	+
244202	Nlrp10	1.56235072	−2.712137721	−2.068419373	+
69315	1700001L19Rik	1.56186649	−1.159566441	−0.516295305	+
207683	Igsf11	1.56178077	−2.668017597	−2.02482564	+
16000	Igf1	1.56017571	2.868638305	3.510346825	+
66748	4933404M02Rik	1.55878638	−1.167487476	−0.527064242	+
11870	Art1	1.55816477	−0.767076139	−0.127228335	+
20204	Prrx2	1.55777361	−0.446348758	0.193136826	+
15235	Mst1	1.55686708	−0.980842798	−0.342197026	+
545847	Igkv14-111	1.5567467	−0.390771294	0.247762927	+
14067	F5	1.55609908	−0.191611959	0.446321964	+
50722	Dkkl1	1.55571799	−1.431759022	−0.794178459	+
66568	Rwdd3	1.55462859	−1.81927083	−1.182700873	+
11475	Acta2	1.55436909	1.192838104	1.829167224	+
17207	Mcf2l	1.55435122	3.380740353	4.017052886	+
76683	1500002F19Rik	1.55402319	−3.707160719	−3.071152683	+
28017	D7Wsu130e	1.55381674	−0.88711903	−0.251302667	+
17190	Mbd1	1.55268647	0.974254949	1.60902149	+
68939	Rasl11b	1.55103205	3.772416507	4.405645003	+
319839	A530020G20Rik	1.55067013	−1.932147082	−1.299255262	+
381269	Mreg	1.55030634	0.2938796	0.926432916	+
227618	Lrrc26	1.54973242	1.284786944	1.916806082	+
17390	Mmp2	1.54951999	4.580596574	5.212417943	+
13653	Egr1	1.5493839	3.259855386	3.89155004	+
381113	Cdkl4	1.54781535	−1.673739649	−1.043506274	+
67512	Agpat2	1.54739955	2.378032899	3.007878656	+
69534	Avpi1	1.54685894	3.30914221	3.938483855	+
71313	Fsip1	1.54647334	−2.014035884	−1.385053922	+
18642	Pfkm	1.54486709	1.982124722	2.609607443	+
22003	Tpm1	1.54414232	1.918551937	2.545357668	+
75434	1700001C02Rik	1.54376604	−1.137621308	−0.511167183	+
234915	AK129341	1.54354638	−0.047580262	0.578668573	+
50795	Sh3bgr	1.54251089	−1.0633305	−0.438049829	+
50799	Slc25a13	1.5422488	0.755584835	1.380620357	+
72789	Veph1	1.54025718	−0.119408186	0.503763075	+
320277	Spf2	1.53926583	−3.520607378	−2.898364977	+
109222	Rarres1	1.53917302	−0.369750466	0.25240495	+
73316	Calr3	1.53882999	−1.541958618	−0.920124771	+
214384	Myocd	1.53699296	−1.529799879	−0.909689319	+

Supplementary Table S2 (Continued)

52028	Bbs1	1.5367614	−0.249598609	0.370294579	+
72633	2810019C22Rik	1.53644872	−2.682925319	−2.063325705	+
320736	E130203B14Rik	1.5345425	2.214242896	2.832051496	+
18133	Nov	1.53428458	1.059446605	1.6770127	+
72236	Tsnaxip1	1.5325365	−0.044305996	0.571615434	+
14081	Acsl1	1.53139748	0.498994598	1.113843391	+
66834	Acot13	1.53116128	3.030966926	3.645593182	+
13516	Epyc	1.53103136	−2.166364359	−1.551860528	+
69083	Sult1c2	1.52981733	−2.309964214	−1.696604815	+
242122	Vtcn1	1.52882468	−0.488405147	0.124017826	+
67252	Cap2	1.52661446	0.728457799	1.338793564	+
70556	Slc25a33	1.52566304	1.318181525	1.927617883	+
78688	Nol3	1.52431494	0.736414577	1.344575584	+
22262	Uox	1.52352726	−1.435856962	−0.828441652	+
228642	Morn3	1.52343227	−4.140212879	−3.532887515	+
320609	Fam40b	1.52343227	−3.128385005	−2.521059641	+
74890	BC034902	1.52343227	−1.143170074	−0.53584471	+
81840	Sorcs2	1.52316869	0.744380494	1.351456221	+
16658	Mafb	1.52249886	−0.838451688	−0.232010541	+
252967	Ropn11	1.52216568	−1.159802518	−0.553677119	+
11816	Apoe	1.52169684	5.20189896	5.807579927	+
83397	Akap12	1.52143881	4.830673136	5.436109449	+
11832	Aqp7	1.52056351	−3.087714271	−2.483108197	+
12338	Capn6	1.52055826	0.024860572	0.629461663	+
14622	Gjb5	1.52007776	−0.84508246	−0.240937333	+
14745	Lpar1	1.51869609	1.547349882	2.15018308	+
69047	Atp2c2	1.51835543	−1.052951435	−0.450441884	+
76889	Adck4	1.51748767	1.21207688	1.813761678	+
319887	E030030I06Rik	1.51384343	−1.618820562	−1.020604556	+
228550	Itpka	1.51384343	−0.820708569	−0.222492563	+
67080	1700019D03Rik	1.51294439	−1.52021092	−0.922851955	+
13807	Kntc1	1.51038415	−1.986568602	−1.391653076	+
208628	Eno2	1.51038415	−0.313892719	0.281022807	+
236285	Lancl3	1.50949305	−2.835161837	−2.24109772	+
53318	Pdlim3	1.50922501	0.187359768	0.781167677	+
66042	Sostdc1	1.50774278	−2.199696611	−1.607306283	+
14276	Folr2	1.50688372	1.333402688	1.924970784	+
30805	Slc22a4	1.50647524	−2.642010101	−2.050833137	+
19692	Reg1	1.50566386	−2.801681263	−2.211281537	+
19893	Rpgr	1.50566386	−0.63170064	−0.041300914	+
20378	Frzb	1.50547662	−2.183186129	−1.592965823	+
12972	Cryz	1.50534426	2.075508742	2.665602195	+
20308	Ccl9	1.50502625	3.133443513	3.723232166	+
329941	Col8a2	1.5049213	−0.492797054	0.096890988	+
18164	Nptx1	1.50490239	0.551778475	1.141448391	+
11489	Adam12	1.50304563	0.397073392	0.984962198	+

(Continued)

Supplementary Table S2 (Continued)

14281	Fos	1.50293652	3.68549486	4.273278933	+
20503	Slc16a7	1.50264763	0.630264731	1.217771468	+
246049	Slc36a2	1.50244339	2.305142755	2.892453393	+
29856	Smtn	1.50241041	1.747798329	2.335077298	+
330577	Fam154b	1.50223218	−1.541724042	−0.954616236	+
60525	Acss2	1.50191975	−0.019446872	0.567360861	+
69312	Lrrc67	1.50185766	−3.060181843	−2.473433759	+
230971	Megf6	1.5016169	0.866193916	1.452710704	+
210741	Kcnk12	1.50148793	−0.71201106	−0.125618179	+
399599	Ccdc87	1.50137979	−2.215280139	−1.62899117	+
269295	Rtn4rl2	1.50137979	−0.140638399	0.44565057	+
330217	Gal3st4	1.50077061	−0.493838696	0.091864788	+
Downregulated genes					
Gene ID	Gene symbol	1/FC	air control normalization	BPD normalization	Direction
68616	Gdpd3	34.91378342	5.464046101	0.338321303	−
13586	Ear1	34.41343174	2.486927548	−2.617972313	−
15016	H2-Q5	12.24736598	0.910476948	−2.703922651	−
76074	Gbp8	8.543379381	2.711905571	−0.382901277	−
19092	Prkg2	6.108377485	1.946703416	−0.664085805	−
277753	Cyp4a12a	5.022771566	1.285674537	−1.042809126	−
72432	Spink5	4.962234055	−1.350667667	−3.661657451	−
378466	Gm10033	4.884079185	−1.616495867	−3.904582458	−
19752	Rnase1	4.872732037	2.1555041	−0.129226788	−
21667	Tdgf1	3.795916746	−0.157865577	−2.082313928	−
63954	Rbp7	3.755137082	2.553805799	0.644940224	−
19824	Trim10	3.702521111	2.593735066	0.705227105	−
673094	Cd99	3.279321854	4.340938958	2.627541454	−
14934	Gypa	3.197298261	1.897192457	0.220339125	−
13036	Ctsh	3.174599416	5.259954679	3.593380121	−
16427	Itih4	3.149837088	3.692389714	2.037112501	−
22271	Upp1	3.106451914	3.415122339	1.779854616	−
241612	Slc5a12	3.060577614	0.520758622	−1.093045333	−
328399	A930018M24Rik	3.060001538	0.741273985	−0.872258393	−
237310	Il22ra2	3.035873442	1.192260086	−0.409851564	−
70026	Tspo2	2.911876888	1.271798248	−0.270151113	−
69739	2410004I01Rik	2.894978302	0.594617708	−0.938934827	−
170812	Ahsp	2.772555061	4.800115446	3.328899334	−
320679	Samd12	2.75158172	−0.797060672	−2.257321849	−
58185	Rsad2	2.743178138	3.508789182	2.05294087	−
17681	Msc	2.733981185	1.322739774	−0.128263541	−
57266	Cxcl14	2.67264419	3.627839715	2.209571931	−
14938	Gzma	2.655465048	4.190672998	2.781708458	−
211187	Lrtm2	2.654834291	0.174489319	−1.234132494	−
218103	Slc17a2	2.599398257	−0.382314363	−1.760492051	−
638247	9530082P21Rik	2.592783342	1.791359634	0.416857977	−
93966	Hemgn	2.589597662	2.288546599	0.915818631	−

Supplementary Table S2 (Continued)

15950	Ifi203	2.513186901	1.227229	−0.102288966	—
545228	Gm5817	2.511291405	1.83160291	0.503173464	—
20715	Serpina3g	2.483445138	3.541272321	2.228929445	—
79235	Lrat	2.479947245	3.079411204	1.769101773	—
23925	Kel	2.463754023	0.768558343	−0.532299884	—
67937	Tmem59l	2.461616001	0.238259148	−1.061346579	—
170638	Hpcal4	2.442958668	0.229842984	−1.058786471	—
77705	9230104L09Rik	2.424580609	2.134263068	0.856527848	—
69099	1810009N02Rik	2.420816175	2.05943532	0.783941788	—
171166	Mcoln3	2.411318637	1.187756937	−0.082065367	—
16803	Lbp	2.402859294	3.831689971	2.566937801	—
67679	0710001D07Rik	2.39495944	1.404816607	0.144815383	—
14964	H2-D1	2.368603901	1.921207834	0.677170875	—
227638	Qsox2	2.367406225	1.027492983	−0.215814298	—
59041	Stk25	2.337096401	3.767183353	2.542466109	—
668421	Ighv14-2	2.331401821	1.846392122	0.625194446	—
12482	Ms4a1	2.328114943	2.592292293	1.373130004	—
17068	Ly6d	2.321600919	2.000077466	0.78495747	—
20739	Spna1	2.297330265	1.070265764	−0.12969251	—
19743	Rhag	2.286386563	−0.065841236	−1.258910579	—
93694	Clec2d	2.278857699	4.953885942	3.765575102	—
16596	Klf1	2.275173694	1.515599848	0.329623159	—
19279	Ptpr	2.271518711	0.614918967	−0.568738223	—
639390	BC094435	2.234345463	6.900410748	5.740558482	—
216350	Tspan8	2.216675946	2.217382636	1.068984757	—
22413	Wnt2	2.210052216	2.633025488	1.488945032	—
14065	F2rl3	2.20735098	−0.405572005	−1.547888049	—
20304	Ccl5	2.196603476	3.535696608	2.400422146	—
15953	Ifi47	2.184300727	4.245432632	3.118261137	—
69571	2310034O05Rik	2.180830054	−0.863176304	−1.988053653	—
76056	5830443J22Rik	2.174517613	−1.99684796	−3.117543355	—
77421	C030013E06Rik	2.161103543	−1.530403084	−2.64217128	—
73703	Dppa2	2.137835211	−1.361669289	−2.457819941	—
17086	Ncr1	2.130030975	1.169002168	0.078127758	—
15135	Hbb-y	2.128436982	−2.079166178	−3.168960554	—
12902	Cr2	2.118444806	−0.673042252	−1.756047793	—
16145	Igtp	2.084321155	4.117314835	3.057737248	—
330723	Htra4	2.069250266	−0.167528574	−1.216636717	—
269132	Glt25d2	2.066597713	1.170139763	0.122882184	—
70337	lyd	2.065591061	1.38777318	0.341218517	—
19074	Prg2	2.061107232	1.438445312	0.395025747	—
15951	Ifi204	2.060016891	0.305480247	−0.73717592	—
83921	Tmem2	2.057654272	2.254479662	1.213479062	—
72310	Nkg7	2.050572361	1.965021512	0.928994857	—
244958	Mrap2	2.042933389	−0.025570546	−1.056212711	—
192200	Wfdc12	2.038557066	0.943864983	−0.08368336	—

(Continued)



**Supplementary Table S2** (Continued)

54396	Irgm2	2.035877241	3.056085077	2.030434504	–
60440	Iigp1	2.034450006	3.497388085	2.472749257	–
67303	3110045C21Rik	2.028357724	–0.972429952	–1.992742063	–
97696	C77673	2.026145755	–0.045599514	–1.064337475	–
67522	1700097N02Rik	2.025677339	0.675379663	–0.343024729	–
272382	Spib	2.018316827	1.741363924	0.728211264	–
16643	Klrd1	2.014171065	1.319638704	0.309452486	–
19329	Rab17	2.008283464	0.528336887	–0.477626029	–
16069	Igj	2.003654143	2.496430366	1.493796864	–
27423	Klra15	1.998691834	–3.126248134	–4.125304183	–
22035	Tnfsf10	1.994523484	2.661843068	1.665798958	–
77884	6720427H10Rik	1.990218725	0.152954492	–0.839972499	–
72297	B3gnt3	1.987896126	0.547449916	–0.443792457	–
16994	Ltb	1.983716411	3.116099193	2.127893398	–
14468	Gbp1	1.98160579	–0.405270666	–1.391940656	–
320731	A530030E21Rik	1.98160579	–2.022231707	–3.008901697	–
12478	Cd19	1.976841393	0.990611964	0.007414839	–
408063	BC062258	1.972061905	–0.439766095	–1.419470935	–
15985	Cd79b	1.97194146	2.977216672	1.997599948	–
12518	Cd79a	1.968491072	2.612222952	1.635132782	–
20558	Slfn4	1.958552911	0.90023842	–0.069549683	–
14939	Gzmb	1.958020742	0.727432257	–0.241963791	–
330267	Thsd7a	1.952655741	–0.309971747	–1.275409367	–
238455	Macc1	1.949998608	0.646848201	–0.316624893	–
244723	Olfm2	1.949591536	1.038432852	0.075260959	–
52690	Setd3	1.949518766	1.737840159	0.774722117	–
552901	LOC552901	1.936126761	0.490139826	–0.463033585	–
67968	Ooep	1.931654614	0.568245361	–0.381591798	–
102910	Armcx4	1.922514876	3.352426341	2.40943158	–
21899	Tlr6	1.918810043	0.570389319	–0.369822576	–
105285	AU021025	1.918374335	1.801953351	0.862069089	–
229323	Gpr171	1.917939609	1.508551362	0.568994068	–
16159	Il12a	1.916641946	0.051945884	–0.886634964	–
16009	Igfbp3	1.909232285	4.455548295	3.522555658	–
12183	Bpgm	1.904476355	4.573780547	3.64438617	–
66895	1300014I06Rik	1.903282577	4.980211159	4.051721387	–
18985	Pou2af1	1.901103569	1.481813509	0.554976379	–
225583	A730017C20Rik	1.900549131	–1.941531884	–2.867948205	–
226922	Kcnq5	1.899526123	–0.702840961	–1.628480514	–
19194	Psp	1.896563639	1.058741324	0.135353542	–
68929	Mospd3	1.894269133	1.778704401	0.857063082	–
20533	Slc4a1	1.893054687	1.29852604	0.377809952	–
1E + 08	Nhsl2	1.892373509	–0.40551733	–1.3257142	–
14293	Fpr1	1.892194389	3.311868719	2.391808412	–
14955	H19	1.888071175	3.83766453	2.920751379	–
71633	4833414E09Rik	1.887817087	1.480664596	0.563945609	–

Supplementary Table S2 (Continued)

16008	Igfbp2	1.882539867	5.25619279	4.343512372	—
15402	Hoxa5	1.881124986	3.465449779	2.553854071	—
101757	AU020206	1.880974217	4.383659058	3.472178985	—
14396	Gabra3	1.87973359	−0.937003839	−1.847532046	—
319189	Hist2h2bb	1.877481993	1.297587845	0.388788774	—
209351	Wfdc6a	1.877223704	1.201068763	0.29246818	—
15078	H3f3a	1.874794984	0.033895016	−0.872837824	—
12458	Ccr6	1.869156616	1.004042508	0.101655052	—
69909	2610027K06Rik	1.864854512	0.569897464	−0.329165617	—
239319	Card6	1.860060731	1.789350696	0.89400097	—
74558	Gvin1	1.859811856	3.541695065	2.646538383	—
74564	9.13002E + 15	1.857055566	−1.874114278	−2.767131261	—
268885	Stfa2l1	1.855277644	−0.19731563	−1.088950733	—
100702	Mpa2l	1.847940824	2.293400221	1.407481662	—
15511	Hspa1b	1.846974687	4.939400192	4.054236098	—
414872	Zyg11b	1.84529214	0.000567182	−0.883282054	—
53856	Prg3	1.841840851	−0.462563317	−1.343711725	—
330474	Zc3h4	1.837331544	0.475924451	−0.401687531	—
19746	Rhd	1.836897975	0.905052569	0.027781071	—
403342	C130015C19	1.833125571	−0.302030723	−1.176336338	—
20617	Snca	1.828808594	2.182001302	1.311097214	—
241589	D430041D05Rik	1.825248607	0.588367578	−0.279725401	—
142980	Tlr3	1.818771731	1.074832208	0.211867722	—
13035	Ctsg	1.817801066	−0.522493072	−1.384687397	—
20343	Sell	1.816904261	2.5288372	1.667354799	—
17231	Mcpt8	1.814180725	−0.684288509	−1.54360669	—
16590	Kit	1.812290731	2.730918574	1.873104161	—
19324	Rab1	1.810244624	−2.229631019	−3.085815685	—
72446	Prr5l	1.81011807	1.251175475	0.39509167	—
552908	LOC552908	1.80839125	−1.078107913	−1.932814756	—
18979	Pon1	1.80659462	5.432151743	4.578878925	—
230810	Slc30a2	1.803420907	−0.774287394	−1.625023547	—
74644	4930426D05Rik	1.795962137	−1.869941627	−2.714698562	—
66456	2810001G20Rik	1.795695876	1.30424745	0.459704418	—
80782	Klrb1b	1.794037816	−1.696599132	−2.539809433	—
13076	Cyp1a1	1.791235197	3.013205185	2.172250403	—
434341	Nlrc5	1.791029487	0.551496482	−0.289292608	—
52695	D13Erttd666e	1.790418709	−1.472546649	−2.312843666	—
56455	Dynll1	1.78927135	4.036174645	3.196802451	—
52347	D1Erttd564e	1.786598545	−1.105673979	−1.942889472	—
78376	Ng23	1.782823996	−0.730186424	−1.564350708	—
242553	Kank4	1.780755881	1.913797888	1.081308133	—
235674	Acaa1b	1.779856824	3.015788012	2.18402682	—
66574	2510017J16Rik	1.778155876	−0.799354123	−1.629735922	—
109801	Glo1	1.77700436	4.07495378	3.245506558	—
93970	Klra18	1.775714832	1.644440716	0.816040803	—

(Continued)

**Supplementary Table S2** (Continued)

71183	Clec12b	1.775710541	−1.44221823	−2.270614657	—
73167	Arhgap8	1.774958681	1.781585179	0.953799738	—
22362	Vpreb1	1.773077023	−0.045373473	−0.871628682	—
268390	Ahsa2	1.772519039	4.242401683	3.416600558	—
16176	Il1b	1.770826119	2.21082516	1.386402602	—
98363	Efh1	1.768466148	0.892579301	0.070080698	—
72148	2610019F03Rik	1.766932386	1.715393803	0.894146969	—
15006	H2-Q1	1.765097372	−1.446901149	−2.266648922	—
72139	2610044O15Rik	1.764671712	−0.405014762	−1.224414581	—
320791	A130071D04Rik	1.762659592	0.125953583	−0.691800303	—
20608	Sstr4	1.762401055	−0.100128692	−0.917670956	—
27007	Klrk1	1.761335623	0.723834112	−0.092835729	—
96893	D530037H12Rik	1.76054041	−0.239345441	−1.055363783	—
17059	Klrb1c	1.759892967	−0.212452008	−1.027939698	—
73061	3110007F17Rik	1.753669036	−0.40040434	−1.210780839	—
69836	Pla2g12b	1.752326865	−1.079782177	−1.889054086	—
319949	A130009I22Rik	1.752326865	−1.634911586	−2.444183494	—
319654	6430537I21Rik	1.751771186	−0.304738317	−1.113552662	—
109294	Prex2	1.751300418	1.035664957	0.227238372	—
64136	Sdf2l1	1.750095395	3.671823054	2.86438949	—
75683	2310035P21Rik	1.748894816	−0.573831257	−1.380274781	—
408067	Zfp874b	1.748280737	0.772498123	−0.033438746	—
70377	Derl3	1.746859174	1.003042278	0.19827897	—
19064	Ppy	1.74458793	−0.28068969	−1.083576004	—
27028	Ermap	1.742104555	0.83827728	0.037446068	—
74732	Stx11	1.742003885	2.539347071	1.738599229	—
15505	Hsph1	1.737851817	4.678964369	3.881659297	—
230657	Tmem69	1.736052327	−0.170622864	−0.966433298	—
101736	AU015263	1.733557626	1.27608205	0.482346255	—
17858	Mx2	1.732159938	0.488876707	−0.30369544	—
16173	Il18	1.73180881	3.992122176	3.199842509	—
69169	Faim3	1.729833627	2.112206439	1.321573151	—
243755	Slc13a4	1.729731412	1.818716574	1.028168536	—
11656	Alas2	1.726358842	5.795294869	5.007562494	—
108078	Olr1	1.7223574	1.561951007	0.777566465	—
30910	C230037E05Rik	1.720455953	0.194844641	−0.587946316	—
213439	Gpr174	1.719987007	−1.796632547	−2.579030214	—
77433	9430076G02Rik	1.716562652	−1.431759022	−2.211281537	—
22436	Xdh	1.715987752	3.69903303	2.919993774	—
271786	Galnt13	1.715428848	−0.649480831	−1.428050118	—
402747	D630004N19Rik	1.714308643	−0.136170117	−0.913796992	—
234395	Ushbp1	1.713308701	2.594800121	1.818015003	—
21789	Tfpi2	1.711287721	1.40133156	0.626249217	—
230676	Szt2	1.71115647	0.395030623	−0.379941065	—
13034	Ctse	1.708892469	4.108312958	3.335251339	—
73673	2410076I21Rik	1.703657053	−1.824461437	−2.593096386	—

Supplementary Table S2 (Continued)

104348	Zfp120	1.701474947	1.932053264	1.165267355	—
1E + 08	Gm11696	1.699991526	−0.860753741	−1.626281296	—
193452	Zfp184	1.698942713	−0.727773944	−1.492411151	—
58801	Pmaip1	1.69643324	2.002283999	1.239779342	—
22113	Phlda2	1.694990675	−0.063066376	−0.824343712	—
68893	1110064A23Rik	1.693752135	0.549699126	−0.210523639	—
78369	Icam4	1.693735186	0.499044309	−0.261164019	—
14289	Fpr2	1.69344542	4.082972815	3.323011326	—
16142	Igl-V1	1.69240093	0.187940405	−0.571130978	—
71528	9030404E10Rik	1.691960691	−0.442728549	−1.2014246	—
16815	Lbx2	1.691339697	1.025594197	0.26742775	—
319997	A630001G21Rik	1.690873642	−0.799278599	−1.557047451	—
71775	1300017J02Rik	1.689649928	−0.127663928	−0.884388299	—
546058	AA386476	1.689443709	−1.228771848	−1.98532013	—
97874	B430203I24Rik	1.687319403	−0.332833344	−1.08756644	—
114670	4930573O21Rik	1.68596346	−1.408392675	−2.161965944	—
432777	D630045M09Rik	1.685884656	0.159529325	−0.593976509	—
14120	Fbp2	1.684804908	2.16624499	1.413663446	—
433237	Gm9895	1.682611511	0.044581886	−0.706120233	—
56811	Dkk2	1.681957771	−1.091223578	−1.841365063	—
71811	2610027H17Rik	1.681109981	−0.091891218	−0.841305329	—
106967	4732423E21Rik	1.680795366	−1.14928167	−1.89842576	—
74840	Manf	1.680416037	5.661591406	4.912772947	—
170624	Dep1	1.67964635	−0.639936601	−1.388094106	—
12493	Cd37	1.676432378	1.580930563	0.835536272	—
14128	Fcer2a	1.674362315	0.397278901	−0.346332846	—
244867	Arhgap20	1.673842816	0.97208289	0.228918833	—
56791	Ube2l6	1.672482243	1.4013191	0.659328206	—
20201	S100a8	1.671334895	5.585681503	4.844680659	—
21632	Tcrg-V1	1.669366705	0.80140757	0.062106668	—
14103	Fasl	1.668484494	−1.336294104	−2.074832382	—
402749	B430316J06Rik	1.668414035	−0.182236248	−0.920713601	—
66280	1810028F09Rik	1.667906481	−2.843011851	−3.58105025	—
214639	4930486L24Rik	1.667200855	1.66805516	0.930627237	—
76574	Mfsd2a	1.667083619	−0.088523392	−0.825849862	—
15214	Hey2	1.666966097	−0.816143467	−1.55336823	—
242248	Bank1	1.6637221	1.586981367	0.852566894	—
108105	B3gnt5	1.662701775	−0.670149416	−1.403678843	—
442801	Arhgef15	1.661258291	2.050991753	1.318715353	—
20055	Rps16	1.660906524	−2.4174457	−3.149416581	—
22671	Rnf112	1.66045614	−1.312459976	−2.044039591	—
246709	Rgs13	1.657843363	−2.973527297	−3.702835002	—
11889	Asgr1	1.657731381	0.084835216	−0.644375035	—
319737	D130051D11Rik	1.65712285	−0.030742413	−0.759422972	—
77630	Prdm8	1.656579829	1.618479505	0.890271778	—
102371	Gcom1	1.654388838	4.742519792	4.016221435	—

(Continued)

**Supplementary Table S2** (Continued)

380712	Tlcd2	1.653944467	1.833790643	1.107879847	–
22635	Zan	1.651537247	–1.290225991	–2.014035498	–
20348	Sema3c	1.650549849	4.667727967	3.944781257	–
67801	Plip	1.649958609	3.51724199	2.794812156	–
103795	Al594671	1.64952953	–3.753593294	–4.475647899	–
106634	8030497I03Rik	1.64952953	–2.828798048	–3.550852653	–
399593	Al661323	1.64952953	–1.652578587	–2.374633193	–
320832	Sirpb1a	1.649327296	2.93023263	2.208354911	–
12796	Camp	1.645219396	2.996034291	2.277754306	–
22370	Vtn	1.642458233	1.538333278	0.822476594	–
53791	Tlr5	1.640987458	0.277971009	–0.436593203	–
229900	Gbp6	1.640383776	3.789738741	3.075705361	–
327978	Slfn5	1.640266123	1.048465899	0.334535997	–
72049	Tnfrsf13c	1.639310627	0.212727687	–0.500361565	–
97071	C79250	1.638763383	–2.033974766	–2.746582328	–
20778	Scarb1	1.63770412	2.876668072	2.16499334	–
1.01E + 08	5430401H09Rik	1.636745724	–0.31078021	–1.02161042	–
74098	0610037L13Rik	1.636413215	0.453650734	–0.256886359	–
402754	5930427L02Rik	1.635742394	–0.280520714	–0.990466277	–
15959	Ifit3	1.634817388	4.259988005	3.550858512	–
104816	Aspg	1.63332476	–1.071709141	–1.779520817	–
73382	Prss52	1.632225713	–2.058865249	–2.765705824	–
15101	H60a	1.630183467	–2.867363545	–3.572397885	–
57916	Tnfrsf13b	1.629789385	1.84822293	1.14353739	–
12986	Csf3r	1.628304056	2.412591072	1.709220951	–
242109	Zfp697	1.626061642	2.484150809	1.78276886	–
66296	Haus2	1.625581129	1.113991165	0.413035605	–
238076	Kcns3	1.625056375	1.528548837	0.828059069	–
320392	7030407O06Rik	1.624441059	–0.525991734	–1.225935133	–
243653	Clec1a	1.623660062	3.376627716	2.677378103	–
93874	Pcdhb3	1.623632932	1.592448248	0.89322274	–
27215	Azi2	1.623598383	3.090454744	2.391259936	–
15930	Ido1	1.623057424	–0.96414535	–1.662859394	–
654820	G530011O06Rik	1.621769672	0.759283614	0.061714676	–
1E + 08	Gm2115	1.621043739	–0.158230159	–0.855153177	–
13041	Ctsw	1.620587957	1.023696898	0.327179573	–
108743	2210408K08Rik	1.62043815	4.497972579	3.801588624	–
552876	LOC552876	1.620277947	–0.170992965	–0.867234283	–
214642	A430107O13Rik	1.619862552	–0.196286295	–0.892157699	–
16909	Lmo2	1.619444677	4.263943079	3.568443895	–
229694	Al504432	1.619358722	2.336464725	1.641042117	–
234757	BC024137	1.617491777	–0.820708569	–1.514466948	–
231931	Gimap6	1.616642375	2.130612709	1.43761214	–
20701	Serpina1b	1.615269676	4.195246084	3.503471035	–
218877	Sema3g	1.615262823	5.141133862	4.449364934	–
60322	Chst7	1.614456312	1.548426244	0.857377843	–

Supplementary Table S2 (Continued)

218639	Arl15	1.613335329	1.966773792	1.276727462	—
70592	5730480H06Rik	1.612483627	−0.299858499	−0.98914301	—
74695	4930510E17Rik	1.611911862	−2.954572228	−3.643345088	—
99522	AA672641	1.611911862	−3.649973977	−4.338746838	—
67103	Ptgr1	1.611707045	4.387954739	3.699365206	—
103335	AU015253	1.611594547	−1.634543657	−2.323032486	—
108114	Slc22a7	1.608886386	−0.520664962	−1.206727414	—
208154	Btla	1.608886386	2.423276052	1.737213601	—
98858	Al131651	1.608865515	0.671786202	−0.014257534	—
666926	Gm8369	1.608256967	−0.75586066	−1.441358599	—
14237	Foxd4	1.608153904	−2.869328309	−3.554733792	—
15507	Hspb1	1.607802724	4.500801081	3.815710681	—
17085	Ly9	1.603277657	−0.152253646	−0.83327794	—
16175	Il1a	1.603227343	0.068853693	−0.612125326	—
244853	Fam55d	1.602209483	2.399108465	1.719045678	—
15493	Hsd3b2	1.600320095	0.511090534	−0.167269968	—
269643	Ppp2r2c	1.598655333	−0.954565923	−1.631424853	—
170942	Erdr1	1.598516087	4.861064227	4.184330963	—
52190	D3Ert258e	1.59717468	−0.873490846	−1.549012952	—
258206	Olfr1264	1.594199716	−1.550339403	−2.22317178	—
73903	4833403J16Rik	1.594199716	−0.659681494	−1.33251387	—
11677	Akr1b3	1.593788599	4.92088961	4.248429328	—
18054	Ngp	1.593221228	3.805002344	3.133055737	—
14469	Gbp2	1.5927855	4.597357291	3.925805298	—
57765	Tbx21	1.59261634	−0.242974704	−0.914373469	—
69550	Bst2	1.590589121	3.869692639	3.20013143	—
107526	Gimap4	1.590503509	6.094574219	5.425090664	—
68632	Myct1	1.589561722	3.459946022	2.791316985	—
21940	Cd27	1.589452115	−0.577680719	−1.246210272	—
68402	0710001A04Rik	1.589354948	−2.484300575	−3.15274193	—
52058	D4Ert276e	1.588568172	−0.369750466	−1.03747747	—
13828	Epb4.2	1.586543768	−1.267652698	−1.933540019	—
18705	Pik3c2g	1.58425519	0.315467415	−0.348337327	—
399578	8030447M02Rik	1.583320962	0.199294904	−0.463658836	—
78433	A930006K02Rik	1.582861507	−0.984833637	−1.647368669	—
77850	B830007D08Rik	1.582577982	0.279655481	−0.38262111	—
239083	Ccnb1ip1	1.582162521	0.377854586	−0.284043217	—
230594	Zcchc11	1.581989382	−0.65637974	−1.318119657	—
17329	Cxcl9	1.581033294	−0.689011127	−1.349878877	—
317757	Gimap5	1.579312248	1.80106072	1.141764284	—
52341	D4Ert2571e	1.579304042	−2.703174732	−3.362463673	—
70320	2610008G14Rik	1.579304042	−1.002374311	−1.661663252	—
16912	Psmb9	1.578853566	3.990002521	3.331125149	—
71051	4933401L05Rik	1.578525161	−1.48002234	−2.138599597	—
13813	Eomes	1.577884995	−0.464199267	−1.122191324	—
13120	Cyp4b1	1.57732446	6.771820631	6.114341174	—

(Continued)

**Supplementary Table S2** (Continued)

436230	BC065397	1.577023984	−0.415642994	−1.072847595	—
21638	Tcrg-V4	1.575891238	−1.374845582	−2.031013551	—
278279	Tmtc2	1.575408882	1.641411066	0.985684751	—
552911	LOC552911	1.575345269	−1.531278414	−2.186946473	—
76177	6330565B04Rik	1.571541762	−3.045839612	−3.698020223	—
74739	5830400J07Rik	1.570859641	−1.49203519	−2.143589469	—
75502	Cmtm2b	1.570859641	−1.634911586	−2.286465864	—
77688	9230104K21Rik	1.570859641	−0.028178474	−0.679732753	—
78611	Btbd19	1.570725185	0.283495062	−0.367935726	—
67220	Plekho1	1.569661471	2.524697979	1.874244533	—
244334	Defb8	1.568060292	−2.933400902	−3.582381934	—
12143	Blk	1.56804864	0.889331169	0.240360857	—
217887	BC022687	1.566416518	1.864926041	1.217458158	—
17285	Meox1	1.564513929	2.032378321	1.386663818	—
20965	Syn2	1.563962074	−0.753233325	−1.398438853	—
68271	4930441O14Rik	1.563949842	−1.718927592	−2.364121836	—
68157	6720475J19Rik	1.563908768	2.518893379	1.873737024	—
103711	Pnp0	1.563842868	2.786672898	2.141577337	—
72697	2810043O03Rik	1.563315929	0.270821866	−0.373787495	—
77442	9530020I12Rik	1.562652507	−1.910756462	−2.554753458	—
1E + 08	9130023H24Rik	1.561887532	0.948227554	0.304936981	—
76671	5330406M23Rik	1.561866066	1.140304704	0.497033959	—
17294	Mest	1.561064148	3.783532212	3.141002389	—
665005	Gm7444	1.560953259	−2.399294664	−3.041722003	—
15944	Irgm1	1.560381584	2.838346857	2.19644798	—
19265	Ptpcap	1.560248428	2.32142277	1.679647012	—
69816	2010001M09Rik	1.560150925	2.239485637	1.597800038	—
217012	Unc45b	1.559795276	4.040825267	3.39946858	—
66412	Arrdc4	1.558573074	2.366225325	1.725999527	—
74539	9030425L15Rik	1.558336196	1.151497673	0.511491159	—
216021	Stox1	1.557513118	0.679999178	0.040754864	—
56533	Rgs17	1.557366727	−1.492236803	−2.131345511	—
621549	LOC621549	1.556905408	−0.638865382	−1.277546677	—
57444	Isg20	1.556883173	4.606882168	3.968221479	—
11536	Gpr182	1.556489153	2.756390949	2.118095427	—
246746	Cd300lf	1.556171281	1.255458343	0.617457483	—
244579	Tox3	1.555135746	1.986548728	1.349508211	—
71795	Pitpnc1	1.554946474	2.623350797	1.986485878	—
52099	D1Ert75e	1.553380828	−0.175659421	−0.811070987	—
15288	Hmbs	1.552981509	3.150402531	2.515361879	—
69189	1810033B17Rik	1.552529719	3.064321903	2.429701017	—
14404	Gabre	1.552390898	−0.948436126	−1.582928006	—
74455	Nsun6	1.55239073	0.182503206	−0.451988517	—
15957	Ifit1	1.551174652	3.678661602	3.045300469	—
668880	Stard9	1.550467042	0.634014696	0.001311836	—
72480	Tspyl4	1.550379168	2.690019787	2.057398695	—

Supplementary Table S2 (Continued)

72415	Sgol1	1.548937523	0.015920695	−0.615358259	—
18646	Prf1	1.548017082	0.429764471	−0.200656921	—
320329	D830016K09Rik	1.547612431	−1.540258053	−2.170302275	—
78817	4930588G05Rik	1.547520744	−0.10449203	−0.734450778	—
72281	Sh2d4a	1.545803377	2.407873229	1.779516405	—
12142	Prdm1	1.545341188	2.114417382	1.486491983	—
20711	Spi15	1.543617637	−0.886262985	−1.512578418	—
105425	B930053N05Rik	1.543402397	−0.970303347	−1.596417598	—
13865	Nr2f1	1.542810649	1.591727584	0.966166575	—
108089	Rnf144a	1.542325122	2.207154751	1.582047834	—
107605	Rdh1	1.54185043	−3.303914871	−3.928577692	—
237211	Fancb	1.540914651	−0.04158426	−0.665371215	—
72837	2810487C13Rik	1.540286631	−3.262580749	−3.885779595	—
68888	Gkn3	1.538864414	0.48511482	−0.136751305	—
399602	9930024M15Rik	1.538685568	−0.604236687	−1.225935133	—
20202	S100a9	1.538502146	5.58976079	4.968234333	—
13611	S1pr4	1.537757202	2.183081878	1.562254145	—
78078	9230108I15Rik	1.537486408	1.132989728	0.512416072	—
233058	Zfp420	1.536785896	−0.178284681	−0.798200865	—
75342	4930556J24Rik	1.536062966	−2.492102082	−3.111339438	—
76927	1700021C14Rik	1.534152006	0.704447352	0.087005918	—
14263	Fmo5	1.533480698	−0.07799093	−0.694800938	—
99229	AU041474	1.532905162	0.546333941	−0.069934501	—
67722	4921517D21Rik	1.532550685	−1.825975052	−2.441909841	—
213068	Tmem71	1.530098565	3.267212334	2.653587744	—
78353	2500002B13Rik	1.530036834	0.752933073	0.139366688	—
328563	Apol11b	1.529824758	−0.795528014	−1.408894415	—
27356	Insl6	1.529824206	−1.376894409	−1.99026029	—
219150	Hmbx1	1.528543967	0.149216795	−0.462941255	—
103333	AU014973	1.527887488	−0.160664372	−0.77220268	—
243385	Gprin3	1.527691666	0.694786687	0.083433293	—
13392	Dlx2	1.527118711	−2.01256503	−2.623377245	—
20128	Trim30a	1.526756582	1.79728424	1.186814175	—
223989	4921513D23Rik	1.526483461	0.93453518	0.324323222	—
68875	Tmcc2	1.52643464	4.662877084	4.052711268	—
192678	Rassf3	1.525752522	3.587061282	2.977540307	—
77446	Heg1	1.525630295	0.92824881	0.318843413	—
64381	Ms4a8a	1.525346272	1.74410525	1.134968461	—
76737	Crel2	1.525200532	3.915396604	3.306397665	—
18946	Pnliprp1	1.524877655	−1.474311581	−2.083005077	—
18548	Pcsk1	1.524720619	−0.832827942	−1.441372858	—
1E + 08	Al662270	1.522611145	1.887847869	1.281300326	—
235587	Parp3	1.522542137	1.293740368	0.687258212	—
72090	Entpd8	1.522330232	−1.334443876	−1.940725225	—
76392	1700003F17Rik	1.52216593	−1.127360542	−1.733486176	—
22408	Wnt1	1.52216593	−2.191094591	−2.797220225	—

(Continued)



**Supplementary Table S2** (Continued)

16205	Gimap1	1.521733628	2.450155362	1.844439518	—
93968	Klra21	1.521130968	0.737751117	0.132606744	—
56546	Sec1	1.520892595	−0.580524143	−1.185442417	—
54199	Ccrl2	1.520579453	3.801336836	3.196715634	—
97148	C78692	1.520546896	0.237642958	−0.366947355	—
15242	Hhex	1.520431885	3.020273263	2.415792077	—
18761	Prkcq	1.519731462	2.311934103	1.708117682	—
73005	2900072G11Rik	1.518758179	−0.686032383	−1.288924562	—
75957	Mir17hg	1.516660954	1.057916395	0.457017785	—
20400	Sh2d1a	1.516482026	−1.065085549	−1.665813948	—
241128	Fam124b	1.516406371	−0.686969858	−1.287626281	—
54137	Acrbp	1.516338634	−1.412645122	−2.013237099	—
13417	Dnahc8	1.514989767	0.357491715	−0.241816334	—
66066	Gng11	1.513950199	6.093556886	5.495239137	—
216892	Spns2	1.513751697	2.845997911	2.247869334	—
1E + 08	Gm10374	1.513467257	2.39586355	1.798006087	—
66299	2610019N06Rik	1.512979711	0.427995257	−0.169397384	—
13113	Cyp3a13	1.512084588	−0.829781943	−1.426320791	—
15446	Hpgd	1.511638158	5.793239361	5.197126519	—
282663	Serp1b1b	1.511196719	−0.526284021	−1.121975496	—
16426	Itih3	1.511053908	−0.209337255	−0.804892386	—
18689	Phxr4	1.510100404	0.692804784	0.098160308	—
69578	2310016G11Rik	1.510100404	−1.476898619	−2.071543094	—
12346	Car1	1.509283487	−0.656658328	−1.25052214	—
71054	4933401P06Rik	1.507769199	−1.063484849	−1.655900455	—
319734	Cacna2d4	1.507410516	−1.483115525	−2.075187887	—
547253	Parp14	1.505931873	0.791654388	0.200997882	—
19011	Endou	1.505883559	0.718901155	0.128290936	—
77994	2810055G20Rik	1.505601112	−0.087199335	−0.677538934	—
240034	Zfp760	1.505354013	2.323453342	1.733350537	—
668253	Dleu2	1.504254552	0.513592812	−0.07545591	—
67138	Herc6	1.503355434	0.108231702	−0.47995444	—
381822	1190002F15Rik	1.502482937	−2.166231556	−2.753580163	—

Abbreviations: BPD, bronchopulmonary dysplasia; FC, fold change.

<b>Supplementary Table S3</b> The top 10 downregulated and upregulated miRNAs			
Downregulated miRNAs	1/FC	Upregulated miRNAs	FC
let-7c-1-star	4.236293	miR-205	23.86741
miR-466f	3.463282	miR-431	11.8417
miR-299	3.447047	miR-449c	10.9538
miR-220	3.38621	miR-203	10.45745
miR-686	3.325744	miR-133a	9.414993
miR-759	2.966873	miR-300	8.166388
miR-302b	2.774358	miR-350	5.921157
miR-384-5p	2.657178	let-7d-star	5.338742
miR-452	2.594065	miR-128	4.993825
let-7i-star	2.567533	miR-382	4.974728

Abbreviations: FC, fold change; miRNA, microRNA.

<b>Supplementary Table S4</b> The top 10 downregulated and upregulated genes			
Downregulated mRNAs	1/FC	Upregulated mRNAs	FC
Gdpd3	34.91378342	Nppa	199.469578
Ear1	34.41343174	Plunc	110.497928
H2-Q5	12.24736598	Itln1	95.0600777
Gbp8	8.543379381	U46068	58.1507419
Prkg2	6.108377485	Reg3g	55.7865767
Cyp4a12a	5.022771566	Clca3	44.698445
Spink5	4.962234055	Gp2	21.7363815
Gm10033	4.884079185	Acta1	19.5810365
Rnase1	4.872732037	BB144871	14.4774363
Tdgf1	3.795916746	Adipoq	10.8608106

Abbreviation: FC, fold change.

<b>Supplementary Table S5</b> The top 10 enriched GO BP of the downregulated genes			
GO ID	GO term	p-Value	Gene name
GO: 0045954	Positive regulation of natural killer cell mediated cytotoxicity	1.57E-05	Gimap5; Il12a; Klrk1c; Sh2d1a; Klrk1; H60a
GO: 0007600	Sensory perception	3.08E-05	Il1a; Lrat; Cacna2d4; Olfr1264; Mcoln3
GO: 0032496	Response to lipopolysaccharide	0.000144	Snca; Il1b; Prdm1; Ctsg; Scarb1; Zcchc11; Lbp; Ido1; Il12a
GO: 0002824	Positive regulation of adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains	0.00021	H2-D1; Gimap5; Hspa1b; Il12a; Tnfrsf13c; Ido1; Fcer2a
GO: 0030218	Erythrocyte differentiation	0.000291	Lmo2; Epb4.2; Klf1; Ahsp; Hoxa5; Bpgm; Trim10; Alas2
GO: 0002573	Myeloid leukocyte differentiation	0.001006	Cd300lf; Ifi204; Kit; Spib; Ccl5; Gimap5; Clec2d; Hhex
GO: 0034123	Positive regulation of toll-like receptor signaling pathway	0.002244	Lbp; Tlr3; Tlr5
GO: 0052033	Pathogen-associated molecular pattern dependent induction by symbiont of host innate immunity	0.002244	Tlr3; Tlr5; Tlr6
GO: 0032490	Detection of molecule of bacterial origin	0.002244	Scarb1; Tlr6; Lbp
GO: 0045428	Regulation of nitric oxide biosynthetic process	0.002244	H60a; Gimap5; Il1b; Klrk1; Dynll1

Abbreviations: BP, biological process; GO, Gene Ontology.

**Supplementary Table S6** The enriched pathways of the downregulated genes

Pathway ID	Pathway name	p-Value	Gene name
4060	Cytokine–cytokine receptor interaction	2.59E-05	Ccr6; Csf3r; Fasf; Il12a; Il18; Il1a; Il1b; Kit; Ltb; Cxcl9; Ccl5; Cd27; Tnfsf10; Il22ra2; Cxcl14; Tnfrsf13b; Tnfrsf13c
4650	Natural killer cell mediated cytotoxicity	0.000116	Fasf; Gzmb; H2-D1; H60a; Klr1d1; Klr1b1c; Ncr1; Prf1; Sh2d1a; Tnfsf10; Klrk1
4640	Hematopoietic cell lineage	0.000116	Cd19; Ms4a1; Cd37; Cr2; Csf3r; Fcer2a; Il1a; Il1b; Kit
5332	Graft vs. host disease	0.000116	Fasf; Gzmb; H2-D1; H2-Q1; Il1a; Il1b; Klr1d1; Prf1
4940	Type-I diabetes mellitus	0.000158	Fasf; Gzmb; H2-D1; H2-Q1; Il12a; Il1a; Il1b; Prf1
4620	Toll-like receptor signaling pathway	0.001538	Tlr3; Il12a; Il1b; Lbp; Cxcl9; Ccl5; Tlr6; Tlr5

**Supplementary Table S7** The top 10 enriched GO BP of the upregulated genes

GO ID	GO term	p-Value	Gene name
GO: 0060048	Cardiac muscle contraction	5.59E-10	Tnni3; Tpm1; Myl4; Actc1; Vegfb; Myl1; Fkbp1b; Tnnc1; Myl3; Ctgf; Mybpc3; Ryr2
GO: 0007186	G-protein coupled receptor protein signaling pathway	9.29E-09	Ntsr2; Pthlh; Edn1; Lpar1; Rgs5; Penk; Rgs4; Agtr2; Apoe; Entpd2; Ereg; Mrgprf
GO: 0007600	Sensory perception	2.53E-07	Rbp4; Bbs1; Rpgr; Col1a1; Ephx2; Aqp4; Atp6v1b1; Sox2; Penk
GO: 0055010	Ventricular cardiac muscle tissue morphogenesis	2.79E-07	Foxc2; Myh6; Mybpc3; Foxc1; Myl3; Tnnt2; Tnni3; Tnnc1; Tpm1
GO: 0045214	Sarcomere organization	3.07E-07	Myh6; Edn1; Mybpc3; Xirp1; Tcap; Ttn; Tpm1; Tnnt2
GO: 0006094	Gluconeogenesis	1.60E-05	Eno2; Pck1; Atf3; Pgam2; Adipoq; Lep; Gpd1; Rbp4
GO: 0030240	Skeletal muscle thin filament assembly	3.92E-05	Acta1; Ttn; Tcap; Actc1
GO: 0030199	Collagen fibril organization	5.10E-05	Foxc2; Col1a1; Adamts2; Col3a1; Dpt; Foxc1; Col5a1
GO: 0010038	Response to metal ion	0.000126	Slc25a13; Ryr2; Sord; Pgam2; Tnnt2; Mt1; Abat; Tnnc1; Gatm; Mt2; Fabp4; Thbs1; Ttn
GO: 0006096	Glycolysis	0.000189	Pfkm; Eno4; Pgam2; Igf1; Eno3; Hk2; Dhdkd1; Eno2

Abbreviations: BP, biological process; GO, Gene Ontology.

Supplementary Table S8 The enriched pathways of the upregulated genes			
Path ID	Pathway name	p-Value	Gene name
4740	Olfactory transduction	5.28E-07	Clca3; Calml3
4512	ECM-receptor interaction	5.34E-05	Chad; Col3a1; Col5a1; Col6a2; Col1a1; Fn1; Itgb4; Thbs1; Thbs2; Fndc5; Fndc1; Col4a6
4510	Focal adhesion	5.40E-05	Actn2; Chad; Col3a1; Col5a1; Col6a2; Col1a1; Figf; Fn1; Igf1; Myl7; Itgb4; Mylk3; Thbs1; Thbs2; Vegfb; Pdgfc; Flnc; Col4a6
3320	PPAR signaling pathway	5.66E-05	Adipoq; Fabp4; Aqp7; Fabp7; Fabp3; Acsl1; Me1; Pck1; Ucp1; Slc27a2; Acox2
1430	Cell communication	0.000396	Chad; Col3a1; Col5a1; Col6a2; Col1a1; Dsc2; Fn1; Gjb5; Krt15; Itgb4; Thbs1; Thbs2; Col4a6
10	Glycolysis/gluconeogenesis	0.0008	Adh7; Eno2; Eno3; Hk2; Pfkfb; Pgcm2; Acss2; Aldh1b1
330	Arginine and proline metabolism	0.001567	Ckm; Ckmt1; Got1; Pycr1; Gatm; Ckmt2
410	Beta-alanine metabolism	0.002477	Upb1; Aoc3; Abat; Aldh1b1; Abp1
620	Pyruvate metabolism	0.004808	Me3; Akr1b7; Me1; Pck1; Acss2; Aldh1b1

Abbreviations: ECM, extracellular matrix; PPAR, peroxisome proliferator-activated receptor.

Supplementary Table S9 The top 10 genes and their putative interaction of each of the candidates	
miRNA	Putative target genes
Mir-374	Kcnj15, Ankrd1, Slc15a2, Myl1, Gdf10, Myoz2, Cap1, Ereg, Tmem45b, BC018473, Fgf12, Ccl11, Kbtbd10, Plcx3, Cmya5, Ndr4, Wnt16, 9130014G24Rik, Prom1, Nts, Abra, Rnf128, Dgat2, 1700003M02Rik, Thbs1, Pdk4, Ttn, Atp6v1b1, Slc25a31, Txlnb, Matn2, Iqcg, Sgcb, Slc5a8, Gm106, Plch1, Agr3, Dsc2, Pdgfrl, Gm626, Ephx4, Murc, Alox15, Ccl12, Mbp, Gm11545, 9230110C19Rik, Amacr, Enkur, Lrrc39, Cd163, Ccdc162, Nexn, Cldn4, Wif1, Adh7, Rgs4, Foxj1, Lrrc36, Dnahc6, Elmod1, Pfaf, Adam8, Tecrl, Ccdc96, Foxred2, Adamdec1, Agtr2, Katnal2, Slc16a12, A930001A20Rik, Dmrt2, Gm11992, Myom1, Hk2, Tmem20, Dbc1, Twist1, Sox17, Npl, Aqp4, Pla2g4f, Apobec4, Fn1, Ttc39a, Ttc12, Abat, Aspn, Ugt8a, Abcc4, Gpc6, Col3a1, Ptpn20, Errf1, F13a1, Kcnt2, Pappa2, Hspa13, Ppp2r3a, Fgl2, Dner, Ccno, Gatm, Tmem107, Ttc8, Caps2, Ccdc3, Myb, Ttc9, Foxc1, Wdr78, Pdgfc, Tbx18, Efhh, Mapk4, Col4a6, Mpzl2, Smoc2, Frem1, Rwdd3, Acta2, Mcf2l, Mbd1, AK129341, Slc25a13, Rarres1, Bbs1, Nov, Acs11, Slc25a33, Uox, BC034902, Sorcs2, Akap12, Lpar1, Atp2c2, Lnc13, Pdlm3, Rpgr, Adam12, Fam154b, Ccdc87
mmu-miR-384-5p	Scin, Kcnj15, Ankrd1, Slc15a2, Myoz2, Cxcl17, Cd209e, Fgf12, Kbtbd10, Plcx3, Pck1, Nts, Thbs2, Fhod3, Wdr16, Rnf128, Mpz, Pdk4, Ttc29, Ttn, Tmem232, Lrrc6, 1700016K19Rik, Txlnb, Matn2, Iqcg, Meig1, 4930451C15Rik, Slc5a8, Gm106, Plch1, Fap, Actc1, Dsc2, Trdn, Kif9, Cyr61, Rad51ap1, Me1, D6Mm5e, Anubl1, Usp2, Frmd5, Fam183b, Ryr2, Enpp1, Serpine1, Lrrc36, 9530036O11Rik, Tecrl, Ccdc80, Ttc16, 5430414B12Rik, Katnal2, Fsd2, Dmrt2, Defb1, Ppargc1a, Egl3, Cirbp, 633040615Rik, Tmem20, Fgl1, Akap14, Cygb, Efcab2, Fn1, Ttc39a, Klra7, Abat, Mt1, Ugt8a, Gfpt2, Abcc4, Rcan1, Col3a1, Ptpn20, Errf1, Pex11a, Negr1, Kcnt2, Pappa2, Mrvi1, Ddit4, Hspa2, 4430402118Rik, Rbm24, F3, Mfap5, Fgl2, Gatm, Bex4, Caps2, Ift74, Rbpms2, Me3, Daglb, Foxc1, Abcc9, Cdh2, Odf3b, Fam178b, Smoc2, Frem1, Lrrc17, Igf1, Rwdd3, Mcf2l, Mreg, AK129341, Rarres1, Nov, Cap2, Uox, Mafk, Eno2, Lnc13, Rpgr, Frzb, Adam12, Megf6, Gal3st4
mmu-miR-377	Trim63, Car3, Slc15a2, Ereg, Rgs5, Slc47a1, Pck1, Retn, Nts, 1700003M02Rik, Lrguk, Thbs1, Pdk4, Fndc5, Ttc29, Ttn, Tmem232, Myom2, Tcap, Thrsp, Sgcb, Slc5a8, Enpp5, Dsc2, Trdn, Gm626, 1700009P17Rik, Rsph4a, Kif9, Fbln7, Rad51ap1, Slc2a4, Murc, Frmd5, Mbp, Ryr2, Enpp1, 8430408G22Rik, Lrrc39, Mall, Ccdc162, Serpine1, Fndc1, Rgs4, Flnc, Elmod1, 9530036O11Rik, Fkbp1b, 5430414B12Rik, Gata5, 1700040L02Rik, Ppargc1a, Cirbp, St6galnac5, Hk2, Tmem20, Vwa3b, Dbc1, Adss1, Lgi2, Kcne4, Kcna1, Ttc12, Akr1c18, Zfp474, Abcc4, Rcan1, Cd109, Gpc6, Efcab1, Gxylt2, Upb1, Negr1, Ctgf, Sertad4, Pappa2, Synpo2, Dner, H2-Q7, Klf15, Sync, Ttc8, Akr1c19, Myb, Shox2, Ttc9, Ccl7, Abcc9, Cdh2, Tbx18, Col4a6, Mpzl2, Smoc2, Frem1, Ociad2, Igslf11, Igf1, Mcf2l, Mbd1, Egr1, Cdkl4, Tpm1, Bbs1, Acs11, Cap2, Nol3, BC034902, Gjb5, Lpar1, Lnc13, Pdlm3, Rpgr, Nptx1, Adam12, Megf6
mmu-miR-543	Smpx, Lmod2, Csrp3, Prg4, Ereg, Sult1d1, Fgf12, Ccl11, Slc47a1, 9130014G24Rik, Col15a1, Baiap2l1, Fhod3, Dgat2, Mmp12, Agr2, Mpz, Lrguk, Fndc5, Tmem232, Mlf1, Myom2, Txlnb, Iqcg, Agr3, Ccna1, Trdn, Rsph4a, Cyr61, Aldh1b1, Tmc5, Alox15, Fam183b, Lrrc39, Cd163, Ccdc162, Armc4, Clec10a, Spag6, Adh7, Rgs4, Foxj1, Mylk3, Cilp, Ttc16, 6330439K17Rik, Adhfe1, Fam195a, Hhip, Clic6, Slc16a12, Ces1f, Defb1, Ppargc1a, Hk2, Twist1, Actr3b, Cpxm2, 4832428D23Rik, Aqp4, Efcab2, Kcna1, Ttc39a, Col5a1, Klra7, Ugt8a, Abcc4, Cd109, Gpc6, Pcdh7, F13a1, Negr1, Sertad4, Rbm24, F3, Dner, Phex, Car13, Klf15, Gatm, Sync, Ccdc3, Myb, Ccl7, Wnt11, Wdr78, Lmcd1, Cdh2, D130043K22Rik, Tbx18, Efhh, Mapk4, Gpd1, Frem1,

(Continued)

Supplementary Table S9 (Continued)

miRNA	Putative target genes
	1700001L19Rik, Igsf11, Igf1, Acta2, Mbd1, Egr1, Myocd, Acs1, Slc25a33, Uox, Akap12, Lancl3, Pdlim3, Sostdc1, Rpgr, Reg1, Fos, Acss2
mmu-miR-290-5p	Adipoq, Kcnj15, Smpx, Cd209e, Xirp1, Kbtbd10, Slc47a1, Ndr4, 9130014G24Rik, Hal, Mmp12, Lrguk, Pdk4, Ttn, Hfe2, Lrrc6, Thrsp, Sgcg, Plch1, Gm626, Nr4a1, Fbln7, Bex1, Usp2, Ryr2, Sox2, Gm11545, Mall, Ccdc162, Pln5, Mns1, Cldn4, Clec10a, Fndc1, Rgs4, Tmem38a, Elmod1, Nnmt, Pfas, Fkbp5, 6330439K17Rik, Foxc2, Adamdec1, Itih5, Adhfe1, Katnal2, Defb1, Gm11992, Dpt, Ngef, Hk2, Alg6, Akap14, Dbc1, Xylb, Efcab2, Ttc39a, Cd209g, Aspn, Mt1, Ugt8a, Ptpn20, Pcdh7, Errfi1, F13a1, Fkbp10, Hspa13, 4430402118Rik, Ppp2r3a, F3, Dner, Phex, Car13, Rbp4, Col6a2, Shox2, Ttc9, Me3, Foxc1, Wdr78, D130043K22Rik, Tbx18, Mapk4, Gpd1, Frem1, Ociad2, Tpm1, AK129341, Myocd, Bbs1, Epyc, Slc25a33, Fam40b, Mafb, Capn6, Rpgr, Cryz
mmu-miR-302b	Ear11, Actn2, Myoz2, Fgf12, Cmya5, Prom1, Hal, Pdk4, Ttc29, Txlnb, Ppp1r36, Gm106, Cdh3, Enpp5, Plch1, Fap, Dsc2, Trdn, Rad51ap1, Ccdc67, Synpo2l, Slc2a4, Aldh1b1, Slc25a35, Ahnak2, Frmd5, Has3, Ryr2, Sox2, Enpp1, Cdkn1a, Ccdc162, Serpine1, Rgs4, 1700007K13Rik, 9530036O11Rik, Pfas, Adamdec1, Adhfe1, Katnal2, Slc16a12, Eno4, Gm11992, Myom1, Cirbp, Tmem20, Alg6, Akap14, Vwa3b, Cygb, Aqp4, Kcne4, Xylb, Pla2g4f, Wdr69, Fn1, Ttc39a, Fam167a, Hspb6, Ugt8a, Cd109, Gpc6, Pcdh7, Efcab1, F13a1, Smoc1, Negr1, Sertad4, Hspa13, Itgb4, 4932425I24Rik, Ppp2r3a, F3, Phex, Pgbd5, Bex4, Fam26e, BC060267, Caps2, Myb, Ttc9, Daglb, Abcc9, Cdh2, Gpd1, Lep, Nlrp10, Igf1, Mcf2l, Mbd1, A530020G20Rik, Mreg, Bbs1, Pdlim3, Fos, Acss2
mmu-miR-653	Car3, Myoz2, Sult1d1, Fgf12, 2310046A06Rik, Plcx3, 9130014G24Rik, Nts, Abra, 1600029I14Rik, Mmp12, AU021034, Chad, Ttn, Lrrc6, Txlnb, Corin, Edn1, 4930451C15Rik, Plch1, Ccna1, Pdgfrl, Atf3, Trdn, Fbln7, Ephx4, 1100001G20Rik, Slc25a35, Frmd5, Kcne3, Has3, Lrrc34, Sox2, Lrrc39, Ccdc162, Spag6, Rgs4, Lrrc36, Dnahc6, Tmem38a, Ankrd42, Tecrl, Foxred2, A930001A20Rik, 1700013F07Rik, Gm11992, Dpt, Tmem20, Dbc1, Cpxm2, 4832428D23Rik, Adamts1, Apobec4, Abat, Aspn, Gpc6, Col3a1, Ptpn20, Errfi1, Dpy19l2, F13a1, Upb1, Negr1, Moxd1, Rbm24, Dner, Tagln, Shox2, 2810405K02Rik, Abcc9, Pdgfc, Efhb, Nlrp10, Igsf11, Igf1, Acta2, A530020G20Rik, Mmp2, Myocd, Vtcn1, Uox, BC034902, Sorcs2, Akap12, Capn6, Lancl3, Pdlim3, Rpgr, Frzb, Nptx1, Slc16a7, Smtn, Acss2
mmu-miR-203	Il22ra2, Samd12, Rsad2, Slc17a2, Ifi203, Stk25, Ms4a1, Clec2d, Ncr1, Glt25d2, Tmem2, Iigp1, Tnfsf10, Slfn4, Thsd7a, Setd3, Igfbp3, Kcnq5, Mospd3, Nhsl2, H3f3a, Gbp6, Zyg11b, Snca, D430041D05Rik, Kit, Rab1, Klr1b1b, Il1b, Klrk1, Klr1c, Prex2, Ermap, Stx11, Hsph1, Slc13a4, Gpr174, Galnt13, Tfpi2, Zfp120, Dkk2, Arhgap20, Fasl, 4930486L24Rik, Bank1, B3gnt5, Rgs13, Gcom1, Zan, Sema3c, Slfn5, Ifit3, Clec1a, Azi2, Ido1, A430107O13Rik, Lmo2, AI504432, Sema3g, Chst7, Il1a, Fam55d, Ppp2r2c, Gbp2, Tbx21, Myct1, Zcchc11, Cxcl9, Eomes, BC065397, Tmtc2, Mest, Unc45b, Rgs17, Tox3, Pitpnc1, Nsun6, Stard9, Rnf144a, Zfp420, 4921517D21Rik, 4921513D23Rik, Heg1, AI662270, Hhex, Dnahc8, Serpinb1b, Caca2d4, Parp14, Endou, 2810055G20Rik
mmu-miR-33	Itgb1bp3, Kcnj15, Ankrd1, Car3, Actn2, Dhrr7c, Myoz2, Hspb7, Plcx3, Ndr4, Wnt16, Saa3, Cdh4, Fhod3, Rnf128, Hal, St8sia6, Thbs1, Pdk4, Ttc29, Ttn, Mlf1, Dio1, Edn1, Meig1, Fap, Fabp7, Ahnak2, Murc, Has3, Tmem212, Ryr2, Gm11545, Lrrc39, Rgs4, Elmod1, 9530036O11Rik, Tecrl, Ccdc96, Itih5, Rtdr1, Adhfe1, Ribc1, Pthlh, 6330406I15Rik, Alg6, Twist1, Cpxm2, Kcne4, Ttc39a, Abat, Ugt8a, Cd109, Errfi1, Akr1b7, F13a1, Hspa2, F3, Fbln1, Pnck, Klfl5, Gatm, Myb, Ttc9, Rbpms2, Me3, Foxc1, Pdgfc, Abp1, Cdh2, Mapk4, Smoc2, Igsf11, Igf1, Mbd1, Mreg, Mmp2, Slc25a13, Bbs1, Nov, Nol3, Fam40b, Lpar1, Slc22a4, Col8a2, Nptx1, Adam12, Fam154b
mmu-miR-29b	Itln1, Trim63, Car3, BC018473, Ndr4, Col15a1, Nts, C1qtnf3, AU021034, Mlf1, Myom2, Matn2, Ppil6, Sgcg, 6820408C15Rik, Slc5a8, Cdh3, Enpp5, Armc10, Dsc2, Rad51ap1, Ctsk, Tmc5, Mybpc3, Frmd5, Has3, Lrrc34, Mbp, Gm11545, Cdkn1a, Lrrc39, Mall, Ankrd23, Spag6, Bdh1, Pfas, Fkbp1b, Tecrl, Ccdc80, Ttc16, Agtr2, Adhfe1, Katnal2, Dnaic2, Fsd2, A930001A20Rik, Pthlh, Per1, Dbc1, Hepacam, Ttc39a, Fam167a, Rcan1, Gpc6, Col3a1, Gxylt2, F13a1, Negr1, Fkbp10, F3, Mfap5, Fbln1, Col6a2, Ttc9, Asb11, Ntsr2, Me3, Pdgfc, Col4a6, Lep, Frem1, Nlrp10, Igf1, Mmp2, Agpat2, Tpm1, Sh3bgr, Bbs1, E130203B14Rik, Nov, Slc25a33, Mafb, Aqp7, 1700019D03Rik, Frzb, Adam12, Fos
mRNA	Regulated by putative miRNAs
2810055G20Rik	mmu-let-7f, mmu-miR-1, mmu-miR-122, mmu-miR-124, mmu-miR-128, mmu-miR-132, mmu-miR-134, mmu-miR-137, mmu-miR-148a, mmu-miR-148b, mmu-miR-183, mmu-miR-190, mmu-miR-203, mmu-miR-206, mmu-miR-21, mmu-miR-296-3p, mmu-miR-29c, mmu-miR-301a, mmu-miR-322, mmu-miR-329, mmu-miR-362-3p, mmu-miR-382, mmu-miR-421, mmu-miR-433, mmu-miR-499, mmu-miR-551b, mmu-miR-708, mmu-miR-721, mmu-miR-882, , Hmbox1: mmu-let-7f, mmu-miR-1, mmu-miR-10b, mmu-miR-124, mmu-miR-132, mmu-miR-133a, mmu-miR-133b, mmu-miR-137, mmu-miR-140, mmu-miR-148a, mmu-miR-148b, mmu-miR-154, mmu-miR-155, mmu-miR-183, mmu-miR-206, mmu-miR-291b-3p, mmu-miR-296-3p, mmu-miR-29c, mmu-miR-301a, mmu-miR-322, mmu-miR-329, mmu-miR-362-3p, mmu-miR-379, mmu-miR-411, mmu-miR-499, mmu-miR-708, mmu-miR-876-3p
Hmbox1	mmu-let-7f, mmu-miR-1, mmu-miR-10b, mmu-miR-124, mmu-miR-132, mmu-miR-133a, mmu-miR-133b, mmu-miR-137, mmu-miR-140, mmu-miR-148a, mmu-miR-148b, mmu-miR-154, mmu-miR-155, mmu-miR-

Supplementary Table S9 (Continued)

miRNA	Putative target genes
	183, mmu-miR-206, mmu-miR-291b-3p, mmu-miR-296-3p, mmu-miR-29c, mmu-miR-301a, mmu-miR-322, mmu-miR-329, mmu-miR-362-3p, mmu-miR-379, mmu-miR-411, mmu-miR-499, mmu-miR-708, mmu-miR-876-3p
Ifi203	mmu-miR-1, mmu-miR-124, mmu-miR-134, mmu-miR-154, mmu-miR-155, mmu-miR-183, mmu-miR-190, mmu-miR-203, mmu-miR-206, mmu-miR-208a, mmu-miR-21, mmu-miR-29c, mmu-miR-301a, mmu-miR-329, mmu-miR-362-3p, mmu-miR-382, mmu-miR-411, mmu-miR-421, mmu-miR-449a, mmu-miR-449c, mmu-miR-499, mmu-miR-876-3p, mmu-miR-882
Arhgap20	mmu-let-7f, mmu-miR-134, mmu-miR-140, mmu-miR-148a, mmu-miR-148b, mmu-miR-154, mmu-miR-183, mmu-miR-190, mmu-miR-203, mmu-miR-205, mmu-miR-300, mmu-miR-322, mmu-miR-411, mmu-miR-421, mmu-miR-433, mmu-miR-499, mmu-miR-551b, mmu-miR-708, mmu-miR-876-3p, mmu-miR-882
Tox3	mmu-let-7f, mmu-miR-1, mmu-miR-128, mmu-miR-132, mmu-miR-137, mmu-miR-148a, mmu-miR-148b, mmu-miR-190, mmu-miR-203, mmu-miR-206, mmu-miR-291b-3p, mmu-miR-296-3p, mmu-miR-301a, mmu-miR-411, mmu-miR-431, mmu-miR-433, mmu-miR-708, mmu-miR-721, mmu-miR-882
Parp14	mmu-let-7f, mmu-miR-10b, mmu-miR-124, mmu-miR-128, mmu-miR-133a, mmu-miR-133b, mmu-miR-137, mmu-miR-148b, mmu-miR-154, mmu-miR-155, mmu-miR-190, mmu-miR-192, mmu-miR-203, mmu-miR-208a, mmu-miR-322, mmu-miR-329, mmu-miR-362-3p, mmu-miR-379, mmu-miR-421
Kit	mmu-miR-122, mmu-miR-128, mmu-miR-137, mmu-miR-154, mmu-miR-190, mmu-miR-203, mmu-miR-296-3p, mmu-miR-29c, mmu-miR-301a, mmu-miR-322, mmu-miR-329, mmu-miR-362-3p, mmu-miR-382, mmu-miR-421, mmu-miR-431, mmu-miR-708, mmu-miR-721, mmu-miR-882
Rab1	mmu-miR-132, mmu-miR-137, mmu-miR-148a, mmu-miR-148b, mmu-miR-155, mmu-miR-184, mmu-miR-192, mmu-miR-203, mmu-miR-21, mmu-miR-296-3p, mmu-miR-29c, mmu-miR-301a, mmu-miR-322, mmu-miR-329, mmu-miR-362-3p, mmu-miR-421, mmu-miR-431, mmu-miR-721
Bank1	mmu-miR-1, mmu-miR-122, mmu-miR-124, mmu-miR-137, mmu-miR-154, mmu-miR-192, mmu-miR-203, mmu-miR-206, mmu-miR-329, mmu-miR-362-3p, mmu-miR-382, mmu-miR-421, mmu-miR-433, mmu-miR-449a, mmu-miR-449c, mmu-miR-499, mmu-miR-882
F13a1	mmu-miR-138, mmu-miR-150, mmu-miR-215, mmu-miR-290-5p, mmu-miR-299, mmu-miR-29b, mmu-miR-302b, mmu-miR-33, mmu-miR-335-5p, mmu-miR-363, mmu-miR-374, mmu-miR-489, mmu-miR-491, mmu-miR-543, mmu-miR-653, mmu-miR-875-5p, mmu-miR-96

Abbreviation: miRNA, microRNA.

**Supplementary Table S10** The top 18 enriched GO BP of the first immune related subnetwork

GO ID	GO term	p-Value	Gene name
GO: 0051092	Positive regulation of NF-kappa B transcription factor activity	1.12E-11	Tlr3; Traf1; Ikbkb; Traf6; Il1b; Traf5; Myd88; Traf2; Prkcq; Ikbkg
GO: 0045954	Positive regulation of natural killer cell mediated cytotoxicity	6.17E-09	Gimap5; Il12a; Klr1c; Raet1b; Sh2d1a; Klrk1
GO: 0042102	Positive regulation of T-cell proliferation	1.35E-06	Il18; Tnfrsf13c; Il12a; Il1b; Traf6; Prkcq
GO:0032755	Positive regulation of interleukin-6 production	1.62E-06	Lbp; Il1a; Myd88; Il1b; Tlr3
GO:0046330	Positive regulation of JNK cascade	1.94E-06	Cd27; Il1b; Tlr3; Il1a; Myd88
GO: 0048169	Regulation of long-term neuronal synaptic plasticity	2.29E-06	Kit; Grin2b; Dlg4; Grin1; Snca
GO: 0006916	Apoptosis	5.27E-06	Myd88; Traf2; Vegfb; Il1b; Snca; Traf6; Ikbkb; Cd27; Hspa1b
GO: 0001782	B-cell homeostasis	1.04E-05	Ikbkb; Tnfrsf13c; Ikbkg; Tnfrsf13b
GO: 0070555	Response to interleukin-1	1.29E-05	Il1r1; Traf6; Snca; Myd88
GO: 0045080	Positive regulation of chemokine biosynthetic process	2.33E-05	Tlr3; Il1b; Myd88
GO: 0008633	Activation of proapoptotic gene products	2.35E-05	Ywhab; Traf2; Tnfrsf10; Fasl
GO: 0043123	Positive regulation of I-kappa B kinase/NF-kappa B cascade	3.29E-05	Traf6; Il1a; Bst2; Il1b; Tlr3; Myd88
GO: 0032729	Positive regulation of interferon-gamma production	3.84E-05	Klrk1; Il18; Raet1b; Il12a
GO: 0045078	Positive regulation of interferon-gamma biosynthetic process	9.31E-05	Tlr3; Cd27; Tnfrsf13c
GO: 0007250	Activation of NF-kappa B-inducing kinase activity	9.31E-05	Traf6; Ikbkg; Traf2
GO: 0030889	Negative regulation of B-cell proliferation	0.000116	Prdm1; Tnfrsf13b; Btla
GO: 0045086	Positive regulation of interleukin-2 biosynthetic process	0.000116	Il1b; Il1a; Prkcq
GO: 0001916	Positive regulation of T-cell mediated cytotoxicity	0.00026	Il12a; H2-D1; Hspa1b

Abbreviations: BP, biological process; GO, Gene Ontology; NF, nuclear factor.

<b>Supplementary Table S11</b> The top 12 enriched GO BP of the second immune related subnetwork			
GO ID	GO term	p-Value	Gene name
GO: 0008285	Negative regulation of cell proliferation	0.000214	Rbp4; Scin; Cebpa; Cdkn1a; Foxj1; Thbs1; Ereg
GO: 0010757	Negative regulation of plasminogen activation	0.00024	Serpine1; Thbs1
GO: 0048585	Negative regulation of response to stimulus	0.000368	Serpine1; Enpp1; Foxj1; Lep; Col3a1
GO: 0051918	Negative regulation of fibrinolysis	0.000851	Serpine1; Thbs1
GO: 0019221	Cytokine-mediated signaling pathway	0.001003	Cebpa; Ereg; Adipoq; Lep
GO: 0002683	Negative regulation of immune system process	0.001228	Thbs1; Col3a1; Vtcn1; Foxj1
GO: 0009749	Response to glucose stimulus	0.001258	Adipoq; Thbs1; Fkbp1b
GO: 0045766	Positive regulation of angiogenesis	0.00139	Thbs1; Ccl11; Serpine1
GO: 0010670	Positive regulation of oxygen and reactive oxygen species metabolic process	0.001442	Thbs1; Cdkn1a
GO: 0006111	Regulation of gluconeogenesis	0.001609	Adipoq; Lep
GO: 0007162	Negative regulation of cell adhesion	0.001761	Serpine1; Adipoq; Thbs1
GO: 0010677	Negative regulation of cellular carbohydrate metabolic process	0.001834	Enpp1; Adipoq

Abbreviations: BP, biological process; GO, Gene Ontology; JNK, c-Jun N-terminal kinase.