suppressPackageStartupMessages(library("optparse"))

suppressPackageStartupMessages(library("stats"))

option\_list <- list(

make\_option(c("-f", "--file"),action = "store",type = "character",

help = "The Input file"),

make\_option(c("-t","--type"),action = "store",type = "character",

help = "heatmap type:

exp

exp\_norowname

exp\_nox

exp\_nox\_log2

exp\_noxy

exp\_noscale

exp\_noscale\_nox

exp\_noscale\_noy

exp\_noscale\_noxy

exp\_noscale\_noxy\_norowname

exp\_noscale\_noxy\_log2

exp\_colscale

exp\_colscale\_nox

exp\_colscale\_noy

exp\_colscale\_noxy

exp\_noscale\_norowname

exp\_noscale\_nox\_norowname

exp\_nox\_norowname

exp\_nox\_norowname\_log2

exp\_noy\_norowname

exp\_noy\_norowname\_log2

exp\_noxy\_norowname

exp\_noxy\_norowname\_log2

samplecor

samplecor\_half\_upper

samplecor\_half\_lower

kmeans

kmeans\_nox

"),

make\_option(c("-c","--colorstyle"),action = "store",type = "character",default="A",

help = "colorstyle:

A :default

C :blackandred

B :big red

"),

make\_option(c("-b","--start"),action = "store",type = "integer",default = 1,

help = "appoint the column of start ; default = 1"),

make\_option(c("-e","--end"),action = "store",type = "integer",default = -1,

help = "appoint the column of end; default = -1"),

make\_option(c("-x", "--xanno"),action = "store",type = "character",default = "",

help = "The Anno file for X"),

make\_option(c("-y", "--yanno"),action = "store",type = "character",default = "",

help = "The Anno file for Y"),

make\_option(c("-w","--width"),action = "store",type = "integer",default = 5,

help = "width; default = 5"),

make\_option(c("-g","--height"),action = "store",type = "integer",default = 8,

help = "heigth; default = 8"),

make\_option(c("-n","--filename"),action = "store",type = "character",default="DEG\_heatmap",

help = "The filename of the picture ; default = DEG\_heatmap"),

make\_option(c("-o", "--outdir"),action = "store",type = "character",default = "./",

help = "The outdir;default = ./")

)

opt <- parse\_args(OptionParser(option\_list = option\_list))

start <- as.numeric(opt$start)

end <- as.numeric(opt$end)

w <- as.numeric(opt$width)

h <- as.numeric(opt$height)

library(pheatmap)

library("RColorBrewer")

library("corrplot")

NO\_REUSE = F

# # get the filename to use later

filename <- strsplit(opt$file,"/")[[1]]

filename <- filename[length(filename)]

filename <- sub('.txt','',filename)

# # try to reuse earlier-loaded data if possible

# print('Reading matrix file.')

primary\_data = read.table(opt$file, header=T, com='',quote = "", sep="\t", row.names=1, check.names=F)

# primary\_data = read.table("Sample\_correlation.dat", header=T, com='', sep="\t", row.names=1, check.names=F)

annotation\_col = data.frame(

s = factor(rep(c("s"), length(colnames(primary\_data))))

)

rownames(annotation\_col) = colnames(primary\_data)

if(opt$xanno!=""){

annotation\_col = read.table(opt$xanno, header=T, com='', sep="\t", row.names=1, check.names=F)

}

annotation\_row = data.frame(

s = factor(rep(c("s"), length(rownames(primary\_data))))

)

rownames(annotation\_row) = rownames(primary\_data)

if(opt$yanno!=""){

annotation\_row = read.table(opt$yanno, header=T, com='', sep="\t", row.names=1, check.names=F)

}

if(end> 0){

primary\_data <- primary\_data[,start:end]

}

primary\_data = as.matrix(primary\_data)

data = primary\_data

scaleyellowred <- colorRampPalette(c("#08519c","#3182bd","#ffffff","#e6550d","#a63603"),space = "rgb")(500)

if (opt$colorstyle == "B"){

scaleyellowred <- colorRampPalette(c("#08519c","#08519c","#3182bd","#3182bd","#ffffff","#e6550d","#e6550d","#a63603","#a63603"),space = "rgb")(500)

}

if (opt$colorstyle == "C"){

scaleyellowred <- colorRampPalette(c("green","green","black","red","red"),space = "rgb")(500)

}

if (opt$colorstyle == "D"){

scaleyellowred <- colorRampPalette(c("navy", "white", "firebrick3"))(50)

}

annotation\_colors <- c("#0072B2","#eb5d46","#F0E442","#009E73","#CC79A7","#5d8ac4","#f39659","#936355","#999999","#E69F00","#56B4E9","#009E73","#F0E442","#0072B2","#D55E00","#000000","#E69F00","#56B4E9","#D55E00","#CC79A7","#FCFBFD","#EFEDF5","#DADAEB","#BCBDDC","#9E9AC8","#807DBA","#6A51A3","#54278F","#3F007D")

# scaleyellowred <- colorRampPalette(c("green","black","red"),bias=1)(256)

# scaleyellowred <- colorRampPalette(rev(brewer.pal(n = 7, name = "RdYlBu")))(100)

## row anno and col anno

if (opt$type == "kmeans\_nox"){

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, kmeans\_k=4, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = F,fontsize=15, cellwidth = 15,cellheight = 15,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, kmeans\_k=4, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = F,fontsize=15, cellwidth = 15,cellheight = 15,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))

if (opt$type == "exp"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))}

if (opt$type == "exp\_colscale"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))}

if (opt$type == "exp\_colscale\_nox"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))}

if (opt$type == "exp\_colscale\_noy"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_colscale\_noxy"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='') pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="column",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_norowname"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))}

if (opt$type == "exp\_noscale"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noscale\_nox\_norowname"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="none",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="none",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noscale\_nox"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noscale\_noy"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noscale\_noxy"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noscale\_noxy\_log2"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="none",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noscale\_noxy\_norowname"){

data <- data[rowSums(data) != 0,]

data <- data[,colSums(data) != 0]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="none",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", cluster\_cols=F,cluster\_rows=F,scale="none",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))

}

if (opt$type == "exp\_noscale\_norowname"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="none",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="none",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_log2"){

data <- data[rowSums(data) != 0,]

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",clustering\_distance\_cols="euclidean",scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))

if (opt$type == "exp\_nox"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_nox\_log2"){

data <- data[rowSums(data) != 0,]

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))}

if (opt$type == "exp\_noxy"){

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_rows=F,cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_rows=F,cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noy\_norowname"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) #

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noy\_norowname\_log2"){

data <- data[rowSums(data) != 0,]

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_cols="euclidean",cluster\_rows=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_nox\_norowname"){

data <- data[rowSums(data) != 0,]

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_nox\_norowname\_log2"){

data <- data[rowSums(data) != 0,]

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))

}

if (opt$type == "exp\_nox\_log2"){

data <- data[rowSums(data) != 0,]

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''))

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_cols=F,scale="row",show\_rownames = T,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noxy\_norowname"){

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_rows=F,cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_rows=F,cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep='')) }

if (opt$type == "exp\_noxy\_norowname\_log2"){

data = log2(data+1)

pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_rows=F,cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep='')) pheatmap(data,annotation\_col = annotation\_col, annotation\_row = annotation\_row,color=scaleyellowred, clustering\_method = "complete", clustering\_distance\_rows="euclidean",cluster\_rows=F,cluster\_cols=F,scale="row",show\_rownames = F,border\_color=NA, angle\_col = "45",width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''))

if (opt$type == "samplecor"){

sample\_cor = cor(data, method='pearson', use='pairwise.complete.obs')

cat(c('Gene\t'),file=paste(opt$filename,".xls",sep=''))

write.table(sample\_cor, file=paste(opt$filename,".xls",sep=''), quote=F, append=T, sep='\t')

data <- sample\_cor

o = rownames(data)

sample\_dist = dist(t(primary\_data), method='euclidean')

hc = hclust(sample\_dist, method='complete')

data = data[hc$order, hc$order]

data = data[o, o]

data

rowcount <- nrow(data)

if (rowcount>7){

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,cellwidth = 15, cellheight = 15, fontsize=15,width=opt$width,height=opt$height,filename = paste(opt$filename,".pdf",sep=''),display\_numbers = FALSE)

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,cellwidth = 15, cellheight = 15, fontsize=15,width=opt$width,height=opt$height,filename = paste(opt$filename,".png",sep=''),display\_numbers = FALSE)

}

if (rowcount<=7){

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,fontsize=20,filename = paste(opt$filename,".pdf",sep=''),display\_numbers = FALSE,width = 8, height = 7)

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,fontsize=20,filename = paste(opt$filename,".png",sep=''),display\_numbers = FALSE,width = 8, height = 7)

}

}

if (opt$type == "samplecor\_half\_upper"){

sample\_cor = cor(data, method='pearson', use='pairwise.complete.obs')

cat(c('Gene\t'),file=paste(opt$filename,".xls",sep=''))

write.table(sample\_cor, file=paste(opt$filename,".xls",sep=''), quote=F, append=T, sep='\t')

data <- sample\_cor

o = rownames(data)

sample\_dist = dist(t(data), method='euclidean')

hc = hclust(sample\_dist, method='complete')

# hc = hclust(as.dist(1 - data))

data = data[hc$order, hc$order]

data[upper.tri(data)] = NA

data = data[o, o]

data

rowcount <- nrow(data)

if (rowcount>7){

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,cellwidth = 15, cellheight = 15, fontsize=15,width=opt$width,filename = paste(opt$filename,".pdf",sep=''),display\_numbers = FALSE)

pheatmap(data, cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,cellwidth = 15, cellheight = 15, fontsize=15,width=opt$width,filename = paste(opt$filename,".png",sep=''),display\_numbers = FALSE)

}

if (rowcount<=7){

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,fontsize=20,filename = paste(opt$filename,".pdf",sep=''),display\_numbers = FALSE,width = 8, height = 7)

pheatmap(data, cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,fontsize=20,filename = paste(opt$filename,".png",sep=''),display\_numbers = FALSE,width = 8, height = 7)

}

}

if (opt$type == "samplecor\_half\_lower"){

sample\_cor = cor(data, method='pearson', use='pairwise.complete.obs')

cat(c('Gene\t'),file=paste(opt$filename,".xls",sep=''))

write.table(sample\_cor, file=paste(opt$filename,".xls",sep=''), quote=F, append=T, sep='\t')

data <- sample\_cor

o = rownames(data)

sample\_dist = dist(t(data), method='euclidean')

hc = hclust(sample\_dist, method='complete')

# hc = hclust(as.dist(1 - data))

data = data[hc$order, hc$order]

data[lower.tri(data)] = NA

data = data[o, o]

data

rowcount <- nrow(data)

if (rowcount>7){

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,cellwidth = 15, cellheight = 15, fontsize=15,width=opt$width,filename = paste(opt$filename,".pdf",sep=''),display\_numbers = FALSE)

pheatmap(data, cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,cellwidth = 15, cellheight = 15, fontsize=15,width=opt$width,filename = paste(opt$filename,".png",sep=''),display\_numbers = FALSE)

}

if (rowcount<=7){

pheatmap(data, annotation\_col = annotation\_col, annotation\_row = annotation\_row,cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,fontsize=20,filename = paste(opt$filename,".pdf",sep=''),display\_numbers = FALSE,width = 8, height = 7)

pheatmap(data, cluster\_col = hc, cluster\_row = hc,border\_color="white",show\_colnames=T,fontsize=20,filename = paste(opt$filename,".png",sep=''),display\_numbers = FALSE,width = 8, height = 7)

}

}