

```
## Gene2 3.083160 0.2642755 2.855381 1.988289e-01  
## Gene3 3.417809 -0.1362079 3.858884 -8.390304e-01  
## Gene4 2.911934 0.4299550 4.128398 -3.011521e+00  
## Gene5 2.651758 -1.6884728 3.001079 1.861780e+00  
## Gene6 1.934270 0.5811059 2.297763 6.878644e-05
```

```
# 默认绘图  
pheatmap(test)
```

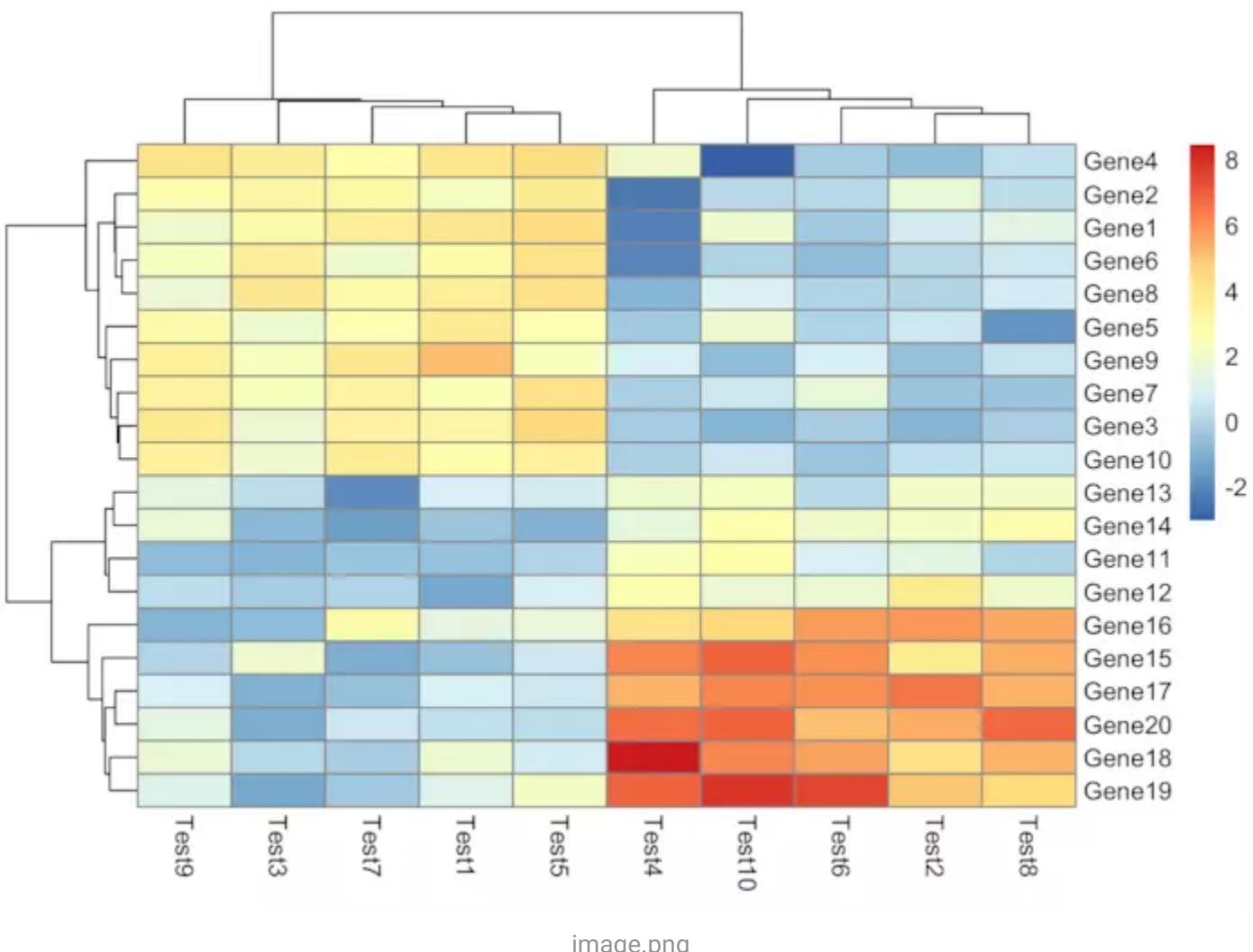


image.png

```
# scale = "row"参数对行进行归一化  
pheatmap(test, scale = "row")
```

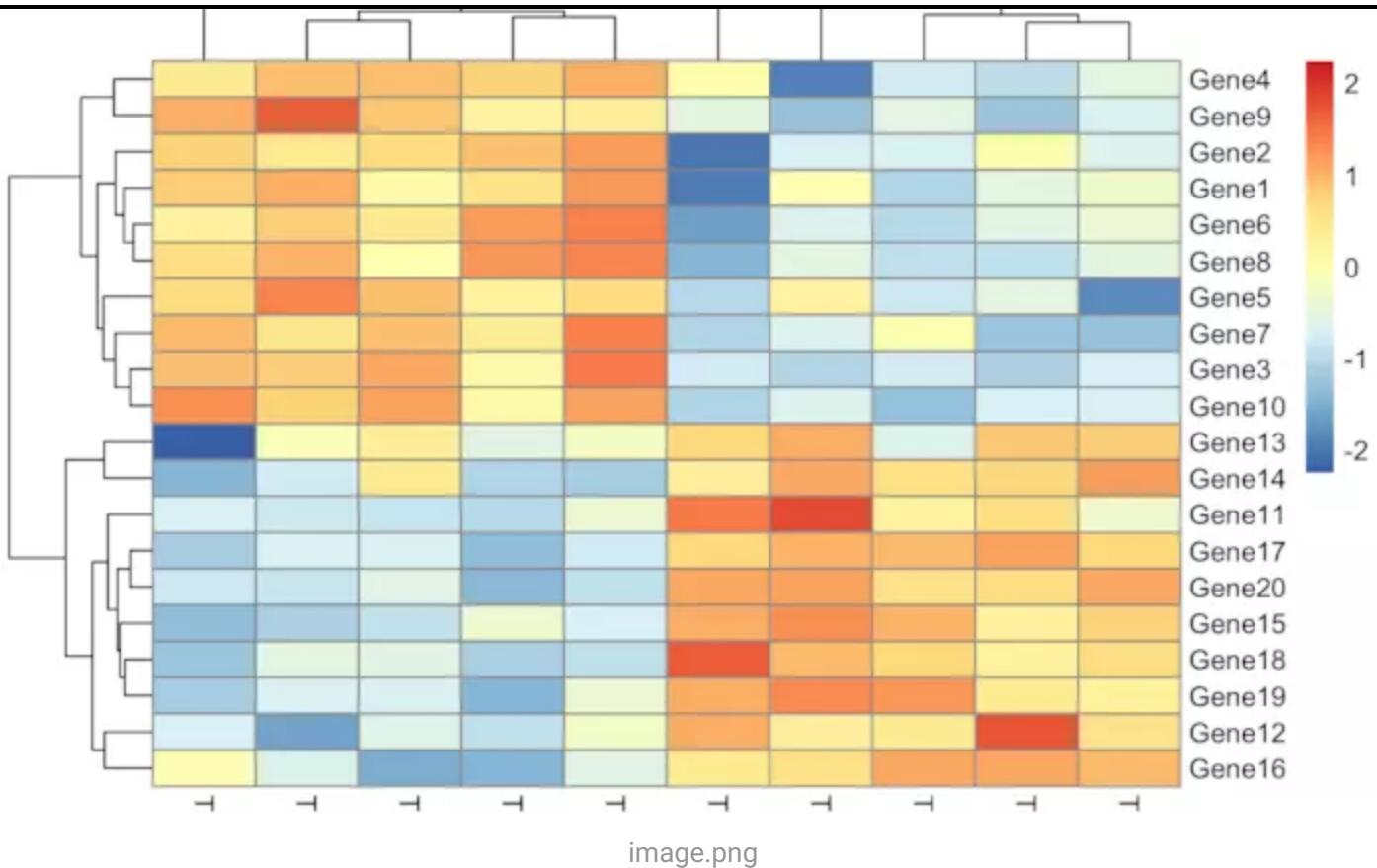
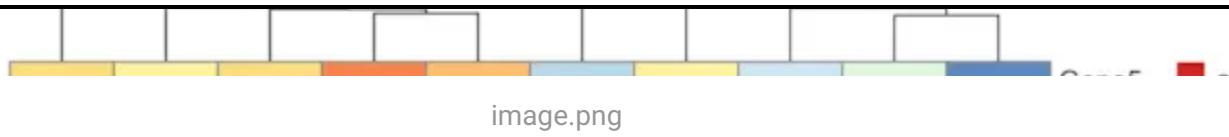
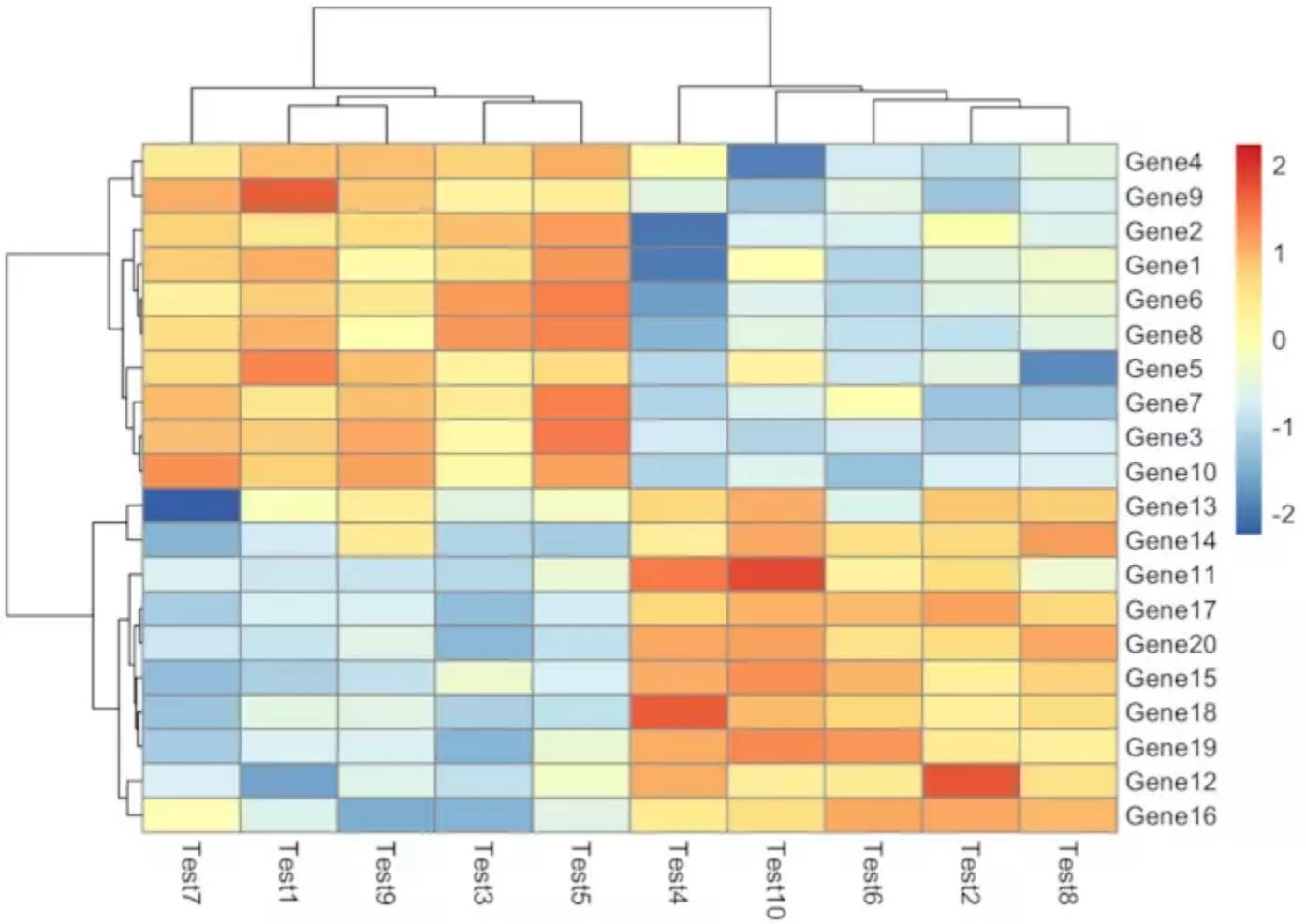


image.png

```
# clustering_method参数设定不同聚类方法，默認為"complete"，可以設定為'ward'，'ward.D'，'ward.D2'，'  
pheatmap(test,scale = "row", clustering_method = "average")
```



```
# clustering_distance_rows = "correlation"参数设定行聚类距离方法为Pearson correlation，默认为欧氏距离  
pheatmap(test, scale = "row", clustering_distance_rows = "correlation")
```



```
# color参数自定义颜色  
pheatmap(test, color = colorRampPalette(c("navy", "white", "firebrick3"))(50))
```

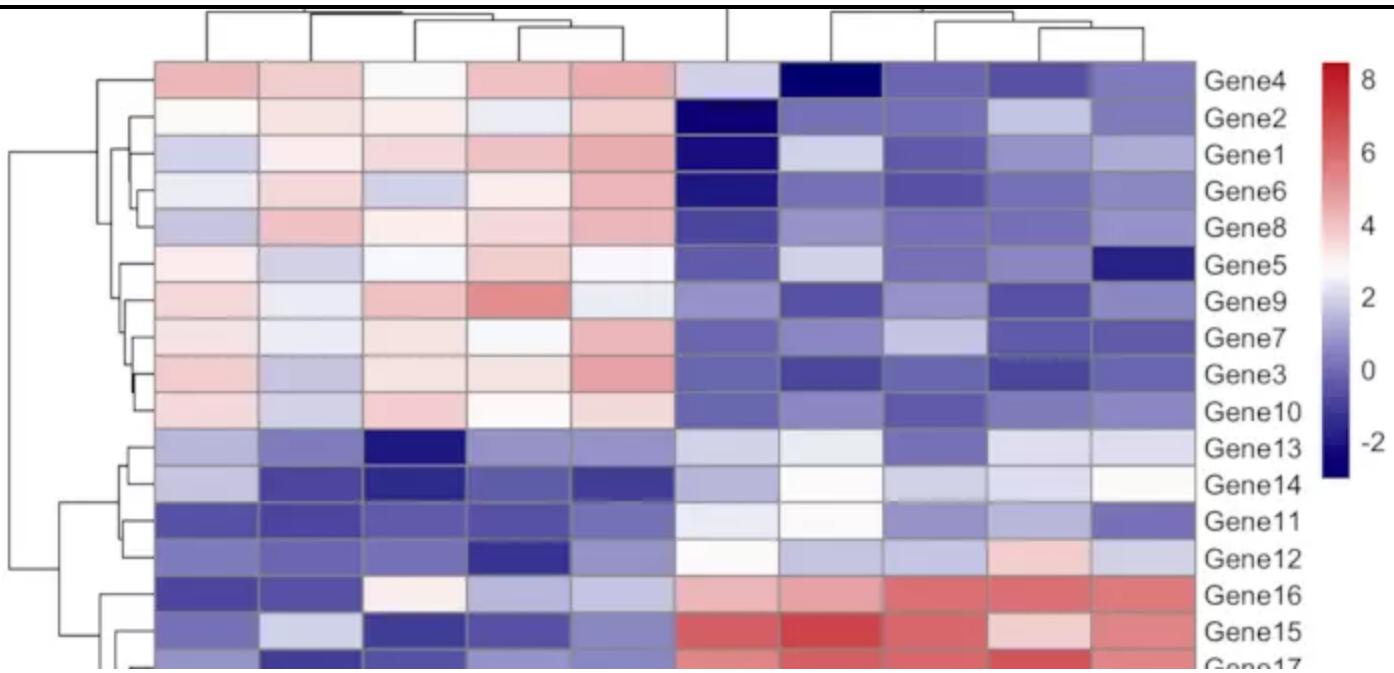


image.png

```
# cluster_row = FALSE参数设定不对行进行聚类  
pheatmap(test, cluster_row = FALSE)
```

```
# legend_breaks参数设定图例显示范围，legend_labels参数添加图例标签  
pheatmap(test, legend_breaks = c(1:5), legend_labels = c("1.0","2.0","3.0","4.0","5.0"))
```

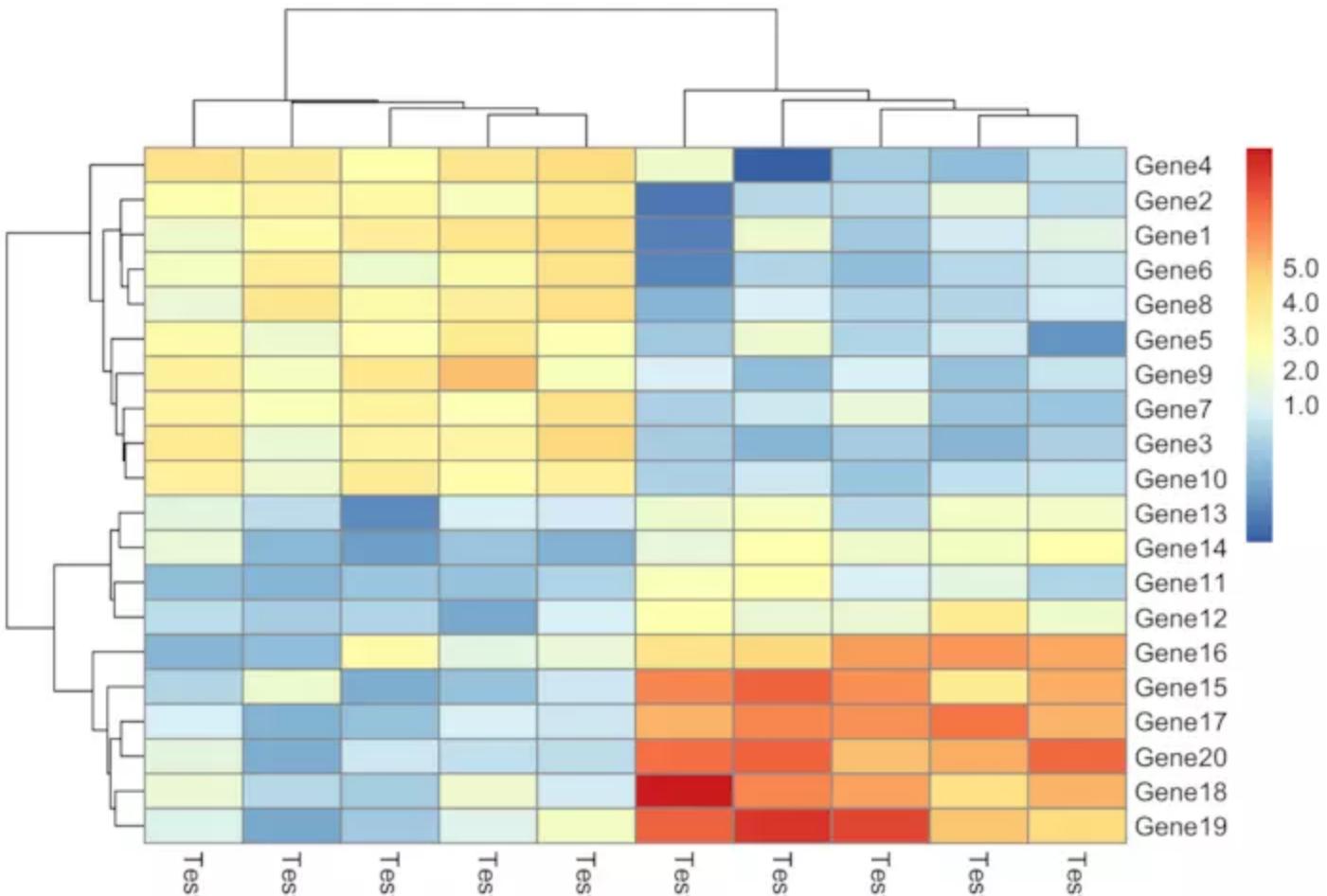


image.png

```
# legend = FALSE参数去掉图例  
pheatmap(test, legend = FALSE)
```

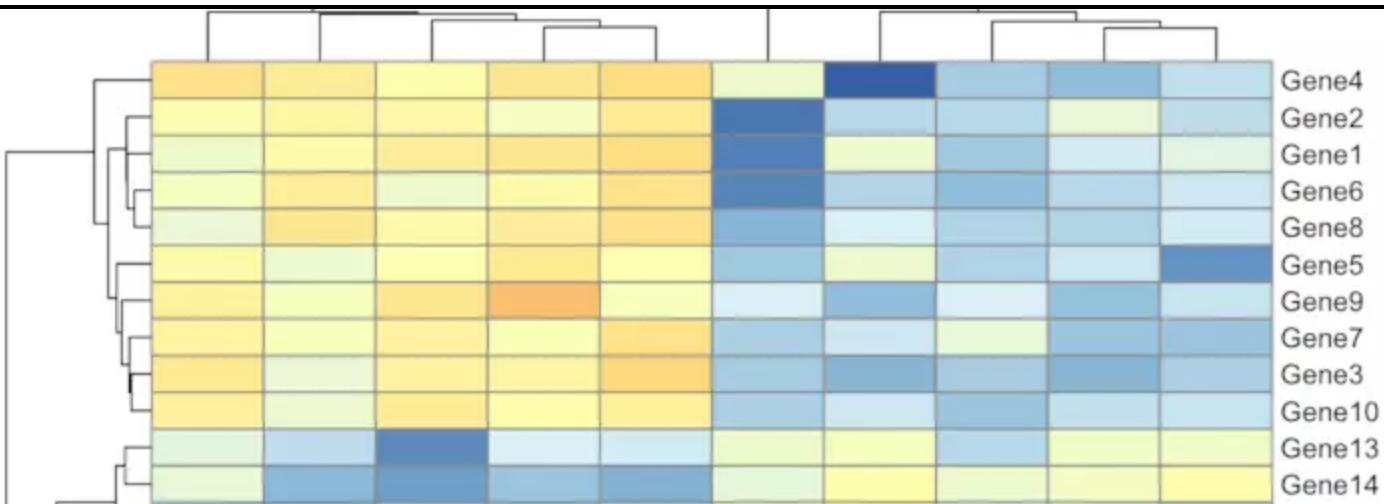


image.png

```
# border_color参数设定每个热图格子的边框色  
pheatmap(test, border_color = "red")
```

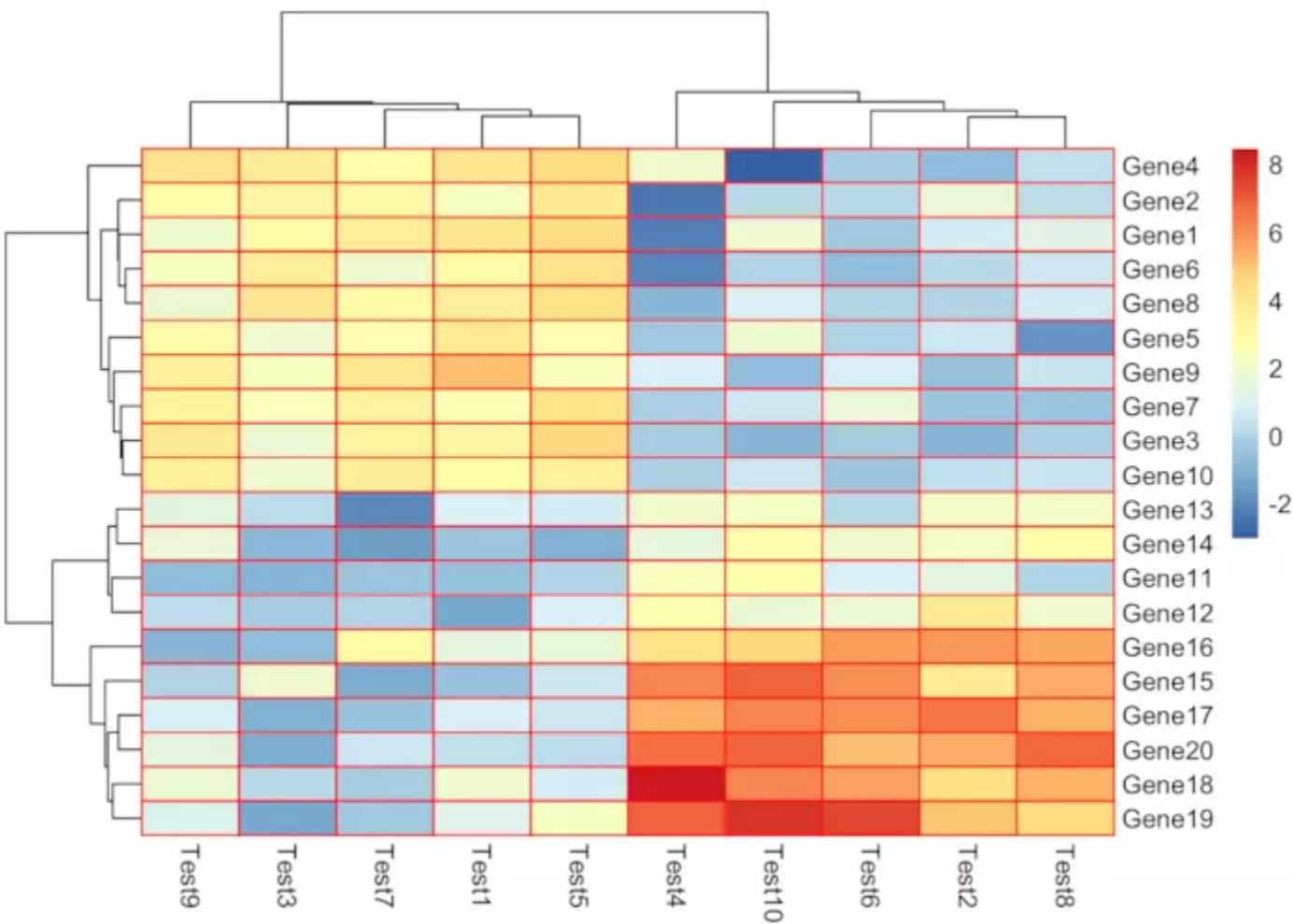


image.png

```
pheatmap(test, border=FALSE)
```

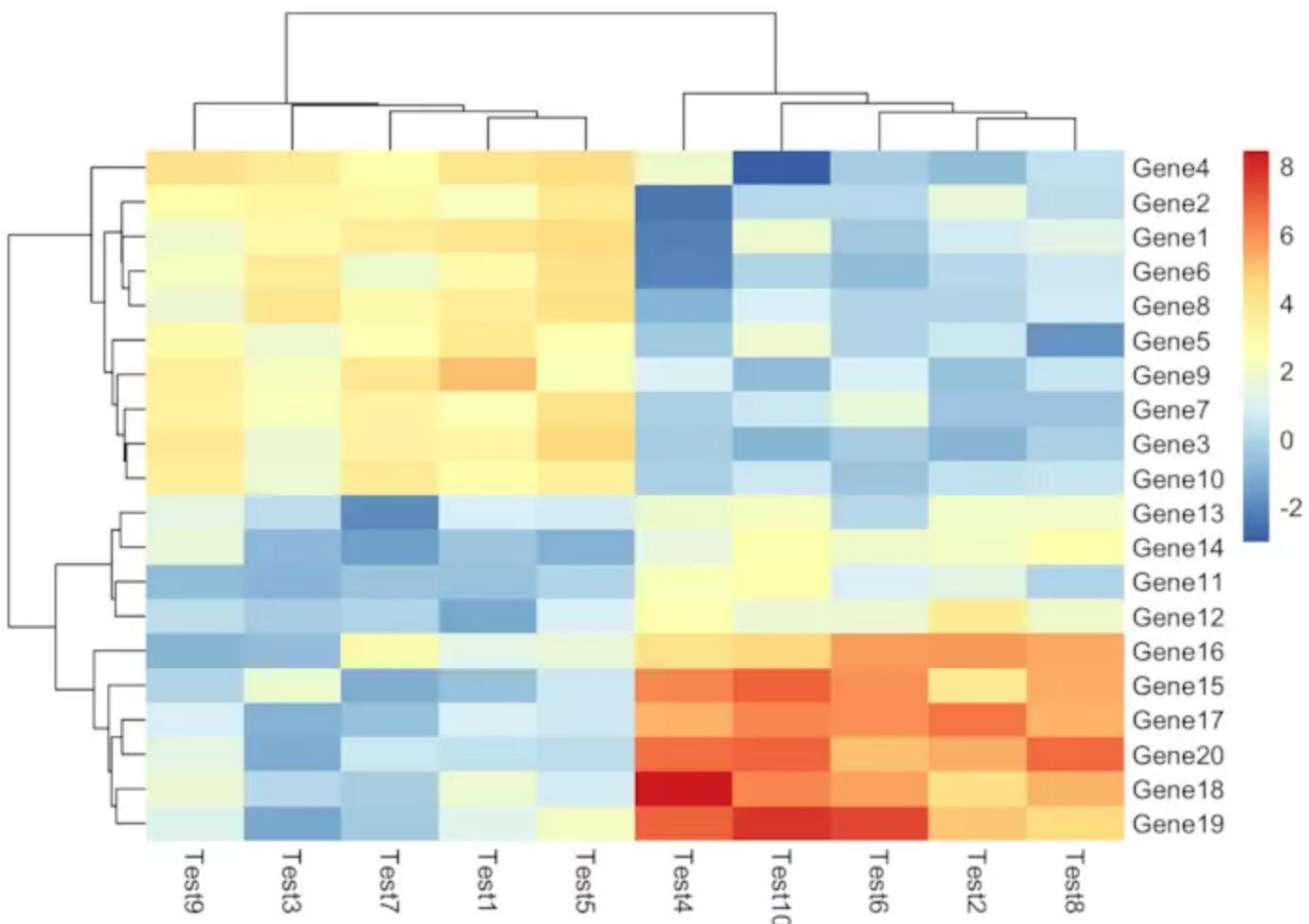


image.png

```
# show_rownames和show_colnames参数设定是否显示行名和列名  
pheatmap(test,show_rownames=F,show_colnames=F)
```

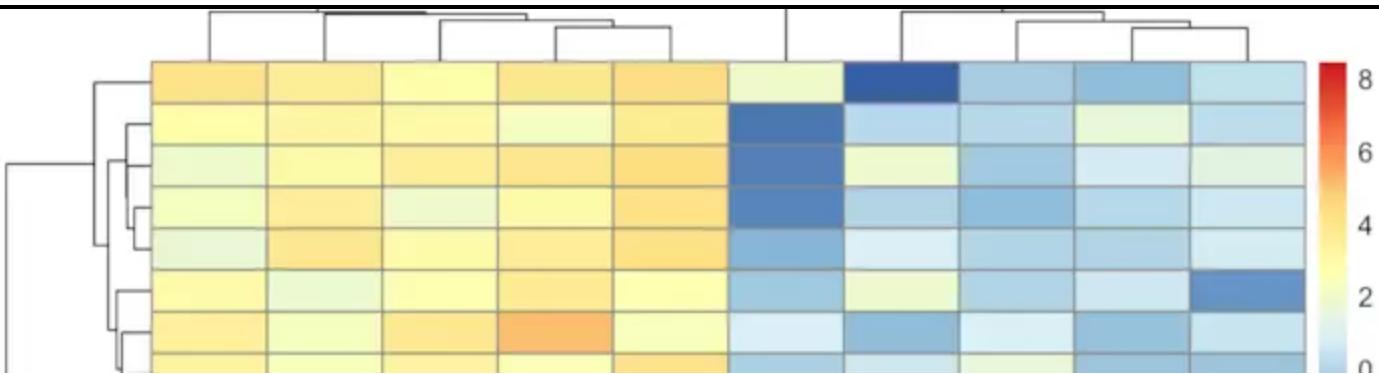


image.png

```
# treeheight_row和treeheight_col参数设定行和列聚类树的高度，默认为50  
pheatmap(test, treeheight_row = 30, treeheight_col = 50)
```

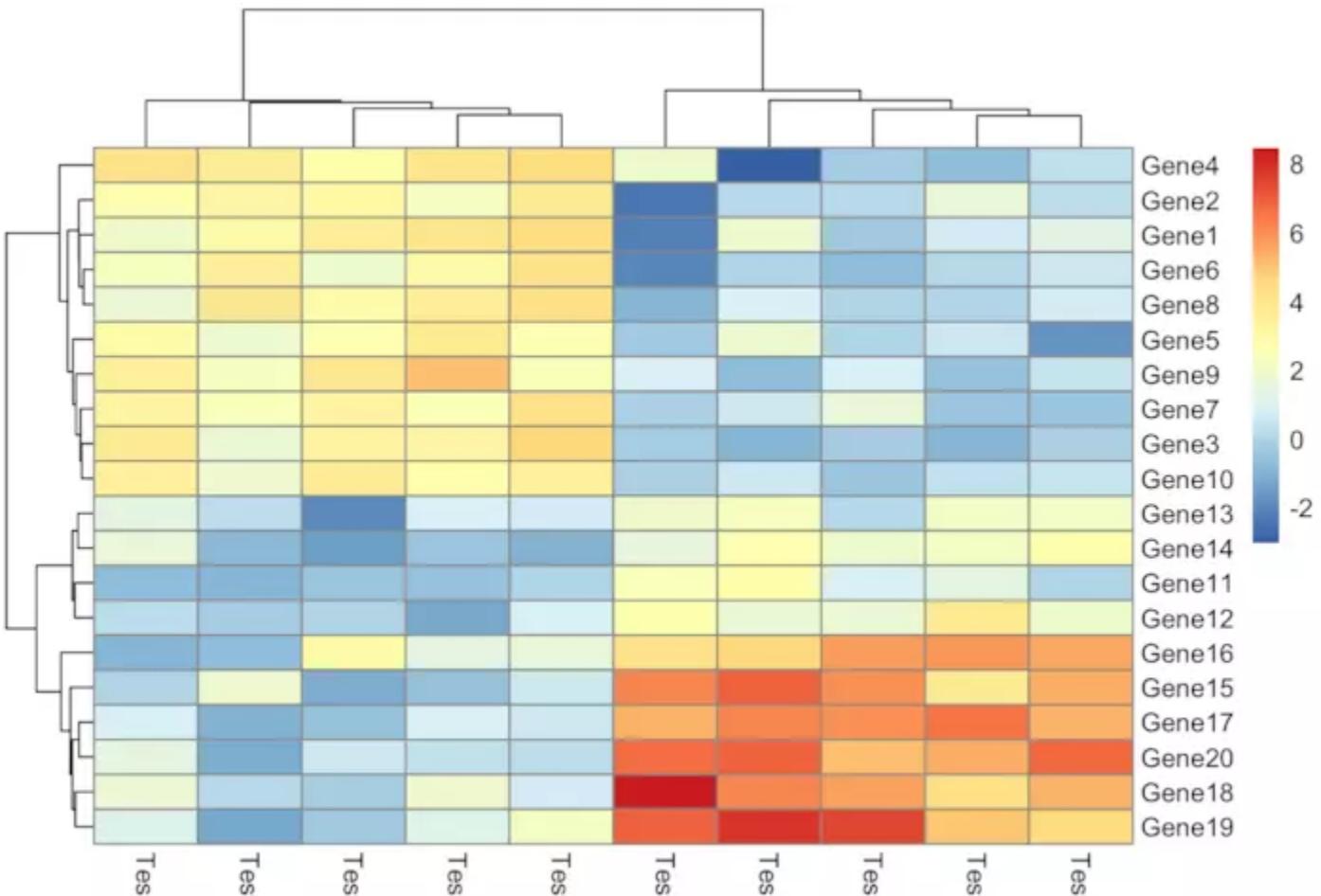


image.png

```
# display_numbers = TRUE参数设定在每个热图格子中显示相应的数值，number_color参数设置数值字体的颜色  
pheatmap(test, display_numbers = TRUE, number_color = "blue")
```

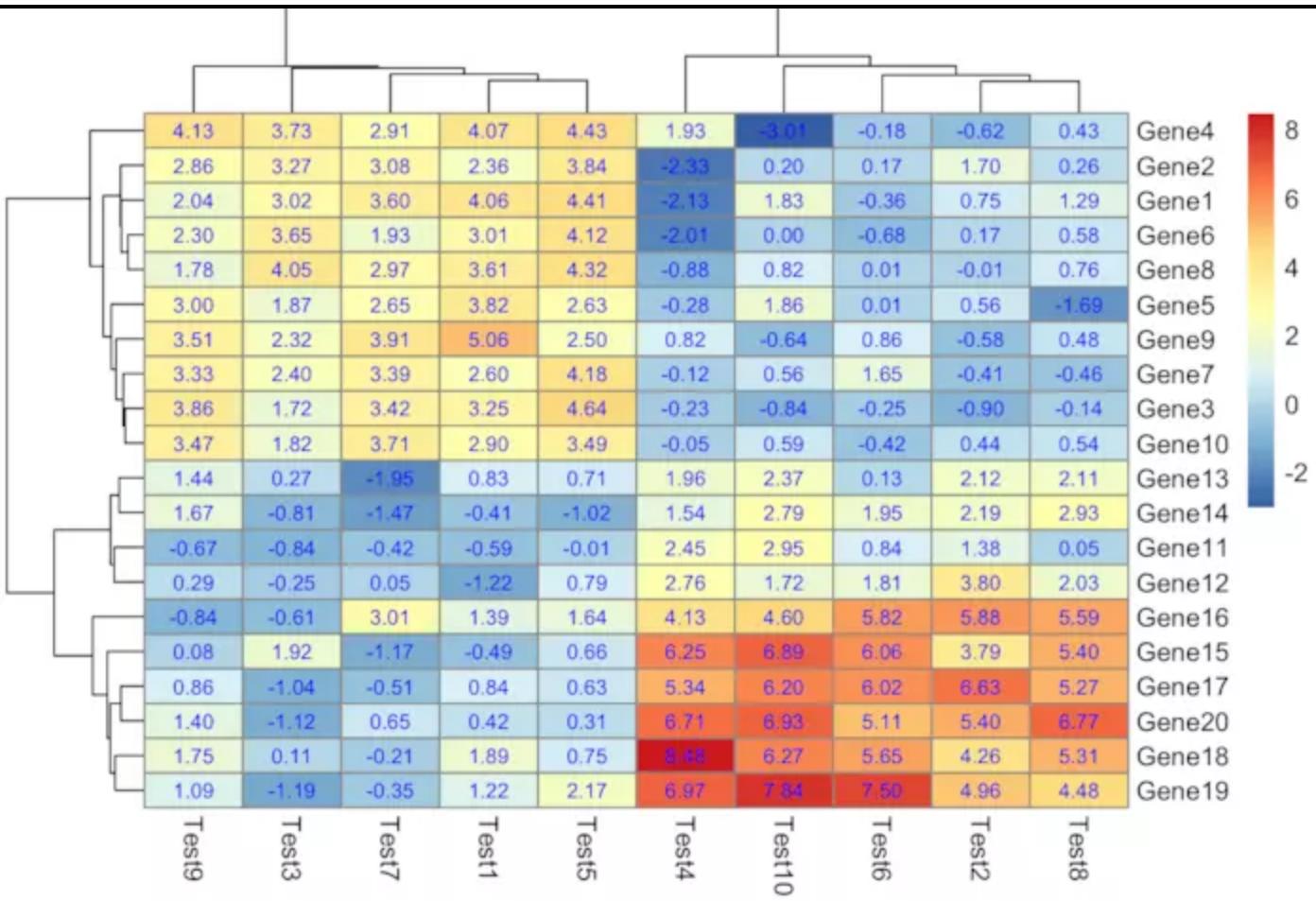


image.png

```
# number_format = "%.1e"参数设定数值的显示格式  
pheatmap(test, display_numbers = TRUE, number_format = "%.1e")
```

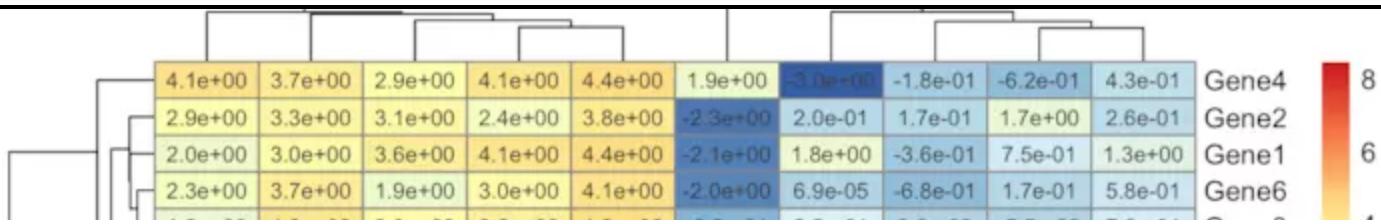


image.png

```
# 自定义数值的显示方式
```

```
pheatmap(test, display_numbers = matrix(ifelse(test > 5, "*", ""), nrow(test)))
```

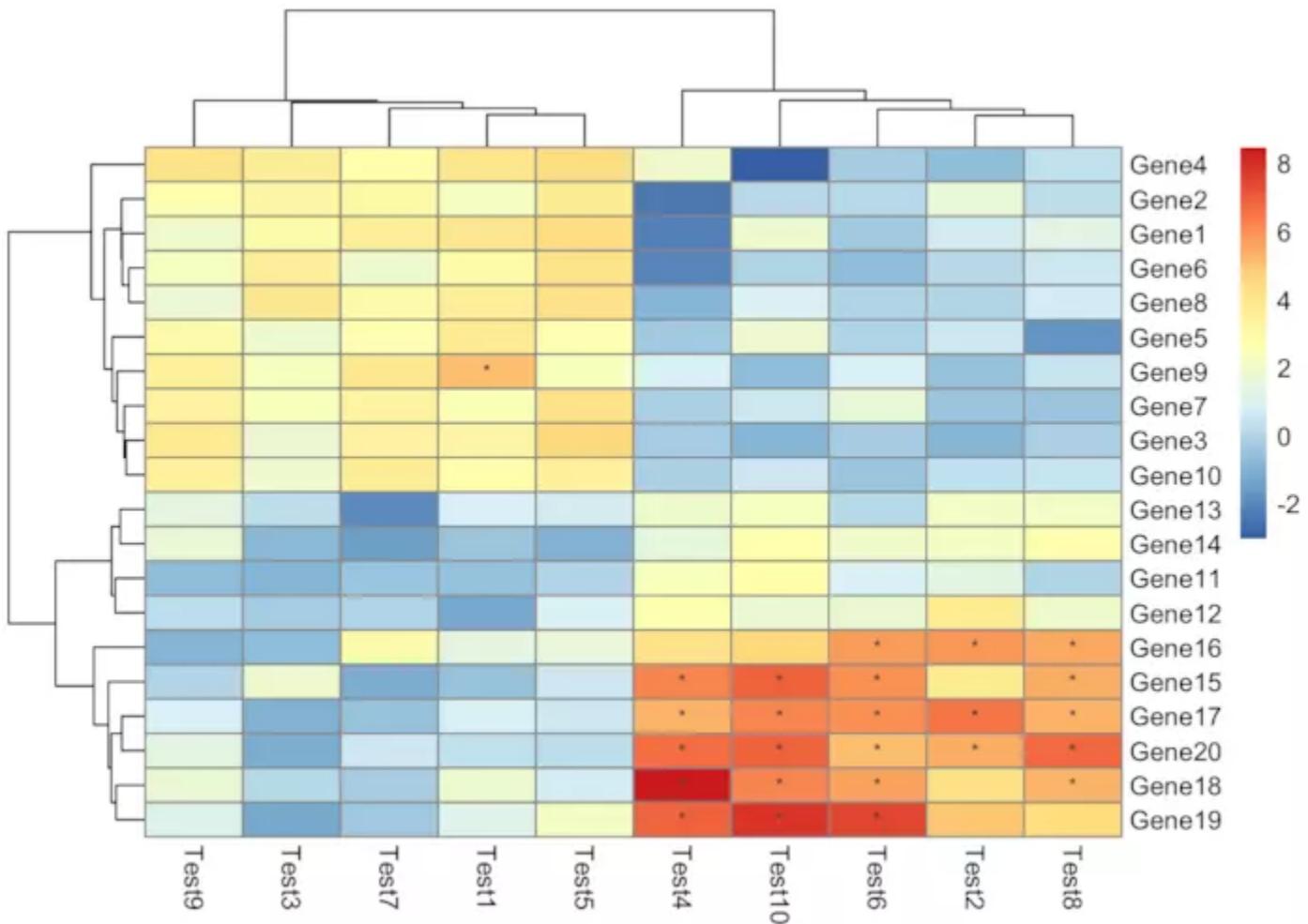
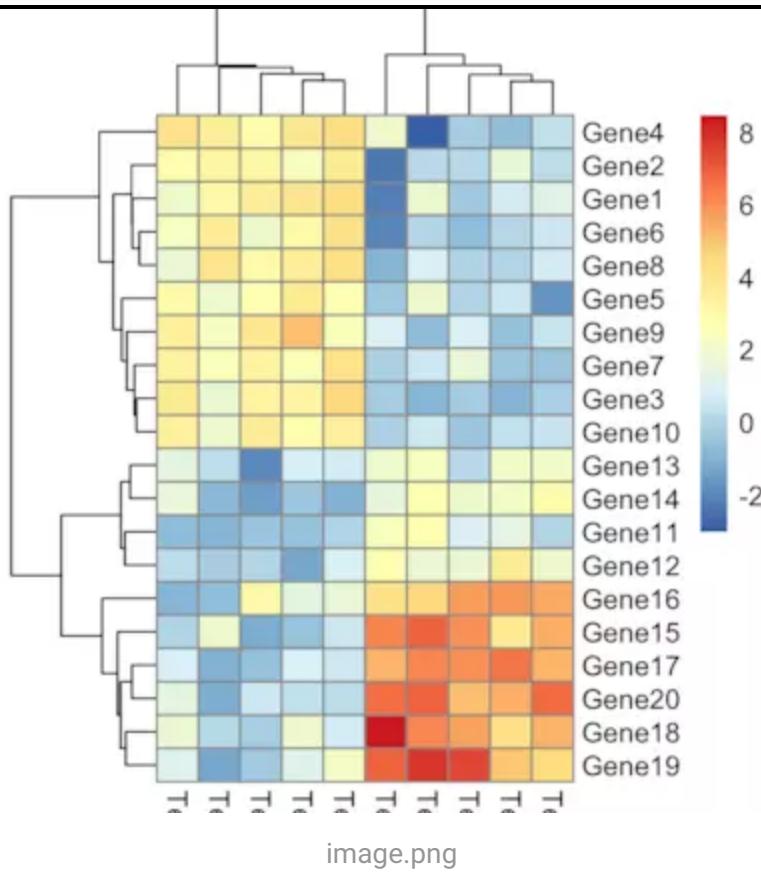


image.png

```
# cellwidth和cellheight参数设定每个热图格子的宽度和高度，main参数添加主标题
```

```
pheatmap(test, cellwidth = 15, cellheight = 12, main = "Example heatmap")
```



```
# 构建列注释信息  
annotation_col = data.frame(  
  CellType = factor(rep(c("CT1", "CT2"), 5)),  
  Time = 1:5  
)  
rownames(annotation_col) = paste("Test", 1:10, sep = "")  
head(annotation_col)
```

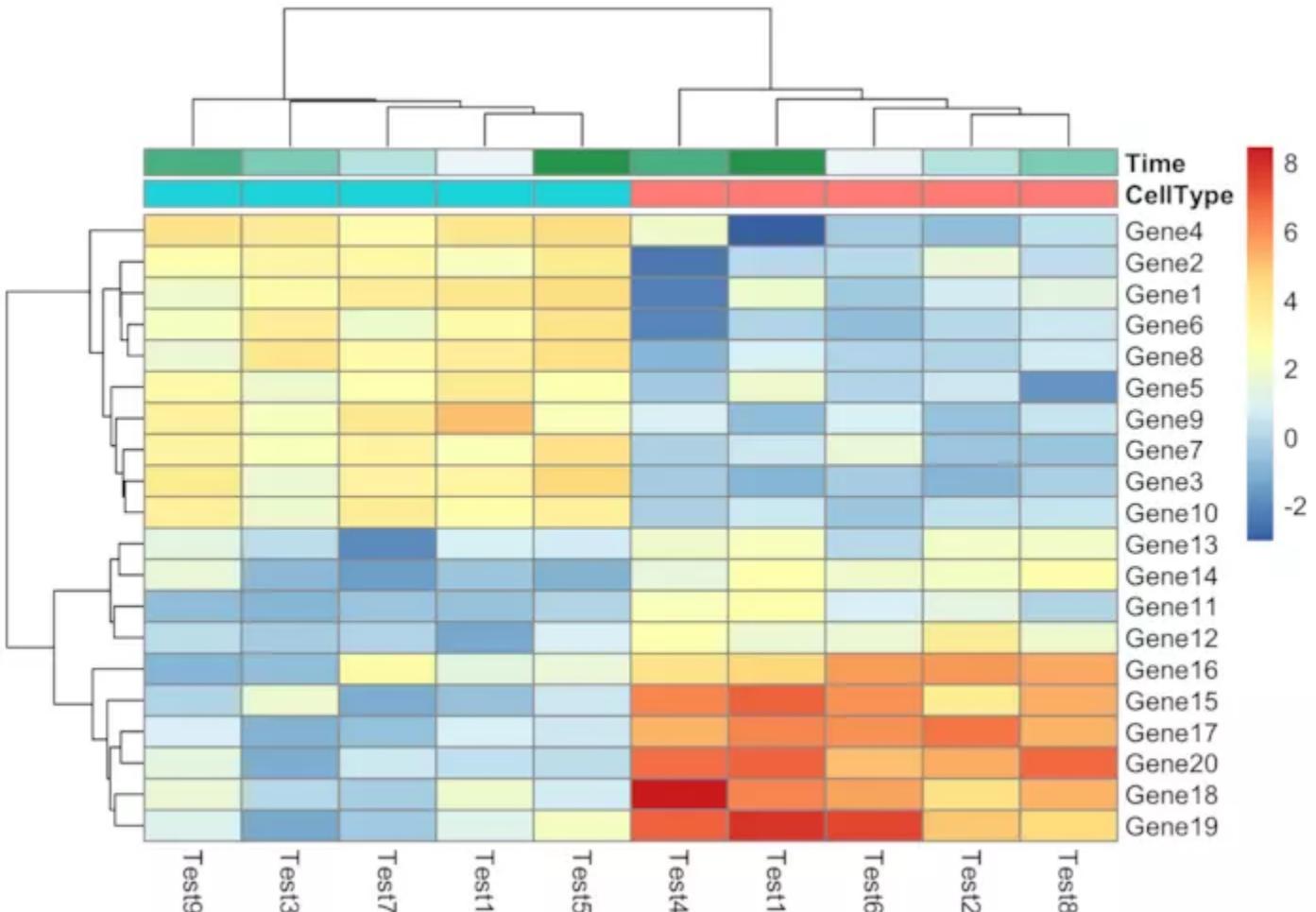
```
##          CellType Time  
## Test1      CT1    1  
## Test2      CT2    2  
## Test3      CT1    3  
## Test4      CT2    4  
## Test5      CT1    5  
## Test6      CT2    1
```

```
annotation_row = data.frame(  
  GeneClass = factor(rep(c("Path1", "Path2", "Path3"), c(10, 4, 6)))  
)  
rownames(annotation_row) = paste("Gene", 1:20, sep = "")  
head(annotation_row)
```

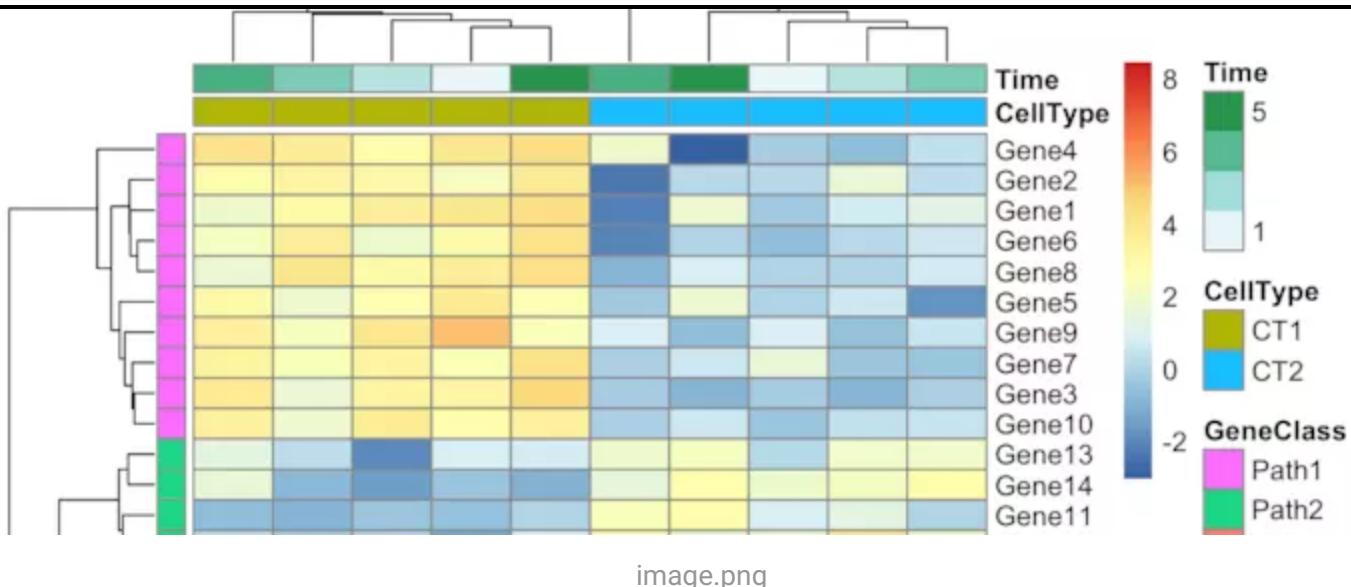
```
##      GeneClass  
## Gene1      Path1  
## Gene2      Path1  
## Gene3      Path1  
## Gene4      Path1  
## Gene5      Path1  
## Gene6      Path1
```

```
# annotation_col参数添加列注释信息  
pheatmap(test, annotation_col = annotation_col)
```

```
# annotation_legend = FALSE参数去掉注释图例  
pheatmap(test, annotation_col = annotation_col, annotation_legend = FALSE)
```



```
# annotation_col和annotation_row参数同时添加行和列的注释信息  
pheatmap(test, annotation_row = annotation_row, annotation_col = annotation_col)
```



```
# 自定注释信息的颜色列表
ann_colors = list(
  Time = c("white", "firebrick"),
  CellType = c(CT1 = "#1B9E77", CT2 = "#D95F02"),
  GeneClass = c(Path1 = "#7570B3", Path2 = "#E7298A", Path3 = "#66A61E")
)
head(ann_colors)
```

```
## $Time
## [1] "white"      "firebrick"
##
## $CellType
##      CT1      CT2
## "#1B9E77" "#D95F02"
##
## $GeneClass
##      Path1      Path2      Path3
## "#7570B3" "#E7298A" "#66A61E"
```

```
# annotation_colors设定注释信息的颜色
pheatmap(test, annotation_col = annotation_col, annotation_colors = ann_colors, main = "Title")
```

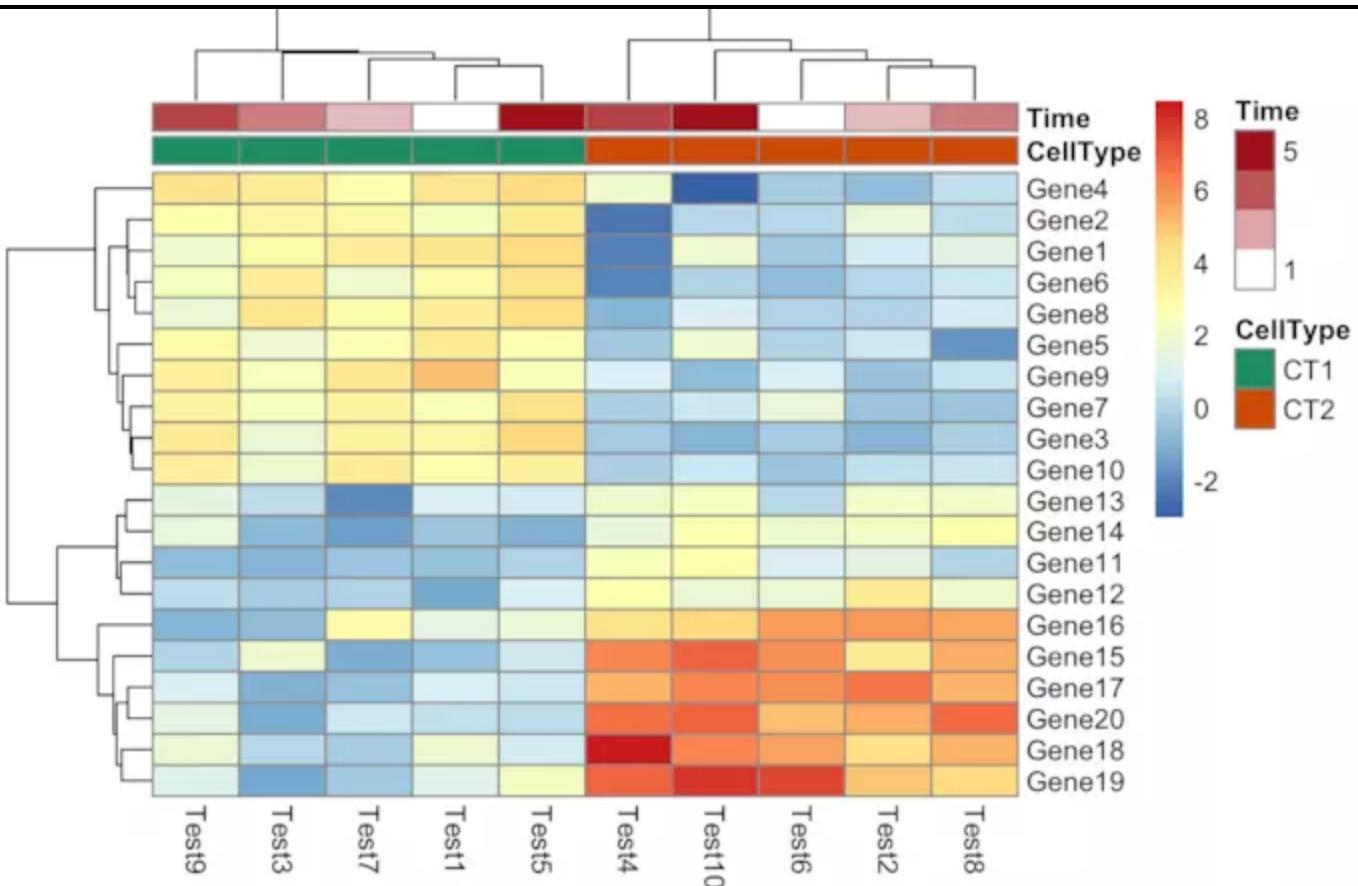
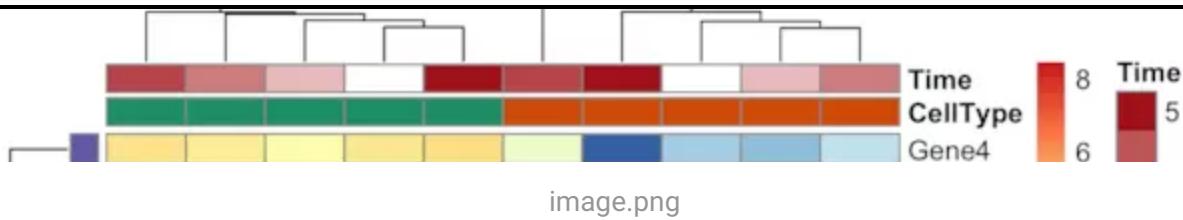
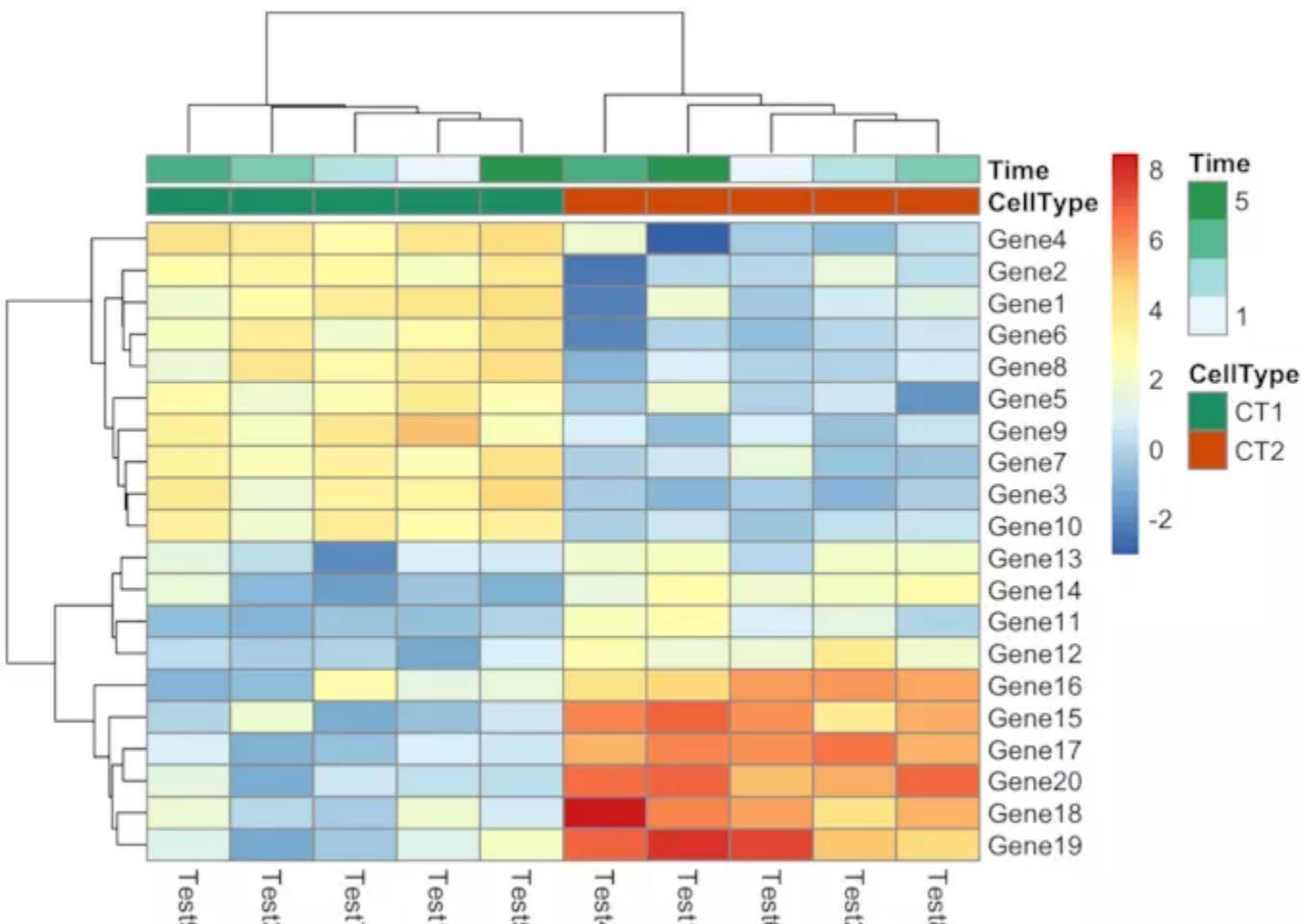


image.png

```
pheatmap(test, annotation_col = annotation_col, annotation_row = annotation_row,  
annotation_colors = ann_colors)
```



```
pheatmap(test, annotation_col = annotation_col, annotation_colors = ann_colors[2])
```



```
# gaps_row = c(10, 14)参数在第10和14行处添加gap, 要求对行不进行聚类  
pheatmap(test, annotation_col = annotation_col, cluster_rows = FALSE, gaps_row = c(10, 14))
```

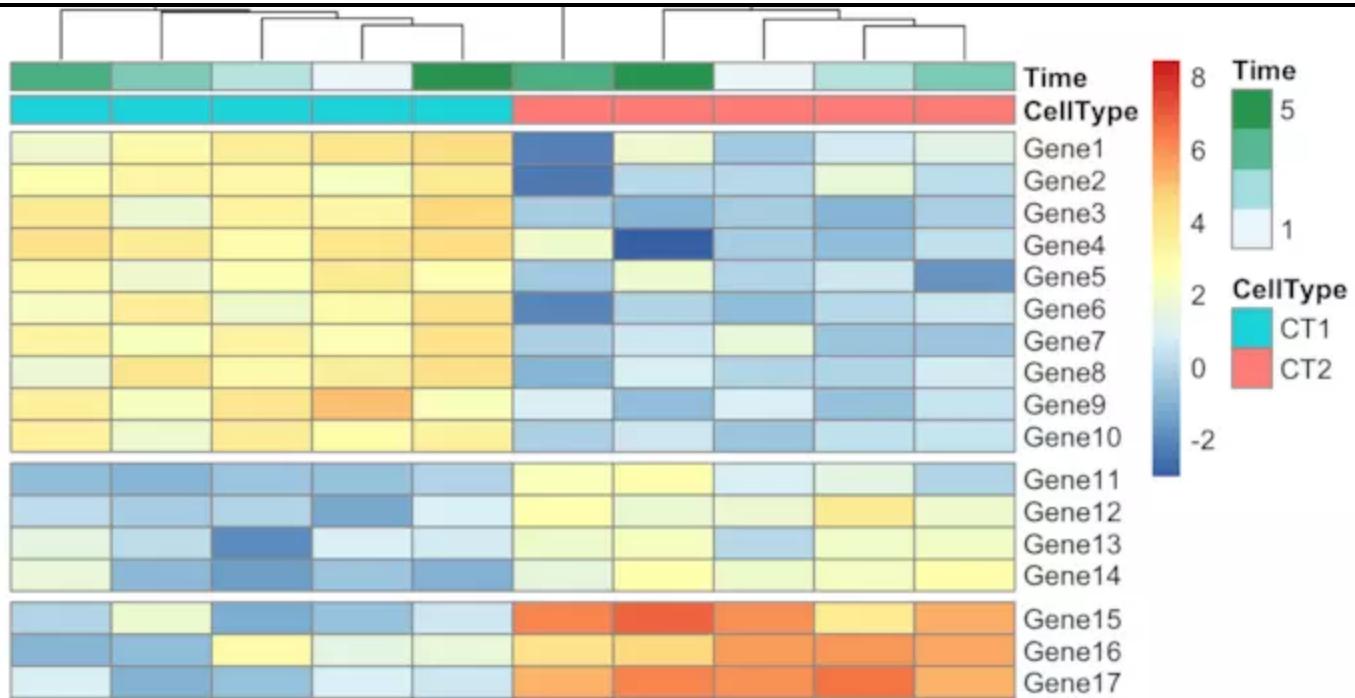


image.png

```
# cutree_col = 2参数将列按聚类树的结果分成两部分，要求对列进行聚类
pheatmap(test, annotation_col = annotation_col, cluster_rows = FALSE, gaps_row = c(10, 14),
         cutree_col = 2)
```

image.png

```
# 对行和列都不聚类，自定义划分行和列的gap  
pheatmap(test, annotation_col = annotation_col, cluster_rows = FALSE, cluster_cols = FALSE,  
gaps_row = c(6, 10, 14), gaps_col = c(2, 5, 8))
```

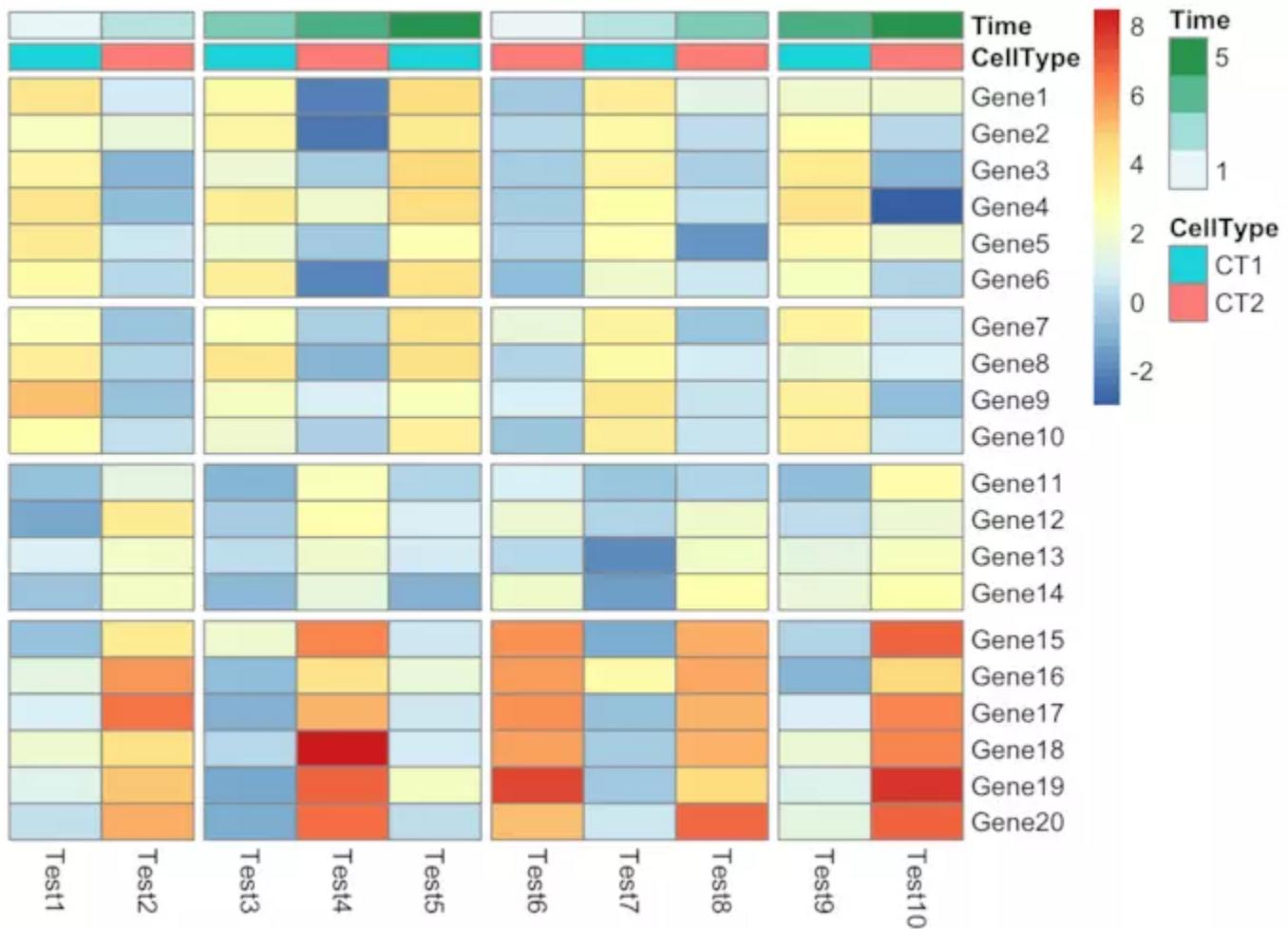


image.png

```
# 自定义行的标签名  
labels_row = c("", "", "", "", "", "", "", "", "", "", "", "", "",  
    "", "", "I110", "I115", "I11b")  
# labels_row参数添加行标签  
pheatmap(test, annotation_col = annotation_col, labels_row = labels_row)
```

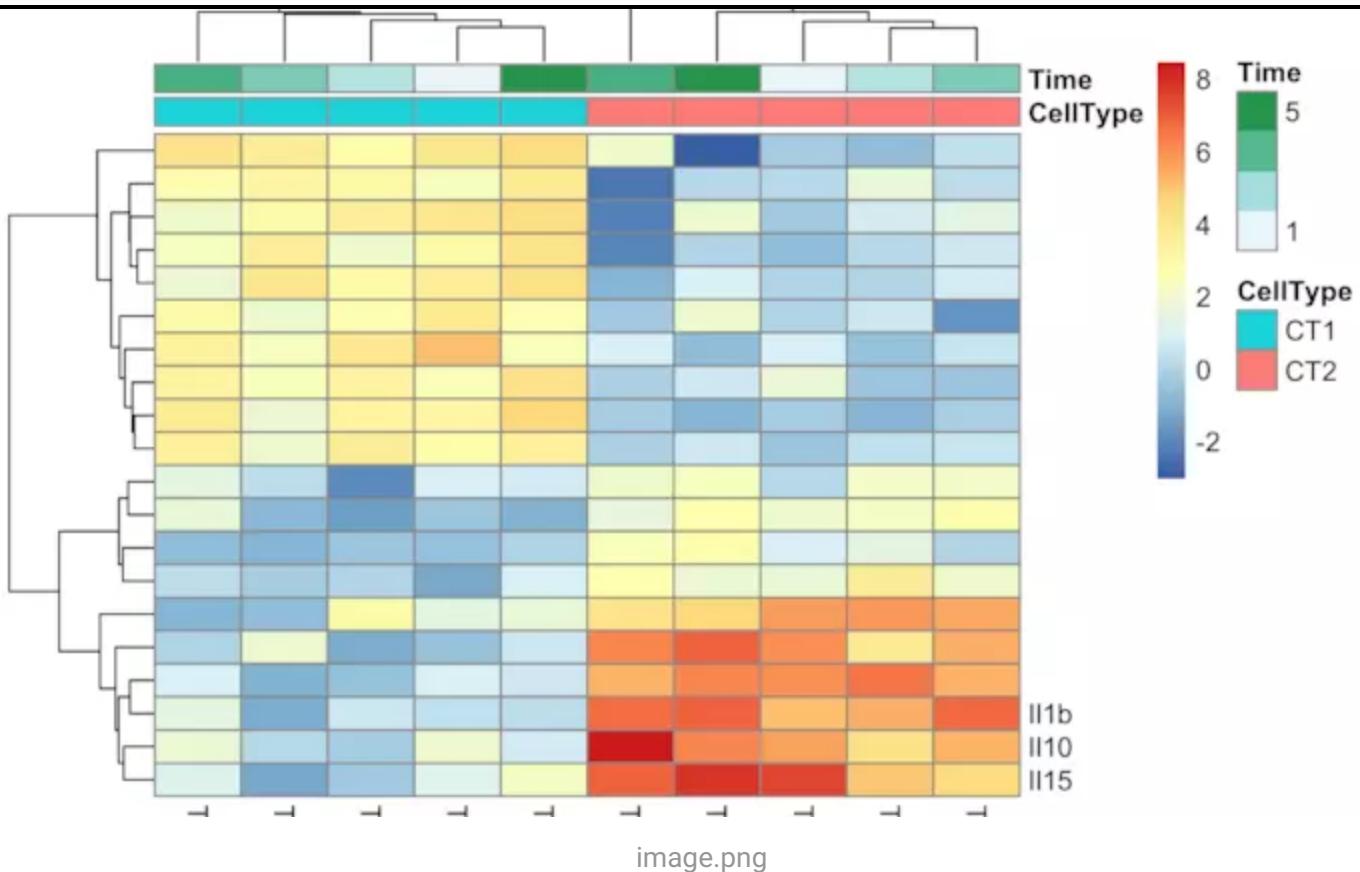
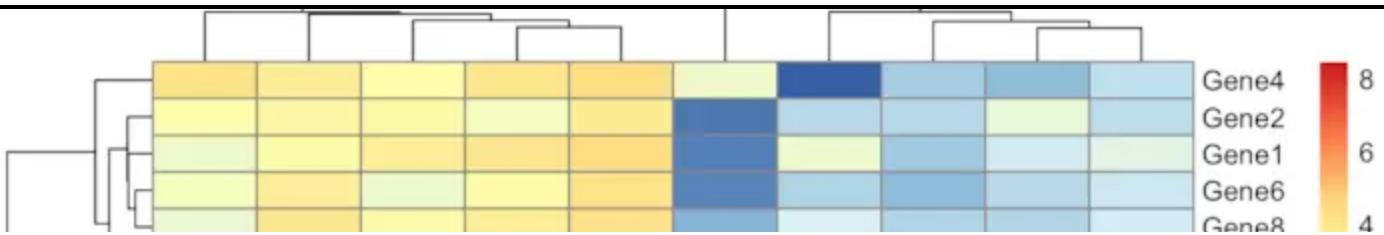


image.png

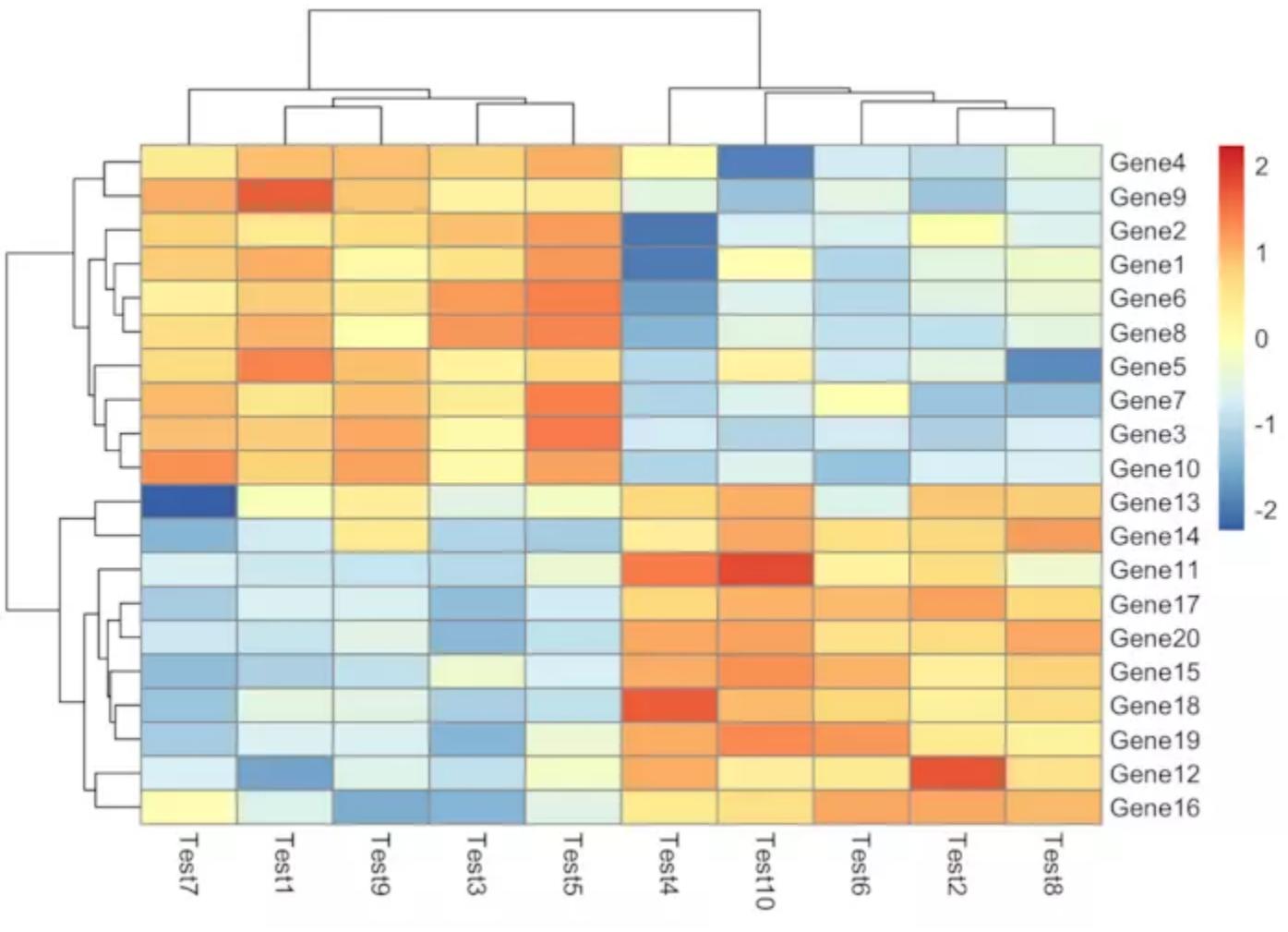
```
# 自定义聚类的距离方法
drows = dist(test, method = "minkowski")
dcols = dist(t(test), method = "minkowski")
# clustering_distance_rows和clustering_distance_cols参数设定行和列的聚类距离方法
pheatmap(test, clustering_distance_rows = drows, clustering_distance_cols = dcols)
```



```
# fontsize参数设定标签字体大小，filename参数设定图片保存名称  
pheatmap(test, cellwidth = 15, cellheight = 12, fontsize = 8, filename = "test.pdf")
```

将热图结果按聚类后的顺序输出

```
aa=pheatmap(test,scale="row") #热图，归一化，并聚类
```



```
summary(aa)
```

```
##          Length Class  Mode
## tree_row 7     hclust list
## tree_col 7     hclust list
## kmeans    1     -none- logical
## gtable   6     gtable list
```

```
order_row = aa$tree_row$order #记录热图的行排序
order_col = aa$tree_col$order #记录热图的列排序
datat = data.frame(test[order_row,order_col]) # 按照热图的顺序，重新排原始数据
datat = data.frame(rownames(datat),datat,check.names = F) # 将行名加到表格数据中
colnames(datat)[1] = "geneid"
write.table(datat,file="reorder.txt",row.names=FALSE,quote = FALSE,sep='\t') #输出结果，按照热
```

```
sessionInfo()
```

```
## R version 3.5.1 (2018-07-02)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: OS X El Capitan 10.11.3
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
## [1] zh_CN.UTF-8/zh_CN.UTF-8/zh_CN.UTF-8/C/zh_CN.UTF-8/zh_CN.UTF-8
##
## attached base packages:
## [1] stats      graphics   grDevices  utils      datasets   methods    base
##
## other attached packages:
## [1] pheatmap_1.0.10
```

```
## [1] Rcpp_0.12.18      digest_0.6.16      rprojroot_1.3-2
## [4] grid_3.5.1        gtable_0.2.0       backports_1.1.2
## [7] magrittr_1.5      scales_1.0.0       evaluate_0.11
## [10] stringi_1.2.4     rmarkdown_1.10     RColorBrewer_1.1-2
## [13] tools_3.5.1       stringr_1.3.1      munsell_0.5.0
## [16] yaml_2.2.0        compiler_3.5.1    colorspace_1.3-2
## [19] htmltools_0.3.6   knitr_1.20
```

小礼物走一走，来简书关注我

赞赏支持

8

© 著作权归作者所有

开发10年 全记在这本Java进阶宝典了

Spring源码分析

分布式架构

微服务架构

点击领取



评论

写评论



载入灵魂



写得很用心

3楼 · 2018-12-17 09:59



风吹裤衩danDan凉



学习了

2楼 · 2018-12-10 14:08

打开App，查看全部评论

下载简书App
你也可以写文章赚赞赏

#送你上热门009#我到底该选择什么时间离职？

 猎头老王

App中阅读  10304  31  305

广告

他抽烟、喝酒、打牌、逛窑子，但今天我们还是称他为大师

 笔墨史书

App中阅读  15253  49  210

2019年面包会有的，牛奶也会有的

 呱呱鸟

App中阅读  2874  42  163

石榴，羞红秋天的脸

 11山山

App中阅读  2493  71  114

9个简单又有仪式感的跨年方式！

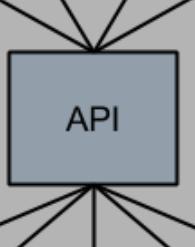
 桑塔露露的礼物盒

App中阅读  14643  25  418

Java面试宝典Beta5.0

王震阳

App中阅读 37038 评论 25 喜欢 432



API

Spring Cloud

卡卡罗2017

App中阅读 38151 评论 9 喜欢 100

掘金 Android 文章精选合集

掘金官方

App中阅读 105987 评论 18 喜欢 1025

Android - 收藏集

passiontim

App中阅读 74175 评论 14 喜欢 468

大数据算法

爱我的程序人生

App中阅读 579 评论 0 喜欢 6

05.14 《金字塔原理》

简安Tina

App中阅读 20 评论 0 喜欢 0

生活是自己的，努力还是糟蹋请随意！

木卡

App中阅读 36 评论 0 喜欢 1

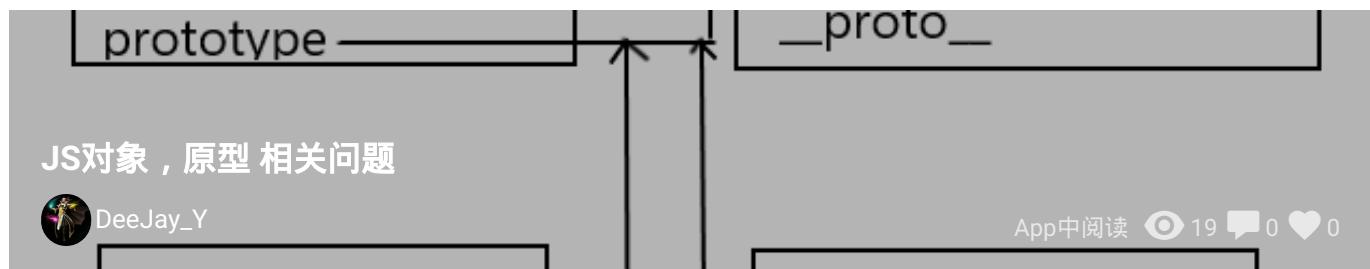
功 我 遇 ， 的
。 所 见 无 要
愿 些 非 求

切

王 小

FOLLOWER

FOLLOWING



创作你的创作，
接受世界的赞赏

[登录](#) | [打开App](#) | [热门文章](#)

[下载简书，创作你的创作](#)