Project Report for DNA RNA Dynamics

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Assigned parameters	*Valeu*
Student number	25
Prob ID	40796508
P-Value	0.01
Normalization	preprocessNoob
Statistical test	t-test

Task 3:

In Table 1, we examine the fluorescent intensity and the type of the probe. The probe ID is associated with type I infimum.

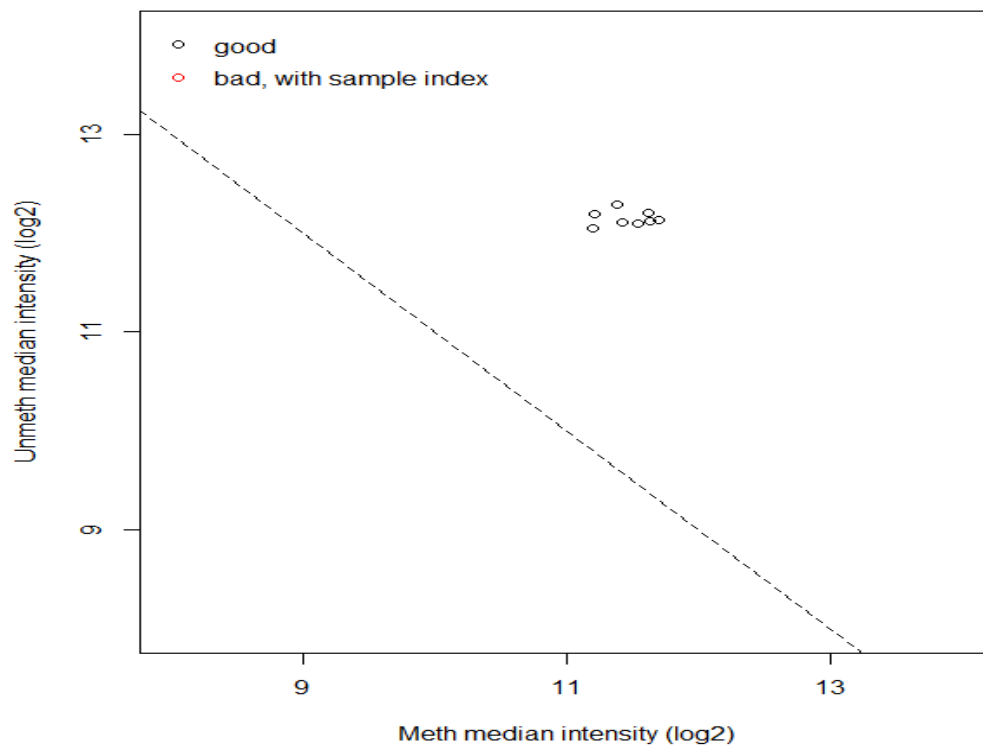| Sample	Red fluor	Green fluor	Type	Color
200400320115_R01C01	422	1901	I	Red
200400320115_R02C01	827	2504	I	Red
200400320115_R03C01	551	2718	I	Red
200400320115_R04C01	493	2584	I	Red
200400320115_R02C02	599	2788	I	Red
200400320115_R03C02	440	2673	I	Red
200400320115_R04C02	589	2744	I	Red
200400320115_R05C02	575	3476	I	Red

Task 5:

Figure 1 All dots are above the line. showing high median of intensity in methylated and unmethylated state. the quality is good.
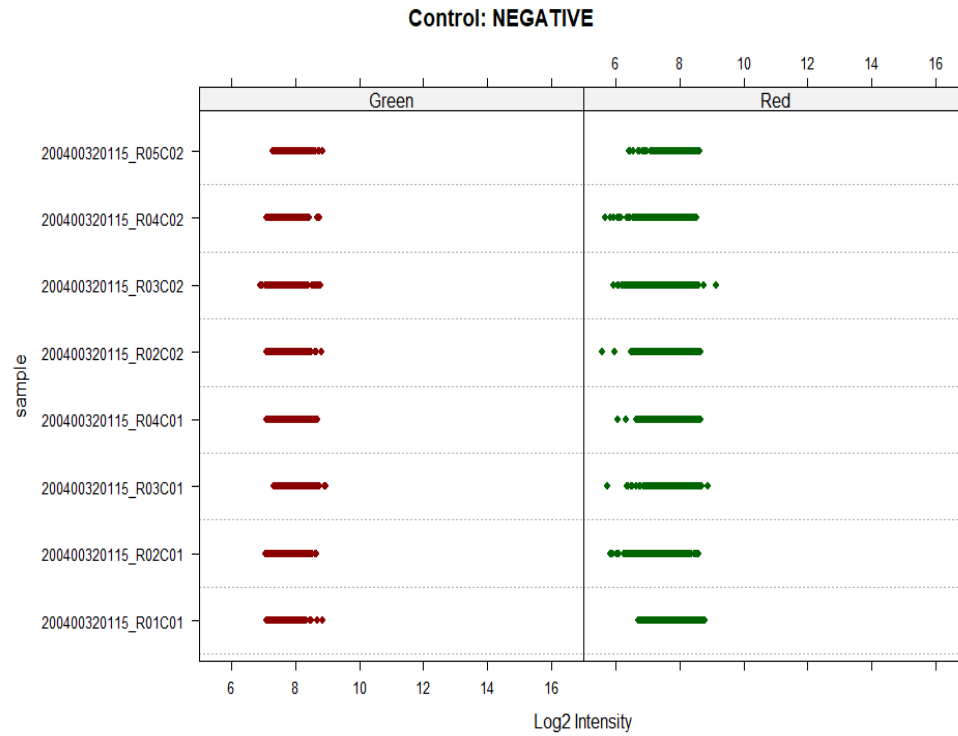
Figure 2 All values below 10 and the quality is good

Sample	n° Failed positions
200400320115_R01C01	56
200400320115_R02C01	39
200400320115_R03C01	42
200400320115_R04C01	35
200400320115_R02C02	242
200400320115_R03C02	186
200400320115_R04C02	21
200400320115_R05C02	550

Table 2: number of probs higher than our threshold (0.01)

Density Beta values

Density M values

Density

Density

0.0   0.4   0.8

-5   0   5

N = 485510   Bandwidth = 0.02176

N = 485510   Bandwidth = 0.1839

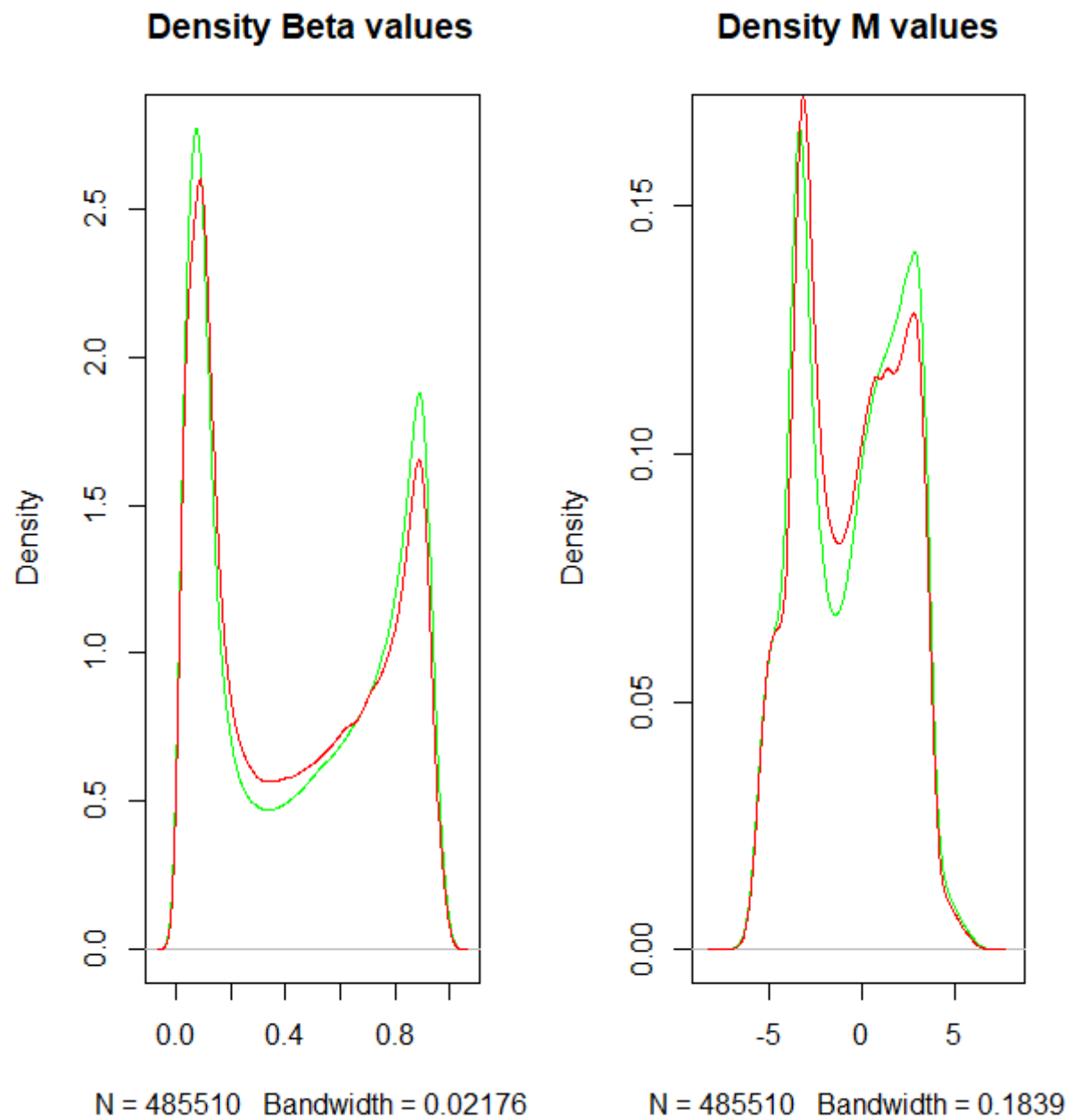Figure 3: In this figure the WT(green) and MUT(red) are mostly the same however in the extreme parts WT have higher intensity.
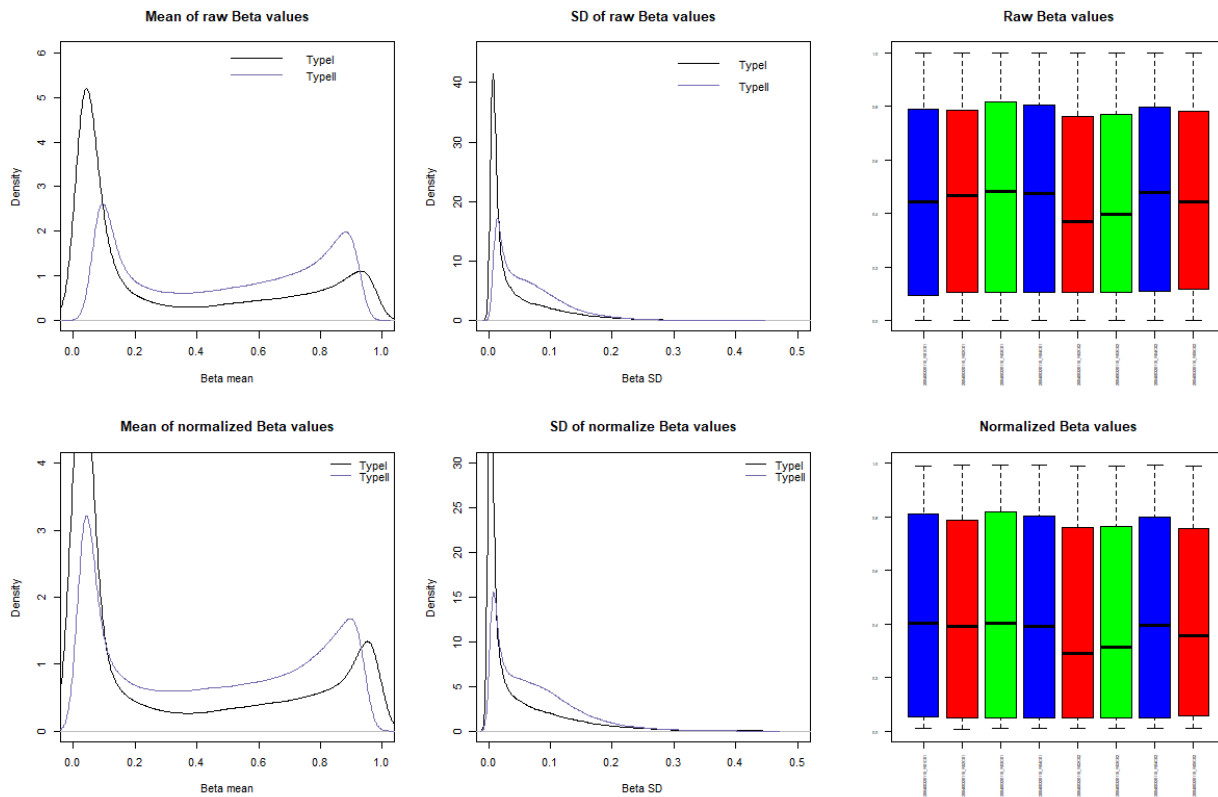
Figure 4: Mean plot, SD plot, and box plot in normalized and unnormalized states

1. **Mean Plot**:

    o Type II probabilities exhibit **lower sensitivity** and are **more centralized**.

    o After normalization, Type II and Type I align.

2. **Standard Deviation (SD) Plot**:

    o Peaks of Type II are **lower** than those of Type I due to **reduced sensitivity** to extreme methylation values.

    o However, after normalization, they become **closer** to Type I.

3. **Box Plot**:
    o After normalization, the distribution of the data becomes **closer** and more **comparable**.
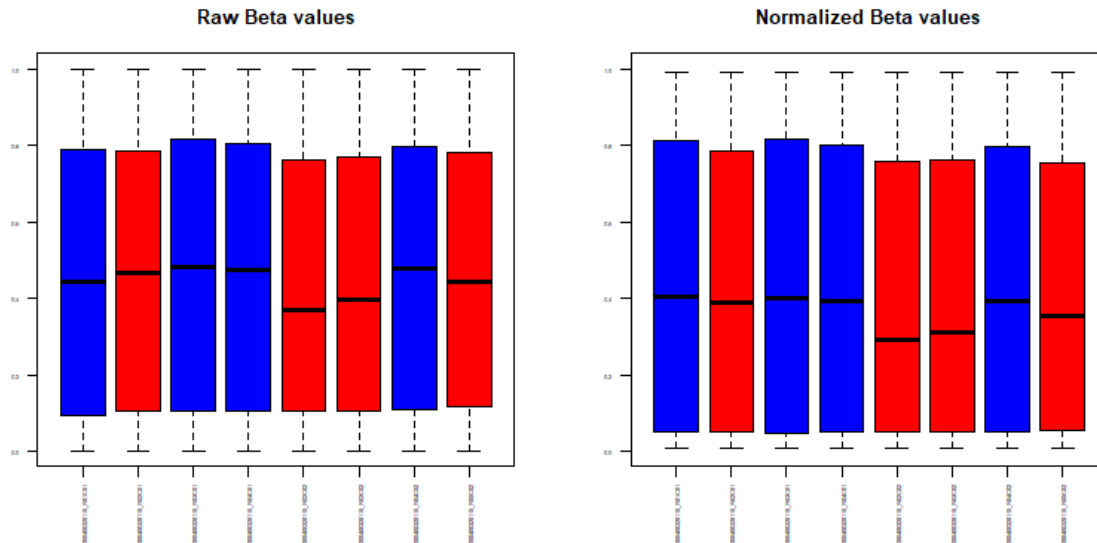
Figure 5, MUT: blue/ WT: red, the variability between two groups is hardly detectable and they almost have identical distributions.
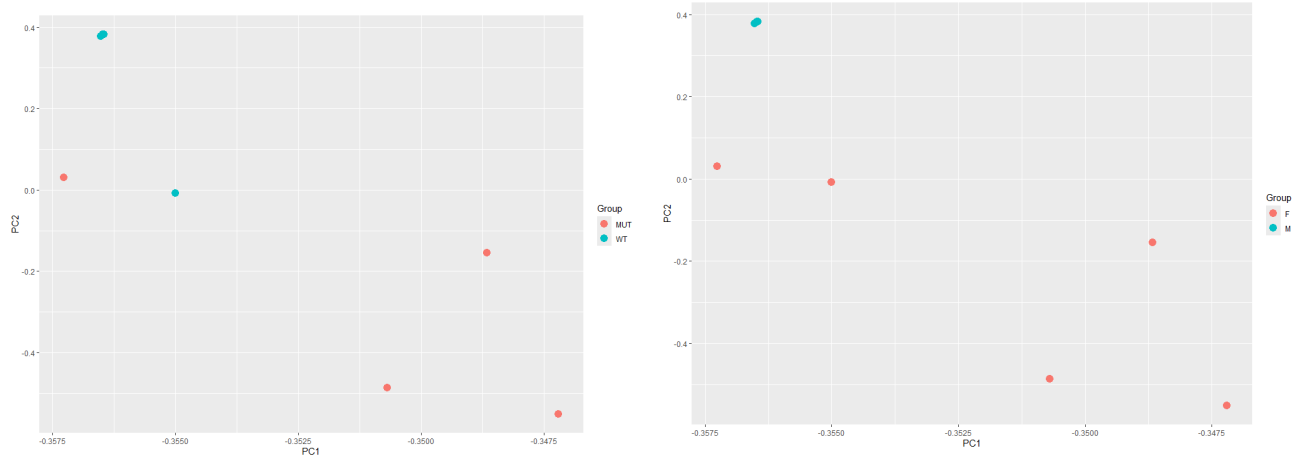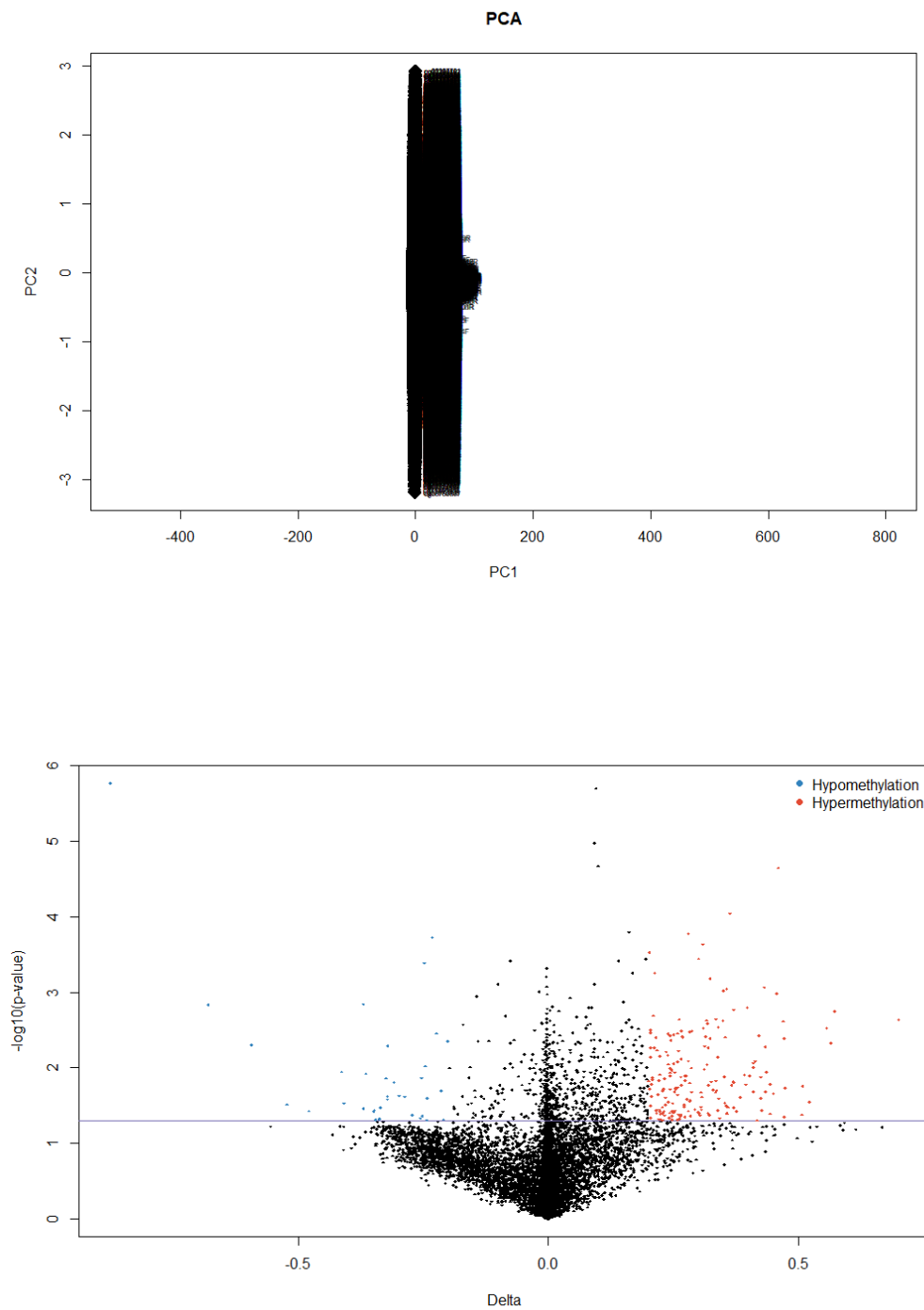
Task 8:

Figure 6: we can see in the PCA are values are well sorted according to target and sex, and target and group.

Primary 915 probs have p-value less than or equal to 0.05 With Benferroni correction 2 probs has pvalue less than or equal to 0.05 After BH correction 5 probs shows p value less than or equal to 0.05.
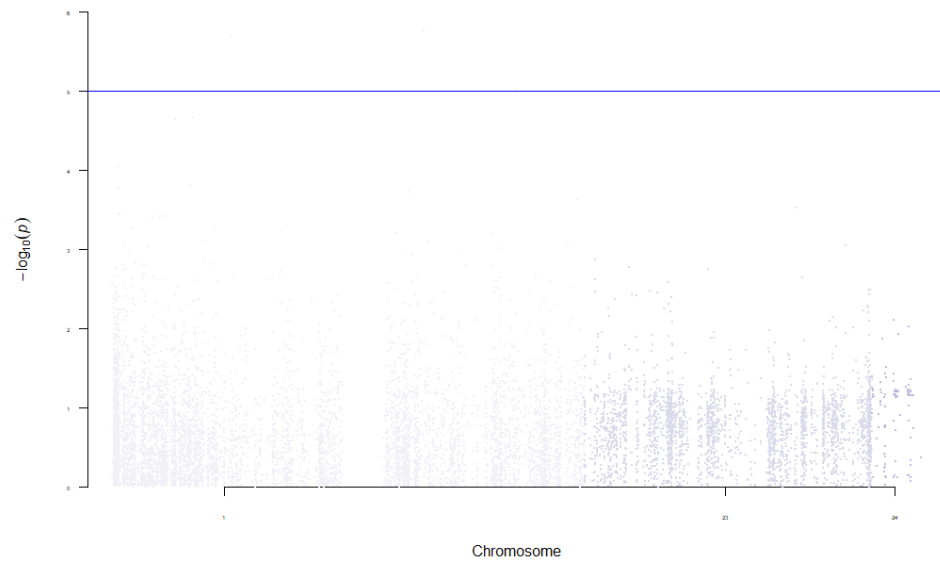
Figure 7: the Volcano and manhattan plot

Other Tasks :

Single linkage

Complete linkage