

# Analyzing Shoal

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```
suppressPackageStartupMessages(source("run_limma.R"))
dirSal <- "/fs/cbcb-lab/rob/students/noor/shoal_proj/swim/sal_best/vbprior=1e0"
load("/fs/cbcb-lab/rob/students/noor/Uncertainty/mikelove-swimdown-216aldd/simulate/data/simulate.rda")
library(pracma)
```

```
dirShoal <- "/fs/cbcb-lab/rob/students/noor/shoal_proj/swim/shoal_best_updated/vbprior=1e0/c=0.1"
suppressWarnings(dd <- runDE(dirSal, dirShoal, seq(0,1,0.05)))
df <- dd[["cob"]][["cob"]][[1]]@fdrtpr
inds <- seq(1,nrow(df),2)

print(trapz(df[inds, "FDR"], df[inds, "TPR"])) ##Area under roc curve for Salmon
```

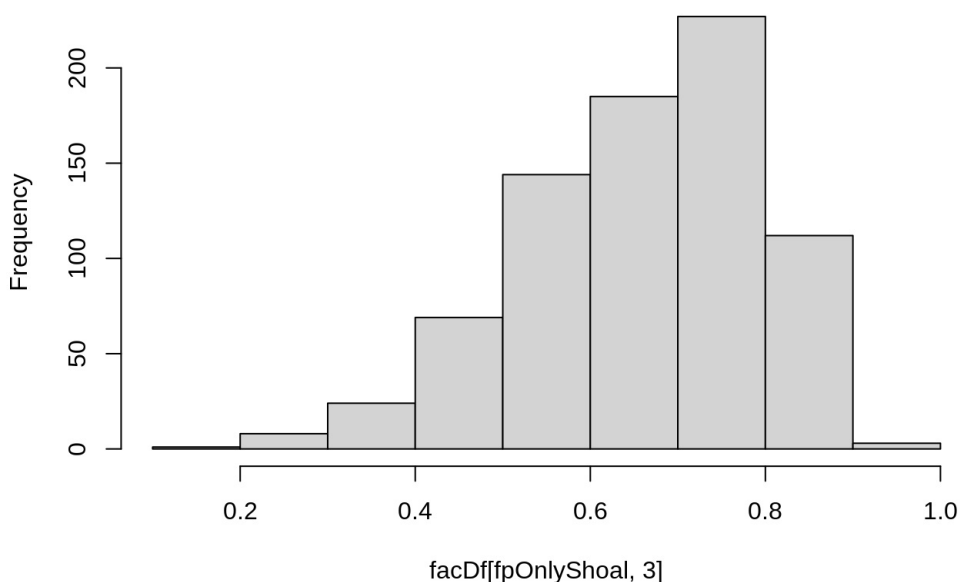
```
## [1] 0.6320981
```

```
print(trapz(df[inds+1, "FDR"], df[inds+1, "TPR"])) ##Area under roc curve for Shoal
```

```
## [1] 0.7062926
```

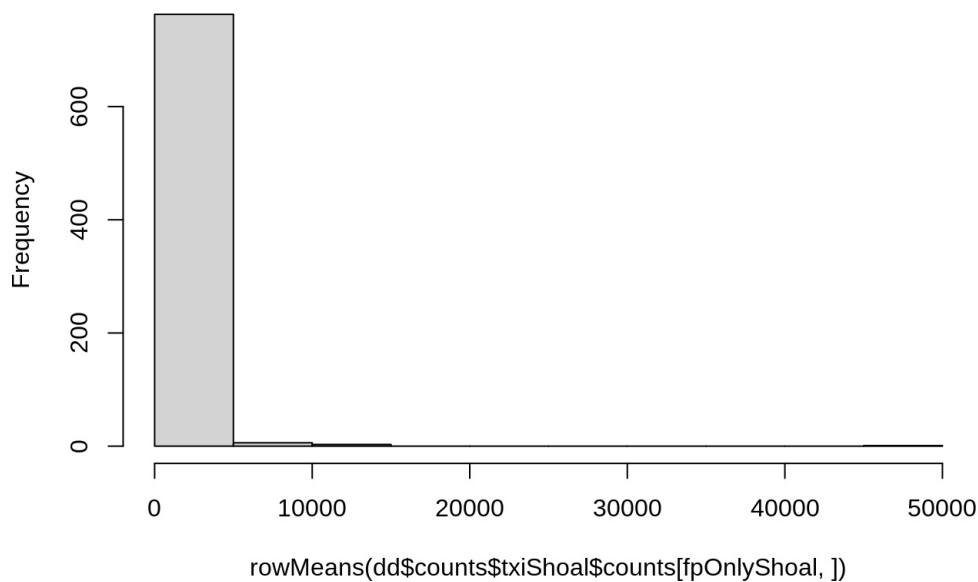
```
pShoal <- which(dd[["cob"]][["cd"]][@padj$Shoal <= 0.1)
pSal <- which(dd[["cob"]][["cd"]][@padj$Sal <= 0.1)
fpSal <- setdiff(pSal, which(dd[["cob"]][["cd"]][@truth$status==1))
fpShoal <- setdiff(pShoal, which(dd[["cob"]][["cd"]][@truth$status==1))
fpOnlyShoal <- rownames(dd[["cob"]][["cd"]][@truth][setdiff(fpShoal, fpSal)])
facDf <- read.delim("swim/shoal_best_updated/vbprior=1e0/c=0.1/prior.tsv", row.names = 1)
hist(facDf[fpOnlyShoal,3])
```

Histogram of facDf[fpOnlyShoal, 3]



```
hist(rowMeans(dd$counts$txiShoal$counts[fpOnlyShoal,]))
```

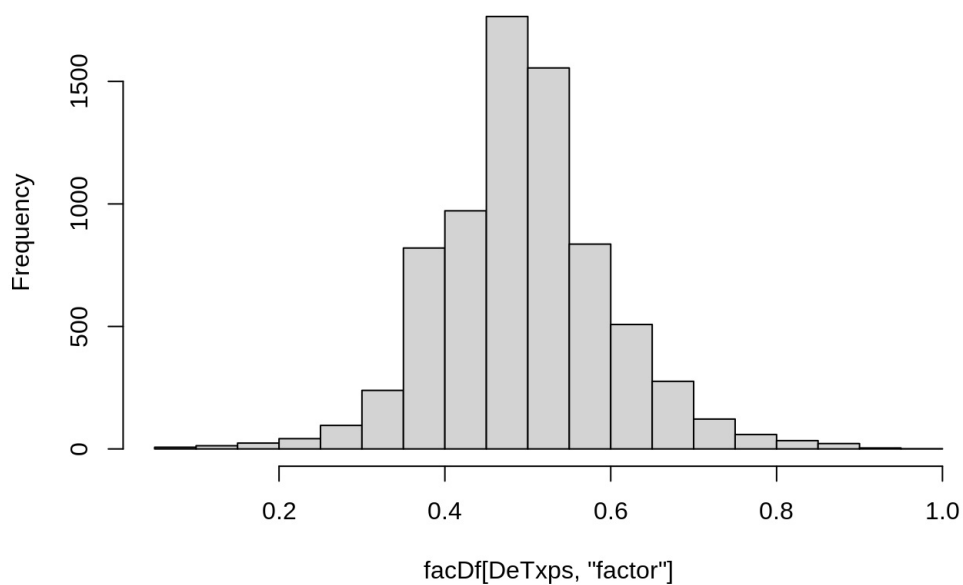
**Histogram of rowMeans(dd\$counts\$txiShoal\$counts[fpOnlyShoal, ])**



Factors for differential and non differential transcripts

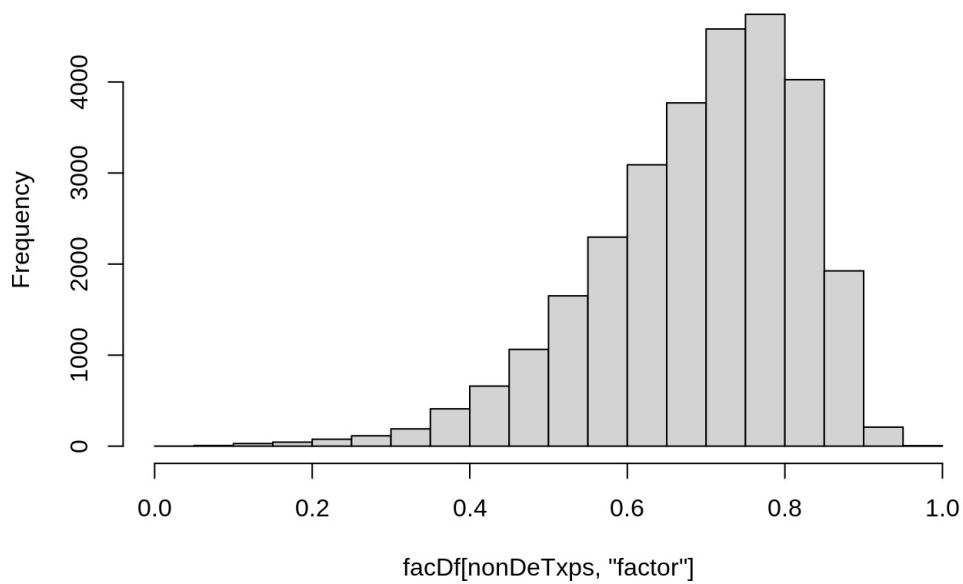
```
DeTxps <- rownames(dd[["cob"]][["cd"]>@truth][dd[["cob"]][["cd"]>@truth==1]  
nonDeTxps <- rownames(dd[["cob"]][["cd"]>@truth][dd[["cob"]][["cd"]>@truth==0]  
  
hist(facDf[DeTxps, "factor"])
```

**Histogram of facDf[DeTxps, "factor"]**



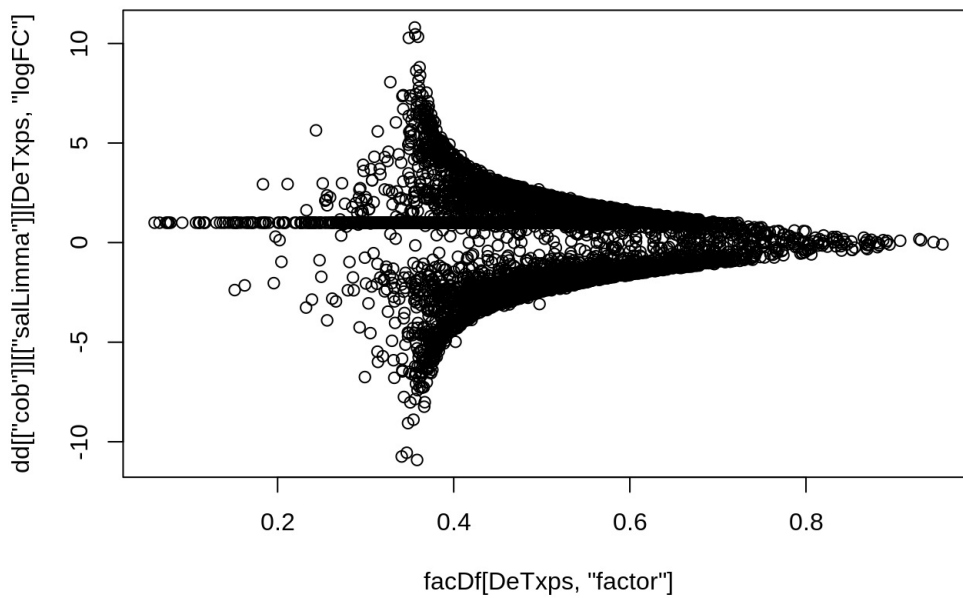
```
hist(facDf[nonDeTxps, "factor"])
```

Histogram of facDf[nonDeTxps, "factor"]

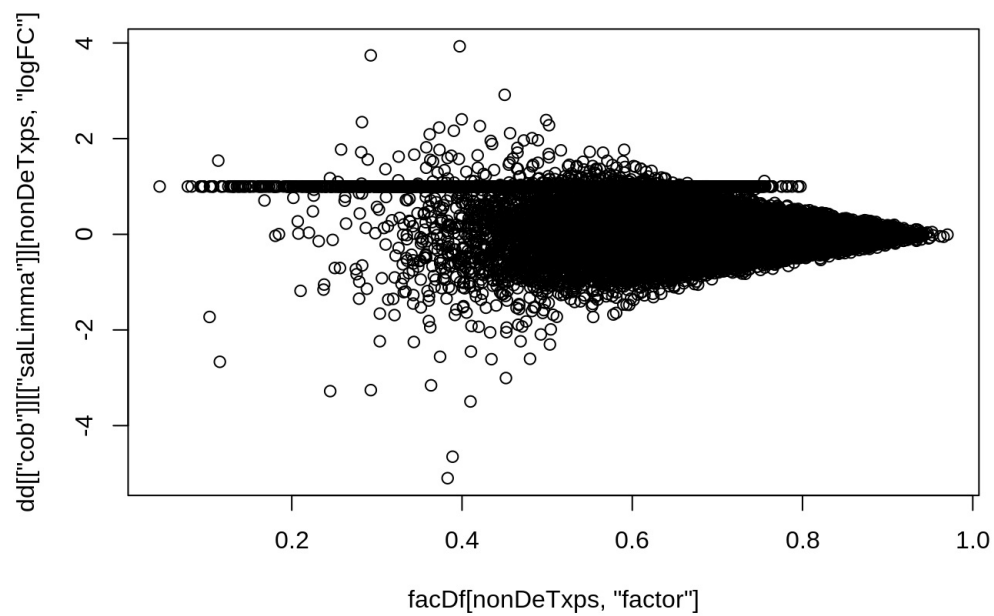


logFC changes with factors Shoal

```
plot(facDf[DeTxps, "factor"], dd[["cob"]][["salLimma"]][DeTxps, "logFC"])
```

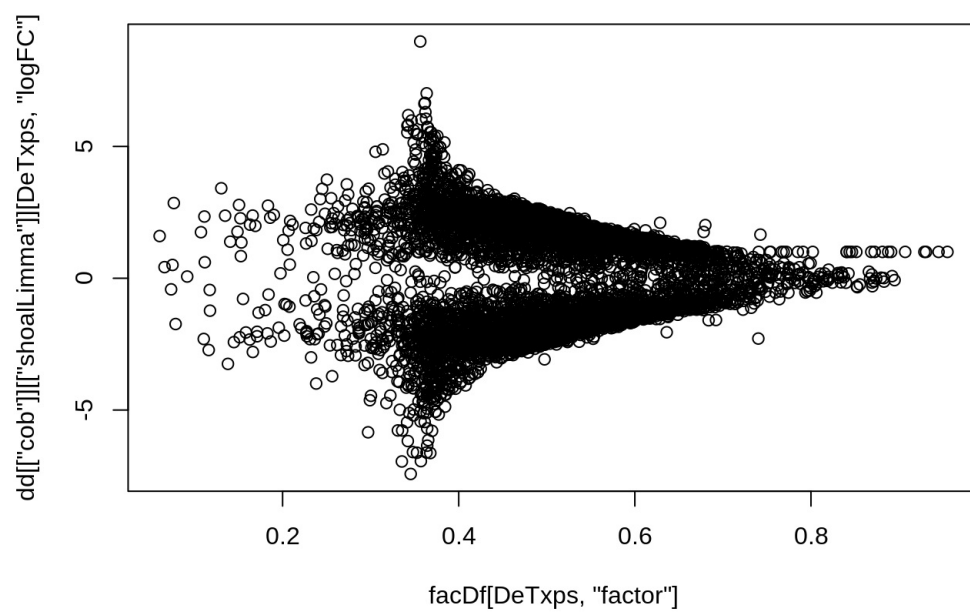


```
plot(facDf[nonDeTxps, "factor"], dd[["cob"]][["salLimma"]][nonDeTxps, "logFC"])
```



logFC changes with factors Shoal

```
plot(facDf[DeTxps, \"factor\"], dd[\"cob\"][[\"shoalLimma\"]][DeTxps, \"logFC\"])
```



```
plot(facDf[nonDeTxps, \"factor\"], dd[\"cob\"][[\"shoalLimma\"]][nonDeTxps, \"logFC\"])
```

