

Lab 4 - Gr. 14 - Bioinformatics (732A93)

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Assignment 1

Task:

- Run all the R code and reproduce the graphics.
- Go carefully through the R code and explain in your words what each step does.

Assignment 2

Task:

- Present the variables versus each other original, log-scaled and MA-plot for each considered pair both before and after normalization.
- A cluster analysis is performed on the page but not report. Present plots and also draw heatmaps.

Assignment 3

Task:

- Provide volcano plots for the other pairs.
- Indicate significantly differentially expressed genes.
- Explain how they are found.

Assignment 4

Task:

- Try to find more information on the genes that are reported to be significantly differentially expressed. Report in your own words on what you find.
- Report all the Gene Ontology (GO) terms associated with each gene.
- Are any of the GO terms common between genes?
- If so do the common GO terms seem to be related to anything particular?
- Try to present GO analysis in an informative manner, if possible visualize.

Appendix

```
knitr::opts_chunk$set(fig.width = 7, fig.height = 3, echo = FALSE,
                        warning = FALSE, message = FALSE)

# All provided Links:
# R Bio: Untangling Genomes
# https://www.bioconductor.org/help/course-materials/ 2015/Uruguay2015/
# Step by Step HUVEC and OVE
```

```

# https://www.bioconductor.org/help/course-materials/2015/Uruguay2015/day3-gene.expression.html
# Cell Data:
# ftp://ftp.ncbi.nlm.nih.gov/geo/series/GSE20nnn/GSE20986/suppl/
# Description of Cell Data:
# https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE20986
# Additional
# https://www.bioconductor.org/help/course-materials/2015/Uruguay2015/day5-data\_analysis.html
# Explanations Graphic
# https://www.bioconductor.org/help/course-materials/2015/Uruguay2015/V6-RNASeq.html

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# Question 1
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# Question 2
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# Question 3
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# Question 4
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