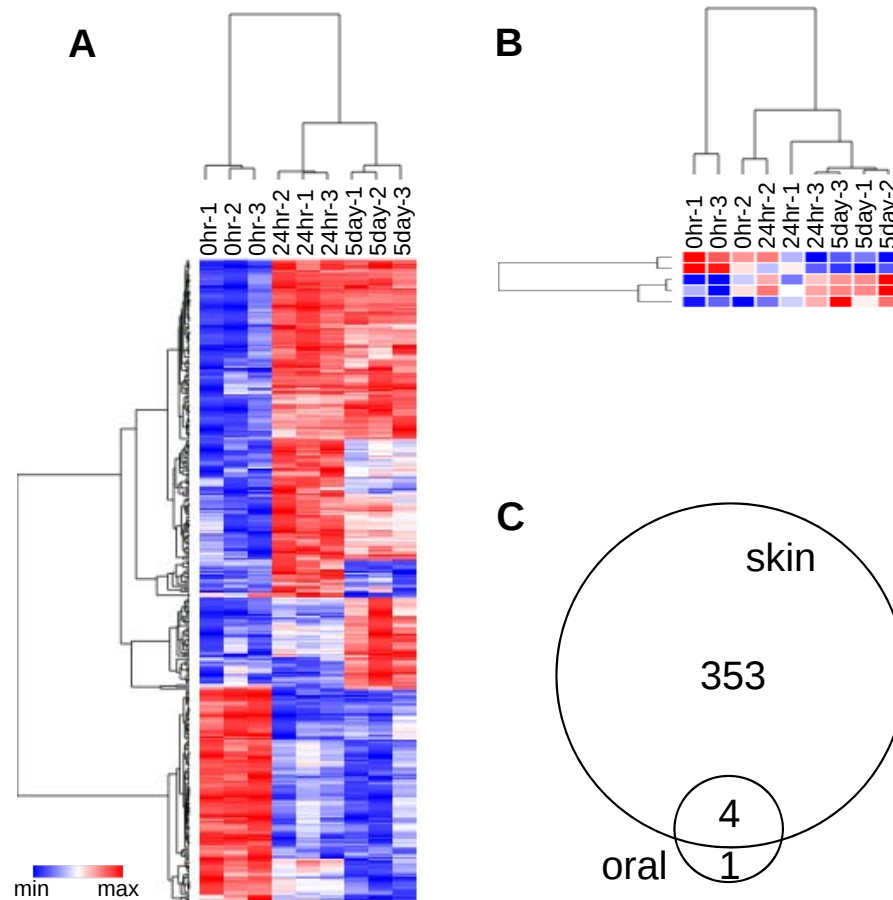




Supplementary Figure S1: Differentially expressed piRNAs during skin and oral mucosal wound healing. (A) piRNA profiles were obtained on mouse skin and oral mucosal (palate) wound healing time course (0hr, 24 hr, and 5 day). A total of 357 differentially expressed piRNA were identified during skin wound healing (Bonferroni adjusted P value <0.05). See **Supplementary Table 1A** for the full list. (B) Five differentially expressed piRNA were identified during oral mucosal wound healing (P value <0.01, list presented in **Supplementary Table 1B**). Note: more stringent statistical cut-off ((Bonferroni adjusted P value) yield 0 differentially expressed piRNA gene. (C) Venn diagram illustrates overlaps between differentially expressed piRNAs in skin and oral mucosal wound healing.

Supplementary Table S1a: Differentially expressed piRNAs in skin wound healing

piRNA	Mean			StDev			pVal	adj P
	0 hr	24 hr	5 day	0 hr	24 hr	5 day		
piR-mmu-15927330	5.418351	11.39746	10.799	0.34576	0.253492	0.154802	6.32E-14	6.97E-11
piR-mmu-49559417	5.301647	10.10777	9.816878	0.441719	0.222335	0.032479	3.95E-12	4.36E-09
piR-mmu-30053093	6.32531	11.26384	4.020902	0.280841	1.057847	0.178798	5.21E-12	5.76E-09
piR-mmu-29303577	5.15005	10.47662	9.52175	0.554877	0.26622	0.163283	1.53E-11	1.69E-08
piR-mmu-49254706	5.187673	10.19644	9.622374	0.520671	0.330378	0.191116	1.96E-11	2.16E-08
piR-mmu-49005170	5.415133	9.639725	9.565967	0.411507	0.281143	0.095657	2.01E-11	2.22E-08
piR-mmu-33056206	5.178179	9.864265	9.39513	0.538986	0.283804	0.240795	2.29E-11	2.53E-08
piR-mmu-49117425	5.43053	9.776696	9.379862	0.332302	0.370967	0.418124	2.63E-11	2.90E-08
piR-mmu-49947745	5.15005	10.39038	9.553774	0.554877	0.404618	0.063169	2.77E-11	3.05E-08
piR-mmu-30876808	5.633238	9.351468	3.413962	0.221386	0.842191	0.638678	2.80E-11	3.09E-08
piR-mmu-24697737	6.749407	13.33618	9.219858	0.78039	0.376817	0.664177	3.32E-11	3.66E-08
piR-mmu-26877685	5.825909	9.412237	10.40902	0.295957	0.296975	0.549284	5.09E-11	5.62E-08
piR-mmu-51208629	5.322489	9.674555	4.339173	0.482649	0.476203	0.569868	5.94E-11	6.56E-08
piR-mmu-49214057	5.173474	9.463311	9.688759	0.530532	0.186272	0.203834	6.33E-11	6.99E-08
piR-mmu-49857560	6.096626	10.80289	8.089564	0.305426	0.190109	0.500752	7.57E-11	8.36E-08
piR-mmu-28107338	5.279592	9.686733	4.636521	0.436702	0.597722	0.352074	8.29E-11	9.15E-08
piR-mmu-29851930	5.187673	8.477601	10.01247	0.520671	0.319898	0.305159	9.40E-11	1.04E-07
piR-mmu-37120680	5.61471	9.783534	9.842512	0.257938	0.487058	0.553785	1.07E-10	1.18E-07
piR-mmu-49293964	8.081628	14.49751	10.49034	1.118888	0.318574	0.503249	1.22E-10	1.35E-07
piR-mmu-49342972	10.3054	5.26409	5.567938	0.317342	0.194286	0.552373	1.63E-10	1.80E-07
piR-mmu-11998481	5.306418	9.156603	8.816	0.448088	0.068244	0.191428	1.96E-10	2.16E-07
piR-mmu-33436983	5.302276	9.555314	8.642954	0.503112	0.361598	0.236862	2.16E-10	2.38E-07
piR-mmu-29438338	5.164249	8.891336	9.356356	0.54637	0.166207	0.354669	2.42E-10	2.67E-07
piR-mmu-29446719	5.446596	9.023653	9.080276	0.368554	0.442015	0.127741	2.44E-10	2.70E-07
piR-mmu-33225252	5.918832	10.28668	7.585454	0.363775	0.362888	0.064971	2.52E-10	2.79E-07
piR-mmu-46771645	5.879289	9.182917	9.463217	0.139979	0.459672	0.253782	2.61E-10	2.88E-07
piR-mmu-31717841	6.311648	12.04745	10.12849	0.747336	0.530349	0.751021	2.91E-10	3.21E-07
piR-mmu-24890504	5.15005	9.761486	8.754651	0.554877	0.398959	0.209057	3.38E-10	3.73E-07
piR-mmu-49197585	8.442509	3.27852	3.589529	0.294622	0.394896	0.048466	3.40E-10	3.76E-07
piR-mmu-48846936	5.797893	10.29159	8.177274	0.376319	0.355817	0.306872	3.76E-10	4.15E-07
piR-mmu-50223161	5.422519	9.841802	9.600623	0.565765	0.386174	0.805022	3.89E-10	4.29E-07
piR-mmu-49657255	5.869841	11.37368	5.02339	0.189147	1.661196	0.715557	4.37E-10	4.83E-07
piR-mmu-48726739	5.15005	8.89129	9.519018	0.554877	0.315097	0.538707	5.17E-10	5.71E-07
piR-mmu-40290832	5.613701	9.037247	9.057221	0.270534	0.413085	0.402927	5.19E-10	5.73E-07
piR-mmu-50927440	5.395527	8.985665	9.625324	0.494797	0.197356	0.692051	6.23E-10	6.88E-07

piR-mmu-35442814	6.280799	10.20491	10.31227	0.210296	0.510832	0.271543	7.61E-10	8.40E-07
piR-mmu-49665792	5.232933	7.595773	9.459027	0.503115	0.154799	0.26182	8.58E-10	9.47E-07
piR-mmu-49940004	6.149593	10.01617	9.962588	0.149371	0.132921	0.805658	8.87E-10	9.80E-07
piR-mmu-49079980	8.016324	2.404083	2.367978	0.225311	1.070106	0.933203	1.09E-09	1.20E-06
piR-mmu-3729268	6.727558	12.34273	9.038599	0.432931	0.396272	1.054685	1.13E-09	1.25E-06
piR-mmu-23866657	5.909041	8.758412	3.731125	0.481623	0.969402	0.29095	1.24E-09	1.36E-06
piR-mmu-49200681	5.517559	8.819822	11.29521	0.558373	0.255394	1.359045	1.31E-09	1.45E-06
piR-mmu-10916133	9.006139	4.435075	4.378467	0.181429	0.191708	0.472498	1.38E-09	1.52E-06
piR-mmu-49442773	5.695952	9.162211	9.759958	0.65509	0.110523	0.693257	1.57E-09	1.73E-06
piR-mmu-24767632	6.246944	9.893676	9.87215	0.670547	0.218314	0.148024	1.60E-09	1.77E-06
piR-mmu-49468812	5.259046	8.890393	8.84603	0.456434	0.374162	0.236757	1.72E-09	1.89E-06
piR-mmu-46411880	5.757963	9.210236	8.870957	0.209247	0.505991	0.188884	1.84E-09	2.03E-06
piR-mmu-49629011	6.394067	9.899318	10.77082	0.318246	0.29194	0.214496	1.99E-09	2.20E-06
piR-mmu-23061108	5.15005	8.432179	9.612841	0.554877	0.318266	0.739589	2.10E-09	2.31E-06
piR-mmu-48906998	5.734571	8.846223	9.455816	0.676172	0.195041	0.368177	2.13E-09	2.35E-06
piR-mmu-11461049	7.831382	3.227082	3.459768	0.164814	0.587455	0.270473	3.00E-09	3.32E-06
piR-mmu-49659703	9.51909	4.712022	5.762557	0.379303	0.524145	0.255331	3.35E-09	3.70E-06
piR-mmu-49952640	5.15005	9.073816	8.406652	0.554877	0.146685	0.056975	3.36E-09	3.71E-06
piR-mmu-31182420	5.15005	8.855188	8.368443	0.554877	0.189043	0.274056	3.68E-09	4.06E-06
piR-mmu-49080070	5.298168	8.575196	8.325364	0.495614	0.242747	0.39256	4.34E-09	4.79E-06
piR-mmu-10991144	8.439477	3.910995	3.865678	0.188807	0.635618	0.437285	5.50E-09	6.08E-06
piR-mmu-49773186	6.751307	11.08459	7.312575	0.479732	0.329914	0.135458	5.64E-09	6.23E-06
piR-mmu-29895302	5.899725	9.894493	9.918986	0.786352	0.223651	0.893297	5.76E-09	6.36E-06
piR-mmu-51487042	6.014965	9.997085	9.125916	0.560519	0.592697	0.612345	6.19E-09	6.84E-06
piR-mmu-32883726	5.923341	9.27594	9.006999	0.178182	0.679798	0.210836	6.95E-09	7.68E-06
piR-mmu-49933547	5.75779	5.389256	9.089344	0.462186	0.049603	0.783662	6.97E-09	7.69E-06
piR-mmu-2672873	5.15005	8.25819	9.136136	0.554877	0.159099	0.633959	7.50E-09	8.28E-06
piR-mmu-29637882	5.15005	8.019067	9.186451	0.554877	0.212343	0.451819	7.55E-09	8.34E-06
piR-mmu-20597713	7.203771	12.23855	11.87161	1.220746	0.389528	0.632727	8.22E-09	9.07E-06
piR-mmu-51274259	6.017372	9.123959	8.67975	0.256763	0.218963	0.441455	9.23E-09	1.02E-05
piR-mmu-48866107	5.595204	9.032033	5.723512	0.419958	0.446255	0.597236	1.05E-08	1.16E-05
piR-mmu-49241740	6.279664	9.685847	10.69884	0.222912	0.703932	0.900408	1.09E-08	1.21E-05
piR-mmu-49382286	5.158933	8.65092	8.249933	0.570095	0.267719	0.159262	1.34E-08	1.48E-05
piR-mmu-51643821	7.519207	12.6145	9.596769	1.102484	0.543142	0.290728	1.39E-08	1.54E-05
piR-mmu-22671960	5.97871	9.647747	8.370724	0.160223	0.613471	0.201582	1.41E-08	1.55E-05
piR-mmu-49588383	7.083072	13.01262	10.72906	0.787661	0.766097	1.287702	1.47E-08	1.63E-05
piR-mmu-33480893	5.462742	6.221246	9.113601	0.315912	0.11925	0.754174	1.48E-08	1.63E-05
piR-mmu-18556972	5.27125	8.584016	8.476492	0.517445	0.1457	0.329352	1.50E-08	1.65E-05
piR-mmu-49933562	7.526843	12.04363	10.46176	0.638879	0.481849	0.382207	1.59E-08	1.75E-05

piR-mmu-49569681	6.25268	7.042786	9.935162	0.427913	0.422728	0.455765	1.72E-08	1.90E-05
piR-mmu-10912700	9.019803	5.378028	4.955719	0.150037	0.350307	0.811744	1.85E-08	2.04E-05
piR-mmu-12389572	8.370798	12.76121	11.56309	0.427422	0.807022	0.400508	1.89E-08	2.09E-05
piR-mmu-33182941	5.47189	9.420339	5.377668	0.456577	0.266522	1.121171	1.89E-08	2.09E-05
piR-mmu-49087018	6.021527	7.814657	9.737039	0.407342	0.257139	0.661694	1.99E-08	2.19E-05
piR-mmu-48841475	6.069887	10.16306	7.650951	0.71545	0.63043	0.556374	2.47E-08	2.72E-05
piR-mmu-49837945	5.15005	8.870562	7.90699	0.554877	0.26627	0.12543	2.52E-08	2.78E-05
piR-mmu-23770174	6.085307	5.644995	9.801009	0.435243	1.135329	0.391661	2.54E-08	2.81E-05
piR-mmu-22987998	5.250023	8.654647	7.73253	0.507556	0.351792	0.304585	3.00E-08	3.32E-05
piR-mmu-49382307	6.011552	7.781772	10.32848	0.450553	0.235632	1.226581	3.20E-08	3.53E-05
piR-mmu-49033791	5.590985	8.324095	8.921579	0.380193	0.170834	0.800676	3.55E-08	3.92E-05
piR-mmu-49673022	5.213775	8.686233	7.65827	0.542266	0.260251	0.312388	3.55E-08	3.92E-05
piR-mmu-49326551	5.232933	8.208439	8.098537	0.503115	0.238952	0.246988	3.71E-08	4.10E-05
piR-mmu-10834668	5.15005	7.419065	9.869112	0.554877	0.318432	1.305473	4.23E-08	4.67E-05
piR-mmu-11031895	7.58526	3.818405	3.666734	0.223864	0.202072	0.497063	4.24E-08	4.68E-05
piR-mmu-49012494	6.35505	10.39922	6.521731	0.689823	0.532296	0.45326	4.35E-08	4.81E-05
piR-mmu-49654384	6.041147	9.400683	7.074314	0.782673	0.381656	0.27158	4.67E-08	5.15E-05
piR-mmu-49581248	8.172059	13.51836	11.35049	0.815937	0.973087	0.999903	4.91E-08	5.42E-05
piR-mmu-12465402	6.126048	9.545263	8.698818	0.369055	0.412143	0.726986	5.06E-08	5.59E-05
piR-mmu-48843118	5.173474	8.453387	8.237587	0.530532	0.214422	0.657828	5.37E-08	5.93E-05
piR-mmu-49232656	7.503123	11.55595	10.26856	0.518236	0.457277	0.416419	5.43E-08	6.00E-05
piR-mmu-31167747	5.164249	9.086734	7.898283	0.54637	0.802484	0.259897	5.45E-08	6.02E-05
piR-mmu-51113620	5.728505	8.035786	8.771263	0.450867	0.087553	0.374874	5.71E-08	6.30E-05
piR-mmu-49019848	9.051946	13.57422	11.53909	1.138489	0.350275	0.413354	6.09E-08	6.73E-05
piR-mmu-18257020	6.742615	10.88126	8.703871	0.854295	0.399511	0.229938	6.28E-08	6.93E-05
piR-mmu-10991141	8.657402	5.195215	4.93923	0.158311	0.41419	0.738379	6.32E-08	6.98E-05
piR-mmu-10940440	8.908801	5.314249	4.964897	0.204908	0.677881	0.648399	6.63E-08	7.32E-05
piR-mmu-10934588	8.501352	4.201323	4.41681	0.155096	0.697259	0.613556	6.68E-08	7.37E-05
piR-mmu-49285797	5.250764	8.270168	7.697008	0.471369	0.191989	0.083471	6.72E-08	7.42E-05
piR-mmu-48753165	8.530879	12.21483	12.57544	0.588704	0.424104	0.681559	7.34E-08	8.10E-05
piR-mmu-23829230	5.539701	9.12877	7.516856	0.456486	0.229009	0.967028	7.96E-08	8.79E-05
piR-mmu-8855247	5.742301	6.533495	10.2249	0.619377	0.344106	1.514327	8.01E-08	8.85E-05
piR-mmu-49698133	5.794405	4.41104	8.942213	0.58773	0.705548	1.089062	8.59E-08	9.49E-05
piR-mmu-10940441	8.500941	5.03694	4.332035	0.151103	0.590197	0.647477	8.62E-08	9.51E-05
piR-mmu-31375764	5.15005	8.829099	7.928576	0.554877	0.441288	0.511066	8.68E-08	9.59E-05
piR-mmu-41640190	6.262204	9.78718	8.194538	0.62874	0.34805	0.351869	8.96E-08	9.90E-05
piR-mmu-7719044	6.340522	10.39298	7.838189	0.213712	0.640536	0.672611	9.59E-08	0.000106
piR-mmu-51029016	7.769701	11.91035	11.04514	0.471187	0.845009	0.481716	1.10E-07	0.000121
piR-mmu-31551436	5.918102	9.019492	7.123002	0.222429	0.369406	0.261168	1.12E-07	0.000124

piR-mmu-22674430	5.259647	7.847954	8.522718	0.486441	0.342926	0.336344	1.13E-07	0.000125
piR-mmu-50675109	9.332318	12.74613	12.91409	0.787817	0.077376	0.582716	1.15E-07	0.000127
piR-mmu-5610469	5.990627	6.766829	9.306074	0.337435	0.585676	0.543532	1.28E-07	0.000142
piR-mmu-15983767	6.391659	10.87489	8.535181	1.037321	0.480604	0.423725	1.35E-07	0.000149
piR-mmu-11461014	8.787251	4.760203	4.634775	0.086673	0.857346	0.727927	1.38E-07	0.000152
piR-mmu-33199875	14.47334	11.81288	10.58285	0.30886	0.565109	1.021616	1.44E-07	0.000159
piR-mmu-49287809	9.095436	5.619299	5.175905	0.376088	0.666893	0.710208	1.54E-07	0.00017
piR-mmu-1395616	6.287623	9.477844	7.866021	0.256231	0.094607	0.439529	1.56E-07	0.000172
piR-mmu-10960276	8.086195	4.878327	4.018662	0.213635	0.489612	0.83721	1.61E-07	0.000178
piR-mmu-29446216	5.293697	7.925616	7.732174	0.488806	0.122804	0.242607	1.61E-07	0.000178
piR-mmu-49597408	5.232933	8.317475	8.111378	0.503115	0.410303	0.632287	1.63E-07	0.00018
piR-mmu-49544423	6.264344	8.562567	10.43317	1.1196	0.262805	0.899261	1.67E-07	0.000185
piR-mmu-8117275	6.934675	11.37606	9.359973	1.199739	0.363795	0.169896	1.77E-07	0.000195
piR-mmu-49039221	5.15005	8.274018	7.358781	0.554877	0.174456	0.153788	1.83E-07	0.000202
piR-mmu-7474227	9.38674	6.189675	5.665049	0.093529	0.545149	0.922661	1.88E-07	0.000208
piR-mmu-4213313	6.697146	9.91544	10.91775	1.120732	0.598208	0.368005	1.95E-07	0.000215
piR-mmu-50063001	7.325331	10.73829	11.18788	0.878548	0.075752	0.451351	2.04E-07	0.000226
piR-mmu-16168384	6.576752	8.043489	10.8472	1.041081	0.303017	0.697361	2.08E-07	0.00023
piR-mmu-50769050	9.567962	5.830838	6.644783	0.480003	0.271591	0.449119	2.15E-07	0.000237
piR-mmu-50433158	8.670875	4.998029	5.6868	0.553755	0.296602	0.426545	2.21E-07	0.000244
piR-mmu-50642085	5.907762	8.961841	8.560374	0.475786	0.139757	0.770191	2.29E-07	0.000253
piR-mmu-10916134	8.326815	5.438947	4.929679	0.194624	0.363756	0.285463	2.36E-07	0.000261
piR-mmu-1996661	8.821273	11.75874	13.76222	1.240297	0.463161	0.947619	2.39E-07	0.000264
piR-mmu-4589701	6.142416	9.007192	8.478244	0.081337	0.302226	0.272007	2.40E-07	0.000265
piR-mmu-11031886	8.487193	5.016835	4.617445	0.055488	0.570872	0.752002	2.51E-07	0.000277
piR-mmu-3447241	5.956158	6.874357	9.257937	0.262845	0.771845	0.47863	2.52E-07	0.000278
piR-mmu-10911100	9.254792	5.975397	5.590992	0.126515	0.418464	0.819511	2.57E-07	0.000283
piR-mmu-7425154	8.026957	4.936781	4.244071	0.276842	0.563058	0.635839	2.62E-07	0.000289
piR-mmu-49205030	5.37697	8.122776	7.049101	0.415804	0.125672	0.09431	2.65E-07	0.000293
piR-mmu-49224045	7.597267	11.44538	11.58604	1.389622	0.191575	0.613602	2.68E-07	0.000296
piR-mmu-49115216	10.26824	13.03387	13.79316	0.272606	0.494095	0.482476	2.86E-07	0.000316
piR-mmu-49362409	5.797761	8.438295	8.18114	0.518101	0.165572	0.480947	3.04E-07	0.000336
piR-mmu-49092060	5.608102	8.20684	7.973137	0.2751	0.215895	0.104471	3.06E-07	0.000338
piR-mmu-16474472	5.627487	8.870892	6.497755	0.496171	0.604497	0.302872	3.14E-07	0.000347
piR-mmu-51015918	8.792336	5.522712	5.736947	0.272205	0.103976	0.396465	3.18E-07	0.000351
piR-mmu-49823282	8.629291	5.139206	5.755066	0.429578	0.405527	0.345846	3.35E-07	0.00037
piR-mmu-49973886	9.803798	5.837109	6.395967	0.146429	0.288981	0.650906	3.42E-07	0.000378
piR-mmu-50920012	5.746641	8.786812	6.818866	0.361585	0.238098	0.558011	3.55E-07	0.000392
piR-mmu-51625409	9.090178	9.919294	13.55212	1.436288	0.426177	0.750406	3.77E-07	0.000416

piR-mmu-20743584	8.599392	6.123449	4.645802	0.300336	0.699845	0.411834	3.81E-07	0.000421
piR-mmu-24780774	5.502449	7.942628	7.778368	0.398977	0.221477	0.343328	3.84E-07	0.000424
piR-mmu-10932261	9.169739	5.981045	5.367342	0.144462	0.612888	0.829605	3.95E-07	0.000437
piR-mmu-3078829	5.187062	8.87548	6.927667	0.553964	0.596496	0.809741	3.96E-07	0.000437
piR-mmu-10906591	16.71583	13.97554	12.97739	0.028771	0.620408	1.079699	4.03E-07	0.000445
piR-mmu-10911823	9.170175	6.111828	5.488273	0.173396	0.481199	0.755892	4.04E-07	0.000446
piR-mmu-10978311	7.840821	5.309242	4.259595	0.221247	0.381587	0.755246	4.18E-07	0.000462
piR-mmu-49427307	9.419166	6.980699	6.069427	0.510991	0.276694	0.146718	4.39E-07	0.000485
piR-mmu-25580810	8.447645	12.08875	11.54713	0.661896	0.687285	0.581423	4.48E-07	0.000494
piR-mmu-49909396	5.79033	8.990596	6.33238	0.429559	0.279289	0.756561	4.53E-07	0.000501
piR-mmu-49118066	7.600456	5.07719	4.084155	0.381216	0.343345	0.342678	4.58E-07	0.000506
piR-mmu-12112309	8.888458	12.72464	12.70091	1.364692	0.080906	0.249148	4.75E-07	0.000525
piR-mmu-4704882	6.429275	10.23249	8.347158	0.907712	0.298605	0.179584	4.94E-07	0.000545
piR-mmu-29978745	5.15005	8.02254	7.577541	0.554877	0.202322	0.246633	5.01E-07	0.000553
piR-mmu-1275617	6.655362	7.246865	9.788821	0.044382	0.321163	0.361733	5.03E-07	0.000555
piR-mmu-85958	16.70036	14.34846	13.38272	0.352028	0.219821	0.82999	5.89E-07	0.000651
piR-mmu-51389087	5.15005	8.269196	7.216026	0.554877	0.120398	0.082929	6.08E-07	0.000671
piR-mmu-51430009	6.342917	6.298657	9.304158	0.651361	0.250279	0.352705	6.16E-07	0.00068
piR-mmu-48942900	7.577654	10.32499	10.80663	0.544103	0.160223	0.24646	6.47E-07	0.000714
piR-mmu-10953882	8.904071	5.539356	5.414267	0.148529	0.55955	0.652457	6.62E-07	0.000731
piR-mmu-11065039	7.816388	11.84815	10.988	0.683414	0.639694	1.14166	7.02E-07	0.000775
piR-mmu-2001062	5.479745	3.525885	7.148306	0.353337	0.771477	0.454687	7.25E-07	0.0008
piR-mmu-10910310	10.22279	7.754421	6.251734	0.125766	0.668621	0.957331	7.29E-07	0.000805
piR-mmu-7719646	8.127894	5.060983	4.540183	0.293166	0.253327	0.96444	7.67E-07	0.000847
piR-mmu-48782409	5.178179	7.64989	7.732366	0.538986	0.230487	0.252759	8.64E-07	0.000954
piR-mmu-18494776	6.005717	8.031514	8.904245	0.242086	0.551226	0.530218	8.91E-07	0.000984
piR-mmu-5093664	8.04862	11.41533	10.80107	0.858568	0.39795	0.391669	9.11E-07	0.001006
piR-mmu-49615547	6.758346	10.20742	11.03159	1.390446	0.066464	0.774353	9.24E-07	0.00102
piR-mmu-49613252	5.272219	7.632196	7.989142	0.447475	0.295456	0.046439	9.87E-07	0.00109
piR-mmu-50378326	8.444847	11.40833	11.59005	0.841725	0.274716	0.440534	1.02E-06	0.001131
piR-mmu-49714631	7.39974	6.148673	3.930353	0.302992	0.460166	0.492526	1.04E-06	0.001151
piR-mmu-10879220	5.298027	8.38539	6.423259	0.491951	0.497285	0.351575	1.08E-06	0.001189
piR-mmu-29271766	11.77436	9.234084	7.925069	0.31301	0.542792	0.885497	1.09E-06	0.001208
piR-mmu-51145640	6.273702	7.723474	9.292517	0.371243	0.713459	0.269636	1.11E-06	0.001227
piR-mmu-6049578	7.437362	11.42809	9.83497	1.318983	0.280897	0.228958	1.12E-06	0.001241
piR-mmu-50884454	6.610728	10.02755	8.434765	0.393945	0.720409	0.392883	1.13E-06	0.001243
piR-mmu-10909435	9.257176	6.628314	5.781335	0.09225	0.375187	0.980443	1.16E-06	0.001277
piR-mmu-49248879	6.234551	9.134487	8.585095	0.433591	0.51576	0.683921	1.16E-06	0.001281
piR-mmu-10882589	6.799763	10.20454	8.931421	0.502148	0.517195	0.270898	1.23E-06	0.001359

piR-mmu-48899520	13.07643	9.682496	9.603453	0.559318	0.378683	1.205807	1.23E-06	0.001362
piR-mmu-48911844	10.1134	7.150765	7.58682	0.348919	0.408214	0.557144	1.40E-06	0.001545
piR-mmu-10911632	9.008779	5.806274	5.237652	0.063744	0.628441	1.069517	1.41E-06	0.00156
piR-mmu-49550745	5.19172	6.299442	8.955102	0.532758	0.247511	1.330675	1.48E-06	0.001637
piR-mmu-2004883	7.476168	9.049655	11.41162	0.884439	0.341857	0.972046	1.49E-06	0.001642
piR-mmu-49308008	8.670316	6.62997	5.18286	0.416201	0.47603	0.156802	1.49E-06	0.001644
piR-mmu-48741163	5.376003	7.982424	6.630218	0.453055	0.257171	0.295747	1.54E-06	0.001699
piR-mmu-10940438	8.210238	4.549404	4.241595	0.279598	0.804566	1.238049	1.57E-06	0.001736
piR-mmu-50003926	5.15005	7.659926	7.614041	0.554877	0.140063	0.203429	1.59E-06	0.001755
piR-mmu-72373	9.290186	7.745465	5.796298	1.019776	0.388048	0.278786	1.61E-06	0.00178
piR-mmu-5808923	6.404205	9.806518	7.718845	0.130633	0.790935	0.431462	1.62E-06	0.001791
piR-mmu-50207618	20.52026	17.72975	16.99092	0.151505	0.69064	1.15932	1.63E-06	0.001801
piR-mmu-49508490	5.394587	7.796824	7.921617	0.441945	0.22065	0.563299	1.69E-06	0.001869
piR-mmu-7073709	8.8502	12.50497	11.9505	1.368842	0.216072	0.106038	1.79E-06	0.001979
piR-mmu-2692796	8.133247	6.732823	4.704361	0.256382	0.493568	0.578319	1.82E-06	0.002015
piR-mmu-49377801	7.799159	11.11428	9.840577	0.860255	0.233827	0.434855	1.84E-06	0.002029
piR-mmu-29261732	9.438859	10.59309	7.51579	0.686445	0.415146	0.283848	1.85E-06	0.002038
piR-mmu-49361860	8.565421	6.769727	4.857444	0.597649	0.565582	0.527361	2.00E-06	0.002204
piR-mmu-49777149	6.941687	8.065948	10.55196	0.863135	0.364425	0.521907	2.02E-06	0.00223
piR-mmu-10856482	5.20529	6.813013	9.178682	0.550931	0.318184	1.518146	2.04E-06	0.002256
piR-mmu-240378	15.68287	14.75963	12.56915	0.372211	0.506789	0.824103	2.12E-06	0.002339
piR-mmu-32331990	5.182357	6.640634	8.735867	0.545857	0.42655	1.11578	2.16E-06	0.002388
piR-mmu-1994694	5.862405	8.945896	5.655384	0.211242	1.4606	0.242902	2.19E-06	0.002416
piR-mmu-2041313	7.366998	11.1951	9.620152	0.779925	1.127385	0.384151	2.21E-06	0.002442
piR-mmu-13828175	7.259749	3.954346	4.27727	0.589611	0.28426	0.351462	2.23E-06	0.002467
piR-mmu-49391324	10.52253	8.296355	7.303789	0.383225	0.246239	0.682009	2.25E-06	0.002487
piR-mmu-10907457	10.82699	8.226629	7.232688	0.307625	0.498926	0.910951	2.32E-06	0.002566
piR-mmu-48799366	7.674723	4.758569	4.91387	0.475571	0.150108	0.229654	2.49E-06	0.002754
piR-mmu-2760499	14.35281	13.0764	11.66238	0.324212	0.174461	0.418969	2.57E-06	0.002836
piR-mmu-49599562	10.56144	7.761591	7.678816	0.116039	0.746119	0.562395	2.60E-06	0.002867
piR-mmu-26860261	9.200038	6.483039	6.10972	0.4233	0.656817	0.584648	2.61E-06	0.002881
piR-mmu-51194478	7.913513	11.07214	9.942886	0.674663	0.70234	0.24566	2.62E-06	0.002889
piR-mmu-11663635	7.827281	5.180671	4.857439	0.35159	0.612585	0.636837	2.73E-06	0.003017
piR-mmu-10906686	8.211093	4.646317	4.77175	0.660359	0.376073	1.084405	2.83E-06	0.003124
piR-mmu-26426124	6.134832	8.920991	7.793253	0.69451	0.353726	0.530925	3.09E-06	0.003416
piR-mmu-49623631	7.380719	10.59183	9.567407	0.846506	0.395288	0.105672	3.15E-06	0.003481
piR-mmu-48805945	6.993775	10.46061	9.058865	0.594192	0.53616	0.133652	3.20E-06	0.003534
piR-mmu-50062170	5.822566	8.266445	8.069891	0.583283	0.245154	0.667773	3.28E-06	0.003626
piR-mmu-51294737	7.059209	3.659042	3.412649	0.539499	0.886144	0.381325	3.30E-06	0.003648

piR-mmu-2618472	12.52104	11.14293	9.520583	0.333304	0.141049	0.319337	3.31E-06	0.003653
piR-mmu-27200780	8.000454	6.472638	4.912414	0.274638	0.068637	0.816221	3.50E-06	0.003863
piR-mmu-48882277	7.945725	6.474342	4.8149	0.214656	0.464959	0.64771	3.51E-06	0.003878
piR-mmu-49493928	5.877385	7.842784	9.491075	0.605953	0.912022	1.267387	3.54E-06	0.003914
piR-mmu-10718433	7.017807	6.676283	10.19579	0.732362	1.043989	0.32353	3.57E-06	0.003938
piR-mmu-15658525	6.420198	7.238486	9.752767	0.905034	0.16995	0.59321	3.80E-06	0.004195
piR-mmu-48949488	5.991379	8.583455	6.424379	0.735038	0.133786	0.329852	4.02E-06	0.004443
piR-mmu-7474220	10.82525	7.659336	8.816542	0.408047	0.32561	0.559642	4.05E-06	0.004477
piR-mmu-11663672	7.743442	4.199059	4.796372	0.551066	0.910293	0.536521	4.22E-06	0.004664
piR-mmu-29521986	6.71111	10.33882	7.585598	0.261209	1.313086	0.705133	4.58E-06	0.005061
piR-mmu-24711038	5.266051	7.715008	7.086142	0.448278	0.244631	0.469	4.59E-06	0.00507
piR-mmu-48729792	7.945213	5.004343	5.052365	0.141262	0.60082	0.814533	4.78E-06	0.005274
piR-mmu-7474228	9.980355	6.8163	7.708103	0.332775	0.262706	0.706878	5.06E-06	0.005584
piR-mmu-49609791	8.498115	6.524281	4.978015	0.843415	0.420725	0.477631	5.09E-06	0.005615
piR-mmu-10843785	8.01296	7.378577	10.42935	1.079667	0.239065	0.377541	5.23E-06	0.005769
piR-mmu-49257406	8.24247	9.421308	11.96635	1.484544	0.22379	0.467532	5.33E-06	0.005888
piR-mmu-12363372	9.285227	7.35348	5.771644	1.339932	0.279096	0.282008	5.70E-06	0.00629
piR-mmu-30257664	9.445169	10.34701	7.43995	0.690172	0.379365	0.383495	5.92E-06	0.006536
piR-mmu-2201360	7.119097	8.978778	11.18654	1.067111	0.17253	1.164653	5.96E-06	0.006584
piR-mmu-8379514	6.622364	6.197301	8.847092	0.072181	0.477445	0.400561	5.99E-06	0.006614
piR-mmu-10934587	8.693607	6.114771	5.525992	0.230376	0.435112	0.841673	6.34E-06	0.006998
piR-mmu-9022216	7.113574	10.68702	8.999236	1.188609	0.333782	0.104875	6.52E-06	0.007194
piR-mmu-48890693	9.864513	12.28318	12.93912	0.182877	0.429406	0.547153	6.64E-06	0.007326
piR-mmu-49658450	5.899551	7.927312	8.507981	0.589915	0.217481	0.61792	6.88E-06	0.007599
piR-mmu-48810876	7.989998	9.756279	11.44511	1.22001	0.487962	0.507502	6.89E-06	0.007606
piR-mmu-49015749	12.86147	11.97195	9.747566	0.409896	0.445825	0.7636	6.94E-06	0.007666
piR-mmu-50046028	8.449156	5.633704	5.319871	0.147332	0.320844	0.960873	7.03E-06	0.007756
piR-mmu-5611284	6.330003	7.714953	9.622114	0.938557	0.299616	0.772625	7.21E-06	0.00796
piR-mmu-49413063	8.061575	4.832312	5.242824	0.204806	0.892659	0.624654	7.39E-06	0.008155
piR-mmu-8422651	6.591113	9.644249	8.46939	0.595955	0.36376	0.527188	7.52E-06	0.008297
piR-mmu-49897460	15.91163	13.21208	12.71857	0.610685	0.49207	1.242274	7.56E-06	0.008342
piR-mmu-49735293	9.511419	6.507697	7.272849	0.389742	0.076029	0.718808	7.66E-06	0.008462
piR-mmu-34200	11.21122	9.232899	8.566129	0.346755	0.274261	0.283831	8.10E-06	0.008947
piR-mmu-49804704	5.15005	6.171665	8.733763	0.554877	0.63966	1.482224	8.72E-06	0.009626
piR-mmu-49822140	10.43499	8.012334	7.906484	0.468738	0.186906	0.463742	8.76E-06	0.009673
piR-mmu-11066710	10.73449	8.183064	8.338899	0.183498	0.377009	0.650985	8.83E-06	0.009753
piR-mmu-49224859	6.22965	8.555219	6.94873	0.300275	0.449468	0.437928	9.18E-06	0.010131
piR-mmu-7489022	7.587968	4.740949	4.353133	0.325471	0.97168	0.650665	9.21E-06	0.010164
piR-mmu-49838805	13.06354	10.31838	9.814057	0.546025	0.426125	1.178442	9.44E-06	0.010418

piR-mmu-11220195	13.63104	11.04577	11.02138	0.220207	0.510841	0.62488	9.63E-06	0.010632
piR-mmu-49054943	8.636926	6.542112	5.976527	0.40793	0.035059	0.307999	9.77E-06	0.01079
piR-mmu-49153404	5.340213	6.943701	8.434471	0.476839	0.64017	0.946158	1.01E-05	0.011103
piR-mmu-49896624	7.880696	5.779684	4.970201	0.377477	0.588529	0.439668	1.02E-05	0.011262
piR-mmu-49915338	8.739174	6.132398	5.484683	0.100555	0.568912	0.976529	1.03E-05	0.011398
piR-mmu-72274	9.807956	6.291221	7.286231	0.401482	1.04273	0.465882	1.05E-05	0.01157
piR-mmu-49565256	6.871939	9.869836	9.378294	0.758358	0.403073	0.720992	1.06E-05	0.011715
piR-mmu-50516164	10.7438	9.377604	7.891294	0.342858	0.120759	0.390206	1.07E-05	0.01178
piR-mmu-10991138	7.6793	5.056276	4.594643	0.309202	0.544167	0.917362	1.08E-05	0.011881
piR-mmu-2439726	6.448435	9.781072	8.424182	0.583461	0.923901	0.496371	1.11E-05	0.012252
piR-mmu-50304273	12.11005	13.24378	10.21945	0.755315	0.399992	0.304094	1.15E-05	0.012716
piR-mmu-16071780	7.367531	8.400201	10.07397	0.649795	0.148865	0.147294	1.15E-05	0.012726
piR-mmu-29894166	6.460966	8.571532	9.180376	0.26629	0.366434	0.638582	1.16E-05	0.012793
piR-mmu-49094654	6.63703	6.57484	9.13026	0.659059	0.239644	0.562664	1.20E-05	0.01323
piR-mmu-48897293	11.2542	9.087936	8.647718	0.364596	0.131111	0.591904	1.20E-05	0.013245
piR-mmu-1283203	10.62302	10.60273	13.56431	1.099935	0.392028	0.323472	1.21E-05	0.013361
piR-mmu-44699003	7.089614	6.234116	9.746314	1.171342	0.761771	0.402724	1.23E-05	0.013532
piR-mmu-48824062	8.268448	11.48074	9.829226	0.982995	0.49076	0.422688	1.34E-05	0.014846
piR-mmu-4945476	7.126532	6.318107	9.438444	0.995508	0.271743	0.216896	1.41E-05	0.015577
piR-mmu-49155517	9.035335	7.016972	6.045797	0.178024	0.63782	0.815393	1.44E-05	0.015895
piR-mmu-377765	6.590078	8.657053	8.929418	0.178718	0.246794	0.456491	1.46E-05	0.016077
piR-mmu-11429767	6.293501	9.138722	8.422984	0.803984	0.499257	0.698957	1.52E-05	0.016778
piR-mmu-16477705	5.351494	7.832507	7.213782	0.442874	0.396377	0.598123	1.56E-05	0.017175
piR-mmu-25482018	9.196342	7.921032	6.509744	0.32034	0.179014	0.456418	1.56E-05	0.017208
piR-mmu-49923410	6.425332	9.109425	7.087576	0.81532	0.153119	0.146426	1.56E-05	0.017264
piR-mmu-31018127	7.881568	4.914338	5.093678	0.657226	0.962929	0.58418	1.58E-05	0.017477
piR-mmu-50556010	9.352118	6.619248	7.096739	0.37347	0.474703	0.739299	1.62E-05	0.01792
piR-mmu-2027261	6.366683	9.042537	7.844226	0.447454	0.359289	0.561471	1.67E-05	0.018421
piR-mmu-3293489	7.330385	5.310355	4.350313	0.758375	0.249346	0.443755	1.68E-05	0.018533
piR-mmu-49483892	17.03115	14.46958	15.16703	0.291639	0.470049	0.58884	1.70E-05	0.018735
piR-mmu-50773373	9.568962	6.820177	7.342682	0.473984	0.186936	0.598006	1.70E-05	0.018814
piR-mmu-5644081	6.435484	9.213359	6.959113	0.800336	0.426713	0.304733	1.71E-05	0.018834
piR-mmu-48811585	9.360661	9.897245	12.50077	1.407415	0.088379	0.465778	1.71E-05	0.018913
piR-mmu-23550216	10.59583	9.360865	7.890852	0.372091	0.234727	0.385293	1.72E-05	0.019019
piR-mmu-30249863	7.741988	11.2776	9.916662	1.599357	0.261799	0.253491	1.75E-05	0.019349
piR-mmu-49597541	11.26435	10.01263	8.542848	0.350769	0.186335	0.475092	1.79E-05	0.019789
piR-mmu-49794365	7.195728	6.285041	10.11637	1.729598	0.279175	0.726797	1.81E-05	0.020001
piR-mmu-50670137	7.628111	5.599317	4.327988	0.845437	0.672287	0.744504	1.85E-05	0.020432
piR-mmu-49121139	5.772802	8.010896	6.98259	0.560162	0.307717	0.198206	1.95E-05	0.021507

piR-mmu-3753105	8.049068	6.525187	5.074443	0.496475	0.494875	0.589175	2.03E-05	0.022435
piR-mmu-11220180	10.32558	7.705047	7.9696	0.223655	0.65727	0.570421	2.04E-05	0.022513
piR-mmu-24893113	6.778698	9.043916	9.273699	0.557823	0.674377	0.027043	2.08E-05	0.022919
piR-mmu-15757013	6.608934	9.017957	6.339959	0.328246	0.847314	0.253452	2.11E-05	0.023338
piR-mmu-2678950	7.919631	6.648886	5.099925	0.502653	0.290963	0.527478	2.23E-05	0.024568
piR-mmu-50773402	6.767372	9.974545	9.164421	1.349618	0.340071	0.447596	2.25E-05	0.024802
piR-mmu-49279079	7.617926	9.298544	9.898779	0.286718	0.162208	0.34907	2.26E-05	0.024953
piR-mmu-30125408	6.13517	10.79343	7.9276	0.201234	0.794917	2.587181	2.27E-05	0.025084
piR-mmu-4955906	6.387204	7.308338	9.374232	0.100285	0.6349	1.092721	2.31E-05	0.025518
piR-mmu-29300517	6.666858	9.155887	8.068158	0.164895	0.26823	0.52234	2.32E-05	0.025568
piR-mmu-10870488	6.478389	7.931631	9.130325	0.196437	0.431678	0.507081	2.40E-05	0.026542
piR-mmu-48965986	6.453257	7.290597	9.432474	0.904904	0.51517	0.629385	2.42E-05	0.02669
piR-mmu-29244907	8.4554	6.409087	5.235411	1.078937	0.312244	0.339247	2.52E-05	0.027829
piR-mmu-10937275	8.381393	5.992826	5.4026	0.213211	0.523297	0.847976	2.55E-05	0.028159
piR-mmu-12634892	12.11505	9.550065	10.11089	0.240477	0.421147	0.487121	2.64E-05	0.029159
piR-mmu-50282397	6.480228	9.467626	7.896658	0.959233	0.249862	0.160147	2.67E-05	0.029524
piR-mmu-26503959	6.920697	9.831993	8.962642	0.630943	0.387061	0.533254	2.69E-05	0.029644
piR-mmu-50734440	6.530278	7.480803	9.15731	0.147064	0.380526	0.360317	2.73E-05	0.030166
piR-mmu-16410150	8.52871	5.901432	6.093906	0.118258	0.520639	0.349563	2.76E-05	0.030499
piR-mmu-51321102	7.698202	10.34535	10.02261	0.812441	0.452908	0.16375	2.79E-05	0.030813
piR-mmu-49006988	5.15005	7.469701	7.14924	0.554877	0.265423	0.195725	2.81E-05	0.031017
piR-mmu-49949269	10.36916	8.924893	7.588021	0.569138	0.602105	0.658555	2.83E-05	0.031266
piR-mmu-23825363	7.425108	10.63169	9.616893	0.916632	0.995404	0.515052	2.84E-05	0.031383
piR-mmu-30081630	7.413435	6.14883	3.826215	1.412211	0.472058	0.78449	2.89E-05	0.0319
piR-mmu-631775	6.882397	9.292891	9.09487	0.355033	0.42956	0.331719	2.90E-05	0.032001
piR-mmu-23721480	7.500329	10.33714	10.08761	0.738559	0.798473	0.664086	2.94E-05	0.03246
piR-mmu-11066915	7.505415	5.10677	4.768957	0.494776	0.689188	0.476739	2.96E-05	0.032697
piR-mmu-49709935	7.156832	4.917646	4.418427	0.36697	0.231155	0.312046	2.96E-05	0.032701
piR-mmu-11461028	8.830341	6.671914	5.647616	0.220243	0.653043	1.093104	2.98E-05	0.03288
piR-mmu-7489023	9.519627	6.91477	7.395858	0.331494	0.635051	0.576882	3.20E-05	0.035341
piR-mmu-37314969	7.242855	9.939862	7.207731	0.49182	0.519279	1.058546	3.24E-05	0.035765
piR-mmu-29936651	7.627713	6.072867	4.740996	0.945865	0.095773	0.229958	3.34E-05	0.036878
piR-mmu-50194882	8.369746	11.1464	9.522836	0.982603	0.362325	0.113948	3.45E-05	0.038054
piR-mmu-49122465	6.96591	3.629663	3.698056	1.096571	0.663394	0.986572	3.48E-05	0.038444
piR-mmu-48823448	5.250764	8.867406	6.195424	0.471369	0.941887	1.69773	3.51E-05	0.038764
piR-mmu-1451695	8.052145	10.92301	8.525845	0.962948	0.713495	0.417678	3.53E-05	0.03902
piR-mmu-2033913	5.52243	8.711603	6.404922	0.385715	0.97034	1.371163	3.79E-05	0.041816
piR-mmu-841407	8.105439	6.503748	9.470858	0.957873	0.633352	0.652964	3.81E-05	0.042029
piR-mmu-51340600	9.030951	6.634132	7.50968	0.149847	0.181998	0.331545	3.84E-05	0.042445

piR-mmu-49253747	8.552386	11.08933	10.1604	0.367841	0.146947	0.261643	3.86E-05	0.042629
piR-mmu-10925255	7.741014	5.563985	5.06083	0.144086	0.72206	0.406777	4.14E-05	0.045707
piR-mmu-11087008	8.460055	6.093725	8.101463	0.344232	0.1507	0.333849	4.15E-05	0.04581
piR-mmu-16155104	6.488672	8.393035	9.206275	0.770497	0.575781	0.179456	4.25E-05	0.046927
piR-mmu-8132128	7.124045	10.13585	9.032629	1.116705	0.215488	0.330003	4.28E-05	0.047234
piR-mmu-48943025	11.85424	9.286701	10.06978	0.209989	0.528864	0.560219	4.29E-05	0.047345
piR-mmu-30055696	7.405981	5.113643	5.058356	0.235553	0.476881	0.224867	4.31E-05	0.047556
piR-mmu-49363871	8.870237	10.6913	12.20091	1.47951	0.158474	0.370064	4.45E-05	0.049121
piR-mmu-32397906	8.961152	11.11719	8.8911	0.163525	0.457803	0.471408	4.50E-05	0.049669
piR-mmu-48803219	6.951924	7.205359	9.652404	0.907967	0.093193	0.476719	4.52E-05	0.049934

adj P: Benjamini-Hochberg adjusted P value.

Supplementary Table S1b: Differentially expressed piRNAs in oral mucosal wound healing

piRNA	Mean			StDev			pVal	adj P
	0 hr	24 hr	5 day	0 hr	24 hr	5 day		
piR-mmu-23632402	8.545856	6.714704	5.822723	0.567802	1.470847	0.448796	0.003404	0.9999
piR-mmu-37120680	6.102041	7.876522	9.352654	1.099071	1.133759	0.799032	0.005566	0.9999
piR-mmu-12363372	7.149341	5.751218	4.950101	0.709467	0.510774	0.246961	0.008648	0.9999
piR-mmu-26877685	6.40733	8.241614	9.161494	1.505142	0.721752	0.802004	0.008954	0.9999
piR-mmu-16071780	7.653443	8.946332	10.218	0.375789	0.810963	0.868781	0.009613	0.9999

adj P: Benjamini-Hochberg adjusted P value.

Supplementary Table S2: Baseline tissue-specific differentially expressed piRNAs between skin and oral mucosa epithelium

piRNA	Mean		StDev		pVal	adj P
	Skin	Oral	Skin	Oral		
piR-mmu-49382307	6.011552	10.1937	0.450553	0.241789	7.62E-07	0.000841
piR-mmu-8855247	5.742301	8.926093	0.619377	0.3768	2.64E-05	0.014577
piR-mmu-1996661	8.821273	12.9794	1.240297	0.874027	5.06E-05	0.018629
piR-mmu-27200780	8.000454	5.051215	0.274638	0.87648	0.000216	0.039285
piR-mmu-240378	15.68287	12.8386	0.372211	1.05009	0.000288	0.039285
piR-mmu-4981268	9.643152	6.157263	1.339592	0.774927	0.000317	0.039285
piR-mmu-49754607	10.80484	13.56093	0.525127	0.284167	0.000335	0.039285
piR-mmu-24507210	9.979987	12.73058	0.49342	0.26704	0.000357	0.039285
piR-mmu-11461049	7.831382	4.679713	0.164814	1.460871	0.000487	0.039285
piR-mmu-10912700	9.019803	6.266817	0.150037	0.987323	0.000525	0.039285
piR-mmu-49714631	7.39974	4.727223	0.302992	0.73737	0.000536	0.039285
piR-mmu-30876808	5.633238	3.365039	0.221386	0.712874	0.000538	0.039285
piR-mmu-10916133	9.006139	5.920146	0.181429	1.301235	0.000547	0.039285
piR-mmu-49079980	8.016324	4.485175	0.225311	1.993919	0.000645	0.039285
piR-mmu-30053093	6.32531	3.752345	0.280841	0.827534	0.000648	0.039285
piR-mmu-48824062	8.268448	5.119166	0.982995	0.8712	0.00074	0.039285
piR-mmu-8379514	6.622364	9.147847	0.072181	0.359798	0.000773	0.039285
piR-mmu-10934588	8.501352	5.865535	0.155096	0.733998	0.000806	0.039285
piR-mmu-49251782	7.52583	4.446159	1.254668	0.672699	0.000814	0.039285
piR-mmu-10991144	8.439477	5.399423	0.188807	1.450519	0.000821	0.039285
piR-mmu-48806923	7.981486	5.238404	0.345378	1.044538	0.000844	0.039285
piR-mmu-2692796	8.133247	5.367479	0.256382	1.006387	0.000853	0.039285
piR-mmu-2678950	7.919631	5.363272	0.502653	0.638986	0.000925	0.039285
piR-mmu-29426453	7.685471	10.65773	1.098009	0.627713	0.000996	0.039285
piR-mmu-48882277	7.945725	5.355019	0.214656	0.828789	0.001	0.039285
piR-mmu-23866657	5.909041	3.647083	0.481623	0.778792	0.001024	0.039285
piR-mmu-5842895	8.103472	5.192	1.241467	0.449323	0.001031	0.039285
piR-mmu-10991141	8.657402	6.129678	0.158311	0.987354	0.001075	0.039285
piR-mmu-685550	12.71685	10.2542	0.460456	0.489091	0.001203	0.039285
piR-mmu-12633865	7.81997	5.197765	0.641788	0.896935	0.001215	0.039285
piR-mmu-11031895	7.58526	4.877849	0.223864	1.239018	0.001229	0.039285
piR-mmu-3698999	6.637311	8.733597	0.175804	0.31401	0.00124	0.039285
piR-mmu-8492800	6.776737	9.21786	0.886213	0.253547	0.001241	0.039285
piR-mmu-49913296	6.892045	9.247607	0.263656	0.486117	0.001279	0.039285
piR-mmu-10906591	16.71583	14.57278	0.028771	0.726801	0.001305	0.039285

piR-mmu-3753105	8.049068	5.295393	0.496475	1.057556	0.001308	0.039285
piR-mmu-10940440	8.908801	6.385735	0.204908	0.957164	0.001325	0.039285
piR-mmu-49197585	8.442509	5.063956	0.294622	2.008048	0.001352	0.039285
piR-mmu-2004883	7.476168	10.22248	0.884439	0.896389	0.001401	0.039672
piR-mmu-7474221	10.26116	12.39335	0.422005	0.391351	0.001488	0.039794
piR-mmu-48954623	9.36661	11.67674	0.489552	0.291969	0.001505	0.039794
piR-mmu-49015749	12.86147	9.930503	0.409896	1.092517	0.001531	0.039794
piR-mmu-33199875	14.47334	12.35931	0.30886	0.723957	0.001662	0.039794
piR-mmu-10911823	9.170175	6.801243	0.173396	0.826335	0.001673	0.039794
piR-mmu-49287809	9.095436	6.763861	0.376088	0.758288	0.001711	0.039794
piR-mmu-49342972	10.3054	6.986643	0.317342	1.904491	0.001751	0.039794
piR-mmu-51362692	7.039682	4.459206	0.892062	0.421031	0.001751	0.039794
piR-mmu-8492825	6.508086	8.877179	0.757607	0.333444	0.001803	0.039794
piR-mmu-49659703	9.51909	6.815889	0.379303	1.258486	0.001823	0.039794
piR-mmu-50207618	20.52026	18.38622	0.151505	0.74858	0.001837	0.039794
piR-mmu-8507752	8.867652	6.004725	1.459146	0.333503	0.001861	0.039794
piR-mmu-48844636	8.647022	10.98257	0.124699	0.611232	0.00194	0.039794
piR-mmu-10932261	9.169739	6.821275	0.144462	0.774313	0.001947	0.039794
piR-mmu-11461014	8.787251	6.140072	0.086673	1.32298	0.002049	0.039794
piR-mmu-10953882	8.904071	6.532893	0.148529	0.658735	0.002054	0.039794
piR-mmu-50670137	7.628111	5.160135	0.845437	0.534881	0.002075	0.039794
piR-mmu-9265278	6.416931	8.671537	0.797145	0.366448	0.002076	0.039794
piR-mmu-2201360	7.119097	10.16291	1.067111	1.261019	0.002091	0.039794
piR-mmu-3213041	9.083183	6.826825	0.57272	0.498043	0.002156	0.039947
piR-mmu-10916134	8.326815	6.107024	0.194624	0.72042	0.002171	0.039947
piR-mmu-11461037	13.64706	11.11304	0.900588	0.994997	0.002246	0.04053
piR-mmu-11031886	8.487193	6.039109	0.055488	1.096883	0.002276	0.04053
piR-mmu-10911100	9.254792	6.758299	0.126515	1.237273	0.002627	0.04604
piR-mmu-48831092	12.78064	10.35412	0.344555	1.002409	0.002716	0.046854
piR-mmu-10911632	9.008779	6.643823	0.063744	0.781272	0.002895	0.04872
piR-mmu-49325513	7.482259	9.797665	0.567873	0.259003	0.002929	0.04872
piR-mmu-31033718	7.915551	5.885577	0.482042	0.084427	0.002957	0.04872
piR-mmu-49609791	8.498115	6.083831	0.843415	0.837839	0.003114	0.049367
piR-mmu-10960276	8.086195	5.822554	0.213635	0.817765	0.003125	0.049367
piR-mmu-23832900	7.927196	5.972949	0.228311	0.067763	0.00313	0.049367

adj P: Benjamini-Hochberg adjusted P value.

Supplementary Table S3: Bioinformatics prediction of molecular pathways regulated by tissue-specific differentially expressed piRNAs**Oral-specific piRNAs targeted pathways:**

Pathway identifier	Pathway name	Count	PValue	Fold Enrichment	Bonferroni	Benjamini
mmu03015	mRNA surveillance pathway	10	1.92E-05	6.513380759	0.00312994	0.00313
mmu04114	Oocyte meiosis	8	0.001946781	4.466318235	0.27213124	0.146848
mmu04728	Dopaminergic synapse	8	0.00530134	3.733042107	0.5795447	0.250842
mmu04152	AMPK signaling pathway	7	0.015898974	3.419524898	0.92663843	0.479564
mmu03013	RNA transport	8	0.018232865	2.942515543	0.95018228	0.451121
mmu05033	Nicotine addiction	4	0.025123112	6.252845528	0.98419432	0.499041
mmu05202	Transcriptional misregulation in cancer	7	0.046995666	2.652722345	0.99960874	0.674006
mmu04550	Signaling pathways regulating pluripotency of stem cells	6	0.068006886	2.718628491	0.99998967	0.761887
mmu04723	Retrograde endocannabinoid signaling	5	0.080677513	3.035361907	0.99999889	0.782047
mmu05031	Amphetamine addiction	4	0.089923651	3.733042107	0.99999979	0.784737

Skin-specific piRNAs targeted pathways:

Pathway identifier	Pathway name	Count	PValue	Fold Enrichment	Bonferroni	Benjamini
mmu05211	Renal cell carcinoma	13	2.58E-05	4.45557041	0.00644912	0.006449
mmu04660	T cell receptor signaling pathway	14	3.44E-04	3.230543054	0.08266099	0.042222
mmu04360	Axon guidance	14	0.003386471	2.529339911	0.57320302	0.247095
mmu04010	MAPK signaling pathway	21	0.005309027	1.949909453	0.73713526	0.283967
mmu04014	Ras signaling pathway	19	0.00913617	1.933690618	0.90011327	0.369186
mmu03040	Spliceosome	13	0.011338142	2.278035999	0.9428531	0.379371
mmu04722	Neurotrophin signaling pathway	12	0.015080351	2.292399404	0.97794022	0.420075
mmu05030	Cocaine addiction	7	0.017363952	3.329437229	0.98768127	0.422807
mmu05205	Proteoglycans in cancer	16	0.027254184	1.836930885	0.99902761	0.537283
mmu04510	Focal adhesion	16	0.031694782	1.801434636	0.99969162	0.554438
mmu04012	ErbB signaling pathway	9	0.032064673	2.410971787	0.99971982	0.524622
mmu04730	Long-term depression	7	0.045189286	2.674465971	0.9999909	0.619866
mmu04713	Circadian entrainment	9	0.058031972	2.140352505	0.9999997	0.684719
mmu04720	Long-term potentiation	7	0.06211028	2.471854913	0.9999999	0.683247
mmu04550	Signaling pathways regulating pluripotency of stem cells	11	0.071188107	1.857729469	0.99999999	0.709381
mmu04024	cAMP signaling pathway	14	0.079323864	1.656268266	1	0.726519
mmu04974	Protein digestion and absorption	8	0.081927452	2.118732782	1	0.716933
mmu04520	Adherens junction	7	0.086749456	2.265867003	1	0.71787
mmu04022	cGMP-PKG signaling pathway	12	0.089678898	1.715783603	1	0.710972
mmu04144	Endocytosis	17	0.093086673	1.518019273	1	0.706606
mmu05202	Transcriptional misregulation in cancer	12	0.09569783	1.694986226	1	0.699501

70 tissue-specific differentially expressed piRNAs (including 18-oral specific and 52 skin-specific piRNAs) were used for the analysis.

The piRNA target gene prediction was performed with MR-microT (aggregated score ≥ 0.9).

A total of 492 and 1869 piRNA-target gene pairs (365 and 1023 non-redundant target genes) were predicted for oral- and skin-specific piRNAs.

The pathway analysis was performed with DAVID (v6.8).

Supplementary Table S4a: Bioinformatics prediction piRNA-target gene pairs of oral-specific differentially expressed piRNAs

piRNA	target gene	MR-microT score
piR-mmu-49382307	Ythdf2	0.954893
piR-mmu-49382307	Ccdc150	0.92895
piR-mmu-49382307	Setd5	0.919205
piR-mmu-8855247	Ythdf2	0.954893
piR-mmu-8855247	Ccdc150	0.92895
piR-mmu-8855247	Setd5	0.919205
piR-mmu-1996661	Fam114a2	0.990383
piR-mmu-1996661	Gm8247	0.974847
piR-mmu-1996661	Ahdc1	0.973333
piR-mmu-1996661	Serpini1	0.971592
piR-mmu-1996661	Hnrnpd	0.963839
piR-mmu-1996661	Fbxo28	0.961341
piR-mmu-1996661	Prdm6	0.958353
piR-mmu-1996661	Ppp1cb	0.958094
piR-mmu-1996661	Kcnh2	0.95561
piR-mmu-1996661	Kdm7a	0.95059
piR-mmu-1996661	Anapc2	0.948216
piR-mmu-1996661	E2f7	0.94477
piR-mmu-1996661	D830030K20Rik	0.93071
piR-mmu-1996661	Kif5a	0.929627
piR-mmu-1996661	Ppp2r5e	0.925427
piR-mmu-1996661	Vkorc1l1	0.925096
piR-mmu-1996661	Relb	0.9248
piR-mmu-1996661	Sympk	0.921113
piR-mmu-1996661	Gm3278	0.915405
piR-mmu-1996661	Ptbp3	0.915041
piR-mmu-1996661	Gm8271	0.913931
piR-mmu-1996661	Gm3532	0.912902
piR-mmu-1996661	Fip1l1	0.909043
piR-mmu-1996661	Celf4	0.904977
piR-mmu-1996661	Ppp2r5c	0.902804
piR-mmu-1996661	Ephb1	0.901025
piR-mmu-2201360	5430402E10Rik	0.995845
piR-mmu-2201360	Gm14744	0.994925
piR-mmu-2201360	Ago2	0.99272
piR-mmu-2201360	BC052040	0.986589
piR-mmu-2201360	Serpini1	0.968061
piR-mmu-2201360	Ahdc1	0.958687
piR-mmu-2201360	Ppp1cb	0.95719
piR-mmu-2201360	Gm8247	0.956703
piR-mmu-2201360	Abcg8	0.953005
piR-mmu-2201360	Ralgps2	0.950137
piR-mmu-2201360	Bcl9	0.946818
piR-mmu-2201360	Rag2	0.942341
piR-mmu-2201360	Ptbp3	0.940046
piR-mmu-2201360	Nek11	0.936471
piR-mmu-2201360	Clip4	0.934483
piR-mmu-2201360	Cast	0.934357

piR-mmu-2201360	Nckap1l	0.931753
piR-mmu-2201360	E2f7	0.928199
piR-mmu-2201360	Btg3	0.926763
piR-mmu-2201360	Mettl3	0.925947
piR-mmu-2201360	Smg1	0.925347
piR-mmu-2201360	Gmeb1	0.923545
piR-mmu-2201360	Upf3b	0.923513
piR-mmu-2201360	Zfp160	0.923477
piR-mmu-2201360	Kif5a	0.922425
piR-mmu-2201360	Esco1	0.922373
piR-mmu-2201360	Hnrnpd	0.920936
piR-mmu-2201360	Ltbp2	0.92074
piR-mmu-2201360	Frmpd4	0.92023
piR-mmu-2201360	Spes2	0.919436
piR-mmu-2201360	Kdm5c	0.918879
piR-mmu-2201360	Esrrg	0.917279
piR-mmu-2201360	Rbm15	0.915681
piR-mmu-2201360	Cep350	0.915337
piR-mmu-2201360	Pomt2	0.913058
piR-mmu-2201360	Foxj3	0.910785
piR-mmu-2201360	Ctbs	0.910095
piR-mmu-2201360	Kcnh2	0.908137
piR-mmu-2201360	Iffo2	0.903367
piR-mmu-2201360	Chchd3	0.902839
piR-mmu-2201360	Mecp2	0.900381
piR-mmu-29426453	Pnlsr	0.997744
piR-mmu-29426453	Plppr4	0.990007
piR-mmu-29426453	Cpeb4	0.986842
piR-mmu-29426453	Necab1	0.984047
piR-mmu-29426453	Mmp13	0.983959
piR-mmu-29426453	Dazl	0.981887
piR-mmu-29426453	Prpf40a	0.981398
piR-mmu-29426453	Crisp3	0.981371
piR-mmu-29426453	Zfp800	0.98116
piR-mmu-29426453	Mars2	0.98088
piR-mmu-29426453	C77370	0.980861
piR-mmu-29426453	Fmr1	0.979981
piR-mmu-29426453	Ptbp3	0.978896
piR-mmu-29426453	Phc3	0.978033
piR-mmu-29426453	Whsc1	0.978018
piR-mmu-29426453	Gch1	0.977015
piR-mmu-29426453	Meioc	0.976434
piR-mmu-29426453	Phip	0.973197
piR-mmu-29426453	Fermt2	0.971877
piR-mmu-29426453	Foxn2	0.967597
piR-mmu-29426453	Pura	0.965832
piR-mmu-29426453	Ube2v2	0.964946
piR-mmu-29426453	Ism1	0.963961
piR-mmu-29426453	Taok1	0.963654
piR-mmu-29426453	Mib1	0.963589
piR-mmu-29426453	Fubp1	0.960643
piR-mmu-29426453	Tead1	0.960634

piR-mmu-29426453	D1Ert622e	0.958517
piR-mmu-29426453	Syncrip	0.958444
piR-mmu-29426453	Prex2	0.957806
piR-mmu-29426453	Gria3	0.957119
piR-mmu-29426453	Ppp4r2	0.954231
piR-mmu-29426453	Zmat1	0.954155
piR-mmu-29426453	Smg1	0.954101
piR-mmu-29426453	lqch	0.950594
piR-mmu-29426453	Lmbrd1	0.950446
piR-mmu-29426453	Zbtb20	0.949713
piR-mmu-29426453	Crebrf	0.949684
piR-mmu-29426453	Chrn4	0.949138
piR-mmu-29426453	Ivns1abp	0.947193
piR-mmu-29426453	Fam199x	0.947102
piR-mmu-29426453	Gm20537	0.944916
piR-mmu-29426453	5430402E10Rik	0.944509
piR-mmu-29426453	Ect2	0.943553
piR-mmu-29426453	Rlim	0.939342
piR-mmu-29426453	Chic2	0.938787
piR-mmu-29426453	Hist2h2be	0.938729
piR-mmu-29426453	Nexn	0.938445
piR-mmu-29426453	Ptprd	0.93733
piR-mmu-29426453	Nsa2	0.936769
piR-mmu-29426453	Cadm2	0.936064
piR-mmu-29426453	1700010B08Rik	0.935885
piR-mmu-29426453	Spred1	0.935736
piR-mmu-29426453	Rabep1	0.933335
piR-mmu-29426453	Acadl	0.933057
piR-mmu-29426453	Elavl1	0.932677
piR-mmu-29426453	Myh8	0.932655
piR-mmu-29426453	Lats1	0.932408
piR-mmu-29426453	Srgn	0.931822
piR-mmu-29426453	C1galt1	0.931777
piR-mmu-29426453	Arhgap11a	0.929846
piR-mmu-29426453	Xpo1	0.929497
piR-mmu-29426453	Tgfb1	0.928897
piR-mmu-29426453	Fus	0.927475
piR-mmu-29426453	Hnrnp1	0.925989
piR-mmu-29426453	1700066M21Rik	0.925046
piR-mmu-29426453	Cdkl5	0.925045
piR-mmu-29426453	Rfcd	0.921883
piR-mmu-29426453	Srsf3	0.920642
piR-mmu-29426453	Slmap	0.920134
piR-mmu-29426453	Slco1a1	0.919091
piR-mmu-29426453	Ptpn12	0.918157
piR-mmu-29426453	Gfral	0.917667
piR-mmu-29426453	Fsbp	0.917211
piR-mmu-29426453	Spopl	0.914839
piR-mmu-29426453	Ildr2	0.914724
piR-mmu-29426453	Kcnh7	0.914711
piR-mmu-29426453	Ak6	0.914574
piR-mmu-29426453	Kdm7a	0.914098

piR-mmu-29426453	Gm19965	0.914058
piR-mmu-29426453	Cdc73	0.912351
piR-mmu-29426453	Rpgrip1l	0.912189
piR-mmu-29426453	Dopey1	0.911902
piR-mmu-29426453	March6	0.910348
piR-mmu-29426453	Unk	0.910099
piR-mmu-29426453	Mef2d	0.909795
piR-mmu-29426453	Dpp10	0.909666
piR-mmu-29426453	Wdr43	0.905411
piR-mmu-29426453	Mgat4c	0.904272
piR-mmu-29426453	Tmem215	0.904134
piR-mmu-29426453	St8sia4	0.903042
piR-mmu-29426453	Bend6	0.903039
piR-mmu-29426453	Med13	0.902643
piR-mmu-29426453	Rab30	0.902439
piR-mmu-29426453	App	0.902297
piR-mmu-29426453	Sirt1	0.901677
piR-mmu-29426453	Gm5415	0.90165
piR-mmu-29426453	Enah	0.9003
piR-mmu-29426453	Mysm1	0.900138
piR-mmu-8379514	Supt16	0.9397
piR-mmu-2004883	Fbxo28	0.99105
piR-mmu-2004883	Hnrnpd	0.956761
piR-mmu-2004883	Ppp2r5e	0.930728
piR-mmu-2004883	Pcm1	0.921105
piR-mmu-2004883	Eif2ak3	0.911102
piR-mmu-2004883	Eme1	0.907139
piR-mmu-8492825	Zfp704	0.979934
piR-mmu-8492825	Pura	0.967762
piR-mmu-8492825	Ccdc120	0.958503
piR-mmu-8492825	Gm10282	0.955684
piR-mmu-8492825	D1Ertd622e	0.954168
piR-mmu-8492825	Ctu1	0.953616
piR-mmu-8492825	Megf11	0.952288
piR-mmu-8492825	Zbtb4	0.951919
piR-mmu-8492825	Tmem151a	0.951816
piR-mmu-8492825	Fam149b	0.948346
piR-mmu-8492825	Ddx6	0.946188
piR-mmu-8492825	Tbc1d12	0.943482
piR-mmu-8492825	Ccnc	0.943008
piR-mmu-8492825	Taok1	0.94156
piR-mmu-8492825	Camk1d	0.937831
piR-mmu-8492825	Trip4	0.934576
piR-mmu-8492825	Ddx55	0.929028
piR-mmu-8492825	Id4	0.923827
piR-mmu-8492825	Cpeb4	0.921971
piR-mmu-8492825	Mef2d	0.921487
piR-mmu-8492825	Phf3	0.919968
piR-mmu-8492825	Plagl1	0.918111
piR-mmu-8492825	Zfp740	0.915668
piR-mmu-8492825	Itga10	0.914853
piR-mmu-8492825	Zeb2	0.913046

piR-mmu-8492825	4932438A13Rik	0.912683
piR-mmu-8492825	Ube2k	0.907627
piR-mmu-8492825	Mtmr4	0.905144
piR-mmu-8492825	4930452B06Rik	0.904951
piR-mmu-8492825	Mier3	0.903886
piR-mmu-8492825	Umad1	0.900682
piR-mmu-8492800	Zfp704	0.979985
piR-mmu-8492800	Pura	0.967635
piR-mmu-8492800	Ccdc120	0.958057
piR-mmu-8492800	Gm10282	0.955881
piR-mmu-8492800	D1Ert622e	0.954095
piR-mmu-8492800	Ctu1	0.953616
piR-mmu-8492800	Megf11	0.952288
piR-mmu-8492800	Zbtb4	0.951227
piR-mmu-8492800	Tmem151a	0.950984
piR-mmu-8492800	Fam149b	0.948346
piR-mmu-8492800	Ddx6	0.946277
piR-mmu-8492800	Tbc1d12	0.943482
piR-mmu-8492800	Ccnc	0.943008
piR-mmu-8492800	Taok1	0.941571
piR-mmu-8492800	Camk1d	0.937859
piR-mmu-8492800	Trip4	0.931963
piR-mmu-8492800	Ddx55	0.929378
piR-mmu-8492800	Cpeb4	0.921971
piR-mmu-8492800	Mef2d	0.921525
piR-mmu-8492800	Id4	0.920398
piR-mmu-8492800	Plagl1	0.918111
piR-mmu-8492800	Zeb2	0.917569
piR-mmu-8492800	Phf3	0.91555
piR-mmu-8492800	Zfp740	0.915116
piR-mmu-8492800	Itga10	0.915028
piR-mmu-8492800	4932438A13Rik	0.911072
piR-mmu-8492800	Ube2k	0.907504
piR-mmu-8492800	4930452B06Rik	0.904951
piR-mmu-8492800	Mier3	0.901547
piR-mmu-8492800	Mtmr4	0.901232
piR-mmu-8492800	Umad1	0.900682
piR-mmu-9265278	Paplg	0.994918
piR-mmu-9265278	Tmem50a	0.990819
piR-mmu-9265278	Bbx	0.990012
piR-mmu-9265278	Cbl	0.988102
piR-mmu-9265278	Brd1	0.987071
piR-mmu-9265278	Mtf2	0.985754
piR-mmu-9265278	Wasf2	0.983942
piR-mmu-9265278	Sbf1	0.982674
piR-mmu-9265278	Zfyve26	0.981194
piR-mmu-9265278	Arhgef3	0.972462
piR-mmu-9265278	Nfia	0.969373
piR-mmu-9265278	Cdkl5	0.968797
piR-mmu-9265278	Abcc5	0.968504
piR-mmu-9265278	Psmf1	0.967593
piR-mmu-9265278	Lce1c	0.967268

piR-mmu-9265278	Zbtb20	0.96704
piR-mmu-9265278	Cisd1	0.962676
piR-mmu-9265278	Hrh2	0.962431
piR-mmu-9265278	Bdnf	0.962294
piR-mmu-9265278	Tph1	0.959649
piR-mmu-9265278	Lce1f	0.956302
piR-mmu-9265278	Acin1	0.956182
piR-mmu-9265278	Tmem132a	0.953808
piR-mmu-9265278	Agps	0.951753
piR-mmu-9265278	Lce1a1	0.949468
piR-mmu-9265278	Foxk1	0.947535
piR-mmu-9265278	Mphosph9	0.94735
piR-mmu-9265278	Prkag2	0.947298
piR-mmu-9265278	Slc22a23	0.947012
piR-mmu-9265278	Ppp1r1c	0.944525
piR-mmu-9265278	Zzz3	0.942763
piR-mmu-9265278	Dhx40	0.942626
piR-mmu-9265278	Plrg1	0.94048
piR-mmu-9265278	Lce1a2	0.940287
piR-mmu-9265278	Fgfr2	0.939736
piR-mmu-9265278	Cdon	0.939438
piR-mmu-9265278	Fosl2	0.93484
piR-mmu-9265278	Thoc1	0.933294
piR-mmu-9265278	Chd9	0.932579
piR-mmu-9265278	Myocd	0.93084
piR-mmu-9265278	Lce1g	0.930125
piR-mmu-9265278	Susd6	0.928422
piR-mmu-9265278	Slc25a46	0.92776
piR-mmu-9265278	Tnrc6b	0.927733
piR-mmu-9265278	Trmt2b	0.927293
piR-mmu-9265278	Nol4l	0.92634
piR-mmu-9265278	Fam122b	0.9262
piR-mmu-9265278	Mier1	0.922623
piR-mmu-9265278	Dcstamp	0.92204
piR-mmu-9265278	Krt76	0.920829
piR-mmu-9265278	Reps2	0.920275
piR-mmu-9265278	Mafg	0.919547
piR-mmu-9265278	Lce1b	0.919156
piR-mmu-9265278	Ppm1g	0.918733
piR-mmu-9265278	Adrbk1	0.918521
piR-mmu-9265278	Sdc2	0.915272
piR-mmu-9265278	Cacna1b	0.915061
piR-mmu-9265278	Rnf6	0.914496
piR-mmu-9265278	Adamts5	0.910052
piR-mmu-9265278	Entpd3	0.90875
piR-mmu-9265278	Adam9	0.906222
piR-mmu-9265278	Cfap100	0.906028
piR-mmu-9265278	D1Ert622e	0.904846
piR-mmu-9265278	Ppp4c	0.902119
piR-mmu-9265278	Nfib	0.901654
piR-mmu-9265278	Ptcd1	0.901609
piR-mmu-9265278	Son	0.900922

piR-mmu-9265278	Tanc2	0.900243
piR-mmu-49913296	Gm7293	0.994585
piR-mmu-49913296	Fam120a	0.986716
piR-mmu-49913296	Khdc1a	0.986557
piR-mmu-49913296	Rnf115	0.983542
piR-mmu-49913296	Gria2	0.979262
piR-mmu-49913296	Cd46	0.972232
piR-mmu-49913296	E130114P18Rik	0.971622
piR-mmu-49913296	Kctd8	0.96546
piR-mmu-49913296	Snx7	0.964454
piR-mmu-49913296	Gabrb2	0.962885
piR-mmu-49913296	Inpp4a	0.953382
piR-mmu-49913296	Oraov1	0.942119
piR-mmu-49913296	Dip2c	0.941789
piR-mmu-49913296	Zfp810	0.93942
piR-mmu-49913296	Ssfa2	0.936781
piR-mmu-49913296	Sumo2	0.932753
piR-mmu-49913296	Ogt	0.931633
piR-mmu-49913296	Edn1	0.931457
piR-mmu-49913296	Trim63	0.928694
piR-mmu-49913296	Glis3	0.92283
piR-mmu-49913296	Parp6	0.922825
piR-mmu-49913296	Hmga2	0.921754
piR-mmu-49913296	AF529169	0.921189
piR-mmu-49913296	Tanc2	0.919253
piR-mmu-49913296	Skap1	0.919214
piR-mmu-49913296	Atp2b1	0.918548
piR-mmu-49913296	Dmd	0.912054
piR-mmu-49913296	Trpm8	0.910737
piR-mmu-49913296	Cadm2	0.90721
piR-mmu-49913296	Gspt1	0.906565
piR-mmu-49913296	Dagla	0.906072
piR-mmu-49913296	Adamts5	0.905675
piR-mmu-49913296	Kif5b	0.90512
piR-mmu-49913296	Csmd3	0.904569
piR-mmu-3698999	Magt1	0.999311
piR-mmu-3698999	Dctn2	0.99304
piR-mmu-3698999	Zfand1	0.988632
piR-mmu-3698999	Rdm1	0.988223
piR-mmu-3698999	Tead1	0.987853
piR-mmu-3698999	Gtpbp8	0.981519
piR-mmu-3698999	Crebrf	0.973687
piR-mmu-3698999	Kif5b	0.972618
piR-mmu-3698999	Psmd9	0.963301
piR-mmu-3698999	Ccdc163	0.954861
piR-mmu-3698999	Abcd4	0.95439
piR-mmu-3698999	Runx1t1	0.946914
piR-mmu-3698999	Zfp141	0.946255
piR-mmu-3698999	Cbfb	0.943523
piR-mmu-3698999	Fblim1	0.936822
piR-mmu-3698999	Zfp553	0.93565
piR-mmu-3698999	Ccdc125	0.932996

piR-mmu-3698999	Zmym5	0.929406
piR-mmu-3698999	Inip	0.928382
piR-mmu-3698999	Ropn1	0.924617
piR-mmu-3698999	Mrpl33	0.921706
piR-mmu-3698999	Tprkb	0.918157
piR-mmu-3698999	Pdcd5	0.91513
piR-mmu-3698999	Rcsd1	0.91171
piR-mmu-3698999	Fxn	0.906458
piR-mmu-3698999	Gm4924	0.905104
piR-mmu-3698999	Ankrd24	0.902011
piR-mmu-49325513	4930474N05Rik	0.964632
piR-mmu-49325513	Zfp521	0.960943
piR-mmu-49325513	Gm4631	0.927372
piR-mmu-49325513	Ttn	0.903327
piR-mmu-49325513	Rab21	0.903086
piR-mmu-49325513	Kpna4	0.900726
piR-mmu-24507210	Ddx3x	0.989052
piR-mmu-24507210	Ogt	0.980044
piR-mmu-24507210	Gm15140	0.961388
piR-mmu-24507210	Pcdhb9	0.961295
piR-mmu-24507210	Etnk1	0.960515
piR-mmu-24507210	Gclm	0.959233
piR-mmu-24507210	Dennd5b	0.957864
piR-mmu-24507210	Rita1	0.949149
piR-mmu-24507210	Nfat5	0.948381
piR-mmu-24507210	Igf1r	0.947725
piR-mmu-24507210	Tmem251	0.943091
piR-mmu-24507210	Plcz1	0.937915
piR-mmu-24507210	Ptprd	0.937253
piR-mmu-24507210	Zfand3	0.935923
piR-mmu-24507210	Zak	0.933998
piR-mmu-24507210	Ldah	0.933742
piR-mmu-24507210	Atp1a2	0.933501
piR-mmu-24507210	Ctdspl2	0.931958
piR-mmu-24507210	Rgs17	0.927617
piR-mmu-24507210	Lcp2	0.927267
piR-mmu-24507210	Mxi1	0.925051
piR-mmu-24507210	Trim36	0.921167
piR-mmu-24507210	Meis1	0.918076
piR-mmu-24507210	Fam134a	0.918041
piR-mmu-24507210	Anapc11	0.916558
piR-mmu-24507210	D1Ert622e	0.915287
piR-mmu-24507210	Onecut1	0.913933
piR-mmu-24507210	Rnf217	0.910694
piR-mmu-24507210	Anks4b	0.909092
piR-mmu-24507210	Wnt7a	0.906525
piR-mmu-24507210	Lrriq4	0.904059
piR-mmu-24507210	Zbtb20	0.903393
piR-mmu-24507210	Strap	0.903003
piR-mmu-24507210	Amfr	0.902131
piR-mmu-48844636	Ddx3x	0.988867
piR-mmu-48844636	Ogt	0.980247

piR-mmu-48844636	Gm15140	0.961388
piR-mmu-48844636	Pcdhb9	0.961295
piR-mmu-48844636	Gclm	0.961234
piR-mmu-48844636	Etnk1	0.960495
piR-mmu-48844636	Dennd5b	0.957863
piR-mmu-48844636	Rita1	0.949149
piR-mmu-48844636	Nfat5	0.948336
piR-mmu-48844636	Igf1r	0.947715
piR-mmu-48844636	Tmem251	0.943091
piR-mmu-48844636	Plcz1	0.938602
piR-mmu-48844636	Ptprd	0.937152
piR-mmu-48844636	Zfand3	0.935923
piR-mmu-48844636	Atp1a2	0.934381
piR-mmu-48844636	Zak	0.933998
piR-mmu-48844636	Ldah	0.933742
piR-mmu-48844636	Ctdspl2	0.931958
piR-mmu-48844636	Rgs17	0.927386
piR-mmu-48844636	Lcp2	0.927267
piR-mmu-48844636	Mxi1	0.925051
piR-mmu-48844636	Trim36	0.921167
piR-mmu-48844636	Meis1	0.918076
piR-mmu-48844636	Fam134a	0.918041
piR-mmu-48844636	Anapc11	0.916531
piR-mmu-48844636	D1Ert622e	0.915339
piR-mmu-48844636	Wnt7a	0.914798
piR-mmu-48844636	Onecut1	0.913933
piR-mmu-48844636	Rnf217	0.910694
piR-mmu-48844636	Anks4b	0.909092
piR-mmu-48844636	Lrriq4	0.904059
piR-mmu-48844636	Zbtb20	0.90345
piR-mmu-48844636	Strap	0.903003
piR-mmu-48844636	Amfr	0.902131
piR-mmu-49754607	Gm7293	0.994491
piR-mmu-49754607	E130114P18Rik	0.968933
piR-mmu-49754607	Fam120a	0.957455
piR-mmu-49754607	Gabrb2	0.954991
piR-mmu-49754607	Jph1	0.946742
piR-mmu-49754607	Snx7	0.936162
piR-mmu-49754607	Skap1	0.929981
piR-mmu-49754607	Trpm8	0.926452
piR-mmu-49754607	Gspt1	0.921665
piR-mmu-49754607	Ptprb	0.919221
piR-mmu-49754607	Oraov1	0.918198
piR-mmu-49754607	Parp6	0.916909
piR-mmu-49754607	Gria2	0.911238
piR-mmu-49754607	Csmd3	0.9075
piR-mmu-49754607	Speer3	0.905922
piR-mmu-49754607	Cadm2	0.905403
piR-mmu-49754607	Ncaph2	0.904701
piR-mmu-48954623	Gm7293	0.994975
piR-mmu-48954623	F830016B08Rik	0.98034
piR-mmu-48954623	Rps6kb1	0.977955

piR-mmu-48954623	Cadm2	0.967846
piR-mmu-48954623	Kank4	0.962409
piR-mmu-48954623	Nrep	0.959476
piR-mmu-48954623	Rab11a	0.956309
piR-mmu-48954623	Mbd3l2	0.954699
piR-mmu-48954623	Tanc2	0.950601
piR-mmu-48954623	Rc3h1	0.93603
piR-mmu-48954623	Ulbp1	0.92328
piR-mmu-48954623	Hmga2	0.922363
piR-mmu-48954623	Ap1g2	0.921732
piR-mmu-48954623	2610001J05Rik	0.91954
piR-mmu-48954623	Wtap	0.916353
piR-mmu-48954623	Trmt10a	0.913283
piR-mmu-48954623	Man1a2	0.905456
piR-mmu-48954623	Gm8898	0.904572
piR-mmu-48954623	Hormad2	0.901074
piR-mmu-7474221	4930474N05Rik	0.964933
piR-mmu-7474221	Hs6st2	0.956404
piR-mmu-7474221	Rsf1	0.938396
piR-mmu-7474221	Zfp521	0.933961
piR-mmu-7474221	Slc5a4b	0.929418
piR-mmu-7474221	Gm17359	0.927758
piR-mmu-7474221	Rab21	0.927355
piR-mmu-7474221	Ttn	0.92542
piR-mmu-7474221	Gm4631	0.924672
piR-mmu-7474221	1700019D03Rik	0.918775
piR-mmu-7474221	Fst	0.916383
piR-mmu-7474221	Esyt2	0.901094

The piRNA target gene prediction was performed with MR-microT (aggregated score ≥ 0.9).

Supplementary Table S4b: Bioinformatics prediction target genes of oral-specific differentially expressed piRNAs

OFFICIAL_GENE_SYMBOL	Name	Species
Cdon	cell adhesion molecule-related/down-regulated by oncogenes(Cdon)	Mus musculus
Etnk1	ethanolamine kinase 1(Etnk1)	Mus musculus
Fam114a2	family with sequence similarity 114, member A2(Fam114a2)	Mus musculus
Zmym5	zinc finger, MYM-type 5(Zmym5)	Mus musculus
Necab1	N-terminal EF-hand calcium binding protein 1(Necab1)	Mus musculus
Nexn	nexilin(Nexn)	Mus musculus
Rita1	RBPJ interacting and tubulin associated 1(Rita1)	Mus musculus
Edn1	endothelin 1(Edn1)	Mus musculus
Tph1	tryptophan hydroxylase 1(Tph1)	Mus musculus
Ppp4c	protein phosphatase 4, catalytic subunit(Ppp4c)	Mus musculus
Sirt1	sirtuin 1(Sirt1)	Mus musculus
Strap	serine/threonine kinase receptor associated protein(Strap)	Mus musculus
Slmap	sarcolemma associated protein(Slmap)	Mus musculus
Pnlsr	PNN interacting serine/arginine-rich(Pnlsr)	Mus musculus
Spcs2	signal peptidase complex subunit 2 homolog (S. cerevisiae)(Spcs2)	Mus musculus
Ect2	ect2 oncogene(Ect2)	Mus musculus
Rab30	RAB30, member RAS oncogene family(Rab30)	Mus musculus
Speer3	spermatogenesis associated glutamate (E)-rich protein 3(Speer3)	Mus musculus
Mphosph9	M-phase phosphoprotein 9(Mphosph9)	Mus musculus
Syncrip	synaptotagmin binding, cytoplasmic RNA interacting protein(Syncrip)	Mus musculus
Trip4	thyroid hormone receptor interactor 4(Trip4)	Mus musculus
Hnrnpr	heterogeneous nuclear ribonucleoprotein R(Hnrnpr)	Mus musculus
Rsf1	remodeling and spacing factor 1(Rsf1)	Mus musculus
Gm4631	predicted gene 4631(Gm4631)	Mus musculus
Ldah	lipid droplet associated hydrolase(Ldah)	Mus musculus
Gtpbp8	GTP-binding protein 8 (putative)(Gtpbp8)	Mus musculus
Lce1c	late cornified envelope 1C(Lce1c)	Mus musculus
Lce1a2	late cornified envelope 1A2(Lce1a2)	Mus musculus
Whsc1	Wolf-Hirschhorn syndrome candidate 1 (human)(Whsc1)	Mus musculus
AF529169	cDNA sequence AF529169(AF529169)	Mus musculus
Frmpd4	FERM and PDZ domain containing 4(Frmpd4)	Mus musculus
Chchd3	coiled-coil-helix-coiled-coil-helix domain containing 3(Chchd3)	Mus musculus
Anks4b	ankyrin repeat and sterile alpha motif domain containing 4B(Anks4b)	Mus musculus
Kif5a	kinesin family member 5A(Kif5a)	Mus musculus
Kif5b	kinesin family member 5B(Kif5b)	Mus musculus
Ppp1r1c	protein phosphatase 1, regulatory (inhibitor) subunit 1C(Ppp1r1c)	Mus musculus

Ism1	isthmin 1, angiogenesis inhibitor(Ism1)	Mus musculus
Psmd9	proteasome (prosome, macropain) 26S subunit, non-ATPase, 9(Psmd9)	Mus musculus
Mier3	MIER family member 3(Mier3)	Mus musculus
Csmd3	CUB and Sushi multiple domains 3(Csmd3)	Mus musculus
Gria2	glutamate receptor, ionotropic, AMPA2 (alpha 2)(Gria2)	Mus musculus
Dazl	deleted in azoospermia-like(Dazl)	Mus musculus
Gm7293	glyceraldehyde-3-phosphate dehydrogenase pseudogene(Gm7293)	Mus musculus
Nfat5	nuclear factor of activated T cells 5(Nfat5)	Mus musculus
Mafg	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein G (avian)(Mafg)	Mus musculus
Reps2	RALBP1 associated Eps domain containing protein 2(Reps2)	Mus musculus
Kcnh7	potassium voltage-gated channel, subfamily H (eag-related), member 7(Kcnh7)	Mus musculus
Zzz3	zinc finger, ZZ domain containing 3(Zzz3)	Mus musculus
Tmem215	transmembrane protein 215(Tmem215)	Mus musculus
Wnt7a	wingless-type MMTV integration site family, member 7A(Wnt7a)	Mus musculus
Nek11	NIMA (never in mitosis gene a)-related expressed kinase 11(Nek11)	Mus musculus
Fam134a	family with sequence similarity 134, member A(Fam134a)	Mus musculus
Gm8271	predicted gene 8271(Gm8271)	Mus musculus
Zfp740	zinc finger protein 740(Zfp740)	Mus musculus
Lce1a1	late cornified envelope 1A1(Lce1a1)	Mus musculus
Papolg	poly(A) polymerase gamma(Papolg)	Mus musculus
Mtmt4	myotubularin related protein 4(Mtmt4)	Mus musculus
Foxj3	forkhead box J3(Foxj3)	Mus musculus
Ppp1cb	protein phosphatase 1, catalytic subunit, beta isoform(Ppp1cb)	Mus musculus
Chic2	cysteine-rich hydrophobic domain 2(Chic2)	Mus musculus
4932438A13Rik	RIKEN cDNA 4932438A13 gene(4932438A13Rik)	Mus musculus
Brd1	bromodomain containing 1(Brd1)	Mus musculus
Eif2ak3	eukaryotic translation initiation factor 2 alpha kinase 3(Eif2ak3)	Mus musculus
Zfp810	zinc finger protein 810(Zfp810)	Mus musculus
Anapc11	anaphase promoting complex subunit 11(Anapc11)	Mus musculus
Trmt10a	tRNA methyltransferase 10A(Trmt10a)	Mus musculus
Hnrnpd	heterogeneous nuclear ribonucleoprotein D(Hnrnpd)	Mus musculus
Tmem132a	transmembrane protein 132A(Tmem132a)	Mus musculus
Gm8247	predicted gene 8247(Gm8247)	Mus musculus
Slco1a1	solute carrier organic anion transporter family, member 1a1(Slco1a1)	Mus musculus
Atp1a2	ATPase, Na ⁺ /K ⁺ transporting, alpha 2 polypeptide(Atp1a2)	Mus musculus
Rbm15	RNA binding motif protein 15(Rbm15)	Mus musculus
Bbx	bobby sox homolog (Drosophila)(Bbx)	Mus musculus
Ctbs	chitinase, di-N-acetyl-(Ctbs)	Mus musculus
1700019D03Rik	RIKEN cDNA 1700019D03 gene(1700019D03Rik)	Mus musculus

Mettl3	methyltransferase like 3(Mettl3)	Mus musculus
Pcm1	pericentriolar material 1(Pcm1)	Mus musculus
Lrriq4	leucine-rich repeats and IQ motif containing 4(Lrriq4)	Mus musculus
Krt76	keratin 76(Krt76)	Mus musculus
Anapc2	anaphase promoting complex subunit 2(Anapc2)	Mus musculus
Adam9	a disintegrin and metallopeptidase domain 9 (meltrin gamma)(Adam9)	Mus musculus
Lce1f	late cornified envelope 1F(Lce1f)	Mus musculus
Ptbp3	polypyrimidine tract binding protein 3(Ptbp3)	Mus musculus
Fgfr2	fibroblast growth factor receptor 2(Fgfr2)	Mus musculus
Rdm1	RAD52 motif 1(Rdm1)	Mus musculus
Slc22a23	solute carrier family 22, member 23(Slc22a23)	Mus musculus
Gfral	GDNF family receptor alpha like(Gfral)	Mus musculus
Magt1	magnesium transporter 1(Magt1)	Mus musculus
Pdcd5	programmed cell death 5(Pdcd5)	Mus musculus
Ncaph2	non-SMC condensin II complex, subunit H2(Ncaph2)	Mus musculus
Upf3b	UPF3 regulator of nonsense transcripts homolog B (yeast)(Upf3b)	Mus musculus
Nfib	nuclear factor I/B(Nfib)	Mus musculus
Nfia	nuclear factor I/A(Nfia)	Mus musculus
Zmat1	zinc finger, matrin type 1(Zmat1)	Mus musculus
Clip4	CAP-GLY domain containing linker protein family, member 4(Clip4)	Mus musculus
Mier1	MEIR1 treanscription regulator(Mier1)	Mus musculus
Foxn2	forkhead box N2(Foxn2)	Mus musculus
E2f7	E2F transcription factor 7(E2f7)	Mus musculus
Trmt2b	TRM2 tRNA methyltransferase 2B(Trmt2b)	Mus musculus
App	amyloid beta (A4) precursor protein(App)	Mus musculus
Gm14744	predicted gene 14744(Gm14744)	Mus musculus
Ppm1g	protein phosphatase 1G (formerly 2C), magnesium-dependent, gamma isoform(	Mus musculus
Pcdhb9	protocadherin beta 9(Pcdhb9)	Mus musculus
Inip	INTS3 and NABP interacting protein(Inip)	Mus musculus
Relb	avian reticuloendotheliosis viral (v-rel) oncogene related B(Relb)	Mus musculus
Fermt2	fermitin family member 2(Fermt2)	Mus musculus
Ago2	argonaute RISC catalytic subunit 2(Ago2)	Mus musculus
Parp6	poly (ADP-ribose) polymerase family, member 6(Parp6)	Mus musculus
Rps6kb1	ribosomal protein S6 kinase, polypeptide 1(Rps6kb1)	Mus musculus
Rgs17	regulator of G-protein signaling 17(Rgs17)	Mus musculus
Phc3	polyhomeotic-like 3 (Drosophila)(Phc3)	Mus musculus
Fmr1	fragile X mental retardation syndrome 1(Fmr1)	Mus musculus
Lce1g	late cornified envelope 1G(Lce1g)	Mus musculus
Rcsd1	RCSD domain containing 1(Rcsd1)	Mus musculus

Spopl	speckle-type POZ protein-like(Spopl)	Mus musculus
Psmf1	proteasome (prosome, macropain) inhibitor subunit 1(Psmf1)	Mus musculus
Ythdf2	YTH domain family 2(Ythdf2)	Mus musculus
Dip2c	disco interacting protein 2 homolog C(Dip2c)	Mus musculus
Srgn	serglycin(Srgn)	Mus musculus
Inpp4a	inositol polyphosphate-4-phosphatase, type I(Inpp4a)	Mus musculus
Ropn1	ropporin, rhophilin associated protein 1(Ropn1)	Mus musculus
Lce1b	late cornified envelope 1B(Lce1b)	Mus musculus
Plppr4	phospholipid phosphatase related 4(Plppr4)	Mus musculus
lqch	IQ motif containing H(lqch)	Mus musculus
Ltbp2	latent transforming growth factor beta binding protein 2(Ltbp2)	Mus musculus
4930452B06Rik	RIKEN cDNA 4930452B06 gene(4930452B06Rik)	Mus musculus
4930474N05Rik	RIKEN cDNA 4930474N05 gene(4930474N05Rik)	Mus musculus
Ddx6	DEAD (Asp-Glu-Ala-Asp) box polypeptide 6(Ddx6)	Mus musculus
Ralgps2	Ral GEF with PH domain and SH3 binding motif 2(Ralgps2)	Mus musculus
Gclm	glutamate-cysteine ligase, modifier subunit(Gclm)	Mus musculus
Phf3	PHD finger protein 3(Phf3)	Mus musculus
Dagla	diacylglycerol lipase, alpha(Dagla)	Mus musculus
Ddx3x	DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 3, X-linked(Ddx3x)	Mus musculus
Fxn	frataxin(Fxn)	Mus musculus
Tgfbr1	transforming growth factor, beta receptor I(Tgfbr1)	Mus musculus
Khdc1a	KH domain containing 1A(Khdc1a)	Mus musculus
Ssfa2	sperm specific antigen 2(Ssfa2)	Mus musculus
Hist2h2be	histone cluster 2, H2be(Hist2h2be)	Mus musculus
Itga10	integrin, alpha 10(Itga10)	Mus musculus
Wdr43	WD repeat domain 43(Wdr43)	Mus musculus
Trim63	tripartite motif-containing 63(Trim63)	Mus musculus
Cisd1	CDGSH iron sulfur domain 1(Cisd1)	Mus musculus
Zbtb20	zinc finger and BTB domain containing 20(Zbtb20)	Mus musculus
Esyt2	extended synaptotagmin-like protein 2(Esyt2)	Mus musculus
Ube2v2	ubiquitin-conjugating enzyme E2 variant 2(Ube2v2)	Mus musculus
Megf11	multiple EGF-like-domains 11(Megf11)	Mus musculus
Foxk1	forkhead box K1(Foxk1)	Mus musculus
Fosl2	fos-like antigen 2(Fosl2)	Mus musculus
Ivns1abp	influenza virus NS1A binding protein(Ivns1abp)	Mus musculus
Ankrd24	ankyrin repeat domain 24(Ankrd24)	Mus musculus
Enah	enabled homolog (Drosophila)(Enah)	Mus musculus
Ppp4r2	protein phosphatase 4, regulatory subunit 2(Ppp4r2)	Mus musculus
Ahdc1	AT hook, DNA binding motif, containing 1(Ahdc1)	Mus musculus

Chrn4	cholinergic receptor, nicotinic, beta polypeptide 4(Chrn4)	Mus musculus
Rab11a	RAB11A, member RAS oncogene family(Rab11a)	Mus musculus
Ube2k	ubiquitin-conjugating enzyme E2K(Ube2k)	Mus musculus
Ephb1	Eph receptor B1(Ephb1)	Mus musculus
Celf4	CUGBP, Elav-like family member 4(Celf4)	Mus musculus
E130114P18Rik	RIKEN cDNA E130114P18 gene(E130114P18Rik)	Mus musculus
Tmem251	transmembrane protein 251(Tmem251)	Mus musculus
Plrg1	pleiotropic regulator 1(Plrg1)	Mus musculus
Fam122b	family with sequence similarity 122, member B(Fam122b)	Mus musculus
Xpo1	exportin 1(Xpo1)	Mus musculus
1700010B08Rik	RIKEN cDNA 1700010B08 gene(1700010B08Rik)	Mus musculus
Hormad2	HORMA domain containing 2(Hormad2)	Mus musculus
D830030K20Rik	RIKEN cDNA D830030K20 gene(D830030K20Rik)	Mus musculus
Dpp10	dipeptidylpeptidase 10(Dpp10)	Mus musculus
Zfand3	zinc finger, AN1-type domain 3(Zfand3)	Mus musculus
Glis3	GLIS family zinc finger 3(Glis3)	Mus musculus
Fst	folliculin(Fst)	Mus musculus
Kcnh2	potassium voltage-gated channel, subfamily H (eag-related), member 2(Kcnh2)	Mus musculus
Sympk	sympkin(Sympk)	Mus musculus
Kdm7a	lysine (K)-specific demethylase 7A(Kdm7a)	Mus musculus
Acadl	acyl-Coenzyme A dehydrogenase, long-chain(Acadl)	Mus musculus
Fsdp	fibrinogen silencer binding protein(Fsdp)	Mus musculus
Lats1	large tumor suppressor(Lats1)	Mus musculus
Cdc73	cell division cycle 73, Paf1/RNA polymerase II complex component(Cdc73)	Mus musculus
Nsa2	NSA2 ribosome biogenesis homolog(Nsa2)	Mus musculus
Mysm1	myb-like, SWIRM and MPN domains 1(Mysm1)	Mus musculus
F830016B08Rik	RIKEN cDNA F830016B08 gene(F830016B08Rik)	Mus musculus
BC052040	cDNA sequence BC052040(BC052040)	Mus musculus
Ctdspl2	CTD (carboxy-terminal domain, RNA polymerase II, polypeptide A) small phospho	Mus musculus
Bend6	BEN domain containing 6(Bend6)	Mus musculus
Runx1t1	runt-related transcription factor 1; translocated to, 1 (cyclin D-related)(Runx1t1)	Mus musculus
Phip	pleckstrin homology domain interacting protein(Phip)	Mus musculus
Prex2	phosphatidylinositol-3,4,5-trisphosphate-dependent Rac exchange factor 2(Prex2)	Mus musculus
Myh8	myosin, heavy polypeptide 8, skeletal muscle, perinatal(Myh8)	Mus musculus
Mxi1	MAX interactor 1, dimerization protein(Mxi1)	Mus musculus
Kank4	KN motif and ankyrin repeat domains 4(Kank4)	Mus musculus
Ptpn12	protein tyrosine phosphatase, non-receptor type 12(Ptpn12)	Mus musculus
Zbtb4	zinc finger and BTB domain containing 4(Zbtb4)	Mus musculus
Cbfb	core binding factor beta(Cbfb)	Mus musculus

Sumo2	small ubiquitin-like modifier 2(Sumo2)	Mus musculus
Zeb2	zinc finger E-box binding homeobox 2(Zeb2)	Mus musculus
Slc25a46	solute carrier family 25, member 46(Slc25a46)	Mus musculus
Cbl	Casitas B-lineage lymphoma(Cbl)	Mus musculus
Cadm2	cell adhesion molecule 2(Cadm2)	Mus musculus
Igf1r	insulin-like growth factor I receptor(Igf1r)	Mus musculus
Sdc2	syndecan 2(Sdc2)	Mus musculus
Son	Son DNA binding protein(Son)	Mus musculus
Zfand1	zinc finger, AN1-type domain 1(Zfand1)	Mus musculus
Fip1l1	FIP1 like 1 (S. cerevisiae)(Fip1l1)	Mus musculus
Ptpnb	protein tyrosine phosphatase, receptor type, B(Ptpnb)	Mus musculus
Atp2b1	ATPase, Ca++ transporting, plasma membrane 1(Atp2b1)	Mus musculus
Tmem50a	transmembrane protein 50A(Tmem50a)	Mus musculus
Gm3278	predicted gene 3278(Gm3278)	Mus musculus
Rlim	ring finger protein, LIM domain interacting(Rlim)	Mus musculus
Cep350	centrosomal protein 350(Cep350)	Mus musculus
Dctn2	dynactin 2(Dctn2)	Mus musculus
Lcp2	lymphocyte cytosolic protein 2(Lcp2)	Mus musculus
Plcz1	phospholipase C, zeta 1(Plcz1)	Mus musculus
Ctu1	cytosolic thioridylase subunit 1(Ctu1)	Mus musculus
Zfp141	zinc finger protein 141(Zfp141)	Mus musculus
Vkorc1l1	vitamin K epoxide reductase complex, subunit 1-like 1(Vkorc1l1)	Mus musculus
Meioc	meiosis specific with coiled-coil domain(Meios)	Mus musculus
Rfesd	Rieske (Fe-S) domain containing(Rfesd)	Mus musculus
Prdm6	PR domain containing 6(Prdm6)	Mus musculus
Tbc1d12	TBC1D12: TBC1 domain family, member 12(Tbc1d12)	Mus musculus
Smg1	SMG1 homolog, phosphatidylinositol 3-kinase-related kinase (C. elegans)(Smg1)	Mus musculus
1700066M21Rik	RIKEN cDNA 1700066M21 gene(1700066M21Rik)	Mus musculus
Ildr2	immunoglobulin-like domain containing receptor 2(Ildr2)	Mus musculus
Cast	calpastatin(Cast)	Mus musculus
Iffo2	intermediate filament family orphan 2(Iffo2)	Mus musculus
Rabep1	rabaptin, RAB GTPase binding effector protein 1(Rabep1)	Mus musculus
Pomt2	protein-O-mannosyltransferase 2(Pomt2)	Mus musculus
Gch1	GTP cyclohydrolase 1(Gch1)	Mus musculus
Abcd4	ATP-binding cassette, sub-family D (ALD), member 4(Abcd4)	Mus musculus
Serpini1	serine (or cysteine) peptidase inhibitor, clade I, member 1(Serpini1)	Mus musculus
Fam149b	family with sequence similarity 149, member B(Fam149b)	Mus musculus
Tead1	TEA domain family member 1(Tead1)	Mus musculus
Ogt	O-linked N-acetylglucosamine (GlcNAc) transferase (UDP-N-acetylglucosamine:p	Mus musculus

Eme1	essential meiotic structure-specific endonuclease 1(Eme1)	Mus musculus
Gm3532	predicted gene 3532(Gm3532)	Mus musculus
Mmp13	matrix metalloproteinase 13(Mmp13)	Mus musculus
Mrpl33	mitochondrial ribosomal protein L33(Mrpl33)	Mus musculus
Plagl1	pleiomorphic adenoma gene-like 1(Plagl1)	Mus musculus
Ccnc	cyclin C(Ccnc)	Mus musculus
Setd5	SET domain containing 5(Setd5)	Mus musculus
Cacna1b	calcium channel, voltage-dependent, N type, alpha 1B subunit(Cacna1b)	Mus musculus
Gm17359	predicted gene, 17359(Gm17359)	Mus musculus
Esco1	establishment of sister chromatid cohesion N-acetyltransferase 1(Esco1)	Mus musculus
Ulb1	UL16 binding protein 1(Ulb1)	Mus musculus
Ptprd	protein tyrosine phosphatase, receptor type, D(Ptprd)	Mus musculus
Rab21	RAB21, member RAS oncogene family(Rab21)	Mus musculus
Wtap	Wilms tumour 1-associating protein(Wtap)	Mus musculus
Btg3	B cell translocation gene 3(Btg3)	Mus musculus
Mars2	methionine-tRNA synthetase 2 (mitochondrial)(Mars2)	Mus musculus
Elavl1	ELAV (embryonic lethal, abnormal vision)-like 1 (Hu antigen R)(Elavl1)	Mus musculus
Kctd8	potassium channel tetramerisation domain containing 8(Kctd8)	Mus musculus
Tnrc6b	trinucleotide repeat containing 6b(Tnrc6b)	Mus musculus
Nol4l	nucleolar protein 4-like(Nol4l)	Mus musculus
Unk	unkempt family zinc finger(Unk)	Mus musculus
Ap1g2	adaptor protein complex AP-1, gamma 2 subunit(Ap1g2)	Mus musculus
Prkag2	protein kinase, AMP-activated, gamma 2 non-catalytic subunit(Prkag2)	Mus musculus
Cfap100	cilia and flagella associated protein 100(Cfap100)	Mus musculus
Zfp160	zinc finger protein 160(Zfp160)	Mus musculus
Ppp2r5e	protein phosphatase 2, regulatory subunit B', epsilon(Ppp2r5e)	Mus musculus
Dmd	dystrophin, muscular dystrophy(Dmd)	Mus musculus
Ppp2r5c	protein phosphatase 2, regulatory subunit B', gamma(Ppp2r5c)	Mus musculus
Med13	mediator complex subunit 13(Med13)	Mus musculus
Abcc5	ATP-binding cassette, sub-family C (CFTR/MRP), member 5(Abcc5)	Mus musculus
Gm15140	predicted gene 15140(Gm15140)	Mus musculus
Pura	purine rich element binding protein A(Pura)	Mus musculus
Prpf40a	pre-mRNA processing factor 40A(Prpf40a)	Mus musculus
Gmeb1	glucocorticoid modulatory element binding protein 1(Gmeb1)	Mus musculus
St8sia4	ST8 alpha-N-acetyl-neuraminide alpha-2,8-sialyltransferase 4(St8sia4)	Mus musculus
Adamts5	a disintegrin-like and metalloproteinase (reprolysin type) with thrombospondin type 1 motifs(Adamts5)	Mus musculus
Zfyve26	zinc finger, FYVE domain containing 26(Zfyve26)	Mus musculus
Slc5a4b	solute carrier family 5 (neutral amino acid transporters, system A), member 4b(Slc5a4b)	Mus musculus
Hs6st2	heparan sulfate 6-O-sulfotransferase 2(Hs6st2)	Mus musculus

Gm19965	zinc finger protein 234-like(Gm19965)	Mus musculus
C77370	expressed sequence C77370(C77370)	Mus musculus
Rag2	recombination activating gene 2(Rag2)	Mus musculus
Arhgap11a	Rho GTPase activating protein 11A(Arhgap11a)	Mus musculus
Spred1	sprouty protein with EVH-1 domain 1, related sequence(Spred1)	Mus musculus
Ccdc120	coiled-coil domain containing 120(Ccdc120)	Mus musculus
Amfr	autocrine motility factor receptor(Amfr)	Mus musculus
Nckap1l	NCK associated protein 1 like(Nckap1l)	Mus musculus
Cdkl5	cyclin-dependent kinase-like 5(Cdkl5)	Mus musculus
Bdnf	brain derived neurotrophic factor(Bdnf)	Mus musculus
Mgat4c	MGAT4 family, member C(Mgat4c)	Mus musculus
Rpgrip1l	Rpgrip1-like(Rpgrip1l)	Mus musculus
Acin1	apoptotic chromatin condensation inducer 1(Acin1)	Mus musculus
Rc3h1	RING CCCH (C3H) domains 1(Rc3h1)	Mus musculus
Rnf115	ring finger protein 115(Rnf115)	Mus musculus
Gm4924	predicted gene 4924(Gm4924)	Mus musculus
Fblim1	filamin binding LIM protein 1(Fblim1)	Mus musculus
Cpeb4	cytoplasmic polyadenylation element binding protein 4(Cpeb4)	Mus musculus
Thoc1	THO complex 1(Thoc1)	Mus musculus
Myocd	myocardin(Myocd)	Mus musculus
Ddx55	DEAD (Asp-Glu-Ala-Asp) box polypeptide 55(Ddx55)	Mus musculus
Fubp1	far upstream element (FUSE) binding protein 1(Fubp1)	Mus musculus
Camk1d	calcium/calmodulin-dependent protein kinase ID(Camk1d)	Mus musculus
Mib1	mindbomb E3 ubiquitin protein ligase 1(Mib1)	Mus musculus
Kpna4	karyopherin (importin) alpha 4(Kpna4)	Mus musculus
Ccdc163	coiled-coil domain containing 163(Ccdc163)	Mus musculus
Wasf2	WAS protein family, member 2(Wasf2)	Mus musculus
Zfp553	zinc finger protein 553(Zfp553)	Mus musculus
Tprkb	Tp53rk binding protein(Tprkb)	Mus musculus
Dopey1	dopey family member 1(Dopey1)	Mus musculus
Mbd3l2	methyl-CpG binding domain protein 3-like 2(Mbd3l2)	Mus musculus
Zak	sterile alpha motif and leucine zipper containing kinase AZK(Zak)	Mus musculus
Fam120a	family with sequence similarity 120, member A(Fam120a)	Mus musculus
Zfp521	zinc finger protein 521(Zfp521)	Mus musculus
Onecut1	one cut domain, family member 1(Onecut1)	Mus musculus
Entpd3	ectonucleoside triphosphate diphosphohydrolase 3(Entpd3)	Mus musculus
Supt16	suppressor of Ty 16(Supt16)	Mus musculus
Zfp704	zinc finger protein 704(Zfp704)	Mus musculus
Trpm8	transient receptor potential cation channel, subfamily M, member 8(Trpm8)	Mus musculus

Agps	alkylglycerone phosphate synthase(Agps)	Mus musculus
Tanc2	tetratricopeptide repeat, ankyrin repeat and coiled-coil containing 2(Tanc2)	Mus musculus
Ttn	titin(Ttn)	Mus musculus
Esrrg	estrogen-related receptor gamma(Esrrg)	Mus musculus
Chd9	chromodomain helicase DNA binding protein 9(Chd9)	Mus musculus
Jph1	junctionophilin 1(Jph1)	Mus musculus
Gabrb2	gamma-aminobutyric acid (GABA) A receptor, subunit beta 2(Gabrb2)	Mus musculus
Man1a2	mannosidase, alpha, class 1A, member 2(Man1a2)	Mus musculus
Fus	fused in sarcoma(Fus)	Mus musculus
Bcl9	B cell CLL/lymphoma 9(Bcl9)	Mus musculus
Gm10282	high mobility group nucleosomal binding domain 2 pseudogene(Gm10282)	Mus musculus
Arhgef3	Rho guanine nucleotide exchange factor (GEF) 3(Arhgef3)	Mus musculus
Mtf2	metal response element binding transcription factor 2(Mtf2)	Mus musculus
Id4	inhibitor of DNA binding 4(Id4)	Mus musculus
Hmga2	high mobility group AT-hook 2(Hmga2)	Mus musculus
Crisp3	cysteine-rich secretory protein 3(Crisp3)	Mus musculus
Ccdc150	coiled-coil domain containing 150(Ccdc150)	Mus musculus
Meis1	Meis homeobox 1(Meis1)	Mus musculus
C1galt1	core 1 synthase, glycoprotein-N-acetylgalactosamine 3-beta-galactosyltransferase	Mus musculus
Fam199x	family with sequence similarity 199, X-linked(Fam199x)	Mus musculus
Trim36	tripartite motif-containing 36(Trim36)	Mus musculus
Gm5415	predicted gene 5415(Gm5415)	Mus musculus
Kdm5c	lysine (K)-specific demethylase 5C(Kdm5c)	Mus musculus
Zfp800	zinc finger protein 800(Zfp800)	Mus musculus
Gria3	glutamate receptor, ionotropic, AMPA3 (alpha 3)(Gria3)	Mus musculus
Ptcd1	pentatricopeptide repeat domain 1(Ptcd1)	Mus musculus
Gspt1	G1 to S phase transition 1(Gspt1)	Mus musculus
Dcstamp	dendrocyte expressed seven transmembrane protein(Dcstamp)	Mus musculus
Crebrf	CREB3 regulatory factor(Crebrf)	Mus musculus
Taok1	TAO kinase 1(Taok1)	Mus musculus
Skap1	src family associated phosphoprotein 1(Skap1)	Mus musculus
Hrh2	histamine receptor H2(Hrh2)	Mus musculus
Ak6	adenylate kinase 6(Ak6)	Mus musculus
Ccdc125	coiled-coil domain containing 125(Ccdc125)	Mus musculus
Mef2d	myocyte enhancer factor 2D(Mef2d)	Mus musculus
Oraov1	oral cancer overexpressed 1(Oraov1)	Mus musculus
Mecp2	methyl CpG binding protein 2(Mecp2)	Mus musculus
Rnf6	ring finger protein (C3H2C3 type) 6(Rnf6)	Mus musculus
5430402E10Rik	RIKEN cDNA 5430402E10 gene(5430402E10Rik)	Mus musculus

Nrep	neuronal regeneration related protein(Nrep)	Mus musculus
Susd6	sushi domain containing 6(Susd6)	Mus musculus
Snx7	sorting nexin 7(Snx7)	Mus musculus
Tmem151a	transmembrane protein 151A(Tmem151a)	Mus musculus
Sbf1	SET binding factor 1(Sbf1)	Mus musculus
Abcg8	ATP-binding cassette, sub-family G (WHITE), member 8(Abcg8)	Mus musculus
Dennd5b	DENN/MADD domain containing 5B(Dennd5b)	Mus musculus
Cd46	CD46 antigen, complement regulatory protein(Cd46)	Mus musculus
2610001J05Rik	RIKEN cDNA 2610001J05 gene(2610001J05Rik)	Mus musculus
Rnf217	ring finger protein 217(Rnf217)	Mus musculus
Lmbrd1	LMBR1 domain containing 1(Lmbrd1)	Mus musculus
D1Ert622e	DNA segment, Chr 1, ERATO Doi 622, expressed(D1Ert622e)	Mus musculus
Umad1	UMAP1-MVP12 associated (UMA) domain containing 1(Umad1)	Mus musculus
Dhx40	DEAH (Asp-Glu-Ala-His) box polypeptide 40(Dhx40)	Mus musculus
Fbxo28	F-box protein 28(Fbxo28)	Mus musculus
Srsf3	serine/arginine-rich splicing factor 3(Srsf3)	Mus musculus
March6	Membrane Associated Ring-CH-Type Finger 9 (March6)	Mus musculus
Unmapped Id	Gm8898	
Unmapped Id	Gm20537	

Mapped genes were used for pathway analysis.

Supplementary Table S5a: Bioinformatics prediction piRNA-target gene pairs of skin-specific differentially expressed piRNAs

piRNA	target gene	MR-microT score
piR-mmu-49079980	Slc5a4b	0.971082
piR-mmu-49079980	Esyt2	0.969098
piR-mmu-49079980	4930474N05Rik	0.965645
piR-mmu-49079980	Hs6st2	0.960036
piR-mmu-49079980	Zfp521	0.935732
piR-mmu-49079980	Rsf1	0.934158
piR-mmu-49079980	Rab21	0.930514
piR-mmu-49079980	Gm4631	0.927044
piR-mmu-49079980	Fst	0.922388
piR-mmu-49079980	Ttn	0.911675
piR-mmu-49079980	Cmah	0.909939
piR-mmu-49251782	Slc10a7	0.999828
piR-mmu-49251782	Tmsb4x	0.998987
piR-mmu-49251782	Msantd2	0.998726
piR-mmu-49251782	Pcsk5	0.998053
piR-mmu-49251782	Ets1	0.989109
piR-mmu-49251782	Cabyr	0.98892
piR-mmu-49251782	Snx14	0.982791
piR-mmu-49251782	Cdkl5	0.972971
piR-mmu-49251782	Gpbp1	0.972788
piR-mmu-49251782	Tshz1	0.965739
piR-mmu-49251782	Jarid2	0.961579
piR-mmu-49251782	Fgf14	0.956232
piR-mmu-49251782	Hnrnpa3	0.952339
piR-mmu-49251782	Bdnf	0.947977
piR-mmu-49251782	Zfp964	0.946726
piR-mmu-49251782	Ccdc166	0.945772
piR-mmu-49251782	Adprm	0.943203
piR-mmu-49251782	Pcdhb14	0.942583
piR-mmu-49251782	Plppr4	0.942327
piR-mmu-49251782	Fbxo33	0.938642
piR-mmu-49251782	Gm3371	0.93843
piR-mmu-49251782	Pik3r1	0.937646
piR-mmu-49251782	Ywhaz	0.936198
piR-mmu-49251782	Wipf2	0.935729
piR-mmu-49251782	Rgs2	0.935421
piR-mmu-49251782	St6galnac5	0.934992
piR-mmu-49251782	Pigx	0.930007
piR-mmu-49251782	Kctd13	0.929246
piR-mmu-49251782	Zbtb39	0.92902
piR-mmu-49251782	Slc25a53	0.928153
piR-mmu-49251782	Abhd2	0.928051
piR-mmu-49251782	Gm2832	0.927476
piR-mmu-49251782	Nsdhl	0.926109
piR-mmu-49251782	Gm5798	0.925213
piR-mmu-49251782	Cand1	0.924763
piR-mmu-49251782	Srsf1	0.922216
piR-mmu-49251782	Wwc2	0.918671
piR-mmu-49251782	Ss18	0.918643

piR-mmu-49251782	Gm8011	0.917939
piR-mmu-49251782	Map3k1	0.917475
piR-mmu-49251782	Trim2	0.915858
piR-mmu-49251782	Zfp160	0.913734
piR-mmu-49251782	Hmcn1	0.913458
piR-mmu-49251782	Glyctk	0.913196
piR-mmu-49251782	Cnksr3	0.912792
piR-mmu-49251782	Pianp	0.911204
piR-mmu-49251782	Frs2	0.910488
piR-mmu-49251782	Ptpn14	0.908596
piR-mmu-49251782	Adar	0.907511
piR-mmu-49251782	Gm7233	0.90725
piR-mmu-49251782	Atf2	0.906255
piR-mmu-49251782	Sri	0.905209
piR-mmu-49251782	Rfcd	0.900928
piR-mmu-30053093	Meioc	0.991041
piR-mmu-30053093	Ldb2	0.988517
piR-mmu-30053093	Galnt3	0.97797
piR-mmu-30053093	Fig	0.958555
piR-mmu-30053093	Eif4g2	0.956022
piR-mmu-30053093	Nfib	0.954769
piR-mmu-30053093	Dopey1	0.950393
piR-mmu-30053093	Zbtb20	0.948826
piR-mmu-30053093	Onecut2	0.946709
piR-mmu-30053093	Epb42	0.936723
piR-mmu-30053093	Zfp644	0.936206
piR-mmu-30053093	Pak2	0.935901
piR-mmu-30053093	Rsf1	0.931239
piR-mmu-30053093	Stpg2	0.927312
piR-mmu-30053093	Tspan5	0.925403
piR-mmu-30053093	Fbxo41	0.920682
piR-mmu-30053093	Col5a2	0.920069
piR-mmu-30053093	Enah	0.918931
piR-mmu-30053093	Wac	0.914051
piR-mmu-30053093	Purb	0.91297
piR-mmu-30053093	Matr3	0.911603
piR-mmu-30053093	Ntrk3	0.908445
piR-mmu-30053093	Zmpste24	0.906514
piR-mmu-30053093	Uty	0.905462
piR-mmu-30053093	Zyg11b	0.900537
piR-mmu-30876808	Meioc	0.990879
piR-mmu-30876808	Ldb2	0.979519
piR-mmu-30876808	Galnt3	0.977886
piR-mmu-30876808	Fig	0.963889
piR-mmu-30876808	Nfib	0.956467
piR-mmu-30876808	Dopey1	0.948686
piR-mmu-30876808	Onecut2	0.947444
piR-mmu-30876808	Zbtb20	0.944991
piR-mmu-30876808	Stpg2	0.933436
piR-mmu-30876808	Zfp644	0.928619
piR-mmu-30876808	Cd47	0.92086
piR-mmu-30876808	Pak2	0.920776
piR-mmu-30876808	Col5a2	0.920453

piR-mmu-30876808	Fbxo41	0.919709
piR-mmu-30876808	Tspan5	0.919518
piR-mmu-30876808	Wac	0.912581
piR-mmu-30876808	Purb	0.912072
piR-mmu-30876808	Matr3	0.907525
piR-mmu-30876808	Nfat5	0.907259
piR-mmu-30876808	Usp9x	0.907167
piR-mmu-30876808	Ttn	0.90328
piR-mmu-30876808	Uty	0.901149
piR-mmu-30876808	Zyg11b	0.900448
piR-mmu-30876808	Plch1	0.900024
piR-mmu-11461049	4930474N05Rik	0.964529
piR-mmu-11461049	Hs6st2	0.956585
piR-mmu-11461049	Rsf1	0.935302
piR-mmu-11461049	Zfp521	0.932021
piR-mmu-11461049	Rab21	0.928738
piR-mmu-11461049	Esyt2	0.928691
piR-mmu-11461049	Gm4631	0.924599
piR-mmu-11461049	Ttn	0.921338
piR-mmu-11461049	Fst	0.921159
piR-mmu-11461049	Slc5a4b	0.902128
piR-mmu-49197585	Slc5a4b	0.973539
piR-mmu-49197585	Esyt2	0.969098
piR-mmu-49197585	4930474N05Rik	0.965645
piR-mmu-49197585	Hs6st2	0.95989
piR-mmu-49197585	Zfp521	0.935732
piR-mmu-49197585	Rsf1	0.934158
piR-mmu-49197585	Rab21	0.930514
piR-mmu-49197585	Gm4631	0.927025
piR-mmu-49197585	Fst	0.922388
piR-mmu-49197585	Cmah	0.920229
piR-mmu-49197585	Ttn	0.910353
piR-mmu-23866657	Meioc	0.991336
piR-mmu-23866657	Ldb2	0.988502
piR-mmu-23866657	Galnt3	0.978195
piR-mmu-23866657	Figf	0.958411
piR-mmu-23866657	Nfib	0.955338
piR-mmu-23866657	Dopey1	0.950272
piR-mmu-23866657	Zbtb20	0.949818
piR-mmu-23866657	Onecut2	0.946723
piR-mmu-23866657	Pak2	0.943341
piR-mmu-23866657	Epb42	0.937412
piR-mmu-23866657	Zfp644	0.936582
piR-mmu-23866657	Tspan5	0.933662
piR-mmu-23866657	Rsf1	0.931238
piR-mmu-23866657	Stpg2	0.927275
piR-mmu-23866657	Fbxo41	0.922652
piR-mmu-23866657	Enah	0.921516
piR-mmu-23866657	Col5a2	0.919856
piR-mmu-23866657	Wac	0.915322
piR-mmu-23866657	Purb	0.913821
piR-mmu-23866657	Matr3	0.911134
piR-mmu-23866657	Ntrk3	0.908672

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piR-mmu-48806923	Snai2	0.915033
piR-mmu-48806923	Patl1	0.914356
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piR-mmu-2678950	Apba1	0.957154
piR-mmu-2678950	Snx4	0.956588
piR-mmu-2678950	Dld	0.956223
piR-mmu-2678950	Rap1a	0.955732
piR-mmu-2678950	Nol4l	0.953005
piR-mmu-2678950	Ldoc1l	0.952467
piR-mmu-2678950	Ubt1	0.948601
piR-mmu-2678950	Nr2c2	0.947488
piR-mmu-2678950	Phf21a	0.947267
piR-mmu-2678950	Ipcef1	0.945656
piR-mmu-2678950	Gm10392	0.945375
piR-mmu-2678950	1700017B05Rik	0.94469
piR-mmu-2678950	Msi1	0.942478
piR-mmu-2678950	Zbtb4	0.941064
piR-mmu-2678950	Lgi2	0.940021
piR-mmu-2678950	Col16a1	0.939401
piR-mmu-2678950	Abcb9	0.938735
piR-mmu-2678950	Olfr862	0.937269
piR-mmu-2678950	Ifitm10	0.937187
piR-mmu-2678950	Zbed4	0.93649
piR-mmu-2678950	Smoc2	0.935357
piR-mmu-2678950	A330050F15Rik	0.933149
piR-mmu-2678950	Gramd1b	0.93221
piR-mmu-2678950	Kcnk13	0.93051
piR-mmu-2678950	Slc4a3	0.929635
piR-mmu-2678950	Gps2	0.928614
piR-mmu-2678950	Edc3	0.927676
piR-mmu-2678950	Galk2	0.925769
piR-mmu-2678950	Spag9	0.925583
piR-mmu-2678950	Etf1	0.92481
piR-mmu-2678950	Rnf34	0.924778
piR-mmu-2678950	Samd4b	0.921632
piR-mmu-2678950	Cilp	0.921439
piR-mmu-2678950	Styk1	0.919481
piR-mmu-2678950	Cpne1	0.918356
piR-mmu-2678950	Cbln2	0.917746
piR-mmu-2678950	Hcrt2	0.915609
piR-mmu-2678950	Bahcc1	0.914674
piR-mmu-2678950	Cd40lg	0.913623
piR-mmu-2678950	Ottd7b	0.913273
piR-mmu-2678950	Ralgps2	0.911479
piR-mmu-2678950	Fkbp7	0.910822
piR-mmu-2678950	Elf5	0.910454
piR-mmu-2678950	Creb1	0.909443
piR-mmu-2678950	Tnfrsf22	0.909094

piR-mmu-2678950	A830005F24Rik	0.908779
piR-mmu-2678950	Rcn2	0.908286
piR-mmu-2678950	Dmd	0.905903
piR-mmu-2678950	Wnk1	0.904599
piR-mmu-2678950	BC106179	0.904346
piR-mmu-2678950	Nt5e	0.90412
piR-mmu-2678950	E2f8	0.904014
piR-mmu-2678950	Sp4	0.903745
piR-mmu-2678950	Hoxc9	0.902644
piR-mmu-2678950	Hspa1b	0.902251
piR-mmu-2678950	Lars2	0.901629
piR-mmu-2678950	Timm21	0.901625
piR-mmu-2678950	Tmem8b	0.901185
piR-mmu-2678950	Ddx4	0.900926
piR-mmu-2678950	Gpr85	0.900593
piR-mmu-2678950	Gps1	0.900476
piR-mmu-49342972	Slc5a4b	0.975837
piR-mmu-49342972	4930474N05Rik	0.965746
piR-mmu-49342972	Hs6st2	0.961401
piR-mmu-49342972	Esyt2	0.958955
piR-mmu-49342972	Rsf1	0.935427
piR-mmu-49342972	Rab21	0.933889
piR-mmu-49342972	Zfp521	0.932789
piR-mmu-49342972	Gm4631	0.92408
piR-mmu-49342972	Fst	0.922605
piR-mmu-49342972	Cmah	0.91936
piR-mmu-49342972	Ttn	0.918987
piR-mmu-49342972	Gm17359	0.904966
piR-mmu-10934588	Slc5a4b	0.977283
piR-mmu-10934588	4930474N05Rik	0.965579
piR-mmu-10934588	Esyt2	0.962716
piR-mmu-10934588	Hs6st2	0.956221
piR-mmu-10934588	Rab21	0.944848
piR-mmu-10934588	Rsf1	0.934418
piR-mmu-10934588	Zfp521	0.930588
piR-mmu-10934588	Gm4631	0.926415
piR-mmu-10934588	Fst	0.921106
piR-mmu-10934588	Cmah	0.920454
piR-mmu-10934588	1700019D03Rik	0.9165
piR-mmu-10934588	Ttn	0.912102
piR-mmu-10934588	Chka	0.90841
piR-mmu-10934588	Gm17359	0.902237
piR-mmu-10912700	4930474N05Rik	0.964606
piR-mmu-10912700	Hs6st2	0.957198
piR-mmu-10912700	Rsf1	0.936375
piR-mmu-10912700	Zfp521	0.933009
piR-mmu-10912700	Rab21	0.929145
piR-mmu-10912700	1700019D03Rik	0.928145
piR-mmu-10912700	Slc5a4b	0.926282
piR-mmu-10912700	Gm4631	0.924724
piR-mmu-10912700	Ttn	0.924376
piR-mmu-10912700	Fst	0.922547
piR-mmu-10912700	Chka	0.916729

piR-mmu-10912700	Esyt2	0.907793
piR-mmu-10912700	Gm17359	0.906987
piR-mmu-11461014	4930474N05Rik	0.964431
piR-mmu-11461014	Hs6st2	0.955028
piR-mmu-11461014	Rab21	0.936214
piR-mmu-11461014	1700019D03Rik	0.932658
piR-mmu-11461014	Rsf1	0.929049
piR-mmu-11461014	Zfp521	0.927983
piR-mmu-11461014	Slc5a4b	0.926282
piR-mmu-11461014	Fst	0.924896
piR-mmu-11461014	Gm4631	0.923684
piR-mmu-11461014	Ttn	0.923388
piR-mmu-11461014	Chka	0.913143
piR-mmu-11461014	Gm17359	0.90086
piR-mmu-10991141	4930474N05Rik	0.964431
piR-mmu-10991141	Hs6st2	0.956247
piR-mmu-10991141	Rsf1	0.936713
piR-mmu-10991141	Zfp521	0.931272
piR-mmu-10991141	1700019D03Rik	0.929688
piR-mmu-10991141	Ttn	0.928505
piR-mmu-10991141	Rab21	0.927637
piR-mmu-10991141	Slc5a4b	0.926282
piR-mmu-10991141	Gm4631	0.923458
piR-mmu-10991141	Fst	0.922547
piR-mmu-10991141	Chka	0.913091
piR-mmu-10991141	Gm17359	0.908324
piR-mmu-11031886	4930474N05Rik	0.964793
piR-mmu-11031886	Hs6st2	0.957279
piR-mmu-11031886	Rsf1	0.937353
piR-mmu-11031886	Zfp521	0.930111
piR-mmu-11031886	Rab21	0.929954
piR-mmu-11031886	Slc5a4b	0.926282
piR-mmu-11031886	Ttn	0.924288
piR-mmu-11031886	Fst	0.924255
piR-mmu-11031886	Gm4631	0.923247
piR-mmu-11031886	Esyt2	0.922309
piR-mmu-11031886	Chka	0.913632
piR-mmu-11031886	Gm17359	0.904966
piR-mmu-49609791	Ctla4	0.992971
piR-mmu-49609791	Kbtbd7	0.987621
piR-mmu-49609791	Pgm2l1	0.986001
piR-mmu-49609791	Fstl1	0.984275
piR-mmu-49609791	Fam175a	0.965769
piR-mmu-49609791	Tnfrsf26	0.956257
piR-mmu-49609791	Vipr2	0.954048
piR-mmu-49609791	Ubfd1	0.951074
piR-mmu-49609791	Elavl4	0.947465
piR-mmu-49609791	Rnf128	0.947073
piR-mmu-49609791	Macrod2	0.94592
piR-mmu-49609791	Cd276	0.944693
piR-mmu-49609791	Alg10b	0.938607
piR-mmu-49609791	Trip11	0.938588
piR-mmu-49609791	S100a14	0.933324

piR-mmu-49609791	Kras	0.930639
piR-mmu-49609791	Runx2	0.9306
piR-mmu-49609791	Fer	0.930343
piR-mmu-49609791	Asah2	0.928413
piR-mmu-49609791	Smim7	0.927938
piR-mmu-49609791	Grin2b	0.925851
piR-mmu-49609791	Fmo6	0.925493
piR-mmu-49609791	Bend3	0.923208
piR-mmu-49609791	Zfp106	0.922686
piR-mmu-49609791	Zfp746	0.919535
piR-mmu-49609791	Gm4847	0.919469
piR-mmu-49609791	Sorl1	0.918157
piR-mmu-49609791	Lipn	0.915828
piR-mmu-49609791	Pou2f1	0.914618
piR-mmu-49609791	Oas1f	0.912813
piR-mmu-49609791	Rnf141	0.910337
piR-mmu-49609791	D330045A20Rik	0.906262
piR-mmu-49609791	Epha7	0.905559
piR-mmu-49609791	Gm498	0.903676
piR-mmu-49659703	4930474N05Rik	0.965417
piR-mmu-49659703	Hs6st2	0.959074
piR-mmu-49659703	Rsf1	0.937641
piR-mmu-49659703	Gm17359	0.932927
piR-mmu-49659703	Zfp521	0.932469
piR-mmu-49659703	Spink8	0.930354
piR-mmu-49659703	Ttn	0.926219
piR-mmu-49659703	Gm4631	0.925974
piR-mmu-49659703	Esyt2	0.923495
piR-mmu-49659703	Fst	0.921816
piR-mmu-49659703	Ccr2	0.916336
piR-mmu-49659703	Rab21	0.900839
piR-mmu-10940440	4930474N05Rik	0.964711
piR-mmu-10940440	Hs6st2	0.95515
piR-mmu-10940440	1700019D03Rik	0.947226
piR-mmu-10940440	Esyt2	0.939808
piR-mmu-10940440	Rsf1	0.934093
piR-mmu-10940440	Rab21	0.934003
piR-mmu-10940440	Zfp521	0.930792
piR-mmu-10940440	Fst	0.92012
piR-mmu-10940440	Gm4631	0.919306
piR-mmu-10940440	Ttn	0.909108
piR-mmu-10940440	Pcca	0.905983
piR-mmu-10940440	Slc5a4b	0.900261
piR-mmu-10960276	4930474N05Rik	0.96526
piR-mmu-10960276	Hs6st2	0.957634
piR-mmu-10960276	Esyt2	0.938336
piR-mmu-10960276	Rsf1	0.934533
piR-mmu-10960276	Slc5a4b	0.930956
piR-mmu-10960276	Rab21	0.930505
piR-mmu-10960276	Zfp521	0.929733
piR-mmu-10960276	Gm4631	0.925558
piR-mmu-10960276	Fst	0.92186
piR-mmu-10960276	1700019D03Rik	0.920857

piR-mmu-10960276	Chka	0.914617
piR-mmu-10960276	Ttn	0.914221
piR-mmu-10911100	4930474N05Rik	0.965353
piR-mmu-10911100	Hs6st2	0.955944
piR-mmu-10911100	Rab21	0.935948
piR-mmu-10911100	Rsf1	0.934902
piR-mmu-10911100	Zfp521	0.933796
piR-mmu-10911100	Esyt2	0.931586
piR-mmu-10911100	Gm4631	0.925821
piR-mmu-10911100	Chka	0.925384
piR-mmu-10911100	Fst	0.920628
piR-mmu-10911100	Ttn	0.918183
piR-mmu-10911100	Slc5a4b	0.912941
piR-mmu-10911100	1700019D03Rik	0.91087
piR-mmu-10911100	Gm17359	0.902237
piR-mmu-10916134	Rnf115	0.996363
piR-mmu-10916134	Gm7293	0.996051
piR-mmu-10916134	Fam120a	0.98968
piR-mmu-10916134	Khdc1a	0.986546
piR-mmu-10916134	Gria2	0.985582
piR-mmu-10916134	E130114P18Rik	0.981587
piR-mmu-10916134	Dip2c	0.974722
piR-mmu-10916134	Cd46	0.969067
piR-mmu-10916134	Snx7	0.968274
piR-mmu-10916134	Kif5b	0.964012
piR-mmu-10916134	Parp6	0.963692
piR-mmu-10916134	Ssfa2	0.958597
piR-mmu-10916134	Ogt	0.957271
piR-mmu-10916134	Gabrb2	0.954803
piR-mmu-10916134	Trim63	0.953541
piR-mmu-10916134	Atp2b1	0.952864
piR-mmu-10916134	Itgae	0.952398
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piR-mmu-10916134	Zeb2	0.945821
piR-mmu-10916134	Hmga2	0.941135
piR-mmu-10916134	Tanc2	0.934547
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piR-mmu-10916134	Skap1	0.933377
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piR-mmu-10916134	Sumo2	0.921627
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piR-mmu-10916134	Csmd3	0.91243
piR-mmu-10916134	Gspt1	0.909657
piR-mmu-10916134	Speer3	0.907381
piR-mmu-10916134	Dmd	0.904811
piR-mmu-10916134	Exoc8	0.904503
piR-mmu-10916134	Dennd1b	0.904069
piR-mmu-10916134	Dclk3	0.900007

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piR-mmu-10953882	Hs6st2	0.957198
piR-mmu-10953882	Rsf1	0.937304
piR-mmu-10953882	Slc5a4b	0.932473
piR-mmu-10953882	Zfp521	0.931741
piR-mmu-10953882	Rab21	0.931315
piR-mmu-10953882	1700019D03Rik	0.930182
piR-mmu-10953882	Ttn	0.926464
piR-mmu-10953882	Gm4631	0.923247
piR-mmu-10953882	Fst	0.9226
piR-mmu-10953882	Chka	0.913472
piR-mmu-10953882	Gm17359	0.90965
piR-mmu-10953882	Esyt2	0.905671
piR-mmu-10911632	4930474N05Rik	0.965849
piR-mmu-10911632	Hs6st2	0.956906
piR-mmu-10911632	Rsf1	0.933862
piR-mmu-10911632	Zfp521	0.931634
piR-mmu-10911632	Rab21	0.92832
piR-mmu-10911632	Slc5a4b	0.926282
piR-mmu-10911632	Gm4631	0.922173
piR-mmu-10911632	Fst	0.921054
piR-mmu-10911632	Ttn	0.920185
piR-mmu-10911632	Chka	0.913472
piR-mmu-10911632	Cpt1a	0.903908
piR-mmu-10911823	Lrrtm3	0.951583
piR-mmu-10911823	Arhgap29	0.907845
piR-mmu-31033718	Eif4g2	0.999983
piR-mmu-31033718	Nfat5	0.998628
piR-mmu-31033718	Ranbp2	0.997541
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piR-mmu-31033718	Zbtb20	0.983943
piR-mmu-31033718	Nova1	0.983798
piR-mmu-31033718	Il31	0.983604
piR-mmu-31033718	Arnt	0.981902
piR-mmu-31033718	Sc1t1	0.979788
piR-mmu-31033718	Stc1	0.979479
piR-mmu-31033718	Sbno1	0.977607
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piR-mmu-31033718	Fopnl	0.976602
piR-mmu-31033718	Rnf38	0.976505
piR-mmu-31033718	Btg1	0.974734
piR-mmu-31033718	Chic1	0.972183
piR-mmu-31033718	Rev3l	0.970514
piR-mmu-31033718	Runx1	0.963399
piR-mmu-31033718	Ccdc171	0.962169
piR-mmu-31033718	Ube3b	0.961208
piR-mmu-31033718	Rel	0.961151
piR-mmu-31033718	D1Erttd622e	0.960897
piR-mmu-31033718	Traf6	0.956629

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piR-mmu-31033718	Dgkk	0.955118
piR-mmu-31033718	Mlf2	0.951315
piR-mmu-31033718	Strbp	0.950261
piR-mmu-31033718	Ttc3	0.949948
piR-mmu-31033718	Hnrnpa2b1	0.949467
piR-mmu-31033718	Parp1	0.949181
piR-mmu-31033718	Armc9	0.948661
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piR-mmu-31033718	Ncaph	0.944404
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piR-mmu-31033718	Bcor1	0.939547
piR-mmu-31033718	Fam96a	0.939463
piR-mmu-31033718	Cdc42bpb	0.937959
piR-mmu-31033718	Tasp1	0.937842
piR-mmu-31033718	Rab30	0.937193
piR-mmu-31033718	Vstm2a	0.936833
piR-mmu-31033718	Cnpy2	0.936791
piR-mmu-31033718	Esyt2	0.936334
piR-mmu-31033718	Adgrf5	0.93599
piR-mmu-31033718	Nprl3	0.935674
piR-mmu-31033718	Ccl25	0.934322
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piR-mmu-31033718	Nuak1	0.931639
piR-mmu-31033718	Sdc2	0.931596
piR-mmu-31033718	Clasp1	0.929532
piR-mmu-31033718	Rab11a	0.928811
piR-mmu-31033718	Megf10	0.928806
piR-mmu-31033718	Ubn2	0.928365
piR-mmu-31033718	Mri1	0.926605
piR-mmu-31033718	Rbm38	0.926191
piR-mmu-31033718	Dazap2	0.923821
piR-mmu-31033718	Sbspon	0.923778
piR-mmu-31033718	Prox1	0.919549
piR-mmu-31033718	Zscan29	0.914364
piR-mmu-31033718	Elf1	0.913112
piR-mmu-31033718	Sub1	0.912637
piR-mmu-31033718	Nhs12	0.911926
piR-mmu-31033718	Rps6ka3	0.908095
piR-mmu-31033718	Susd6	0.90766
piR-mmu-31033718	Sdha	0.90428
piR-mmu-31033718	Ank2	0.900837
piR-mmu-31033718	Numb	0.900165
piR-mmu-49287809	Ube2l3	0.989411
piR-mmu-49287809	Csmd3	0.987726
piR-mmu-49287809	Dgcr2	0.987159
piR-mmu-49287809	Arel1	0.982468
piR-mmu-49287809	Rnf224	0.975654
piR-mmu-49287809	Slc5a4b	0.975071

piR-mmu-49287809	Cpt1a	0.961046
piR-mmu-49287809	Zfp521	0.957159
piR-mmu-49287809	Mbd2	0.954616
piR-mmu-49287809	Esyt2	0.943733
piR-mmu-49287809	Ccr2	0.942246
piR-mmu-49287809	Cdh4	0.941088
piR-mmu-49287809	Spink8	0.939565
piR-mmu-49287809	Chd9	0.93867
piR-mmu-49287809	Zfyve27	0.937524
piR-mmu-49287809	Gramd2	0.936208
piR-mmu-49287809	Abhd2	0.935704
piR-mmu-49287809	4933402J07Rik	0.925557
piR-mmu-49287809	Chka	0.924912
piR-mmu-49287809	Tshz1	0.923252
piR-mmu-49287809	Mup1	0.917184
piR-mmu-49287809	Mup5	0.914278
piR-mmu-49287809	Scg5	0.907534
piR-mmu-49287809	Fam78b	0.905207
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piR-mmu-10932261	4930474N05Rik	0.964431
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piR-mmu-10932261	Zfp521	0.931571
piR-mmu-10932261	Fst	0.930162
piR-mmu-10932261	Slc5a4b	0.92786
piR-mmu-10932261	Ttn	0.927576
piR-mmu-10932261	1700019D03Rik	0.92513
piR-mmu-10932261	Gm4631	0.924239
piR-mmu-10932261	Esyt2	0.916619
piR-mmu-10932261	Chka	0.913472
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piR-mmu-3213041	Rc3h2	0.997765
piR-mmu-3213041	Eif1	0.995998
piR-mmu-3213041	C1galt1	0.994058
piR-mmu-3213041	Hnrnpu	0.992475
piR-mmu-3213041	2310035C23Rik	0.991635
piR-mmu-3213041	Hivep2	0.989907
piR-mmu-3213041	Atxn7	0.986983
piR-mmu-3213041	Cap2	0.986484
piR-mmu-3213041	Rqcd1	0.984655
piR-mmu-3213041	Mbl2	0.984577
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piR-mmu-3213041	Nrn1	0.9737
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piR-mmu-3213041	Pou3f2	0.972184
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piR-mmu-3213041	Cwc15	0.970411
piR-mmu-3213041	Shox2	0.967567
piR-mmu-3213041	Vps54	0.965507

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piR-mmu-3213041	Arntl	0.963779
piR-mmu-3213041	Cers6	0.961739
piR-mmu-3213041	Zfp420	0.961403
piR-mmu-3213041	Rgag4	0.960231
piR-mmu-3213041	Dnajc3	0.959739
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piR-mmu-3213041	Zfp811	0.950772
piR-mmu-3213041	Chd8	0.949925
piR-mmu-3213041	A130051J06Rik	0.948269
piR-mmu-3213041	Ythdc1	0.948185
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piR-mmu-3213041	Meis2	0.924186
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piR-mmu-3213041	Esrrg	0.901567
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piR-mmu-23832900	Mob3b	0.973341
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piR-mmu-23832900	Dnajc3	0.939652
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piR-mmu-49015749	Usp7	0.926718
piR-mmu-49015749	Arhgdig	0.926497
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piR-mmu-49015749	Armc1	0.925886
piR-mmu-49015749	Taf12	0.924985
piR-mmu-49015749	Rad54l2	0.924556
piR-mmu-49015749	Eda	0.923833
piR-mmu-49015749	Rbm46	0.922315
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piR-mmu-49015749	Daam1	0.921045
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piR-mmu-48831092	Trp53inp1	0.983198
piR-mmu-48831092	Nol4l	0.98154
piR-mmu-48831092	Veph1	0.981494
piR-mmu-48831092	Ctage5	0.981398
piR-mmu-48831092	Rbm24	0.980414
piR-mmu-48831092	Mier3	0.979343
piR-mmu-48831092	Sav1	0.977135
piR-mmu-48831092	Nelfa	0.973619
piR-mmu-48831092	Bahcc1	0.968742
piR-mmu-48831092	Nlgn1	0.968283
piR-mmu-48831092	Atg7	0.96757
piR-mmu-48831092	Jph2	0.9621
piR-mmu-48831092	Col16a1	0.961097
piR-mmu-48831092	Gm10392	0.960514
piR-mmu-48831092	Gm4841	0.958079
piR-mmu-48831092	Cbln2	0.954644
piR-mmu-48831092	Duxbl3	0.954178
piR-mmu-48831092	Duxbl2	0.954178
piR-mmu-48831092	Il31ra	0.951713
piR-mmu-48831092	Duxbl1	0.95056
piR-mmu-48831092	Snx4	0.949888
piR-mmu-48831092	Lgi2	0.949196
piR-mmu-48831092	Gramd1b	0.946203
piR-mmu-48831092	Apba1	0.943418
piR-mmu-48831092	Mga	0.943307

piR-mmu-48831092	Phf21a	0.943263
piR-mmu-48831092	Dld	0.942564
piR-mmu-48831092	Ncoa2	0.941732
piR-mmu-48831092	Gps1	0.940407
piR-mmu-48831092	Kcnj6	0.938484
piR-mmu-48831092	Msi1	0.938093
piR-mmu-48831092	4930568D16Rik	0.937852
piR-mmu-48831092	Prpf40a	0.93118
piR-mmu-48831092	Pak7	0.929511
piR-mmu-48831092	Smoc2	0.926721
piR-mmu-48831092	Kcnb1	0.926308
piR-mmu-48831092	Fam160b2	0.925926
piR-mmu-48831092	Samd4b	0.920697
piR-mmu-48831092	Ifitm10	0.920633
piR-mmu-48831092	Creb1	0.915624
piR-mmu-48831092	Kcnip2	0.915453
piR-mmu-48831092	Olfr862	0.914635
piR-mmu-48831092	Rcn2	0.914619
piR-mmu-48831092	A830005F24Rik	0.914359
piR-mmu-48831092	A330050F15Rik	0.911595
piR-mmu-48831092	Ptch1	0.909213
piR-mmu-48831092	Atxn1	0.909033
piR-mmu-48831092	Styk1	0.906671
piR-mmu-48831092	Etf1	0.905253
piR-mmu-48831092	Cpne1	0.904645
piR-mmu-48831092	Ldoc1l	0.904149
piR-mmu-48831092	Hoxc9	0.904105
piR-mmu-48831092	Ralgps2	0.902615
piR-mmu-48831092	Cilp	0.900998
piR-mmu-11461037	4930474N05Rik	0.96526
piR-mmu-11461037	Hs6st2	0.961067
piR-mmu-11461037	Rsf1	0.934684
piR-mmu-11461037	1700019D03Rik	0.933436
piR-mmu-11461037	Esyt2	0.931364
piR-mmu-11461037	Zfp521	0.931069
piR-mmu-11461037	Rab21	0.929283
piR-mmu-11461037	Gm4631	0.924955
piR-mmu-11461037	Fst	0.922547
piR-mmu-11461037	Ttn	0.921627
piR-mmu-11461037	Gm17359	0.906316
piR-mmu-240378	lp6k2	0.999927
piR-mmu-240378	Marcks	0.999908
piR-mmu-240378	Dab1	0.997894
piR-mmu-240378	Bbx	0.997554
piR-mmu-240378	Gm9936	0.996785
piR-mmu-240378	Stx5a	0.996697
piR-mmu-240378	Atp5c1	0.995532
piR-mmu-240378	Per1	0.993562
piR-mmu-240378	Veph1	0.991206
piR-mmu-240378	Xaf1	0.991124
piR-mmu-240378	Kcnd3	0.990468
piR-mmu-240378	Gsx2	0.988976
piR-mmu-240378	Trp53inp1	0.988612

piR-mmu-240378	Nelfa	0.988047
piR-mmu-240378	Pcmttd2	0.987037
piR-mmu-240378	Jph2	0.983869
piR-mmu-240378	Atg7	0.983314
piR-mmu-240378	Ctage5	0.983122
piR-mmu-240378	Sav1	0.982927
piR-mmu-240378	Rbm24	0.982915
piR-mmu-240378	Gm4841	0.981851
piR-mmu-240378	Kcnj6	0.981205
piR-mmu-240378	4930568D16Rik	0.975124
piR-mmu-240378	Duxbl3	0.97034
piR-mmu-240378	Duxbl2	0.97034
piR-mmu-240378	Nlgn1	0.968658
piR-mmu-240378	Duxbl1	0.967926
piR-mmu-240378	Olfr862	0.967071
piR-mmu-240378	Il31ra	0.963753
piR-mmu-240378	Snx4	0.956591
piR-mmu-240378	Gm10392	0.953676
piR-mmu-240378	Mga	0.95271
piR-mmu-240378	Msi1	0.951681
piR-mmu-240378	Lgi2	0.949876
piR-mmu-240378	Kcnb1	0.949469
piR-mmu-240378	Phf21a	0.949146
piR-mmu-240378	Apba1	0.946501
piR-mmu-240378	Nol4l	0.946399
piR-mmu-240378	Ifitm10	0.943621
piR-mmu-240378	Dld	0.941421
piR-mmu-240378	Col16a1	0.940893
piR-mmu-240378	Bahcc1	0.936708
piR-mmu-240378	A330050F15Rik	0.935409
piR-mmu-240378	Gramd1b	0.932119
piR-mmu-240378	Cpne1	0.930997
piR-mmu-240378	Ipcef1	0.930598
piR-mmu-240378	Smoc2	0.930494
piR-mmu-240378	Cacul1	0.929571
piR-mmu-240378	Etf1	0.926133
piR-mmu-240378	Ralgps2	0.924875
piR-mmu-240378	Otud7b	0.923934
piR-mmu-240378	A830005F24Rik	0.923511
piR-mmu-240378	Hoxa1	0.921732
piR-mmu-240378	Creb1	0.921214
piR-mmu-240378	Styk1	0.920095
piR-mmu-240378	Hcrt2	0.919976
piR-mmu-240378	Gps2	0.91816
piR-mmu-240378	Samd4b	0.918087
piR-mmu-240378	Mef2d	0.91177
piR-mmu-240378	Krt71	0.911478
piR-mmu-240378	Rcn2	0.911351
piR-mmu-240378	Rnf34	0.910822
piR-mmu-240378	Rnf219	0.909843
piR-mmu-240378	Hoxc9	0.909716
piR-mmu-240378	Gbe1	0.908705
piR-mmu-240378	Cilp	0.90861

piR-mmu-240378	Tnfrsf22	0.90797
piR-mmu-240378	Dmd	0.905676
piR-mmu-240378	Mier3	0.904379
piR-mmu-240378	Sp4	0.903745
piR-mmu-240378	Ces1h	0.902556
piR-mmu-240378	Slc4a3	0.902406
piR-mmu-240378	Tmem8b	0.901722
piR-mmu-240378	Atxn1	0.900782
piR-mmu-33199875	Ddx3x	0.990283
piR-mmu-33199875	Ogt	0.983613
piR-mmu-33199875	Pcdhb9	0.962229
piR-mmu-33199875	Gm15140	0.95953
piR-mmu-33199875	Dennd5b	0.95787
piR-mmu-33199875	Etnk1	0.957412
piR-mmu-33199875	Gclm	0.957303
piR-mmu-33199875	Nfat5	0.956272
piR-mmu-33199875	Igf1r	0.946534
piR-mmu-33199875	Rita1	0.944728
piR-mmu-33199875	Tmem251	0.94211
piR-mmu-33199875	Myh3	0.94207
piR-mmu-33199875	Zak	0.938356
piR-mmu-33199875	Anapc11	0.937379
piR-mmu-33199875	Mxi1	0.937326
piR-mmu-33199875	Zfand3	0.936705
piR-mmu-33199875	Ptprd	0.934847
piR-mmu-33199875	Ldah	0.934602
piR-mmu-33199875	Rgs17	0.931481
piR-mmu-33199875	Hibadh	0.931175
piR-mmu-33199875	Ctdspl2	0.93025
piR-mmu-33199875	Onecut1	0.929966
piR-mmu-33199875	Plcz1	0.925557
piR-mmu-33199875	Meis1	0.921529
piR-mmu-33199875	D1Ert622e	0.920765
piR-mmu-33199875	Trim36	0.919538
piR-mmu-33199875	Fam134a	0.917391
piR-mmu-33199875	Anks4b	0.912455
piR-mmu-33199875	Lcp2	0.91112
piR-mmu-33199875	Rnf217	0.910388
piR-mmu-33199875	Unc5d	0.906644
piR-mmu-33199875	Zbtb20	0.906533
piR-mmu-33199875	Atp1a2	0.904224
piR-mmu-33199875	Strap	0.903358
piR-mmu-10906591	Gm7293	0.99538
piR-mmu-10906591	E130114P18Rik	0.97511
piR-mmu-10906591	Fam120a	0.964375
piR-mmu-10906591	Gabrb2	0.953747
piR-mmu-10906591	Jph1	0.951016
piR-mmu-10906591	Parp6	0.941437
piR-mmu-10906591	Snx7	0.931536
piR-mmu-10906591	Skap1	0.928247
piR-mmu-10906591	Trpm8	0.927265
piR-mmu-10906591	Gspt1	0.924726
piR-mmu-10906591	Ptprb	0.922519

piR-mmu-10906591	Gria2	0.917028
piR-mmu-10906591	Csmd3	0.907886
piR-mmu-10906591	Ncaph2	0.905987
piR-mmu-10906591	Speer3	0.905922
piR-mmu-10906591	Cadm2	0.901818
piR-mmu-50207618	4930474N05Rik	0.96526
piR-mmu-50207618	Hs6st2	0.957563
piR-mmu-50207618	Rsf1	0.934684
piR-mmu-50207618	Esyt2	0.931364
piR-mmu-50207618	Zfp521	0.931319
piR-mmu-50207618	Rab21	0.929283
piR-mmu-50207618	Slc5a4b	0.926282
piR-mmu-50207618	Gm4631	0.925222
piR-mmu-50207618	Fst	0.922547
piR-mmu-50207618	1700019D03Rik	0.919696
piR-mmu-50207618	Ttn	0.919118
piR-mmu-50207618	Chka	0.913588
piR-mmu-50207618	Gm17359	0.904966

The piRNA target gene prediction was performed with MR-microT (aggregated score ≥ 0.9).

Supplementary Table S5b: Bioinformatics prediction target genes of skin-specific differentially expressed piRNAs

OFFICIAL_GENE_SYMBOL	Name	Species
Mfsd12	major facilitator superfamily domain containing 12(Mfsd12)	Mus musculus
Trmt12	tRNA methyltransferase 12(Trmt12)	Mus musculus
Actr10	ARP10 actin-related protein 10(Actr10)	Mus musculus
Nfrkb	nuclear factor related to kappa B binding protein(Nfrkb)	Mus musculus
Wdr72	WD repeat domain 72(Wdr72)	Mus musculus
Fopnl	Fgfr1op N-terminal like(Fopnl)	Mus musculus
Adar	adenosine deaminase, RNA-specific(Adar)	Mus musculus
Carf	calcium response factor(Carf)	Mus musculus
Megf10	multiple EGF-like-domains 10(Megf10)	Mus musculus
Ppp4c	protein phosphatase 4, catalytic subunit(Ppp4c)	Mus musculus
Dab1	disabled 1(Dab1)	Mus musculus
Rpa1	replication protein A1(Rpa1)	Mus musculus
Rab30	RAB30, member RAS oncogene family(Rab30)	Mus musculus
Ackr2	atypical chemokine receptor 2(Ackr2)	Mus musculus
Cwc15	CWC15 spliceosome-associated protein(Cwc15)	Mus musculus
Tomm70a	translocase of outer mitochondrial membrane 70 homolog A (yeast)(Tomm70a)	Mus musculus
Gramd2	GRAM domain containing 2(Gramd2)	Mus musculus
Tmem170b	transmembrane protein 170B(Tmem170b)	Mus musculus
Arhgef40	Rho guanine nucleotide exchange factor (GEF) 40(Arhgef40)	Mus musculus
Lrp11	low density lipoprotein receptor-related protein 11(Lrp11)	Mus musculus
Tox4	TOX high mobility group box family member 4(Tox4)	Mus musculus
Trub2	TruB pseudouridine (psi) synthase family member 2(Trub2)	Mus musculus
Stx5a	syntaxin 5A(Stx5a)	Mus musculus
Poldip3	polymerase (DNA-directed), delta interacting protein 3(Poldip3)	Mus musculus
Fam96a	family with sequence similarity 96, member A(Fam96a)	Mus musculus
Unc13d	unc-13 homolog D (C. elegans)(Unc13d)	Mus musculus
Nfat5	nuclear factor of activated T cells 5(Nfat5)	Mus musculus
C330011M18Rik	RIKEN cDNA C330011M18 gene(C330011M18Rik)	Mus musculus
Lmx1a	LIM homeobox transcription factor 1 alpha(Lmx1a)	Mus musculus
Asah2	N-acylsphingosine amidohydrolase 2(Asah2)	Mus musculus
A830005F24Rik	RIKEN cDNA A830005F24 gene(A830005F24Rik)	Mus musculus
Rps6ka3	ribosomal protein S6 kinase polypeptide 3(Rps6ka3)	Mus musculus
S100a14	S100 calcium binding protein A14(S100a14)	Mus musculus
Fut10	fucosyltransferase 10(Fut10)	Mus musculus
Meis2	Meis homeobox 2(Meis2)	Mus musculus
Cd40lg	CD40 ligand(Cd40lg)	Mus musculus

Zfp383	zinc finger protein 383(Zfp383)	Mus musculus
Aldh1a7	aldehyde dehydrogenase family 1, subfamily A7(Aldh1a7)	Mus musculus
Nyap2	neuronal tyrosine-phosphorylated phosphoinositide 3-kinase adaptor 2(Nyap2)	Mus musculus
Tmem174	transmembrane protein 174(Tmem174)	Mus musculus
Ets1	E26 avian leukemia oncogene 1, 5' domain(Ets1)	Mus musculus
Rnf182	ring finger protein 182(Rnf182)	Mus musculus
Zfp599	zinc finger protein 599(Zfp599)	Mus musculus
Dmtf1	cyclin D binding myb-like transcription factor 1(Dmtf1)	Mus musculus
Zfp810	zinc finger protein 810(Zfp810)	Mus musculus
Anapc11	anaphase promoting complex subunit 11(Anapc11)	Mus musculus
Bace1	beta-site APP cleaving enzyme 1(Bace1)	Mus musculus
Zfp426	zinc finger protein 426(Zfp426)	Mus musculus
Hivep2	human immunodeficiency virus type I enhancer binding protein 2(Hivep2)	Mus musculus
Pknox2	Pbx/knotted 1 homeobox 2(Pknox2)	Mus musculus
Fbxo41	F-box protein 41(Fbxo41)	Mus musculus
Bbx	bobby sox homolog (Drosophila)(Bbx)	Mus musculus
Ywhab	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptid	Mus musculus
Snx14	sorting nexin 14(Snx14)	Mus musculus
Abcb9	ATP-binding cassette, sub-family B (MDR/TAP), member 9(Abcb9)	Mus musculus
E2f8	E2F transcription factor 8(E2f8)	Mus musculus
Cdc6	cell division cycle 6(Cdc6)	Mus musculus
Ssx2ip	synovial sarcoma, X breakpoint 2 interacting protein(Ssx2ip)	Mus musculus
Nhp2	NHP2 ribonucleoprotein(Nhp2)	Mus musculus
Rabl6	RAB, member RAS oncogene family-like 6(Rabl6)	Mus musculus
Bpnt1	bisphosphate 3'-nucleotidase 1(Bpnt1)	Mus musculus
Cyp2c37	cytochrome P450, family 2. subfamily c, polypeptide 37(Cyp2c37)	Mus musculus
Tlr1	toll-like receptor 1(Tlr1)	Mus musculus
Ncaph2	non-SMC condensin II complex, subunit H2(Ncaph2)	Mus musculus
Vmn2r34	vomer nasal 2, receptor 34(Vmn2r34)	Mus musculus
Kdm3b	KDM3B lysine (K)-specific demethylase 3B(Kdm3b)	Mus musculus
Tle3	transducin-like enhancer of split 3(Tle3)	Mus musculus
Cadm4	cell adhesion molecule 4(Cadm4)	Mus musculus
Pcca	propionyl-Coenzyme A carboxylase, alpha polypeptide(Pcca)	Mus musculus
Ythdc1	YTH domain containing 1(Ythdc1)	Mus musculus
4930568D16Rik	RIKEN cDNA 4930568D16 gene(4930568D16Rik)	Mus musculus
Rbm46	RNA binding motif protein 46(Rbm46)	Mus musculus
Onecut2	one cut domain, family member 2(Onecut2)	Mus musculus
Rel	reticuloendotheliosis oncogene(Rel)	Mus musculus
Hells	helicase, lymphoid specific(Hells)	Mus musculus

BC024978	cDNA sequence BC024978(BC024978)	Mus musculus
Kcnd3	potassium voltage-gated channel, Shal-related family, member 3(Kcnd3)	Mus musculus
Cdc42bpb	CDC42 binding protein kinase beta(Cdc42bpb)	Mus musculus
Cnpy2	canopy FGF signaling regulator 2(Cnpy2)	Mus musculus
Rgs17	regulator of G-protein signaling 17(Rgs17)	Mus musculus
Srsf1	serine/arginine-rich splicing factor 1(Srsf1)	Mus musculus
Rnf219	ring finger protein 219(Rnf219)	Mus musculus
Tshz1	teashirt zinc finger family member 1(Tshz1)	Mus musculus
Reg3a	regenerating islet-derived 3 alpha(Reg3a)	Mus musculus
Cpne1	copine I(Cpne1)	Mus musculus
Zc3h11a	zinc finger CCCH type containing 11A(Zc3h11a)	Mus musculus
Haus2	HAUS augmin-like complex, subunit 2(Haus2)	Mus musculus
Defb1	defensin beta 1(Defb1)	Mus musculus
Ralgps2	Ral GEF with PH domain and SH3 binding motif 2(Ralgps2)	Mus musculus
Ddx3x	DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 3, X-linked(Ddx3x)	Mus musculus
Adgre4	adhesion G protein-coupled receptor E4(Adgre4)	Mus musculus
Elf4	E74-like factor 4 (ets domain transcription factor)(Elf4)	Mus musculus
Ddx5	DEAD (Asp-Glu-Ala-Asp) box polypeptide 5(Ddx5)	Mus musculus
Cnksr3	Cnksr family member 3(Cnksr3)	Mus musculus
Ddx4	DEAD (Asp-Glu-Ala-Asp) box polypeptide 4(Ddx4)	Mus musculus
Ssfa2	sperm specific antigen 2(Ssfa2)	Mus musculus
Msantd2	Myb/SANT-like DNA-binding domain containing 2(Msantd2)	Mus musculus
Zbtb20	zinc finger and BTB domain containing 20(Zbtb20)	Mus musculus
Esyt2	extended synaptotagmin-like protein 2(Esyt2)	Mus musculus
Plpp7	phospholipid phosphatase 7 (inactive)(Plpp7)	Mus musculus
Tgfa	transforming growth factor alpha(Tgfa)	Mus musculus
Fbxo33	F-box protein 33(Fbxo33)	Mus musculus
Wfdc8	WAP four-disulfide core domain 8(Wfdc8)	Mus musculus
Dazap2	DAZ associated protein 2(Dazap2)	Mus musculus
Phactr2	phosphatase and actin regulator 2(Phactr2)	Mus musculus
Tra2a	transformer 2 alpha homolog (Drosophila)(Tra2a)	Mus musculus
Tasp1	taspase, threonine aspartase 1(Tasp1)	Mus musculus
Med26	mediator complex subunit 26(Med26)	Mus musculus
Lin9	lin-9 homolog (C. elegans)(Lin9)	Mus musculus
Arhgap18	Rho GTPase activating protein 18(Arhgap18)	Mus musculus
Nt5e	5' nucleotidase, ecto(Nt5e)	Mus musculus
Zfp667	zinc finger protein 667(Zfp667)	Mus musculus
Hyi	hydroxypyruvate isomerase (putative)(Hyi)	Mus musculus
Zfand3	zinc finger, AN1-type domain 3(Zfand3)	Mus musculus

Rbm41	RNA binding motif protein 41(Rbm41)	Mus musculus
Nemf	nuclear export mediator factor(Nemf)	Mus musculus
Gm4841	predicted gene 4841(Gm4841)	Mus musculus
Lipn	lipase, family member N(Lipn)	Mus musculus
Mr1	major histocompatibility complex, class I-related(Mr1)	Mus musculus
Myh3	myosin, heavy polypeptide 3, skeletal muscle, embryonic(Myh3)	Mus musculus
Cyp20a1	cytochrome P450, family 20, subfamily a, polypeptide 1(Cyp20a1)	Mus musculus
Homer2	homer scaffolding protein 2(Homer2)	Mus musculus
Wipf2	WAS/WASL interacting protein family, member 2(Wipf2)	Mus musculus
Mxi1	MAX interactor 1, dimerization protein(Mxi1)	Mus musculus
Adprm	ADP-ribose/CDP-alcohol diphosphatase, manganese dependent(Adprm)	Mus musculus
Nhlrc3	NHL repeat containing 3(Nhlrc3)	Mus musculus
Rab31	RAB31, member RAS oncogene family(Rab31)	Mus musculus
Zfp24	zinc finger protein 24(Zfp24)	Mus musculus
Bahcc1	BAH domain and coiled-coil containing 1(Bahcc1)	Mus musculus
Cpt1a	carnitine palmitoyltransferase 1a, liver(Cpt1a)	Mus musculus
Btbd1	BTB (POZ) domain containing 1(Btbd1)	Mus musculus
Slc15a1	solute carrier family 15 (oligopeptide transporter), member 1(Slc15a1)	Mus musculus
Myo10	myosin X(Myo10)	Mus musculus
Adamts16	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif	Mus musculus
Ctu1	cytosolic thiouridylase subunit 1(Ctu1)	Mus musculus
Arel1	apoptosis resistant E3 ubiquitin protein ligase 1(Arel1)	Mus musculus
Vps37a	vacuolar protein sorting 37A(Vps37a)	Mus musculus
Creb1	cAMP responsive element binding protein 1(Creb1)	Mus musculus
Nebi	nebulin(Nebi)	Mus musculus
Cnfn	cornifelin(Cnfn)	Mus musculus
Meioc	meiosis specific with coiled-coil domain(Meios)	Mus musculus
2310035C23Rik	RIKEN cDNA 2310035C23 gene(2310035C23Rik)	Mus musculus
Huwe1	HECT, UBA and WWE domain containing 1(Huwe1)	Mus musculus
Gstk1	glutathione S-transferase kappa 1(Gstk1)	Mus musculus
Olfr862	olfactory receptor 862(Olfr862)	Mus musculus
Maml3	mastermind like 3 (Drosophila)(Maml3)	Mus musculus
Zdhhc15	zinc finger, DHHC domain containing 15(Zdhhc15)	Mus musculus
Rcn2	reticulocalbin 2(Rcn2)	Mus musculus
Rsl1d1	ribosomal L1 domain containing 1(Rsl1d1)	Mus musculus
Cd2bp2	CD2 antigen (cytoplasmic tail) binding protein 2(Cd2bp2)	Mus musculus
Tead1	TEA domain family member 1(Tead1)	Mus musculus
Zfp652	zinc finger protein 652(Zfp652)	Mus musculus
Rev3l	REV3 like, DNA directed polymerase zeta catalytic subunit(Rev3l)	Mus musculus

Zfp58	zinc finger protein 58(Zfp58)	Mus musculus
Zfp874a	zinc finger protein 874a(Zfp874a)	Mus musculus
Tec	tec protein tyrosine kinase(Tec)	Mus musculus
Rgs2	regulator of G-protein signaling 2(Rgs2)	Mus musculus
Zfp184	zinc finger protein 184 (Kruppel-like)(Zfp184)	Mus musculus
Gm17359	predicted gene, 17359(Gm17359)	Mus musculus
Kcnk13	potassium channel, subfamily K, member 13(Kcnk13)	Mus musculus
Mup5	major urinary protein 5(Mup5)	Mus musculus
Mup1	major urinary protein 1(Mup1)	Mus musculus
Col5a2	collagen, type V, alpha 2(Col5a2)	Mus musculus
Col6a2	collagen, type VI, alpha 2(Col6a2)	Mus musculus
Kctd8	potassium channel tetramerisation domain containing 8(Kctd8)	Mus musculus
Nphp3	nephronophthisis 3 (adolescent)(Nphp3)	Mus musculus
Nufip2	nuclear fragile X mental retardation protein interacting protein 2(Nufip2)	Mus musculus
Cdk17	cyclin-dependent kinase 17(Cdk17)	Mus musculus
Nudt8	nudix (nucleoside diphosphate linked moiety X)-type motif 8(Nudt8)	Mus musculus
Gramd1b	GRAM domain containing 1B(Gramd1b)	Mus musculus
Ahnak	AHNAK nucleoprotein (desmoyokin)(Ahnak)	Mus musculus
Gm94	predicted gene 94(Gm94)	Mus musculus
Jph2	junctophilin 2(Jph2)	Mus musculus
Nrn1	neuritin 1(Nrn1)	Mus musculus
Map1b	microtubule-associated protein 1B(Map1b)	Mus musculus
Adamts5	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif	Mus musculus
Etf1	eukaryotic translation termination factor 1(Etf1)	Mus musculus
Smc3	structural maintenance of chromosomes 3(Smc3)	Mus musculus
Gbe1	glucan (1,4-alpha-), branching enzyme 1(Gbe1)	Mus musculus
Parg	poly (ADP-ribose) glycohydrolase(Parg)	Mus musculus
Samd4b	sterile alpha motif domain containing 4B(Samd4b)	Mus musculus
Taf12	TATA-box binding protein associated factor 12(Taf12)	Mus musculus
Ldoc1l	leucine zipper, down-regulated in cancer 1-like(Ldoc1l)	Mus musculus
Fbxo27	F-box protein 27(Fbxo27)	Mus musculus
Map3k7	mitogen-activated protein kinase kinase kinase 7(Map3k7)	Mus musculus
Tox	thymocyte selection-associated high mobility group box(Tox)	Mus musculus
Map4k2	mitogen-activated protein kinase kinase kinase kinase 2(Map4k2)	Mus musculus
Map3k1	mitogen-activated protein kinase kinase kinase 1(Map3k1)	Mus musculus
Btla	B and T lymphocyte associated(Btla)	Mus musculus
Abhd2	abhydrolase domain containing 2(Abhd2)	Mus musculus
Zfp420	zinc finger protein 420(Zfp420)	Mus musculus
Zfp280d	zinc finger protein 280D(Zfp280d)	Mus musculus

Rpl27	ribosomal protein L27(Rpl27)	Mus musculus
Pcyt1a	phosphate cytidylyltransferase 1, choline, alpha isoform(Pcyt1a)	Mus musculus
Zfp658	zinc finger protein 658(Zfp658)	Mus musculus
Zfp719	zinc finger protein 719(Zfp719)	Mus musculus
1700017B05Rik	RIKEN cDNA 1700017B05 gene(1700017B05Rik)	Mus musculus
Trpm8	transient receptor potential cation channel, subfamily M, member 8(Trpm8)	Mus musculus
Col6a6	collagen, type VI, alpha 6(Col6a6)	Mus musculus
Stap1	signal transducing adaptor family member 1(Stap1)	Mus musculus
Atp6v1h	ATPase, H ⁺ transporting, lysosomal V1 subunit H(Atp6v1h)	Mus musculus
Esrrg	estrogen-related receptor gamma(Esrrg)	Mus musculus
Lgi2	leucine-rich repeat LGI family, member 2(Lgi2)	Mus musculus
Tmem184b	transmembrane protein 184b(Tmem184b)	Mus musculus
Prtg	protogenin(Prtg)	Mus musculus
Ppp1r14c	protein phosphatase 1, regulatory (inhibitor) subunit 14c(Ppp1r14c)	Mus musculus
Mtf1	metal response element binding transcription factor 1(Mtf1)	Mus musculus
Dclk3	doublecortin-like kinase 3(Dclk3)	Mus musculus
Lrrtm3	leucine rich repeat transmembrane neuronal 3(Lrrtm3)	Mus musculus
Zfp180	zinc finger protein 180(Zfp180)	Mus musculus
Msi1	musashi RNA-binding protein 1(Msi1)	Mus musculus
Krt80	keratin 80(Krt80)	Mus musculus
Rnf14	ring finger protein 14(Rnf14)	Mus musculus
Rmnd5a	required for meiotic nuclear division 5 homolog A(Rmnd5a)	Mus musculus
Akap9	A kinase (PRKA) anchor protein (yotiao) 9(Akap9)	Mus musculus
Gss	glutathione synthetase(Gss)	Mus musculus
Gspt1	G1 to S phase transition 1(Gspt1)	Mus musculus
Nap1l3	nucleosome assembly protein 1-like 3(Nap1l3)	Mus musculus
Ccp1	cell cycle progression 1(Ccp1)	Mus musculus
Wwc2	WW, C2 and coiled-coil domain containing 2(Wwc2)	Mus musculus
Zfp260	zinc finger protein 260(Zfp260)	Mus musculus
Ccdc166	coiled-coil domain containing 166(Ccdc166)	Mus musculus
Zfp146	zinc finger protein 146(Zfp146)	Mus musculus
Rock1	Rho-associated coiled-coil containing protein kinase 1(Rock1)	Mus musculus
Zkscan8	zinc finger with KRAB and SCAN domains 8(Zkscan8)	Mus musculus
Nuak1	NUAK family, SNF1-like kinase, 1(Nuak1)	Mus musculus
Susd6	sushi domain containing 6(Susd6)	Mus musculus
Fam90a1a	family with sequence similarity 90, member A1A(Fam90a1a)	Mus musculus
Lingo1	leucine rich repeat and Ig domain containing 1(Lingo1)	Mus musculus
Nhs12	NHS-like 2(Nhs12)	Mus musculus
Clcf1	cardiotrophin-like cytokine factor 1(Clcf1)	Mus musculus

Ros1	Ros1 proto-oncogene(Ros1)	Mus musculus
Ammechr1l	AMME chromosomal region gene 1-like(Ammecr1l)	Mus musculus
Cluh	clustered mitochondria (cluA/CLU1) homolog(Cluh)	Mus musculus
Krt71	keratin 71(Krt71)	Mus musculus
Gtf2h1	general transcription factor II H, polypeptide 1(Gtf2h1)	Mus musculus
Zfp644	zinc finger protein 644(Zfp644)	Mus musculus
Usp7	ubiquitin specific peptidase 7(Usp7)	Mus musculus
Rnf217	ring finger protein 217(Rnf217)	Mus musculus
D1Erttd622e	DNA segment, Chr 1, ERATO Doi 622, expressed(D1Erttd622e)	Mus musculus
Scgb2b19	secretoglobulin, family 2B, member 19(Scgb2b19)	Mus musculus
Chka	choline kinase alpha(Chka)	Mus musculus
Sri	sorcin(Sri)	Mus musculus
Ube3c	ubiquitin protein ligase E3C(Ube3c)	Mus musculus
Dnajc19	DnaJ heat shock protein family (Hsp40) member C19(Dnajc19)	Mus musculus
Oas1f	2'-5' oligoadenylate synthetase 1F(Oas1f)	Mus musculus
Zfp715	zinc finger protein 715(Zfp715)	Mus musculus
Xylb	xylulokinase homolog (H. influenzae)(Xylb)	Mus musculus
Rita1	RBPJ interacting and tubulin associated 1(Rita1)	Mus musculus
Mark4	MAP/microtubule affinity regulating kinase 4(Mark4)	Mus musculus
Gsx2	GS homeobox 2(Gsx2)	Mus musculus
Tmem39b	transmembrane protein 39b(Tmem39b)	Mus musculus
Ddhd2	DDHD domain containing 2(Ddhd2)	Mus musculus
Sirt1	sirtuin 1(Sirt1)	Mus musculus
Lars2	leucyl-tRNA synthetase, mitochondrial(Lars2)	Mus musculus
Chek1	checkpoint kinase 1(Chek1)	Mus musculus
Trim2	tripartite motif-containing 2(Trim2)	Mus musculus
Zfhx4	zinc finger homeodomain 4(Zfhx4)	Mus musculus
Glpr2	GLI pathogenesis-related 2(Glpr2)	Mus musculus
Kcnmb4	potassium large conductance calcium-activated channel, subfamily M, beta member 4(Kcnmb4)	Mus musculus
Pigx	phosphatidylinositol glycan anchor biosynthesis, class X(Pigx)	Mus musculus
Dcaf12l1	DDB1 and CUL4 associated factor 12-like 1(Dcaf12l1)	Mus musculus
Anks4b	ankyrin repeat and sterile alpha motif domain containing 4B(Anks4b)	Mus musculus
Grin2b	glutamate receptor, ionotropic, NMDA2B (epsilon 2)(Grin2b)	Mus musculus
Spink8	serine peptidase inhibitor, Kazal type 8(Spink8)	Mus musculus
Chd8	chromodomain helicase DNA binding protein 8(Chd8)	Mus musculus
Senp1	SUMO1/sentrin specific peptidase 1(Senp1)	Mus musculus
Csmd3	CUB and Sushi multiple domains 3(Csmd3)	Mus musculus
Rap2c	RAP2C, member of RAS oncogene family(Rap2c)	Mus musculus
Gria2	glutamate receptor, ionotropic, AMPA2 (alpha 2)(Gria2)	Mus musculus

Gm7293	glyceraldehyde-3-phosphate dehydrogenase pseudogene(Gm7293)	Mus musculus
Ip6k2	inositol hexaphosphate kinase 2(Ip6k2)	Mus musculus
Cnot2	CCR4-NOT transcription complex, subunit 2(Cnot2)	Mus musculus
Sfr1	SWI5 dependent recombination repair 1(Sfr1)	Mus musculus
Wnt4	wingless-type MMTV integration site family, member 4(Wnt4)	Mus musculus
Sub1	SUB1 homolog (S. cerevisiae)(Sub1)	Mus musculus
Ccbe1	collagen and calcium binding EGF domains 1(Ccbe1)	Mus musculus
Wnt7a	wingless-type MMTV integration site family, member 7A(Wnt7a)	Mus musculus
Pdc	phosducin(Pdc)	Mus musculus
Slc37a2	solute carrier family 37 (glycerol-3-phosphate transporter), member 2(Slc37a2)	Mus musculus
Cebpz	CCAAT/enhancer binding protein zeta(Cebpz)	Mus musculus
Slc16a6	solute carrier family 16 (monocarboxylic acid transporters), member 6(Slc16a6)	Mus musculus
Zfp286	zinc finger protein 286(Zfp286)	Mus musculus
Snx2	sorting nexin 2(Snx2)	Mus musculus
Uvrug	UV radiation resistance associated gene(Uvrug)	Mus musculus
Zmpste24	zinc metalloproteinase, STE24(Zmpste24)	Mus musculus
Rps15a	ribosomal protein S15A(Rps15a)	Mus musculus
Unc5d	unc-5 netrin receptor D(Unc5d)	Mus musculus
Cstad	CSA-conditional, T cell activation-dependent protein(Cstad)	Mus musculus
Zbed4	zinc finger, BED type containing 4(Zbed4)	Mus musculus
Zfp449	zinc finger protein 449(Zfp449)	Mus musculus
Rassf3	Ras association (RalGDS/AF-6) domain family member 3(Rassf3)	Mus musculus
Hibadh	3-hydroxyisobutyrate dehydrogenase(Hibadh)	Mus musculus
Cdh4	cadherin 4(Cdh4)	Mus musculus
Pak7	p21 protein (Cdc42/Rac)-activated kinase 7(Pak7)	Mus musculus
Psat1	phosphoserine aminotransferase 1(Psat1)	Mus musculus
Atp1a2	ATPase, Na ⁺ /K ⁺ transporting, alpha 2 polypeptide(Atp1a2)	Mus musculus
Lilr4b	leukocyte immunoglobulin-like receptor, subfamily B, member 4B(Lilr4b)	Mus musculus
Zfp418	zinc finger protein 418(Zfp418)	Mus musculus
Gpsm1	G-protein signalling modulator 1 (AGS3-like, C. elegans)(Gpsm1)	Mus musculus
Tnpo3	transportin 3(Tnpo3)	Mus musculus
Atg7	autophagy related 7(Atg7)	Mus musculus
Pdzd4	PDZ domain containing 4(Pdzd4)	Mus musculus
Daam2	dishevelled associated activator of morphogenesis 2(Daam2)	Mus musculus
Sbno1	strawberry notch homolog 1 (Drosophila)(Sbno1)	Mus musculus
Tmprss11a	transmembrane protease, serine 11a(Tmprss11a)	Mus musculus
Tifab	TRAF-interacting protein with forkhead-associated domain, family member B(Tifab)	Mus musculus
Armc1	armadillo repeat containing 1(Armc1)	Mus musculus
Fam46a	family with sequence similarity 46, member A(Fam46a)	Mus musculus

Pex13	peroxisomal biogenesis factor 13(Pex13)	Mus musculus
Nmral1	NmrA-like family domain containing 1(Nmral1)	Mus musculus
Galk2	galactokinase 2(Galk2)	Mus musculus
Tmem67	transmembrane protein 67(Tmem67)	Mus musculus
Armc9	armadillo repeat containing 9(Armc9)	Mus musculus
Nfib	nuclear factor I/B(Nfib)	Mus musculus
Esco2	establishment of sister chromatid cohesion N-acetyltransferase 2(Esco2)	Mus musculus
Zfp735	zinc finger protein 735(Zfp735)	Mus musculus
Gabpb2	GA repeat binding protein, beta 2(Gabpb2)	Mus musculus
Vipr2	vasoactive intestinal peptide receptor 2(Vipr2)	Mus musculus
Il31	interleukin 31(Il31)	Mus musculus
Zdhhc8	zinc finger, DHHC domain containing 8(Zdhhc8)	Mus musculus
Rbm24	RNA binding motif protein 24(Rbm24)	Mus musculus
Tardbp	TAR DNA binding protein(Tardbp)	Mus musculus
A130051J06Rik	RIKEN cDNA A130051J0 gene(A130051J06Rik)	Mus musculus
Pcdhb9	protocadherin beta 9(Pcdhb9)	Mus musculus
Ccr2	chemokine (C-C motif) receptor 2(Ccr2)	Mus musculus
Vegfb	vascular endothelial growth factor B(Vegfb)	Mus musculus
Pcdhb14	protocadherin beta 14(Pcdhb14)	Mus musculus
Zfp583	zinc finger protein 583(Zfp583)	Mus musculus
Cmah	cytidine monophospho-N-acetylneuraminic acid hydroxylase(Cmah)	Mus musculus
Cdca4	cell division cycle associated 4(Cdca4)	Mus musculus
Pank2	pantothenate kinase 2(Pank2)	Mus musculus
Mrps25	mitochondrial ribosomal protein S25(Mrps25)	Mus musculus
Baz1b	bromodomain adjacent to zinc finger domain, 1B(Baz1b)	Mus musculus
Wbp5	WW domain binding protein 5(Wbp5)	Mus musculus
Ankrd13c	ankyrin repeat domain 13c(Ankrd13c)	Mus musculus
Neurod1	neurogenic differentiation 1(Neurod1)	Mus musculus
Cers6	ceramide synthase 6(Cers6)	Mus musculus
Gm10032	predicted gene 10032(Gm10032)	Mus musculus
Dip2c	disco interacting protein 2 homolog C(Dip2c)	Mus musculus
Endod1	endonuclease domain containing 1(Endod1)	Mus musculus
Inpp4a	inositol polyphosphate-4-phosphatase, type I(Inpp4a)	Mus musculus
Cacul1	CDK2 associated, cullin domain 1(Cacul1)	Mus musculus
Rnf34	ring finger protein 34(Rnf34)	Mus musculus
Gnao1	guanine nucleotide binding protein, alpha O(Gnao1)	Mus musculus
Prdm10	PR domain containing 10(Prdm10)	Mus musculus
Gclm	glutamate-cysteine ligase, modifier subunit(Gclm)	Mus musculus
Dhrs3	dehydrogenase/reductase (SDR family) member 3(Dhrs3)	Mus musculus

Cpsf7	cleavage and polyadenylation specific factor 7(Cpsf7)	Mus musculus
Clcn1	chloride channel, voltage-sensitive 1(Clcn1)	Mus musculus
Uty	ubiquitously transcribed tetratricopeptide repeat gene, Y chromosome(Uty)	Mus musculus
Ermp1	endoplasmic reticulum metalloproteinase 1(Ermp1)	Mus musculus
Rabl3	RAB, member RAS oncogene family-like 3(Rabl3)	Mus musculus
Frs2	fibroblast growth factor receptor substrate 2(Frs2)	Mus musculus
Ncoa2	nuclear receptor coactivator 2(Ncoa2)	Mus musculus
Trim63	tripartite motif-containing 63(Trim63)	Mus musculus
Hectd2	HECT domain containing 2(Hectd2)	Mus musculus
Adgrb3	adhesion G protein-coupled receptor B3(Adgrb3)	Mus musculus
Usp9x	ubiquitin specific peptidase 9, X chromosome(Usp9x)	Mus musculus
Urgcp	upregulator of cell proliferation(Urgcp)	Mus musculus
Man2a2	mannosidase 2, alpha 2(Man2a2)	Mus musculus
Gm12830	predicted gene 12830(Gm12830)	Mus musculus
Ypel4	yippee-like 4 (Drosophila)(Ypel4)	Mus musculus
Osbp	oxysterol binding protein(Osbp)	Mus musculus
Pcnp	PEST proteolytic signal containing nuclear protein(Pcnp)	Mus musculus
Myo7a	myosin VIIA(Myo7a)	Mus musculus
Onecut3	one cut domain, family member 3(Onecut3)	Mus musculus
Ifitm10	interferon induced transmembrane protein 10(Ifitm10)	Mus musculus
Fndc3b	fibronectin type III domain containing 3B(Fndc3b)	Mus musculus
Zfp882	zinc finger protein 882(Zfp882)	Mus musculus
Glis3	GLIS family zinc finger 3(Glis3)	Mus musculus
Dcaf5	DDB1 and CUL4 associated factor 5(Dcaf5)	Mus musculus
Chuk	conserved helix-loop-helix ubiquitous kinase(Chuk)	Mus musculus
Atxn7	ataxin 7(Atxn7)	Mus musculus
Ctnna1	catenin (cadherin associated protein), alpha 1(Ctnna1)	Mus musculus
Fam134c	family with sequence similarity 134, member C(Fam134c)	Mus musculus
Runx2	runt related transcription factor 2(Runx2)	Mus musculus
Frrs1	ferric-chelate reductase 1(Frrs1)	Mus musculus
Soga1	suppressor of glucose, autophagy associated 1(Soga1)	Mus musculus
Vps54	VPS54 GARP complex subunit(Vps54)	Mus musculus
Cdc27	cell division cycle 27(Cdc27)	Mus musculus
Runx1	runt related transcription factor 1(Runx1)	Mus musculus
Cbln2	cerebellin 2 precursor protein(Cbln2)	Mus musculus
Zbtb34	zinc finger and BTB domain containing 34(Zbtb34)	Mus musculus
Cbfb	core binding factor beta(Cbfb)	Mus musculus
Zeb2	zinc finger E-box binding homeobox 2(Zeb2)	Mus musculus
Arhgdig	Rho GDP dissociation inhibitor (GDI) gamma(Arhgdig)	Mus musculus

Trpm3	transient receptor potential cation channel, subfamily M, member 3(Trpm3)	Mus musculus
Eid1	EP300 interacting inhibitor of differentiation 1(Eid1)	Mus musculus
Sema3a	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3A(	Mus musculus
2010005H15Rik	RIKEN cDNA 2010005H15 gene(2010005H15Rik)	Mus musculus
Ss18	synovial sarcoma translocation, Chromosome 18(Ss18)	Mus musculus
Duxbl2	double homeobox B-like 2(Duxbl2)	Mus musculus
Ugt2b5	UDP glucuronosyltransferase 2 family, polypeptide B5(Ugt2b5)	Mus musculus
Slc10a7	solute carrier family 10 (sodium/bile acid cotransporter family), member 7(Slc10a7)	Mus musculus
Atp2b1	ATPase, Ca++ transporting, plasma membrane 1(Atp2b1)	Mus musculus
Abhd17b	abhydrolase domain containing 17B(Abhd17b)	Mus musculus
Prdm9	PR domain containing 9(Prdm9)	Mus musculus
Ccl25	chemokine (C-C motif) ligand 25(Ccl25)	Mus musculus
Xlr5b	X-linked lymphocyte-regulated 5B(Xlr5b)	Mus musculus
Cd276	CD276 antigen(Cd276)	Mus musculus
Unc5c	unc-5 netrin receptor C(Unc5c)	Mus musculus
Spdye4b	speedy/RINGO cell cycle regulator family, member E4B(Spdye4b)	Mus musculus
Gda	guanine deaminase(Gda)	Mus musculus
Trpm6	transient receptor potential cation channel, subfamily M, member 6(Trpm6)	Mus musculus
Dnajc3	DnaJ heat shock protein family (Hsp40) member C3(Dnajc3)	Mus musculus
Enho	energy homeostasis associated(Enho)	Mus musculus
D030056L22Rik	RIKEN cDNA D030056L22 gene(D030056L22Rik)	Mus musculus
Gm9936	predicted gene 9936(Gm9936)	Mus musculus
Ubxn7	UBX domain protein 7(Ubxn7)	Mus musculus
Pak2	p21 protein (Cdc42/Rac)-activated kinase 2(Pak2)	Mus musculus
Cd300ld	CD300 molecule like family member d(Cd300ld)	Mus musculus
Hid1	HID1 domain containing(Hid1)	Mus musculus
Rsrp1	arginine/serine rich protein 1(Rsrp1)	Mus musculus
Chst10	carbohydrate sulfotransferase 10(Chst10)	Mus musculus
Car13	carbonic anhydrase 13(Car13)	Mus musculus
Fbxo42	F-box protein 42(Fbxo42)	Mus musculus
Xaf1	XIAP associated factor 1(Xaf1)	Mus musculus
Fam160b2	family with sequence similarity 160, member B2(Fam160b2)	Mus musculus
Gm5591	predicted gene 5591(Gm5591)	Mus musculus
Duxbl3	double homeobox B-like 3(Duxbl3)	Mus musculus
Daam1	dishevelled associated activator of morphogenesis 1(Daam1)	Mus musculus
Clasp1	CLIP associating protein 1(Clasp1)	Mus musculus
Mbtps2	membrane-bound transcription factor peptidase, site 2(Mbtps2)	Mus musculus
Pcdh17	protocadherin 17(Pcdh17)	Mus musculus
Brinp3	bone morphogenetic protein/retinoic acid inducible neural specific 3(Brinp3)	Mus musculus

Clmn	calmin(Clmn)	Mus musculus
Arpc4	actin related protein 2/3 complex, subunit 4(Arpc4)	Mus musculus
Atxn1	ataxin 1(Atxn1)	Mus musculus
Wtap	Wilms tumour 1-associating protein(Wtap)	Mus musculus
Ltbp1	latent transforming growth factor beta binding protein 1(Ltbp1)	Mus musculus
Ncaph	non-SMC condensin I complex, subunit H(Ncaph)	Mus musculus
Nelfa	negative elongation factor complex member A, Whsc2(Nelfa)	Mus musculus
Cnih4	cornichon family AMPA receptor auxiliary protein 4(Cnih4)	Mus musculus
Iffo1	intermediate filament family orphan 1(Iffo1)	Mus musculus
A730049H05Rik	RIKEN cDNA A730049H05 gene(A730049H05Rik)	Mus musculus
Ube2l3	ubiquitin-conjugating enzyme E2L 3(Ube2l3)	Mus musculus
Patl1	protein associated with topoisomerase II homolog 1 (yeast)(Patl1)	Mus musculus
Sobp	sine oculis-binding protein homolog (Drosophila)(Sobp)	Mus musculus
Cand1	cullin associated and neddylation disassociated 1(Cand1)	Mus musculus
Pianp	PILR alpha associated neural protein(Pianp)	Mus musculus
Pcdh20	protocadherin 20(Pcdh20)	Mus musculus
Ubfd1	ubiquitin family domain containing 1(Ubfd1)	Mus musculus
Olfr20	olfactory receptor 20(Olfr20)	Mus musculus
Nova1	neuro-oncological ventral antigen 1(Nova1)	Mus musculus
Hs6st2	heparan sulfate 6-O-sulfotransferase 2(Hs6st2)	Mus musculus
Fytd1	forty-two-three domain containing 1(Fytd1)	Mus musculus
Ogdh	oxoglutarate (alpha-ketoglutarate) dehydrogenase (lipoamide)(Ogdh)	Mus musculus
Cdkl5	cyclin-dependent kinase-like 5(Cdkl5)	Mus musculus
Phlpp1	PH domain and leucine rich repeat protein phosphatase 1(Phlpp1)	Mus musculus
Trip11	thyroid hormone receptor interactor 11(Trip11)	Mus musculus
Wdr38	WD repeat domain 38(Wdr38)	Mus musculus
Rnf115	ring finger protein 115(Rnf115)	Mus musculus
Srxn1	sulfiredoxin 1 homolog (S. cerevisiae)(Srxn1)	Mus musculus
Fbxl21	F-box and leucine-rich repeat protein 21(Fbxl21)	Mus musculus
Pcf11	PCF11 cleavage and polyadenylation factor subunit(Pcf11)	Mus musculus
Ano2	anoctamin 2(Ano2)	Mus musculus
Eda2r	ectodysplasin A2 receptor(Eda2r)	Mus musculus
Pgr15l	G protein-coupled receptor 15-like(Pgr15l)	Mus musculus
Dopey1	dopey family member 1(Dopey1)	Mus musculus
Zak	sterile alpha motif and leucine zipper containing kinase AZK(Zak)	Mus musculus
Rap1b	RAS related protein 1b(Rap1b)	Mus musculus
Gad2	glutamic acid decarboxylase 2(Gad2)	Mus musculus
Gucy1a3	guanylate cyclase 1, soluble, alpha 3(Gucy1a3)	Mus musculus
Shox2	short stature homeobox 2(Shox2)	Mus musculus

Trp53inp1	transformation related protein 53 inducible nuclear protein 1(Trp53inp1)	Mus musculus
Ocln	occludin(Ocln)	Mus musculus
Galnt3	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 3(Galnt3)	Mus musculus
Mri1	methylthioribose-1-phosphate isomerase 1(Mri1)	Mus musculus
Naa20	N(alpha)-acetyltransferase 20, NatB catalytic subunit(Naa20)	Mus musculus
Ttn	titin(Ttn)	Mus musculus
Chd9	chromodomain helicase DNA binding protein 9(Chd9)	Mus musculus
Jph1	junctionophilin 1(Jph1)	Mus musculus
Gabrb2	gamma-aminobutyric acid (GABA) A receptor, subunit beta 2(Gabrb2)	Mus musculus
Ttc3	tetratricopeptide repeat domain 3(Ttc3)	Mus musculus
Icosl	icos ligand(Icosl)	Mus musculus
Noct	nocturnin(Noct)	Mus musculus
Nr2c2	nuclear receptor subfamily 2, group C, member 2(Nr2c2)	Mus musculus
C1galt1	core 1 synthase, glycoprotein-N-acetylgalactosamine 3-beta-galactosyltransferase, 1(C1galt1)	Mus musculus
Trim36	tripartite motif-containing 36(Trim36)	Mus musculus
Sgce	sarcoglycan, epsilon(Sgce)	Mus musculus
Tpp2	tripeptidyl peptidase II(Tpp2)	Mus musculus
Scg5	secretogranin V(Scg5)	Mus musculus
D10Wsu102e	DNA segment, Chr 10, Wayne State University 102, expressed(D10Wsu102e)	Mus musculus
Zfp106	zinc finger protein 106(Zfp106)	Mus musculus
Pcmt2	protein-L-isoaspartate (D-aspartate) O-methyltransferase domain containing 2(Pcmt2)	Mus musculus
Ctla4	cytotoxic T-lymphocyte-associated protein 4(Ctla4)	Mus musculus
Skap1	src family associated phosphoprotein 1(Skap1)	Mus musculus
Numb	numb homolog (Drosophila)(Numb)	Mus musculus
Mga	MAX gene associated(Mga)	Mus musculus
Ubn2	ubinnuclein 2(Ubn2)	Mus musculus
Traf6	TNF receptor-associated factor 6(Traf6)	Mus musculus
Ntrk3	neurotrophic tyrosine kinase, receptor, type 3(Ntrk3)	Mus musculus
Styk1	serine/threonine/tyrosine kinase 1(Styk1)	Mus musculus
Shpk	sedoheptulokinase(Shpk)	Mus musculus
Tob1	transducer of ErbB-2.1(Tob1)	Mus musculus
Snx7	sorting nexin 7(Snx7)	Mus musculus
Nsdhl	NAD(P) dependent steroid dehydrogenase-like(Nsdhl)	Mus musculus
D330045A20Rik	RIKEN cDNA D330045A20 gene(D330045A20Rik)	Mus musculus
Dennd5b	DENN/MADD domain containing 5B(Dennd5b)	Mus musculus
Pum3	pumilio RNA-binding family member 3(Pum3)	Mus musculus
S100pbp	S100P binding protein(S100pbp)	Mus musculus
Rab43	RAB43, member RAS oncogene family(Rab43)	Mus musculus
Nrxn1	neurexin I(Nrxn1)	Mus musculus

Zfp672	zinc finger protein 672(Zfp672)	Mus musculus
Cxxc4	CXXC finger 4(Cxxc4)	Mus musculus
Wnk1	WNK lysine deficient protein kinase 1(Wnk1)	Mus musculus
Tbck	TBC1 domain containing kinase(Tbck)	Mus musculus
Zfp568	zinc finger protein 568(Zfp568)	Mus musculus
Zfp709	zinc finger protein 709(Zfp709)	Mus musculus
Srsf10	serine/arginine-rich splicing factor 10(Srsf10)	Mus musculus
Kcnj6	potassium inwardly-rectifying channel, subfamily J, member 6(Kcnj6)	Mus musculus
Fat1	FAT atypical cadherin 1(Fat1)	Mus musculus
Eif1	eukaryotic translation initiation factor 1(Eif1)	Mus musculus
Corin	corin(Corin)	Mus musculus
Txndc11	thioredoxin domain containing 11(Txndc11)	Mus musculus
P2rx1	purinergic receptor P2X, ligand-gated ion channel, 1(P2rx1)	Mus musculus
Smoc2	SPARC related modular calcium binding 2(Smoc2)	Mus musculus
Rimk1a	ribosomal modification protein rimK-like family member A(Rimk1a)	Mus musculus
Dennd1b	DENN/MADD domain containing 1B(Dennd1b)	Mus musculus
Atp5c1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, gamma polypeptide 1(Atp5c1)	Mus musculus
Strap	serine/threonine kinase receptor associated protein(Strap)	Mus musculus
Phf21a	PHD finger protein 21A(Phf21a)	Mus musculus
Zfp189	zinc finger protein 189(Zfp189)	Mus musculus
Tshz3	teashirt zinc finger family member 3(Tshz3)	Mus musculus
Sc1t1	sodium channel and clathrin linker 1(Sc1t1)	Mus musculus
Pak3	p21 protein (Cdc42/Rac)-activated kinase 3(Pak3)	Mus musculus
Gm4631	predicted gene 4631(Gm4631)	Mus musculus
Hnrnpa2b1	heterogeneous nuclear ribonucleoprotein A2/B1(Hnrnpa2b1)	Mus musculus
Zkscan16	zinc finger with KRAB and SCAN domains 16(Zkscan16)	Mus musculus
Mtdh	metadherin(Mtdh)	Mus musculus
Atp1b3	ATPase, Na ⁺ /K ⁺ transporting, beta 3 polypeptide(Atp1b3)	Mus musculus
Wfikkn2	WAP, follistatin/kazal, immunoglobulin, kunitz and netrin domain containing 2(Wfikkn2)	Mus musculus
Zfp850	zinc finger protein 850(Zfp850)	Mus musculus
Atf2	activating transcription factor 2(Atf2)	Mus musculus
Zfp563	zinc finger protein 563(Zfp563)	Mus musculus
Kif5b	kinesin family member 5B(Kif5b)	Mus musculus
Fbrs	fibrosin(Fbrs)	Mus musculus
Gm5798	predicted gene 5798(Gm5798)	Mus musculus
Zfp799	zinc finger protein 799(Zfp799)	Mus musculus
Rnf141	ring finger protein 141(Rnf141)	Mus musculus
Kif3b	kinesin family member 3B(Kif3b)	Mus musculus
Pak1	p21 protein (Cdc42/Rac)-activated kinase 1(Pak1)	Mus musculus

Gm10392	predicted gene 10392(Gm10392)	Mus musculus
Zfp473	zinc finger protein 473(Zfp473)	Mus musculus
Fgf14	fibroblast growth factor 14(Fgf14)	Mus musculus
Pank3	pantothenate kinase 3(Pank3)	Mus musculus
Tnfrsf22	tumor necrosis factor receptor superfamily, member 22(Tnfrsf22)	Mus musculus
Zfp811	zinc finger protein 811(Zfp811)	Mus musculus
Gm156	predicted gene 156(Gm156)	Mus musculus
9930022D16Rik	RIKEN cDNA 9930022D16 gene(9930022D16Rik)	Mus musculus
Sav1	salvador family WW domain containing 1(Sav1)	Mus musculus
Gm3371	predicted gene 3371(Gm3371)	Mus musculus
Tubgcp3	tubulin, gamma complex associated protein 3(Tubgcp3)	Mus musculus
Fer	fer (fms/fps related) protein kinase(Fer)	Mus musculus
Duxbl1	double homeobox B-like 1(Duxbl1)	Mus musculus
Slc16a13	solute carrier family 16 (monocarboxylic acid transporters), member 13(Slc16a13)	Mus musculus
Boc	biregional cell adhesion molecule-related/down-regulated by oncogenes (Cdon) binding protein (Boc)	Mus musculus
Ipcef1	interaction protein for cytohesin exchange factors 1(Ipcef1)	Mus musculus
Lancl3	LanC lantibiotic synthetase component C-like 3 (bacterial)(Lancl3)	Mus musculus
Timm21	tranlocase of inner mitochondrial membrane 21(Timm21)	Mus musculus
Klf3	Kruppel-like factor 3 (basic)(Klf3)	Mus musculus
Iqub	IQ motif and ubiquitin domain containing(Iqub)	Mus musculus
Atrn	attractin(Atrn)	Mus musculus
Cdk16	cyclin-dependent kinase 16(Cdk16)	Mus musculus
Pcsk5	proprotein convertase subtilisin/kexin type 5(Pcsk5)	Mus musculus
Zfp397	zinc finger protein 397(Zfp397)	Mus musculus
Aak1	AP2 associated kinase 1(Aak1)	Mus musculus
Fhl1	four and a half LIM domains 1(Fhl1)	Mus musculus
Mgat5	mannoside acetylglucosaminyltransferase 5(Mgat5)	Mus musculus
Arid2	AT rich interactive domain 2 (ARID, RFX-like)(Arid2)	Mus musculus
1700019D03Rik	RIKEN cDNA 1700019D03 gene(1700019D03Rik)	Mus musculus
Stx6	syntaxin 6(Stx6)	Mus musculus
Fgl2	fibrinogen-like protein 2(Fgl2)	Mus musculus
P4ha3	procollagen-proline, 2-oxoglutarate 4-dioxygenase (proline 4-hydroxylase), alpha polypeptide chain(P4ha3)	Mus musculus
Rgag4	retrotransposon gag domain containing 4(Rgag4)	Mus musculus
Cyp2c54	cytochrome P450, family 2, subfamily c, polypeptide 54(Cyp2c54)	Mus musculus
Fgfr1	fibroblast growth factor receptor 1(Fgfr1)	Mus musculus
Surf4	surfeit gene 4(Surf4)	Mus musculus
Fkbp7	FK506 binding protein 7(Fkbp7)	Mus musculus
Tmem260	transmembrane protein 260(Tmem260)	Mus musculus
Zfp746	zinc finger protein 746(Zfp746)	Mus musculus

2410141K09Rik	RIKEN cDNA 2410141K09 gene(2410141K09Rik)	Mus musculus
E330009J07Rik	RIKEN cDNA E330009J07 gene(E330009J07Rik)	Mus musculus
Pde6d	phosphodiesterase 6D, cGMP-specific, rod, delta(Pde6d)	Mus musculus
Pde7a	phosphodiesterase 7A(Pde7a)	Mus musculus
Fmo6	flavin containing monooxygenase 6(Fmo6)	Mus musculus
Cacna1h	calcium channel, voltage-dependent, T type, alpha 1H subunit(Cacna1h)	Mus musculus
Kdm4c	lysine (K)-specific demethylase 4C(Kdm4c)	Mus musculus
Itgae	integrin alpha E, epithelial-associated(Itgae)	Mus musculus
Il10	interleukin 10(Il10)	Mus musculus
Scaf4	SR-related CTD-associated factor 4(Scaf4)	Mus musculus
Zfp949	zinc finger protein 949(Zfp949)	Mus musculus
Rasgef1b	RasGEF domain family, member 1B(Rasgef1b)	Mus musculus
Sh3pxd2a	SH3 and PX domains 2A(Sh3pxd2a)	Mus musculus
Ctgf	connective tissue growth factor(Ctgf)	Mus musculus
Apoa2	apolipoprotein A-II(Apoa2)	Mus musculus
Gm4847	predicted gene 4847(Gm4847)	Mus musculus
Rnf224	ring finger protein 224(Rnf224)	Mus musculus
Cd47	CD47 antigen (Rh-related antigen, integrin-associated signal transducer)(Cd47)	Mus musculus
Whsc1l1	Wolf-Hirschhorn syndrome candidate 1-like 1 (human)(Whsc1l1)	Mus musculus
Parp6	poly (ADP-ribose) polymerase family, member 6(Parp6)	Mus musculus
Peg3	paternally expressed 3(Peg3)	Mus musculus
Vstm2b	V-set and transmembrane domain containing 2B(Vstm2b)	Mus musculus
Spopl	speckle-type POZ protein-like(Spopl)	Mus musculus
Fam69a	family with sequence similarity 69, member A(Fam69a)	Mus musculus
Mapk1ip1l	mitogen-activated protein kinase 1 interacting protein 1-like(Mapk1ip1l)	Mus musculus
Fgd5	FYVE, RhoGEF and PH domain containing 5(Fgd5)	Mus musculus
B020011L13Rik	RIKEN cDNA B020011L13 gene(B020011L13Rik)	Mus musculus
Luzp1	leucine zipper protein 1(Luzp1)	Mus musculus
Flt1	FMS-like tyrosine kinase 1(Flt1)	Mus musculus
Ndufa10	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex 10(Ndufa10)	Mus musculus
Arhgap44	Rho GTPase activating protein 44(Arhgap44)	Mus musculus
Strbp	spermatid perinuclear RNA binding protein(Strbp)	Mus musculus
Fam78b	family with sequence similarity 78, member B(Fam78b)	Mus musculus
Dgkk	diacylglycerol kinase kappa(Dgkk)	Mus musculus
Wbp11	WW domain binding protein 11(Wbp11)	Mus musculus
Cap2	CAP, adenylate cyclase-associated protein, 2 (yeast)(Cap2)	Mus musculus
Bcorl1	BCL6 co-repressor-like 1(Bcorl1)	Mus musculus
4930474N05Rik	RIKEN cDNA 4930474N05 gene(4930474N05Rik)	Mus musculus
Rgs20	regulator of G-protein signaling 20(Rgs20)	Mus musculus

Rap1a	RAS-related protein-1a(Rap1a)	Mus musculus
Tbc1d19	TBC1 domain family, member 19(Tbc1d19)	Mus musculus
Stc1	stanniocalcin 1(Stc1)	Mus musculus
Khdc1a	KH domain containing 1A(Khdc1a)	Mus musculus
Gm8011	predicted gene 8011(Gm8011)	Mus musculus
Cdk14	cyclin-dependent kinase 14(Cdk14)	Mus musculus
Jarid2	jumonji, AT rich interactive domain 2(Jarid2)	Mus musculus
Fign	fidgetin(Fign)	Mus musculus
Per1	period circadian clock 1(Per1)	Mus musculus
4930503E14Rik	RIKEN cDNA 4930503E14 gene(4930503E14Rik)	Mus musculus
Arntl	aryl hydrocarbon receptor nuclear translocator-like(Arntl)	Mus musculus
Celf4	CUGBP, Elav-like family member 4(Celf4)	Mus musculus
Tmem251	transmembrane protein 251(Tmem251)	Mus musculus
Kbtbd7	kelch repeat and BTB (POZ) domain containing 7(Kbtbd7)	Mus musculus
Kcna2	potassium voltage-gated channel, shaker-related subfamily, member 2(Kcna2)	Mus musculus
Arnt	aryl hydrocarbon receptor nuclear translocator(Arnt)	Mus musculus
Tmprss12	transmembrane (C-terminal) protease, serine 12(Tmprss12)	Mus musculus
Gps1	G protein pathway suppressor 1(Gps1)	Mus musculus
Cpne9	copine family member IX(Cpne9)	Mus musculus
Snx4	sorting nexin 4(Snx4)	Mus musculus
Kcnb1	potassium voltage gated channel, Shab-related subfamily, member 1(Kcnb1)	Mus musculus
Arf3	ADP-ribosylation factor 3(Arf3)	Mus musculus
Fstl1	folliculin-like 1(Fstl1)	Mus musculus
Stpg2	sperm tail PG rich repeat containing 2(Stpg2)	Mus musculus
Fst	folliculin(Fst)	Mus musculus
Amot	angiomin(Amot)	Mus musculus
Ssr3	signal sequence receptor, gamma(Ssr3)	Mus musculus
Ctdspl2	CTD (carboxy-terminal domain, RNA polymerase II, polypeptide A) small phosphatase like 2(Ctdspl2)	Mus musculus
Epb42	erythrocyte membrane protein band 4.2(Epb42)	Mus musculus
Gm7233	predicted gene 7233(Gm7233)	Mus musculus
4930503B20Rik	RIKEN cDNA 4930503B20 gene(4930503B20Rik)	Mus musculus
Chic1	cysteine-rich hydrophobic domain 1(Chic1)	Mus musculus
Pik3r1	phosphatidylinositol 3-kinase, regulatory subunit, polypeptide 1 (p85 alpha)(Pik3r1)	Mus musculus
Gbp7	guanylate binding protein 7(Gbp7)	Mus musculus
Cadm2	cell adhesion molecule 2(Cadm2)	Mus musculus
Igf1r	insulin-like growth factor I receptor(Igf1r)	Mus musculus
Sox1	SRY (sex determining region Y)-box 1(Sox1)	Mus musculus
Ephb2	Eph receptor B2(Ephb2)	Mus musculus
Sort1	sortilin 1(Sort1)	Mus musculus

Sorl1	sortilin-related receptor, LDLR class A repeats-containing(Sorl1)	Mus musculus
Zyg11b	zyg-II family member B, cell cycle regulator(Zyg11b)	Mus musculus
Dsg4	desmoglein 4(Dsg4)	Mus musculus
Epha7	Eph receptor A7(Epha7)	Mus musculus
Pim1	proviral integration site 1(Pim1)	Mus musculus
Pcgf3	polycomb group ring finger 3(Pcgf3)	Mus musculus
ErbB4	erb-b2 receptor tyrosine kinase 4(ErbB4)	Mus musculus
Ldb2	LIM domain binding 2(Ldb2)	Mus musculus
Zfp763	zinc finger protein 763(Zfp763)	Mus musculus
Lcp2	lymphocyte cytosolic protein 2(Lcp2)	Mus musculus
Maob	monoamine oxidase B(Maob)	Mus musculus
Col16a1	collagen, type XVI, alpha 1(Col16a1)	Mus musculus
Erp29	endoplasmic reticulum protein 29(Erp29)	Mus musculus
Scgb2b12	secretoglobin, family 2B, member 12(Scgb2b12)	Mus musculus
Rnf38	ring finger protein 38(Rnf38)	Mus musculus
Prkce	protein kinase C, epsilon(Prkce)	Mus musculus
Ccdc171	coiled-coil domain containing 171(Ccdc171)	Mus musculus
Exoc8	exocyst complex component 8(Exoc8)	Mus musculus
1700034J05Rik	RIKEN cDNA 1700034J05 gene(1700034J05Rik)	Mus musculus
Rnf103	ring finger protein 103(Rnf103)	Mus musculus
Slc39a2	solute carrier family 39 (zinc transporter), member 2(Slc39a2)	Mus musculus
Cdk13	cyclin-dependent kinase 13(Cdk13)	Mus musculus
Ywhaz	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypept	Mus musculus
Ankrd52	ankyrin repeat domain 52(Ankrd52)	Mus musculus
Pgm3	phosphoglucomutase 3(Pgm3)	Mus musculus
Jchain	immunoglobulin joining chain(Jchain)	Mus musculus
Pla2r1	phospholipase A2 receptor 1(Pla2r1)	Mus musculus
Lypla1	lysophospholipase 1(Lypla1)	Mus musculus
Ldhb	lactate dehydrogenase B(Ldhb)	Mus musculus
Scn4b	sodium channel, type IV, beta(Scn4b)	Mus musculus
Mob3b	MOB kinase activator 3B(Mob3b)	Mus musculus
Btg1	B cell translocation gene 1, anti-proliferative(Btg1)	Mus musculus
Papola	poly (A) polymerase alpha(Papola)	Mus musculus
Ip6k1	inositol hexaphosphate kinase 1(Ip6k1)	Mus musculus
Plaur	plasminogen activator, urokinase receptor(Plaur)	Mus musculus
Nol4l	nucleolar protein 4-like(Nol4l)	Mus musculus
Siae	sialic acid acetylesterase(Siae)	Mus musculus
Zfp160	zinc finger protein 160(Zfp160)	Mus musculus
Sp4	trans-acting transcription factor 4(Sp4)	Mus musculus

Arrb2	arrestin, beta 2(Arrb2)	Mus musculus
Lhx2	LIM homeobox protein 2(Lhx2)	Mus musculus
Zfp60	zinc finger protein 60(Zfp60)	Mus musculus
Slc5a4b	solute carrier family 5 (neutral amino acid transporters, system A), member 4b(Slc5a4b)	Mus musculus
Zfp59	zinc finger protein 59(Zfp59)	Mus musculus
Tsr2	TSR2 20S rRNA accumulation(Tsr2)	Mus musculus
Zfp81	zinc finger protein 81(Zfp81)	Mus musculus
Chd2	chromodomain helicase DNA binding protein 2(Chd2)	Mus musculus
Gpr85	G protein-coupled receptor 85(Gpr85)	Mus musculus
Zfp472	zinc finger protein 472(Zfp472)	Mus musculus
Arhgap11a	Rho GTPase activating protein 11A(Arhgap11a)	Mus musculus
Ssbp1	single-stranded DNA binding protein 1(Ssbp1)	Mus musculus
Zfp961	zinc finger protein 961(Zfp961)	Mus musculus
Slc23a1	solute carrier family 23 (nucleobase transporters), member 1(Slc23a1)	Mus musculus
Bdnf	brain derived neurotrophic factor(Bdnf)	Mus musculus
Slc3a1	solute carrier family 3, member 1(Slc3a1)	Mus musculus
Klra9	killer cell lectin-like receptor subfamily A, member 9(Klra9)	Mus musculus
Zfp37	zinc finger protein 37(Zfp37)	Mus musculus
Zfp35	zinc finger protein 35(Zfp35)	Mus musculus
Kras	Kirsten rat sarcoma viral oncogene homolog(Kras)	Mus musculus
Slc4a3	solute carrier family 4 (anion exchanger), member 3(Slc4a3)	Mus musculus
Zfp26	zinc finger protein 26(Zfp26)	Mus musculus
Kcnip2	Kv channel-interacting protein 2(Kcnip2)	Mus musculus
Clhc1	clathrin heavy chain linker domain containing 1(Clhc1)	Mus musculus
Gatsl2	GATS protein-like 2(Gatsl2)	Mus musculus
Slbp	stem-loop binding protein(Slbp)	Mus musculus
Zfp398	zinc finger protein 398(Zfp398)	Mus musculus
Tanc2	tetratricopeptide repeat, ankyrin repeat and coiled-coil containing 2(Tanc2)	Mus musculus
Celf2	CUGBP, Elav-like family member 2(Celf2)	Mus musculus
Zfp874b	zinc finger protein 874b(Zfp874b)	Mus musculus
Opn1sw	opsin 1 (cone pigments), short-wave-sensitive (color blindness, tritan)(Opn1sw)	Mus musculus
Slc12a2	solute carrier family 12, member 2(Slc12a2)	Mus musculus
Nptxr	neuronal pentraxin receptor(Nptxr)	Mus musculus
Dusp12	dual specificity phosphatase 12(Dusp12)	Mus musculus
Sfxn4	sideroflexin 4(Sfxn4)	Mus musculus
Agbl1	ATP/GTP binding protein-like 1(Agbl1)	Mus musculus
Nlgn1	neuroligin 1(Nlgn1)	Mus musculus
Pcgf2	polycomb group ring finger 2(Pcgf2)	Mus musculus
Ccdc30	coiled-coil domain containing 30(Ccdc30)	Mus musculus

Bcl2l2	BCL2-like 2(Bcl2l2)	Mus musculus
Csnk1g1	casein kinase 1, gamma 1(Csnk1g1)	Mus musculus
Zfand4	zinc finger, AN1-type domain 4(Zfand4)	Mus musculus
Ikzf2	IKAROS family zinc finger 2(Ikzf2)	Mus musculus
Insm1	insulinoma-associated 1(Insm1)	Mus musculus
Rad54l2	RAD54 like 2 (S. cerevisiae)(Rad54l2)	Mus musculus
Snai2	snail family zinc finger 2(Snai2)	Mus musculus
Plch1	phospholipase C, eta 1(Plch1)	Mus musculus
Ccdc50	coiled-coil domain containing 50(Ccdc50)	Mus musculus
BC106179	cDNA sequence BC106179(BC106179)	Mus musculus
Zik1	zinc finger protein interacting with K protein 1(Zik1)	Mus musculus
Cnot4	CCR4-NOT transcription complex, subunit 4(Cnot4)	Mus musculus
Evx1	even-skipped homeobox 1(Evx1)	Mus musculus
Zfp641	zinc finger protein 641(Zfp641)	Mus musculus
Clasrp	CLK4-associating serine/arginine rich protein(Clasrp)	Mus musculus
Hcrtr2	hypocretin (orexin) receptor 2(Hcrtr2)	Mus musculus
Tmed9	transmembrane p24 trafficking protein 9(Tmed9)	Mus musculus
Taok1	TAO kinase 1(Taok1)	Mus musculus
Ier5	immediate early response 5(Ier5)	Mus musculus
Dip2b	disco interacting protein 2 homolog B(Dip2b)	Mus musculus
Wbscr16	Williams-Beuren syndrome chromosome region 16 homolog (human)(Wbscr16)	Mus musculus
Bend3	BEN domain containing 3(Bend3)	Mus musculus
Fam214b	family with sequence similarity 214, member B(Fam214b)	Mus musculus
Kbtbd2	kelch repeat and BTB (POZ) domain containing 2(Kbtbd2)	Mus musculus
Nrep	neuronal regeneration related protein(Nrep)	Mus musculus
Zfp85	zinc finger protein 85(Zfp85)	Mus musculus
Pi15	peptidase inhibitor 15(Pi15)	Mus musculus
Zfp9	zinc finger protein 9(Zfp9)	Mus musculus
Ank2	ankyrin 2, brain(Ank2)	Mus musculus
Slfn3	schlafen 3(Slfn3)	Mus musculus
Ifnar2	interferon (alpha and beta) receptor 2(Ifnar2)	Mus musculus
6430550D23Rik	RIKEN cDNA 6430550D23 gene(6430550D23Rik)	Mus musculus
Ebf4	early B cell factor 4(Ebf4)	Mus musculus
Gpbp1	GC-rich promoter binding protein 1(Gpbp1)	Mus musculus
Trim44	tripartite motif-containing 44(Trim44)	Mus musculus
Zfp62	zinc finger protein 62(Zfp62)	Mus musculus
Il31ra	interleukin 31 receptor A(Il31ra)	Mus musculus
Zbtb39	zinc finger and BTB domain containing 39(Zbtb39)	Mus musculus
Arrb1	arrestin, beta 1(Arrb1)	Mus musculus

Col4a6	collagen, type IV, alpha 6(Col4a6)	Mus musculus
Shb	src homology 2 domain-containing transforming protein B(Shb)	Mus musculus
3110043O21Rik	RIKEN cDNA 3110043O21 gene(3110043O21Rik)	Mus musculus
Pou3f2	POU domain, class 3, transcription factor 2(Pou3f2)	Mus musculus
Etnk1	ethanolamine kinase 1(Etnk1)	Mus musculus
4933434E20Rik	RIKEN cDNA 4933434E20 gene(4933434E20Rik)	Mus musculus
R3hcc1l	R3H domain and coiled-coil containing 1 like(R3hcc1l)	Mus musculus
Phc1	polyhomeotic-like 1 (Drosophila)(Phc1)	Mus musculus
Adgrf5	adhesion G protein-coupled receptor F5(Adgrf5)	Mus musculus
Gm5464	predicted gene 5464(Gm5464)	Mus musculus
Ddi2	DNA-damage inducible protein 2(Ddi2)	Mus musculus
Edn1	endothelin 1(Edn1)	Mus musculus
Pou2f1	POU domain, class 2, transcription factor 1(Pou2f1)	Mus musculus
Lrrc7	leucine rich repeat containing 7(Lrrc7)	Mus musculus
Eda	ectodysplasin-A(Eda)	Mus musculus
Gm2832	predicted gene 2832(Gm2832)	Mus musculus
Xpot	exportin, tRNA (nuclear export receptor for tRNAs)(Xpot)	Mus musculus
Speer3	spermatogenesis associated glutamate (E)-rich protein 3(Speer3)	Mus musculus
Vwc2	von Willebrand factor C domain containing 2(Vwc2)	Mus musculus
Pak6	p21 protein (Cdc42/Rac)-activated kinase 6(Pak6)	Mus musculus
Rsf1	remodeling and spacing factor 1(Rsf1)	Mus musculus
Ldah	lipid droplet associated hydrolase(Ldah)	Mus musculus
Apba1	amyloid beta (A4) precursor protein binding, family A, member 1(Apba1)	Mus musculus
B020004C17Rik	RIKEN cDNA B020004C17 gene(B020004C17Rik)	Mus musculus
Ubtf	upstream binding transcription factor, RNA polymerase I(Ubtf)	Mus musculus
Mapre1	microtubule-associated protein, RP/EB family, member 1(Mapre1)	Mus musculus
Ebf1	early B cell factor 1(Ebf1)	Mus musculus
Plppr3	phospholipid phosphatase related 3(Plppr3)	Mus musculus
Vangl1	vang-like 1 (van gogh, Drosophila)(Vangl1)	Mus musculus
Pnn	pinin(Pnn)	Mus musculus
Mier3	MIER family member 3(Mier3)	Mus musculus
Zfp354a	zinc finger protein 354A(Zfp354a)	Mus musculus
Srp72	signal recognition particle 72(Srp72)	Mus musculus
Mafk	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein K (avian)(Mafk)	Mus musculus
Eif4g2	eukaryotic translation initiation factor 4, gamma 2(Eif4g2)	Mus musculus
Fam134a	family with sequence similarity 134, member A(Fam134a)	Mus musculus
Eif4a2	eukaryotic translation initiation factor 4A2(Eif4a2)	Mus musculus
Mtmr4	myotubularin related protein 4(Mtmr4)	Mus musculus
C2cd3	C2 calcium-dependent domain containing 3(C2cd3)	Mus musculus

Thtpa	thiamine triphosphatase(Thtpa)	Mus musculus
Pgm2l1	phosphoglucomutase 2-like 1(Pgm2l1)	Mus musculus
Eif2ak3	eukaryotic translation initiation factor 2 alpha kinase 3(Eif2ak3)	Mus musculus
Zcchc16	zinc finger, CCHC domain containing 16(Zcchc16)	Mus musculus
Rbak	RB-associated KRAB zinc finger(Rbak)	Mus musculus
Ntmt1	N-terminal Xaa-Pro-Lys N-methyltransferase 1(Ntmt1)	Mus musculus
Zfp872	zinc finger protein 872(Zfp872)	Mus musculus
Lyn	LYN proto-oncogene, Src family tyrosine kinase(Lyn)	Mus musculus
Abi3	ABI gene family, member 3(Abi3)	Mus musculus
Srek1	splicing regulatory glutamine/lysine-rich protein 1(Srek1)	Mus musculus
Zfp266	zinc finger protein 266(Zfp266)	Mus musculus
Adam19	a disintegrin and metallopeptidase domain 19 (meltrin beta)(Adam19)	Mus musculus
Marcks	myristoylated alanine rich protein kinase C substrate(Marcks)	Mus musculus
Efna5	ephrin A5(Efna5)	Mus musculus
5330417C22Rik	RIKEN cDNA 5330417C22 gene(5330417C22Rik)	Mus musculus
Prox1	prospero homeobox 1(Prox1)	Mus musculus
Gm10797	predicted gene 10797(Gm10797)	Mus musculus
Arhgap29	Rho GTPase activating protein 29(Arhgap29)	Mus musculus
Gk5	glycerol kinase 5 (putative)(Gk5)	Mus musculus
Ascc2	activating signal cointegrator 1 complex subunit 2(Ascc2)	Mus musculus
Gm6793	heterogeneous nuclear ribonucleoprotein A3 pseudogene(Gm6793)	Mus musculus
Necab2	N-terminal EF-hand calcium binding protein 2(Necab2)	Mus musculus
Ube3b	ubiquitin protein ligase E3B(Ube3b)	Mus musculus
Fam172a	family with sequence similarity 172, member A(Fam172a)	Mus musculus
Gm10447	predicted gene 10447(Gm10447)	Mus musculus
Stx8	syntaxin 8(Stx8)	Mus musculus
Tmem8b	transmembrane protein 8B(Tmem8b)	Mus musculus
Kansl1l	KAT8 regulatory NSL complex subunit 1-like(Kansl1l)	Mus musculus
Zfp626	zinc finger protein 626(Zfp626)	Mus musculus
Cdc42bpg	CDC42 binding protein kinase gamma (DMPK-like)(Cdc42bpg)	Mus musculus
Nop58	NOP58 ribonucleoprotein(Nop58)	Mus musculus
B3galt2	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 2(B3galt2)	Mus musculus
Snx12	sorting nexin 12(Snx12)	Mus musculus
Lmnb1	lamin B1(Lmnb1)	Mus musculus
Hnrnpa3	heterogeneous nuclear ribonucleoprotein A3(Hnrnpa3)	Mus musculus
Smek1	SMEK homolog 1, suppressor of mek1 (Dictyostelium)(Smek1)	Mus musculus
Abi1	abl-interactor 1(Abi1)	Mus musculus
Glyctk	glycerate kinase(Glyctk)	Mus musculus
Srgn	serglycin(Srgn)	Mus musculus

Esp1	exocrine gland secreted peptide 1(Esp1)	Mus musculus
Cabyr	calcium-binding tyrosine-(Y)-phosphorylation regulated (fibrousheathin 2)(Cabyr)	Mus musculus
Hrnr	hornerin(Hrnr)	Mus musculus
Elf1	E74-like factor 1(Elf1)	Mus musculus
Plppr4	phospholipid phosphatase related 4(Plppr4)	Mus musculus
Gm7145	predicted gene 7145(Gm7145)	Mus musculus
Elf5	E74-like factor 5(Elf5)	Mus musculus
Gm8882	predicted gene 8882(Gm8882)	Mus musculus
Henmt1	HEN1 methyltransferase homolog 1 (Arabidopsis)(Henmt1)	Mus musculus
Gpr22	G protein-coupled receptor 22(Gpr22)	Mus musculus
Dok4	docking protein 4(Dok4)	Mus musculus
4933402J07Rik	RIKEN cDNA 4933402J07 gene(4933402J07Rik)	Mus musculus
Rc3h2	ring finger and CCCH-type zinc finger domains 2(Rc3h2)	Mus musculus
Xlr5a	X-linked lymphocyte-regulated 5A(Xlr5a)	Mus musculus
Enah	enabled homolog (Drosophila)(Enah)	Mus musculus
Enam	enamelin(Enam)	Mus musculus
Tnfrsf26	tumor necrosis factor receptor superfamily, member 26(Tnfrsf26)	Mus musculus
Rab11a	RAB11A, member RAS oncogene family(Rab11a)	Mus musculus
Ephb1	Eph receptor B1(Ephb1)	Mus musculus
Gm498	predicted gene 498(Gm498)	Mus musculus
Alg10b	asparagine-linked glycosylation 10B (alpha-1,2-glucosyltransferase)(Alg10b)	Mus musculus
E130114P18Rik	RIKEN cDNA E130114P18 gene(E130114P18Rik)	Mus musculus
Zranb2	zinc finger, RAN-binding domain containing 2(Zranb2)	Mus musculus
Vstm2a	V-set and transmembrane domain containing 2A(Vstm2a)	Mus musculus
Ankrd61	ankyrin repeat domain 61(Ankrd61)	Mus musculus
Zfp846	zinc finger protein 846(Zfp846)	Mus musculus
D17H6S53E	DNA segment, Chr 17, human D6S53E(D17H6S53E)	Mus musculus
Dgcr2	DiGeorge syndrome critical region gene 2(Dgcr2)	Mus musculus
Rnf128	ring finger protein 128(Rnf128)	Mus musculus
Edc3	enhancer of mRNA decapping 3(Edc3)	Mus musculus
Tmsb4x	thymosin, beta 4, X chromosome(Tmsb4x)	Mus musculus
Ptpn12	protein tyrosine phosphatase, non-receptor type 12(Ptpn12)	Mus musculus
Grm5	glutamate receptor, metabotropic 5(Grm5)	Mus musculus
Egln3	egl-9 family hypoxia-inducible factor 3(Egln3)	Mus musculus
Zbtb4	zinc finger and BTB domain containing 4(Zbtb4)	Mus musculus
Ptpn14	protein tyrosine phosphatase, non-receptor type 14(Ptpn14)	Mus musculus
Sumo2	small ubiquitin-like modifier 2(Sumo2)	Mus musculus
Adamtsl3	ADAMTS-like 3(Adamtsl3)	Mus musculus
Mtap	methylthioadenosine phosphorylase(Mtap)	Mus musculus

Sdc2	syndecan 2(Sdc2)	Mus musculus
Zfp617	zinc finger protein 617(Zfp617)	Mus musculus
Ptprb	protein tyrosine phosphatase, receptor type, B(Ptprb)	Mus musculus
Gucy1b3	guanylate cyclase 1, soluble, beta 3(Gucy1b3)	Mus musculus
Hspa1b	heat shock protein 1B(Hspa1b)	Mus musculus
Ptch1	patched 1(Ptch1)	Mus musculus
Macro2	MACRO domain containing 2(Macro2)	Mus musculus
Lym7	LYR motif containing 7(Lym7)	Mus musculus
Plcz1	phospholipase C, zeta 1(Plcz1)	Mus musculus
Pter	phosphotriesterase related(Pter)	Mus musculus
Cttnbp2	cortactin binding protein 2(Cttnbp2)	Mus musculus
Rfesd	Rieske (Fe-S) domain containing(Rfesd)	Mus musculus
Zhx2	zinc fingers and homeoboxes 2(Zhx2)	Mus musculus
Klrk1	killer cell lectin-like receptor subfamily K, member 1(Klrk1)	Mus musculus
Gak	cyclin G associated kinase(Gak)	Mus musculus
Pycard	PYD and CARD domain containing(Pycard)	Mus musculus
Ypel5	yippee-like 5 (Drosophila)(Ypel5)	Mus musculus
Spcs1	signal peptidase complex subunit 1 homolog (S. cerevisiae)(Spcs1)	Mus musculus
Smim7	small integral membrane protein 7(Smim7)	Mus musculus
Brd1	bromodomain, testis-specific(Brd1)	Mus musculus
Tmem170	transmembrane protein 170(Tmem170)	Mus musculus
Ogt	O-linked N-acetylglucosamine (GlcNAc) transferase (UDP-N-acetylglucosamine:polypeptide-	Mus musculus
Ddx3y	DEAD (Asp-Glu-Ala-Asp) box polypeptide 3, Y-linked(Ddx3y)	Mus musculus
Zscan29	zinc finger SCAN domains 29(Zscan29)	Mus musculus
Hmcn1	hemicentin 1(Hmcn1)	Mus musculus
Hnrnpu	heterogeneous nuclear ribonucleoprotein U(Hnrnpu)	Mus musculus
Pcdh7	protocadherin 7(Pcdh7)	Mus musculus
Fam175a	family with sequence similarity 175, member A(Fam175a)	Mus musculus
Anxa7	annexin A7(Anxa7)	Mus musculus
Rbm8a2	RNA binding motif protein 8A2(Rbm8a2)	Mus musculus
Elavl4	ELAV (embryonic lethal, abnormal vision, Drosophila)-like 4 (Hu antigen D)(Elavl4)	Mus musculus
Ptprd	protein tyrosine phosphatase, receptor type, D(Ptprd)	Mus musculus
Rab21	RAB21, member RAS oncogene family(Rab21)	Mus musculus
Dld	dihydrolipoamide dehydrogenase(Dld)	Mus musculus
Rbm38	RNA binding motif protein 38(Rbm38)	Mus musculus
Ap1g1	adaptor protein complex AP-1, gamma 1 subunit(Ap1g1)	Mus musculus
Dmd	dystrophin, muscular dystrophy(Dmd)	Mus musculus
Mblac2	metallo-beta-lactamase domain containing 2(Mblac2)	Mus musculus
Wac	WW domain containing adaptor with coiled-coil(Wac)	Mus musculus

Arfgef2	ADP-ribosylation factor guanine nucleotide-exchange factor 2 (brefeldin A-inhibited)(Arfgef	Mus musculus
Zfyve27	zinc finger, FYVE domain containing 27(Zfyve27)	Mus musculus
C2cd2	C2 calcium-dependent domain containing 2(C2cd2)	Mus musculus
Gm15140	predicted gene 15140(Gm15140)	Mus musculus
Purb	purine rich element binding protein B(Purb)	Mus musculus
Cilp	cartilage intermediate layer protein, nucleotide pyrophosphohydrolase(Cilp)	Mus musculus
St6galnac5	ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1,3)-N-acetylgalactosaminide alpha-2,6	Mus musculus
Ap1m2	adaptor protein complex AP-1, mu 2 subunit(Ap1m2)	Mus musculus
Prpf40a	pre-mRNA processing factor 40A(Prpf40a)	Mus musculus
Ptbp2	polypyrimidine tract binding protein 2(Ptbp2)	Mus musculus
Cnot6l	CCR4-NOT transcription complex, subunit 6-like(Cnot6l)	Mus musculus
Xlr5c	X-linked lymphocyte-regulated 5C(Xlr5c)	Mus musculus
Gtf3c1	general transcription factor III C 1(Gtf3c1)	Mus musculus
Crocc2	ciliary rootlet coiled-coil, rootletin family member 2(Crocc2)	Mus musculus
Vapa	vesicle-associated membrane protein, associated protein A(Vapa)	Mus musculus
Sbspon	somatomedin B and thrombospondin, type 1 domain containing(Sbspon)	Mus musculus
Matr3	matrin 3(Mat3)	Mus musculus
Parp1	poly (ADP-ribose) polymerase family, member 1(Parp1)	Mus musculus
Ran	RAN, member RAS oncogene family(Ran)	Mus musculus
Xrcc2	X-ray repair complementing defective repair in Chinese hamster cells 2(Xrcc2)	Mus musculus
Ranbp2	RAN binding protein 2(Ranbp2)	Mus musculus
Piezo2	piezo-type mechanosensitive ion channel component 2(Piezo2)	Mus musculus
Kdm4b	lysine (K)-specific demethylase 4B(Kdm4b)	Mus musculus
Fam35a	family with sequence similarity 35, member A(Fam35a)	Mus musculus
Kctd13	potassium channel tetramerisation domain containing 13(Kctd13)	Mus musculus
Nt5c1b	5'-nucleotidase, cytosolic 1B(Nt5c1b)	Mus musculus
Rhog	ras homolog family member G(Rhog)	Mus musculus
Mbd2	methyl-CpG binding domain protein 2(Mbd2)	Mus musculus
Rbm25	RNA binding motif protein 25(Rbm25)	Mus musculus
Arid3a	AT rich interactive domain 3A (BRIGHT-like)(Arid3a)	Mus musculus
Thoc1	THO complex 1(Thoc1)	Mus musculus
Phrf1	PHD and ring finger domains 1(Phrf1)	Mus musculus
Mbl2	mannose-binding lectin (protein C) 2(Mbl2)	Mus musculus
Hoxa1	homeobox A1(Hoxa1)	Mus musculus
Mbp	myelin basic protein(Mbp)	Mus musculus
Eif4b	eukaryotic translation initiation factor 4B(Eif4b)	Mus musculus
Ces1h	carboxylesterase 1H(Ces1h)	Mus musculus
Tspan5	tetraspanin 5(Tspan5)	Mus musculus
Ptpdc1	protein tyrosine phosphatase domain containing 1(Ptpdc1)	Mus musculus

Nprl3	nitrogen permease regulator-like 3(Nprl3)	Mus musculus
Mfsd7b	major facilitator superfamily domain containing 7B(Mfsd7b)	Mus musculus
Fam120a	family with sequence similarity 120, member A(Fam120a)	Mus musculus
Slco6d1	solute carrier organic anion transporter family, member 6d1(Slco6d1)	Mus musculus
Zfp87	zinc finger protein 87(Zfp87)	Mus musculus
Zfp521	zinc finger protein 521(Zfp521)	Mus musculus
Usp25	ubiquitin specific peptidase 25(Usp25)	Mus musculus
Zfp182	zinc finger protein 182(Zfp182)	Mus musculus
Onecut1	one cut domain, family member 1(Onecut1)	Mus musculus
Vma21	VMA21 vacuolar H ⁺ -ATPase homolog (<i>S. cerevisiae</i>)(Vma21)	Mus musculus
Hnrnpa1	heterogeneous nuclear ribonucleoprotein A1(Hnrnpa1)	Mus musculus
Rab23	RAB23, member RAS oncogene family(Rab23)	Mus musculus
Tor1b	torsin family 1, member B(Tor1b)	Mus musculus
Slc25a53	solute carrier family 25, member 53(Slc25a53)	Mus musculus
Samd10	sterile alpha motif domain containing 10(Samd10)	Mus musculus
Veph1	ventricular zone expressed PH domain-containing 1(Veph1)	Mus musculus
Hmga2	high mobility group AT-hook 2(Hmga2)	Mus musculus
Spag9	sperm associated antigen 9(Spag9)	Mus musculus
Meis1	Meis homeobox 1(Meis1)	Mus musculus
Sdha	succinate dehydrogenase complex, subunit A, flavoprotein (Fp)(Sdha)	Mus musculus
Fam117b	family with sequence similarity 117, member B(Fam117b)	Mus musculus
Acan	aggreCAN(Acan)	Mus musculus
Zfp964	zinc finger protein 964(Zfp964)	Mus musculus
Ythdf3	YTH domain family 3(Ythdf3)	Mus musculus
Fam188a	family with sequence similarity 188, member A(Fam188a)	Mus musculus
Vmn2r45	vomer nasal 2, receptor 45(Vmn2r45)	Mus musculus
Hmgxb4	HMG box domain containing 4(Hmgxb4)	Mus musculus
4921507P07Rik	RIKEN cDNA 4921507P07 gene(4921507P07Rik)	Mus musculus
Otud7b	OTU domain containing 7B(Otud7b)	Mus musculus
Arhgef10l	Rho guanine nucleotide exchange factor (GEF) 10-like(Arhgef10l)	Mus musculus
Mef2d	myocyte enhancer factor 2D(Mef2d)	Mus musculus
Mecp2	methyl CpG binding protein 2(Mecp2)	Mus musculus
Dsg1a	desmoglein 1 alpha(Dsg1a)	Mus musculus
Rpl27-ps3	ribosomal protein L27, pseudogene 3(Rpl27-ps3)	Mus musculus
Zfp560	zinc finger protein 560(Zfp560)	Mus musculus
Smrce1	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily e, r	Mus musculus
Dtna	dystrobrevin alpha(Dtna)	Mus musculus
Ttc26	tetratricopeptide repeat domain 26(Ttc26)	Mus musculus
Gps2	G protein pathway suppressor 2(Gps2)	Mus musculus

Cd46	CD46 antigen, complement regulatory protein(Cd46)	Mus musculus
Trpv3	transient receptor potential cation channel, subfamily V, member 3(Trpv3)	Mus musculus
Zfp248	zinc finger protein 248(Zfp248)	Mus musculus
Ggcx	gamma-glutamyl carboxylase(Ggcx)	Mus musculus
Fam168a	family with sequence similarity 168, member A(Fam168a)	Mus musculus
Zfp74	zinc finger protein 74(Zfp74)	Mus musculus
Myf2	myeloid leukemia factor 2(Myf2)	Mus musculus
Inpp5j	inositol polyphosphate 5-phosphatase J(Inpp5j)	Mus musculus
Hoxc9	homeobox C9(Hoxc9)	Mus musculus
Yy2	Yy2 transcription factor(Yy2)	Mus musculus
Obox2	oocyte specific homeobox 2(Obox2)	Mus musculus
March9	Membrane Associated Ring-CH-Type Finger 9 (March9)	Mus musculus
Unmapped Id	Gm42715	
Unmapped Id	Gm21987	
Unmapped Id	C030039L03Rik	
Unmapped Id	Gm28551	
Unmapped Id	Gm17296	
Unmapped Id	RP23-281H4.10	
Unmapped Id	Gm20683	
Unmapped Id	RP23-95K12.13	
Unmapped Id	A330050F15Rik	
Unmapped Id	Gm26965	
Unmapped Id	Gm15262	
Unmapped Id	Gm26920	
Unmapped Id	Zfp607	
Unmapped Id	Gm28557	
Unmapped Id	1700049G17Rik	
Unmapped Id	Gm28168	

Mapped genes were used for pathway analysis.