

Supplemental Table 4. Differentially expressed genes in the OB versus NZO *Beta1* cluster. Also shown are their assignment to biological function or cellular compartment, and association with cilia (according to *Cildb*) and B6-NZO QTL. Related to Figure 2.

Symbol	p-value	coef	FDR	Higher expressed in	ID	Entrez.Gene.Name	Annotation	Associated to cilia	Located in QTL
<i>Akap13</i>	3.05E-250	0.237	6.39E-248	NZO	ENSMUSG00000066406	A-kinase anchoring protein 13	Others	No	No
<i>Atf5</i>	2.06E-116	0.35	1.13E-114	NZO	ENSMUSG00000038539	activating transcription factor 5	Transcriptional regulator	No	No
<i>Atp5e</i>	5.62E-94	0.647	2.41E-92	NZO	ENSMUSG00000016252	ATP synthase. H+ transporting. mitochondrial F1 complex. epsilon subunit	Transporter	No	No
<i>Atp5mc1</i>	0.00E+00	0.852	0.00E+00	NZO	ENSMUSG00000006057	ATP synthase membrane subunit c locus 1	Transporter	No	Blood glucose / Insulin
<i>Atp5mg</i>	6.43E-13	0.359	3.34E-12	NZO	ENSMUSG00000038717	ATP synthase membrane subunit g	Enzyme	Yes	Pancreatic insulin
<i>Bace2</i>	4.76E-170	-0.241	4.77E-168	OB	ENSMUSG00000040605	beta-secretase 2	Peptidase	No	No
<i>BC004004/C6orf89</i>	0.00E+00	0.429	0.00E+00	NZO	ENSMUSG00000052712	chromosome 6 open reading frame 89	Golgi	No	C0
<i>Calr</i>	7.01E-243	0.672	1.39E-240	NZO	ENSMUSG00000003814	calreticulin	Transcription regulator	Yes	No
<i>Camk2n1</i>	2.76E-269	-0.504	6.28E-267	OB	ENSMUSG00000046447	calcium/calmodulin dependent protein kinase II inhibitor 1	Kinase	No	Lean mass
<i>Canx</i>	1.65E-47	0.757	2.90E-46	NZO	ENSMUSG00000020368	calnexin	Endoplasmatic reticulum	Yes	No
<i>Ccnd2</i>	4.35E-223	0.667	7.52E-221	NZO	ENSMUSG00000000184	cyclin D2	Chromatin	Yes	No
<i>Ckb</i>	3.84E-178	0.494	4.05E-176	NZO	ENSMUSG000000001270	creatine kinase B	Kinase	Yes	No
<i>Cox6a2</i>	8.46E-229	0.204	1.49E-226	NZO	ENSMUSG00000030785	cytochrome c oxidase subunit 6A2	Enzyme	Yes	No
<i>Cox8a</i>	7.08E-04	-0.242	1.50E-03	OB	ENSMUSG00000035885	cytochrome c oxidase subunit 8A	Enzyme	No	No
<i>Cst3</i>	0.00E+00	0.673	0.00E+00	NZO	ENSMUSG00000027447	cystatin C	Golgi	Yes	No
<i>Ddc</i>	1.15E-35	-0.241	1.52E-34	OB	ENSMUSG00000020182	dopa decarboxylase	Enzyme	Yes	No
<i>Dnaja1</i>	3.13E-69	0.262	8.69E-68	NZO	ENSMUSG00000028410	DnaJ heat shock protein family (Hsp40) member A1	Apoptosis	Yes	Body weight
<i>Dnabj9</i>	5.25E-189	0.323	6.25E-187	NZO	ENSMUSG00000014905	DnaJ heat shock protein family (Hsp40) member B9	Endoplasmatic reticulum	No	Body weight
<i>Edem2</i>	5.48E-222	0.243	9.37E-220	NZO	ENSMUSG00000038312	ER degradation enhancing alpha-mannosidase like protein 2	Enzyme	No	No
<i>Ero1b</i>	2.68E-11	-0.445	1.26E-10	OB	ENSMUSG00000057069	endoplasmic reticulum oxidoreductase 1 beta	Enzyme	Yes	No
<i>Fkbp11</i>	5.27E-252	0.287	1.12E-249	NZO	ENSMUSG00000003355	FKBP prolyl isomerase 11	Enzyme	No	No
<i>Fkbp2</i>	1.82E-91	0.659	7.38E-90	NZO	ENSMUSG00000056629	FKBP prolyl isomerase 2	Enzyme	Yes	No
<i>Ftl</i>	4.33E-69	0.418	1.19E-67	NZO	ENSMUSG00000050708	ferritin light chain	Enzyme	Yes	No
<i>Fxyd6</i>	0.00E+00	-0.397	0.00E+00	OB	ENSMUSG00000066705	FXYD domain containing ion transport regulator 6	Ion channel	No	Pancreatic insulin
<i>G6pc2</i>	5.39E-86	-0.542	2.00E-84	OB	ENSMUSG00000005232	glucose-6-phosphatase catalytic subunit 2	Phosphatase	No	No
<i>Gapdh</i>	5.70E-05	0.207	1.44E-04	NZO	ENSMUSG00000057666	glyceraldehyde-3-phosphate dehydrogenase	Enzyme	Yes	No
<i>Gcg</i>	2.42E-32	0.393	2.89E-31	NZO	ENSMUSG00000000394	glucagon	Hormone activity	No	No
<i>Gfpt1</i>	2.65E-60	0.201	6.12E-59	NZO	ENSMUSG00000029992	glutamine--fructose-6-phosphate transaminase 1	Enzyme	No	Arginine
<i>Glp1r</i>	8.66E-87	-0.456	3.29E-85	OB	ENSMUSG00000024027	glucagon like peptide 1 receptor	G-protein coupled receptor	No	No
<i>Gm8797</i>	0.00E+00	0.356	0.00E+00	NZO	ENSMUSG000000103034	ubiquitin B pseudogene	Others	No	No
<i>Golga4</i>	1.01E-44	0.249	1.67E-43	NZO	ENSMUSG00000038708	golgin A4	Golgi	Yes	No
<i>Golgb1</i>	3.76E-56	0.365	8.08E-55	NZO	ENSMUSG00000034243	golgin B1	Golgi	Yes	No
<i>H2bc10</i>	0.00E+00	-0.227	0.00E+00	OB	ENSMUSG00000018102	H2B clustered histone 10	Other	Yes	No
<i>H3-3a/H3-3b</i>	0.00E+00	-0.241	0.00E+00	OB	ENSMUSG00000060743	H3.3 histone A	Other	Yes	Blood glucose
<i>Hdlbp</i>	7.32E-297	0.341	1.86E-294	NZO	ENSMUSG00000034088	high density lipoprotein binding protein	Transport	Yes	Blood glucose
<i>Hla-a</i>	0.00E+00	-0.209	0.00E+00	OB	ENSMUSG000000073411	major histocompatibility complex. class I. A	Golgi	Yes	No
<i>Hla-a</i>	0.00E+00	-0.963	0.00E+00	OB	ENSMUSG000000061232	major histocompatibility complex. class I. A	Golgi	Yes	No
<i>Hmgn3</i>	0.00E+00	-0.215	0.00E+00	OB	ENSMUSG000000066456	high mobility group nucleosomal binding domain 3	Chromatin	Yes	Liver weight
<i>Hsp90aa1</i>	3.62E-242	0.786	7.11E-240	NZO	ENSMUSG000000021270	heat shock protein 90 alpha family class A member 1	Enzyme	Yes	No
<i>Hsp90ab1</i>	8.19E-19	0.24	5.89E-18	NZO	ENSMUSG000000023944	heat shock protein 90 alpha family class B member 1	Enzyme	Yes	No
<i>Hspa13</i>	0.00E+00	0.345	0.00E+00	NZO	ENSMUSG00000032932	heat shock protein family A (Hsp70) member 13	Endoplasmatic reticulum	Yes	No
<i>Hspa5</i>	3.59E-237	0.879	6.72E-235	NZO	ENSMUSG00000026864	heat shock protein family A (Hsp70) member 5	Enzyme	Yes	No
<i>Hyoul</i>	2.93E-194	0.224	3.74E-192	NZO	ENSMUSG00000032115	hypoxia up-regulated 1	Endoplasmatic reticulum	Yes	Pancreatic insulin
<i>Iapp</i>	0.00E+00	-0.467	0.00E+00	OB	ENSMUSG000000041681	islet amyloid polypeptide	Hormone activity	No	No
<i>Isl1</i>	0.00E+00	-0.207	0.00E+00	OB	ENSMUSG000000042258	ISL LIM homeobox 1	Transcription regulator	Yes	No
<i>Itm2b</i>	5.49E-314	-0.389	1.54E-311	OB	ENSMUSG000000022108	integral membrane protein 2B	Golgi	Yes	No
<i>Kcnk16</i>	5.72E-199	0.258	7.61E-197	NZO	ENSMUSG000000023387	potassium two pore domain channel subfamily K member 16	Ion channel	No	Fat mass
<i>Kdelr2</i>	2.51E-77	0.23	8.24E-76	NZO	ENSMUSG000000079111	KDEL endoplasmic reticulum protein retention receptor 2	Endoplasmatic reticulum	Yes	No
<i>Lman1</i>	6.45E-27	0.219	6.50E-26	NZO	ENSMUSG000000041891	lectin. mannose binding 1	Transport	Yes	No
<i>Mlec</i>	1.71E-113	0.235	9.07E-112	NZO	ENSMUSG000000048578	malectin	Endoplasmatic reticulum	Yes	Cholesterol

<i>Mt1</i>	0.00E+00	-0.951	0.00E+00	OB	ENSMUSG00000031765	metallothionein 1	Others	No	No
<i>Mt2</i>	2.84E-176	-0.251	2.95E-174	OB	ENSMUSG00000031762	metallothionein 2	Others	No	No
<i>Mt-atp6</i>	1.24E-84	-0.3	4.52E-83	OB	ENSMUSG00000064357	ATP synthase F0 subunit 6	Transporter	No	No
<i>mt-Co1</i>	2.58E-111	-0.298	1.34E-109	OB	ENSMUSG00000064351	cytochrome c oxidase subunit I	Mitochondrial	No	No
<i>Mt-co2</i>	1.08E-119	-0.354	6.27E-118	OB	ENSMUSG00000064354	cytochrome c oxidase subunit II	Enzyme	Yes	No
<i>mt-Co3</i>	2.96E-109	-0.325	1.47E-107	OB	ENSMUSG00000064358	cytochrome c oxidase III	Mitochondrial	No	No
<i>mt-Cyb</i>	8.04E-76	-0.276	2.61E-74	OB	ENSMUSG00000064370	cytochrome b	Mitochondrial	No	No
<i>mt-Nd1</i>	0.00E+00	-0.662	0.00E+00	OB	ENSMUSG00000064341	NADH dehydrogenase, subunit 1 (complex I)	Mitochondrial	No	No
<i>mt-Nd2</i>	0.00E+00	-0.594	0.00E+00	OB	ENSMUSG00000064345	MTND2	Mitochondrial	No	No
<i>mt-Nd3</i>	0.00E+00	-0.856	0.00E+00	OB	ENSMUSG00000064360	NADH dehydrogenase, subunit 3 (complex I)	Mitochondrial	No	No
<i>mt-Nd4</i>	4.35E-134	-0.361	3.10E-132	OB	ENSMUSG00000064363	NADH dehydrogenase, subunit 4 (complex I)	Mitochondrial	No	No
<i>mt-Nd4l</i>	7.23E-142	-0.678	5.74E-140	OB	ENSMUSG00000065947	NADH dehydrogenase, subunit 4L (complex I)	Mitochondrial	No	No
<i>mt-Nd5</i>	8.01E-247	-0.393	1.66E-244	OB	ENSMUSG00000064367	NADH dehydrogenase, subunit 5 (complex I)	Mitochondrial	No	No
<i>Naca</i>	8.33E-139	-0.381	6.35E-137	OB	ENSMUSG00000061315	nascent polypeptide associated complex subunit alpha	Transcription regulator	Yes	No
<i>Ndufa7</i>	0.00E+00	-0.222	0.00E+00	OB	ENSMUSG00000041881	NADH:ubiquinone oxidoreductase subunit A7	Enzyme	No	No
<i>Ndufb11</i>	2.90E-18	0.386	2.03E-17	NZO	ENSMUSG00000031059	NADH:ubiquinone oxidoreductase subunit B11	Enzyme	Yes	No
<i>Ndufs2</i>	0.00E+00	1.276	0.00E+00	NZO	ENSMUSG00000013593	NADH:ubiquinone oxidoreductase core subunit S2	Enzyme	Yes	Blood glucose
<i>Ndufv3</i>	3.47E-23	0.308	3.04E-22	NZO	ENSMUSG00000024038	NADH:ubiquinone oxidoreductase subunit V3	Enzyme	No	No
<i>Nupr1</i>	0.00E+00	1.258	0.00E+00	NZO	ENSMUSG00000030717	nuclear protein 1, transcriptional regulator	Transcriptional regulator	No	No
<i>Oaz1</i>	3.91E-118	-0.377	2.20E-116	OB	ENSMUSG00000035242	ornithine decarboxylase antizyme 1	Enzyme	No	No
<i>P4hb</i>	7.99E-158	0.676	7.22E-156	NZO	ENSMUSG00000025130	prolyl 4-hydroxylase subunit beta	Enzyme	Yes	No
<i>Ppia</i>	3.18E-150	-0.847	2.78E-148	OB	ENSMUSG00000071866	peptidylprolyl isomerase A	Enzyme	Yes	No
<i>Ppp1r1a</i>	1.93E-55	0.414	4.04E-54	NZO	ENSMUSG00000022490	protein phosphatase 1 regulatory inhibitor subunit 1A	Phosphatase	No	No
<i>Prlr</i>	1.75E-231	0.283	3.13E-229	NZO	ENSMUSG00000005268	prolactin receptor	Transmembrane receptor	No	No
<i>Psap</i>	2.54E-14	0.488	1.43E-13	NZO	ENSMUSG00000004207	prosaposin	Enzyme	Yes	No
<i>Ptma (includes others)</i>	1.90E-205	-0.606	2.64E-203	OB	ENSMUSG00000026238	prothymosin alpha	Other	Yes	Blood glucose
<i>Pyy</i>	1.82E-59	-0.253	4.14E-58	OB	ENSMUSG00000017311	peptide YY	Hormone activity	No	Blood glucose / Fasting insulin
<i>Resp18</i>	0.00E+00	-1.354	0.00E+00	OB	ENSMUSG00000033061	regulated endocrine specific protein 18	Golgi	No	Blood glucose
<i>Rgs2</i>	1.94E-168	-0.456	1.91E-166	OB	ENSMUSG00000026360	regulator of G protein signaling 2	Enzyme	Yes	Blood glucose
<i>Rnase4</i>	0.00E+00	0.8	0.00E+00	NZO	ENSMUSG00000021876	ribonuclease A family member 4	Enzyme	No	No
<i>Rpl10</i>	1.56E-47	-0.533	2.76E-46	OB	ENSMUSG00000008682	ribosomal protein L10	Ribosomal	Yes	No
<i>Rpl17</i>	3.76E-14	-0.248	2.09E-13	OB	ENSMUSG00000062328	ribosomal protein L17	Ribosomal	Yes	Liver weight
<i>Rpl21</i>	0.00E+00	-0.782	0.00E+00	OB	ENSMUSG00000041453	ribosomal protein L21	Ribosomal	Yes	No
<i>Rpl23</i>	4.94E-82	-0.344	1.73E-80	OB	ENSMUSG00000071415	ribosomal protein L23	Ribosomal	Yes	Blood glucose / Fasting insulin
<i>Rpl24</i>	1.87E-72	0.292	5.62E-71	NZO	ENSMUSG00000098274	ribosomal protein L24	Ribosomal	Yes	No
<i>Rpl26</i>	0.00E+00	-0.666	0.00E+00	OB	ENSMUSG00000060938	ribosomal protein L26	Ribosomal	Yes	Fasting insulin
<i>Rpl29 (includes others)</i>	0.00E+00	-1.190	0.00E+00	OB	ENSMUSG00000048758	ribosomal protein L29	Ribosomal	Yes	No
<i>Rpl30</i>	6.74E-52	-0.547	1.31E-50	OB	ENSMUSG00000058600	ribosomal protein L30	Ribosomal	Yes	Creatinine 18
<i>Rpl31</i>	5.38E-03	0.378	9.59E-03	NZO	ENSMUSG00000073702	ribosomal protein L31	Ribosomal	Yes	No
<i>Rpl32</i>	2.47E-20	-0.426	1.90E-19	OB	ENSMUSG00000057841	ribosomal protein L32	Ribosomal	Yes	Arginine
<i>Rpl35</i>	2.91E-05	0.259	7.62E-05	NZO	ENSMUSG00000062997	ribosomal protein L35	Ribosomal	Yes	No
<i>Rpl35a</i>	0.00E+00	-0.992	0.00E+00	OB	ENSMUSG00000060636	ribosomal protein L35a	Ribosomal	Yes	No
<i>Rpl38</i>	2.90E-11	0.309	1.36E-10	NZO	ENSMUSG00000057322	ribosomal protein L38	Ribosomal	Yes	No
<i>Rpl4</i>	4.00E-14	0.211	2.22E-13	NZO	ENSMUSG00000032399	ribosomal protein L4	Ribosomal	Yes	Ratio liver weight vs blood glucose
<i>Rpl6</i>	3.03E-27	0.205	3.09E-26	NZO	ENSMUSG00000029614	ribosomal protein L6	Ribosomal	Yes	Cholesterol
<i>Rpl7</i>	3.99E-70	-0.223	1.13E-68	OB	ENSMUSG00000043716	ribosomal protein L7	Transcription regulator	Yes	No
<i>Rpl8</i>	2.09E-19	0.271	1.54E-18	NZO	ENSMUSG00000003970	ribosomal protein L8	Ribosomal	Yes	scWAT weight
<i>Rpl9</i>	1.60E-92	-0.614	6.70E-91	OB	ENSMUSG00000047215	ribosomal protein L9	Ribosomal	Yes	Cholesterol
<i>Rplp1 (includes others)</i>	3.19E-175	0.431	3.29E-173	NZO	ENSMUSG00000007892	ribosomal protein, large, P1	Ribosomal	Yes	Ratio liver weight vs blood glucose
<i>Rps13</i>	4.60E-47	-0.515	8.01E-46	OB	ENSMUSG00000090862	ribosomal protein S13	Ribosomal	Yes	No
<i>Rps15a</i>	3.90E-68	0.24	1.05E-66	NZO	ENSMUSG00000008683	ribosomal protein S15a	Ribosomal	Yes	No
<i>Rps17</i>	9.83E-19	0.226	7.03E-18	NZO	ENSMUSG00000061787	ribosomal protein S17	Ribosomal	Yes	No
<i>Rps18</i>	0.00E+00	-1.063	0.00E+00	OB	ENSMUSG00000008668	ribosomal protein S18	Ribosomal	Yes	No
<i>Rps19</i>	4.52E-16	0.442	2.84E-15	NZO	ENSMUSG00000040952	ribosomal protein S19	Ribosomal	Yes	No

<i>Rps2</i>	0.00E+00	-0.27	0.00E+00	OB	ENSMUSG00000044533	ribosomal protein S2	Ribosomal	Yes	No
<i>Rps23</i>	6.89E-27	0.382	6.91E-26	NZO	ENSMUSG00000049517	ribosomal protein S23	Ribosomal	Yes	No
<i>Rps27/Rps27rt</i>	1.21E-08	0.206	4.61E-08	NZO	ENSMUSG00000090733	ribosomal protein S27	Ribosomal	Yes	No
<i>Rps28</i>	3.09E-37	0.286	4.26E-36	NZO	ENSMUSG00000067288	ribosomal protein S28	Ribosomal	Yes	No
<i>Rps29</i>	8.68E-114	0.379	4.62E-112	NZO	ENSMUSG00000034892	ribosomal protein S29	Ribosomal	No	Arginine
<i>Rps3</i>	1.32E-24	-0.443	1.23E-23	OB	ENSMUSG00000030744	ribosomal protein S3	Ribosomal	Yes	No
<i>Rps5</i>	7.85E-15	-0.531	4.59E-14	OB	ENSMUSG00000012848	ribosomal protein S5	Ribosomal	Yes	No
<i>Rps7</i>	9.07E-192	-0.268	1.14E-189	OB	ENSMUSG00000061477	ribosomal protein S7	Ribosomal	Yes	Arginine
<i>Rpsa</i>	7.40E-15	0.236	4.32E-14	NZO	ENSMUSG00000032518	ribosomal protein SA	Ribosomal	Yes	No
<i>Rrbp1</i>	2.65E-44	0.512	4.33E-43	NZO	ENSMUSG00000027422	ribosome binding protein 1	Transport	Yes	Plasma glycerol
<i>Scg2</i>	1.83E-205	-0.367	2.56E-203	OB	ENSMUSG00000050711	secretogranin II	Cytokine	No	Blood glucose
<i>Scg5</i>	0.00E+00	0.761	0.00E+00	NZO	ENSMUSG00000023236	secretogranin V	Transport	Yes	Plasma glycerol
<i>Sec61a1</i>	4.98E-238	0.464	9.54E-236	NZO	ENSMUSG00000030082	SEC61 translocon subunit alpha 1	Transport	Yes	Arginine
<i>Sec61b</i>	7.15E-43	0.25	1.13E-41	NZO	ENSMUSG00000053317	SEC61 translocon subunit beta	Transporter	No	Body weight
<i>Sec61g</i>	8.47E-23	0.574	7.27E-22	NZO	ENSMUSG00000078974	SEC61 translocon subunit gamma	Transporter	No	No
<i>Selenop</i>	9.35E-94	0.306	3.98E-92	NZO	ENSMUSG00000064373	selenoprotein P	Others	No	No
<i>Selenos</i>	1.80E-159	0.212	1.65E-157	NZO	ENSMUSG00000075701	selenoprotein S	Endoplasmatic reticulum	No	No
<i>Slc2a2</i>	0.00E+00	-0.683	0.00E+00	OB	ENSMUSG00000027690	solute carrier family 2 member 2	Transporter	No	No
<i>Slc30a8</i>	0.00E+00	-0.749	0.00E+00	OB	ENSMUSG00000022315	solute carrier family 30 member 8	Transporter	No	No
<i>Spock2</i>	3.46E-140	-0.202	2.69E-138	OB	ENSMUSG00000058297	SPARC (osteonectin). cwcv and kazal like domains proteoglycan 2	Other	Yes	No
<i>Tgoln1</i>	6.01E-47	0.205	1.04E-45	NZO	ENSMUSG00000056429	trans-golgi network protein	Golgi	No	Arginine
<i>Tmsb4x (includes others)</i>	2.39E-186	-0.254	2.74E-184	OB	ENSMUSG00000049775	thymosin. beta 4. X chromosome	Others	No	No
<i>Txnip</i>	6.93E-29	-0.24	7.45E-28	OB	ENSMUSG00000038393	thioredoxin interacting protein	Apoptosis	Yes	No
<i>Ubxn4</i>	7.82E-120	0.207	4.58E-118	NZO	ENSMUSG00000026353	UBX domain protein 4	Endoplasmatic reticulum	Yes	Blood glucose
<i>Ucn3</i>	1.73E-199	-0.363	2.32E-197	OB	ENSMUSG00000044988	urocortin 3	Hormone activity	No	No
<i>Uqcrcq</i>	1.39E-185	0.258	1.58E-183	NZO	ENSMUSG00000044894	ubiquinol-cytochrome c reductase complex III subunit VII	Enzyme	No	No
<i>Vcp</i>	3.59E-269	0.228	8.06E-267	NZO	ENSMUSG00000028452	valosin containing protein	Enzyme	Yes	Body weight