## *Introduction to R: practical 2*

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Often when we commence an analysis we want to partition the data in different ways. For example, selecting data points greater than a particular value. In this practical we will investigate how this is done using R's logical operators.

## Question difficulty

Some of the questions below are straight forward, others are bit more tricky. Before starting the practical, run the following command:

### library("nclRcourses")

#### Question 1

Run the following R code

- 1. What is length of x1?
- 2. What is the 55<sup>th</sup> element of x1?
- 3. What is the final element of x1?
- 4. What is the mean value of x1?
- 5. What is the smallest value of x1?
- 6. How many values are greater than the first quartile but less than the median?
- 7. How many values are greater than  $\bar{x}_1 + 2sd(x_1)$ , where sd is the sample standard deviation?
- 8. **Tricky:** What is the 50<sup>th</sup> smallest value in x1?

#### Question 2

Run the following R code

#### y = GetDataFrame()

The data frame y is a subset of the yeast data we use in the lectures.

- 1. How many rows does y have?
- 2. How many columns does y have?
- 3. What are the different cell types in this data set?
- 4. How many measurements have been made on mutant cells?
- 5. How many of probes have expression levels less than 5?
- 6. How many measurements have been made at time point o?
- 7. How many mutant probes were measured at time point o?

 $\bar{x}_1$  is the mean value and  $sd(x_1)$  is the standard deviation of  $x_1$ .

# Question 3

Run the following R code
In the following questions, the function table is quite useful, especially when combined with sum, sort, etc.

- 1. How many times does "A" appear in x2?
- 2. Which letter appears the most? If more than one letter appears, just give the first letter (if the letters were sorted in alphabetical order).
- 3. Very tricky: How many pairs of letters are there in x2.1

 $<sup>^{\</sup>scriptscriptstyle 1}$  For example, in AABCCC we would have 3 pairs: AA, CC and CC.