

Class12Lab

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Q5

```
mxl <- read.csv("rs8067378_MXL.csv")
head(mxl)
```

	Sample..	Male..	Female..	Unknown..	Genotype..	forward..	strand..	Population..	s..	Father
1					NA19648	(F)		A A	ALL, AMR, MXL	-
2					NA19649	(M)		G G	ALL, AMR, MXL	-
3					NA19651	(F)		A A	ALL, AMR, MXL	-
4					NA19652	(M)		G G	ALL, AMR, MXL	-
5					NA19654	(F)		G G	ALL, AMR, MXL	-
6					NA19655	(M)		A G	ALL, AMR, MXL	-
	Mother									
1		-								
2		-								
3		-								
4		-								
5		-								
6		-								

```
table(mxl$Genotype..forward.strand)
```

A A	A G	G A	G G
22	21	12	9

```
table(mx1$Genotype..forward.strand.)/nrow(mx1)*100
```

A A	A G	G A	G G
34.3750	32.8125	18.7500	14.0625

Q13

```
rs806 <- read.table("rs8067378_ENSG00000172057.6.txt")
rs806
```

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1	HG00367	A/G	28.96038
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5	NA18870	G/G	18.25141
6	NA11993	A/A	32.89721
7	HG00256	A/G	31.48736
8	NA18498	A/A	47.64556
9	HG00327	G/G	17.67473
10	HG00115	A/G	33.85374
11	NA20806	A/G	16.29854
12	HG00278	A/G	19.73450
13	NA20585	A/A	30.71355
14	NA19137	A/G	13.96175
15	HG00235	A/A	25.44983
16	NA20798	A/A	34.24915
17	NA12546	G/G	18.55622
18	NA19116	A/A	35.15014
19	HG00381	A/G	18.40351
20	NA18488	G/G	23.10383
21	HG00259	A/G	34.21985
22	HG00177	A/G	23.32404
23	NA19214	G/G	30.94554
24	NA19247	A/A	24.54684

25	NA19098	A/G	23.18606
26	NA20589	A/G	18.15997
27	NA19207	A/A	49.39612
28	HG00112	G/G	21.14387
29	NA20518	G/G	18.39547
30	HG00335	A/A	28.20755
31	NA19119	G/G	12.02809
32	HG00247	G/G	17.44761
33	NA12155	A/G	28.03580
34	NA20771	A/G	30.65270
35	NA20758	G/G	29.82254
36	HG00121	A/G	20.51327
37	NA20759	A/A	28.56199
38	NA20816	A/G	29.72309
39	NA20542	A/G	22.50789
40	NA18511	A/G	31.68959
41	NA12249	G/G	23.01983
42	NA11830	A/G	28.76435
43	NA19159	A/G	35.85543
44	NA20778	A/G	37.62403
45	NA18908	A/G	20.54885
46	HG00320	G/G	13.42470
47	NA11843	G/G	22.65437
48	HG00105	A/A	51.51787
49	NA20588	G/G	11.07445
50	NA20510	G/G	28.35841
51	NA12342	A/G	31.04941
52	HG00249	A/G	18.94583
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54	HG00240	A/G	32.29483
55	HG00132	A/A	31.13741
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59	HG00353	A/G	19.89903
60	NA20792	A/G	48.03410
61	NA12234	G/G	16.11138
62	HG00377	A/A	39.12999
63	NA19143	A/G	27.90313
64	NA20787	A/G	36.47949
65	NA20513	A/G	20.03116
66	HG00243	A/G	29.65063
67	NA19172	A/A	32.44173

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79	HG00238	G/G	19.52301
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88	NA12144	A/G	33.22193
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92	HG00183	G/G	10.74263
93	HG00109	G/G	16.66051
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107	NA18909	A/G	38.34531
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118	HG00152	G/G	19.37093
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136	NA18858	A/G	40.06318
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141	HG00097	A/G	25.80393
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144	NA12286	A/G	34.79575
145	NA20797	A/G	34.57705
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147	HG00360	A/G	16.59638
148	NA20530	A/G	27.22300
149	NA12348	A/G	24.35621
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152	NA12763	A/G	23.19511
153	NA20814	G/G	28.23642

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157	NA11829	A/G	33.74015
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159	HG00141	G/G	25.55413
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161	NA20828	A/G	32.33359
162	NA12749	A/A	28.91526
163	NA19190	G/G	24.45672
164	NA06985	A/G	11.36287
165	HG00178	A/G	21.16515
166	NA10851	G/G	23.53572
167	HG00371	A/A	19.14544
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169	NA12004	A/A	22.85572
170	HG00116	G/G	22.48273
171	NA12272	G/G	14.66862
172	NA19096	G/G	33.95602
173	NA20800	A/G	22.73049
174	HG00102	A/A	31.17067
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177	NA20521	A/A	27.87464
178	HG00345	G/G	16.06661
179	NA20509	A/A	27.91580
180	HG00329	A/A	16.86780
181	NA12830	A/G	11.97590
182	HG00359	A/A	23.66127
183	NA07051	A/G	25.35846
184	NA20516	A/G	33.32411
185	HG00128	A/G	22.09122
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187	NA11892	A/A	28.03403
188	NA20804	A/A	36.51922
189	NA11994	A/G	30.83577
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206	NA20517	A/G	22.40203
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210	HG00106	A/G	30.05415
211	HG00189	G/G	14.80495
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216	NA18867	A/G	28.75978
217	HG00100	A/A	35.67637
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221	NA20532	A/G	21.76610
222	NA12812	A/G	9.62656
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229	HG00380	A/A	28.85309
230	NA12761	A/A	38.57101
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232	NA20796	G/G	23.92355
233	NA12399	G/G	9.55902
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243	NA19092	A/A	35.26739
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247	NA19210	G/G	21.98118
248	HG00258	A/A	30.15636
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254	HG00346	G/G	24.32857
255	NA11920	A/G	26.42877
256	HG00326	A/G	26.28329
257	NA12347	A/A	35.88457
258	NA12716	A/G	20.72639
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260	HG00309	A/G	21.09140
261	HG00315	G/G	26.56993
262	HG00338	A/G	23.79292
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265	NA20540	A/A	23.86454
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279	NA20508	A/G	21.29782
280	NA19175	G/G	23.95528
281	NA20815	A/G	33.91853
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294	NA12341	A/G	15.36874
295	HG00245	A/G	29.50350
296	NA19198	A/G	25.70400
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299	HG00358	G/G	18.50772
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324	NA12717	A/G	7.07505
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378	HG00275	G/G	18.06320
379	HG00325	G/G	15.91528
380	NA19118	G/G	24.80823
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414	NA18934	A/G	20.70871
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427	NA19113	A/G	21.34916
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429	NA12718	A/G	21.20080
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431	NA12287	A/G	22.43773
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436	NA19108	G/G	23.08482
437	NA19185	A/G	28.93651
438	HG00246	A/G	31.79897
439	NA12045	A/G	30.80067
440	NA19257	A/G	33.95134
441	NA12413	A/G	39.43243
442	HG00159	A/A	23.99631
443	NA20811	A/A	11.39643
444	HG00149	A/G	23.91465
445	NA19223	A/G	20.97560
446	NA07346	G/G	16.56929
447	NA20536	A/G	20.02507
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449	HG00271	A/G	33.44170
450	HG00373	A/G	17.32813
451	HG00182	A/A	23.38376
452	HG00110	A/G	32.61856
453	NA20819	A/G	36.77906
454	HG00154	G/G	16.69044

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456 NA12750 A/A 34.94395
457 HG00233 G/G 25.08880
458 HG00131 G/G 32.78519
459 HG00108 A/A 31.92036
460 HG00119 A/G 31.53069
461 NA19130 A/A 44.27738
462 HG00239 A/G 23.18250

```

```
table(rs806$geno)
```

```

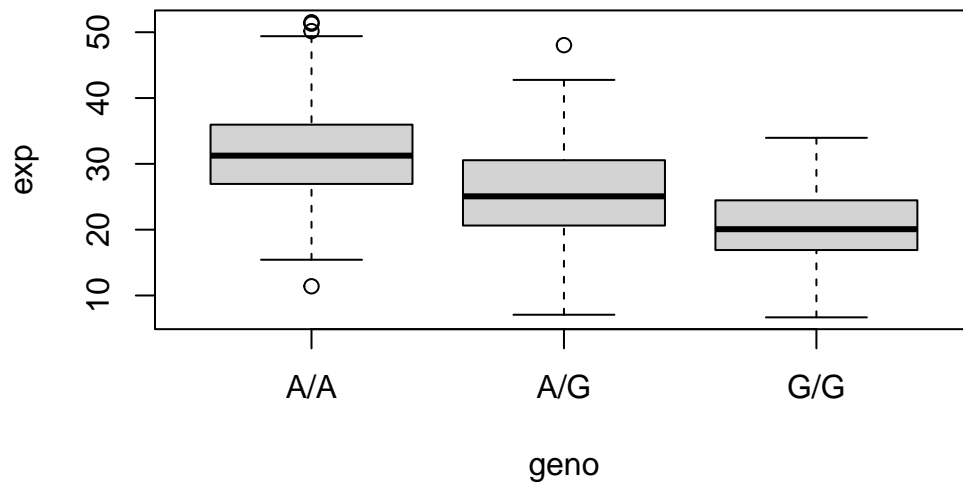
A/A A/G G/G
108 233 121

```

```
summary(rs806)
```

sample	geno	exp
Length:462	Length:462	Min. : 6.675
Class :character	Class :character	1st Qu.:20.004
Mode :character	Mode :character	Median :25.116
		Mean :25.640
		3rd Qu.:30.779
		Max. :51.518

```
rs806box <- boxplot(exp ~ geno, data = rs806)
```



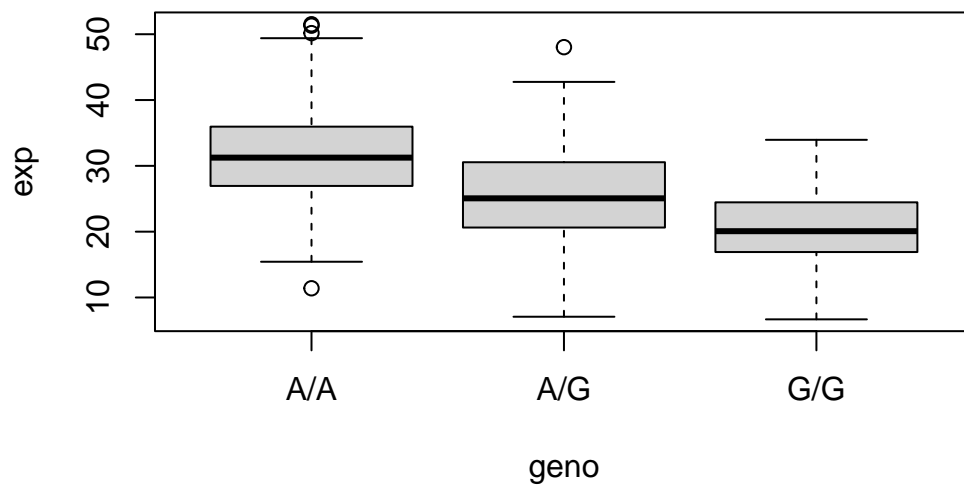
Median values of each genotype:

```
rs806box$stats[3, ]
```

```
[1] 31.24847 25.06486 20.07363
```

Q14

```
boxplot(exp ~ geno, data = rs806)
```



A/A has relatively high expression value compared to G/G. This suggests that SNP (A \rightarrow G) will reduce the expression of ORMDL3.