Supplementary Table 1: List of 113 differentially expressed genes in BAL for genotype effects test by edgeR PiMZ.off.avg PiMZ.off.sd PiMZ.off.cv PiZZ.off.avg PiZZ.off.sd PiZZ.off.cv FC logFC logCPM **PValue** FDR SCN10A 204.656917 405.053239 1.97918177 12.8455855 8.21292296 0.63935762 15.9320816 -3.9938629 2.52872095 2.72E-15 4.47E-11 TNFSF15 14.280638 8.83072711 0.61837063 175.512884 818.091292 4.66114666 12.2902691 3.6194446 1.93675841 1.40E-13 1.15E-09 CXCL8 360.27726 337.236652 0.93604757 5772.75738 29095.2728 5.04009971 16.0230967 4.00208109 6.97304097 5.74E-13 3.14E-09 6.79003427 9.32915881 1.37394871 156.883446 709.977612 4.52551006 23.1049564 4.53013046 1.69934714 8.02F-11 PI3 3.29F-07 G0S2 49.0383721 38.8420672 0.79207497 431.3571 1917.99491 4.44642016 8.79631771 3.13689971 3.30035043 1.37E-10 4.49E-07 PROK2 14.6129297 21.0056991 1.4374735 128.92163 599.877258 4.65303811 8.82243555 3.14117699 1.50119945 1.82E-10 4.52E-07 RNU5A-1 1.93F-10 4.52F-07 ADGRG3 26.8559981 19.9454638 0.74268191 158.245876 614.410895 3.88263449 5.89238483 2.55885166 1.92568167 2.55E-10 5.23E-07 EGR3 32.46861 18.7852373 0.57856611 177.972335 746.461659 4.1942567 5.48136602 2.45453547 2.11841186 1.59E-09 2.90E-06 476.864626.851.910472.1.78648284.105.792169.119.568023.1.1302162.4.50756073.-2.1723469.3.89467862 AKAP12 2.04F-08 3.35F-05 RNU2-1 31.6308104 29.0069623 0.91704771 191.957658 698.553346 3.63910122 6.06869236 2.60138569 2.26661204 2.61E-08 3.90E-05 CCL3L1 182.355215 103.573995 0.56797934 606.36064 1635.30121 2.69691187 3.32516205 1.73342465 4.08164548 4.26E-08 5.83E-05 15.4383387 11.2800735 0.73065332 43.923662 44.3075955 1.00874093 2.84510288 1.50848082 9.52E-08 0.00011326 **BMPER** 0.4553928 CCL3L3 35.9266346 35.9968669 1.00195488 165.678609 487.897202 2.94484125 4.61158165 2.20526164 2.0843916 1.00E-07 0.00011326 RNU2-2P 11.4803745 33.793025 2.94354728 119.963279 432.224025 3.60296941 10.4494221 3.38535125 1.51294102 1.03E-07 0.00011326 413.771517 214.177387 0.51762236 1146.38513 2953.18742 2.57608665 2.77057525 1.47018555 5.07226675 3.95E-07 0.00040571 CCL4L2 CXCR1 32.9497939 32.7889841 0.99511955 119.362223 400.417459 3.35464143 3.62254841 1.85700497 1.66102733 4.41E-07 0.00042611 CCL3 132.723945 85.0951424 0.64114386 424.250605 1132.18221 2.66866374 3.19648881 1.67648804 3.58511618 4.74E-07 0.00043248 1.279859 25.357979 109.191479 4.30600086 4.47377483 2.16149265 CYP4F3 5.66813932 7.2544191 -0.6468801 5.90E-07 0.00050961 CCI 4I 1 413.725533 212.067184 0.5125794 1117.20395 2875.65121 2.57397157 2.70035051 1.43314668 5.04461587 6.69E-07 0.00054906 NRXN2 61.6009587 34.4068294 0.55854373 136.659225 116.209936 0.85036291 2.21845938 1.14955814 2.14491938 8.20E-07 0.00064108 46.3688961 20.8209853 0.44902913 84.4891886 49.3101529 0.58362678 1.82210912 0.86560936 1.56798664 RNF126P1 1.03E-06 0.00076931 SLAMF7 300.161073 292.245045 0.9736274 716.010463 1208.77655 1.68821074 2.38542078 1.25424378 4.40506845 1.10E-06 0.00078269 ADORA2A 2.2943065 112.474491 301.010649 2.67625704 2.12804169 1.08952642 1.65005028 1.21E-06 0.00082512 CHST15 88.5986393 277.927553 3.13692801 127.883744 300.91094 2.35300384 1.44340528 0.52947644 1.89169149 1.55E-06 0.00100707 IRAK2 118.78061 39.1240178 0.32938051 295.862591 851.775333 2.87895584 2.49083239 1.31662795 3.15588097 1.59E-06 0.00100707 CXCL1 32.3555189 33.1030971 1.02310512 130.131158 512.679146 3.93971094 4.02191534 2.00788271 1.79099213 2.07E-06 0.00125897 15.3749681 11.4366335 0.74384763 29.0571469 17.949735 0.61773908 1.88989966 0.91830964 0.05692405 MIR6807 2.76E-06 0.00161885 KCNJ15 39.6463612 31.4073402 0.79218721 127.109416 407.488788 3.20581118 3.20608027 1.68081055 1.82381255 3 76F-06 0 00212897 RNF11 1535.9032 356.715081 0.23225102 1214.13456 201.847847 0.16624833 1.26501893 -0.339159 6.00155091 4.01E-06 0.00219646 11.9137544 6.06078067 0.5087213 33.817952 100.94844 2.98505479 2.83856381 1.50516117 0.14030713 KCNH6 5.34E-06 0.00269665 FFAR2 139.342054 78.4381693 0.56291814 305.980672 486.920209 1.59134303 2.1958961 1.13480979 3.28838748 5.36E-06 0.00269665 268.719071 137.285125 0.51088717 651.857901 1618.05656 2.48222283 2.42579694 1.27845879 4.31695777 5.42E-06 0.00269665 CCL4 ZNF691 288.490866 72.7647064 0.25222534 414.696572 198.219094 0.47798585 1.43746864 0.52353048 3.98716009 7.60E-06 0.00367134 EXD2 1008.82322 196.909372 0.19518719 848.315355 138.237205 0.16295497 1.18920778 -0.2500008 5.44535682 9.42F-06 0.0044221 NKG7 302.466054 1371.6911 4.53502496 221.9731 388.543075 1.75040613 1.36262481 -0.4463884 9.98E-06 0.0045536 AI PI 27.2557969 31.2105911 1.1450992 101.311692 380.211671 3.75289037 3.71706951 1.89416567 1.43966698 1.34E-05 0.00595064 TNFRSF8 16.0579501 48.7887293 3.03829125 19.6569282 27.4560918 1.39676411 1.22412438 0.29175015 -0.5681207 1.43E-05 0.00616386 MMP25 47.0499826 64.1899473 1.36429269 86.5090302 201.162771 2.32533842 1.83866232 0.87865655 1.44296296 1.91E-05 0.00806084 IFITM2 543.539122 661.947925 1.2178478 792.79926 1009.86607 1.27379794 1.4585873 0.54457174 4.76841906 2.28E-05 0.00936706 CD8B 93.8812369 313.945808 3.34407405 113.089351 195.297058 1.72692703 1.20460014 0.26855433 1.79047157 2.63E-05 0.01052116 NFKB2 493.384075 466.233695 0.94497111 685.905394 596.678097 0.86991311 1.39020578 0.47529845 4.62583062 3.13E-05 0.01223621 TNIP1 1350.77031 739.595707 0.54753625 1755.88389 989.228932 0.56337947 1.299913 0.37841507 6.06881794 3.42E-05 0.01307434 SPHK1 31.435843 35.8941893 1.14182366 53.9567798 50.9772937 0.94478014 1.71640951 0.7793938 0.86425282 3.56F-05 0.01327324 3.74E-05 0.01361529 HMOX1 3830.05356 1152.87665 0.30100797 5525.95229 3513.17229 0.63575871 1.44278721 0.52885854 7.71608393 **GAMT** 12.823383 41.2015269 3.2129998 14.9258358 13.3926976 0.89728293 1.16395461 0.2190348 3.81E-05 0.01361529 CCDC73 393.425625 89.1934408 0.22670979 302.916959 87.6262577 0.28927485 1.29879036 -0.3771686 4.0356634 4.00F-05 0.01398247 C5orf45 233.837833 77.8668904 0.33299526 340.650618 197.461823 0.57966084 1.45678146 0.54278446 3.6796416 4.82E-05 0.01649077 ISG20 228.819061 615.141741 2.6883326 273.156069 303.745722 1.11198599 1.19376449 0.25551824 3.15122109 5.15E-05 0.01724758 APOBEC3A 96.5114759 227.707894 2.35938671 137.554809 232.998966 1.69386274 1.42526894 0.51123418 2.12135158 5.60E-05 0.01839441 CXCR4 945.693147 638.503883 0.67517026 1597.09528 2792.72485 1.74862757 1.6888092 0.75600634 5.76480135 5.74E-05 0.01847039 CYCS 1945.41891 517.914039 0.26622237 1587.4053 322.026739 0.20286359 1.22553384 -0.2934103 6.37495051 6.98E-05 0.02202776 TNFRSF10C 123.92044 55.9473722 0.45147816 219.588533 381.137033 1.73568732 1.77201221 0.82538854 2.9041889 7.69E-05 0.02381902 BPNT1 795.71052 187.669595 0.2358516 647.506865 135.456655 0.20919725 1.22888353 -0.2973482 5.08238397 8.43E-05 0.02529457 HLA-E 14375.261 0.36239235 49194.3706 12984.1623 0.26393594 1.24016278 0.3105295 10.9419855 8.49E-05 0.02529457 UBALD2 856.356568 493.398447 0.57616006 1105.32124 552.576582 0.49992397 1.29072547 0.36818218 5.40779874 8.74E-05 0.02529457 BAG4 828.787277 203.349435 0.24535782 684.948499 119.013722 0.17375572 1.20999941 -0.2750063 5.15184358 8.81E-05 0.02529457 $66.6005813 \quad 76.4063372 \quad 1.14723229 \quad 174.085639 \quad 308.521278 \quad 1.77223854 \quad 2.61387566 \quad 1.38619052 \quad 2.40080604 \quad 1.0866981 \quad 1.0966981 \quad 1.09669$ SDS 9.04E-05 0.02529457 ADORA2A-A; 18.3042393 37.9202615 2.07166553 34.3292828 92.1661815 2.68476863 1.87548263 0.9072619 0.05807168 9.09E-05 0.02529457 MCMDC2 139.388888 34.1087423 0.24470202 102.598093 30.4801939 0.29708344 1.35859141 -0.4421116 2.51815986 9.26E-05 0.02535284 2317.44487 632.308701 0.27284736 1898.91505 362.20907 0.19074527 1.22040471 -0.2873597 6.62874802 0.00010122 0.02695905 DECR1 TSPAN7 89.1044082 62.9412218 0.70637607 44.4670862 28.1502533 0.6330582 2.00382836 -1.0027589 1.71297436 0.00010178 0.02695905 FCF1 779.186011 183.815921 0.23590763 621.921966 137.972111 0.22184795 1.25286781 -0.3252342 5.03667117 0.00010475 0.02730527 32.5023539 28.3390687 0.87190819 15.1577484 10.3265177 0.6812699 2.14427322 -1.1004887 0.27729827 0.00010762 FAM212A TNFRSF1B 2139.23291 2811.97988 1.31448047 2399.18848 1611.52918 0.67169761 1.12151812 0.16545293 6.51819115 0.00010928 0.0274892 23.2938303 45.5832139 1.95687928 29.4961935 20.8475113 0.7067865 1.26626635 0.3405809 0.1158186 0.00011048 0.0274892 NTNG2 123.931599 53.6000592 0.43249712 83.8395707 35.6321428 0.42500388 1.47819935 -0.5638408 2.33624758 0.00011969 0.02933685 SPA17 **МОВЗВ** 3793.16616 1123.50503 0.29619189 3114.45916 681.310282 0.21875717 1.21792131 -0.2844209 7.34372297 0.0001244 0.03004239

C20orf202	87.9651047	61.4753315	0.69886044	49.4391187	29.5275939	0.59725162	1.77926118	-0.8312783	1.7614212	0.00012994	0.03054596
SUMO2							1.20030141				0.03054596
PRSS36	226.193493	84.9510242	0.37556794	340.268602	155.270406	0.45631717	1.50432534	0.58911661	3.68108458	0.00013394	0.03058739
ADAM8	334.128124	870.697108	2.60587794	351.053159	356.714714	1.01612734	1.05065433	0.07128809	3.59774151	0.00013411	0.03058739
TLR9	25.5535521	27.5000601	1.07617368	37.1166574	22.7610222	0.61322931	1.45250481	0.53854295	0.47007775	0.00014659	0.03245545
FAM107B	3432.39458	871.287274	0.2538424	2693.21938	667.821793	0.24796413	1.27445785	-0.3498837	7.15150046	0.00014736	0.03245545
AQP12B	6.52904232	5.42376072	0.83071306	14.7602513	14.3682789	0.97344405	2.26070695	1.17677399	-0.8376206	0.00014967	0.03245545
APOBEC3B-A	41.1069409	85.3728012	2.07684638	60.4655	95.359742	1.57709342	1.47093164	0.5567302	0.97806623	0.00015132	0.03245545
FOXL1	11.1461145	8.08487306	0.72535349	21.6248361	17.8777009	0.82672076	1.94012327	0.95614832	-0.2714364	0.00015218	0.03245545
TNFAIP6	94.0291468	71.1272434	0.75643825	219.587428	557.56583	2.53915188	2.33531235	1.22361552	2.7900676	0.00015521	0.032678
DYSF	273.657592	424.276163	1.55039062	450.075164	600.590578	1.33442284	1.64466537	0.71779408	3.86025779	0.00017271	0.03590096
AMDHD2	507.064658	132.335509	0.2609835	681.458354	268.941335	0.39465557	1.34392792	0.42645577	4.73768082	0.00018832	0.03811233
GRIP2	287.962504	153.107124	0.53169118	177.343398	96.282127	0.54291351	1.62375655	-0.6993353	3.4951768	0.00018928	0.03811233
ADAMDEC1	18.6852431	26.3611165	1.41079869	60.9467318	167.069495	2.74123796	3.2617575	1.70564953	0.81367588	0.00019138	0.03811233
CNIH1	1051.77219	288.469128	0.27426959	829.922981	210.40198	0.25351989	1.26731301	-0.3417729	5.46538944	0.00019281	0.03811233
LAMB3	39.7948713	34.2702752	0.86117316	90.2374439	205.176565	2.27374088	2.26756466	1.18114369	1.52196594	0.00019495	0.03811233
MIR6797	136.213674	147.39558	1.08209092	258.6882	257.668992	0.99606009	1.89913532	0.92534271	3.06459992	0.00019941	0.03843322
FOLR3	1655.09042	3186.73208	1.92541268	4820.47904	7541.21139	1.5644112	2.91251703	1.54226649	7.13852024	0.00020127	0.03843322
TREML4	7.92390702	10.6945894	1.34966114	17.7163029	23.4762922	1.32512367	2.23580398	1.16079371	-0.7014185	0.00020783	0.0391851
LAG3	61.1561562	69.3391168	1.13380436	116.239035	173.830923	1.49546083	1.9006923	0.92652499	1.91689001	0.00020998	0.0391851
TAP1	2936.8782	1034.84379	0.35236183	3813.73706	1562.43527	0.40968615	1.29856834	0.37692194	7.22393888	0.0002143	0.03927634
PFKFB3	907.057761	225.069739	0.24813165	1212.13014	599.575728	0.49464633	1.33633181	0.41827827	5.57365172	0.00021525	0.03927634
RGL1	108.293	53.060028	0.48996729	179.076576	181.383335	1.01288141	1.65363021	0.72563665	2.68378485	0.00022346	0.03995248
FEZ2	1424.84252	343.066142	0.24077478	1193.05437	253.155429	0.21219102	1.19428129	-0.2561427	5.94071013	0.00022382	0.03995248
MMP23A	20.0643067	56.5976838	2.82081433	22.1125728	22.5179774	1.01833367	1.10208507	0.14023559	-0.2771502	0.00023057	0.0407149
SH3D21	55.753962	30.2115837	0.54187331	106.035703	163.141177	1.53854949	1.90185054	0.92740388	1.84729028	0.00023493	0.04097865
VAPA	3711.84502	921.87269	0.24835969	3036.14605	724.368923	0.23858171	1.22255154	-0.2898953	7.30346705	0.00023706	0.04097865
PTGS2	129.265595	65.0723223	0.50340017	289.337308	1028.538	3.55480602	2.23831645	1.16241402	3.18517398	0.00024193	0.04138521
DBN1	30.4004831	58.665515	1.92975601	39.3582334	29.5412104	0.75057257	1.29465816	0.37257122	0.48301954	0.00025078	0.04221217
SLAIN2	1661.46346	344.61239	0.20741497	1405.75503	249.785776	0.17768798	1.18190113	-0.2411094	6.16104831	0.00025409	0.04221217
KRT13	17.5099741	57.3628503	3.27601	4.24421051	4.08931786	0.96350496	4.12561396	-2.0446088	-0.7069425	0.00025564	0.04221217
PSMB9	1421.32287	574.52216	0.4042165	2019.18173	1363.50076	0.67527392	1.4206355	0.50653645	6.2533148	0.00025705	0.04221217
HIST1H2BC	22.3158129	16.5846083	0.74317742	39.281733	29.5760053	0.75292007	1.76026449	0.81579222	0.48160309	0.00027218	0.04425475
LAD1	21.5803238	13.6079429	0.63057177	40.6921989	29.5671367	0.72660455	1.88561577	0.91503573	0.54111249	0.00027693	0.04441484
MPP2	9.56203699	7.38897586	0.77274077	15.3926573	11.0561538	0.71827454	1.6097676	0.68685242	-0.7268561	0.00027857	0.04441484
IFITM1	607.073215	1682.16879	2.77094878	607.218244	578.905807	0.95337354	1.0002389	0.00034462	4.3872623	0.00028259	0.04462213
HBZ	21.0090788	93.296755	4.44078277	23.0909608	63.5542228	2.75234206	1.0990944	0.1363153	-0.5087941	0.00028683	0.0447022
HDGFL1	29.755752	19.4035278	0.65209335	16.0681881	9.61110453	0.59814489	1.8518424	-0.8889613	0.24384006	0.00028854	0.0447022
CD8A	337.175134	797.78308	2.36607923	464.203607	752.824706	1.6217554	1.3767433	0.46125959	3.88926119	0.00029724	0.0456063
HOOK3	1684.44893	472.017672	0.28022083	1358.53199	298.688073	0.21986091	1.23990377	-0.3102282	6.15327777	0.00029993	0.0456063
MIR5010	76.4784163	35.1510775	0.45962089	121.276555	60.9068238	0.50221433	1.58576185	0.66517612	2.17497406	0.00030283	0.0456239
GPX3	1871.81886	1242.0252	0.66353921	3036.17097	2145.57671	0.7066719	1.62204316	0.69781221	6.78635412	0.00032185	0.04804919
RPF1	988.206488	218.960962	0.2215741	804.192266	195.153444	0.24267013	1.22881869	-0.2972721	5.38922294	0.00032478	0.04805061
BRE-AS1	33.7316602	15.5340786	0.46051924	52.918232	48.6552936	0.91944292	1.5688001	0.64966154	0.97000764	0.00033737	0.04946666
TRIQK	1488.57272	508.691856	0.34173128	1158.12984	325.777665	0.28129632	1.28532456	-0.3621327	5.96327465	0.00034383	0.04996725