

Table S2: Exomic Variants from Whole Exome Sequencing

Chr	Pos	SNP	Ref	Alt	Variant type	ENU Line	Gene	Exon	AA change	Validation
2	70509665	rs33889947	G	C	nonsynonymous SNV	MF5L1	<i>Erich2</i>	exon2	C158S	chr2
7	14225894	---	T	C	nonsynonymous SNV	MF5L1	<i>Sult2a6</i>	exon5	Q238R	Not Verified
7	15940142	---	T	C	nonsynonymous SNV	MF5L1	<i>Gltscr2</i>	exon6	H254R	ENU
7	85754889	---	A	T	nonsynonymous SNV	MF5L1	<i>Vmn2r72</i>	exon1	D31E	Not Verified
8	108949251	---	A	G	nonsynonymous SNV	MF5L1	<i>Zfx3</i>	exon9	Q2311R	Not Verified
12	110977486	---	G	A	nonsynonymous SNV	MF5L1	<i>Ankrd9</i>	exon3	T5I	Not Verified
17	25722876	---	T	A	nonsynonymous SNV	MF5L1	<i>Chtfl8</i>	exon13	N541Y	ENU
3	99352190	---	A	G	nonsynonymous SNV	MF5L5	<i>Tbx15</i>	exon8	N459S	Not Verified
3	135228816	---	T	A	nonsynonymous SNV	MF5L5	<i>Cenpe</i>	exon13	D381E	ENU
6	35080128	---	G	A	nonsynonymous SNV	MF5L5	<i>Cnot4</i>	exon2	R3C	Not Verified
8	70913530	---	A	T	nonsynonymous SNV	MF5L5	<i>Map1s</i>	exon5	I360F	ENU
17	70657633	---	T	G	splicing	MF5L5	<i>Dlgap1</i>	exon4	c.1368+2T	ENU
1	82741945	---	C	A	nonsynonymous SNV	MF5L6	<i>Mff</i>	exon6	Q190K	de novo
2	67516594	---	A	G	nonsynonymous SNV	MF5L6	<i>Xirp2</i>	exon7	R3060G	chr2
2	76724952	---	G	A	nonsynonymous SNV	MF5L6	<i>Ttn</i>	exon167	R22243C	chr2
2	76939280	---	T	A	nonsynonymous SNV	MF5L6	<i>Ttn</i>	exon34	N2675I	chr2
2	88423385	---	A	T	nonsynonymous SNV	MF5L6	<i>Olf1181</i>	exon1	F213L	chr2
2	111537791	---	A	T	nonsynonymous SNV	MF5L6	<i>Olf1294</i>	exon1	L166Q	chr2
2	140120707	---	T	C	nonsynonymous SNV	MF5L6	<i>Esf1</i>	exon14	K815E	chr2
5	108650355	---	C	T	nonsynonymous SNV	MF5L6	<i>Dgkq</i>	exon18	R679H	Not ENU
7	79822260	---	A	C	nonsynonymous SNV	MF5L6	<i>Anpep</i>	exon20	D955E	ENU
7	101990583	---	A	T	stopgain SNV	MF5L6	<i>Numa1</i>	exon4	K47X	ENU
1	33746762	---	T	G	nonsynonymous SNV	MF5L8	<i>Bag2</i>	exon3	I160L	ENU
1	36163249	---	T	C	nonsynonymous SNV	MF5L8	<i>Uggt1</i>	exon29	Y1089C	ENU
1	40125203	---	A	G	nonsynonymous SNV	MF5L8	<i>Il1r2</i>	exon9	N410S	ENU
2	76549471	---	A	C	nonsynonymous SNV	MF5L8	<i>Osbpl6</i>	exon7	D135A	chr2
2	112407616	---	G	A	nonsynonymous SNV	MF5L8	<i>Katnb1l</i>	exon5	V152I	chr2
2	112630022	---	A	G	nonsynonymous SNV	MF5L8	<i>Aven</i>	exon4	T162A	chr2
2	153136757	---	G	A	nonsynonymous SNV	MF5L8	<i>Hck</i>	exon9	V276M	chr2

2	153225070	---	T	A	nonsynonymous SNV	<i>MF5L8</i>	<i>Tspyl3</i>	exon1	T83S	chr2
9	123712602	---	T	G	nonsynonymous SNV	<i>MF5L8</i>	<i>Lztfl1</i>	exon3	I51L	ENU
10	128290865	---	C	T	stopgain SNV	<i>MF5L8</i>	<i>Stat2</i>	exon23	Q820X	ENU
11	52145503	---	T	C	nonsynonymous SNV	<i>MF5L8</i>	<i>Olfrl373</i>	exon1	E9G	Not ENU
11	69129597	---	A	G	nonsynonymous SNV	<i>MF5L8</i>	<i>Aloxe3</i>	exon4	M156V	Not ENU
14	8169757	---	A	G	nonsynonymous SNV	<i>MF5L8</i>	<i>Pdhb</i>	exon7	S218P	ENU
15	89456795	---	G	T	stopgain SNV	<i>MF5L8</i>	<i>Mapk8ip2</i>	exon3	G148X	ENU
16	59554543	---	C	T	nonsynonymous SNV	<i>MF5L8</i>	<i>Crybg3</i>	exon1	R402H	Not ENU
17	12271353	---	T	A	nonsynonymous SNV	<i>MF5L8</i>	<i>Map3k4</i>	exon3	N397I	ENU
17	45416968	---	T	A	stopgain SNV	<i>MF5L8</i>	<i>Cdc5l</i>	exon7	K294X	ENU
19	39563826	---	C	T	nonsynonymous SNV	<i>MF5L8</i>	<i>Cyp2c39</i>	exon7	A321V	ENU
19	46065668	---	C	G	nonsynonymous SNV	<i>MF5L8</i>	<i>Pprc1</i>	exon6	I1150M	ENU
2	101696795	---	C	T	nonsynonymous SNV	<i>MF5L9</i>	<i>Traf6</i>	exon8	R297C	chr2
7	82868974	---	G	A	nonsynonymous SNV	<i>MF5L9</i>	<i>Mex3b</i>	exon2	G166R	ENU
9	21634876	---	T	C	nonsynonymous SNV	<i>MF5L9</i>	<i>Smarca4</i>	exon3	S117P	ENU
10	67538372	---	T	C	nonsynonymous SNV	<i>MF5L9</i>	<i>Egr2</i>	exon1	M51T	ENU
18	71327504	---	C	T	nonsynonymous SNV	<i>MF5L9</i>	<i>Dcc</i>	exon24	D1172N	de novo
19	56810315	---	G	T	stopgain SNV	<i>MF5L9</i>	<i>A630007-B06Rik</i>	exon2	S247X	ENU
2	30086662	---	A	G	nonsynonymous SNV	<i>MF5L11</i>	<i>Pkn3</i>	exon15	K572E	chr2
2	40874986	---	G	T	nonsynonymous SNV	<i>MF5L11</i>	<i>Lrp1b</i>	exon55	Q2943K	chr2
2	61804747	---	T	C	nonsynonymous SNV	<i>MF5L11</i>	<i>Tbr1</i>	exon1	S14P	chr2
2	144572561	---	G	A	nonsynonymous SNV	<i>MF5L11</i>	<i>Sec23b</i>	exon10	G398R	chr2
4	141581029	---	A	G	nonsynonymous SNV	<i>MF5L11</i>	<i>Fblim1</i>	exon8	I323T	ENU
5	123760656	---	T	A	stopgain SNV	<i>MF5L11</i>	<i>Kntc1</i>	exon8	C204X	ENU
5	136373331	---	T	C	nonsynonymous SNV	<i>MF5L11</i>	<i>Cux1</i>	exon5	K144E	ENU
9	123963447	---	G	T	nonsynonymous SNV	<i>MF5L11</i>	<i>Ccr1</i>	exon2	H349N	ENU
10	84958016	---	A	G	nonsynonymous SNV	<i>MF5L11</i>	<i>Ric8b</i>	exon4	S248G	ENU
11	57221033	---	A	T	nonsynonymous SNV	<i>MF5L11</i>	<i>Grial</i>	exon7	T224S	ENU
11	101740781	---	T	G	nonsynonymo(1)us SNV	<i>MF5L11</i>	<i>Dhx8</i>	exon8	V400G	ENU
13	112368238	---	G	A	stopgain SNV	<i>MF5L11</i>	<i>Ankrd55</i>	exon9	W506X	ENU

14	32966414	---	A	G	nonsynonymous SNV	<i>MF5L11</i>	<i>Wdfy4</i>	exon56	W2921R	ENU
16	92605854	---	T	C	nonsynonymous SNV	<i>MF5L11</i>	<i>Runx1</i>	exon8	Y400C	ENU
5	86719746	---	T	A	nonsynonymous SNV	<i>MF5L12</i>	<i>Tmprss11e</i>	exon5	D155V	ENU
6	129517379	---	A	G	nonsynonymous SNV	<i>MF5L12</i>	<i>Tmem52b</i>	exon5	E182G	ENU
6	148237808	---	G	A	nonsynonymous SNV	<i>MF5L12</i>	<i>Tmtc1</i>	exon20	R939W	ENU
7	141620530	---	G	A	nonsynonymous SNV	<i>MF5L12</i>	<i>Ap2a2</i>	exon12	G504E	ENU
11	20077297	---	G	C	nonsynonymous SNV	<i>MF5L12</i>	<i>Actr2</i>	exon7	R258G	ENU
11	67921730	---	C	T	nonsynonymous SNV	<i>MF5L12</i>	<i>Usp43</i>	exon1	G107S	ENU
13	100285719	---	C	T	nonsynonymous SNV	<i>MF5L12</i>	<i>Naip7</i>	exon14	A1269T	Not Verified
6	36523684	---	A	G	nonsynonymous SNV	<i>MF5L16</i>	<i>Chrm2</i>	exon3	I159V	ENU
8	70259804	---	G	A	nonsynonymous SNV	<i>MF5L16</i>	<i>Sugp2</i>	exon9	R1023Q	ENU
10	77260815	---	T	C	nonsynonymous SNV	<i>MF5L16</i>	<i>Pofut2</i>	exon2	F125L	ENU
10	114800967	---	T	C	nonsynonymous SNV	<i>MF5L16</i>	<i>Trhde</i>	exon1	S112G	ENU
10	117278121	---	T	C	stoploss SNV	<i>MF5L16</i>	<i>Lyz2</i>	exon4	X149W	ENU
11	60710357	---	G	A	nonsynonymous SNV	<i>MF5L16</i>	<i>Llg11</i>	exon16	R707H	Introduced
13	34896062	---	T	A	stopgain SNV	<i>MF5L16</i>	<i>Prpf4b</i>	exon11	L803X	Introduced
13	61568333	---	A	T	nonsynonymous SNV	<i>MF5L16</i>	<i>Cts3</i>	exon3	H71Q	ENU
13	90898831	---	G	A	nonsynonymous SNV	<i>MF5L16</i>	<i>Atp6ap11</i>	exon4	P76S	ENU
13	94443934	---	G	A	nonsynonymous SNV	<i>MF5L16</i>	<i>Ap3b1</i>	exon9	A321T	ENU
15	6786636	---	C	T	stopgain SNV	<i>MF5L16</i>	<i>Rictor</i>	exon31	R1130X	ENU