Class 12 Homework

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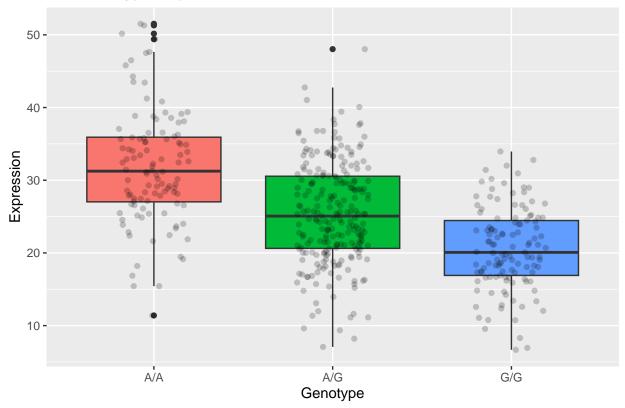
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Q13. Read this file into R and determine the sample size for each genotype and their corresponding median expression levels for each of these genotypes.

```
file <- read.table("rs8067378_ENSG00000172057.6.txt")
summary(file)
##
       sample
                            geno
                                                 exp
   Length:462
                        Length: 462
                                                   : 6.675
##
                                            Min.
    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
# Sample size for each genotype
table(file$geno)
##
## A/A A/G G/G
## 108 233 121
aa <- subset(file, geno == "A/A")
# Median Expression Levels of genotype A/A samples
median(aa$exp)
## [1] 31.24847
ag <- subset(file, geno == "A/G")
# Median Expression Levels of genotype A/G samples
median(ag$exp)
## [1] 25.06486
gg <- subset(file, geno == "G/G")</pre>
\# Median Expression Levels of genotype G/G samples
median(gg$exp)
## [1] 20.07363
     Q14. Generate a boxplot with a box per genotype, what could you infer from the relative
     expression value between A/A and G/G displayed in this plot? Does the SNP effect the expression
     of ORMDL3?
library(ggplot2)
ggplot(file, aes(geno, exp, fill = geno)) +
         geom_boxplot() +
```

```
guides(fill="none") +
  geom_jitter(width = 0.2, alpha = 0.2) +
labs(title="Per Genotype Expression Values", x = "Genotype", y = "Expression")
```

Per Genotype Expression Values



A/A is expressed more than G/G

Given the large difference in expression between the genotypes, I believe SNP affects the expression of ORMDL3.