

Using MLP

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July 13, 2010

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1 Introduction

First draft of MLP vignette document

2 Example Use

2.1 Preliminaries

```
> require(MLP)
> require(limma)
> pathExampleData <- system.file("exampleFiles", "expressionSetGcrma.rda",
+   package = "MLP")
> load(pathExampleData)
```

2.2 Prepare P Values

```
> group <- as.numeric(factor(pData(expressionSetGcrma)$subGroup1,
+   levels = c("WT", "KO")))) - 1
> design <- model.matrix(~group)
> fit <- lmFit(exprs(expressionSetGcrma), design)
> fit2 <- eBayes(fit)
> results <- limma:::topTable(fit2, coef = "group", adjust.method = "fdr",
+   number = Inf)
> pvalues <- results[, "P.Value"]
> names(pvalues) <- results$ID
> names(pvalues) <- sub("_at", "", names(pvalues))
```

2.3 Prepare Gene Sets

```
> geneSets <- getGeneSets(species = "Mouse", pathwaySource = "GOCC",  
+   eset = expressionSetGcrma)
```

2.4 Run MLP

```
> mlpOut <- MLP(geneSet = geneSets, geneStatistic = pvalues, minGenes = 5,  
+   maxGenes = 100, rowPermutations = TRUE, nPermutations = 50,  
+   smoothPValues = TRUE, criticalValues = c(0.5, 0.9, 0.95,  
+   0.99, 0.999, 0.9999, 0.99999), df = 9)
```

2.5 Visualize MLP Results

Three different types of plots are made available. The type of the plot is indicated with the `type` argument which can be one of

```
plot(., type = "quantileCurves")  
plot(., type = "barplot")  
plot(., type = "GOgraph")  
  
> pdf("mlpQuantileCurves.pdf", width = 10, height = 10)  
> plot(mlpOut, type = "quantileCurves")  
> dev.off()  
  
null device  
      1  
  
> pdf("mlpBarplot.pdf", width = 10, height = 10)  
> op <- par(mar = c(30, 10, 6, 2))  
> plot(mlpOut, type = "barplot")  
> par(op)  
> dev.off()  
  
null device  
      1  
  
> pdf("mlpGOgraph.pdf", width = 20, height = 6)  
> op <- par(mar = c(2, 1, 0, 2))  
> plot(mlpOut, type = "GOgraph", nRow = 30, mainTitle = "GO graph")  
> par(op)  
> dev.off()  
  
null device  
      1
```

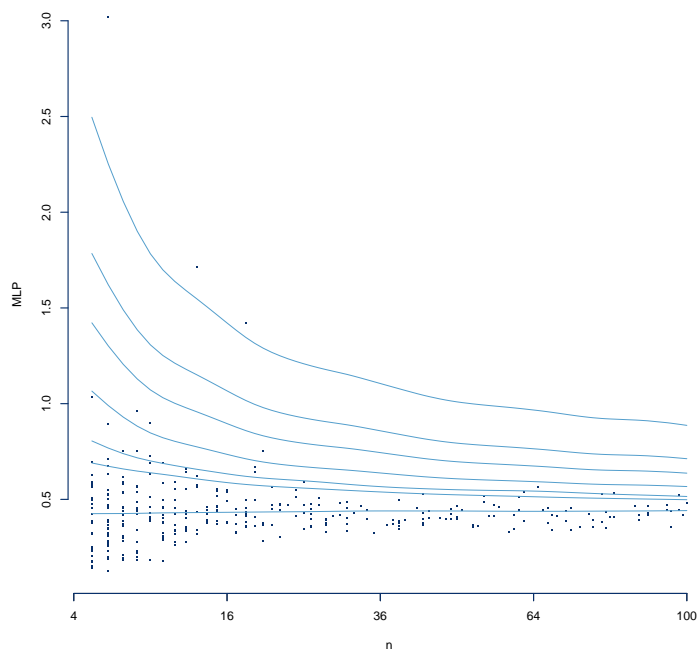


Figure 1: Example of the quantile curves for the MLP run

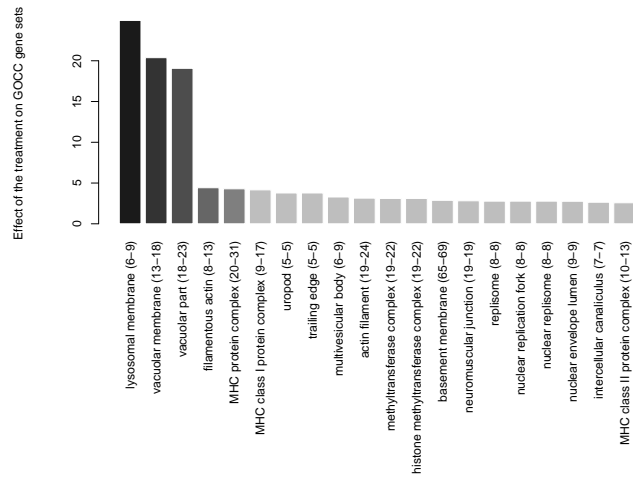


Figure 2: Example of a barplot for MLP results

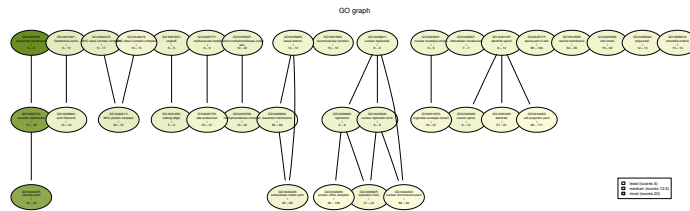


Figure 3: Example of a GOgraph for MLP results