

Barcelona Global Health Institute (ISGlobal), Campus PRBB

```
library(ggplot2)
library(ggfortify)
library(XLConnect)

## Loading required package: XLConnectJars
## XLConnect 0.2-13 by Mirai Solutions GmbH [aut],
## Martin Studer [cre],
## The Apache Software Foundation [ctb, cph] (Apache POI),
## Graph Builder [ctb, cph] (Curvesapi Java library)
## http://www.mirai-solutions.com ,
## http://miraisolutions.wordpress.com

library(dplyr)

##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##
##   filter, lag
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

library(Hmisc)

## Loading required package: lattice
## Loading required package: survival
## Loading required package: Formula
##
## Attaching package: 'Hmisc'
## The following objects are masked from 'package:dplyr':
##
##   combine, src, summarize
## The following objects are masked from 'package:base':
##
##   format.pval, round.POSIXt, trunc.POSIXt, units
```

Primer importem el diccionari de noms antics i nous:

```
rosetta <- read.table("/home/lucas/ISGlobal/Gen_Referencies/Gene_references_rose
```

Desprs la llista de gens amb mxima differncia segons transcripci:

```
diff_trans <- read.table("/home/lucas/ISGlobal/Llista_diff_10G_12B.txt", fill = '

## Warning in file(file, "rt", encoding = fileEncoding): cannot
open file '/home/lucas/ISGlobal/Llista_diff_10G_12B.txt': No such
file or directory
## Error in file(file, "rt", encoding = fileEncoding): cannot open
the connection
```

Alguna diferència segons transcripci:

```
diff_trans_all <- read.table("/home/lucas/ISGlobal/Llista_diff_10G_12B_all.txt",

## Warning in file(file, "rt", encoding = fileEncoding): cannot
open file '/home/lucas/ISGlobal/Llista_diff_10G_12B_all.txt': No
such file or directory
## Error in file(file, "rt", encoding = fileEncoding): cannot open
the connection
```

Differential peak calling 10G

```
diff_10G_met <- read.table("/home/lucas/ISGlobal/Chip_Seq/DATA/Aligns/q5/Narrow_
```

Differential peak calling 1.2B

```
diff_12B_met <- read.table("/home/lucas/ISGlobal/Chip_Seq/DATA/Aligns/q5/Narrow_
```

Comprovant que tots surten al diccionari

```
table(diff_10G_met[,1] %in% rosetta[,1])

##
## FALSE TRUE
##      2   31

diff_10G_met[!diff_10G_met[,1] %in% rosetta[,1],1]

## [1] PF3D7_0701100 PF3D7_0800750
## 33 Levels: PF3D7_0100200 PF3D7_0100300 PF3D7_0215300 ... PF3D7_1371900
```

```
table(diff_trans[,1] %in% rosetta[,3] | diff_trans[,1] %in% rosetta[,4] | diff_t
## Error in diff_trans[, 1] %in% rosetta[, 3]: object 'diff_trans'
not found
```

Tradur tots els gens de "diff<sub>t</sub>trans"

```
for (i in 1:length(diff_trans[,1])){
  if (diff_trans[i,1] %in% rosetta[,3]){
    diff_trans[i,2] <- rosetta[rosetta[,3] %in% diff_trans[i,1],1]
  } else if (diff_trans[i,1] %in% rosetta[,4]){
    diff_trans[i,2] <- rosetta[rosetta[,4] %in% diff_trans[i,1],1]
  } else if (diff_trans[i,1] %in% rosetta[,5]){
    diff_trans[i,2] <- rosetta[rosetta[,5] %in% diff_trans[i,1],1]
  }
}

## Error in eval(expr, envir, enclos): object 'diff_trans' not
found
```

Tradur diff<sub>t</sub>trans<sub>a</sub>!!*ALERTA!!!algunstenenmultiplestraduuccions!*

```
for (i in 1:length(diff_trans_all[,1])){
  if (diff_trans_all[i,1] %in% rosetta[,3]){
    diff_trans_all[i,2] <- rosetta[rosetta[,3] %in% diff_trans_all[i,1],1][1]
  } else if (diff_trans_all[i,1] %in% rosetta[,4]){
    diff_trans_all[i,2] <- rosetta[rosetta[,4] %in% diff_trans_all[i,1],1][1]
  } else if (diff_trans_all[i,1] %in% rosetta[,5]){
    diff_trans_all[i,2] <- rosetta[rosetta[,5] %in% diff_trans_all[i,1],1][1]
  }
}

## Error in eval(expr, envir, enclos): object 'diff_trans_all'
not found
```

Gens de diff<sub>t</sub>trans<sub>que</sub>estanenunualtrallistadelsdifferentialpeakcallings

```
# Taula
table(diff_trans[,2] %in% diff_10G_met[,1] | diff_trans[,2] %in% diff_12B_met[,
```

```

## Error in diff_trans[, 2] %in% diff_10G_met[, 1]: object 'diff_trans'
not found

# Gens que sn a la llista de diff_peaks
diff_trans[diff_trans[,2] %in% diff_10G_met[,1] | diff_trans[,2] %in% diff_12B_

## Error in eval(expr, envir, enclos): object 'diff_trans' not
found

# Gens que no sn a la llista de diff_peaks
diff_trans[!(diff_trans[,2] %in% diff_10G_met[,1] | diff_trans[,2] %in% diff_12B_

## Error in eval(expr, envir, enclos): object 'diff_trans' not
found

#### Gens que surten diferencialment metilats que sn a la llista de trans ##

table(diff_10G_met[,1] %in% diff_trans[,2])

## Error in diff_10G_met[, 1] %in% diff_trans[, 2]: object 'diff_trans'
not found

for (i in diff_10G_met[!diff_10G_met[,1] %in% diff_trans[,2],1]){
  print(i)
}

## Error in diff_10G_met[, 1] %in% diff_trans[, 2]: object 'diff_trans'
not found

table(diff_12B_met[,1] %in% diff_trans[,2])

## Error in diff_12B_met[, 1] %in% diff_trans[, 2]: object 'diff_trans'
not found

for (i in diff_12B_met[diff_12B_met[,1] %in% diff_trans[,2],1]){
  print(i)
}

## Error in diff_12B_met[, 1] %in% diff_trans[, 2]: object 'diff_trans'
not found

#### Gens de diff_trans_all que estan en un o altra llista dels diffential pe

# Taula
table(diff_trans_all[,2] %in% diff_10G_met[,1] | diff_trans_all[,2] %in% diff_1

```

```

## Error in diff_trans_all[, 2] %in% diff_10G_met[, 1]: object
'diff_trans_all' not found

# Gens que sn a la llista de diff_peaks
diff_trans_all[diff_trans_all[,2] %in% diff_10G_met | diff_trans_all[,2] %in% d

## Error in eval(expr, envir, enclos): object 'diff_trans_all'
not found

# Gens que no sn a la llista de diff_peaks
diff_trans_all[!(diff_trans_all[,2] %in% diff_10G_met | diff_trans_all[,2] %in%

## Error in eval(expr, envir, enclos): object 'diff_trans_all'
not found

#### Gens que surten diferencialment metilats que sn a la llista de trans ####

table(diff_10G_met[,1] %in% diff_trans_all[,2])

## Error in diff_10G_met[, 1] %in% diff_trans_all[, 2]: object
'diff_trans_all' not found

table(diff_12B_met[,1] %in% diff_trans_all[,2])

## Error in diff_12B_met[, 1] %in% diff_trans_all[, 2]: object
'diff_trans_all' not found

#### Importar "taules" de gens metilats ####
df_10G <- read.table("/home/lucas/ISGlobal/Chip_Seq/DATA/Aligns/q5/Narrow_fe15/
df_1.2B <- read.table("/home/lucas/ISGlobal/Chip_Seq/DATA/Aligns/q5/Narrow_fe15/

df_10G <- df_10G[df_10G$Gene %in% diff_trans_all[,2],]

## Error in df_10G$Gene %in% diff_trans_all[, 2]: object 'diff_trans_all'
not found

df_1.2B <- df_1.2B[df_1.2B$Gene %in% diff_trans_all[,2],]

## Error in df_1.2B$Gene %in% diff_trans_all[, 2]: object 'diff_trans_all'
not found

head(df_10G)

```

```

##           Gene Gene.cov X5.cov X3.cov           Chrom
## 1 PF3D7_0100200      81.47      0      0 Pf3D7_01_v3
## 2 PF3D7_0100300       0.00      0     50 Pf3D7_01_v3
## 3 PF3D7_0100300      41.88      0      0 Pf3D7_01_v3
## 4 PF3D7_0100400      48.55      0      0 Pf3D7_01_v3
## 5 PF3D7_0220800     100.00     100     100 Pf3D7_02_v3
## 6 PF3D7_0300100       4.19      0      0 Pf3D7_03_v3
##
##                                     Annotations
## 1                                     ID=PF3D7_0100200;description=rifin
## 2 ID=PF3D7_0100300;description=erythrocyte membrane protein 1%2C PfEMP1
## 3 ID=PF3D7_0100300;description=erythrocyte membrane protein 1%2C PfEMP1
## 4                                     ID=PF3D7_0100400;description=rifin
## 5   ID=PF3D7_0220800;description=cytoadherence linked asexual protein 2
## 6 ID=PF3D7_0300100;description=erythrocyte membrane protein 1%2C PfEMP1

#Tota la taula
table(df_10G$Gene %in% diff_trans[,2])

## Error in df_10G$Gene %in% diff_trans[, 2]:  object 'diff_trans'
not found

df_10G$Gene[!df_10G$Gene %in% diff_trans[,2]]

## Error in df_10G$Gene %in% diff_trans[, 2]:  object 'diff_trans'
not found

table(df_1.2B$Gene %in% diff_trans[,2])

## Error in df_1.2B$Gene %in% diff_trans[, 2]:  object 'diff_trans'
not found

df_1.2B$Gene[!df_1.2B$Gene %in% diff_trans[,2]]

## Error in df_1.2B$Gene %in% diff_trans[, 2]:  object 'diff_trans'
not found

#Noms gens metilats a 5' o a ORF
df_10G_tss <- df_10G[df_10G$X5.cov > 30,]
df_10G_ORF <- df_10G[df_10G$Gene.cov > 30,]
df_10G_filtered <- df_10G[df_10G$X5.cov > 30 | df_10G$Gene.cov > 10,]

table(df_10G_tss$Gene %in% diff_trans[,2])

```

```

## Error in df_10G_tss$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

df_10G_tss[df_10G_tss$Gene %in% diff_trans[,2],]

## Error in df_10G_tss$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

df_10G_tss[!df_10G_tss$Gene %in% diff_trans[,2],]

## Error in df_10G_tss$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

table(df_10G_ORF$Gene %in% diff_trans[,2])

## Error in df_10G_ORF$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

df_10G_ORF[df_10G_ORF$Gene %in% diff_trans[,2],]

## Error in df_10G_ORF$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

df_10G_ORF[!df_10G_ORF$Gene %in% diff_trans[,2],]

## Error in df_10G_ORF$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

table(df_10G_filtered$Gene %in% diff_trans[,2])

## Error in df_10G_filtered$Gene %in% diff_trans[, 2]: object
'diff_trans' not found

table(df_10G_filtered$Gene[!df_10G_filtered$Gene %in% diff_trans[,2]] %in% diff

## Error in df_10G_filtered$Gene %in% diff_trans[, 2]: object
'diff_trans' not found

df_1.2B_tss <- df_1.2B[df_1.2B$X5.cov > 10,]
df_1.2B_ORF <- df_1.2B[df_1.2B$Gene.cov > 10,]
df_1.2B_filtered <- df_1.2B[df_1.2B$X5.cov > 10 | df_1.2B$Gene.cov > 10,]

table(df_1.2B_tss$Gene %in% diff_trans[,2])

## Error in df_1.2B_tss$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

```

```

table(df_1.2B_ORF$Gene %in% diff_trans[,2])

## Error in df_1.2B_ORF$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

table(df_1.2B_filtered$Gene %in% diff_trans[,2])

## Error in df_1.2B_filtered$Gene %in% diff_trans[, 2]: object
'diff_trans' not found

#### PCAS ####
df_10G["Trans"] <- df_10G$Gene %in% diff_trans[,2]

## Error in df_10G$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

autoplot(prcomp(df_10G[,2:4]), data = df_10G, colour = "Trans")

## Error in grDevices::col2rgb(colour, TRUE): invalid color name
'Trans'

df_1.2B["Trans"] <- df_1.2B$Gene %in% diff_trans[,2]

## Error in df_1.2B$Gene %in% diff_trans[, 2]: object 'diff_trans'
not found

autoplot(prcomp(df_1.2B[,2:4]), data = df_1.2B, colour = "Trans")

## Error in grDevices::col2rgb(colour, TRUE): invalid color name
'Trans'

colnames(df_10G)

## [1] "Gene"          "Gene.cov"      "X5.cov"        "X3.cov"        "Chrom"
## [6] "Annotations"

ggplot(data = df_10G, aes( x = Gene.cov, y = X5.cov)) + geom_point(aes(color =

## Error in FUN(X[[i]], ...): object 'Trans' not found

ggplot(data = df_1.2B, aes( x = Gene.cov, y = X5.cov)) + geom_point(aes(color =

## Error in FUN(X[[i]], ...): object 'Trans' not found

```



```
#### Recalcular diferncies transcripci ####
```

```
xls <- readWorksheetFromFile("/home/lucas/ISGlobal/Chip_Seq/Transcripci_CSV/3D7
```

```
## Warning: Error detected in cell AE9 - Division by 0
## Warning: Error detected in cell AE18 - Division by 0
## Warning: Error detected in cell AE199 - Division by 0
## Warning: Error detected in cell AE294 - Division by 0
## Warning: Error detected in cell AE318 - Division by 0
## Warning: Error detected in cell AE325 - Division by 0
## Warning: Error detected in cell AE486 - Division by 0
## Warning: Error detected in cell AE488 - Division by 0
## Warning: Error detected in cell AE492 - Division by 0
## Warning: Error detected in cell AE493 - Division by 0
## Warning: Error detected in cell AE635 - Division by 0
## Warning: Error detected in cell AE651 - Division by 0
## Warning: Error detected in cell AE697 - Division by 0
## Warning: Error detected in cell AE699 - Division by 0
## Warning: Error detected in cell AE711 - Division by 0
## Warning: Error detected in cell AE719 - Division by 0
## Warning: Error detected in cell AE792 - Division by 0
## Warning: Error detected in cell AE872 - Division by 0
## Warning: Error detected in cell AE910 - Division by 0
## Warning: Error detected in cell AE992 - Division by 0
## Warning: Error detected in cell AE996 - Division by 0
## Warning: Error detected in cell AE1278 - Division by 0
## Warning: Error detected in cell AE1360 - Division by 0
## Warning: Error detected in cell AE1363 - Division by 0
## Warning: Error detected in cell AE1370 - Division by 0
## Warning: Error detected in cell AE1390 - Division by 0
## Warning: Error detected in cell AE1680 - Division by 0
## Warning: Error detected in cell AE1771 - Division by 0
## Warning: Error detected in cell AE1805 - Division by 0
## Warning: Error detected in cell AE2151 - Division by 0
## Warning: Error detected in cell AE2152 - Division by 0
## Warning: Error detected in cell AE2153 - Division by 0
## Warning: Error detected in cell AE2727 - Division by 0
## Warning: Error detected in cell AE2881 - Division by 0
## Warning: Error detected in cell AE2890 - Division by 0
## Warning: Error detected in cell AE2892 - Division by 0
```

```
## Warning: Error detected in cell AE2904 - Division by 0
## Warning: Error detected in cell AE3016 - Division by 0
## Warning: Error detected in cell AE3022 - Division by 0
## Warning: Error detected in cell AE3026 - Division by 0
## Warning: Error detected in cell AE3030 - Division by 0
## Warning: Error detected in cell AE3040 - Division by 0
## Warning: Error detected in cell AE3045 - Division by 0
## Warning: Error detected in cell AE3046 - Division by 0
## Warning: Error detected in cell AE3047 - Division by 0
## Warning: Error detected in cell AE3230 - Division by 0
## Warning: Error detected in cell AE3234 - Division by 0
## Warning: Error detected in cell AE3240 - Division by 0
## Warning: Error detected in cell AE3241 - Division by 0
## Warning: Error detected in cell AE3252 - Division by 0
## Warning: Error detected in cell AE3257 - Division by 0
## Warning: Error detected in cell AE3481 - Division by 0
## Warning: Error detected in cell AE3542 - Division by 0
## Warning: Error detected in cell AE3543 - Division by 0
## Warning: Error detected in cell AE3546 - Division by 0
## Warning: Error detected in cell AE3548 - Division by 0
## Warning: Error detected in cell AE3549 - Division by 0
## Warning: Error detected in cell AE3655 - Division by 0
## Warning: Error detected in cell AE3775 - Division by 0
## Warning: Error detected in cell AE3776 - Division by 0
## Warning: Error detected in cell AE3835 - Division by 0
## Warning: Error detected in cell AE3876 - Division by 0
## Warning: Error detected in cell AE4086 - Division by 0
## Warning: Error detected in cell AE4093 - Division by 0
## Warning: Error detected in cell AE4122 - Division by 0
## Warning: Error detected in cell AE4371 - Division by 0
## Warning: Error detected in cell AE4396 - Division by 0
## Warning: Error detected in cell AE4400 - Division by 0
## Warning: Error detected in cell AE4401 - Division by 0
## Warning: Error detected in cell AE4607 - Division by 0
## Warning: Error detected in cell AE4877 - Division by 0
## Warning: Error detected in cell AE5098 - Division by 0
## Warning: Error detected in cell AE5138 - Division by 0
## Warning: Error detected in cell AE5257 - Division by 0
## Warning: Error detected in cell AE5259 - Division by 0
```

```
## Warning: Error detected in cell AE5262 - Division by 0
## Warning: Error detected in cell AE5266 - Division by 0
## Warning: Error detected in cell AE5267 - Division by 0
## Warning: Error detected in cell AG9 - Incompatible type
## Warning: Error detected in cell AG18 - Incompatible type
## Warning: Error detected in cell AG199 - Incompatible type
## Warning: Error detected in cell AG294 - Incompatible type
## Warning: Error detected in cell AG318 - Incompatible type
## Warning: Error detected in cell AG320 - Incompatible type
## Warning: Error detected in cell AG322 - Incompatible type
## Warning: Error detected in cell AG325 - Incompatible type
## Warning: Error detected in cell AG468 - Incompatible type
## Warning: Error detected in cell AG486 - Incompatible type
## Warning: Error detected in cell AG488 - Incompatible type
## Warning: Error detected in cell AG492 - Incompatible type
## Warning: Error detected in cell AG493 - Incompatible type
## Warning: Error detected in cell AG558 - Incompatible type
## Warning: Error detected in cell AG635 - Incompatible type
## Warning: Error detected in cell AG651 - Incompatible type
## Warning: Error detected in cell AG697 - Incompatible type
## Warning: Error detected in cell AG699 - Incompatible type
## Warning: Error detected in cell AG711 - Incompatible type
## Warning: Error detected in cell AG719 - Incompatible type
## Warning: Error detected in cell AG792 - Incompatible type
## Warning: Error detected in cell AG847 - Incompatible type
## Warning: Error detected in cell AG872 - Incompatible type
## Warning: Error detected in cell AG910 - Incompatible type
## Warning: Error detected in cell AG992 - Incompatible type
## Warning: Error detected in cell AG996 - Incompatible type
## Warning: Error detected in cell AG1278 - Incompatible type
## Warning: Error detected in cell AG1354 - Incompatible type
## Warning: Error detected in cell AG1360 - Incompatible type
## Warning: Error detected in cell AG1362 - Incompatible type
## Warning: Error detected in cell AG1363 - Incompatible type
## Warning: Error detected in cell AG1370 - Incompatible type
## Warning: Error detected in cell AG1373 - Incompatible type
## Warning: Error detected in cell AG1390 - Incompatible type
## Warning: Error detected in cell AG1680 - Incompatible type
## Warning: Error detected in cell AG1713 - Incompatible type
```



```
## Warning: Error detected in cell AG3549 - Incompatible type
## Warning: Error detected in cell AG3655 - Incompatible type
## Warning: Error detected in cell AG3768 - Incompatible type
## Warning: Error detected in cell AG3775 - Incompatible type
## Warning: Error detected in cell AG3776 - Incompatible type
## Warning: Error detected in cell AG3777 - Incompatible type
## Warning: Error detected in cell AG3816 - Incompatible type
## Warning: Error detected in cell AG3835 - Incompatible type
## Warning: Error detected in cell AG3876 - Incompatible type
## Warning: Error detected in cell AG3946 - Incompatible type
## Warning: Error detected in cell AG4086 - Incompatible type
## Warning: Error detected in cell AG4093 - Incompatible type
## Warning: Error detected in cell AG4122 - Incompatible type
## Warning: Error detected in cell AG4371 - Incompatible type
## Warning: Error detected in cell AG4381 - Incompatible type
## Warning: Error detected in cell AG4392 - Incompatible type
## Warning: Error detected in cell AG4396 - Incompatible type
## Warning: Error detected in cell AG4400 - Incompatible type
## Warning: Error detected in cell AG4401 - Incompatible type
## Warning: Error detected in cell AG4607 - Incompatible type
## Warning: Error detected in cell AG4742 - Incompatible type
## Warning: Error detected in cell AG4744 - Incompatible type
## Warning: Error detected in cell AG4877 - Incompatible type
## Warning: Error detected in cell AG5098 - Incompatible type
## Warning: Error detected in cell AG5138 - Incompatible type
## Warning: Error detected in cell AG5257 - Incompatible type
## Warning: Error detected in cell AG5259 - Incompatible type
## Warning: Error detected in cell AG5262 - Incompatible type
## Warning: Error detected in cell AG5264 - Incompatible type
## Warning: Error detected in cell AG5266 - Incompatible type
## Warning: Error detected in cell AG5267 - Incompatible type
## Warning: Error detected in cell AH9 - Incompatible type
## Warning: Error detected in cell AH18 - Incompatible type
## Warning: Error detected in cell AH199 - Incompatible type
## Warning: Error detected in cell AH266 - Incompatible type
## Warning: Error detected in cell AH294 - Incompatible type
## Warning: Error detected in cell AH318 - Incompatible type
## Warning: Error detected in cell AH320 - Incompatible type
## Warning: Error detected in cell AH322 - Incompatible type
```

```
## Warning: Error detected in cell AH324 - Incompatible type
## Warning: Error detected in cell AH325 - Incompatible type
## Warning: Error detected in cell AH358 - Incompatible type
## Warning: Error detected in cell AH468 - Incompatible type
## Warning: Error detected in cell AH486 - Incompatible type
## Warning: Error detected in cell AH488 - Incompatible type
## Warning: Error detected in cell AH492 - Incompatible type
## Warning: Error detected in cell AH493 - Incompatible type
## Warning: Error detected in cell AH523 - Incompatible type
## Warning: Error detected in cell AH558 - Incompatible type
## Warning: Error detected in cell AH635 - Incompatible type
## Warning: Error detected in cell AH651 - Incompatible type
## Warning: Error detected in cell AH697 - Incompatible type
## Warning: Error detected in cell AH699 - Incompatible type
## Warning: Error detected in cell AH711 - Incompatible type
## Warning: Error detected in cell AH719 - Incompatible type
## Warning: Error detected in cell AH792 - Incompatible type
## Warning: Error detected in cell AH872 - Incompatible type
## Warning: Error detected in cell AH910 - Incompatible type
## Warning: Error detected in cell AH992 - Incompatible type
## Warning: Error detected in cell AH994 - Incompatible type
## Warning: Error detected in cell AH996 - Incompatible type
## Warning: Error detected in cell AH998 - Incompatible type
## Warning: Error detected in cell AH1278 - Incompatible type
## Warning: Error detected in cell AH1360 - Incompatible type
## Warning: Error detected in cell AH1362 - Incompatible type
## Warning: Error detected in cell AH1363 - Incompatible type
## Warning: Error detected in cell AH1370 - Incompatible type
## Warning: Error detected in cell AH1373 - Incompatible type
## Warning: Error detected in cell AH1390 - Incompatible type
## Warning: Error detected in cell AH1475 - Incompatible type
## Warning: Error detected in cell AH1680 - Incompatible type
## Warning: Error detected in cell AH1713 - Incompatible type
## Warning: Error detected in cell AH1771 - Incompatible type
## Warning: Error detected in cell AH1777 - Incompatible type
## Warning: Error detected in cell AH1805 - Incompatible type
## Warning: Error detected in cell AH1806 - Incompatible type
## Warning: Error detected in cell AH2097 - Incompatible type
## Warning: Error detected in cell AH2151 - Incompatible type
```

[illegible]

```
## Warning: Error detected in cell AH3542 - Incompatible type
## Warning: Error detected in cell AH3543 - Incompatible type
## Warning: Error detected in cell AH3546 - Incompatible type
## Warning: Error detected in cell AH3548 - Incompatible type
## Warning: Error detected in cell AH3549 - Incompatible type
## Warning: Error detected in cell AH3560 - Incompatible type
## Warning: Error detected in cell AH3655 - Incompatible type
## Warning: Error detected in cell AH3775 - Incompatible type
## Warning: Error detected in cell AH3776 - Incompatible type
## Warning: Error detected in cell AH3777 - Incompatible type
## Warning: Error detected in cell AH3778 - Incompatible type
## Warning: Error detected in cell AH3835 - Incompatible type
## Warning: Error detected in cell AH3876 - Incompatible type
## Warning: Error detected in cell AH4026 - Incompatible type
## Warning: Error detected in cell AH4086 - Incompatible type
## Warning: Error detected in cell AH4093 - Incompatible type
## Warning: Error detected in cell AH4122 - Incompatible type
## Warning: Error detected in cell AH4371 - Incompatible type
## Warning: Error detected in cell AH4381 - Incompatible type
## Warning: Error detected in cell AH4392 - Incompatible type
## Warning: Error detected in cell AH4396 - Incompatible type
## Warning: Error detected in cell AH4400 - Incompatible type
## Warning: Error detected in cell AH4401 - Incompatible type
## Warning: Error detected in cell AH4607 - Incompatible type
## Warning: Error detected in cell AH4742 - Incompatible type
## Warning: Error detected in cell AH4877 - Incompatible type
## Warning: Error detected in cell AH5098 - Incompatible type
## Warning: Error detected in cell AH5138 - Incompatible type
## Warning: Error detected in cell AH5172 - Incompatible type
## Warning: Error detected in cell AH5257 - Incompatible type
## Warning: Error detected in cell AH5259 - Incompatible type
## Warning: Error detected in cell AH5260 - Incompatible type
## Warning: Error detected in cell AH5262 - Incompatible type
## Warning: Error detected in cell AH5264 - Incompatible type
## Warning: Error detected in cell AH5266 - Incompatible type
## Warning: Error detected in cell AH5267 - Incompatible type
## Warning: Error detected in cell AI9 - Incompatible type
## Warning: Error detected in cell AI18 - Incompatible type
## Warning: Error detected in cell AI66 - Incompatible type
```



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## Warning: Error detected in cell AI199 - Incompatible type
## Warning: Error detected in cell AI266 - Incompatible type
## Warning: Error detected in cell AI294 - Incompatible type
## Warning: Error detected in cell AI318 - Incompatible type
## Warning: Error detected in cell AI320 - Incompatible type
## Warning: Error detected in cell AI322 - Incompatible type
## Warning: Error detected in cell AI324 - Incompatible type
## Warning: Error detected in cell AI325 - Incompatible type
## Warning: Error detected in cell AI468 - Incompatible type
## Warning: Error detected in cell AI486 - Incompatible type
## Warning: Error detected in cell AI488 - Incompatible type
## Warning: Error detected in cell AI492 - Incompatible type
## Warning: Error detected in cell AI493 - Incompatible type
## Warning: Error detected in cell AI523 - Incompatible type
## Warning: Error detected in cell AI635 - Incompatible type
## Warning: Error detected in cell AI651 - Incompatible type
## Warning: Error detected in cell AI697 - Incompatible type
## Warning: Error detected in cell AI699 - Incompatible type
## Warning: Error detected in cell AI711 - Incompatible type
## Warning: Error detected in cell AI719 - Incompatible type
## Warning: Error detected in cell AI792 - Incompatible type
## Warning: Error detected in cell AI847 - Incompatible type
## Warning: Error detected in cell AI872 - Incompatible type
## Warning: Error detected in cell AI910 - Incompatible type
## Warning: Error detected in cell AI952 - Incompatible type
## Warning: Error detected in cell AI992 - Incompatible type
## Warning: Error detected in cell AI996 - Incompatible type
## Warning: Error detected in cell AI1278 - Incompatible type
## Warning: Error detected in cell AI1354 - Incompatible type
## Warning: Error detected in cell AI1360 - Incompatible type
## Warning: Error detected in cell AI1361 - Incompatible type
## Warning: Error detected in cell AI1363 - Incompatible type
## Warning: Error detected in cell AI1370 - Incompatible type
## Warning: Error detected in cell AI1373 - Incompatible type
## Warning: Error detected in cell AI1390 - Incompatible type
## Warning: Error detected in cell AI1475 - Incompatible type
## Warning: Error detected in cell AI1680 - Incompatible type
## Warning: Error detected in cell AI1713 - Incompatible type
## Warning: Error detected in cell AI1771 - Incompatible type
```



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## Warning: Error detected in cell AI3484 - Incompatible type
## Warning: Error detected in cell AI3535 - Incompatible type
## Warning: Error detected in cell AI3542 - Incompatible type
## Warning: Error detected in cell AI3543 - Incompatible type
## Warning: Error detected in cell AI3546 - Incompatible type
## Warning: Error detected in cell AI3548 - Incompatible type
## Warning: Error detected in cell AI3549 - Incompatible type
## Warning: Error detected in cell AI3655 - Incompatible type
## Warning: Error detected in cell AI3692 - Incompatible type
## Warning: Error detected in cell AI3775 - Incompatible type
## Warning: Error detected in cell AI3776 - Incompatible type
## Warning: Error detected in cell AI3777 - Incompatible type
## Warning: Error detected in cell AI3778 - Incompatible type
## Warning: Error detected in cell AI3779 - Incompatible type
## Warning: Error detected in cell AI3816 - Incompatible type
## Warning: Error detected in cell AI3835 - Incompatible type
## Warning: Error detected in cell AI3876 - Incompatible type
## Warning: Error detected in cell AI3946 - Incompatible type
## Warning: Error detected in cell AI4086 - Incompatible type
## Warning: Error detected in cell AI4093 - Incompatible type
## Warning: Error detected in cell AI4122 - Incompatible type
## Warning: Error detected in cell AI4371 - Incompatible type
## Warning: Error detected in cell AI4381 - Incompatible type
## Warning: Error detected in cell AI4396 - Incompatible type
## Warning: Error detected in cell AI4400 - Incompatible type
## Warning: Error detected in cell AI4401 - Incompatible type
## Warning: Error detected in cell AI4607 - Incompatible type
## Warning: Error detected in cell AI4743 - Incompatible type
## Warning: Error detected in cell AI4746 - Incompatible type
## Warning: Error detected in cell AI4877 - Incompatible type
## Warning: Error detected in cell AI5098 - Incompatible type
## Warning: Error detected in cell AI5099 - Incompatible type
## Warning: Error detected in cell AI5115 - Incompatible type
## Warning: Error detected in cell AI5138 - Incompatible type
## Warning: Error detected in cell AI5257 - Incompatible type
## Warning: Error detected in cell AI5259 - Incompatible type
## Warning: Error detected in cell AI5262 - Incompatible type
## Warning: Error detected in cell AI5264 - Incompatible type
## Warning: Error detected in cell AI5266 - Incompatible type
```

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## Warning: Error detected in cell AI5267 - Incompatible type
## Warning: Error detected in cell AJ9 - Incompatible type
## Warning: Error detected in cell AJ18 - Incompatible type
## Warning: Error detected in cell AJ199 - Incompatible type
## Warning: Error detected in cell AJ294 - Incompatible type
## Warning: Error detected in cell AJ318 - Incompatible type
## Warning: Error detected in cell AJ325 - Incompatible type
## Warning: Error detected in cell AJ486 - Incompatible type
## Warning: Error detected in cell AJ488 - Incompatible type
## Warning: Error detected in cell AJ492 - Incompatible type
## Warning: Error detected in cell AJ493 - Incompatible type
## Warning: Error detected in cell AJ523 - Incompatible type
## Warning: Error detected in cell AJ558 - Incompatible type
## Warning: Error detected in cell AJ635 - Incompatible type
## Warning: Error detected in cell AJ651 - Incompatible type
## Warning: Error detected in cell AJ697 - Incompatible type
## Warning: Error detected in cell AJ699 - Incompatible type
## Warning: Error detected in cell AJ711 - Incompatible type
## Warning: Error detected in cell AJ719 - Incompatible type
## Warning: Error detected in cell AJ792 - Incompatible type
## Warning: Error detected in cell AJ872 - Incompatible type
## Warning: Error detected in cell AJ910 - Incompatible type
## Warning: Error detected in cell AJ992 - Incompatible type
## Warning: Error detected in cell AJ996 - Incompatible type
## Warning: Error detected in cell AJ998 - Incompatible type
## Warning: Error detected in cell AJ1278 - Incompatible type
## Warning: Error detected in cell AJ1360 - Incompatible type
## Warning: Error detected in cell AJ1363 - Incompatible type
## Warning: Error detected in cell AJ1370 - Incompatible type
## Warning: Error detected in cell AJ1390 - Incompatible type
## Warning: Error detected in cell AJ1680 - Incompatible type
## Warning: Error detected in cell AJ1771 - Incompatible type
## Warning: Error detected in cell AJ1805 - Incompatible type
## Warning: Error detected in cell AJ2151 - Incompatible type
## Warning: Error detected in cell AJ2152 - Incompatible type
## Warning: Error detected in cell AJ2153 - Incompatible type
## Warning: Error detected in cell AJ2231 - Incompatible type
## Warning: Error detected in cell AJ2301 - Incompatible type
## Warning: Error detected in cell AJ2727 - Incompatible type
```



```
## Warning: Error detected in cell AJ4400 - Incompatible type
## Warning: Error detected in cell AJ4401 - Incompatible type
## Warning: Error detected in cell AJ4607 - Incompatible type
## Warning: Error detected in cell AJ4743 - Incompatible type
## Warning: Error detected in cell AJ4877 - Incompatible type
## Warning: Error detected in cell AJ5098 - Incompatible type
## Warning: Error detected in cell AJ5115 - Incompatible type
## Warning: Error detected in cell AJ5138 - Incompatible type
## Warning: Error detected in cell AJ5257 - Incompatible type
## Warning: Error detected in cell AJ5259 - Incompatible type
## Warning: Error detected in cell AJ5262 - Incompatible type
## Warning: Error detected in cell AJ5266 - Incompatible type
## Warning: Error detected in cell AJ5267 - Incompatible type
## Warning: Error detected in cell AK9 - Incompatible type
## Warning: Error detected in cell AK18 - Incompatible type
## Warning: Error detected in cell AK72 - Incompatible type
## Warning: Error detected in cell AK199 - Incompatible type
## Warning: Error detected in cell AK294 - Incompatible type
## Warning: Error detected in cell AK318 - Incompatible type
## Warning: Error detected in cell AK324 - Incompatible type
## Warning: Error detected in cell AK325 - Incompatible type
## Warning: Error detected in cell AK391 - Incompatible type
## Warning: Error detected in cell AK486 - Incompatible type
## Warning: Error detected in cell AK488 - Incompatible type
## Warning: Error detected in cell AK492 - Incompatible type
## Warning: Error detected in cell AK493 - Incompatible type
## Warning: Error detected in cell AK635 - Incompatible type
## Warning: Error detected in cell AK651 - Incompatible type
## Warning: Error detected in cell AK697 - Incompatible type
## Warning: Error detected in cell AK699 - Incompatible type
## Warning: Error detected in cell AK711 - Incompatible type
## Warning: Error detected in cell AK719 - Incompatible type
## Warning: Error detected in cell AK792 - Incompatible type
## Warning: Error detected in cell AK872 - Incompatible type
## Warning: Error detected in cell AK910 - Incompatible type
## Warning: Error detected in cell AK992 - Incompatible type
## Warning: Error detected in cell AK996 - Incompatible type
## Warning: Error detected in cell AK1278 - Incompatible type
## Warning: Error detected in cell AK1360 - Incompatible type
```

[illegible]

```
## Warning: Error detected in cell AK3835 - Incompatible type
## Warning: Error detected in cell AK3876 - Incompatible type
## Warning: Error detected in cell AK3877 - Incompatible type
## Warning: Error detected in cell AK4086 - Incompatible type
## Warning: Error detected in cell AK4093 - Incompatible type
## Warning: Error detected in cell AK4122 - Incompatible type
## Warning: Error detected in cell AK4371 - Incompatible type
## Warning: Error detected in cell AK4396 - Incompatible type
## Warning: Error detected in cell AK4400 - Incompatible type
## Warning: Error detected in cell AK4401 - Incompatible type
## Warning: Error detected in cell AK4607 - Incompatible type
## Warning: Error detected in cell AK4743 - Incompatible type
## Warning: Error detected in cell AK4744 - Incompatible type
## Warning: Error detected in cell AK4877 - Incompatible type
## Warning: Error detected in cell AK5098 - Incompatible type
## Warning: Error detected in cell AK5138 - Incompatible type
## Warning: Error detected in cell AK5257 - Incompatible type
## Warning: Error detected in cell AK5259 - Incompatible type
## Warning: Error detected in cell AK5262 - Incompatible type
## Warning: Error detected in cell AK5266 - Incompatible type
## Warning: Error detected in cell AK5267 - Incompatible type
## Warning: Error detected in cell AM9 - Incompatible type
## Warning: Error detected in cell AM18 - Incompatible type
## Warning: Error detected in cell AM199 - Incompatible type
## Warning: Error detected in cell AM294 - Incompatible type
## Warning: Error detected in cell AM318 - Incompatible type
## Warning: Error detected in cell AM320 - Incompatible type
## Warning: Error detected in cell AM322 - Incompatible type
## Warning: Error detected in cell AM325 - Incompatible type
## Warning: Error detected in cell AM468 - Incompatible type
## Warning: Error detected in cell AM486 - Incompatible type
## Warning: Error detected in cell AM488 - Incompatible type
## Warning: Error detected in cell AM492 - Incompatible type
## Warning: Error detected in cell AM493 - Incompatible type
## Warning: Error detected in cell AM558 - Incompatible type
## Warning: Error detected in cell AM635 - Incompatible type
## Warning: Error detected in cell AM651 - Incompatible type
## Warning: Error detected in cell AM697 - Incompatible type
## Warning: Error detected in cell AM699 - Incompatible type
```



```
## Warning: Error detected in cell AM711 - Incompatible type
## Warning: Error detected in cell AM719 - Incompatible type
## Warning: Error detected in cell AM792 - Incompatible type
## Warning: Error detected in cell AM847 - Incompatible type
## Warning: Error detected in cell AM872 - Incompatible type
## Warning: Error detected in cell AM910 - Incompatible type
## Warning: Error detected in cell AM992 - Incompatible type
## Warning: Error detected in cell AM996 - Incompatible type
## Warning: Error detected in cell AM1278 - Incompatible type
## Warning: Error detected in cell AM1354 - Incompatible type
## Warning: Error detected in cell AM1360 - Incompatible type
## Warning: Error detected in cell AM1362 - Incompatible type
## Warning: Error detected in cell AM1363 - Incompatible type
## Warning: Error detected in cell AM1370 - Incompatible type
## Warning: Error detected in cell AM1373 - Incompatible type
## Warning: Error detected in cell AM1390 - Incompatible type
## Warning: Error detected in cell AM1680 - Incompatible type
## Warning: Error detected in cell AM1713 - Incompatible type
## Warning: Error detected in cell AM1771 - Incompatible type
## Warning: Error detected in cell AM1805 - Incompatible type
## Warning: Error detected in cell AM2151 - Incompatible type
## Warning: Error detected in cell AM2152 - Incompatible type
## Warning: Error detected in cell AM2153 - Incompatible type
## Warning: Error detected in cell AM2727 - Incompatible type
## Warning: Error detected in cell AM2881 - Incompatible type
## Warning: Error detected in cell AM2884 - Incompatible type
## Warning: Error detected in cell AM2890 - Incompatible type
## Warning: Error detected in cell AM2892 - Incompatible type
## Warning: Error detected in cell AM2904 - Incompatible type
## Warning: Error detected in cell AM2910 - Incompatible type
## Warning: Error detected in cell AM3016 - Incompatible type
## Warning: Error detected in cell AM3022 - Incompatible type
## Warning: Error detected in cell AM3024 - Incompatible type
## Warning: Error detected in cell AM3026 - Incompatible type
## Warning: Error detected in cell AM3030 - Incompatible type
## Warning: Error detected in cell AM3039 - Incompatible type
## Warning: Error detected in cell AM3040 - Incompatible type
## Warning: Error detected in cell AM3043 - Incompatible type
## Warning: Error detected in cell AM3045 - Incompatible type
```

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## Warning: Error detected in cell AM3046 - Incompatible type
## Warning: Error detected in cell AM3047 - Incompatible type
## Warning: Error detected in cell AM3230 - Incompatible type
## Warning: Error detected in cell AM3234 - Incompatible type
## Warning: Error detected in cell AM3240 - Incompatible type
## Warning: Error detected in cell AM3241 - Incompatible type
## Warning: Error detected in cell AM3243 - Incompatible type
## Warning: Error detected in cell AM3250 - Incompatible type
## Warning: Error detected in cell AM3252 - Incompatible type
## Warning: Error detected in cell AM3257 - Incompatible type
## Warning: Error detected in cell AM3353 - Incompatible type
## Warning: Error detected in cell AM3476 - Incompatible type
## Warning: Error detected in cell AM3481 - Incompatible type
## Warning: Error detected in cell AM3535 - Incompatible type
## Warning: Error detected in cell AM3542 - Incompatible type
## Warning: Error detected in cell AM3543 - Incompatible type
## Warning: Error detected in cell AM3546 - Incompatible type
## Warning: Error detected in cell AM3548 - Incompatible type
## Warning: Error detected in cell AM3549 - Incompatible type
## Warning: Error detected in cell AM3655 - Incompatible type
## Warning: Error detected in cell AM3768 - Incompatible type
## Warning: Error detected in cell AM3775 - Incompatible type
## Warning: Error detected in cell AM3776 - Incompatible type
## Warning: Error detected in cell AM3777 - Incompatible type
## Warning: Error detected in cell AM3816 - Incompatible type
## Warning: Error detected in cell AM3835 - Incompatible type
## Warning: Error detected in cell AM3876 - Incompatible type
## Warning: Error detected in cell AM3946 - Incompatible type
## Warning: Error detected in cell AM4086 - Incompatible type
## Warning: Error detected in cell AM4093 - Incompatible type
## Warning: Error detected in cell AM4122 - Incompatible type
## Warning: Error detected in cell AM4371 - Incompatible type
## Warning: Error detected in cell AM4381 - Incompatible type
## Warning: Error detected in cell AM4392 - Incompatible type
## Warning: Error detected in cell AM4396 - Incompatible type
## Warning: Error detected in cell AM4400 - Incompatible type
## Warning: Error detected in cell AM4401 - Incompatible type
## Warning: Error detected in cell AM4607 - Incompatible type
## Warning: Error detected in cell AM4742 - Incompatible type
```

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## Warning: Error detected in cell AM4744 - Incompatible type
## Warning: Error detected in cell AM4877 - Incompatible type
## Warning: Error detected in cell AM5098 - Incompatible type
## Warning: Error detected in cell AM5138 - Incompatible type
## Warning: Error detected in cell AM5257 - Incompatible type
## Warning: Error detected in cell AM5259 - Incompatible type
## Warning: Error detected in cell AM5262 - Incompatible type
## Warning: Error detected in cell AM5264 - Incompatible type
## Warning: Error detected in cell AM5266 - Incompatible type
## Warning: Error detected in cell AM5267 - Incompatible type
## Warning: Error detected in cell AN9 - Incompatible type
## Warning: Error detected in cell AN18 - Incompatible type
## Warning: Error detected in cell AN199 - Incompatible type
## Warning: Error detected in cell AN266 - Incompatible type
## Warning: Error detected in cell AN294 - Incompatible type
## Warning: Error detected in cell AN318 - Incompatible type
## Warning: Error detected in cell AN320 - Incompatible type
## Warning: Error detected in cell AN322 - Incompatible type
## Warning: Error detected in cell AN324 - Incompatible type
## Warning: Error detected in cell AN325 - Incompatible type
## Warning: Error detected in cell AN358 - Incompatible type
## Warning: Error detected in cell AN468 - Incompatible type
## Warning: Error detected in cell AN486 - Incompatible type
## Warning: Error detected in cell AN488 - Incompatible type
## Warning: Error detected in cell AN492 - Incompatible type
## Warning: Error detected in cell AN493 - Incompatible type
## Warning: Error detected in cell AN523 - Incompatible type
## Warning: Error detected in cell AN558 - Incompatible type
## Warning: Error detected in cell AN635 - Incompatible type
## Warning: Error detected in cell AN651 - Incompatible type
## Warning: Error detected in cell AN697 - Incompatible type
## Warning: Error detected in cell AN699 - Incompatible type
## Warning: Error detected in cell AN711 - Incompatible type
## Warning: Error detected in cell AN719 - Incompatible type
## Warning: Error detected in cell AN792 - Incompatible type
## Warning: Error detected in cell AN872 - Incompatible type
## Warning: Error detected in cell AN910 - Incompatible type
## Warning: Error detected in cell AN992 - Incompatible type
## Warning: Error detected in cell AN994 - Incompatible type
```

```
## Warning: Error detected in cell AN996 - Incompatible type
## Warning: Error detected in cell AN998 - Incompatible type
## Warning: Error detected in cell AN1278 - Incompatible type
## Warning: Error detected in cell AN1360 - Incompatible type
## Warning: Error detected in cell AN1362 - Incompatible type
## Warning: Error detected in cell AN1363 - Incompatible type
## Warning: Error detected in cell AN1370 - Incompatible type
## Warning: Error detected in cell AN1373 - Incompatible type
## Warning: Error detected in cell AN1390 - Incompatible type
## Warning: Error detected in cell AN1475 - Incompatible type
## Warning: Error detected in cell AN1680 - Incompatible type
## Warning: Error detected in cell AN1713 - Incompatible type
## Warning: Error detected in cell AN1771 - Incompatible type
## Warning: Error detected in cell AN1777 - Incompatible type
## Warning: Error detected in cell AN1805 - Incompatible type
## Warning: Error detected in cell AN1806 - Incompatible type
## Warning: Error detected in cell AN2097 - Incompatible type
## Warning: Error detected in cell AN2151 - Incompatible type
## Warning: Error detected in cell AN2152 - Incompatible type
## Warning: Error detected in cell AN2153 - Incompatible type
## Warning: Error detected in cell AN2301 - Incompatible type
## Warning: Error detected in cell AN2727 - Incompatible type
## Warning: Error detected in cell AN2881 - Incompatible type
## Warning: Error detected in cell AN2890 - Incompatible type
## Warning: Error detected in cell AN2892 - Incompatible type
## Warning: Error detected in cell AN2904 - Incompatible type
## Warning: Error detected in cell AN2905 - Incompatible type
## Warning: Error detected in cell AN2909 - Incompatible type
## Warning: Error detected in cell AN2910 - Incompatible type
## Warning: Error detected in cell AN2911 - Incompatible type
## Warning: Error detected in cell AN3016 - Incompatible type
## Warning: Error detected in cell AN3022 - Incompatible type
## Warning: Error detected in cell AN3024 - Incompatible type
## Warning: Error detected in cell AN3026 - Incompatible type
## Warning: Error detected in cell AN3030 - Incompatible type
## Warning: Error detected in cell AN3031 - Incompatible type
## Warning: Error detected in cell AN3034 - Incompatible type
## Warning: Error detected in cell AN3039 - Incompatible type
## Warning: Error detected in cell AN3040 - Incompatible type
```

[illegible]

```
## Warning: Error detected in cell AN4400 - Incompatible type
## Warning: Error detected in cell AN4401 - Incompatible type
## Warning: Error detected in cell AN4607 - Incompatible type
## Warning: Error detected in cell AN4742 - Incompatible type
## Warning: Error detected in cell AN4877 - Incompatible type
## Warning: Error detected in cell AN5098 - Incompatible type
## Warning: Error detected in cell AN5138 - Incompatible type
## Warning: Error detected in cell AN5172 - Incompatible type
## Warning: Error detected in cell AN5257 - Incompatible type
## Warning: Error detected in cell AN5259 - Incompatible type
## Warning: Error detected in cell AN5260 - Incompatible type
## Warning: Error detected in cell AN5262 - Incompatible type
## Warning: Error detected in cell AN5264 - Incompatible type
## Warning: Error detected in cell AN5266 - Incompatible type
## Warning: Error detected in cell AN5267 - Incompatible type
## Warning: Error detected in cell A09 - Incompatible type
## Warning: Error detected in cell A018 - Incompatible type
## Warning: Error detected in cell A066 - Incompatible type
## Warning: Error detected in cell A0199 - Incompatible type
## Warning: Error detected in cell A0266 - Incompatible type
## Warning: Error detected in cell A0294 - Incompatible type
## Warning: Error detected in cell A0318 - Incompatible type
## Warning: Error detected in cell A0320 - Incompatible type
## Warning: Error detected in cell A0322 - Incompatible type
## Warning: Error detected in cell A0324 - Incompatible type
## Warning: Error detected in cell A0325 - Incompatible type
## Warning: Error detected in cell A0468 - Incompatible type
## Warning: Error detected in cell A0486 - Incompatible type
## Warning: Error detected in cell A0488 - Incompatible type
## Warning: Error detected in cell A0492 - Incompatible type
## Warning: Error detected in cell A0493 - Incompatible type
## Warning: Error detected in cell A0523 - Incompatible type
## Warning: Error detected in cell A0635 - Incompatible type
## Warning: Error detected in cell A0651 - Incompatible type
## Warning: Error detected in cell A0697 - Incompatible type
## Warning: Error detected in cell A0699 - Incompatible type
## Warning: Error detected in cell A0711 - Incompatible type
## Warning: Error detected in cell A0719 - Incompatible type
## Warning: Error detected in cell A0792 - Incompatible type
```

```
## Warning: Error detected in cell A0847 - Incompatible type
## Warning: Error detected in cell A0872 - Incompatible type
## Warning: Error detected in cell A0910 - Incompatible type
## Warning: Error detected in cell A0952 - Incompatible type
## Warning: Error detected in cell A0992 - Incompatible type
## Warning: Error detected in cell A0996 - Incompatible type
## Warning: Error detected in cell A01278 - Incompatible type
## Warning: Error detected in cell A01354 - Incompatible type
## Warning: Error detected in cell A01360 - Incompatible type
## Warning: Error detected in cell A01361 - Incompatible type
## Warning: Error detected in cell A01363 - Incompatible type
## Warning: Error detected in cell A01370 - Incompatible type
## Warning: Error detected in cell A01373 - Incompatible type
## Warning: Error detected in cell A01390 - Incompatible type
## Warning: Error detected in cell A01475 - Incompatible type
## Warning: Error detected in cell A01680 - Incompatible type
## Warning: Error detected in cell A01713 - Incompatible type
## Warning: Error detected in cell A01771 - Incompatible type
## Warning: Error detected in cell A01805 - Incompatible type
## Warning: Error detected in cell A01806 - Incompatible type
## Warning: Error detected in cell A01814 - Incompatible type
## Warning: Error detected in cell A02097 - Incompatible type
## Warning: Error detected in cell A02149 - Incompatible type
## Warning: Error detected in cell A02151 - Incompatible type
## Warning: Error detected in cell A02152 - Incompatible type
## Warning: Error detected in cell A02153 - Incompatible type
## Warning: Error detected in cell A02727 - Incompatible type
## Warning: Error detected in cell A02881 - Incompatible type
## Warning: Error detected in cell A02884 - Incompatible type
## Warning: Error detected in cell A02890 - Incompatible type
## Warning: Error detected in cell A02892 - Incompatible type
## Warning: Error detected in cell A02904 - Incompatible type
## Warning: Error detected in cell A02905 - Incompatible type
## Warning: Error detected in cell A02909 - Incompatible type
## Warning: Error detected in cell A02910 - Incompatible type
## Warning: Error detected in cell A02911 - Incompatible type
## Warning: Error detected in cell A03016 - Incompatible type
## Warning: Error detected in cell A03022 - Incompatible type
## Warning: Error detected in cell A03026 - Incompatible type
```

[illegible]



```
## Warning: Error detected in cell A04371 - Incompatible type
## Warning: Error detected in cell A04381 - Incompatible type
## Warning: Error detected in cell A04396 - Incompatible type
## Warning: Error detected in cell A04400 - Incompatible type
## Warning: Error detected in cell A04401 - Incompatible type
## Warning: Error detected in cell A04607 - Incompatible type
## Warning: Error detected in cell A04743 - Incompatible type
## Warning: Error detected in cell A04746 - Incompatible type
## Warning: Error detected in cell A04877 - Incompatible type
## Warning: Error detected in cell A05098 - Incompatible type
## Warning: Error detected in cell A05099 - Incompatible type
## Warning: Error detected in cell A05115 - Incompatible type
## Warning: Error detected in cell A05138 - Incompatible type
## Warning: Error detected in cell A05257 - Incompatible type
## Warning: Error detected in cell A05259 - Incompatible type
## Warning: Error detected in cell A05262 - Incompatible type
## Warning: Error detected in cell A05264 - Incompatible type
## Warning: Error detected in cell A05266 - Incompatible type
## Warning: Error detected in cell A05267 - Incompatible type
## Warning: Error detected in cell AP9 - Incompatible type
## Warning: Error detected in cell AP18 - Incompatible type
## Warning: Error detected in cell AP199 - Incompatible type
## Warning: Error detected in cell AP294 - Incompatible type
## Warning: Error detected in cell AP318 - Incompatible type
## Warning: Error detected in cell AP325 - Incompatible type
## Warning: Error detected in cell AP486 - Incompatible type
## Warning: Error detected in cell AP488 - Incompatible type
## Warning: Error detected in cell AP492 - Incompatible type
## Warning: Error detected in cell AP493 - Incompatible type
## Warning: Error detected in cell AP523 - Incompatible type
## Warning: Error detected in cell AP558 - Incompatible type
## Warning: Error detected in cell AP635 - Incompatible type
## Warning: Error detected in cell AP651 - Incompatible type
## Warning: Error detected in cell AP697 - Incompatible type
## Warning: Error detected in cell AP699 - Incompatible type
## Warning: Error detected in cell AP711 - Incompatible type
## Warning: Error detected in cell AP719 - Incompatible type
## Warning: Error detected in cell AP792 - Incompatible type
## Warning: Error detected in cell AP872 - Incompatible type
```

```
## Warning: Error detected in cell AP910 - Incompatible type
## Warning: Error detected in cell AP992 - Incompatible type
## Warning: Error detected in cell AP996 - Incompatible type
## Warning: Error detected in cell AP998 - Incompatible type
## Warning: Error detected in cell AP1278 - Incompatible type
## Warning: Error detected in cell AP1360 - Incompatible type
## Warning: Error detected in cell AP1363 - Incompatible type
## Warning: Error detected in cell AP1370 - Incompatible type
## Warning: Error detected in cell AP1390 - Incompatible type
## Warning: Error detected in cell AP1680 - Incompatible type
## Warning: Error detected in cell AP1771 - Incompatible type
## Warning: Error detected in cell AP1805 - Incompatible type
## Warning: Error detected in cell AP2151 - Incompatible type
## Warning: Error detected in cell AP2152 - Incompatible type
## Warning: Error detected in cell AP2153 - Incompatible type
## Warning: Error detected in cell AP2231 - Incompatible type
## Warning: Error detected in cell AP2301 - Incompatible type
## Warning: Error detected in cell AP2727 - Incompatible type
## Warning: Error detected in cell AP2881 - Incompatible type
## Warning: Error detected in cell AP2890 - Incompatible type
## Warning: Error detected in cell AP2892 - Incompatible type
## Warning: Error detected in cell AP2904 - Incompatible type
## Warning: Error detected in cell AP2911 - Incompatible type
## Warning: Error detected in cell AP3016 - Incompatible type
## Warning: Error detected in cell AP3022 - Incompatible type
## Warning: Error detected in cell AP3026 - Incompatible type
## Warning: Error detected in cell AP3030 - Incompatible type
## Warning: Error detected in cell AP3040 - Incompatible type
## Warning: Error detected in cell AP3045 - Incompatible type
## Warning: Error detected in cell AP3046 - Incompatible type
## Warning: Error detected in cell AP3047 - Incompatible type
## Warning: Error detected in cell AP3230 - Incompatible type
## Warning: Error detected in cell AP3234 - Incompatible type
## Warning: Error detected in cell AP3240 - Incompatible type
## Warning: Error detected in cell AP3241 - Incompatible type
## Warning: Error detected in cell AP3252 - Incompatible type
## Warning: Error detected in cell AP3257 - Incompatible type
## Warning: Error detected in cell AP3481 - Incompatible type
## Warning: Error detected in cell AP3536 - Incompatible type
```

```
## Warning: Error detected in cell AP3542 - Incompatible type
## Warning: Error detected in cell AP3543 - Incompatible type
## Warning: Error detected in cell AP3546 - Incompatible type
## Warning: Error detected in cell AP3548 - Incompatible type
## Warning: Error detected in cell AP3549 - Incompatible type
## Warning: Error detected in cell AP3655 - Incompatible type
## Warning: Error detected in cell AP3775 - Incompatible type
## Warning: Error detected in cell AP3776 - Incompatible type
## Warning: Error detected in cell AP3778 - Incompatible type
## Warning: Error detected in cell AP3816 - Incompatible type
## Warning: Error detected in cell AP3835 - Incompatible type
## Warning: Error detected in cell AP3876 - Incompatible type
## Warning: Error detected in cell AP3946 - Incompatible type
## Warning: Error detected in cell AP4086 - Incompatible type
## Warning: Error detected in cell AP4093 - Incompatible type
## Warning: Error detected in cell AP4122 - Incompatible type
## Warning: Error detected in cell AP4371 - Incompatible type
## Warning: Error detected in cell AP4396 - Incompatible type
## Warning: Error detected in cell AP4400 - Incompatible type
## Warning: Error detected in cell AP4401 - Incompatible type
## Warning: Error detected in cell AP4607 - Incompatible type
## Warning: Error detected in cell AP4743 - Incompatible type
## Warning: Error detected in cell AP4877 - Incompatible type
## Warning: Error detected in cell AP5098 - Incompatible type
## Warning: Error detected in cell AP5115 - Incompatible type
## Warning: Error detected in cell AP5138 - Incompatible type
## Warning: Error detected in cell AP5257 - Incompatible type
## Warning: Error detected in cell AP5259 - Incompatible type
## Warning: Error detected in cell AP5262 - Incompatible type
## Warning: Error detected in cell AP5266 - Incompatible type
## Warning: Error detected in cell AP5267 - Incompatible type
## Warning: Error detected in cell AQ9 - Incompatible type
## Warning: Error detected in cell AQ18 - Incompatible type
## Warning: Error detected in cell AQ72 - Incompatible type
## Warning: Error detected in cell AQ199 - Incompatible type
## Warning: Error detected in cell AQ294 - Incompatible type
## Warning: Error detected in cell AQ318 - Incompatible type
## Warning: Error detected in cell AQ324 - Incompatible type
## Warning: Error detected in cell AQ325 - Incompatible type
```

```
## Warning: Error detected in cell AQ391 - Incompatible type
## Warning: Error detected in cell AQ486 - Incompatible type
## Warning: Error detected in cell AQ488 - Incompatible type
## Warning: Error detected in cell AQ492 - Incompatible type
## Warning: Error detected in cell AQ493 - Incompatible type
## Warning: Error detected in cell AQ635 - Incompatible type
## Warning: Error detected in cell AQ651 - Incompatible type
## Warning: Error detected in cell AQ697 - Incompatible type
## Warning: Error detected in cell AQ699 - Incompatible type
## Warning: Error detected in cell AQ711 - Incompatible type
## Warning: Error detected in cell AQ719 - Incompatible type
## Warning: Error detected in cell AQ792 - Incompatible type
## Warning: Error detected in cell AQ872 - Incompatible type
## Warning: Error detected in cell AQ910 - Incompatible type
## Warning: Error detected in cell AQ992 - Incompatible type
## Warning: Error detected in cell AQ996 - Incompatible type
## Warning: Error detected in cell AQ1278 - Incompatible type
## Warning: Error detected in cell AQ1360 - Incompatible type
## Warning: Error detected in cell AQ1363 - Incompatible type
## Warning: Error detected in cell AQ1370 - Incompatible type
## Warning: Error detected in cell AQ1390 - Incompatible type
## Warning: Error detected in cell AQ1680 - Incompatible type
## Warning: Error detected in cell AQ1771 - Incompatible type
## Warning: Error detected in cell AQ1805 - Incompatible type
## Warning: Error detected in cell AQ2151 - Incompatible type
## Warning: Error detected in cell AQ2152 - Incompatible type
## Warning: Error detected in cell AQ2153 - Incompatible type
## Warning: Error detected in cell AQ2727 - Incompatible type
## Warning: Error detected in cell AQ2881 - Incompatible type
## Warning: Error detected in cell AQ2890 - Incompatible type
## Warning: Error detected in cell AQ2892 - Incompatible type
## Warning: Error detected in cell AQ2904 - Incompatible type
## Warning: Error detected in cell AQ3016 - Incompatible type
## Warning: Error detected in cell AQ3022 - Incompatible type
## Warning: Error detected in cell AQ3026 - Incompatible type
## Warning: Error detected in cell AQ3030 - Incompatible type
## Warning: Error detected in cell AQ3040 - Incompatible type
## Warning: Error detected in cell AQ3045 - Incompatible type
## Warning: Error detected in cell AQ3046 - Incompatible type
```

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## Warning: Error detected in cell AQ3047 - Incompatible type
## Warning: Error detected in cell AQ3230 - Incompatible type
## Warning: Error detected in cell AQ3234 - Incompatible type
## Warning: Error detected in cell AQ3240 - Incompatible type
## Warning: Error detected in cell AQ3241 - Incompatible type
## Warning: Error detected in cell AQ3252 - Incompatible type
## Warning: Error detected in cell AQ3257 - Incompatible type
## Warning: Error detected in cell AQ3422 - Incompatible type
## Warning: Error detected in cell AQ3481 - Incompatible type
## Warning: Error detected in cell AQ3542 - Incompatible type
## Warning: Error detected in cell AQ3543 - Incompatible type
## Warning: Error detected in cell AQ3546 - Incompatible type
## Warning: Error detected in cell AQ3548 - Incompatible type
## Warning: Error detected in cell AQ3549 - Incompatible type
## Warning: Error detected in cell AQ3655 - Incompatible type
## Warning: Error detected in cell AQ3733 - Incompatible type
## Warning: Error detected in cell AQ3775 - Incompatible type
## Warning: Error detected in cell AQ3776 - Incompatible type
## Warning: Error detected in cell AQ3835 - Incompatible type
## Warning: Error detected in cell AQ3876 - Incompatible type
## Warning: Error detected in cell AQ3877 - Incompatible type
## Warning: Error detected in cell AQ4086 - Incompatible type
## Warning: Error detected in cell AQ4093 - Incompatible type
## Warning: Error detected in cell AQ4122 - Incompatible type
## Warning: Error detected in cell AQ4371 - Incompatible type
## Warning: Error detected in cell AQ4396 - Incompatible type
## Warning: Error detected in cell AQ4400 - Incompatible type
## Warning: Error detected in cell AQ4401 - Incompatible type
## Warning: Error detected in cell AQ4607 - Incompatible type
## Warning: Error detected in cell AQ4743 - Incompatible type
## Warning: Error detected in cell AQ4744 - Incompatible type
## Warning: Error detected in cell AQ4877 - Incompatible type
## Warning: Error detected in cell AQ5098 - Incompatible type
## Warning: Error detected in cell AQ5138 - Incompatible type
## Warning: Error detected in cell AQ5257 - Incompatible type
## Warning: Error detected in cell AQ5259 - Incompatible type
## Warning: Error detected in cell AQ5262 - Incompatible type
## Warning: Error detected in cell AQ5266 - Incompatible type
## Warning: Error detected in cell AQ5267 - Incompatible type
```

```

colnames(xls)

## [1] "Col1"
## [2] "On.max..dif..."
## [3] "Col3"
## [4] "Name"
## [5] "left.1.2b"
## [6] "left.10g"
## [7] "left.3d7a"
## [8] "left.3d7b"
## [9] "left.w41"
## [10] "mid.1.2b"
## [11] "mid.10g"
## [12] "mid.3d7a"
## [13] "mid.3d7b"
## [14] "mid.w41"
## [15] "right.1.2b"
## [16] "right.10g"
## [17] "right.3d7a"
## [18] "right.3d7b"
## [19] "right.w41"
## [20] "sides.1.2b"
## [21] "sides.10g"
## [22] "sides.3d7a"
## [23] "sides.3d7b"
## [24] "sides.w41"
## [25] "Col25"
## [26] "A.1.2B"
## [27] "A.10G"
## [28] "A.3D7.A"
## [29] "A.3D7.B"
## [30] "A.W4.1"
## [31] "Average."
## [32] "Dif..from.average."
## [33] "D.1.2B"
## [34] "D.10G"
## [35] "D.3D7.A"
## [36] "D.3D7.B"
## [37] "D.W4.1"
## [38] "Dif..from.average.divided.by.half.TI..log.of.max..average.fold.change."

```

```

## [39] "X1.2B"
## [40] "X10G"
## [41] "X3D7.A"
## [42] "X3D7.B"
## [43] "W4.1"
## [44] "Col144"

trans_df <- xls[,c(3,5,6,10,11,15,16,20,21)]
colnames(trans_df)[1] <- "Gene"
#Convert NAs to 0
trans_df[trans_df == "NA"] <- NA
#Calculate max difference and add column
trans_df["Max_diff"] <- apply(trans_df[,-1], 1, function(x) max(c(abs(as.numeric(x[1]) - as.numeric(x[2])),
(abs(as.numeric(x[3]) - as.numeric(x[4])),
abs(as.numeric(x[5]) - as.numeric(x[6])),
abs(as.numeric(x[7]) - as.numeric(x[8]))))

#Calculate FC corresponding to max difference and adding column
get_max_fc <- function(x){
  l <- abs(as.numeric(x[1]) - as.numeric(x[2]))
  m <- abs(as.numeric(x[3]) - as.numeric(x[4]))
  r <- abs(as.numeric(x[5]) - as.numeric(x[6]))
  s <- abs(as.numeric(x[7]) - as.numeric(x[8]))
  top <- which.max(c(l,m,r,s))
  if (length(top) > 0){
    if (top == 1) {
      fc = as.numeric(x[1])/as.numeric(x[2])
    } else if (top == 2) {
      fc = as.numeric(x[3])/as.numeric(x[4])
    } else if (top == 3) {
      fc = as.numeric(x[5])/as.numeric(x[6])
    } else if (top == 4) {
      fc = as.numeric(x[7])/as.numeric(x[8])
    }
  } else {
    fc = NA
  }
  return(fc)
}

```

```
trans_df["FC"] <- apply(trans_df[, -1], 1, get_max_fc)
```

```
#Arrange df according to FC
```

```
trans_df <- arrange(trans_df, desc(FC))
```

```
trans_df[5100:5267,]
```

##	Gene	left.1.2b	left.10g	mid.1.2b	mid.10g
## 5100	PFL1305c	2.075497588	4.40512893	12.24499539	12.30709089
## 5101	PFI0805w	2.279840965	1.917339574	1.26378328	2.509579562
## 5102	PFA0765c	13.7616819	29.68313107	9.238145108	8.137060193
## 5103	PF11_0195	12.26774435	14.48968445	5.104760159	9.453242071
## 5104	PF08_0122	23.20977939	25.61341505	10.07423346	13.74343882
## 5105	PF11_0011	36.54173194	81.82925226	29.54556431	66.96164341
## 5106	PF11_0045	4.336619439	9.72845956	7.25442547	10.17433617
## 5107	PF14_0735	12.98783462	11.74781334	8.757305718	11.33875686
## 5108	MAL8P1.146	5.227347794	11.77391568	26.87485613	33.056668
## 5109	MAL8P1.25	8.61061043	17.93127795	13.14144555	20.25387338
## 5110	PFI1335w	2.486759929	4.802860801	2.998783815	6.849638917
## 5111	PFD1240w	47.45177591	55.00659269	44.8714079	52.82872917
## 5112	PF11_0009	24.76680981	57.30779542	18.47289145	29.3046841
## 5113	PFC0241w	9.541350082	13.31890397	3.517168992	8.27885689
## 5114	PFC0110w	5.606559435	6.689002689	15.02967875	36.6447851
## 5115	PFL1755w	2.738274083	6.563921474	8.914051055	8.649327027
## 5116	PFB0650w	20.12583601	18.77143759	9.528871928	10.91010524
## 5117	MAL13_tRNA_Thr1	5.417072306	13.68138573	6.837890873	10.44646084
## 5118	PFL1770c	3.636148922	8.09089122	10.23318611	11.21547769
## 5119	PFB0310c	13.09259629	33.6454836	34.49182539	51.60149391
## 5120	PFB0974c	22.43400182	59.47645685	13.48181748	21.2729306
## 5121	PF07_0109	2.398392615	5.458432639	2.305641224	6.293077523
## 5122	PFD0755c	5.966163135	9.537892835	3.333523724	9.11387637
## 5123	PFE0625w	2.244108367	6.140774488	10.04252377	11.92276488
## 5124	PF14_0537	5.522342139	11.42806405	10.31204712	15.13345633
## 5125	PFC0905c	14.60857158	12.23420844	8.722333409	9.865717317
## 5126	MAL13P1.415	5.423268761	6.117132021	1.289779334	3.676217863
## 5127	PF14_0708	9.365563761	7.887854159	4.59039721	6.692474404
## 5128	PF10_0374	9.644031183	12.15463494	4.26602072	7.327431261
## 5129	PFL1000c	18.50709885	46.01178562	12.05033165	27.36342885
## 5130	PF11_0034	24.02987197	55.22161914	16.89218718	32.78416302
## 5131	PF14_0337	4.667971562	16.00340014	14.60825669	22.81694792
## 5132	PFI0175w-b	2.535095974	11.35987519	3.870347011	14.13491035



## 5133	PFL0995c	7.530606272	20.17481916	10.45073707	19.83084517
## 5134	MAL13P1.278	3.85059612	14.37254787	11.94419162	20.0883809
## 5135	MAL13P1.60	27.12878963	34.17413446	16.18490043	27.5501789
## 5136	PFE0820c	0.7135125294	3.375676931	2.492375866	4.297786654
## 5137	MAL13P1.129	5.475818149	29.32879168	16.5690583	26.43706092
## 5138	PF14_0419	1.815334834	15.26142422	6.61978219	11.71817315
## 5139	MAL1 ITS1	<NA>	<NA>	<NA>	<NA>
## 5140	MAL13_tRNA_Ser1	15.37408896	<NA>	<NA>	<NA>
## 5141	MAL13P1.276	<NA>	<NA>	<NA>	<NA>
## 5142	MAL13P1.339	2.534430692	<NA>	1.911491636	<NA>
## 5143	MAL13P1.4	<NA>	<NA>	<NA>	<NA>
## 5144	MAL13P1.505	<NA>	<NA>	<NA>	<NA>
## 5145	MAL13P1.515	<NA>	<NA>	<NA>	<NA>
## 5146	MAL13P1.520	<NA>	<NA>	<NA>	<NA>
## 5147	MAL13P1.530	8.485545199	<NA>	4.500819305	<NA>
## 5148	MAL13P1.535	<NA>	<NA>	<NA>	<NA>
## 5149	MAL13P1.85	9.156142365	<NA>	18.67547041	<NA>
## 5150	MAL7P1.185	<NA>	<NA>	<NA>	<NA>
## 5151	MAL7P1.217	<NA>	<NA>	<NA>	<NA>
## 5152	MAL7P1.219	<NA>	<NA>	<NA>	<NA>
## 5153	MAL7P1.223	<NA>	<NA>	<NA>	<NA>
## 5154	MAL7P1.224	<NA>	<NA>	<NA>	<NA>
## 5155	MAL7P1.52	23.44840056	<NA>	14.8111195	<NA>
## 5156	MAL7P1.97	<NA>	<NA>	<NA>	<NA>
## 5157	MAL8P1.217	<NA>	<NA>	<NA>	<NA>
## 5158	MAL8P1.310	<NA>	<NA>	<NA>	<NA>
## 5159	MAL8P1.76	<NA>	<NA>	<NA>	<NA>
## 5160	MAL8P1.78	<NA>	<NA>	<NA>	<NA>
## 5161	MAL8P1.90	<NA>	<NA>	<NA>	<NA>
## 5162	PF07_0003	<NA>	<NA>	<NA>	<NA>
## 5163	PF07_0076	<NA>	<NA>	<NA>	<NA>
## 5164	PF07_0134	<NA>	2.812658159	<NA>	3.904316779
## 5165	PF08_0024	<NA>	<NA>	<NA>	<NA>
## 5166	PF08_0062	<NA>	<NA>	<NA>	<NA>
## 5167	PF10_0003	<NA>	<NA>	<NA>	<NA>
## 5168	PF10_0005	29.04660067	<NA>	23.7729487	<NA>
## 5169	PF10_0007	<NA>	<NA>	<NA>	<NA>
## 5170	PF10_0012	20.25437949	<NA>	11.92215863	<NA>
## 5171	PF10_0302	<NA>	<NA>	<NA>	<NA>

## 5172	PF10_0394	<NA>	16.09111458	<NA>	<NA>
## 5173	PF10_0401	<NA>	<NA>	<NA>	<NA>
## 5174	PF10_0403	<NA>	<NA>	<NA>	<NA>
## 5175	PF10_0404	<NA>	<NA>	<NA>	<NA>
## 5176	PF11_0010	<NA>	<NA>	<NA>	<NA>
## 5177	PF11_0020	<NA>	<NA>	<NA>	<NA>
## 5178	PF11_0050	<NA>	<NA>	<NA>	<NA>
## 5179	PF11_0148	5.501456045	<NA>	6.632560842	<NA>
## 5180	PF11_0365	<NA>	<NA>	<NA>	<NA>
## 5181	PF11_0405-a/b	<NA>	<NA>	<NA>	<NA>
## 5182	PF11_0467	<NA>	<NA>	<NA>	<NA>
## 5183	PF11_0474	3.511788958	<NA>	5.384603426	<NA>
## 5184	PF11_0517	<NA>	<NA>	<NA>	<NA>
## 5185	PF11_0518	9.842037584	<NA>	<NA>	<NA>
## 5186	PF13_0306	11.55329457	<NA>	11.5695417	<NA>
## 5187	PF14_0003	<NA>	<NA>	<NA>	<NA>
## 5188	PF14_0004	<NA>	<NA>	<NA>	<NA>
## 5189	PF14_0005	<NA>	<NA>	<NA>	<NA>
## 5190	PF14_0158	50.65856161	<NA>	47.07065446	<NA>
## 5191	PF14_0595	<NA>	<NA>	<NA>	<NA>
## 5192	PF14_0756	<NA>	<NA>	<NA>	<NA>
## 5193	PF14_0759	<NA>	17.19282726	<NA>	14.27814956
## 5194	PF14_0768	<NA>	<NA>	<NA>	<NA>
## 5195	PF14_0770	<NA>	<NA>	<NA>	<NA>
## 5196	PFA0030c	<NA>	<NA>	<NA>	<NA>
## 5197	PFA0040w	4.078777036	<NA>	<NA>	<NA>
## 5198	PFA0080c	8.287185929	<NA>	4.409314468	<NA>
## 5199	PFA0090c	<NA>	<NA>	<NA>	<NA>
## 5200	PFA0095c	13.21979294	<NA>	14.06698917	<NA>
## 5201	PFA0645c	<NA>	<NA>	<NA>	<NA>
## 5202	PFA0685c	<NA>	<NA>	<NA>	<NA>
## 5203	PFA0695c	<NA>	<NA>	<NA>	<NA>
## 5204	PFA0705c	<NA>	<NA>	<NA>	<NA>
## 5205	PFA0725w	<NA>	<NA>	<NA>	<NA>
## 5206	PFA0755w	15.74030654	<NA>	<NA>	<NA>
## 5207	PFB0025c	<NA>	<NA>	<NA>	<NA>
## 5208	PFB0030c	<NA>	<NA>	<NA>	<NA>
## 5209	PFB0050c	<NA>	<NA>	<NA>	<NA>
## 5210	PFB0060w	<NA>	<NA>	<NA>	<NA>

## 5211	PFB0065w	<NA>	<NA>	<NA>	<NA>
## 5212	PFB0070w	<NA>	<NA>	<NA>	<NA>
## 5213	PFB0950w	<NA>	<NA>	<NA>	<NA>
## 5214	PFB0965c	<NA>	<NA>	<NA>	<NA>
## 5215	PFB0973c	26.7366492	<NA>	18.47669022	<NA>
## 5216	PFB1005w	<NA>	<NA>	<NA>	<NA>
## 5217	PFB1010w	<NA>	<NA>	<NA>	<NA>
## 5218	PFB1020w	<NA>	<NA>	<NA>	<NA>
## 5219	PFC0010c	<NA>	<NA>	<NA>	<NA>
## 5220	PFC0030c	<NA>	<NA>	<NA>	<NA>
## 5221	PFC0050c	14.2247834	<NA>	12.4998904	<NA>
## 5222	PFC0055w	<NA>	<NA>	<NA>	<NA>
## 5223	PFC0460w	<NA>	5.875586734	<NA>	6.108056214
## 5224	PFC10_API0013	<NA>	15.88755117	<NA>	16.86537591
## 5225	PFC10_API0019	<NA>	<NA>	<NA>	<NA>
## 5226	PFC1100w	<NA>	<NA>	<NA>	<NA>
## 5227	PFC1105w	22.09138008	<NA>	22.20448945	<NA>
## 5228	PFD0030c	<NA>	<NA>	<NA>	<NA>
## 5229	PFD0035c	<NA>	<NA>	<NA>	<NA>
## 5230	PFD0050w	<NA>	<NA>	<NA>	<NA>
## 5231	PFD0060w	<NA>	<NA>	<NA>	<NA>
## 5232	PFD0065w	<NA>	<NA>	<NA>	<NA>
## 5233	PFD0135c	17.92197363	<NA>	<NA>	<NA>
## 5234	PFD0645w	<NA>	<NA>	<NA>	<NA>
## 5235	PFD1210w	<NA>	14.75259943	<NA>	<NA>
## 5236	PFE0015c	<NA>	<NA>	<NA>	<NA>
## 5237	PFE0020c	7.473894995	<NA>	4.899188268	<NA>
## 5238	PFE0025c	<NA>	<NA>	<NA>	<NA>
## 5239	PFE0030c	11.92518583	<NA>	17.03296666	<NA>
## 5240	PFE0220w	<NA>	<NA>	<NA>	<NA>
## 5241	PFE0315c	<NA>	<NA>	<NA>	<NA>
## 5242	PFE0530w	<NA>	<NA>	<NA>	<NA>
## 5243	PFE0890c	<NA>	0.8591937641	<NA>	5.335939106
## 5244	PFE1290w	6.764893353	<NA>	4.899473893	<NA>
## 5245	PFE1630w	2.164466336	<NA>	<NA>	<NA>
## 5246	PFF0025w	<NA>	<NA>	<NA>	<NA>
## 5247	PFF0215w	<NA>	<NA>	<NA>	<NA>
## 5248	PFF1455c	<NA>	<NA>	<NA>	<NA>
## 5249	PFF1545w	<NA>	<NA>	<NA>	<NA>

## 5250	PFI0010c	<NA>	<NA>	<NA>	<NA>	
## 5251	PFI0035c	<NA>	<NA>	<NA>	<NA>	
## 5252	PFI0070w	<NA>	<NA>	<NA>	<NA>	
## 5253	PFI0075w	<NA>	<NA>	<NA>	<NA>	
## 5254	PFI1115c	<NA>	<NA>	<NA>	<NA>	
## 5255	PFI1785w	<NA>	<NA>	<NA>	<NA>	
## 5256	PFI1795c	<NA>	6.83683429	<NA>	6.091634455	
## 5257	PFL0645c	<NA>	<NA>	<NA>	<NA>	
## 5258	PFL1765c	<NA>	<NA>	<NA>	<NA>	
## 5259	PFL1965w	<NA>	<NA>	<NA>	<NA>	
## 5260	PFL2135c	9.436162761	<NA>	6.823402217	<NA>	
## 5261	PFL2580w	<NA>	<NA>	<NA>	<NA>	
## 5262	PFL2605w	<NA>	<NA>	<NA>	<NA>	
## 5263	PFL2610w	16.56101922	<NA>	13.1391363	<NA>	
## 5264	PFL2625w	<NA>	<NA>	<NA>	<NA>	
## 5265	PFL2640c	<NA>	<NA>	<NA>	<NA>	
## 5266	PFL2655w	<NA>	<NA>	<NA>	<NA>	
## 5267	PFL2660w	<NA>	<NA>	<NA>	<NA>	
##	right.1.2b	right.10g	sides.1.2b	sides.10g	Max_diff	FC
## 5100	27.47131483	27.12676081	17.30181702	19.22479885	2.329631	0.4711548
## 5101	1.322048814	2.842023092	2.338106498	2.249783104	1.519974	0.4651788
## 5102	7.127553877	4.838020588	11.65109067	26.38409146	15.921449	0.4636196
## 5103	4.191201403	9.128429011	11.3541856	14.16487139	4.937228	0.4591372
## 5104	4.631525605	10.1286605	17.76707153	21.99863673	5.497135	0.4572693
## 5105	23.69440982	34.4703854	30.69057745	49.33799425	45.287520	0.4465607
## 5106	7.787489363	7.08502376	4.869683332	6.63914715	5.391840	0.4457663
## 5107	5.302191057	11.91633433	9.532719955	12.3253908	6.614143	0.4449515
## 5108	58.91067145	60.20297831	37.26316312	38.92022599	6.546568	0.4439770
## 5109	12.23588285	19.7311127	7.705047723	17.40851726	9.703470	0.4426022
## 5110	15.13095928	18.86554422	14.6189354	16.81876611	3.734585	0.4378017
## 5111	23.93450667	54.95245049	26.51487468	57.13031401	31.017944	0.4355494
## 5112	10.91971972	9.824257457	17.21363808	37.82736877	32.540986	0.4321717
## 5113	7.23054315	9.493857221	13.25472424	14.5339043	3.777554	0.4248375
## 5114	37.32947976	88.1957709	27.90636045	58.23998849	50.866291	0.4232570
## 5115	10.81062869	9.634984703	4.634851713	7.54957915	3.825647	0.4171705
## 5116	3.234455411	7.873717536	13.8314195	15.73504988	4.639262	0.4107914
## 5117	9.400352709	8.396860903	7.979534141	11.63178579	8.264313	0.3959447
## 5118	12.36619466	17.78919377	5.769157466	14.6646073	8.895450	0.3934069
## 5119	59.20627753	64.42524288	37.80704843	46.46923256	20.552887	0.3891338

##	5120	14.84446886	14.40186184	23.7966532	52.60538809	37.042455	0.3771913
##	5121	4.400559384	7.534126338	4.493310776	6.699481454	3.133567	0.3663774
##	5122	7.425894298	8.432885155	10.05853371	8.85690162	3.571730	0.3657635
##	5123	14.78810241	14.52429217	6.989687005	8.742301777	3.896666	0.3654439
##	5124	12.03473958	23.58385741	7.245034604	19.87846513	12.633431	0.3644665
##	5125	4.546000597	12.54550363	10.43223877	14.91399475	7.999503	0.3623609
##	5126	8.488970879	10.5952447	12.62246031	13.03615886	2.106274	0.3508441
##	5127	3.874361141	11.36486402	8.649527692	12.56024377	7.490503	0.3409070
##	5128	2.599879849	7.965336892	7.977890313	12.79254057	5.365457	0.3263992
##	5129	7.202063293	24.00753584	13.65883049	42.65589262	28.997062	0.3202097
##	5130	7.262784344	25.55424101	14.40046913	47.99169714	33.591228	0.3000617
##	5131	50.47303483	49.54669149	40.53274971	42.73314372	11.335429	0.2916862
##	5132	33.25999228	35.89716684	31.92474124	33.12213168	8.824779	0.2738148
##	5133	8.79777192	21.42167715	5.877641127	21.76565115	15.888010	0.2700421
##	5134	49.29260035	50.87023802	41.19900485	45.15440499	10.521952	0.2679133
##	5135	15.0035502	59.14681345	25.94743939	65.77076901	44.143263	0.2536662
##	5136	7.021385994	7.952998693	5.242522657	7.03088897	2.662164	0.2113687
##	5137	23.87440765	29.66080995	12.78116749	32.55254071	23.852974	0.1867045
##	5138	19.77036097	20.98654456	14.96591362	24.52979564	13.446089	0.1189492
##	5139	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5140	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5141	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5142	1.848541552	<NA>	2.471480608	<NA>	NA	NA
##	5143	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5144	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5145	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5146	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5147	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5148	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5149	19.14043063	<NA>	9.621102581	<NA>	NA	NA
##	5150	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5151	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5152	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5153	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5154	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5155	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5156	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5157	<NA>	<NA>	<NA>	<NA>	NA	NA
##	5158	<NA>	<NA>	<NA>	<NA>	NA	NA

## 5159	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5160	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5161	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5162	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5163	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5164	<NA>	7.335531496	<NA>	6.243872876	NA	NA
## 5165	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5166	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5167	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5168	13.10643204	<NA>	18.380084	<NA>	NA	NA
## 5169	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5170	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5171	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5172	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5173	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5174	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5175	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5176	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5177	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5178	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5179	6.489981355	<NA>	5.358876558	<NA>	NA	NA
## 5180	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5181	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5182	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5183	16.17970734	<NA>	14.30689288	<NA>	NA	NA
## 5184	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5185	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5186	11.99783584	<NA>	11.98158871	<NA>	NA	NA
## 5187	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5188	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5189	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5190	37.97372247	<NA>	41.56162961	<NA>	NA	NA
## 5191	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5192	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5193	<NA>	9.340319323	<NA>	12.25499702	NA	NA
## 5194	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5195	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5196	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5197	<NA>	<NA>	<NA>	<NA>	NA	NA

## 5198	6.335971043	<NA>	10.21384251	<NA>	NA	NA
## 5199	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5200	15.25445469	<NA>	14.40725847	<NA>	NA	NA
## 5201	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5202	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5203	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5204	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5205	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5206	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5207	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5208	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5209	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5210	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5211	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5212	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5213	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5214	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5215	11.32146833	<NA>	19.58142731	<NA>	NA	NA
## 5216	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5217	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5218	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5219	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5220	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5221	8.29968563	<NA>	10.02457864	<NA>	NA	NA
## 5222	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5223	<NA>	5.187075345	<NA>	4.954605865	NA	NA
## 5224	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5225	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5226	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5227	12.49224295	<NA>	12.37913358	<NA>	NA	NA
## 5228	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5229	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5230	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5231	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5232	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5233	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5234	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5235	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5236	<NA>	<NA>	<NA>	<NA>	NA	NA

## 5237	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5238	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5239	36.14192042	<NA>	31.03413959	<NA>	NA	NA
## 5240	<NA>	12.65061222	<NA>	<NA>	NA	NA
## 5241	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5242	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5243	<NA>	7.985499717	<NA>	3.508754375	NA	NA
## 5244	8.609948548	<NA>	10.47536801	<NA>	NA	NA
## 5245	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5246	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5247	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5248	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5249	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5250	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5251	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5252	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5253	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5254	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5255	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5256	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5257	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5258	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5259	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5260	9.746862843	<NA>	12.35962339	<NA>	NA	NA
## 5261	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5262	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5263	6.571102483	<NA>	9.992985396	<NA>	NA	NA
## 5264	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5265	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5266	<NA>	<NA>	<NA>	<NA>	NA	NA
## 5267	<NA>	<NA>	<NA>	<NA>	NA	NA

*#Traduire*

```
for (i in 1:length(trans_df[,1])){
  if (trans_df[i,1] %in% rosetta[,3]){
    trans_df[i,"ID"] <- rosetta[rosetta[,3] %in% trans_df[i,1],1][1]
  } else if (trans_df[i,1] %in% rosetta[,4]){
    trans_df[i,"ID"] <- rosetta[rosetta[,4] %in% trans_df[i,1],1][1]
  } else if (trans_df[i,1] %in% rosetta[,5]){
    trans_df[i,"ID"] <- rosetta[rosetta[,5] %in% trans_df[i,1],1][1]
  }
}
```



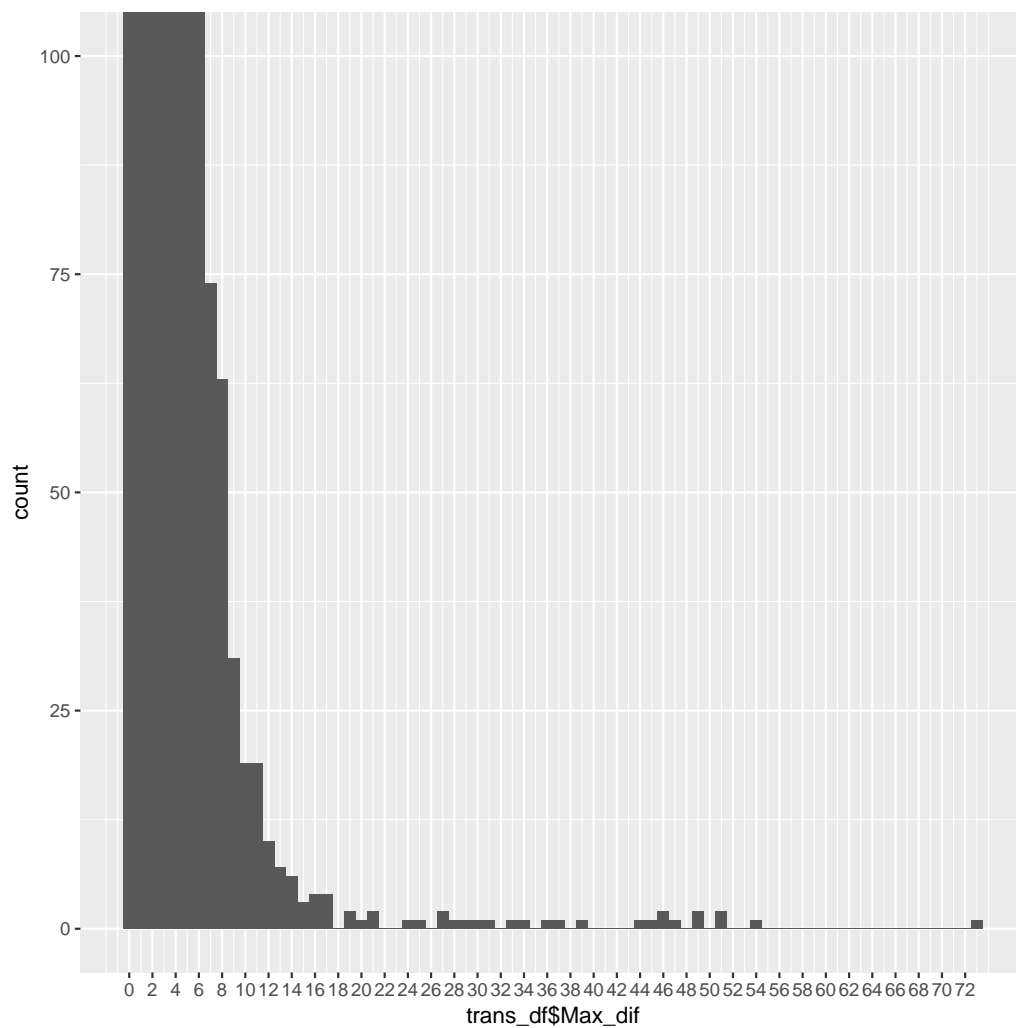
```

}
}

# Plots de diferncies i FC
h <- ggplot(trans_df, aes(x = trans_df$Max_dif))
h + geom_histogram(binwidth = 1) +
  scale_x_continuous(breaks = seq(0, max(trans_df$Max_dif, na.rm = TRUE), 2)) +
  coord_cartesian(ylim = c(0,100))

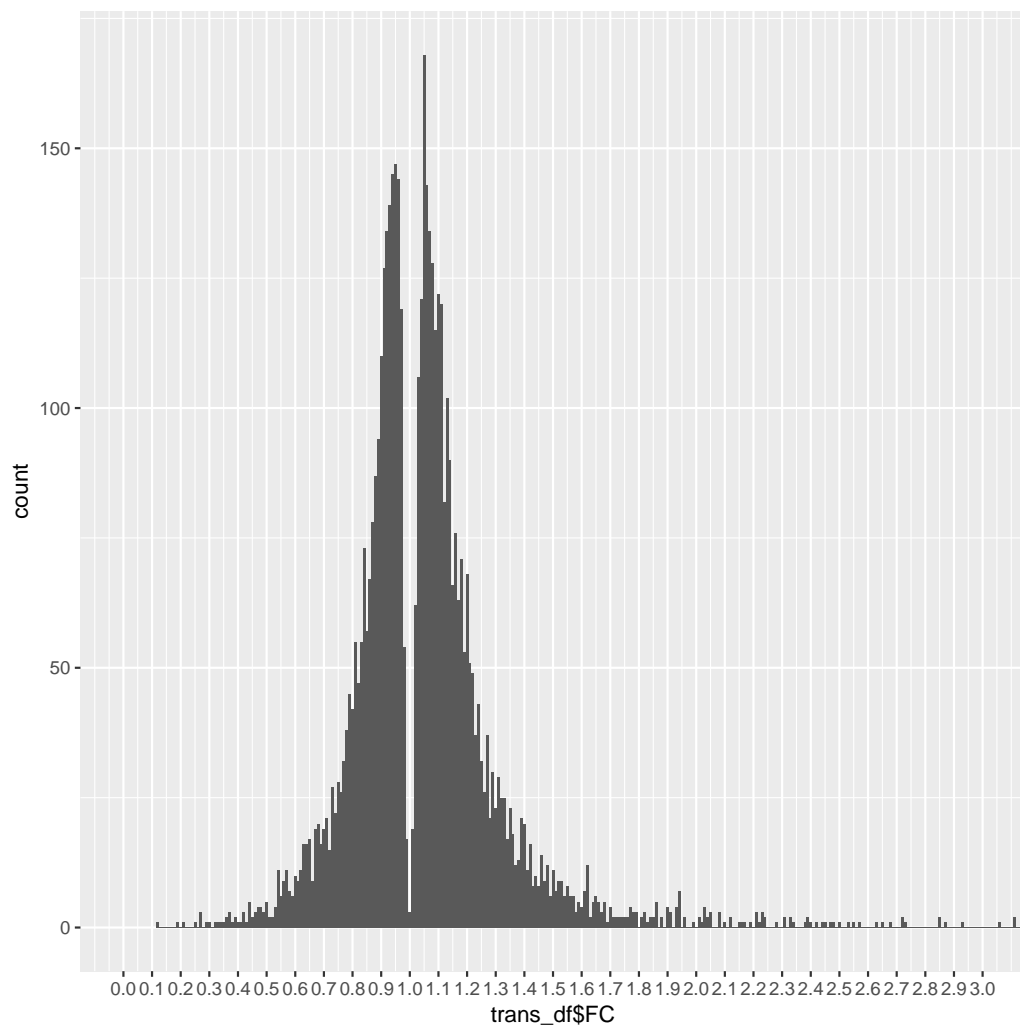
## Warning: Removed 170 rows containing non-finite values (stat_bin).

```



```
fc <- ggplot(trans_df, aes(x = trans_df$FC))
fc + geom_histogram(binwidth = 0.01) +
  scale_x_continuous(breaks = seq(0, 3, by = 0.1)) +
  coord_cartesian(xlim = c(0,3))

## Warning: Removed 129 rows containing non-finite values (stat_bin).
```



```
#### I repetim comparatives ####

get_FC <- function(x){
  return(trans_df[which(trans_df[, "ID"] == x[1]), "FC"])
}
```

```

df_10G["FC"] <- apply(df_10G, 1, get_FC)

## Warning in '[<-.data.frame'('*tmp*', "FC", value = list(9.99246559115003,
: provided 80 variables to replace 1 variables

df_1.2B["FC"] <- apply(df_1.2B, 1, get_FC)

## Warning in '[<-.data.frame'('*tmp*', "FC", value = list(NA_real_,
NA_real_, : provided 70 variables to replace 1 variables

table(df_10G$FC > 1)

##
## TRUE
##      80

table(df_1.2B$FC < 1)

## < table of extent 0 >

#Tota la taula
table(df_10G$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE  TRUE
##      32    48

df_10G$Gene[!df_10G$Gene %in% trans_df$ID]

## [1] PF3D7_0324700 PF3D7_0532700 PF3D7_0601400 PF3D7_0601400 PF3D7_0601400
## [6] PF3D7_0701000 PF3D7_0701100 PF3D7_0800750 PF3D7_0937700 PF3D7_0937700
## [11] PF3D7_1040400 PF3D7_1040400 PF3D7_1253500
## 51 Levels: PF3D7_0100200 PF3D7_0100300 PF3D7_0100400 ... PF3D7_1477600

table(df_1.2B$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE  TRUE
##      61     9

df_1.2B$Gene[!df_1.2B$Gene %in% trans_df$ID[trans_df$Max_diff > 5]]

```

```
## [1] PF3D7_0115000 PF3D7_0115000 PF3D7_0115000 PF3D7_0115100 PF3D7_0115100
## [6] PF3D7_0115100 PF3D7_0115150 PF3D7_0115600 PF3D7_0221600 PF3D7_0221650
## [11] PF3D7_0223400 PF3D7_0302100 PF3D7_0401500 PF3D7_0421200 PF3D7_0421200
## [16] PF3D7_0421200 PF3D7_0425800 PF3D7_0425800 PF3D7_0500300 PF3D7_0500300
## [21] PF3D7_0601100 PF3D7_0731900 PF3D7_0731900 PF3D7_0731900 PF3D7_1039000
## [26] PF3D7_1039100 PF3D7_1100200 PF3D7_1100400 PF3D7_1100400 PF3D7_1100600
## [31] PF3D7_1100600 PF3D7_1101600 PF3D7_1139100 PF3D7_1220700 PF3D7_1240000
## [36] PF3D7_1240200 PF3D7_1255100 PF3D7_1447800
## 42 Levels: PF3D7_0115000 PF3D7_0115100 PF3D7_0115150 ... PF3D7_1447800

#Noms gens metilats a 5' o a ORF
df_10G_tss <- df_10G[df_10G$X5.cov > 10,]
df_10G_ORF <- df_10G[df_10G$Gene.cov > 10,]
df_10G_tts <- df_10G[df_10G$X3.cov > 10,]
df_10G_filtered <- df_10G[df_10G$X5.cov > 10 | df_10G$Gene.cov > 10,]

table(df_10G_tts$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE TRUE
## 13 21

df_10G_tts[df_10G_tts$Gene %in% trans_df$ID[trans_df$FC > 1],]

##          Gene Gene.cov X5.cov X3.cov      Chrom
## 2  PF3D7_0100300    0.00   0.0   50.0 Pf3D7_01_v3
## 5  PF3D7_0220800  100.00  100.0  100.0 Pf3D7_02_v3
## 11 PF3D7_0402000    0.00   0.0   13.5 Pf3D7_04_v3
## 12 PF3D7_0402000    0.00   0.0   19.1 Pf3D7_04_v3
## 14 PF3D7_0421600   98.59   0.0   71.8 Pf3D7_04_v3
## 15 PF3D7_0421700    0.00   0.0   11.3 Pf3D7_04_v3
## 16 PF3D7_0421700   51.92   0.0   30.0 Pf3D7_04_v3
## 18 PF3D7_0532600    0.00  40.9   40.9 Pf3D7_05_v3
## 19 PF3D7_0532600    0.00   4.9   35.1 Pf3D7_05_v3
## 26 PF3D7_0711700   10.70   0.0  100.0 Pf3D7_07_v3
## 28 PF3D7_0711900    0.00  52.0   52.0 Pf3D7_07_v3
## 31 PF3D7_0732900   79.98   0.0   15.4 Pf3D7_07_v3
## 37 PF3D7_0800800   70.70   0.0  100.0 Pf3D7_08_v3
## 47 PF3D7_1040500   83.10   0.0   83.9 Pf3D7_10_v3
```

## 51	PF3D7_1040700	0.00	0.0	29.9	Pf3D7_10_v3
## 63	PF3D7_1300400	0.00	0.0	60.8	Pf3D7_13_v3
## 65	PF3D7_1300500	99.00	0.0	13.8	Pf3D7_13_v3
## 67	PF3D7_1300600	0.00	0.0	21.9	Pf3D7_13_v3
## 70	PF3D7_1301400	0.00	0.0	28.2	Pf3D7_13_v3
## 71	PF3D7_1301500	100.00	46.2	82.7	Pf3D7_13_v3
## 75	PF3D7_1371900	57.81	0.0	65.5	Pf3D7_13_v3
##					
## 2	ID=PF3D7_0100300;description=erythrocyte membrane protein				
## 5	ID=PF3D7_0220800;description=cytoadherence linked asexual				
## 11	ID=PF3D7_0402000;description=Plasmodium exported protein (PHISTa)%2C unknown				
## 12	ID=PF3D7_0402000;description=Plasmodium exported protein (PHISTa)%2C unknown				
## 14	ID=PF3D7_0421600;description=erythrocyte membrane protein 1 (PfEMP1)-like				
## 15	ID=PF3D7_0421700;description=conserved Plasmodium protein%2C unknown				
## 16	ID=PF3D7_0421700;description=conserved Plasmodium protein%2C unknown				
## 18	ID=PF3D7_0532600;description=Plasmodium exported protein%2C unknown				
## 19	ID=PF3D7_0532600;description=Plasmodium exported protein%2C unknown				
## 26	ID=PF3D7_0711700;description=erythrocyte membrane protein				
## 28	ID=PF3D7_0711900;description=rifin%2C				
## 31	ID=PF3D7_0732900;description=				
## 37	ID=PF3D7_0800800;description=Plasmodium exported protein (hyp7)%2C unknown				
## 47	ID=PF3D7_1040500;description=				
## 51	ID=PF3D7_1040700;description=				
## 63	ID=PF3D7_1300400;description=				
## 65	ID=PF3D7_1300500;description=				
## 67	ID=PF3D7_1300600;description=				
## 70	ID=PF3D7_1301400;description=Plasmodium exported protein (hyp12)%2C unknown				
## 71	ID=PF3D7_1301500;description=Plasmodium exported protein (PHISTa)%2C unknown				
## 75	ID=PF3D7_1371900;description=Plasmodium exported protein%2C unknown				
##	FC				
## 2	9.992466				
## 5	9.992466				
## 11	9.992466				
## 12	9.992466				
## 14	9.992466				
## 15	9.992466				
## 16	9.992466				
## 18	9.992466				
## 19	9.992466				
## 26	9.992466				

```

## 28 9.992466
## 31 9.992466
## 37 9.992466
## 47 9.992466
## 51 9.992466
## 63 9.992466
## 65 9.992466
## 67 9.992466
## 70 9.992466
## 71 9.992466
## 75 9.992466

df_10G_tts[!df_10G_tts$Gene %in% trans_df$ID[trans_df$FC > 1],]

##           Gene Gene.cov X5.cov X3.cov      Chrom
## 20 PF3D7_0532700      0.00  98.5  83.4 Pf3D7_05_v3
## 23 PF3D7_0601400      0.00   0.0  20.3 Pf3D7_06_v3
## 25 PF3D7_0701100     83.51   0.0  10.9 Pf3D7_07_v3
## 29 PF3D7_0712000     10.53   0.0 100.0 Pf3D7_07_v3
## 34 PF3D7_0800750     87.29   0.0  97.4 Pf3D7_08_v3
## 40 PF3D7_0937700     83.82   0.0  15.1 Pf3D7_09_v3
## 41 PF3D7_0937700      0.00   0.0  27.0 Pf3D7_09_v3
## 42 PF3D7_0937800     19.56   0.0  10.8 Pf3D7_09_v3
## 49 PF3D7_1040600     81.78   0.0  13.0 Pf3D7_10_v3
## 50 PF3D7_1040600      0.00   0.0  24.3 Pf3D7_10_v3
## 58 PF3D7_1253500     68.23   0.0  34.2 Pf3D7_12_v3
## 73 PF3D7_1301600      0.00   0.0  57.6 Pf3D7_13_v3
## 78 PF3D7_1373400     81.83   0.0  14.6 Pf3D7_13_v3
##
## 20          ID=PF3D7_0532700;description=erythrocyte membrane protein 1 (PfEMP
## 23          ID=PF3D7_0601400;description=erythrocyte membrane protein 1 (PfEMP
## 25                                     ID=PF3D7_0701100;d
## 29                                     ID=PF3D7_0712000;description=erythrocyte membrane pro
## 34 ID=PF3D7_0800750;description=Plasmodium exported protein%2C unknown functi
## 40                                     ID=PF3D7_0937700;d
## 41                                     ID=PF3D7_0937700;d
## 42                                     ID=PF3D7_0937800;description=erythrocyte membrane pro
## 49                                     ID=PF3D7_1040600;d
## 50                                     ID=PF3D7_1040600;d
## 58          ID=PF3D7_1253500;description=Plasmodium exported protein%2C
## 73                                     ID=PF3D7_1301600;description=erythrocyte bin

```

```

## 78 ID=PF3D7_1373400;d
##          FC
## 20 9.992466
## 23 9.992466
## 25 9.992466
## 29 9.992466
## 34 9.992466
## 40 9.992466
## 41 9.992466
## 42 9.992466
## 49 9.992466
## 50 9.992466
## 58 9.992466
## 73 9.992466
## 78 9.992466

table(df_10G_tss$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE  TRUE
##      4    15

df_10G_tss[df_10G_tss$Gene %in% trans_df$ID[trans_df$FC > 1],]

##          Gene Gene.cov X5.cov X3.cov      Chrom
## 5  PF3D7_0220800   100.00  100.0  100.0 Pf3D7_02_v3
## 7  PF3D7_0302500   31.34  100.0    0.0 Pf3D7_03_v3
## 10 PF3D7_0324800   64.95   68.0    0.0 Pf3D7_03_v3
## 18 PF3D7_0532600    0.00   40.9   40.9 Pf3D7_05_v3
## 27 PF3D7_0711700   80.33  100.0    0.0 Pf3D7_07_v3
## 28 PF3D7_0711900    0.00   52.0   52.0 Pf3D7_07_v3
## 35 PF3D7_0800800    0.00   10.3    0.0 Pf3D7_08_v3
## 36 PF3D7_0800800    7.33   71.1    0.0 Pf3D7_08_v3
## 46 PF3D7_1040500    0.00   65.2    0.0 Pf3D7_10_v3
## 52 PF3D7_1040700  100.00  100.0    7.9 Pf3D7_10_v3
## 64 PF3D7_1300500    0.00   39.6    0.0 Pf3D7_13_v3
## 69 PF3D7_1301300   86.21   10.8    0.0 Pf3D7_13_v3
## 71 PF3D7_1301500  100.00   46.2   82.7 Pf3D7_13_v3
## 72 PF3D7_1301500    0.00   31.6    0.0 Pf3D7_13_v3
## 76 PF3D7_1372000    0.00   52.3    0.0 Pf3D7_13_v3
##

```

```

## 5 ID=PF3D7_0220800;description=cytoadhe
## 7 ID=PF3D7_0302500;description=cytoadhere
## 10 ID=P
## 18 ID=PF3D7_0532600;description=Plasmodium export
## 27 ID=PF3D7_0711700;description=erythrocyt
## 28 ID=PF3D7_0711900;d
## 35 ID=PF3D7_0800800;description=Plasmodium exported prot
## 36 ID=PF3D7_0800800;description=Plasmodium exported prot
## 46 ID=P
## 52 ID=P
## 64 ID=P
## 69 ID=PF3D7_1301300;description=Plasmodium exported protein (PHISTa-like)%2C
## 71 ID=PF3D7_1301500;description=Plasmodium exported protei
## 72 ID=PF3D7_1301500;description=Plasmodium exported protei
## 76 ID=PF3D7_1372000;description=Plasmodium exported protei
## FC
## 5 9.992466
## 7 9.992466
## 10 9.992466
## 18 9.992466
## 27 9.992466
## 28 9.992466
## 35 9.992466
## 36 9.992466
## 46 9.992466
## 52 9.992466
## 64 9.992466
## 69 9.992466
## 71 9.992466
## 72 9.992466
## 76 9.992466

df_10G_tss[!df_10G_tss$Gene %in% trans_df$ID[trans_df$FC > 1],]

## Gene Gene.cov X5.cov X3.cov Chrom
## 17 PF3D7_0500600 0 49.6 0.0 Pf3D7_05_v3
## 20 PF3D7_0532700 0 98.5 83.4 Pf3D7_05_v3
## 48 PF3D7_1040600 0 36.5 0.0 Pf3D7_10_v3
## 53 PF3D7_1040800 0 62.8 0.0 Pf3D7_10_v3
##
## 17 ID=PF3D7_0500600;description=stevor%2C ps

```



```
## 20 ID=PF3D7_0532700;description=erythrocyte membrane protein 1 (PfEMP1)%2C ps
## 48 ID=PF3D7_1040600;descripti
## 53 ID=PF3D7_1040800;descripti
##          FC
## 17 9.992466
## 20 9.992466
## 48 9.992466
## 53 9.992466

table(df_10G_ORF$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE  TRUE
##    22    27

df_10G_ORF[df_10G_ORF$Gene %in% trans_df$ID[trans_df$FC > 1],]

##          Gene Gene.cov X5.cov X3.cov      Chrom
## 1  PF3D7_0100200    81.47    0.0    0.0 Pf3D7_01_v3
## 3  PF3D7_0100300    41.88    0.0    0.0 Pf3D7_01_v3
## 4  PF3D7_0100400    48.55    0.0    0.0 Pf3D7_01_v3
## 5  PF3D7_0220800   100.00  100.0  100.0 Pf3D7_02_v3
## 7  PF3D7_0302500    31.34  100.0    0.0 Pf3D7_03_v3
## 8  PF3D7_0302500    25.85    0.0    0.0 Pf3D7_03_v3
## 10 PF3D7_0324800    64.95   68.0    0.0 Pf3D7_03_v3
## 13 PF3D7_0402000   100.00    6.5    3.4 Pf3D7_04_v3
## 14 PF3D7_0421600    98.59    0.0   71.8 Pf3D7_04_v3
## 16 PF3D7_0421700    51.92    0.0   30.0 Pf3D7_04_v3
## 26 PF3D7_0711700    10.70    0.0  100.0 Pf3D7_07_v3
## 27 PF3D7_0711700    80.33  100.0    0.0 Pf3D7_07_v3
## 31 PF3D7_0732900    79.98    0.0   15.4 Pf3D7_07_v3
## 37 PF3D7_0800800    70.70    0.0  100.0 Pf3D7_08_v3
## 39 PF3D7_0808900    97.40    5.3    0.0 Pf3D7_08_v3
## 47 PF3D7_1040500    83.10    0.0   83.9 Pf3D7_10_v3
## 52 PF3D7_1040700   100.00  100.0    7.9 Pf3D7_10_v3
## 56 PF3D7_1240600    19.92    0.0    0.0 Pf3D7_12_v3
## 57 PF3D7_1240600    17.94    0.0    1.5 Pf3D7_12_v3
## 60 PF3D7_1300200    96.79    3.6    0.0 Pf3D7_13_v3
## 62 PF3D7_1300400    70.91    0.0    6.5 Pf3D7_13_v3
## 65 PF3D7_1300500    99.00    0.0   13.8 Pf3D7_13_v3
## 68 PF3D7_1300600    83.98    0.0    9.4 Pf3D7_13_v3
```

## 69	PF3D7_1301300	86.21	10.8	0.0	Pf3D7_13_v3
## 71	PF3D7_1301500	100.00	46.2	82.7	Pf3D7_13_v3
## 75	PF3D7_1371900	57.81	0.0	65.5	Pf3D7_13_v3
## 77	PF3D7_1372000	86.72	3.8	0.0	Pf3D7_13_v3
##					
## 1					ID=P
## 3					ID=PF3D7_0100300;description=erythrocyt
## 4					ID=P
## 5					ID=PF3D7_0220800;description=cytoadhe
## 7					ID=PF3D7_0302500;description=cytoadhere
## 8					ID=PF3D7_0302500;description=cytoadhere
## 10					ID=P
## 13					ID=PF3D7_0402000;description=Plasmodium exported protei
## 14					ID=PF3D7_0421600;description=erythrocyte membrane prot
## 16					ID=PF3D7_0421700;description=conserved Plasmodi
## 26					ID=PF3D7_0711700;description=erythrocyt
## 27					ID=PF3D7_0711700;description=erythrocyt
## 31					ID=P
## 37					ID=PF3D7_0800800;description=Plasmodium exported prot
## 39					ID=P
## 47					ID=P
## 52					ID=P
## 56					ID=PF3D7_1240600;description=erythrocyt
## 57					ID=PF3D7_1240600;description=erythrocyt
## 60					ID=P
## 62					ID=P
## 65					ID=P
## 68					ID=P
## 69	ID=PF3D7_1301300;description=Plasmodium exported protein (PHISTa-like)%2C				
## 71	ID=PF3D7_1301500;description=Plasmodium exported protei				
## 75	ID=PF3D7_1371900;description=Plasmodium export				
## 77	ID=PF3D7_1372000;description=Plasmodium exported protei				
##	FC				
## 1	9.992466				
## 3	9.992466				
## 4	9.992466				
## 5	9.992466				
## 7	9.992466				
## 8	9.992466				
## 10	9.992466				

```

## 13 9.992466
## 14 9.992466
## 16 9.992466
## 26 9.992466
## 27 9.992466
## 31 9.992466
## 37 9.992466
## 39 9.992466
## 47 9.992466
## 52 9.992466
## 56 9.992466
## 57 9.992466
## 60 9.992466
## 62 9.992466
## 65 9.992466
## 68 9.992466
## 69 9.992466
## 71 9.992466
## 75 9.992466
## 77 9.992466

df_10G_ORF[!df_10G_ORF$Gene %in% trans_df$ID[trans_df$FC > 1],]

##           Gene Gene.cov X5.cov X3.cov      Chrom
## 9  PF3D7_0324700    18.54      0    0.0 Pf3D7_03_v3
## 21 PF3D7_0601400    41.44      0    0.0 Pf3D7_06_v3
## 22 PF3D7_0601400    20.49      0    6.2 Pf3D7_06_v3
## 25 PF3D7_0701100    83.51      0   10.9 Pf3D7_07_v3
## 29 PF3D7_0712000    10.53      0  100.0 Pf3D7_07_v3
## 30 PF3D7_0712000    31.21      0    0.0 Pf3D7_07_v3
## 32 PF3D7_0733000    17.42      0    9.4 Pf3D7_07_v3
## 33 PF3D7_0733000    21.58      0    0.0 Pf3D7_07_v3
## 34 PF3D7_0800750    87.29      0   97.4 Pf3D7_08_v3
## 38 PF3D7_0808800    95.02      0    0.0 Pf3D7_08_v3
## 40 PF3D7_0937700    83.82      0   15.1 Pf3D7_09_v3
## 42 PF3D7_0937800    19.56      0   10.8 Pf3D7_09_v3
## 43 PF3D7_0937800    23.32      0    0.0 Pf3D7_09_v3
## 44 PF3D7_1040400    78.42      0    6.0 Pf3D7_10_v3
## 49 PF3D7_1040600    81.78      0   13.0 Pf3D7_10_v3
## 54 PF3D7_1041300    18.60      0    7.2 Pf3D7_10_v3
## 55 PF3D7_1041300    24.57      0    0.0 Pf3D7_10_v3

```

```

## 58 PF3D7_1253500      68.23      0    34.2 Pf3D7_12_v3
## 61 PF3D7_1300300      12.24      0     2.1 Pf3D7_13_v3
## 74 PF3D7_1301600      36.37      0     5.2 Pf3D7_13_v3
## 78 PF3D7_1373400      81.83      0    14.6 Pf3D7_13_v3
## 79 PF3D7_1373500      14.54      0     6.4 Pf3D7_13_v3
##
## 9  ID=PF3D7_0324700;description=erythrocyte membrane protein 1 (PfEMP1)%2C ex
## 21      ID=PF3D7_0601400;description=erythrocyte membrane protein 1 (PfE
## 22      ID=PF3D7_0601400;description=erythrocyte membrane protein 1 (PfE
## 25                                          ID=PF3D7_0701100
## 29                                          ID=PF3D7_0712000;description=erythrocyte membrane p
## 30                                          ID=PF3D7_0712000;description=erythrocyte membrane p
## 32                                          ID=PF3D7_0733000;description=erythrocyte membrane p
## 33                                          ID=PF3D7_0733000;description=erythrocyte membrane p
## 34 ID=PF3D7_0800750;description=Plasmodium exported protein%2C unknown func
## 38                                          ID=PF3D7_0808800
## 40                                          ID=PF3D7_0937700
## 42                                          ID=PF3D7_0937800;description=erythrocyte membrane p
## 43                                          ID=PF3D7_0937800;description=erythrocyte membrane p
## 44                                          ID=PF3D7_1040400
## 49                                          ID=PF3D7_1040600
## 54                                          ID=PF3D7_1041300;description=erythrocyte membrane p
## 55                                          ID=PF3D7_1041300;description=erythrocyte membrane p
## 58      ID=PF3D7_1253500;description=Plasmodium exported protein%2
## 61                                          ID=PF3D7_1300300;description=erythrocyte membrane p
## 74                                          ID=PF3D7_1301600;description=erythrocyte b
## 78                                          ID=PF3D7_1373400
## 79      ID=PF3D7_1373500;description=erythrocyte membrane p
##      FC
## 9  9.992466
## 21 9.992466
## 22 9.992466
## 25 9.992466
## 29 9.992466
## 30 9.992466
## 32 9.992466
## 33 9.992466
## 34 9.992466
## 38 9.992466
## 40 9.992466

```

```
## 42 9.992466
## 43 9.992466
## 44 9.992466
## 49 9.992466
## 54 9.992466
## 55 9.992466
## 58 9.992466
## 61 9.992466
## 74 9.992466
## 78 9.992466
## 79 9.992466

table(df_10G_filtered$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE TRUE
##      26   35

df_10G_filtered[df_10G_filtered$Gene %in% trans_df$ID[trans_df$FC > 1],]

##           Gene Gene.cov X5.cov X3.cov      Chrom
## 1 PF3D7_0100200    81.47   0.0   0.0 Pf3D7_01_v3
## 3 PF3D7_0100300    41.88   0.0   0.0 Pf3D7_01_v3
## 4 PF3D7_0100400    48.55   0.0   0.0 Pf3D7_01_v3
## 5 PF3D7_0220800   100.00  100.0  100.0 Pf3D7_02_v3
## 7 PF3D7_0302500    31.34  100.0   0.0 Pf3D7_03_v3
## 8 PF3D7_0302500    25.85   0.0   0.0 Pf3D7_03_v3
## 10 PF3D7_0324800    64.95   68.0   0.0 Pf3D7_03_v3
## 13 PF3D7_0402000   100.00    6.5   3.4 Pf3D7_04_v3
## 14 PF3D7_0421600    98.59   0.0  71.8 Pf3D7_04_v3
## 16 PF3D7_0421700    51.92   0.0  30.0 Pf3D7_04_v3
## 18 PF3D7_0532600     0.00  40.9  40.9 Pf3D7_05_v3
## 26 PF3D7_0711700    10.70   0.0 100.0 Pf3D7_07_v3
## 27 PF3D7_0711700    80.33  100.0   0.0 Pf3D7_07_v3
## 28 PF3D7_0711900     0.00  52.0  52.0 Pf3D7_07_v3
## 31 PF3D7_0732900    79.98   0.0  15.4 Pf3D7_07_v3
## 35 PF3D7_0800800     0.00  10.3   0.0 Pf3D7_08_v3
## 36 PF3D7_0800800     7.33  71.1   0.0 Pf3D7_08_v3
## 37 PF3D7_0800800    70.70   0.0 100.0 Pf3D7_08_v3
## 39 PF3D7_0808900    97.40   5.3   0.0 Pf3D7_08_v3
## 46 PF3D7_1040500     0.00  65.2   0.0 Pf3D7_10_v3
```

## 47	PF3D7_1040500	83.10	0.0	83.9	Pf3D7_10_v3
## 52	PF3D7_1040700	100.00	100.0	7.9	Pf3D7_10_v3
## 56	PF3D7_1240600	19.92	0.0	0.0	Pf3D7_12_v3
## 57	PF3D7_1240600	17.94	0.0	1.5	Pf3D7_12_v3
## 60	PF3D7_1300200	96.79	3.6	0.0	Pf3D7_13_v3
## 62	PF3D7_1300400	70.91	0.0	6.5	Pf3D7_13_v3
## 64	PF3D7_1300500	0.00	39.6	0.0	Pf3D7_13_v3
## 65	PF3D7_1300500	99.00	0.0	13.8	Pf3D7_13_v3
## 68	PF3D7_1300600	83.98	0.0	9.4	Pf3D7_13_v3
## 69	PF3D7_1301300	86.21	10.8	0.0	Pf3D7_13_v3
## 71	PF3D7_1301500	100.00	46.2	82.7	Pf3D7_13_v3
## 72	PF3D7_1301500	0.00	31.6	0.0	Pf3D7_13_v3
## 75	PF3D7_1371900	57.81	0.0	65.5	Pf3D7_13_v3
## 76	PF3D7_1372000	0.00	52.3	0.0	Pf3D7_13_v3
## 77	PF3D7_1372000	86.72	3.8	0.0	Pf3D7_13_v3
##					
## 1					ID=P
## 3				ID=PF3D7_0100300;description=erythrocyt	
## 4					ID=P
## 5				ID=PF3D7_0220800;description=cytoadhe	
## 7				ID=PF3D7_0302500;description=cytoadhere	
## 8				ID=PF3D7_0302500;description=cytoadhere	
## 10					ID=P
## 13				ID=PF3D7_0402000;description=Plasmodium exported protei	
## 14				ID=PF3D7_0421600;description=erythrocyte membrane prot	
## 16				ID=PF3D7_0421700;description=conserved Plasmodi	
## 18				ID=PF3D7_0532600;description=Plasmodium export	
## 26				ID=PF3D7_0711700;description=erythrocyt	
## 27				ID=PF3D7_0711700;description=erythrocyt	
## 28					ID=PF3D7_0711900;d
## 31					ID=P
## 35				ID=PF3D7_0800800;description=Plasmodium exported prot	
## 36				ID=PF3D7_0800800;description=Plasmodium exported prot	
## 37				ID=PF3D7_0800800;description=Plasmodium exported prot	
## 39					ID=P
## 46					ID=P
## 47					ID=P
## 52					ID=P
## 56				ID=PF3D7_1240600;description=erythrocyt	
## 57				ID=PF3D7_1240600;description=erythrocyt	

## 60		ID=P
## 62		ID=P
## 64		ID=P
## 65		ID=P
## 68		ID=P
## 69	ID=PF3D7_1301300;description=Plasmodium exported protein (PHISTa-like)%2C	
## 71	ID=PF3D7_1301500;description=Plasmodium exported protei	
## 72	ID=PF3D7_1301500;description=Plasmodium exported protei	
## 75	ID=PF3D7_1371900;description=Plasmodium export	
## 76	ID=PF3D7_1372000;description=Plasmodium exported protei	
## 77	ID=PF3D7_1372000;description=Plasmodium exported protei	
##	FC	
## 1	9.992466	
## 3	9.992466	
## 4	9.992466	
## 5	9.992466	
## 7	9.992466	
## 8	9.992466	
## 10	9.992466	
## 13	9.992466	
## 14	9.992466	
## 16	9.992466	
## 18	9.992466	
## 26	9.992466	
## 27	9.992466	
## 28	9.992466	
## 31	9.992466	
## 35	9.992466	
## 36	9.992466	
## 37	9.992466	
## 39	9.992466	
## 46	9.992466	
## 47	9.992466	
## 52	9.992466	
## 56	9.992466	
## 57	9.992466	
## 60	9.992466	
## 62	9.992466	
## 64	9.992466	
## 65	9.992466	

```
## 68 9.992466
## 69 9.992466
## 71 9.992466
## 72 9.992466
## 75 9.992466
## 76 9.992466
## 77 9.992466
```

```
df_10G_filtered[!df_10G_filtered$Gene %in% trans_df$ID[trans_df$FC > 1],]
```

```
##          Gene Gene.cov X5.cov X3.cov      Chrom
## 9  PF3D7_0324700    18.54    0.0    0.0 Pf3D7_03_v3
## 17 PF3D7_0500600     0.00   49.6    0.0 Pf3D7_05_v3
## 20 PF3D7_0532700     0.00   98.5   83.4 Pf3D7_05_v3
## 21 PF3D7_0601400    41.44    0.0    0.0 Pf3D7_06_v3
## 22 PF3D7_0601400    20.49    0.0    6.2 Pf3D7_06_v3
## 25 PF3D7_0701100    83.51    0.0   10.9 Pf3D7_07_v3
## 29 PF3D7_0712000    10.53    0.0  100.0 Pf3D7_07_v3
## 30 PF3D7_0712000    31.21    0.0    0.0 Pf3D7_07_v3
## 32 PF3D7_0733000    17.42    0.0    9.4 Pf3D7_07_v3
## 33 PF3D7_0733000    21.58    0.0    0.0 Pf3D7_07_v3
## 34 PF3D7_0800750    87.29    0.0   97.4 Pf3D7_08_v3
## 38 PF3D7_0808800    95.02    0.0    0.0 Pf3D7_08_v3
## 40 PF3D7_0937700    83.82    0.0   15.1 Pf3D7_09_v3
## 42 PF3D7_0937800    19.56    0.0   10.8 Pf3D7_09_v3
## 43 PF3D7_0937800    23.32    0.0    0.0 Pf3D7_09_v3
## 44 PF3D7_1040400    78.42    0.0    6.0 Pf3D7_10_v3
## 48 PF3D7_1040600     0.00   36.5    0.0 Pf3D7_10_v3
## 49 PF3D7_1040600    81.78    0.0   13.0 Pf3D7_10_v3
## 53 PF3D7_1040800     0.00   62.8    0.0 Pf3D7_10_v3
## 54 PF3D7_1041300    18.60    0.0    7.2 Pf3D7_10_v3
## 55 PF3D7_1041300    24.57    0.0    0.0 Pf3D7_10_v3
## 58 PF3D7_1253500    68.23    0.0   34.2 Pf3D7_12_v3
## 61 PF3D7_1300300    12.24    0.0    2.1 Pf3D7_13_v3
## 74 PF3D7_1301600    36.37    0.0    5.2 Pf3D7_13_v3
## 78 PF3D7_1373400    81.83    0.0   14.6 Pf3D7_13_v3
## 79 PF3D7_1373500    14.54    0.0    6.4 Pf3D7_13_v3
```

```
##
```

```
## 9  ID=PF3D7_0324700;description=erythrocyte membrane protein 1 (PfEMP1)%2C ex
```

```
## 17                                     ID=PF3D7_0500600;description=st
```

```
## 20                                     ID=PF3D7_0532700;description=erythrocyte membrane protein 1 (PfE
```



```

## 21          ID=PF3D7_0601400;description=erythrocyte membrane protein 1 (Pfe
## 22          ID=PF3D7_0601400;description=erythrocyte membrane protein 1 (Pfe
## 25                                     ID=PF3D7_0701100
## 29          ID=PF3D7_0712000;description=erythrocyte membrane p
## 30          ID=PF3D7_0712000;description=erythrocyte membrane p
## 32          ID=PF3D7_0733000;description=erythrocyte membrane p
## 33          ID=PF3D7_0733000;description=erythrocyte membrane p
## 34  ID=PF3D7_0800750;description=Plasmodium exported protein%2C unknown func
## 38                                     ID=PF3D7_0808800
## 40                                     ID=PF3D7_0937700
## 42          ID=PF3D7_0937800;description=erythrocyte membrane p
## 43          ID=PF3D7_0937800;description=erythrocyte membrane p
## 44                                     ID=PF3D7_1040400
## 48                                     ID=PF3D7_1040600
## 49                                     ID=PF3D7_1040600
## 53                                     ID=PF3D7_1040800
## 54          ID=PF3D7_1041300;description=erythrocyte membrane p
## 55          ID=PF3D7_1041300;description=erythrocyte membrane p
## 58          ID=PF3D7_1253500;description=Plasmodium exported protein%2
## 61          ID=PF3D7_1300300;description=erythrocyte membrane p
## 74          ID=PF3D7_1301600;description=erythrocyte b
## 78          ID=PF3D7_1373400
## 79          ID=PF3D7_1373500;description=erythrocyte membrane p
##          FC
## 9  9.992466
## 17 9.992466
## 20 9.992466
## 21 9.992466
## 22 9.992466
## 25 9.992466
## 29 9.992466
## 30 9.992466
## 32 9.992466
## 33 9.992466
## 34 9.992466
## 38 9.992466
## 40 9.992466
## 42 9.992466
## 43 9.992466
## 44 9.992466

```

```

## 48 9.992466
## 49 9.992466
## 53 9.992466
## 54 9.992466
## 55 9.992466
## 58 9.992466
## 61 9.992466
## 74 9.992466
## 78 9.992466
## 79 9.992466

df_1.2B_tss <- df_1.2B[df_1.2B$X5.cov > 10,]
df_1.2B_ORF <- df_1.2B[df_1.2B$Gene.cov > 10,]
df_1.2B_tts <- df_1.2B[df_1.2B$X3.cov > 10,]
df_1.2B_filtered <- df_1.2B[df_1.2B$X5.cov > 10 | df_1.2B$Gene.cov > 10,]

table(df_1.2B_tss$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE TRUE
##    19    4

df_1.2B_tss[df_1.2B_tss$Gene %in% trans_df$ID[trans_df$FC > 1],]

##           Gene Gene.cov X5.cov X3.cov      Chrom
## 12 PF3D7_0223400    0.00  73.7    95 Pf3D7_02_v3
## 25 PF3D7_0421200    0.00  74.7     0 Pf3D7_04_v3
## 45 PF3D7_1100100    0.00  59.5     0 Pf3D7_11_v3
## 46 PF3D7_1100100   61.21  22.3     0 Pf3D7_11_v3
##
##                                     Annotations
## 12                                     ID=PF3D7_0223400;description=rifin
## 25                                     ID=PF3D7_0421200;description=rifin
## 45 ID=PF3D7_1100100;description=erythrocyte membrane protein 1%2C PfEMP1
## 46 ID=PF3D7_1100100;description=erythrocyte membrane protein 1%2C PfEMP1
##    FC
## 12 NA
## 25 NA
## 45 NA
## 46 NA

df_1.2B_tss[!df_1.2B_tss$Gene %in% trans_df$ID[trans_df$FC > 1],]

```

##	Gene	Gene.cov	X5.cov	X3.cov	Chrom
## 4	PF3D7_0115100	0.00	83.5	0.0	Pf3D7_01_v3
## 10	PF3D7_0221600	0.00	91.5	0.0	Pf3D7_02_v3
## 11	PF3D7_0221650	0.00	100.0	29.6	Pf3D7_02_v3
## 15	PF3D7_0302200	31.83	100.0	0.0	Pf3D7_03_v3
## 21	PF3D7_0421100	36.81	13.1	0.0	Pf3D7_04_v3
## 22	PF3D7_0421100	0.00	50.4	0.0	Pf3D7_04_v3
## 31	PF3D7_0425900	0.00	70.0	0.0	Pf3D7_04_v3
## 35	PF3D7_0601100	0.00	26.8	29.8	Pf3D7_06_v3
## 40	PF3D7_0731900	0.00	46.5	0.0	Pf3D7_07_v3
## 44	PF3D7_1039100	0.00	11.8	55.9	Pf3D7_10_v3
## 51	PF3D7_1100400	6.53	100.0	0.0	Pf3D7_11_v3
## 53	PF3D7_1100500	69.41	100.0	0.0	Pf3D7_11_v3
## 56	PF3D7_1101600	0.00	18.2	22.1	Pf3D7_11_v3
## 57	PF3D7_1139100	13.39	100.0	0.0	Pf3D7_11_v3
## 58	PF3D7_1220700	38.39	100.0	0.0	Pf3D7_12_v3
## 65	PF3D7_1301600	0.00	22.8	0.0	Pf3D7_13_v3
## 66	PF3D7_1301600	0.00	28.7	0.0	Pf3D7_13_v3
## 67	PF3D7_1301700	100.00	20.4	100.0	Pf3D7_13_v3
## 68	PF3D7_1301700	0.00	45.2	0.0	Pf3D7_13_v3
##					
## 4	ID=PF3D7_0115100;description=Plasmodium exported protein (PHISTa)%2C				
## 10	ID=PF3D7_0221600;description=Plasmodium exported protein%2C unknown functi				
## 11	ID=PF3D7_0221650;description=Plasmodium exported protein%2C unknown functi				
## 15	ID=PF3D7_0302200;description=cytoadherence linked ase				
## 21	ID=PF3D7_0421100;description=erythrocyte membrane pro				
## 22	ID=PF3D7_0421100;description=erythrocyte membrane pro				
## 31	ID=PF3D7_0425900;d				
## 35	ID=PF3D7_0601100;description=exported				
## 40	ID=PF3D7_0731900;description=rif				
## 44	ID=PF3D7_1039100;description=DnaJ protein%2C putati				
## 51	ID=PF3D7_1100400;d				
## 53	ID=PF3D7_1100500;d				
## 56	ID=PF3D7_1101600;description=exported				
## 57	ID=PF3D7_1139100;description=RNA-binding pro				
## 58	ID=PF3D7_1220700;description=conserved Plasmodium protein%2C				
## 65	ID=PF3D7_1301600;description=erythrocyte bin				
## 66	ID=PF3D7_1301600;description=erythrocyte bin				
## 67	ID=PF3D7_1301700;description=Plasmodium exported protein (hyp8)%2C				
## 68	ID=PF3D7_1301700;description=Plasmodium exported protein (hyp8)%2C				

```
##      FC
## 4    NA
## 10   NA
## 11   NA
## 15   NA
## 21   NA
## 22   NA
## 31   NA
## 35   NA
## 40   NA
## 44   NA
## 51   NA
## 53   NA
## 56   NA
## 57   NA
## 58   NA
## 65   NA
## 66   NA
## 67   NA
## 68   NA

table(df_1.2B_tts$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE  TRUE
##      20      5

df_1.2B_tts[df_1.2B_tts$Gene %in% trans_df$ID[trans_df$FC > 1],]

##           Gene Gene.cov X5.cov X3.cov      Chrom
## 8  PF3D7_0115600    78.38    0.0   11.5 Pf3D7_01_v3
## 12 PF3D7_0223400     0.00   73.7   95.0 Pf3D7_02_v3
## 23 PF3D7_0421200    75.85    0.0   28.3 Pf3D7_04_v3
## 24 PF3D7_0421200     0.00    0.0   25.6 Pf3D7_04_v3
## 43 PF3D7_1039000    25.86    0.0  100.0 Pf3D7_10_v3
##
##                                     Annotation
## 8                                     ID=PF3D7_0115600;description=rifi
## 12                                    ID=PF3D7_0223400;description=rifi
## 23                                    ID=PF3D7_0421200;description=rifi
## 24                                    ID=PF3D7_0421200;description=rifi
## 43 ID=PF3D7_1039000;description=serine/threonine protein kinase%2C FIKK famil
```

```

##      FC
## 8    NA
## 12   NA
## 23   NA
## 24   NA
## 43   NA

df_1.2B_tts[!df_1.2B_tts$Gene %in% trans_df$ID[trans_df$FC > 1],]

##      Gene Gene.cov X5.cov X3.cov      Chrom
## 3  PF3D7_0115000    0.00   0.0   15.1 Pf3D7_01_v3
## 11 PF3D7_0221650    0.00  100.0   29.6 Pf3D7_02_v3
## 13 PF3D7_0223500    4.91   0.0  100.0 Pf3D7_02_v3
## 14 PF3D7_0302100   30.90   0.0  100.0 Pf3D7_03_v3
## 18 PF3D7_0302200    0.00   0.0   30.7 Pf3D7_03_v3
## 19 PF3D7_0302200    0.00   0.0   36.4 Pf3D7_03_v3
## 27 PF3D7_0421300   17.78   0.0   49.8 Pf3D7_04_v3
## 33 PF3D7_0500300    0.00   0.0   30.3 Pf3D7_05_v3
## 35 PF3D7_0601100    0.00  26.8   29.8 Pf3D7_06_v3
## 36 PF3D7_0731800   36.49   0.0   14.4 Pf3D7_07_v3
## 37 PF3D7_0731800    0.00   0.0   21.6 Pf3D7_07_v3
## 44 PF3D7_1039100    0.00  11.8   55.9 Pf3D7_10_v3
## 49 PF3D7_1100300    0.00   0.0   17.0 Pf3D7_11_v3
## 50 PF3D7_1100300    0.00   0.0   32.8 Pf3D7_11_v3
## 54 PF3D7_1100600    6.75   0.0  100.0 Pf3D7_11_v3
## 56 PF3D7_1101600    0.00  18.2   22.1 Pf3D7_11_v3
## 59 PF3D7_1240000    0.00   0.0   10.2 Pf3D7_12_v3
## 60 PF3D7_1240100    0.00   1.7   43.6 Pf3D7_12_v3
## 61 PF3D7_1240200   38.26   0.0   38.3 Pf3D7_12_v3
## 67 PF3D7_1301700  100.00  20.4  100.0 Pf3D7_13_v3
##
## 3      ID=PF3D7_0115000;description=surface-associated interspersed
## 11     ID=PF3D7_0221650;description=Plasmodium exported protein%2C unknow
## 13     ID=PF3D7_0223500;description=erythrocyte membrane protein
## 14     ID=PF3D7_0302100;description=serine protease
## 18     ID=PF3D7_0302200;description=cytoadherence ligand
## 19     ID=PF3D7_0302200;description=cytoadherence ligand
## 27     ID=PF3D7_0421300;description=erythrocyte membrane protein
## 33     ID=PF3D7_0500300;description=
## 35     ID=PF3D7_0601100;description=
## 36     ID=PF3D7_0731800;description=alpha/beta

```

```

## 37 ID=PF3D7_0731800;description=alpha/b
## 44 ID=PF3D7_1039100;description=DnaJ protein%
## 49 ID=PF3D7_
## 50 ID=PF3D7_
## 54 ID=PF3D7_1100600;description=Plasmodium exported protein (PHISTa)%2C unkno
## 56 ID=PF3D7_1101600;description=
## 59 ID=PF3D7_1240000;description=3-hydroxyisobutyryl-coenzym
## 60 ID=PF3D7_1240100;description=early transc
## 61 ID=PF3D7_1240200;description=erythrocyte membrane protein
## 67 ID=PF3D7_1301700;description=Plasmodium exported protein (
## FC
## 3 NA
## 11 NA
## 13 NA
## 14 NA
## 18 NA
## 19 NA
## 27 NA
## 33 NA
## 35 NA
## 36 NA
## 37 NA
## 44 NA
## 49 NA
## 50 NA
## 54 NA
## 56 NA
## 59 NA
## 60 NA
## 61 NA
## 67 NA

table(df_1.2B_ORF$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE TRUE
## 27 4

df_1.2B_ORF[df_1.2B_ORF$Gene %in% trans_df$ID[trans_df$FC > 1],]

## Gene Gene.cov X5.cov X3.cov Chrom

```

```

## 8 PF3D7_0115600 78.38 0.0 11.5 Pf3D7_01_v3
## 23 PF3D7_0421200 75.85 0.0 28.3 Pf3D7_04_v3
## 43 PF3D7_1039000 25.86 0.0 100.0 Pf3D7_10_v3
## 46 PF3D7_1100100 61.21 22.3 0.0 Pf3D7_11_v3
##
## 8 ID=PF3D7_0115600;description=rifi
## 23 ID=PF3D7_0421200;description=rifi
## 43 ID=PF3D7_1039000;description=serine/threonine protein kinase%2C FIKK famil
## 46 ID=PF3D7_1100100;description=erythrocyte membrane protein 1%2C PfEMP
## FC
## 8 NA
## 23 NA
## 43 NA
## 46 NA

df_1.2B_ORF[!df_1.2B_ORF$Gene %in% trans_df$ID[trans_df$FC > 1],]

## Gene Gene.cov X5.cov X3.cov Chrom
## 5 PF3D7_0115100 18.29 0.0 0.0 Pf3D7_01_v3
## 6 PF3D7_0115100 29.05 0.0 6.9 Pf3D7_01_v3
## 9 PF3D7_0115700 13.77 0.0 3.1 Pf3D7_01_v3
## 14 PF3D7_0302100 30.90 0.0 100.0 Pf3D7_03_v3
## 15 PF3D7_0302200 31.83 100.0 0.0 Pf3D7_03_v3
## 16 PF3D7_0302200 25.94 0.0 0.0 Pf3D7_03_v3
## 20 PF3D7_0401500 92.82 0.0 3.8 Pf3D7_04_v3
## 21 PF3D7_0421100 36.81 13.1 0.0 Pf3D7_04_v3
## 27 PF3D7_0421300 17.78 0.0 49.8 Pf3D7_04_v3
## 28 PF3D7_0421300 36.81 0.0 0.0 Pf3D7_04_v3
## 29 PF3D7_0425800 17.85 0.0 0.0 Pf3D7_04_v3
## 30 PF3D7_0425800 12.11 0.0 2.2 Pf3D7_04_v3
## 32 PF3D7_0425900 56.98 0.0 0.0 Pf3D7_04_v3
## 34 PF3D7_0500300 68.29 0.0 1.4 Pf3D7_05_v3
## 36 PF3D7_0731800 36.49 0.0 14.4 Pf3D7_07_v3
## 41 PF3D7_0731900 90.48 5.2 0.0 Pf3D7_07_v3
## 48 PF3D7_1100300 86.15 0.0 2.7 Pf3D7_11_v3
## 52 PF3D7_1100400 78.33 0.0 6.8 Pf3D7_11_v3
## 53 PF3D7_1100500 69.41 100.0 0.0 Pf3D7_11_v3
## 55 PF3D7_1100600 17.51 0.0 0.0 Pf3D7_11_v3
## 57 PF3D7_1139100 13.39 100.0 0.0 Pf3D7_11_v3
## 58 PF3D7_1220700 38.39 100.0 0.0 Pf3D7_12_v3
## 61 PF3D7_1240200 38.26 0.0 38.3 Pf3D7_12_v3

```

## 62	PF3D7_1255100	64.37	0.0	9.5	Pf3D7_12_v3
## 63	PF3D7_1255200	13.20	0.0	1.9	Pf3D7_12_v3
## 64	PF3D7_1301600	59.68	0.0	0.0	Pf3D7_13_v3
## 67	PF3D7_1301700	100.00	20.4	100.0	Pf3D7_13_v3
##					
## 5	ID=PF3D7_0115100;description=Plasmodium exported protein (PH				
## 6	ID=PF3D7_0115100;description=Plasmodium exported protein (PH				
## 9	ID=PF3D7_0115700;description=erythrocyte mem				
## 14	ID=PF3D7_0302100;description=serine				
## 15	ID=PF3D7_0302200;description=cytoadherence l				
## 16	ID=PF3D7_0302200;description=cytoadherence l				
## 20	ID=PF3D7_0401500;descrip				
## 21	ID=PF3D7_0421100;description=erythrocyte mem				
## 27	ID=PF3D7_0421300;description=erythrocyte mem				
## 28	ID=PF3D7_0421300;description=erythrocyte mem				
## 29	ID=PF3D7_0425800;description=erythrocyte mem				
## 30	ID=PF3D7_0425800;description=erythrocyte mem				
## 32	ID=PF3D7_				
## 34	ID=PF3D7_0500300;descri				
## 36	ID=PF3D7_0731800;description=alpha/b				
## 41	ID=PF3D7_0731900;descri				
## 48	ID=PF3D7_				
## 52	ID=PF3D7_				
## 53	ID=PF3D7_				
## 55	ID=PF3D7_1100600;description=Plasmodium exported protein (PHISTa)%2C unkno				
## 57	ID=PF3D7_1139100;description=RNA-bi				
## 58	ID=PF3D7_1220700;description=conserved Plasmodium pr				
## 61	ID=PF3D7_1240200;description=erythrocyte membrane protein				
## 62	ID=PF3D7_				
## 63	ID=PF3D7_1255200;description=erythrocyte mem				
## 64	ID=PF3D7_1301600;description=erythr				
## 67	ID=PF3D7_1301700;description=Plasmodium exported protein (				
##	FC				
## 5	NA				
## 6	NA				
## 9	NA				
## 14	NA				
## 15	NA				
## 16	NA				
## 20	NA				



```

## 21 NA
## 27 NA
## 28 NA
## 29 NA
## 30 NA
## 32 NA
## 34 NA
## 36 NA
## 41 NA
## 48 NA
## 52 NA
## 53 NA
## 55 NA
## 57 NA
## 58 NA
## 61 NA
## 62 NA
## 63 NA
## 64 NA
## 67 NA

table(df_1.2B_filtered$Gene %in% trans_df$ID[trans_df$FC > 1])

##
## FALSE TRUE
##    40    7

#### PCAS ####
trans_df["Met"] <- trans_df$ID %in% df_10G$Gene
trans_df_noNA <- trans_df[complete.cases(trans_df),]
trans_df_noNA[,2:9] <- apply(trans_df_noNA[,2:9], c(1,2), function(x) x <- as.nu

autoplot(prcomp(trans_df_noNA[,2:9]), data = trans_df_noNA, colour = "Met") + sc

```



```
#### Load Taulas de coverage 10G####
gene_metilation_10G <- read.table("/home/lucas/ISGlobal/Chip_Seq/DATA/Aligns/q5/

## Warning in scan(file = file, what = what, sep = sep, quote = quote,
dec = dec, : EOF within quoted string
## Warning in scan(file = file, what = what, sep = sep, quote = quote,
dec = dec, : number of items read is not a multiple of the number
of columns

gene_metilation_10G$V9 <- lapply(gene_metilation_10G$V9, function(x) gsub("ID=",
gene_metilation_10G <- gene_metilation_10G[,c(9,1:8,10)]

get_FC2 <- function(x){
```

```

fc <- trans_df[which(trans_df[, "ID"] == x), "FC"]
if (length(fc) > 1){
  if (any(!is.na(fc))){
    fc <- max(fc, na.rm = FALSE)
  } else {
    fc <- NA
  }
} else if ((length(fc) == 0)){
  fc <- NA
}
return(fc)
}

gene_metilation_10G["FC"] <- sapply(gene_metilation_10G$V9, function(x) get_FC2(x))
gene_metilation_10G["V10"] <- sapply(gene_metilation_10G["V10"], function(x) x)

#Get mean 10G expression value
trans_df["mean_10G"] <- apply(trans_df, 1, function(x) mean(c(as.numeric(x["left

get_mean10g <- function(x){
  m <- trans_df[which(trans_df[, "ID"] == x), "mean_10G"]
  if (length(m) == 0){
    m <- NA
  }
  return(m)
}

gene_metilation_10G["mean_10G"] <- sapply(gene_metilation_10G$V9, function(x) get_mean10g(x))

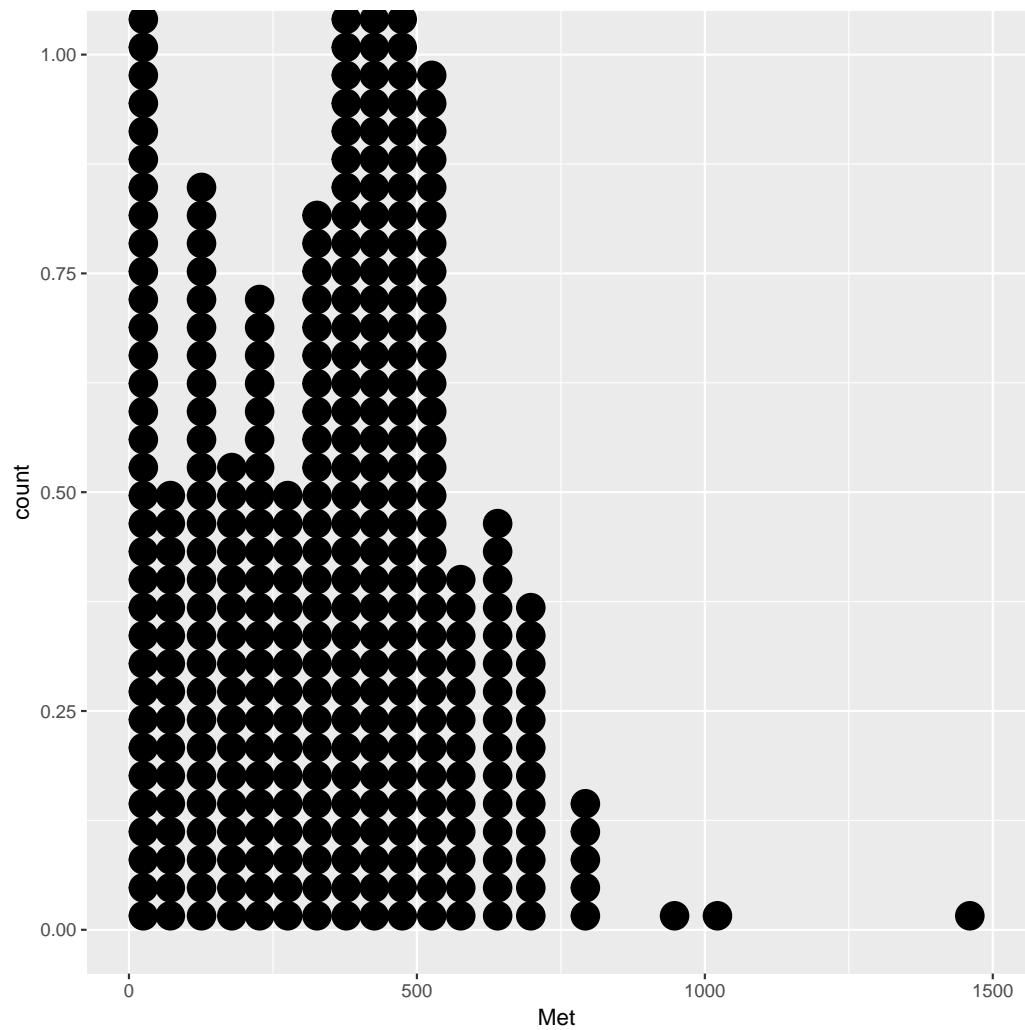
# Posar colnames
colnames(gene_metilation_10G) <- c("ID", "Chrom", "DB", "Type", "Start", "Stop",

#### Some Plots ####
#for_PCA <- gene_metilation_10G[-3716,]

p <- ggplot(gene_metilation_10G, aes(x = Met))
p + geom_dotplot(aes(fill = mean_10G))

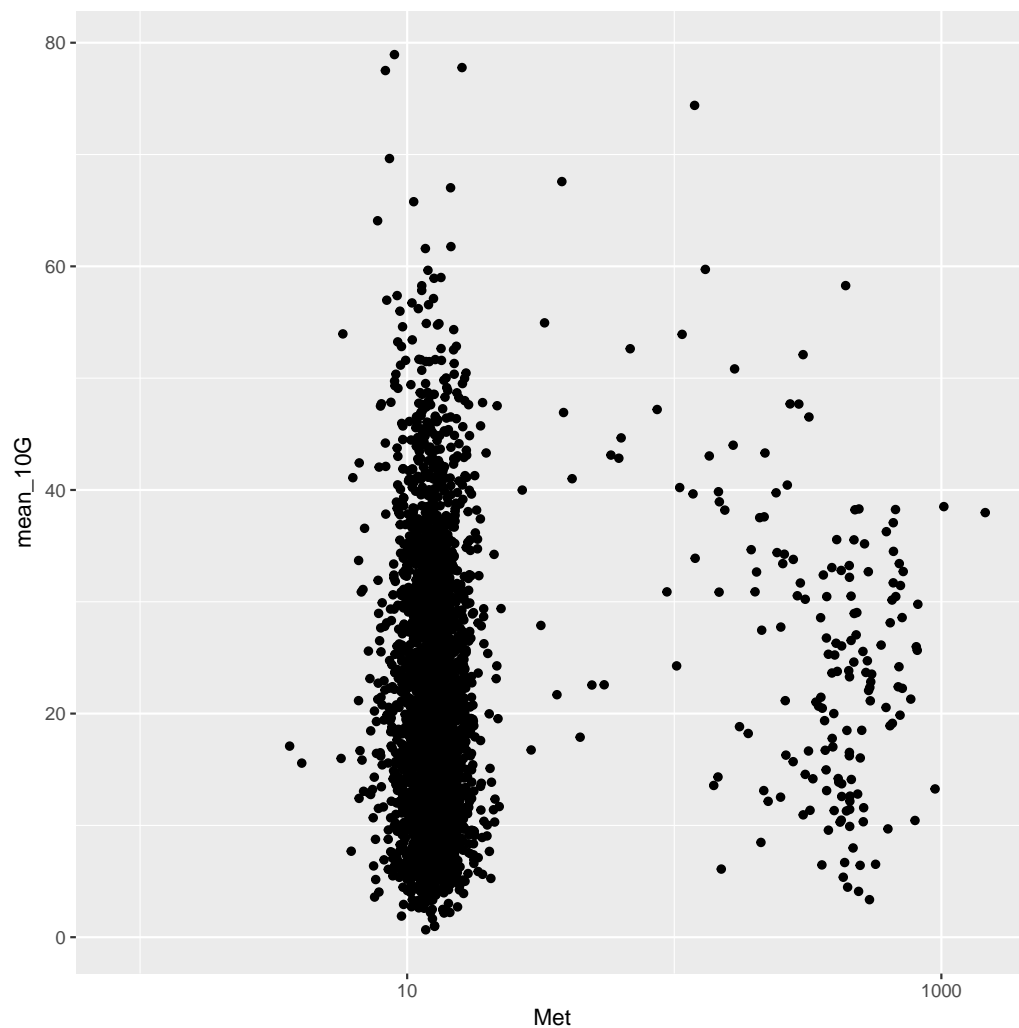
## 'stat_bindot()' using 'bins = 30'. Pick better value with 'binwidth'.
## Warning: Removed 1 rows containing non-finite values (stat_bindot).

```



```
p <- ggplot(gene_metilation_10G, aes(x = Met, y = mean_10G))
p + geom_point() + scale_x_log10()

## Warning: Removed 425 rows containing missing values (geom_point).
```



```
#### Calcular correlacions ####
cor <- rcorr(as.matrix(gene_metilation_10G[,c("Met", "mean_10G", "FC"))))
signif(cor$r, 2)
```

	Met	mean_10G	FC
Met	1.000	0.054	0.12
mean_10G	0.054	1.000	-0.10
FC	0.120	-0.100	1.00

## 1 Session Info

```

sessionInfo()

## R version 3.4.1 (2017-06-30)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 16.04.3 LTS
##
## Matrix products: default
## BLAS: /usr/lib/openblas-base/libblas.so.3
## LAPACK: /usr/lib/libopenblas-r0.2.18.so
##
## locale:
##  [1] LC_CTYPE=en_US.UTF-8          LC_NUMERIC=C
##  [3] LC_TIME=es_ES.UTF-8          LC_COLLATE=en_US.UTF-8
##  [5] LC_MONETARY=es_ES.UTF-8       LC_MESSAGES=en_US.UTF-8
##  [7] LC_PAPER=es_ES.UTF-8          LC_NAME=es_ES.UTF-8
##  [9] LC_ADDRESS=es_ES.UTF-8        LC_TELEPHONE=es_ES.UTF-8
## [11] LC_MEASUREMENT=es_ES.UTF-8    LC_IDENTIFICATION=es_ES.UTF-8
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods    base
##
## other attached packages:
##  [1] bindrcpp_0.2      Hmisc_4.0-3      Formula_1.2-2
##  [4] survival_2.41-3   lattice_0.20-35  dplyr_0.7.3
##  [7] XLConnect_0.2-13  XLConnectJars_0.2-13 ggfortify_0.4.1
## [10] ggplot2_2.2.1     knitr_1.17
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.12      highr_0.6         RColorBrewer_1.1-2
##  [4] compiler_3.4.1    plyr_1.8.4        bindr_0.1
##  [7] base64enc_0.1-3   tools_3.4.1       digest_0.6.12
## [10] rpart_4.1-11      checkmate_1.8.3    htmlTable_1.9
## [13] evaluate_0.10.1    tibble_1.3.4       gtable_0.2.0
## [16] pkgconfig_2.0.1    rlang_0.1.2        Matrix_1.2-11
## [19] gridExtra_2.3      rJava_0.9-8        cluster_2.0.6
## [22] stringr_1.2.0      htmlwidgets_0.9    nnet_7.3-12
## [25] grid_3.4.1         data.table_1.10.4  glue_1.1.1
## [28] R6_2.2.2           foreign_0.8-69     latticeExtra_0.6-28
## [31] tidyr_0.7.1        purrr_0.2.3        magrittr_1.5
## [34] htmltools_0.3.6    backports_1.1.0    scales_0.5.0
## [37] splines_3.4.1      assertthat_0.2.0   colorspace_1.3-2

```

```
## [40] labeling_0.3      stringi_1.1.5      acepack_1.4.1
## [43] lazyeval_0.2.0    munsell_0.4.3
```