options(stringsAsFactors = F)
options(warn = -1)

library(ggpubr)
library(ggthemes)

deg.data <- data.table::fread("GSE89116.txt")

head(deg.data)

deg.data$logP <- -log10(deg.data$adj.P.Val)

ggscatter(deg.data, x = "logFC", y = "logP") + theme_base()

deg.data$Group = "not-significant"

deg.data$Group[which( (deg.data$adj.P.Val < 0.05) & (deg.data$logFC > 2) )] = "up-regulated"

deg.data$Group[which( (deg.data$adj.P.Val < 0.05) & (deg.data$logFC < -2) )] = "down-regulated"

table(deg.data$Group)

ggscatter(deg.data, x = "logFC", y = "logP",
    color = "Group") + theme_base()

ggscatter(deg.data, x = "logFC", y = "logP",
    color = "Group",
    palette = c("green", "gray", "red"),
    size = 1) + theme_base()

ggscatter(deg.data, x = "logFC", y = "logP",
    color = "Group",
    palette = c("green", "gray", "red"),
    size = 1) + theme_base() +
geom_hline(yintercept = 1.30, linetype="dashed") +
geom_vline(xintercept = c(-2,2), linetype="dashed")

ggscatter(deg.data, x = "logFC", y = "logP",
  color = "Group",
  palette = c("#4CC417", "#6698FF", "#F62217"),
  size = 2,
  label = deg.data$Label,
  font.label = 8,
  repel = T,
  xlab = "Log2FC",
  ylab = "-log10(adj.P.Val)") +
theme_base() +
geom_hline(yintercept = 1.30, linetype="dashed") +
geom_vline(xintercept = c(-2,2), linetype="dashed")