

# Project02 - Group01

Eva, Tobi, Kathi, Laura

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## data loading

## data scaling

After checking for normalization, we scaled our data in the first place to provide the scaled data for further analysis.

## 2. Specific analysis: lapatinib

### Analysis of the biomarker and t-test between treated and untreated cells

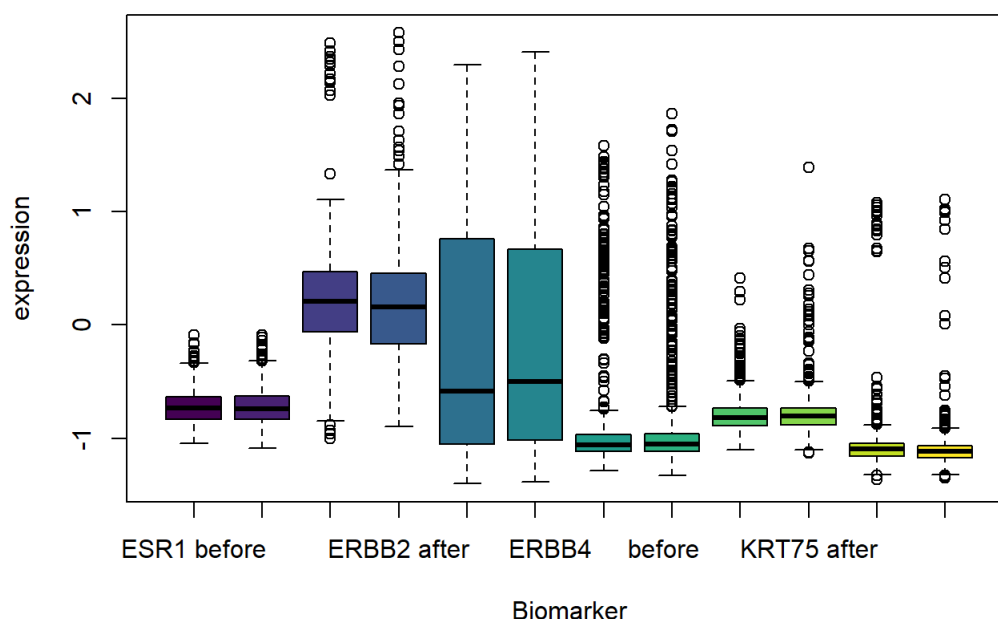
Expression of biomakers before and after the treatment with Lapatinib.

```
Treated_t<-data.frame(t(Treated))
Untreated_t<-data.frame(t(Untreated))
```

### boxplot of biomakers before and after treatment with Lapatinib

```
boxplot(Untreated_t$ESR1, Treated_t$ESR1,
        Untreated_t$ERBB2, Treated_t$ERBB2,
        Untreated_t$ERBB3, Treated_t$ERBB3,
        Untreated_t$ERBB4, Treated_t$ERBB4,
        Untreated_t$KRT75, Treated_t$KRT75,
        Untreated_t$PGR, Treated_t$PGR,
        col = viridis(12),
        names = c("ESR1 before", "ESR1 after", "ERBB2 before", "ERBB2 after", "ERBB3 before", "ERBB3 after",
                  "ERBB4 before", "ERBB4 after", "KRT75 before", "KRT75 after", "PGR before", "PGR after"),
        main="Expression of Biomarkers before and after treatment with Lapatinib",
        xlab="Biomarker",
        ylab="expression")
```

### Expression of Biomakers before and after treatment with Lapatinib

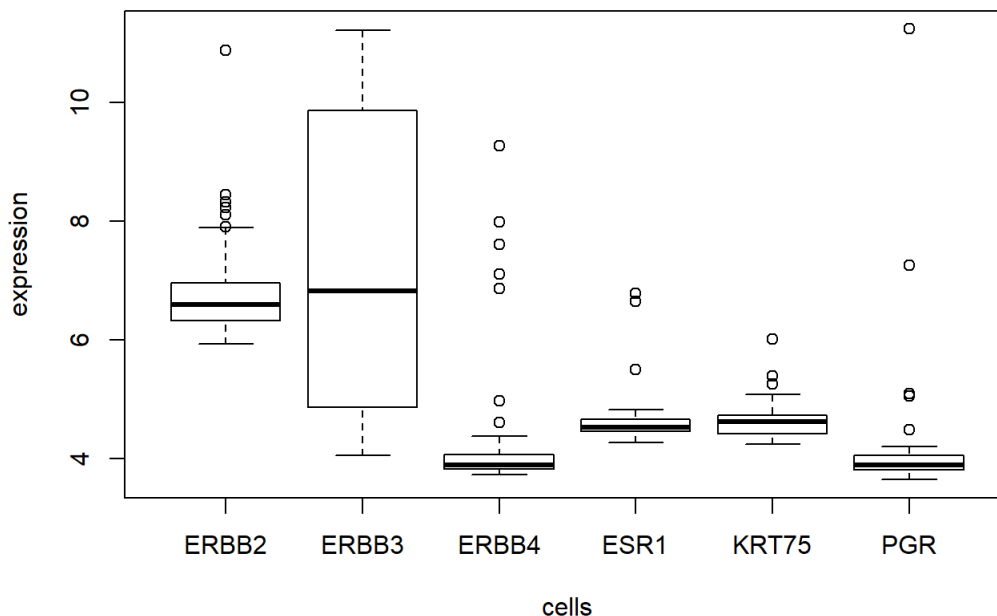


## creating some data

```
breastcells<-subset(Metadata, tissue == "Breast")
breast<-subset(CCLE_basalexpression, breastcells$cell %in% colnames(CCLE_basalexpression))
tbreastcells<-data.frame(t(breast))
biomarker_genes <-c("ESR1", "ERBB2", "ERBB3", "ERBB4", "KRT75", "PGR")
breast_marker <- c(tbreastcells$ESR1,tbreastcells$ERBB2, tbreastcells$ERBB3, tbreastcells$ERBB4, tbreastcells$KRT75, tbreastcells$PGR )
breast_marker_matrix <- data.frame(tbreastcells$ESR1,tbreastcells$ERBB2, tbreastcells$ERBB3, tbreastcells$ERBB4, tbreastcells$KRT75, tbreastcells$PGR )
```

## overview of the basalexpression of our biomarkers

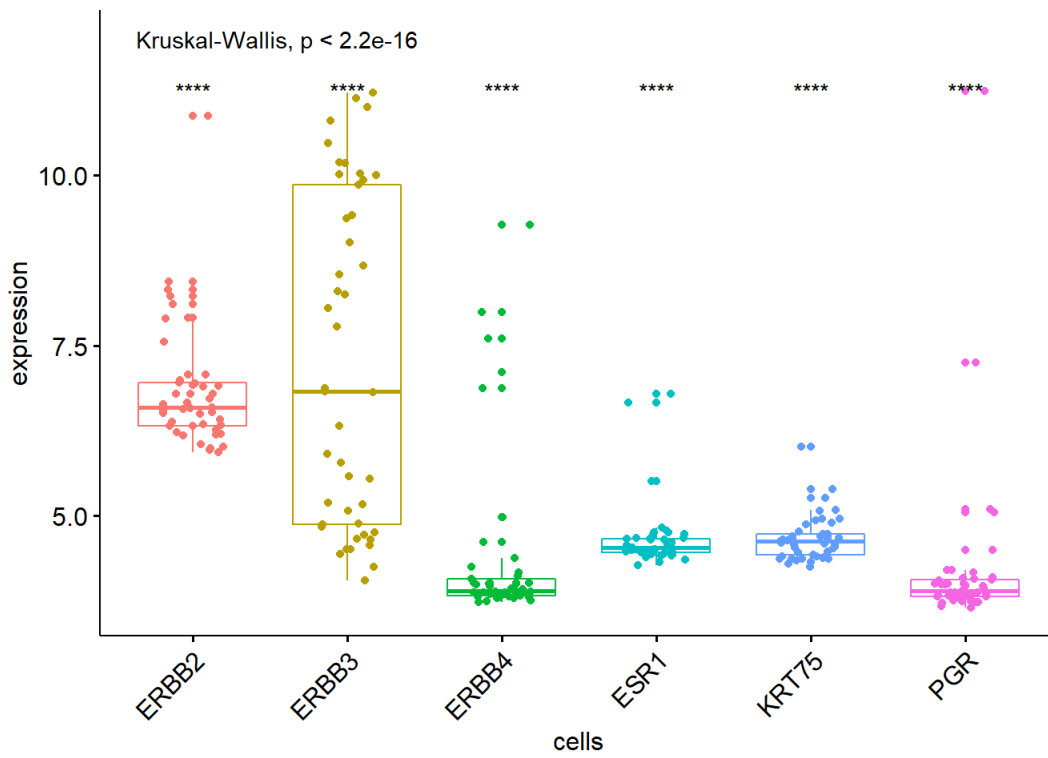
```
cells<-c(rep('ESR1',45),rep('ERBB2',45),rep('ERBB3',45),rep('ERBB4',45),rep('KRT75',45),rep('PGR',45))
expression<-c(tbreastcells$ESR1,tbreastcells$ERBB2, tbreastcells$ERBB3, tbreastcells$ERBB4, tbreastcells$KRT75, tbreastcells$PGR )
df_breast<-data.frame(cells,expression)
plot(expression ~ cells, data=df_breast)
```



## ggboxplot of basalexpression of biomarkers in breast cells

Kruskal-Wallis test The null hypothesis is: there is no difference between the groups

```
ggboxplot(df_breast, x="cells", y="expression", color = "cells",
  add = "jitter", legend = "none")+
  rotate_x_text(angle = 45)+
  stat_compare_means(method = "kruskal.test", label.y = 12)+ # Add global annova p-value
  stat_compare_means(label = "p.signif", method = "t.test",
    ref.group = ".all.", hide.ns = TRUE) # Pairwise comparison against all
```



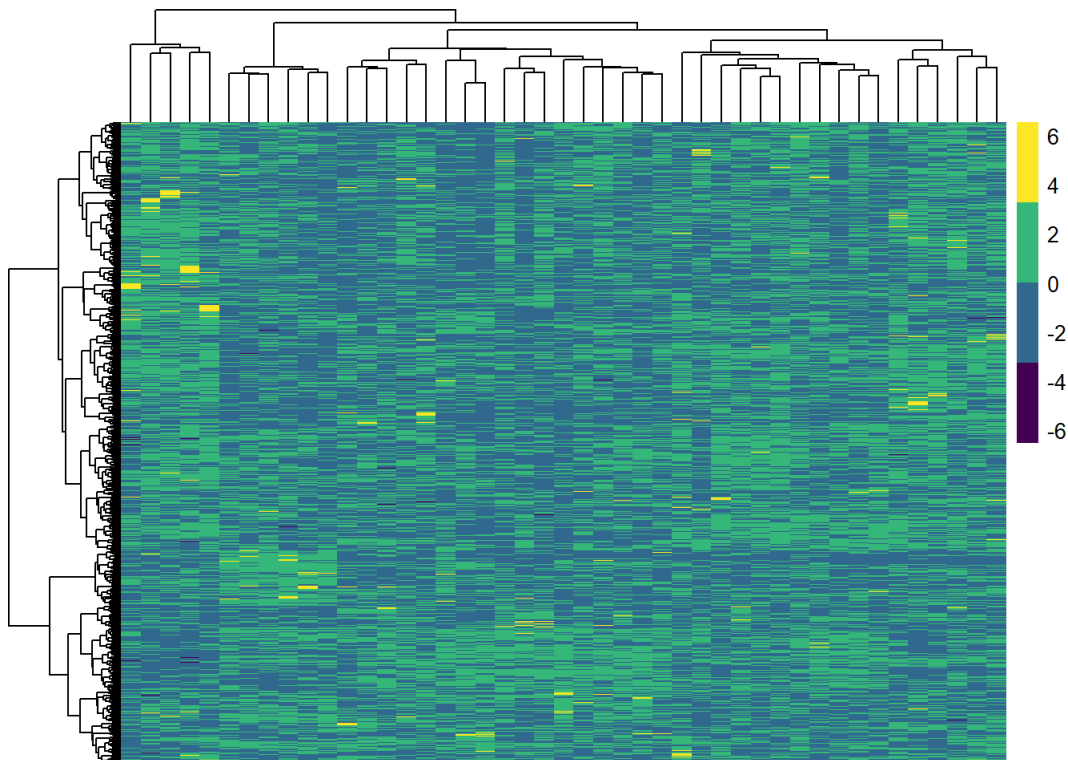
## pheatmap of the basalexpression

to detect highly over expressed genes

```

pheatmap(CCLE_basalexpression,
  show_rownames = FALSE,
  show_colnames = FALSE,
  color = viridis(4),
  drop_levels = TRUE,
  clustering_method = "ward.D2",
  scale="row")

```

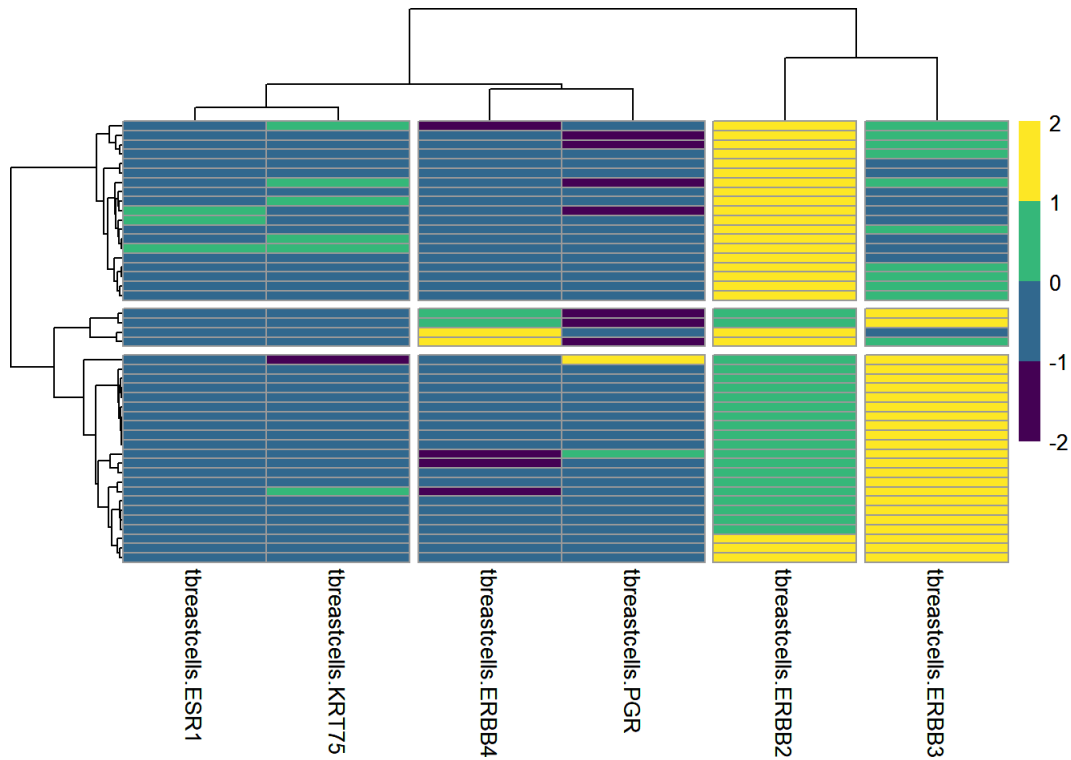


## pheatmap of the biomarker in breast cells

The genes ERBB2 and ERBB3 showed the highest expression.

```
pheat_breast<-pheatmap(breast_marker_matrix ,
  show_rownames = FALSE,
  show_colnames = TRUE,
  cutree_cols = 4,
  cutree_rows = 3,
  color = viridis(4),
  drop_levels = TRUE,
  clustering_method = "ward.D2",
  scale="row")

pheat_breast
```

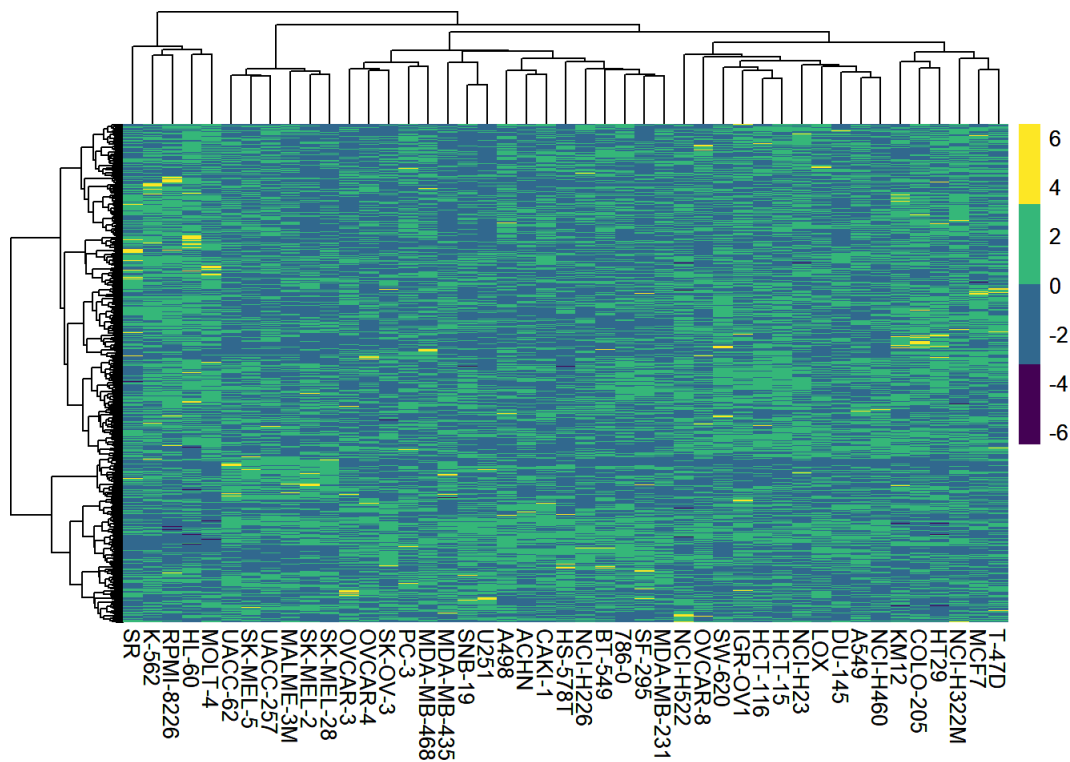


## pheatmap of all genes in breast cells

This serves as an over view. Yellow fields are highly over expressed.

```
all_genes_cells<-pheatmap(breast,
  show_rownames = FALSE,
  show_colnames = TRUE,
  color = viridis(4),
  drop_levels = TRUE,
  clustering_method = "ward.D2",
  scale="row")

all_genes_cells
```



## boxplot of biomarkers in basalexpression

The boxplot shows the overexpression of the biomakers in the basalexpression

```
t_basalexpression<-data.frame(t(CCLE_basalexpression))
biomarker_genes <-c("ESR1", "ERBB2", "ERBB3", "ERBB4", "KRT75", "PGR")
Matrix_biomarker<-c(t_basalexpression$ESR1, t_basalexpression$ERBB2, t_basalexpression$ERBB3, t_basalexpression$ERBB4, t_basalexpression$KRT75, t_basalexpression$PGR)
summary(Matrix_biomarker)
```

##	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
##	3.649	4.063	4.602	5.338	6.320	11.233

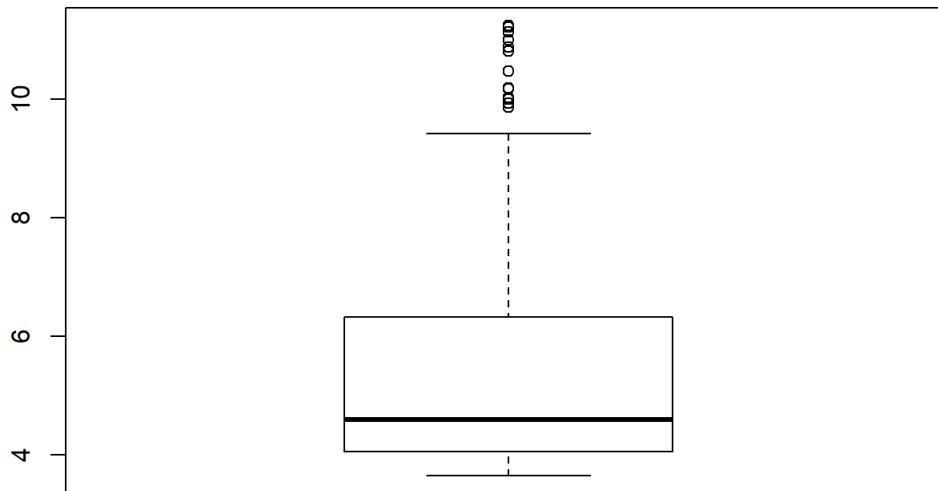
```
min(Matrix_biomarker)
```

```
## [1] 3.648889
```

```
max(Matrix_biomarker)
```

```
## [1] 11.23277
```

```
boxplot(Matrix_biomarker)
```



*setting a threshold to define overexpressed genes*

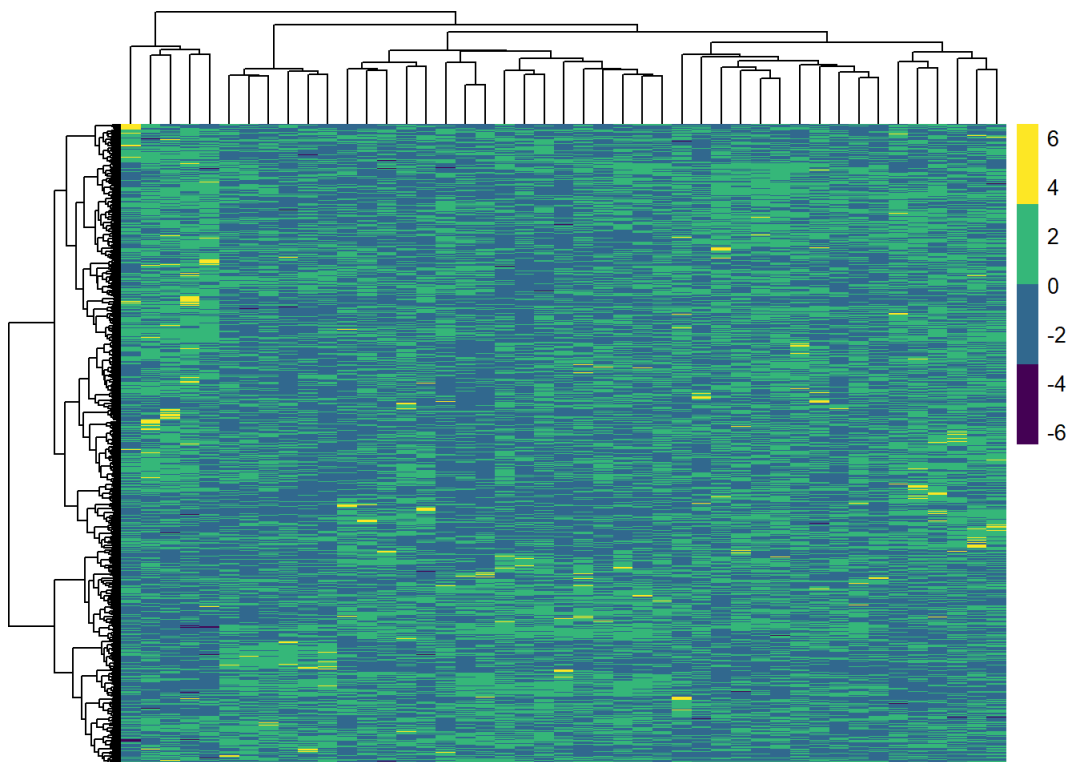
```
rmv.rows = apply(CCLE_basalexpression, 1, function(x) {
  sum(x<14)})
which(rmv.rows <14)
```

```
##          GAPDH GNB2L1 RPL13A RPL37A   RPL8  RPS11  RPS16  RPS19  RPS24
##      1    6075   6347  14296  14313  14319  14334  14336  14337  14342
## TUBA1B      UBC
##  17441  17541
```

```
highest_expression = CCLE_basalexpression[~which(rmv.rows <14), ]
rm(rmv.rows)
```

**pheatmap of highly expressed genes**

```
#install.packages("viridisLite")
pheatmap(highest_expression,
  show_rownames = FALSE,
  color=viridis(4),
  show_colnames = FALSE,
  drop_levels = TRUE,
  clustering_method = "ward.D2",
  scale="row")
```



## searching for our own biomarkers

This command displays the six most expressed genes of basal expression.

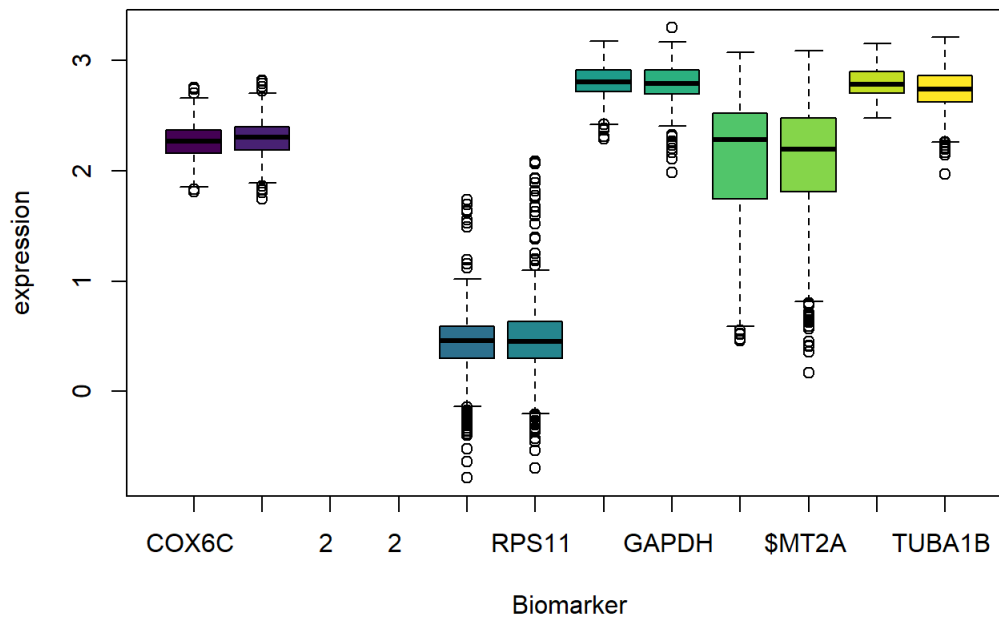
```
basalexpression <- data.frame(CCLE_basalexpression)
b<-apply(basalexpression,1, max)
highest_basalexpression<-sort(b, decreasing = TRUE)
head(highest_basalexpression)
```

```
##      COX6C      RPS11      GAPDH      MT2A      TUBA1B
## 14.93047 14.90998 14.89525 14.84014 14.79168 14.76575
```

## boxplot of highly expressed genes before and after treatment with Lapatinib

```
boxplot(Untreated_t$COX6C, Treated_t$COX6C,
        Untreated_t$'2', Treated_t$'2',
        Untreated_t$RPS11, Treated_t$RPS11,
        Untreated_t$GAPDH, Treated_t$GAPDH,
        Untreated_t$MT2A, Treated_t$MT2A,
        Untreated_t$TUBA1B, Treated_t$TUBA1B,
        col = viridis(12),
        names = c("COX6C ", "COX6C ",
                  "2 ", "2 ",
                  "RPS11 ", "RPS11 ",
                  "GAPDH ", "GAPDH ",
                  "MT2A ", "MT2A ",
                  "TUBA1B ", "TUBA1B "),
        main="Expression of Biomarkers before and after treatment with Lapatinib",
        xlab="Biomarker",
        ylab="expression")
```

## Expression of Biomarkers before and after treatment with Lapatinib



paired t-test between the Lapatinib treated und untreated data

genome wide paired t-test

```
LapatinibUntreated<-grep("lapatinib", colnames(Untreated))
LapatinibTreated<-grep("lapatinib", colnames(Treated))
before=as.matrix(LapatinibUntreated)
after=as.matrix(LapatinibTreated)
t.test(before, after, paired=TRUE)
```

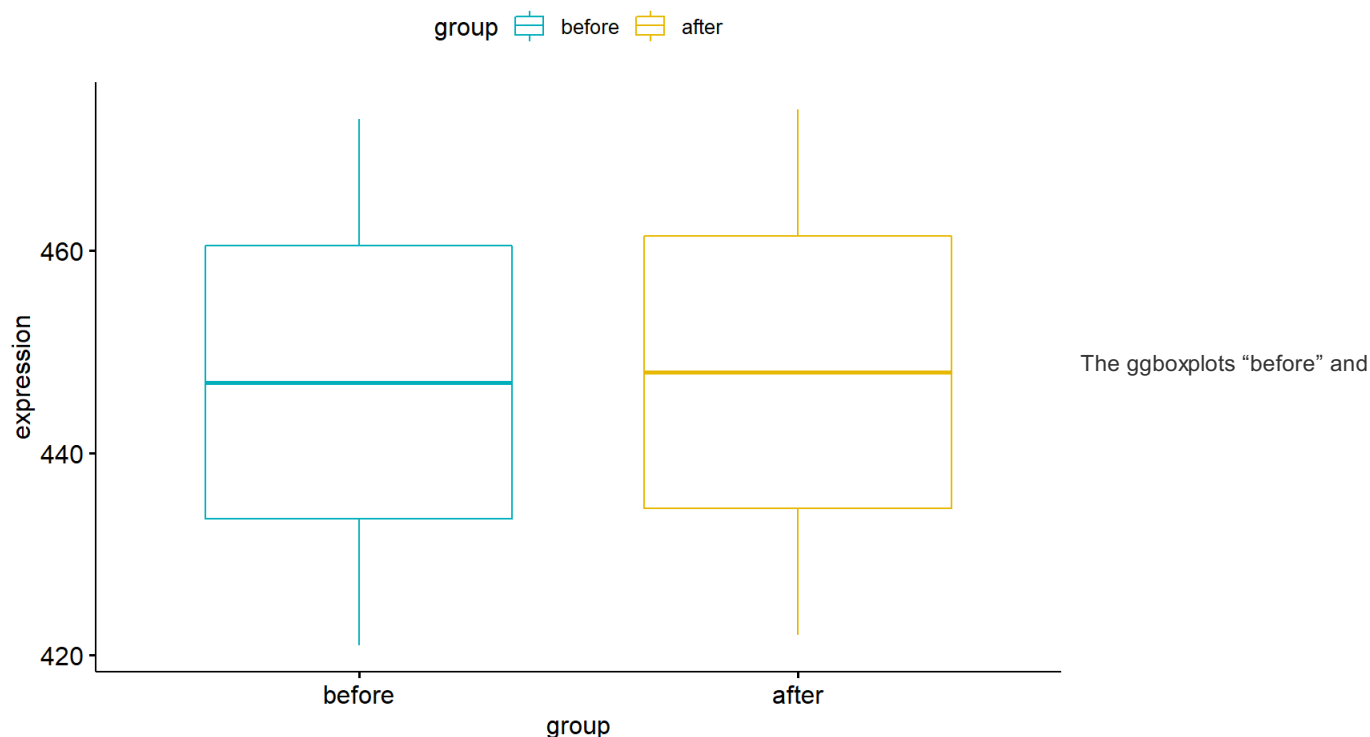
```
##
## Paired t-test
##
## data: before and after
## t = NaN, df = 53, p-value = NA
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## NaN NaN
## sample estimates:
## mean of the differences
## 0
```

ggboxplot to compare the treated an untreated data

```
my_data <- data.frame(
  group = rep(c("before", "after")),
  expression = c(before, after))

ggboxplot(my_data, x = "group", y = "expression",
  color = "group", palette = c("#00AFBB", "#E7B800"),
  order = c("before", "after"),
  ylab = "expression", xlab = "group")
```





“after” are very similar. This suggests that lapatinib only modifies the expression of fewer genes. The theory makes sense because in cancer cells only certain genes, such as proliferation genes, are altered.

## t-test over each column

-> paired t-test over cell lines

```
#t-test over each column -> cell lines
col_t_paired(LapatinibUntreated, LapatinibTreated, alternative = "two.sided", mu = 0, conf.level = 0.95)
```

```
## Warning: col_t_paired: 1 of the columns were essentially constant.
## First occurrence at column 1
```

```
##   obs.x obs.y obs.paired mean.x mean.y mean.diff var.x var.y var.diff
## 1    54    54         54  447.5  447.5         0 247.5 247.5         0
##   stderr df statistic pvalue conf.low conf.high alternative mean.null
## 1      0  53      NA      NA      NA      NA      two.sided         0
##   conf.level
## 1      0.95
```

## t-test over each row

-> paired t-test over genes, increased confidence level (99%) to minimize false positives

```
row_t_test<-as.data.frame(row_t_paired(LapatinibUntreated, LapatinibTreated, alternative = "two.sided", mu = 0, conf.level = 0.99))
```

```
## Warning: row_t_paired: 1 of the rows were essentially constant.
## First occurrence at row 1
```

```
summary(row_t_test$pvalue)
```

```
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##      NA      NA      NA     NaN     NA     NA      1
```

```
row_t_test$pvalue
```

```
## [1] NA
```

# k-means

```
LapatinibFold = select(Fold_Change, contains("Lapa"))
```

```
#Determining the number of clusters
```

```
topVarFold = apply(LapatinibFold, 1, var)  
summary(topVarFold)
```

```
##      Min.   1st Qu.   Median     Mean   3rd Qu.    Max.     
## 0.0007514 0.0090894 0.0138573 0.0197222 0.0226351 0.4897715
```

```
# Using the most variable, thus informative genes
```

```
topVarFold75 = LapatinibFold[topVarFold > quantile(topVarFold, probs = 0.75), ]  
dim(topVarFold75)
```

```
## [1] 3325   54
```

```
km = kmeans(x = t(topVarFold75), centers = 2, nstart = 10)  
km$tot.withinss
```

```
## [1] 6627.055
```

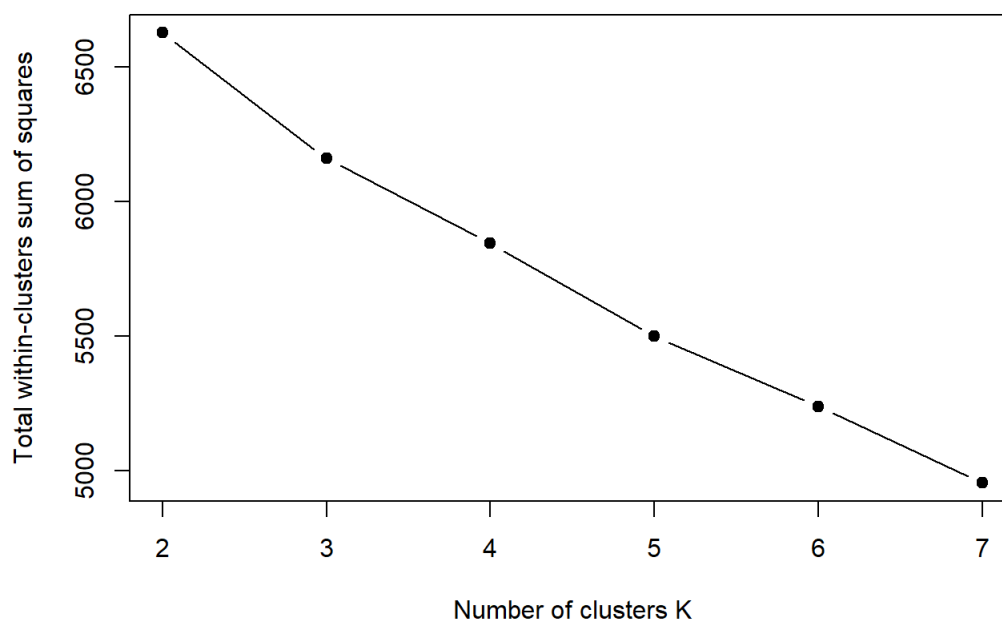
```
km = kmeans(x = t(topVarFold75), centers = 3, nstart = 10)  
km$tot.withinss
```

```
## [1] 6159.495
```

```
#running a loop for the best n (searching for "elbow")
```

```
wss = (sapply(2:7, function(k) {  
  kmeans(x = t(topVarFold75), centers = k)$tot.withinss}) )  
plot(2:7, wss, type = "b", pch = 19, xlab = "Number of clusters K", ylab = "Total within-clusters sum of  
squares", main = "Determining the amount of clusters from Foldchange")
```

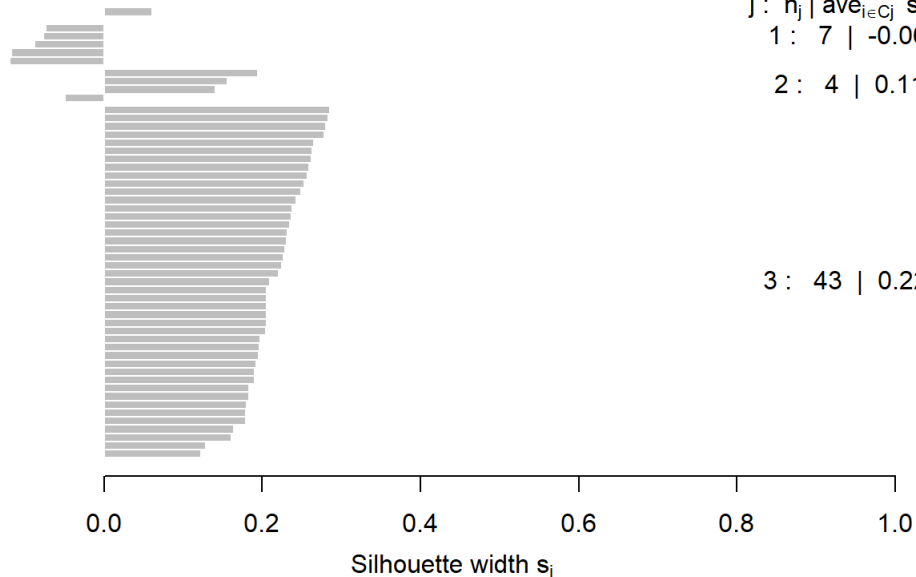
**Determining the amount of clusters from Foldchange**



```
# Using the silhouett method
D = dist(t(topVarFold75))
km = kmeans(x = t(topVarFold75), centers = 3, nstart = 10)
s = silhouette(km$cluster, D)
plot(s)
```

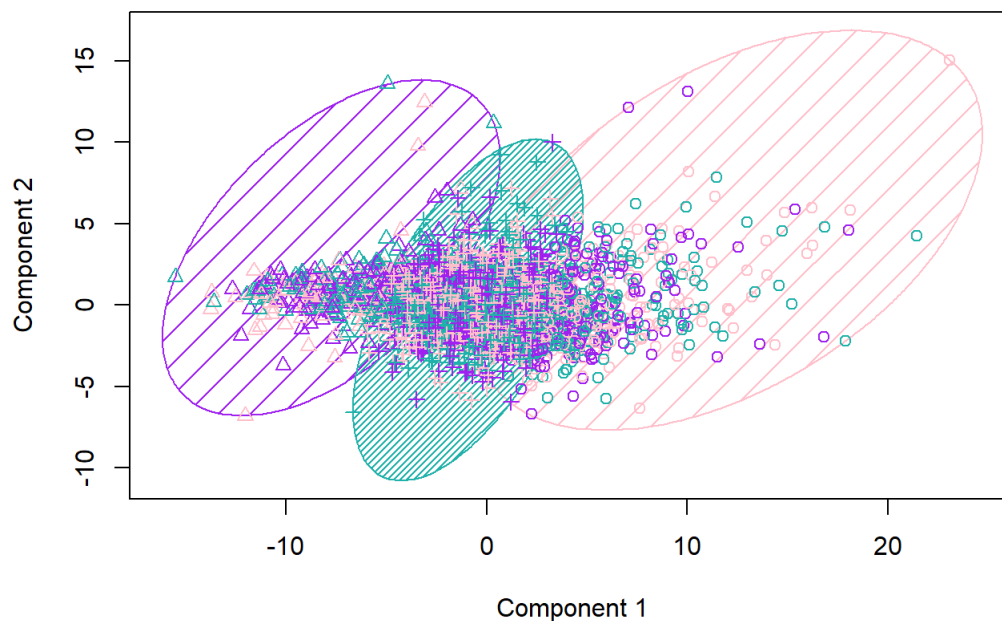
### Silhouette plot of (x = km\$cluster, dist = D)

n = 54



```
#plot kmeans
clus <- kmeans(topVarFold75, centers=3)
clusplot(topVarFold75, clus$cluster, color=TRUE, shade=TRUE, labels=1, lines=0, col.clus = c("purple", "pink", "lightseagreen"), main = "K-means Plot", col.p = c("purple", "pink", "lightseagreen"))
```

### K-means Plot



These two components explain 36.05 % of the point variability.

```
#PCA
pca = prcomp(topVarFold75, center = T, scale. = T)
print(pca)
```

```
## Standard deviations (1, ..., p=54):
```

```
## [1] 3.9841623 1.8961503 1.4960925 1.3380457 1.2005093 1.1476897 1.0688302
## [8] 1.0480862 0.9887584 0.9807155 0.9683499 0.9617627 0.9238507 0.9192428
## [15] 0.8825481 0.8737555 0.8615723 0.8522799 0.8255044 0.8167424 0.8111297
## [22] 0.8090361 0.7933809 0.7890360 0.7834529 0.7699536 0.7648841 0.7556303
## [29] 0.7426359 0.7314742 0.7291527 0.7180048 0.7152390 0.7049844 0.7043093
## [36] 0.6854395 0.6825072 0.6740117 0.6679745 0.6610695 0.6504194 0.6430278
## [43] 0.6407756 0.6281950 0.6219485 0.6126508 0.5989705 0.5904257 0.5695407
## [50] 0.5602659 0.5456909 0.5320088 0.5027083 0.4702761
```

```
##
## Rotation (n x k) = (54 x 54):
```

	PC1	PC2	PC3
## X786.0_lapatinib_10000nM_24h	0.14686449	-0.1802421869	0.102420513
## A498_lapatinib_10000nM_24h	0.12186635	-0.1826812188	0.124909378
## A549_lapatinib_10000nM_24h	0.12649903	0.2081323908	0.112474755
## ACHN_lapatinib_10000nM_24h	0.16365730	0.2508075103	-0.095956327
## BT.549_lapatinib_10000nM_24h	0.08361505	-0.2129516683	0.018239710
## CAKI.1_lapatinib_10000nM_24h	0.17404751	0.2347053878	-0.039402301
## COLO.205_lapatinib_10000nM_24h	0.12083913	0.0559585029	0.062753995
## DU.145_lapatinib_10000nM_24h	0.15329481	0.2194872353	-0.009254995
## EKVX_lapatinib_10000nM_24h	0.17788119	0.2068823879	-0.102462519
## HCC.2998_lapatinib_10000nM_24h	0.08457966	-0.2102623327	-0.157275729
## HCT.116_lapatinib_10000nM_24h	0.09487482	-0.0385404447	-0.060929991
## HCT.15_lapatinib_10000nM_24h	0.10903851	-0.0324156997	0.004896218
## HOP.62_lapatinib_10000nM_24h	0.14851896	-0.1057077390	0.237458514
## HOP.92_lapatinib_10000nM_24h	0.13380538	-0.1131025275	0.163510641
## HS.578T_lapatinib_10000nM_24h	0.13809620	-0.0792881905	0.244842905
## IGR.OV1_lapatinib_10000nM_24h	0.11372620	0.1167143853	-0.112073988
## KM12_lapatinib_10000nM_24h	0.05561418	0.0024374769	0.008313841
## M14_lapatinib_10000nM_24h	0.17450938	-0.0315829313	-0.149491398
## MALME.3M_lapatinib_10000nM_24h	0.08821540	-0.1824561036	-0.149761250
## MCF7_lapatinib_10000nM_24h	0.10496315	-0.2101744326	-0.248608240
## MDA.MB.231_lapatinib_10000nM_24h	0.12316695	0.0108870812	0.193913748
## MDA.MB.435_lapatinib_10000nM_24h	0.13391296	-0.0111273543	-0.125789196
## MDA.MB.468_lapatinib_10000nM_24h	0.11802474	0.0795629376	-0.057609054
## MOLT.4_lapatinib_10000nM_24h	0.10840581	-0.0249824694	-0.159668640
## NCI.ADR.RES_lapatinib_10000nM_24h	0.16795597	0.0767298702	0.013783141
## NCI.H226_lapatinib_10000nM_24h	0.10697809	0.0193202384	0.158167395
## NCI.H23_lapatinib_10000nM_24h	0.15839073	-0.0503586813	-0.037175964
## NCI.H322M_lapatinib_10000nM_24h	0.14709811	0.2416383838	-0.014939923
## NCI.H460_lapatinib_10000nM_24h	0.09812831	-0.0376257298	0.169348568
## NCI.H522_lapatinib_10000nM_24h	0.10794602	0.1894206566	0.088825812
## OVCAR.3_lapatinib_10000nM_24h	0.11542330	0.0766069028	0.047866362
## OVCAR.4_lapatinib_10000nM_24h	0.12093417	-0.1626793982	-0.233872455
## OVCAR.5_lapatinib_10000nM_24h	0.14351153	0.1478709169	0.122259153
## OVCAR.8_lapatinib_10000nM_24h	0.15774163	0.0727068215	-0.010914086
## PC.3_lapatinib_10000nM_24h	0.18495393	-0.0220941596	0.004417137
## RPMI.8226_lapatinib_10000nM_24h	0.10629817	-0.1146806349	-0.155403740
## RXF.393_lapatinib_10000nM_24h	0.16121528	-0.1578671516	0.077456229
## SF.268_lapatinib_10000nM_24h	0.13639087	-0.1314594649	0.135432178
## SF.295_lapatinib_10000nM_24h	0.14808175	-0.0820176083	0.172068721
## SF.539_lapatinib_10000nM_24h	0.11462268	-0.1010484612	0.260302599
## SK.MEL.2_lapatinib_10000nM_24h	0.11318516	-0.0455791127	-0.090993010
## SK.MEL.28_lapatinib_10000nM_24h	0.14478577	0.0032977227	-0.144170960
## SK.MEL.5_lapatinib_10000nM_24h	0.14107613	0.0360073424	-0.112240740
## SK.OV.3_lapatinib_10000nM_24h	0.16438582	0.1546893609	-0.057558926
## SN12C_lapatinib_10000nM_24h	0.14787302	0.1084557779	0.203851529
## SNB.19_lapatinib_10000nM_24h	0.16900899	-0.1255009996	-0.025525436
## SNB.75_lapatinib_10000nM_24h	0.08597948	-0.2589068455	0.197055294
## SW.620_lapatinib_10000nM_24h	0.09595413	-0.2339933693	-0.220621469
## T.47D_lapatinib_10000nM_24h	0.15229366	-0.0221848183	-0.080240581
## TK.10_lapatinib_10000nM_24h	0.16586028	0.1366732587	-0.036492256
## U251_lapatinib_10000nM_24h	0.11172635	-0.1382425989	0.137095668
## UACC.257_lapatinib_10000nM_24h	0.17175596	-0.0664033203	-0.264928087
## UACC.62_lapatinib_10000nM_24h	0.16629602	0.0322040019	-0.087793887
## UO.31_lapatinib_10000nM_24h	0.16823803	0.0006100328	0.046800779
##	PC4	PC5	PC6
## X786.0_lapatinib_10000nM_24h	-0.125962272	0.135377569	-0.053090077
## A498_lapatinib_10000nM_24h	-0.053048827	-0.009096935	-0.152257555
## A549_lapatinib_10000nM_24h	-0.050972569	-0.116302862	-0.048619596
## ACHN_lapatinib_10000nM_24h	-0.056101101	0.167466716	0.068172571
## BT.549_lapatinib_10000nM_24h	0.062795132	0.028653140	0.262106765
## CAKI.1_lapatinib_10000nM_24h	-0.034335301	0.132360330	-0.030530076
##			

## COLO.205_lapatinib_10000nM_24h	0.033919538	-0.271675791	-0.001224977
## DU.145_lapatinib_10000nM_24h	-0.022962762	0.110038292	0.055837370
## EKVX_lapatinib_10000nM_24h	-0.088634221	0.067129618	-0.040481278
## HCC.2998_lapatinib_10000nM_24h	-0.166714974	-0.017204614	0.045353335
## HCT.116_lapatinib_10000nM_24h	-0.162600764	-0.337128924	0.341394496
## HCT.15_lapatinib_10000nM_24h	-0.189084706	0.090986489	-0.008836758
## HOP.62_lapatinib_10000nM_24h	0.095085854	-0.024133685	0.011967987
## HOP.92_lapatinib_10000nM_24h	0.065095268	-0.155765249	-0.198877114
## HS.578T_lapatinib_10000nM_24h	0.079148804	0.220262028	-0.101830801
## IGR.OV1_lapatinib_10000nM_24h	-0.089009345	0.012546297	0.152052656
## KM12_lapatinib_10000nM_24h	0.140413613	-0.244600508	-0.239308979
## M14_lapatinib_10000nM_24h	0.282318482	0.064530874	-0.026710847
## MALME.3M_lapatinib_10000nM_24h	0.139182222	-0.048001918	-0.237311708
## MCF7_lapatinib_10000nM_24h	-0.204178403	-0.046645182	-0.046324519
## MDA.MB.231_lapatinib_10000nM_24h	0.014245428	0.042121385	-0.234666331
## MDA.MB.435_lapatinib_10000nM_24h	0.290451249	-0.066801127	0.030828761
## MDA.MB.468_lapatinib_10000nM_24h	-0.203653212	-0.156367171	-0.290891724
## MOLT.4_lapatinib_10000nM_24h	-0.010662913	0.057937235	0.130865069
## NCI.ADR.RES_lapatinib_10000nM_24h	0.022504469	0.081434036	0.162414981
## NCI.H226_lapatinib_10000nM_24h	-0.079123659	-0.247434165	0.105163430
## NCI.H23_lapatinib_10000nM_24h	0.032408470	-0.022638926	0.099118065
## NCI.H322M_lapatinib_10000nM_24h	-0.080349550	-0.053146534	-0.168031038
## NCI.H460_lapatinib_10000nM_24h	0.032120845	-0.236807630	0.089744323
## NCI.H522_lapatinib_10000nM_24h	-0.028448301	-0.216894751	0.130498728
## OVCAR.3_lapatinib_10000nM_24h	-0.031092379	0.108820938	-0.076463654
## OVCAR.4_lapatinib_10000nM_24h	-0.186067835	0.045708091	-0.001364966
## OVCAR.5_lapatinib_10000nM_24h	-0.067874873	-0.223647314	-0.009928951
## OVCAR.8_lapatinib_10000nM_24h	0.039334500	0.107531767	0.307228099
## PC.3_lapatinib_10000nM_24h	-0.006849385	-0.085164229	0.160030809
## RPMI.8226_lapatinib_10000nM_24h	-0.140794586	-0.087188914	-0.135481917
## RXF.393_lapatinib_10000nM_24h	-0.077334755	0.132453302	-0.117691301
## SF.268_lapatinib_10000nM_24h	-0.019444421	0.044340031	0.076944925
## SF.295_lapatinib_10000nM_24h	0.015902882	-0.048613381	0.086789682
## SF.539_lapatinib_10000nM_24h	0.063622468	0.086689048	-0.113963368
## SK.MEL.2_lapatinib_10000nM_24h	0.226625556	-0.256524774	0.007903565
## SK.MEL.28_lapatinib_10000nM_24h	0.345163398	-0.051056169	-0.144297199
## SK.MEL.5_lapatinib_10000nM_24h	0.241584453	0.011746395	0.065538472
## SK.OV.3_lapatinib_10000nM_24h	-0.135818599	0.024895983	-0.170957722
## SN12C_lapatinib_10000nM_24h	-0.034953614	0.049774948	0.097727258
## SNB.19_lapatinib_10000nM_24h	-0.064408610	0.045933144	-0.013656025
## SNB.75_lapatinib_10000nM_24h	0.036701369	0.188999355	0.109175356
## SW.620_lapatinib_10000nM_24h	-0.194388485	-0.048548836	0.075660998
## T.47D_lapatinib_10000nM_24h	-0.186299278	-0.133554353	-0.178541660
## TK.10_lapatinib_10000nM_24h	-0.092248503	0.229550378	0.010672726
## U251_lapatinib_10000nM_24h	-0.064915298	-0.097484920	0.127764258
## UACC.257_lapatinib_10000nM_24h	0.202376542	0.064618262	-0.057667296
## UACC.62_lapatinib_10000nM_24h	0.294617030	0.029723226	0.088227360
## UO.31_lapatinib_10000nM_24h	-0.038066501	0.204924053	-0.011610555
##	PC7	PC8	PC9
## X786.0_lapatinib_10000nM_24h	0.075581427	-0.062176634	0.147182088
## A498_lapatinib_10000nM_24h	0.116077167	-0.097964113	0.117855605
## A549_lapatinib_10000nM_24h	-0.120489145	0.048140267	-0.053011211
## ACHN_lapatinib_10000nM_24h	0.045063588	0.101665558	-0.021404069
## BT.549_lapatinib_10000nM_24h	0.188003385	-0.089207284	0.062810994
## CAKI.1_lapatinib_10000nM_24h	0.091562253	0.085001634	-0.075911736
## COLO.205_lapatinib_10000nM_24h	-0.130946523	0.266510792	0.068013551
## DU.145_lapatinib_10000nM_24h	-0.145040092	0.017190208	0.004594556
## EKVX_lapatinib_10000nM_24h	0.088930509	0.149908869	-0.082499117
## HCC.2998_lapatinib_10000nM_24h	-0.262197637	0.297582977	0.112948274
## HCT.116_lapatinib_10000nM_24h	-0.069474722	0.048622788	-0.139376419
## HCT.15_lapatinib_10000nM_24h	-0.462814485	0.047006084	-0.043324907
## HOP.62_lapatinib_10000nM_24h	-0.037277076	0.064863897	-0.120423563
## HOP.92_lapatinib_10000nM_24h	0.085384084	-0.180554375	-0.054243011
## HS.578T_lapatinib_10000nM_24h	-0.038439638	0.023914591	-0.122816958
## IGR.OV1_lapatinib_10000nM_24h	0.067684022	-0.190614740	-0.215635280
## KM12_lapatinib_10000nM_24h	-0.356308180	-0.004618872	0.216119190
## M14_lapatinib_10000nM_24h	0.008909272	0.019810559	-0.080363053
## MALME.3M_lapatinib_10000nM_24h	-0.144411651	0.041335374	0.089718206
## MCF7_lapatinib_10000nM_24h	-0.008117803	-0.085648893	-0.088726350
## MDA.MB.231_lapatinib_10000nM_24h	-0.190468813	-0.118096822	0.118653172
## MDA.MB.435_lapatinib_10000nM_24h	0.040587895	0.032091271	0.095469291
## MDA.MB.468_lapatinib_10000nM_24h	0.162836286	-0.020764288	-0.075199613
## MOLT.4_lapatinib_10000nM_24h	-0.027753053	-0.264065788	0.120340550

## NCI.ADR.RES_lapatinib_10000nM_24h	-0.096930457	-0.213423147	0.142339972
## NCI.H226_lapatinib_10000nM_24h	0.215789405	0.068898071	0.381155472
## NCI.H23_lapatinib_10000nM_24h	-0.064445083	-0.156962689	-0.111730779
## NCI.H322M_lapatinib_10000nM_24h	0.042760868	0.088410411	-0.028076468
## NCI.H460_lapatinib_10000nM_24h	-0.088298911	-0.191607300	-0.307423232
## NCI.H522_lapatinib_10000nM_24h	0.018231557	-0.242752138	0.065128043
## OVCAR.3_lapatinib_10000nM_24h	-0.261217303	-0.271381482	-0.232035342
## OVCAR.4_lapatinib_10000nM_24h	0.114259669	0.058926113	0.117820090
## OVCAR.5_lapatinib_10000nM_24h	0.036147229	0.202337968	0.069142970
## OVCAR.8_lapatinib_10000nM_24h	-0.108486357	-0.081427378	0.297424486
## PC.3_lapatinib_10000nM_24h	-0.055273570	0.077144427	-0.084028245
## RPMI.8226_lapatinib_10000nM_24h	0.025155949	-0.368373033	0.107286800
## RXF.393_lapatinib_10000nM_24h	0.139384691	0.015375940	-0.023719280
## SF.268_lapatinib_10000nM_24h	0.042515031	0.025830596	0.219273663
## SF.295_lapatinib_10000nM_24h	-0.003074031	0.046516806	-0.114792736
## SF.539_lapatinib_10000nM_24h	-0.067693922	0.070681367	-0.047793350
## SK.MEL.2_lapatinib_10000nM_24h	0.218461727	0.097367728	-0.111526756
## SK.MEL.28_lapatinib_10000nM_24h	0.043303691	0.047275287	0.029528622
## SK.MEL.5_lapatinib_10000nM_24h	-0.068142595	-0.196954210	-0.008533140
## SK.OV.3_lapatinib_10000nM_24h	0.132446113	0.052619294	-0.069278392
## SN12C_lapatinib_10000nM_24h	-0.013656768	0.006751932	0.288542608
## SNB.19_lapatinib_10000nM_24h	0.072931018	0.127436990	-0.084113983
## SNB.75_lapatinib_10000nM_24h	0.049303388	0.132707275	-0.127839603
## SW.620_lapatinib_10000nM_24h	-0.200258103	0.138697265	-0.046343397
## T.47D_lapatinib_10000nM_24h	0.129389316	-0.151685086	0.022913606
## TK.10_lapatinib_10000nM_24h	0.015161690	0.081869106	0.001807734
## U251_lapatinib_10000nM_24h	0.086068789	0.064106562	-0.241733764
## UACC.257_lapatinib_10000nM_24h	0.016061967	0.078092656	0.014951498
## UACC.62_lapatinib_10000nM_24h	0.001846843	0.065870195	-0.060352052
## UO.31_lapatinib_10000nM_24h	0.142644991	0.001244278	0.058960412
##	PC10	PC11	PC12
## X786.0_lapatinib_10000nM_24h	-0.105201277	0.26979358	-0.039826147
## A498_lapatinib_10000nM_24h	0.276940678	0.26429885	0.010272456
## A549_lapatinib_10000nM_24h	-0.006785946	0.06828951	-0.084678235
## ACHN_lapatinib_10000nM_24h	-0.014142133	0.04830174	0.009002600
## BT.549_lapatinib_10000nM_24h	0.423292629	-0.02572157	-0.117144533
## CAKI.1_lapatinib_10000nM_24h	-0.052702323	0.01284683	-0.038894742
## COLO.205_lapatinib_10000nM_24h	-0.035412452	0.09609710	0.047510397
## DU.145_lapatinib_10000nM_24h	-0.037444928	-0.07211613	0.011281413
## EK VX_lapatinib_10000nM_24h	0.012460491	0.04675017	-0.048359849
## HCC.2998_lapatinib_10000nM_24h	0.016057938	0.08341081	-0.035445325
## HCT.116_lapatinib_10000nM_24h	-0.036118725	0.27680283	-0.060296641
## HCT.15_lapatinib_10000nM_24h	0.065727104	0.18727830	-0.080584720
## HOP.62_lapatinib_10000nM_24h	0.019499552	0.01289442	0.075826512
## HOP.92_lapatinib_10000nM_24h	0.018848281	0.04767864	0.035613526
## HS.578T_lapatinib_10000nM_24h	0.090105822	-0.01083088	-0.089260740
## IGR.OV1_lapatinib_10000nM_24h	0.302184664	-0.08934334	0.016823507
## KM12_lapatinib_10000nM_24h	0.243952859	-0.12713803	-0.478661077
## M14_lapatinib_10000nM_24h	-0.059222132	0.05327872	-0.006014059
## MALME.3M_lapatinib_10000nM_24h	0.028270385	-0.09687156	0.316842427
## MCF7_lapatinib_10000nM_24h	-0.072374500	-0.17000612	0.008502071
## MDA.MB.231_lapatinib_10000nM_24h	-0.124380049	0.06022689	0.262280101
## MDA.MB.435_lapatinib_10000nM_24h	-0.001139219	-0.01626824	0.004718013
## MDA.MB.468_lapatinib_10000nM_24h	0.133901106	-0.28649086	-0.077220501
## MOLT.4_lapatinib_10000nM_24h	-0.283225972	0.04886018	-0.448509937
## NCI.ADR.RES_lapatinib_10000nM_24h	-0.091099945	-0.22163606	-0.009511514
## NCI.H226_lapatinib_10000nM_24h	0.141637996	-0.05417217	0.169263589
## NCI.H23_lapatinib_10000nM_24h	0.091390977	-0.02626184	0.057519557
## NCI.H322M_lapatinib_10000nM_24h	-0.016643889	-0.04133881	-0.052865519
## NCI.H460_lapatinib_10000nM_24h	-0.105715565	0.18934299	0.113862203
## NCI.H522_lapatinib_10000nM_24h	0.069459281	0.12942756	0.061926760
## OVCAR.3_lapatinib_10000nM_24h	0.287430334	-0.16151119	0.169118788
## OVCAR.4_lapatinib_10000nM_24h	0.111569709	0.12207713	0.040797292
## OVCAR.5_lapatinib_10000nM_24h	-0.025960966	0.04360216	-0.016910144
## OVCAR.8_lapatinib_10000nM_24h	0.043640164	-0.14817730	0.075020248
## PC.3_lapatinib_10000nM_24h	0.007787398	-0.01764946	0.031236926
## RPMI.8226_lapatinib_10000nM_24h	-0.239895518	0.03554484	-0.031075036
## RXF.393_lapatinib_10000nM_24h	-0.038414195	0.19334324	-0.045542671
## SF.268_lapatinib_10000nM_24h	0.036915086	-0.27841678	-0.085500151
## SF.295_lapatinib_10000nM_24h	-0.017184032	-0.02870879	0.003131939
## SF.539_lapatinib_10000nM_24h	-0.149297693	-0.10604279	-0.271972909
## SK.MEL.2_lapatinib_10000nM_24h	0.010578715	-0.05228496	-0.209859713
## SK.MEL.28_lapatinib_10000nM_24h	-0.008191818	0.07895095	0.157620255

## SK.MEL.5_lapatinib_10000nM_24h	-0.056245195	0.08365291	-0.044933519
## SK.OV.3_lapatinib_10000nM_24h	0.097860569	-0.03898244	-0.077489034
## SN12C_lapatinib_10000nM_24h	-0.173955150	-0.13392766	0.188929754
## SNB.19_lapatinib_10000nM_24h	-0.093681890	-0.23256517	0.000249380
## SNB.75_lapatinib_10000nM_24h	0.100530174	-0.04160726	-0.078274692
## SW.620_lapatinib_10000nM_24h	0.006956369	-0.14172929	0.164420471
## T.47D_lapatinib_10000nM_24h	-0.075836244	-0.01880483	0.069176845
## TK.10_lapatinib_10000nM_24h	0.147374446	0.13380011	0.010243530
## U251_lapatinib_10000nM_24h	-0.318593800	-0.30401762	0.022663173
## UACC.257_lapatinib_10000nM_24h	-0.031966429	0.06214326	0.096290092
## UACC.62_lapatinib_10000nM_24h	-0.008310845	0.02243984	0.040071159
## UO.31_lapatinib_10000nM_24h	-0.112499144	0.17680137	-0.060980776
##	PC13	PC14	PC15
## X786.0_lapatinib_10000nM_24h	0.0075266122	0.081781526	-0.084222801
## A498_lapatinib_10000nM_24h	-0.0481888272	0.084140602	-0.043807963
## A549_lapatinib_10000nM_24h	-0.0063091302	-0.023169154	-0.136086652
## ACHN_lapatinib_10000nM_24h	0.0488805138	-0.070492442	0.025906180
## BT.549_lapatinib_10000nM_24h	0.1641750492	-0.081253394	0.038049302
## CAKI.1_lapatinib_10000nM_24h	0.0726217335	-0.049038054	-0.018493037
## COLO.205_lapatinib_10000nM_24h	0.3497794002	0.160611355	-0.430500326
## DU.145_lapatinib_10000nM_24h	-0.0882673250	0.004777653	-0.049320084
## EK VX_lapatinib_10000nM_24h	-0.0097778615	-0.077164684	0.042724061
## HCC.2998_lapatinib_10000nM_24h	0.0173716126	-0.148751161	-0.130997580
## HCT.116_lapatinib_10000nM_24h	-0.1573100771	0.081104280	0.117458037
## HCT.15_lapatinib_10000nM_24h	-0.2093822650	0.235379715	0.242363186
## HOP.62_lapatinib_10000nM_24h	0.1795078938	-0.123797732	0.089965998
## HOP.92_lapatinib_10000nM_24h	0.1365345271	-0.120044977	-0.068116000
## HS.578T_lapatinib_10000nM_24h	-0.1004273461	-0.125207583	-0.001981539
## IGR.OV1_lapatinib_10000nM_24h	-0.0084884886	-0.092851913	-0.420146202
## KM12_lapatinib_10000nM_24h	0.2007293965	-0.185190981	0.251356948
## M14_lapatinib_10000nM_24h	0.0421139685	-0.052250046	0.103989119
## MALME.3M_lapatinib_10000nM_24h	-0.3390247879	0.185286762	-0.065279035
## MCF7_lapatinib_10000nM_24h	0.0006590959	-0.257872686	-0.073928757
## MDA.MB.231_lapatinib_10000nM_24h	0.0412253303	-0.397253008	-0.012200404
## MDA.MB.435_lapatinib_10000nM_24h	0.1222129508	0.244789764	0.035917493
## MDA.MB.468_lapatinib_10000nM_24h	-0.1462912619	0.096753393	0.028646499
## MOLT.4_lapatinib_10000nM_24h	-0.2341559001	-0.062403987	-0.208767983
## NCI.ADR.RES_lapatinib_10000nM_24h	0.0720395043	0.054404703	0.008159223
## NCI.H226_lapatinib_10000nM_24h	-0.3539712305	-0.183837571	-0.014721797
## NCI.H23_lapatinib_10000nM_24h	-0.0650136334	-0.240006669	0.072858114
## NCI.H322M_lapatinib_10000nM_24h	-0.0490564846	0.050911955	-0.008806407
## NCI.H460_lapatinib_10000nM_24h	-0.0016038142	0.109061595	0.181945342
## NCI.H522_lapatinib_10000nM_24h	-0.0728950598	0.021904366	0.123012456
## OV CAR.3_lapatinib_10000nM_24h	0.0120936590	0.295110057	-0.115178756
## OV CAR.4_lapatinib_10000nM_24h	0.0742362340	0.149323872	0.124260437
## OV CAR.5_lapatinib_10000nM_24h	0.0798999672	0.010609326	-0.111544400
## OV CAR.8_lapatinib_10000nM_24h	0.1070091888	0.146325012	-0.040864898
## PC.3_lapatinib_10000nM_24h	0.1056513073	-0.099739278	0.059218896
## RPMI.8226_lapatinib_10000nM_24h	0.2828330229	0.086879488	-0.158585732
## RXF.393_lapatinib_10000nM_24h	-0.0281334517	-0.011323494	-0.039582812
## SF.268_lapatinib_10000nM_24h	-0.0438953731	0.194070533	0.120401533
## SF.295_lapatinib_10000nM_24h	-0.1918803504	-0.099507735	-0.164503330
## SF.539_lapatinib_10000nM_24h	-0.1925372785	0.189595059	-0.240443677
## SK.MEL.2_lapatinib_10000nM_24h	-0.1778660861	0.093129128	-0.045872131
## SK.MEL.28_lapatinib_10000nM_24h	-0.0989603829	0.033293224	-0.059170561
## SK.MEL.5_lapatinib_10000nM_24h	-0.1653787598	-0.152064738	0.029990650
## SK.OV.3_lapatinib_10000nM_24h	-0.0161443348	-0.033925187	0.183469162
## SN12C_lapatinib_10000nM_24h	-0.0213248089	0.004030889	0.084977205
## SNB.19_lapatinib_10000nM_24h	0.0263203711	-0.029931064	0.086827863
## SNB.75_lapatinib_10000nM_24h	0.0790972040	0.088819359	-0.066082846
## SW.620_lapatinib_10000nM_24h	-0.0007699528	-0.123225997	-0.056479584
## T.47D_lapatinib_10000nM_24h	0.1559492407	0.175146728	0.161099432
## TK.10_lapatinib_10000nM_24h	0.0508394206	-0.005517831	0.045001099
## U251_lapatinib_10000nM_24h	0.0794289094	0.026712506	0.196772574
## UACC.257_lapatinib_10000nM_24h	-0.0189908818	-0.024430183	0.050597653
## UACC.62_lapatinib_10000nM_24h	0.0859273662	0.034184333	0.039811672
## UO.31_lapatinib_10000nM_24h	0.0430981735	0.018973123	0.110693742
##	PC16	PC17	PC18
## X786.0_lapatinib_10000nM_24h	0.2327886412	0.152552274	-0.021250122
## A498_lapatinib_10000nM_24h	0.1363612966	-0.184401179	0.122227634
## A549_lapatinib_10000nM_24h	-0.1809589706	0.140967709	-0.278592295
## ACHN_lapatinib_10000nM_24h	0.0305865178	0.044356538	-0.112294986
## SK.MEL.2_lapatinib_10000nM_24h	0.0545888244	0.088778848	0.178384748

## BT.549_lapatinib_10000nM_24h	-0.2545800344	0.002700442	-0.178784748
## CAKI.1_lapatinib_10000nM_24h	0.0451681166	0.022015358	-0.061930878
## COLO.205_lapatinib_10000nM_24h	0.0731760139	-0.051620875	0.015026993
## DU.145_lapatinib_10000nM_24h	0.0152328872	-0.001277950	-0.001086224
## EKVX_lapatinib_10000nM_24h	-0.0323430971	-0.020266667	-0.045495783
## HCC.2998_lapatinib_10000nM_24h	-0.0900000385	-0.272201597	0.152570900
## HCT.116_lapatinib_10000nM_24h	-0.0004528557	0.169488027	0.246526321
## HCT.15_lapatinib_10000nM_24h	-0.1319148825	0.127945727	0.100286982
## HOP.62_lapatinib_10000nM_24h	-0.2383689232	-0.011960484	0.105425422
## HOP.92_lapatinib_10000nM_24h	-0.0029507927	0.057137912	0.325227019
## HS.578T_lapatinib_10000nM_24h	-0.2122340468	-0.009550603	-0.034361617
## IGR.OV1_lapatinib_10000nM_24h	0.2827245674	0.178303274	0.001171019
## KM12_lapatinib_10000nM_24h	0.3429542780	0.128882031	-0.128024544
## M14_lapatinib_10000nM_24h	-0.0279348751	-0.114714108	0.056335210
## MALME.3M_lapatinib_10000nM_24h	0.0128387675	0.272770147	-0.229357126
## MCF7_lapatinib_10000nM_24h	-0.0786809782	0.022808799	-0.120763168
## MDA.MB.231_lapatinib_10000nM_24h	0.0130995857	-0.055899821	0.094180541
## MDA.MB.435_lapatinib_10000nM_24h	0.0607342027	-0.151416637	0.005331065
## MDA.MB.468_lapatinib_10000nM_24h	-0.0689302022	-0.290798751	0.144644344
## MOLT.4_lapatinib_10000nM_24h	-0.0485810574	-0.277318582	-0.053007313
## NCI.ADR.RES_lapatinib_10000nM_24h	0.0068120919	0.026529545	0.127394281
## NCI.H226_lapatinib_10000nM_24h	0.0885920721	-0.076138436	-0.145365884
## NCI.H23_lapatinib_10000nM_24h	-0.0761697046	0.145021039	-0.109291306
## NCI.H322M_lapatinib_10000nM_24h	-0.0823378769	-0.043539932	0.066861328
## NCI.H460_lapatinib_10000nM_24h	0.1622502189	-0.498974206	-0.480608537
## NCI.H522_lapatinib_10000nM_24h	-0.0590609224	0.232373442	-0.067293553
## OVCAR.3_lapatinib_10000nM_24h	0.0855127505	-0.135975455	0.161173919
## OVCAR.4_lapatinib_10000nM_24h	0.0737712975	0.026940155	-0.039100969
## OVCAR.5_lapatinib_10000nM_24h	-0.1114524033	0.015443972	-0.070535429
## OVCAR.8_lapatinib_10000nM_24h	0.0543176596	-0.074947823	0.079957076
## PC.3_lapatinib_10000nM_24h	-0.0810872347	0.024208039	0.095050631
## RPMI.8226_lapatinib_10000nM_24h	-0.1985699521	0.115805602	-0.152644340
## RXF.393_lapatinib_10000nM_24h	0.2207341778	0.117044178	0.034136359
## SF.268_lapatinib_10000nM_24h	-0.0422372862	-0.059221870	-0.004780749
## SF.295_lapatinib_10000nM_24h	0.0590286894	-0.063866661	0.116499870
## SF.539_lapatinib_10000nM_24h	-0.0699640092	0.130532296	-0.141212035
## SK.MEL.2_lapatinib_10000nM_24h	-0.0779081594	0.084103896	0.169604593
## SK.MEL.28_lapatinib_10000nM_24h	0.0064608670	-0.012792574	-0.054690054
## SK.MEL.5_lapatinib_10000nM_24h	-0.0117942734	-0.009501643	0.184869061
## SK.OV.3_lapatinib_10000nM_24h	-0.0269117799	-0.076992744	0.020517305
## SN12C_lapatinib_10000nM_24h	-0.0772442566	-0.019223659	0.036909210
## SNB.19_lapatinib_10000nM_24h	0.1791289776	0.021024699	-0.068253656
## SNB.75_lapatinib_10000nM_24h	-0.1570009930	0.045492909	-0.136012605
## SW.620_lapatinib_10000nM_24h	0.0205885765	-0.085168072	-0.052191879
## T.47D_lapatinib_10000nM_24h	-0.2690402054	0.087224831	0.022760912
## TK.10_lapatinib_10000nM_24h	0.0849834265	0.007494329	-0.151630245
## U251_lapatinib_10000nM_24h	0.3434494159	0.158508494	0.040674532
## UACC.257_lapatinib_10000nM_24h	-0.0031526634	0.029680622	-0.035249341
## UACC.62_lapatinib_10000nM_24h	-0.0356540197	0.042352961	0.000165823
## UO.31_lapatinib_10000nM_24h	0.1573649645	-0.044419441	0.097581447
##	PC19	PC20	PC21
## X786.0_lapatinib_10000nM_24h	-4.836102e-02	-0.007181914	-7.983588e-02
## A498_lapatinib_10000nM_24h	4.654420e-02	0.079789983	-1.367501e-01
## A549_lapatinib_10000nM_24h	1.646290e-01	0.232512004	-5.990599e-02
## ACHN_lapatinib_10000nM_24h	-1.314453e-02	0.021941031	3.911919e-02
## BT.549_lapatinib_10000nM_24h	8.975607e-02	0.295799415	-2.841844e-01
## CAKI.1_lapatinib_10000nM_24h	6.364824e-02	0.022507242	3.066031e-02
## COLO.205_lapatinib_10000nM_24h	-1.535264e-01	-0.075911165	-7.201514e-02
## DU.145_lapatinib_10000nM_24h	4.769943e-02	-0.068622124	-5.216758e-02
## EKVX_lapatinib_10000nM_24h	1.579745e-03	0.065437323	3.577987e-02
## HCC.2998_lapatinib_10000nM_24h	-1.179591e-01	-0.136890604	-2.885821e-01
## HCT.116_lapatinib_10000nM_24h	1.356192e-01	0.121002196	2.059165e-01
## HCT.15_lapatinib_10000nM_24h	-2.478199e-02	0.120625596	-5.803649e-02
## HOP.62_lapatinib_10000nM_24h	1.435960e-01	-0.175788916	-6.159587e-03
## HOP.92_lapatinib_10000nM_24h	3.267005e-01	-0.137036897	7.791983e-02
## HS.578T_lapatinib_10000nM_24h	-4.510234e-02	-0.035781010	1.351878e-03
## IGR.OV1_lapatinib_10000nM_24h	1.029186e-01	-0.080743360	1.434632e-02
## KM12_lapatinib_10000nM_24h	-1.792534e-02	0.005002114	9.544870e-02
## M14_lapatinib_10000nM_24h	4.777245e-02	0.048592540	-5.465623e-03
## MALME.3M_lapatinib_10000nM_24h	3.278600e-01	0.039676510	-2.066614e-01
## MCF7_lapatinib_10000nM_24h	-1.115255e-01	-0.004983698	2.987358e-03
## MDA.MB.231_lapatinib_10000nM_24h	6.081749e-02	0.182447220	9.467656e-02
## MDA.MB.435_lapatinib_10000nM_24h	-1.491996e-01	0.046166559	1.438017e-02



## MDA.MB.468_lapatinib_10000nM_24h	-1.432513e-01	0.050035958	-1.627559e-01
## MOLT.4_lapatinib_10000nM_24h	2.477990e-01	-0.049085705	-3.966307e-02
## NCI.ADR.RES_lapatinib_10000nM_24h	1.730706e-01	-0.038741900	-6.914216e-02
## NCI.H226_lapatinib_10000nM_24h	-1.587286e-01	0.134989717	3.276848e-01
## NCI.H23_lapatinib_10000nM_24h	-9.437440e-02	-0.424748519	1.725942e-02
## NCI.H322M_lapatinib_10000nM_24h	-6.681445e-03	0.017752217	-9.467871e-02
## NCI.H460_lapatinib_10000nM_24h	9.646270e-02	-0.116248739	3.144812e-02
## NCI.H522_lapatinib_10000nM_24h	-3.497069e-01	-0.284146632	-3.946375e-01
## OVCAR.3_lapatinib_10000nM_24h	-7.674478e-02	0.084251779	1.957864e-01
## OVCAR.4_lapatinib_10000nM_24h	9.509309e-02	-0.056788637	2.988622e-01
## OVCAR.5_lapatinib_10000nM_24h	2.112096e-01	0.068457545	-1.455496e-02
## OVCAR.8_lapatinib_10000nM_24h	9.079761e-02	0.008096723	-1.617952e-02
## PC.3_lapatinib_10000nM_24h	4.942127e-03	0.073366599	6.994430e-02
## RPMI.8226_lapatinib_10000nM_24h	-1.306655e-01	0.211384778	8.352795e-02
## RXF.393_lapatinib_10000nM_24h	-8.636388e-02	-0.138892476	-5.784854e-02
## SF.268_lapatinib_10000nM_24h	7.127529e-02	-0.145651379	7.693953e-06
## SF.295_lapatinib_10000nM_24h	-1.700978e-01	0.195070302	-5.668250e-02
## SF.539_lapatinib_10000nM_24h	-1.877452e-01	-0.105996490	2.186437e-01
## SK.MEL.2_lapatinib_10000nM_24h	1.121817e-01	-0.170469121	6.353021e-02
## SK.MEL.28_lapatinib_10000nM_24h	-1.624931e-02	0.057417031	-1.378508e-01
## SK.MEL.5_lapatinib_10000nM_24h	-2.975602e-01	0.278466364	3.924527e-02
## SK.OV.3_lapatinib_10000nM_24h	1.007042e-01	-0.001669354	1.615148e-02
## SN12C_lapatinib_10000nM_24h	2.973741e-02	-0.117762277	4.113609e-02
## SNB.19_lapatinib_10000nM_24h	-5.967419e-02	-0.047338071	-1.709289e-02
## SNB.75_lapatinib_10000nM_24h	-7.471473e-02	0.101082146	1.467057e-01
## SW.620_lapatinib_10000nM_24h	-1.108504e-02	-0.088687561	1.021496e-01
## T.47D_lapatinib_10000nM_24h	-1.207363e-01	-0.047164171	1.022527e-01
## TK.10_lapatinib_10000nM_24h	1.383945e-02	-0.004628923	-7.937230e-03
## U251_lapatinib_10000nM_24h	9.375426e-03	0.297417536	-2.767347e-01
## UACC.257_lapatinib_10000nM_24h	2.558837e-02	-0.003660590	2.283263e-02
## UACC.62_lapatinib_10000nM_24h	-1.801312e-01	-0.030889537	1.751747e-01
## UO.31_lapatinib_10000nM_24h	1.011254e-05	-0.033916567	-6.974773e-02
##	PC22	PC23	PC24
## X786.0_lapatinib_10000nM_24h	0.083644683	0.089886177	0.240519437
## A498_lapatinib_10000nM_24h	-0.055048560	-0.035929161	0.013183092
## A549_lapatinib_10000nM_24h	0.096890306	-0.081069266	0.267661092
## ACHN_lapatinib_10000nM_24h	-0.014047112	-0.017440450	0.007318054
## BT.549_lapatinib_10000nM_24h	-0.033453912	0.097528180	-0.056633357
## CAKI.1_lapatinib_10000nM_24h	-0.041766501	-0.019761103	0.012454762
## COLO.205_lapatinib_10000nM_24h	0.038375890	-0.042995612	-0.208160790
## DU.145_lapatinib_10000nM_24h	-0.076174237	-0.019670996	-0.104806761
## EKVX_lapatinib_10000nM_24h	0.036815099	-0.022231601	-0.069938148
## HCC.2998_lapatinib_10000nM_24h	-0.070803139	0.081841372	0.040072863
## HCT.116_lapatinib_10000nM_24h	0.314114547	-0.120649680	0.118230074
## HCT.15_lapatinib_10000nM_24h	-0.427464218	-0.001871565	-0.000442802
## HOP.62_lapatinib_10000nM_24h	0.066270312	-0.073830156	-0.122021155
## HOP.92_lapatinib_10000nM_24h	0.019398693	-0.211814245	0.105206441
## HS.578T_lapatinib_10000nM_24h	0.037792375	-0.136071693	-0.022792221
## IGR.OV1_lapatinib_10000nM_24h	-0.204208962	-0.098152127	-0.009964266
## KM12_lapatinib_10000nM_24h	0.073010868	-0.046980696	-0.059757380
## M14_lapatinib_10000nM_24h	-0.011101058	0.010551228	-0.053893760
## MALME.3M_lapatinib_10000nM_24h	0.147748586	-0.094159680	-0.077326529
## MCF7_lapatinib_10000nM_24h	0.065803964	-0.039158143	0.233174311
## MDA.MB.231_lapatinib_10000nM_24h	-0.098527727	0.340925976	-0.089103930
## MDA.MB.435_lapatinib_10000nM_24h	-0.040297129	-0.118648476	0.307469802
## MDA.MB.468_lapatinib_10000nM_24h	0.254108797	0.069217160	0.204319268
## MOLT.4_lapatinib_10000nM_24h	0.156337716	0.084126224	-0.316377906
## NCI.ADR.RES_lapatinib_10000nM_24h	0.005881875	-0.059337053	0.106754718
## NCI.H226_lapatinib_10000nM_24h	-0.117510096	-0.006602304	-0.054263973
## NCI.H23_lapatinib_10000nM_24h	-0.029064185	0.066808145	0.091095020
## NCI.H322M_lapatinib_10000nM_24h	-0.007114469	-0.101413125	-0.097016700
## NCI.H460_lapatinib_10000nM_24h	-0.099749349	-0.026172248	0.055106445
## NCI.H522_lapatinib_10000nM_24h	0.159194925	0.102449423	-0.195629345
## OVCAR.3_lapatinib_10000nM_24h	0.143878735	0.259694728	-0.085029181
## OVCAR.4_lapatinib_10000nM_24h	0.090955491	0.095022957	-0.353052841
## OVCAR.5_lapatinib_10000nM_24h	0.003384444	0.272113566	0.070194566
## OVCAR.8_lapatinib_10000nM_24h	0.056772819	0.061546401	0.052525439
## PC.3_lapatinib_10000nM_24h	0.110866876	0.018199214	0.031522321
## RPMI.8226_lapatinib_10000nM_24h	-0.268097185	-0.082399526	0.037735195
## RXF.393_lapatinib_10000nM_24h	0.069286839	0.096928305	0.060939915
## SF.268_lapatinib_10000nM_24h	-0.127379501	-0.211089296	0.080811703
## SF.295_lapatinib_10000nM_24h	-0.187189662	-0.436353913	-0.249765134
## SF.539_lapatinib_10000nM_24h	0.101741371	0.075690694	0.049450922

## SK.MEL.2_lapatinib_10000nM_24h	-0.446197081	0.423368498	0.094018125
## SK.MEL.28_lapatinib_10000nM_24h	0.056664872	0.031588763	-0.028725294
## SK.MEL.5_lapatinib_10000nM_24h	0.113760287	0.039040617	0.087975613
## SK.OV.3_lapatinib_10000nM_24h	-0.003975413	-0.049878055	-0.060079911
## SN12C_lapatinib_10000nM_24h	0.032257040	0.033759000	0.089402192
## SNB.19_lapatinib_10000nM_24h	-0.041701786	-0.079329652	-0.107009408
## SNB.75_lapatinib_10000nM_24h	0.191986900	0.153252503	-0.073961673
## SW.620_lapatinib_10000nM_24h	0.020424855	0.012264151	0.128154525
## T.47D_lapatinib_10000nM_24h	-0.048808224	-0.055141255	-0.212651728
## TK.10_lapatinib_10000nM_24h	-0.064747443	0.064372700	0.156672563
## U251_lapatinib_10000nM_24h	-0.039667863	0.196396342	-0.127756397
## UACC.257_lapatinib_10000nM_24h	0.074130107	-0.042360321	-0.088106835
## UACC.62_lapatinib_10000nM_24h	-0.029029015	-0.068411057	0.014007903
## UO.31_lapatinib_10000nM_24h	0.002220577	-0.089143811	0.087156096
##	PC25	PC26	PC27
## X786.0_lapatinib_10000nM_24h	-0.025874902	-0.002686593	-0.0096442879
## A498_lapatinib_10000nM_24h	0.095210215	-0.048543655	0.1301768909
## A549_lapatinib_10000nM_24h	-0.249334311	0.003466105	-0.1495887241
## ACHN_lapatinib_10000nM_24h	-0.127876637	0.066649370	0.0713763439
## BT.549_lapatinib_10000nM_24h	0.106226416	0.254585009	0.0271732223
## CAKI.1_lapatinib_10000nM_24h	-0.080656186	0.077332053	0.0304838471
## COLO.205_lapatinib_10000nM_24h	0.033185996	0.253162069	-0.2572324443
## DU.145_lapatinib_10000nM_24h	0.002917541	0.093932949	0.2504430925
## EKVX_lapatinib_10000nM_24h	-0.010635167	-0.023528211	-0.0010943804
## HCC.2998_lapatinib_10000nM_24h	-0.261675345	-0.134967996	0.1439390769
## HCT.116_lapatinib_10000nM_24h	-0.023856108	-0.097085904	0.1200409570
## HCT.15_lapatinib_10000nM_24h	0.250172704	0.044705346	-0.1822270895
## HOP.62_lapatinib_10000nM_24h	-0.018760676	-0.065505386	0.0364060131
## HOP.92_lapatinib_10000nM_24h	-0.002882028	0.242750875	-0.0987766272
## HS.578T_lapatinib_10000nM_24h	-0.049073209	0.006963637	0.1320578564
## IGR.OV1_lapatinib_10000nM_24h	0.192597762	-0.451769568	-0.0122418697
## KM12_lapatinib_10000nM_24h	-0.104807992	-0.084196180	0.1502471125
## M14_lapatinib_10000nM_24h	0.115851928	-0.078133898	-0.0056932981
## MALME.3M_lapatinib_10000nM_24h	-0.045778986	0.059726231	0.0695344988
## MCF7_lapatinib_10000nM_24h	0.046101310	0.212854607	0.0600679877
## MDA.MB.231_lapatinib_10000nM_24h	0.187532698	-0.153151169	-0.0368141884
## MDA.MB.435_lapatinib_10000nM_24h	0.416767309	0.027235679	0.1338038982
## MDA.MB.468_lapatinib_10000nM_24h	0.056795335	-0.077768222	-0.0158279653
## MOLT.4_lapatinib_10000nM_24h	0.093114580	0.038042026	-0.1123925257
## NCI.ADR.RES_lapatinib_10000nM_24h	0.063158690	0.065657717	0.0889369784
## NCI.H226_lapatinib_10000nM_24h	-0.043031213	0.112510967	-0.0292629140
## NCI.H23_lapatinib_10000nM_24h	0.081735343	0.158427100	-0.2013383877
## NCI.H322M_lapatinib_10000nM_24h	0.137242317	-0.120374957	-0.0510155377
## NCI.H460_lapatinib_10000nM_24h	-0.043812363	-0.046567105	0.0391240976
## NCI.H522_lapatinib_10000nM_24h	-0.004922521	-0.079313938	0.0339663719
## OVCAR.3_lapatinib_10000nM_24h	-0.297532790	0.191491503	-0.0336492450
## OVCAR.4_lapatinib_10000nM_24h	0.021255329	0.072036857	-0.0423223580
## OVCAR.5_lapatinib_10000nM_24h	0.209954059	-0.055796175	-0.1464051098
## OVCAR.8_lapatinib_10000nM_24h	-0.033532553	0.003685640	0.1430712765
## PC.3_lapatinib_10000nM_24h	0.043478000	-0.029551552	0.0841578716
## RPMI.8226_lapatinib_10000nM_24h	-0.202225520	-0.147968854	0.1031509893
## RXF.393_lapatinib_10000nM_24h	-0.002028476	-0.020177339	-0.0220959873
## SF.268_lapatinib_10000nM_24h	-0.194160168	-0.251184639	-0.0526741111
## SF.295_lapatinib_10000nM_24h	-0.099245935	0.096733254	0.1743861356
## SF.539_lapatinib_10000nM_24h	0.243681624	0.110800429	0.1926765336
## SK.MEL.2_lapatinib_10000nM_24h	-0.280047019	0.069865197	0.1457949898
## SK.MEL.28_lapatinib_10000nM_24h	-0.101473151	-0.174105982	0.0127237170
## SK.MEL.5_lapatinib_10000nM_24h	-0.058985443	0.020664181	-0.3533318225
## SK.OV.3_lapatinib_10000nM_24h	0.046978838	-0.030711488	0.0323854223
## SN12C_lapatinib_10000nM_24h	-0.034860329	-0.101809080	0.1838386752
## SNB.19_lapatinib_10000nM_24h	0.066162746	0.108869207	-0.1751645168
## SNB.75_lapatinib_10000nM_24h	-0.049266524	-0.368160705	-0.0192098942
## SW.620_lapatinib_10000nM_24h	0.071966938	-0.050700456	0.0136399892
## T.47D_lapatinib_10000nM_24h	0.047973676	-0.039332380	0.1071544864
## TK.10_lapatinib_10000nM_24h	-0.020671443	0.178852613	-0.0145209827
## U251_lapatinib_10000nM_24h	0.003180214	0.030460569	-0.0009662148
## UACC.257_lapatinib_10000nM_24h	-0.044189791	-0.062024689	-0.0483723525
## UACC.62_lapatinib_10000nM_24h	-0.015989836	-0.047572052	-0.0103826994
## UO.31_lapatinib_10000nM_24h	-0.205175081	0.052744974	-0.0200568697
##	PC28	PC29	PC30
## X786.0_lapatinib_10000nM_24h	-0.0244112384	-0.0582205351	-0.018989272
## A498_lapatinib_10000nM_24h	-0.2731229212	-0.2569744912	-0.195536302
##			

## A549_lapatinib_10000nM_24h	-0.1276911832	0.3750299250	-0.200848115
## ACHN_lapatinib_10000nM_24h	0.0058814883	-0.0135960056	0.108699524
## BT.549_lapatinib_10000nM_24h	-0.0305744926	-0.0353419106	0.173779438
## CAKI.1_lapatinib_10000nM_24h	0.0563519954	0.0158965052	0.106994880
## COLO.205_lapatinib_10000nM_24h	0.0006688363	-0.0259843312	-0.008953070
## DU.145_lapatinib_10000nM_24h	-0.1173595274	-0.2766326899	0.017930074
## EKVX_lapatinib_10000nM_24h	0.0004751316	-0.0111239108	-0.061091524
## HCC.2998_lapatinib_10000nM_24h	-0.1130974064	0.2247718549	0.235676733
## HCT.116_lapatinib_10000nM_24h	0.0144710951	-0.1885869319	0.212045363
## HCT.15_lapatinib_10000nM_24h	0.1154162930	0.1460256586	-0.082346065
## HOP.62_lapatinib_10000nM_24h	0.1071836935	-0.0571209832	-0.014480088
## HOP.92_lapatinib_10000nM_24h	0.0898794163	0.1567916075	0.054659195
## HS.578T_lapatinib_10000nM_24h	0.0611426936	-0.0630823752	0.342456159
## IGR.OV1_lapatinib_10000nM_24h	-0.0204389720	0.1846578774	0.152636814
## KM12_lapatinib_10000nM_24h	0.0508019872	-0.0522110826	-0.046898854
## M14_lapatinib_10000nM_24h	0.0059473593	0.0414856367	0.039147444
## MALME.3M_lapatinib_10000nM_24h	0.0711066274	-0.0239015238	0.044214417
## MCF7_lapatinib_10000nM_24h	0.0470150296	0.0154695554	-0.010845710
## MDA.MB.231_lapatinib_10000nM_24h	0.0013125653	0.0748494390	0.083917012
## MDA.MB.435_lapatinib_10000nM_24h	0.3605636919	0.1864339203	0.077447960
## MDA.MB.468_lapatinib_10000nM_24h	-0.0308585748	0.0288512659	-0.097046404
## MOLT.4_lapatinib_10000nM_24h	0.2723782969	0.0080221912	-0.040069061
## NCI.ADR.RES_lapatinib_10000nM_24h	-0.2033124522	0.1491938807	-0.125226642
## NCI.H226_lapatinib_10000nM_24h	0.1869724091	0.0908469402	0.025715409
## NCI.H23_lapatinib_10000nM_24h	-0.0839374391	-0.1648987314	-0.330769860
## NCI.H322M_lapatinib_10000nM_24h	0.0689610695	-0.3008699390	-0.136091444
## NCI.H460_lapatinib_10000nM_24h	-0.1493749934	0.0380245355	0.058883740
## NCI.H522_lapatinib_10000nM_24h	0.1642755594	0.1282594374	0.089294049
## OVCAR.3_lapatinib_10000nM_24h	0.2219265932	-0.0405025936	0.098470001
## OVCAR.4_lapatinib_10000nM_24h	-0.2014009114	0.2226436148	0.019244088
## OVCAR.5_lapatinib_10000nM_24h	-0.0195076064	-0.1980562582	0.036419271
## OVCAR.8_lapatinib_10000nM_24h	-0.1963045990	0.0233230146	-0.186871677
## PC.3_lapatinib_10000nM_24h	0.0532259472	0.0003149735	-0.023625409
## RPMI.8226_lapatinib_10000nM_24h	0.0943790233	-0.2565719061	0.072312347
## RXF.393_lapatinib_10000nM_24h	0.0399186095	-0.0037170066	0.027617809
## SF.268_lapatinib_10000nM_24h	-0.0171976422	-0.1715530337	0.235825809
## SF.295_lapatinib_10000nM_24h	0.0108199479	0.0136518839	-0.273557366
## SF.539_lapatinib_10000nM_24h	-0.2796856831	0.0573046015	0.171155175
## SK.MEL.2_lapatinib_10000nM_24h	0.0155530083	0.0185738008	-0.077389152
## SK.MEL.28_lapatinib_10000nM_24h	0.0135864609	-0.0062719001	0.001827648
## SK.MEL.5_lapatinib_10000nM_24h	-0.2922703213	-0.0240314873	0.083295041
## SK.OV.3_lapatinib_10000nM_24h	-0.0883535820	0.1164849866	0.045715255
## SN12C_lapatinib_10000nM_24h	0.0434589716	0.0132968963	0.032356060
## SNB.19_lapatinib_10000nM_24h	-0.0836421576	0.0536921574	0.139603309
## SNB.75_lapatinib_10000nM_24h	0.1882626957	0.0817743392	-0.368971511
## SW.620_lapatinib_10000nM_24h	0.1408577085	-0.1492217044	-0.128958277
## T.47D_lapatinib_10000nM_24h	-0.1265151300	0.1581727190	-0.022821462
## TK.10_lapatinib_10000nM_24h	0.1501254224	-0.1855863976	0.039648016
## U251_lapatinib_10000nM_24h	0.0106980282	-0.0223167985	0.014163576
## UACC.257_lapatinib_10000nM_24h	-0.0747568748	-0.0420507379	-0.047456433
## UACC.62_lapatinib_10000nM_24h	-0.0953667304	-0.0541371097	-0.017345545
## UO.31_lapatinib_10000nM_24h	0.2371634759	0.1549726025	-0.145082929
##	PC31	PC32	PC33
## X786.0_lapatinib_10000nM_24h	-0.011022649	0.294534659	0.072999308
## A498_lapatinib_10000nM_24h	-0.247899686	-0.330159906	0.234595641
## A549_lapatinib_10000nM_24h	-0.263193317	0.018760316	0.062939938
## ACHN_lapatinib_10000nM_24h	-0.015921147	-0.149850707	-0.035849492
## BT.549_lapatinib_10000nM_24h	0.157694709	0.206732293	-0.205074326
## CAKI.1_lapatinib_10000nM_24h	-0.036654673	-0.141689386	0.005185815
## COLO.205_lapatinib_10000nM_24h	0.335386410	-0.029047248	0.139519897
## DU.145_lapatinib_10000nM_24h	-0.072846423	0.111757443	0.129767222
## EKVX_lapatinib_10000nM_24h	-0.071401215	0.143663399	0.035087826
## HCC.2998_lapatinib_10000nM_24h	-0.150726724	0.012445137	-0.112982706
## HCT.116_lapatinib_10000nM_24h	0.058260333	-0.008910552	-0.153043640
## HCT.15_lapatinib_10000nM_24h	0.202207751	-0.147944592	-0.025432505
## HOP.62_lapatinib_10000nM_24h	0.054534808	-0.152463728	0.065591399
## HOP.92_lapatinib_10000nM_24h	-0.083127811	-0.154175896	-0.010965294
## HS.578T_lapatinib_10000nM_24h	0.123387422	-0.043143798	0.279768303
## IGR.OV1_lapatinib_10000nM_24h	0.141827920	-0.028077965	-0.006313714
## KM12_lapatinib_10000nM_24h	0.057601627	0.022564993	-0.016249496
## M14_lapatinib_10000nM_24h	0.015088596	0.017063049	0.036868359
## MALME.3M_lapatinib_10000nM_24h	0.091490575	0.025733195	0.031796967
## MCF7_lapatinib_10000nM_24h	0.026382151	0.073830950	0.275294200

## MDA.MB.231_lapatinib_10000nM_24h	-0.065755750	0.166403598	-0.127104660
## MDA.MB.435_lapatinib_10000nM_24h	-0.321416843	0.077531024	0.029872492
## MDA.MB.468_lapatinib_10000nM_24h	0.230296681	-0.151859588	-0.240676474
## MOLT.4_lapatinib_10000nM_24h	-0.062382433	-0.078643164	0.022260177
## NCI.ADR.RES_lapatinib_10000nM_24h	0.124764077	0.088207838	0.170979100
## NCI.H226_lapatinib_10000nM_24h	0.123111595	-0.068618932	0.103958669
## NCI.H23_lapatinib_10000nM_24h	-0.069456493	-0.005230425	-0.328683870
## NCI.H322M_lapatinib_10000nM_24h	0.035633980	0.307460674	0.087037300
## NCI.H460_lapatinib_10000nM_24h	0.150964254	0.089307969	0.023774778
## NCI.H522_lapatinib_10000nM_24h	-0.204899432	-0.104384857	0.134270354
## OVCAR.3_lapatinib_10000nM_24h	-0.168348347	0.130078669	-0.067681686
## OVCAR.4_lapatinib_10000nM_24h	-0.169867248	0.005542799	-0.007477566
## OVCAR.5_lapatinib_10000nM_24h	-0.174612747	0.008160247	-0.115777125
## OVCAR.8_lapatinib_10000nM_24h	0.097781429	-0.077271706	-0.038532005
## PC.3_lapatinib_10000nM_24h	-0.009809557	0.107539506	-0.001109050
## RPMI.8226_lapatinib_10000nM_24h	0.015928736	-0.205868359	-0.172453357
## RXF.393_lapatinib_10000nM_24h	0.126063590	0.255557015	-0.039366226
## SF.268_lapatinib_10000nM_24h	-0.181033906	0.186664683	0.022250587
## SF.295_lapatinib_10000nM_24h	-0.204427852	0.183824541	-0.239176913
## SF.539_lapatinib_10000nM_24h	-0.011623055	-0.068552488	-0.197541186
## SK.MEL.2_lapatinib_10000nM_24h	0.032682583	0.054292106	0.148784465
## SK.MEL.28_lapatinib_10000nM_24h	0.084894258	-0.102570853	-0.190981088
## SK.MEL.5_lapatinib_10000nM_24h	0.089449661	-0.075209262	0.230897806
## SK.OV.3_lapatinib_10000nM_24h	0.070771871	0.009055983	0.068088219
## SN12C_lapatinib_10000nM_24h	0.128023413	-0.109850197	-0.092010891
## SNB.19_lapatinib_10000nM_24h	-0.131322240	-0.242103069	-0.152890376
## SNB.75_lapatinib_10000nM_24h	0.034920848	-0.118222973	0.137456939
## SW.620_lapatinib_10000nM_24h	-0.015774084	-0.022026793	0.192806915
## T.47D_lapatinib_10000nM_24h	0.042380232	0.182026421	0.107906532
## TK.10_lapatinib_10000nM_24h	-0.048858067	-0.216712232	0.007380228
## U251_lapatinib_10000nM_24h	-0.064420701	-0.120145817	0.090342624
## UACC.257_lapatinib_10000nM_24h	0.035448798	-0.017928110	-0.092862185
## UACC.62_lapatinib_10000nM_24h	-0.021392670	0.023306258	-0.008480739
## UO.31_lapatinib_10000nM_24h	0.272374099	0.041891903	-0.162800035
##	PC34	PC35	PC36
## X786.0_lapatinib_10000nM_24h	-0.009902603	-0.177797236	-0.015234831
## A498_lapatinib_10000nM_24h	0.086871014	0.064771702	0.080159924
## A549_lapatinib_10000nM_24h	0.178181965	0.002996646	0.001492929
## ACHN_lapatinib_10000nM_24h	0.019883625	0.098693025	0.080573070
## BT.549_lapatinib_10000nM_24h	0.057762990	-0.022005124	0.014023157
## CAKI.1_lapatinib_10000nM_24h	0.019319060	0.090927564	-0.041912587
## COLO.205_lapatinib_10000nM_24h	0.130188394	0.155571293	0.067809946
## DU.145_lapatinib_10000nM_24h	-0.067050685	0.184425669	0.183848495
## EKVX_lapatinib_10000nM_24h	0.026946531	0.026996956	-0.041558368
## HCC.2998_lapatinib_10000nM_24h	-0.141304573	0.174789605	-0.105640610
## HCT.116_lapatinib_10000nM_24h	0.121137016	0.240283571	-0.023516572
## HCT.15_lapatinib_10000nM_24h	0.026087456	-0.081097268	-0.012276328
## HOP.62_lapatinib_10000nM_24h	-0.387784167	-0.065624713	-0.057337956
## HOP.92_lapatinib_10000nM_24h	0.020166291	-0.036652473	0.037670849
## HS.578T_lapatinib_10000nM_24h	0.309367893	-0.032115856	-0.157912250
## IGR.OV1_lapatinib_10000nM_24h	-0.111838509	-0.010762489	0.069589671
## KM12_lapatinib_10000nM_24h	-0.042883458	-0.008330105	-0.005326261
## M14_lapatinib_10000nM_24h	-0.063398379	0.019056513	-0.002509638
## MALME.3M_lapatinib_10000nM_24h	-0.174157472	0.161448825	0.084837502
## MCF7_lapatinib_10000nM_24h	-0.251677043	0.034833376	0.111697240
## MDA.MB.231_lapatinib_10000nM_24h	0.168667655	0.214629302	0.234789902
## MDA.MB.435_lapatinib_10000nM_24h	-0.035816365	0.220076720	-0.104116908
## MDA.MB.468_lapatinib_10000nM_24h	0.098199763	0.050067139	0.208250984
## MOLT.4_lapatinib_10000nM_24h	0.108820444	-0.032616848	0.080446340
## NCI.ADR.RES_lapatinib_10000nM_24h	0.143627921	0.055853613	-0.246861915
## NCI.H226_lapatinib_10000nM_24h	-0.037347919	0.050617168	-0.106507129
## NCI.H23_lapatinib_10000nM_24h	0.053220434	0.271713251	-0.130831738
## NCI.H322M_lapatinib_10000nM_24h	-0.060958903	0.107863939	-0.248462279
## NCI.H460_lapatinib_10000nM_24h	-0.054644054	0.012280594	-0.010059226
## NCI.H522_lapatinib_10000nM_24h	0.007431619	-0.150401022	0.068423061
## OVCAR.3_lapatinib_10000nM_24h	-0.054163922	-0.074191765	-0.138462175
## OVCAR.4_lapatinib_10000nM_24h	-0.057616931	-0.008689220	-0.023459971
## OVCAR.5_lapatinib_10000nM_24h	-0.302067545	-0.298693096	-0.144609845
## OVCAR.8_lapatinib_10000nM_24h	-0.036932428	-0.069031486	-0.041802208
## PC.3_lapatinib_10000nM_24h	0.092532788	-0.210904396	0.247195822
## RPMI.8226_lapatinib_10000nM_24h	-0.021541524	0.019517323	-0.158773340
## RXF.393_lapatinib_10000nM_24h	0.150762743	0.030173071	-0.248974410
## SF.268_lapatinib_10000nM_24h	0.022269148	0.053700683	0.245519422

## SF.295_lapatinib_10000nM_24h	-0.062744604	-0.132391542	0.011300815
## SF.539_lapatinib_10000nM_24h	-0.144726839	-0.099968834	0.121683209
## SK.MEL.2_lapatinib_10000nM_24h	0.059479333	0.033654165	0.028681358
## SK.MEL.28_lapatinib_10000nM_24h	0.193024252	-0.213149528	-0.117347304
## SK.MEL.5_lapatinib_10000nM_24h	-0.301239965	0.011501797	-0.101057654
## SK.OV.3_lapatinib_10000nM_24h	-0.075656417	-0.150920530	-0.189948955
## SN12C_lapatinib_10000nM_24h	0.018437028	-0.047064299	-0.089535929
## SNB.19_lapatinib_10000nM_24h	0.143230137	0.017780510	-0.247731728
## SNB.75_lapatinib_10000nM_24h	-0.052095045	0.282707835	-0.052518571
## SW.620_lapatinib_10000nM_24h	0.230028970	-0.415809213	0.002353653
## T.47D_lapatinib_10000nM_24h	0.047197370	0.067899701	0.165059144
## TK.10_lapatinib_10000nM_24h	-0.025744760	0.062408244	0.216486632
## U251_lapatinib_10000nM_24h	0.011867126	0.057210988	0.047041092
## UACC.257_lapatinib_10000nM_24h	0.038015009	-0.073335325	-0.005862421
## UACC.62_lapatinib_10000nM_24h	0.141003113	-0.155339652	0.292655043
## UO.31_lapatinib_10000nM_24h	-0.252083468	-0.059454325	0.214581011
##	PC37	PC38	PC39
## X786.0_lapatinib_10000nM_24h	-0.122637912	0.0446460114	0.0447536847
## A498_lapatinib_10000nM_24h	0.098443228	-0.3020160860	-0.0966569165
## A549_lapatinib_10000nM_24h	-0.166714156	-0.1463961761	0.0291936808
## ACHN_lapatinib_10000nM_24h	0.139319569	-0.0084021041	0.0450882072
## BT.549_lapatinib_10000nM_24h	0.052669871	-0.1441945675	0.1943494866
## CAKI.1_lapatinib_10000nM_24h	0.168583443	-0.0427240549	0.0610479461
## COLO.205_lapatinib_10000nM_24h	-0.048705193	-0.0521447529	0.0148718235
## DU.145_lapatinib_10000nM_24h	-0.165688486	0.0526095399	-0.0359438966
## EKVX_lapatinib_10000nM_24h	0.046029450	-0.1193008468	0.0578218224
## HCC.2998_lapatinib_10000nM_24h	0.076768307	-0.0525023788	-0.0293226273
## HCT.116_lapatinib_10000nM_24h	0.036719194	0.0252234894	0.0328787374
## HCT.15_lapatinib_10000nM_24h	0.011191239	-0.0181410102	-0.1133428422
## HOP.62_lapatinib_10000nM_24h	-0.135173014	0.0104589440	-0.0133005512
## HOP.92_lapatinib_10000nM_24h	0.144143398	0.0712321278	0.1277235348
## HS.578T_lapatinib_10000nM_24h	-0.394446279	0.1579148088	-0.1052052329
## IGR.OV1_lapatinib_10000nM_24h	-0.129105718	-0.0934505468	-0.0157169347
## KM12_lapatinib_10000nM_24h	-0.031234158	-0.0051447666	0.0088169184
## M14_lapatinib_10000nM_24h	0.058921240	-0.1048001542	0.0544890753
## MALME.3M_lapatinib_10000nM_24h	0.073628551	0.0459255735	0.0992961326
## MCF7_lapatinib_10000nM_24h	0.047666869	-0.0203040052	-0.3302637507
## MDA.MB.231_lapatinib_10000nM_24h	0.071694395	0.1428059951	0.1297744433
## MDA.MB.435_lapatinib_10000nM_24h	-0.162844152	0.0023724231	0.0311014154
## MDA.MB.468_lapatinib_10000nM_24h	-0.188030904	0.2237944086	0.0709228618
## MOLT.4_lapatinib_10000nM_24h	-0.032424331	-0.0733907286	-0.0762455145
## NCI.ADR.RES_lapatinib_10000nM_24h	0.191391411	0.1845692589	-0.0240107334
## NCI.H226_lapatinib_10000nM_24h	0.088747006	-0.0466151766	-0.1405738441
## NCI.H23_lapatinib_10000nM_24h	-0.182934600	-0.1588656415	-0.0859977967
## NCI.H322M_lapatinib_10000nM_24h	0.095781589	-0.1084217058	0.1688093661
## NCI.H460_lapatinib_10000nM_24h	0.054147184	0.0839136727	0.0500232832
## NCI.H522_lapatinib_10000nM_24h	0.157682196	0.1379669226	0.1495015224
## OVCAR.3_lapatinib_10000nM_24h	0.053652940	-0.1789995285	-0.0878762107
## OVCAR.4_lapatinib_10000nM_24h	-0.400852004	0.1221276687	0.1103201445
## OVCAR.5_lapatinib_10000nM_24h	-0.075687796	0.1945337711	-0.1776088071
## OVCAR.8_lapatinib_10000nM_24h	0.024624197	0.2624050413	-0.0885505716
## PC.3_lapatinib_10000nM_24h	0.154797894	-0.0705878746	-0.3572090812
## RPMI.8226_lapatinib_10000nM_24h	-0.004951235	0.0672410221	0.0548501226
## RXF.393_lapatinib_10000nM_24h	0.102931085	0.0889165311	-0.1434698072
## SF.268_lapatinib_10000nM_24h	0.065837985	0.0007683455	-0.0499523001
## SF.295_lapatinib_10000nM_24h	-0.069674173	0.2391287122	0.0765277660
## SF.539_lapatinib_10000nM_24h	0.198048896	-0.1414392990	0.1243369027
## SK.MEL.2_lapatinib_10000nM_24h	-0.020200397	0.0773080635	0.1279203300
## SK.MEL.28_lapatinib_10000nM_24h	-0.057436640	-0.0338084241	-0.3204280887
## SK.MEL.5_lapatinib_10000nM_24h	-0.092991977	0.0294552053	0.2066882981
## SK.OV.3_lapatinib_10000nM_24h	0.169669742	-0.0434291782	0.0101007086
## SN12C_lapatinib_10000nM_24h	-0.229165725	-0.4217082232	0.1515757590
## SNB.19_lapatinib_10000nM_24h	0.168395270	0.0845519440	0.0005597275
## SNB.75_lapatinib_10000nM_24h	0.182468029	0.1417796213	0.0491457972
## SW.620_lapatinib_10000nM_24h	0.024873878	-0.0587769845	0.4655352142
## T.47D_lapatinib_10000nM_24h	0.004709854	-0.0687332229	-0.1255358920
## TK.10_lapatinib_10000nM_24h	-0.020831991	0.3022080344	0.0365792182
## U251_lapatinib_10000nM_24h	-0.180356830	-0.1585338186	-0.0555019535
## UACC.257_lapatinib_10000nM_24h	0.072271098	-0.0034488122	-0.0235170423
## UACC.62_lapatinib_10000nM_24h	0.041751214	-0.0177666820	-0.0175393231
## UO.31_lapatinib_10000nM_24h	-0.048343292	-0.1532462087	0.0762431709
##	PC40	PC41	PC42
## X786.0_lapatinib_10000nM_24h	0.004323222	0.006716665	0.1151606660

## X786.0_lapatinib_10000nM_24h	0.024339288	0.09616685	0.1151996660
## A498_lapatinib_10000nM_24h	-0.141014858	-0.042827274	-0.0828330008
## A549_lapatinib_10000nM_24h	-0.058913625	-0.068628532	0.1753106172
## ACHN_lapatinib_10000nM_24h	-0.038757821	0.053693619	-0.0165035353
## BT.549_lapatinib_10000nM_24h	0.073019235	-0.057321857	0.0295624303
## CAKI.1_lapatinib_10000nM_24h	-0.050307397	0.044060962	-0.1172201965
## COLO.205_lapatinib_10000nM_24h	-0.163015143	-0.033827896	-0.0303146916
## DU.145_lapatinib_10000nM_24h	0.303740271	-0.319633143	0.3000092020
## EKVX_lapatinib_10000nM_24h	0.103012012	-0.043215897	0.0210035714
## HCC.2998_lapatinib_10000nM_24h	0.171896650	0.164409314	-0.0292072960
## HCT.116_lapatinib_10000nM_24h	-0.123740966	-0.131573266	-0.1073296344
## HCT.15_lapatinib_10000nM_24h	0.113228840	-0.040478298	0.0666268576
## HOP.62_lapatinib_10000nM_24h	-0.263948219	-0.052455969	0.4075949515
## HOP.92_lapatinib_10000nM_24h	0.502552285	0.040999139	0.0158145138
## HS.578T_lapatinib_10000nM_24h	-0.028256563	0.023118845	-0.2315220826
## IGR.OV1_lapatinib_10000nM_24h	0.019886268	0.045670392	-0.0151284204
## KM12_lapatinib_10000nM_24h	0.029938021	0.035623756	-0.0724112503
## M14_lapatinib_10000nM_24h	0.006601582	-0.068100678	-0.0085166565
## MALME.3M_lapatinib_10000nM_24h	-0.113872373	0.245250399	-0.0143401056
## MCF7_lapatinib_10000nM_24h	-0.019620232	-0.249726368	-0.1538278027
## MDA.MB.231_lapatinib_10000nM_24h	-0.209955213	-0.142915337	-0.0315349708
## MDA.MB.435_lapatinib_10000nM_24h	-0.112528650	0.009099843	0.0524857816
## MDA.MB.468_lapatinib_10000nM_24h	0.028574490	0.022639649	0.1457784303
## MOLT.4_lapatinib_10000nM_24h	-0.032920498	0.164250860	0.0360917243
## NCI.ADR.RES_lapatinib_10000nM_24h	-0.076168047	-0.135040879	-0.1591965053
## NCI.H226_lapatinib_10000nM_24h	0.124232344	-0.006060984	0.1477155879
## NCI.H23_lapatinib_10000nM_24h	-0.074894964	0.102402341	-0.0840476914
## NCI.H322M_lapatinib_10000nM_24h	0.208197662	-0.015110235	0.0392322679
## NCI.H460_lapatinib_10000nM_24h	0.098816983	0.023829232	-0.0159478325
## NCI.H522_lapatinib_10000nM_24h	-0.001763594	-0.151708906	-0.0173441066
## OVCAR.3_lapatinib_10000nM_24h	-0.034716335	-0.009827694	-0.0514034614
## OVCAR.4_lapatinib_10000nM_24h	0.048359962	-0.160807371	0.0538779645
## OVCAR.5_lapatinib_10000nM_24h	0.084651366	0.041534108	-0.3510220984
## OVCAR.8_lapatinib_10000nM_24h	-0.019817561	0.059584268	0.0733831924
## PC.3_lapatinib_10000nM_24h	-0.057521429	0.188857904	0.2505741195
## RPMI.8226_lapatinib_10000nM_24h	-0.034635647	-0.025782887	0.1681856580
## RXF.393_lapatinib_10000nM_24h	0.003756756	0.139776952	0.2619260377
## SF.268_lapatinib_10000nM_24h	-0.100068797	-0.119160100	-0.0216381122
## SF.295_lapatinib_10000nM_24h	-0.138087364	0.086196513	-0.1585646849
## SF.539_lapatinib_10000nM_24h	-0.013744309	-0.124713806	0.0128167368
## SK.MEL.2_lapatinib_10000nM_24h	-0.139266028	-0.026984377	-0.0002902421
## SK.MEL.28_lapatinib_10000nM_24h	0.120293876	-0.324380294	-0.0677770406
## SK.MEL.5_lapatinib_10000nM_24h	0.024246032	0.151266120	-0.0037786512
## SK.OV.3_lapatinib_10000nM_24h	-0.366458601	0.092767000	0.0866742056
## SN12C_lapatinib_10000nM_24h	0.075425672	0.178611133	-0.1119825635
## SNB.19_lapatinib_10000nM_24h	-0.035073107	-0.105804853	0.0774517345
## SNB.75_lapatinib_10000nM_24h	0.196659882	-0.025456601	-0.1042143031
## SW.620_lapatinib_10000nM_24h	-0.026930807	-0.076398420	-0.0291433536
## T.47D_lapatinib_10000nM_24h	0.057554150	0.246401904	-0.2559391710
## TK.10_lapatinib_10000nM_24h	-0.001642945	0.226347463	-0.0791067352
## U251_lapatinib_10000nM_24h	0.099716760	0.088428320	-0.0040616664
## UACC.257_lapatinib_10000nM_24h	0.060203535	-0.059067273	-0.0219543906
## UACC.62_lapatinib_10000nM_24h	0.139392594	0.239188630	0.0447186816
## UO.31_lapatinib_10000nM_24h	-0.083499540	-0.311488249	-0.2404445757
##	PC43	PC44	
## X786.0_lapatinib_10000nM_24h	0.0208646761	-0.0001994189	
## A498_lapatinib_10000nM_24h	-0.0274162041	0.0823426222	
## A549_lapatinib_10000nM_24h	-0.0571203574	0.1102011399	
## ACHN_lapatinib_10000nM_24h	0.0008418971	-0.1590021720	
## BT.549_lapatinib_10000nM_24h	-0.0735162915	-0.0338849105	
## CAKI.1_lapatinib_10000nM_24h	0.0630837316	-0.1439374774	
## COLO.205_lapatinib_10000nM_24h	0.0015532822	-0.0733841899	
## DU.145_lapatinib_10000nM_24h	0.0157230560	-0.1834441121	
## EKVX_lapatinib_10000nM_24h	-0.0538196372	0.0772073904	
## HCC.2998_lapatinib_10000nM_24h	0.1622151332	0.0788236462	
## HCT.116_lapatinib_10000nM_24h	-0.0615332499	0.0436797948	
## HCT.15_lapatinib_10000nM_24h	-0.0560327151	-0.0131827278	
## HOP.62_lapatinib_10000nM_24h	-0.1365817835	0.1335373411	
## HOP.92_lapatinib_10000nM_24h	0.0757364706	-0.1541702941	
## HS.578T_lapatinib_10000nM_24h	0.2012952014	0.0948324877	
## IGR.OV1_lapatinib_10000nM_24h	-0.0411443716	0.0366519543	
## KM12_lapatinib_10000nM_24h	-0.0773293060	-0.0238112765	
## M14_lapatinib_10000nM_24h	0.0113724883	0.2167907830	

## MALME.3M_lapatinib_10000nM_24h	0.0602301500	0.0679985770	
## MCF7_lapatinib_10000nM_24h	-0.2650648566	0.0382532487	
## MDA.MB.231_lapatinib_10000nM_24h	-0.0312800024	0.0155736256	
## MDA.MB.435_lapatinib_10000nM_24h	0.0497417612	-0.1221198489	
## MDA.MB.468_lapatinib_10000nM_24h	-0.0038590152	0.0807915865	
## MOLT.4_lapatinib_10000nM_24h	-0.0533135704	0.0152507423	
## NCI.ADR.RES_lapatinib_10000nM_24h	0.1045312883	0.2098175866	
## NCI.H226_lapatinib_10000nM_24h	0.1976368394	0.1398469537	
## NCI.H23_lapatinib_10000nM_24h	0.2655779943	-0.0612070750	
## NCI.H322M_lapatinib_10000nM_24h	0.0348371996	0.1788108269	
## NCI.H460_lapatinib_10000nM_24h	-0.0306037804	-0.0424732680	
## NCI.H522_lapatinib_10000nM_24h	0.0168184411	0.0391632661	
## OVCAR.3_lapatinib_10000nM_24h	-0.0286764977	0.0809214721	
## OVCAR.4_lapatinib_10000nM_24h	0.0613169130	0.0129977232	
## OVCAR.5_lapatinib_10000nM_24h	0.0260766721	0.0817004520	
## OVCAR.8_lapatinib_10000nM_24h	0.0329918185	-0.0359783216	
## PC.3_lapatinib_10000nM_24h	0.1390751213	-0.1606234729	
## RPMI.8226_lapatinib_10000nM_24h	0.1661591321	0.0619295378	
## RXF.393_lapatinib_10000nM_24h	-0.2002880202	-0.0415309584	
## SF.268_lapatinib_10000nM_24h	0.0124271909	-0.1344346679	
## SF.295_lapatinib_10000nM_24h	-0.1394019875	-0.1120833198	
## SF.539_lapatinib_10000nM_24h	0.1252241790	-0.0367040919	
## SK.MEL.2_lapatinib_10000nM_24h	-0.1297348604	-0.0194879829	
## SK.MEL.28_lapatinib_10000nM_24h	-0.0556631599	-0.2810863817	
## SK.MEL.5_lapatinib_10000nM_24h	-0.0702091046	-0.2086530100	
## SK.OV.3_lapatinib_10000nM_24h	0.2625382243	-0.2646842912	
## SN12C_lapatinib_10000nM_24h	-0.4113086223	-0.1062010594	
## SNB.19_lapatinib_10000nM_24h	-0.3664118084	0.2067479117	
## SNB.75_lapatinib_10000nM_24h	-0.0122482883	-0.1535643027	
## SW.620_lapatinib_10000nM_24h	0.0897113169	-0.1184548809	
## T.47D_lapatinib_10000nM_24h	-0.1323612527	-0.1149257531	
## TK.10_lapatinib_10000nM_24h	-0.1510406688	0.0074225574	
## U251_lapatinib_10000nM_24h	0.2471410951	-0.0060435193	
## UACC.257_lapatinib_10000nM_24h	0.0120259009	-0.0178432100	
## UACC.62_lapatinib_10000nM_24h	0.0408831216	0.4969449717	
## UO.31_lapatinib_10000nM_24h	0.1912849948	0.1651361166	
##	PC45	PC46	PC47
## X786.0_lapatinib_10000nM_24h	-0.0804970984	-0.2324149475	0.002437329
## A498_lapatinib_10000nM_24h	0.0142751742	0.0853500813	0.024557616
## A549_lapatinib_10000nM_24h	-0.0797632137	0.0351362651	-0.080332708
## ACHN_lapatinib_10000nM_24h	-0.0911087410	0.0211217977	0.019423482
## BT.549_lapatinib_10000nM_24h	-0.0038374601	-0.0370409038	-0.036735125
## CAKI.1_lapatinib_10000nM_24h	0.0084278021	-0.0968073848	0.038588615
## COLO.205_lapatinib_10000nM_24h	0.1166608464	-0.0332623055	0.003604343
## DU.145_lapatinib_10000nM_24h	0.1157652483	0.1507710686	-0.373532929
## EKVX_lapatinib_10000nM_24h	-0.0089271925	0.0024452482	0.182330626
## HCC.2998_lapatinib_10000nM_24h	-0.0452746345	-0.0499132997	-0.030831154
## HCT.116_lapatinib_10000nM_24h	-0.0362873891	-0.1054319693	-0.055702428
## HCT.15_lapatinib_10000nM_24h	0.0625504581	-0.0715569700	0.045570200
## HOP.62_lapatinib_10000nM_24h	-0.2712491099	-0.1871160266	-0.070807630
## HOP.92_lapatinib_10000nM_24h	0.0459763737	-0.0561279774	0.070816181
## HS.578T_lapatinib_10000nM_24h	-0.0308363407	0.1391849347	0.135840299
## IGR.OV1_lapatinib_10000nM_24h	-0.0584421990	0.0209913842	0.003809042
## KM12_lapatinib_10000nM_24h	-0.0164510857	0.0134245636	-0.014478370
## M14_lapatinib_10000nM_24h	0.1309652521	0.0621251825	-0.246233539
## MALME.3M_lapatinib_10000nM_24h	0.0669109782	0.1488311989	0.037050332
## MCF7_lapatinib_10000nM_24h	0.1702890525	-0.2095867643	0.190494545
## MDA.MB.231_lapatinib_10000nM_24h	-0.0212661456	-0.0592251289	0.095086610
## MDA.MB.435_lapatinib_10000nM_24h	-0.0457291859	0.0428088344	0.007758865
## MDA.MB.468_lapatinib_10000nM_24h	0.0820054584	-0.0007878638	-0.043301121
## MOLT.4_lapatinib_10000nM_24h	-0.0524389898	-0.0608192765	-0.042640120
## NCI.ADR.RES_lapatinib_10000nM_24h	0.0962706572	-0.0430092035	-0.148159187
## NCI.H226_lapatinib_10000nM_24h	-0.1118728245	-0.0502631929	-0.132258159
## NCI.H23_lapatinib_10000nM_24h	-0.0217220871	-0.0036891030	-0.019822406
## NCI.H322M_lapatinib_10000nM_24h	-0.1851791690	-0.0548364397	0.397331872
## NCI.H460_lapatinib_10000nM_24h	0.0221683559	0.0269644109	0.101622313
## NCI.H522_lapatinib_10000nM_24h	0.1134483700	0.0108895380	0.076968096
## OVCAR.3_lapatinib_10000nM_24h	-0.0092669530	-0.0304568979	-0.056216929
## OVCAR.4_lapatinib_10000nM_24h	0.1824501619	-0.0034053420	0.221625545
## OVCAR.5_lapatinib_10000nM_24h	0.1074563670	0.1698728127	-0.190817609
## OVCAR.8_lapatinib_10000nM_24h	-0.2597345130	-0.0274907505	0.257788947
## PC.3_lapatinib_10000nM_24h	0.1032671238	0.4511118919	0.293461330
## RPMI.8226_lapatinib_10000nM_24h	0.1437242177	0.0813243150	0.034627587

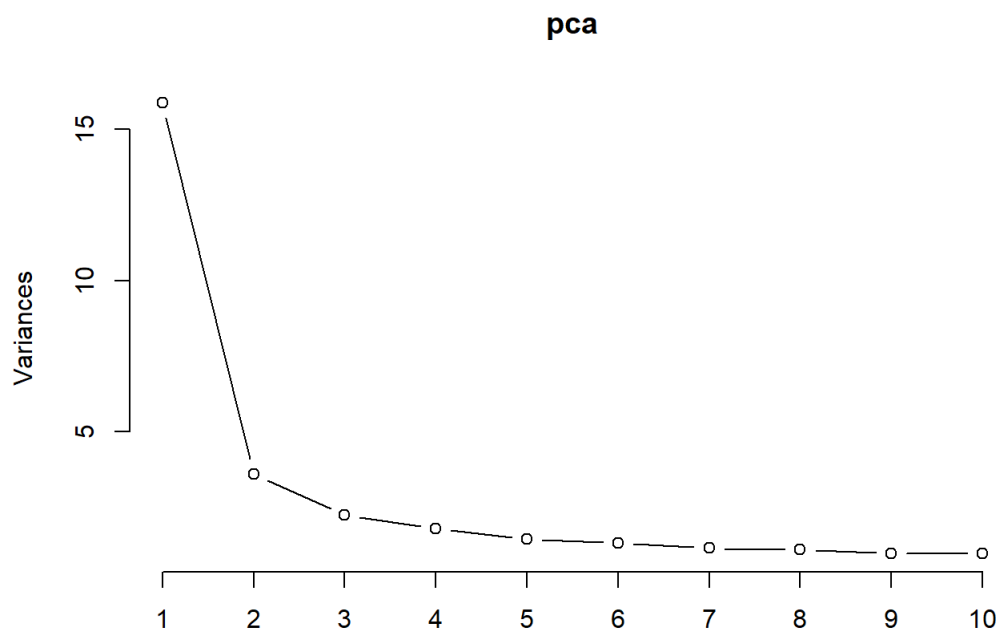
## RXF.393_lapatinib_10000nM_24h	0.1124672169	0.1346663443	-0.196499353
## SF.268_lapatinib_10000nM_24h	0.0430235008	-0.0728238499	0.019112231
## SF.295_lapatinib_10000nM_24h	0.1192695197	-0.0628629486	-0.012545321
## SF.539_lapatinib_10000nM_24h	-0.1182241563	-0.0595539063	0.081322711
## SK.MEL.2_lapatinib_10000nM_24h	-0.0042733891	0.0609717995	0.120261382
## SK.MEL.28_lapatinib_10000nM_24h	-0.1807602817	-0.2389662058	0.001142324
## SK.MEL.5_lapatinib_10000nM_24h	-0.0459814916	0.1683767895	-0.005848647
## SK.OV.3_lapatinib_10000nM_24h	0.2842176315	-0.2444653684	-0.137965377
## SN12C_lapatinib_10000nM_24h	0.3227121573	-0.0195677493	0.080484901
## SNB.19_lapatinib_10000nM_24h	-0.1279872629	0.2995238581	-0.006252279
## SNB.75_lapatinib_10000nM_24h	0.1504369631	-0.0057241417	-0.050199418
## SW.620_lapatinib_10000nM_24h	-0.1690168364	0.0670811943	-0.175821459
## T.47D_lapatinib_10000nM_24h	-0.4310452841	0.0572355382	-0.289629380
## TK.10_lapatinib_10000nM_24h	-0.1235144623	-0.1582219378	-0.020153253
## U251_lapatinib_10000nM_24h	-0.0649935994	-0.1841353861	0.006293733
## UACC.257_lapatinib_10000nM_24h	0.0002036035	-0.0578993831	0.050260970
## UACC.62_lapatinib_10000nM_24h	0.2093395686	-0.2523475123	-0.086827256
## UO.31_lapatinib_10000nM_24h	-0.0921917303	0.3064456772	-0.031066125
##	PC48	PC49	PC50
## X786.0_lapatinib_10000nM_24h	0.301056186	-2.139032e-01	0.1150069061
## A498_lapatinib_10000nM_24h	-0.061970293	4.529253e-02	0.0625045090
## A549_lapatinib_10000nM_24h	-0.024184676	-5.147349e-02	-0.0700184174
## ACHN_lapatinib_10000nM_24h	-0.2434440402	1.976344e-02	0.2986345343
## BT.549_lapatinib_10000nM_24h	0.014795830	4.714987e-02	0.0654297670
## CAKI.1_lapatinib_10000nM_24h	-0.200945471	2.265134e-02	0.3002473308
## COLO.205_lapatinib_10000nM_24h	0.033335370	-6.073168e-02	-0.0473794335
## DU.145_lapatinib_10000nM_24h	0.174190526	-3.077274e-02	0.0861242821
## EKVX_lapatinib_10000nM_24h	-0.098143803	-3.475883e-02	-0.0996431686
## HCC.2998_lapatinib_10000nM_24h	0.066361149	7.713165e-02	-0.0400615041
## HCT.116_lapatinib_10000nM_24h	0.056454388	-5.087132e-02	-0.0079267788
## HCT.15_lapatinib_10000nM_24h	-0.071147209	-3.243935e-02	0.0965883956
## HOP.62_lapatinib_10000nM_24h	-0.106977883	1.576823e-01	0.0630038429
## HOP.92_lapatinib_10000nM_24h	0.014835825	-7.056272e-02	-0.0008172164
## HS.578T_lapatinib_10000nM_24h	-0.006855087	-1.277036e-01	0.0481543152
## IGR.OV1_lapatinib_10000nM_24h	0.023894773	3.764005e-03	-0.0305153686
## KM12_lapatinib_10000nM_24h	-0.023720317	1.214555e-02	0.0207495066
## M14_lapatinib_10000nM_24h	-0.176051170	-5.017579e-01	-0.3907096996
## MALME.3M_lapatinib_10000nM_24h	0.039312173	3.265782e-02	0.0841374668
## MCF7_lapatinib_10000nM_24h	-0.047373323	-8.376293e-02	0.0683775613
## MDA.MB.231_lapatinib_10000nM_24h	0.048006839	3.924392e-03	0.0676723075
## MDA.MB.435_lapatinib_10000nM_24h	0.003573780	6.914775e-02	0.0962695598
## MDA.MB.468_lapatinib_10000nM_24h	-0.105649672	-9.819318e-03	0.0691550903
## MOLT.4_lapatinib_10000nM_24h	0.047405501	4.352811e-02	0.0614119323
## NCI.ADR.RES_lapatinib_10000nM_24h	-0.043741502	4.244750e-01	-0.1538414496
## NCI.H226_lapatinib_10000nM_24h	-0.029802541	-2.205460e-02	-0.0571903820
## NCI.H23_lapatinib_10000nM_24h	0.035794931	-4.906337e-02	0.0043619590
## NCI.H322M_lapatinib_10000nM_24h	0.083559593	8.555849e-02	-0.0517985753
## NCI.H460_lapatinib_10000nM_24h	-0.005732559	2.854390e-02	0.0288421971
## NCI.H522_lapatinib_10000nM_24h	-0.037709301	-6.524990e-02	-0.0280377397
## OVCAR.3_lapatinib_10000nM_24h	0.003467300	-3.057572e-02	-0.0045097665
## OVCAR.4_lapatinib_10000nM_24h	-0.078873561	1.769863e-01	-0.0369114283
## OVCAR.5_lapatinib_10000nM_24h	-0.070845932	6.475799e-05	0.1321488289
## OVCAR.8_lapatinib_10000nM_24h	-0.082821366	4.260150e-01	0.1074136366
## PC.3_lapatinib_10000nM_24h	0.111655220	1.385769e-01	-0.1586289658
## RPMI.8226_lapatinib_10000nM_24h	-0.008399195	-1.018274e-03	-0.0679318694
## RXF.393_lapatinib_10000nM_24h	-0.424641425	1.116743e-01	0.0089841508
## SF.268_lapatinib_10000nM_24h	-0.123410761	-6.388487e-03	-0.0437309652
## SF.295_lapatinib_10000nM_24h	-0.075310911	-1.209760e-02	-0.0350152024
## SF.539_lapatinib_10000nM_24h	-0.081423138	5.212403e-02	-0.1626727692
## SK.MEL.2_lapatinib_10000nM_24h	0.046990149	-1.970779e-02	0.0107720840
## SK.MEL.28_lapatinib_10000nM_24h	0.131357158	2.170935e-01	-0.0550341228
## SK.MEL.5_lapatinib_10000nM_24h	0.045955543	1.409765e-01	0.0296464967
## SK.OV.3_lapatinib_10000nM_24h	0.345279841	-1.219297e-01	-0.0132984897
## SN12C_lapatinib_10000nM_24h	0.039941022	9.686589e-03	-0.0807927948
## SNB.19_lapatinib_10000nM_24h	0.407231066	-1.003229e-01	0.1114170424
## SNB.75_lapatinib_10000nM_24h	0.144906667	-1.787349e-02	0.0539442184
## SW.620_lapatinib_10000nM_24h	-0.093906410	5.562547e-02	0.0265072864
## T.47D_lapatinib_10000nM_24h	0.033402175	-3.157584e-02	-0.0010624688
## TK.10_lapatinib_10000nM_24h	0.130824169	1.746092e-01	-0.5520541963
## U251_lapatinib_10000nM_24h	-0.111134947	2.478744e-02	-0.0736939832
## UACC.257_lapatinib_10000nM_24h	-0.199557836	-1.405973e-01	-0.0802298771
## UACC.62_lapatinib_10000nM_24h	0.126829368	1.426651e-01	0.3180726312
##			



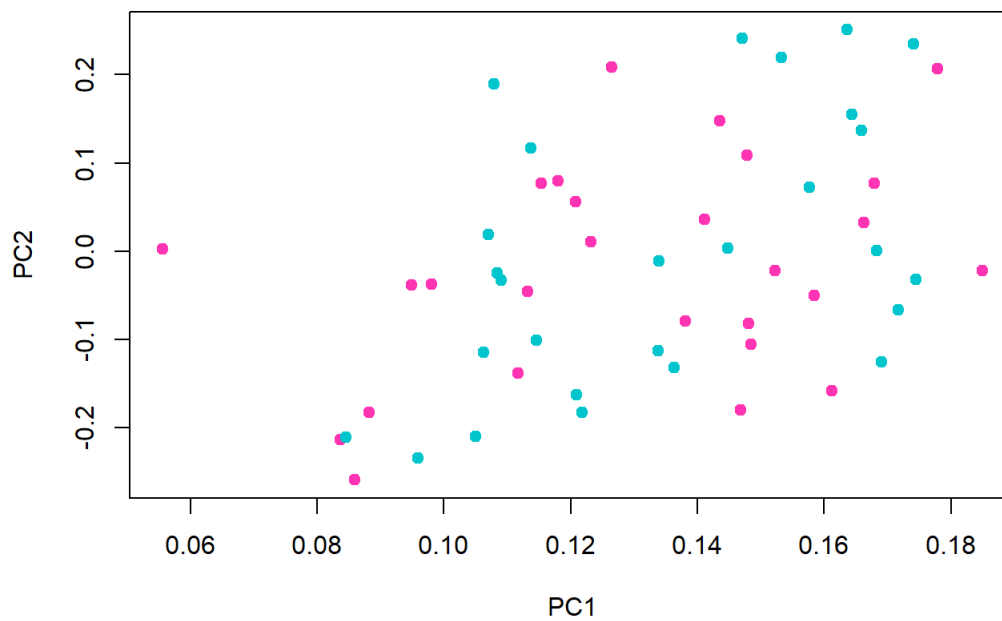
## UO.31_lapatinib_10000nM_24h	0.111497503	7.871090e-02	0.0603716420
##	PC51	PC52	PC53
## X786.0_lapatinib_10000nM_24h	0.457385695	-0.0086776738	0.1167275110
## A498_lapatinib_10000nM_24h	-0.016122737	0.0190569517	0.0002040530
## A549_lapatinib_10000nM_24h	-0.096614089	-0.0091453598	-0.1775351812
## ACHN_lapatinib_10000nM_24h	0.181816419	-0.1396736727	-0.1198716498
## BT.549_lapatinib_10000nM_24h	-0.011434796	0.0104496058	-0.0230833714
## CAKI.1_lapatinib_10000nM_24h	0.260928507	-0.1909255857	0.0519139960
## COLO.205_lapatinib_10000nM_24h	0.013090562	0.0267913744	0.0333855531
## DU.145_lapatinib_10000nM_24h	-0.036711299	0.0701160608	-0.0348792185
## EKVX_lapatinib_10000nM_24h	-0.121516541	0.2707676495	0.7814951125
## HCC.2998_lapatinib_10000nM_24h	-0.009122230	0.0058249222	-0.0088101033
## HCT.116_lapatinib_10000nM_24h	-0.061083729	-0.0003177212	-0.0129055051
## HCT.15_lapatinib_10000nM_24h	0.051472291	0.0074100183	0.0291139401
## HOP.62_lapatinib_10000nM_24h	0.106156040	0.0367937449	0.0683037354
## HOP.92_lapatinib_10000nM_24h	-0.081053804	0.0090714516	0.0185707850
## HS.578T_lapatinib_10000nM_24h	-0.037646131	0.0536566925	-0.0164536410
## IGR.OV1_lapatinib_10000nM_24h	0.016615124	0.0436143686	-0.0216341051
## KM12_lapatinib_10000nM_24h	0.032001778	-0.0102650070	0.0209205886
## M14_lapatinib_10000nM_24h	0.175233419	-0.3997348785	0.0173431884
## MALME.3M_lapatinib_10000nM_24h	-0.038160606	-0.0658973322	0.1181402503
## MCF7_lapatinib_10000nM_24h	-0.090160124	-0.0514566234	-0.0708883738
## MDA.MB.231_lapatinib_10000nM_24h	-0.072241578	0.0304356057	-0.0250594441
## MDA.MB.435_lapatinib_10000nM_24h	-0.051136402	0.1057036317	0.0030273010
## MDA.MB.468_lapatinib_10000nM_24h	0.169589083	-0.0039518394	0.0398131818
## MOLT.4_lapatinib_10000nM_24h	-0.029609090	0.0222420888	-0.0129570202
## NCI.ADR.RES_lapatinib_10000nM_24h	0.249319781	0.0387792918	0.0779879995
## NCI.H226_lapatinib_10000nM_24h	0.076279041	0.0188045630	-0.0100104712
## NCI.H23_lapatinib_10000nM_24h	0.020658117	-0.0504227441	0.0555467299
## NCI.H322M_lapatinib_10000nM_24h	-0.034090195	-0.1758811682	-0.3426769653
## NCI.H460_lapatinib_10000nM_24h	0.015715364	0.0248302145	0.0055145476
## NCI.H522_lapatinib_10000nM_24h	-0.011216452	0.0137773382	-0.0122087790
## OVCAR.3_lapatinib_10000nM_24h	0.032218812	0.0457471746	-0.0232295171
## OVCAR.4_lapatinib_10000nM_24h	0.031301337	-0.1823537862	-0.0652437856
## OVCAR.5_lapatinib_10000nM_24h	-0.015561718	0.0450373641	-0.0013430490
## OVCAR.8_lapatinib_10000nM_24h	-0.322981666	-0.0566751459	0.0190085381
## PC.3_lapatinib_10000nM_24h	0.202529000	-0.0779223904	-0.0223184003
## RPMI.8226_lapatinib_10000nM_24h	-0.042807272	0.0106699725	0.0643010164
## RXF.393_lapatinib_10000nM_24h	-0.339625509	-0.0490143817	-0.0864167712
## SF.268_lapatinib_10000nM_24h	-0.015896921	-0.0306199138	0.0386484054
## SF.295_lapatinib_10000nM_24h	0.060476540	-0.0468604636	-0.0083888768
## SF.539_lapatinib_10000nM_24h	-0.051538008	0.0022498246	-0.0046379848
## SK.MEL.2_lapatinib_10000nM_24h	0.025440067	0.0269852567	-0.0110181982
## SK.MEL.28_lapatinib_10000nM_24h	-0.055901576	-0.2397244835	0.1028030560
## SK.MEL.5_lapatinib_10000nM_24h	-0.050079359	-0.0102956117	0.0344151009
## SK.OV.3_lapatinib_10000nM_24h	-0.251937983	0.0718945075	-0.0875914853
## SN12C_lapatinib_10000nM_24h	0.015766935	0.0237606215	-0.0473768709
## SNB.19_lapatinib_10000nM_24h	0.041264199	0.0179013606	-0.0038962064
## SNB.75_lapatinib_10000nM_24h	0.024602273	0.0012748055	-0.0024417689
## SW.620_lapatinib_10000nM_24h	-0.082366283	-0.0625260628	0.0121446693
## T.47D_lapatinib_10000nM_24h	-0.005621306	0.0067255966	-0.0006339446
## TK.10_lapatinib_10000nM_24h	-0.093696061	0.0049018532	-0.0769476477
## U251_lapatinib_10000nM_24h	-0.091779034	0.0465657328	-0.0325572301
## UACC.257_lapatinib_10000nM_24h	0.214110905	0.7183306377	-0.3417573753
## UACC.62_lapatinib_10000nM_24h	-0.209284222	-0.0501225660	-0.0201220993
## UO.31_lapatinib_10000nM_24h	-0.177801501	0.0344871555	-0.0581109516
##	PC54		
## X786.0_lapatinib_10000nM_24h	-0.0578561047		
## A498_lapatinib_10000nM_24h	-0.0110164888		
## A549_lapatinib_10000nM_24h	0.0401888057		
## ACHN_lapatinib_10000nM_24h	-0.6845788060		
## BT.549_lapatinib_10000nM_24h	0.0245644277		
## CAKI.1_lapatinib_10000nM_24h	0.6776582341		
## COLO.205_lapatinib_10000nM_24h	-0.0340403796		
## DU.145_lapatinib_10000nM_24h	0.0789674666		
## EKVX_lapatinib_10000nM_24h	-0.0801328577		
## HCC.2998_lapatinib_10000nM_24h	0.0146711084		
## HCT.116_lapatinib_10000nM_24h	0.0232953623		
## HCT.15_lapatinib_10000nM_24h	-0.0037578155		
## HOP.62_lapatinib_10000nM_24h	0.0044668444		
## HOP.92_lapatinib_10000nM_24h	-0.0787841440		
## HS.578T_lapatinib_10000nM_24h	-0.0191302774		
## IGR.OV1_lapatinib_10000nM_24h	0.0015719574		

```
## KM12_lapatinib_10000nM_24h      0.0013525199
## M14_lapatinib_10000nM_24h      -0.0423975972
## MALME.3M_lapatinib_10000nM_24h -0.0063540754
## MCF7_lapatinib_10000nM_24h      -0.0112204176
## MDA.MB.231_lapatinib_10000nM_24h 0.0036065198
## MDA.MB.435_lapatinib_10000nM_24h -0.0232946937
## MDA.MB.468_lapatinib_10000nM_24h 0.0008740099
## MOLT.4_lapatinib_10000nM_24h     -0.0208173715
## NCI.ADR.RES_lapatinib_10000nM_24h -0.0784912792
## NCI.H226_lapatinib_10000nM_24h   0.0180308591
## NCI.H23_lapatinib_10000nM_24h    -0.0065313060
## NCI.H322M_lapatinib_10000nM_24h  -0.0114855660
## NCI.H460_lapatinib_10000nM_24h   -0.0006286141
## NCI.H522_lapatinib_10000nM_24h   0.0241876931
## OVCAR.3_lapatinib_10000nM_24h    -0.0269566912
## OVCAR.4_lapatinib_10000nM_24h    0.0127438667
## OVCAR.5_lapatinib_10000nM_24h    -0.0432028171
## OVCAR.8_lapatinib_10000nM_24h    0.0778639171
## PC.3_lapatinib_10000nM_24h       0.0550183682
## RPMI.8226_lapatinib_10000nM_24h  -0.0113710383
## RXF.393_lapatinib_10000nM_24h    0.0475309838
## SF.268_lapatinib_10000nM_24h     -0.0066624335
## SF.295_lapatinib_10000nM_24h     -0.0141220754
## SF.539_lapatinib_10000nM_24h     -0.0042779523
## SK.MEL.2_lapatinib_10000nM_24h   -0.0249739420
## SK.MEL.28_lapatinib_10000nM_24h  -0.0287025480
## SK.MEL.5_lapatinib_10000nM_24h   0.0318244373
## SK.OV.3_lapatinib_10000nM_24h    -0.0653614206
## SN12C_lapatinib_10000nM_24h      -0.0006065495
## SNB.19_lapatinib_10000nM_24h     0.0078157906
## SNB.75_lapatinib_10000nM_24h     -0.0263211271
## SW.620_lapatinib_10000nM_24h     0.0229526384
## T.47D_lapatinib_10000nM_24h      0.0384889489
## TK.10_lapatinib_10000nM_24h      0.0563192683
## U251_lapatinib_10000nM_24h       -0.0334998560
## UACC.257_lapatinib_10000nM_24h   0.0749465271
## UACC.62_lapatinib_10000nM_24h    0.0166241656
## UO.31_lapatinib_10000nM_24h      0.0296797854
```

```
plot(pca, type = "l") #First two componets explain most of the variability in the data
```



```
plot(pca$rotation[, 1], pca$rotation[, 2], col = c("maroon1", "turquoise3"), pch = 19, xlab = "PC1", ylab = "PC2")
```



## PCA

```
L_fc <- select(Fold_Change, contains("Lapa"))
```

```
# PCA
```

```
pca <- prcomp(t(L_fc), scale = TRUE)
```

```
pca.var <- pca$sdev^2 # sdev calculates variation each PC accounts for
```

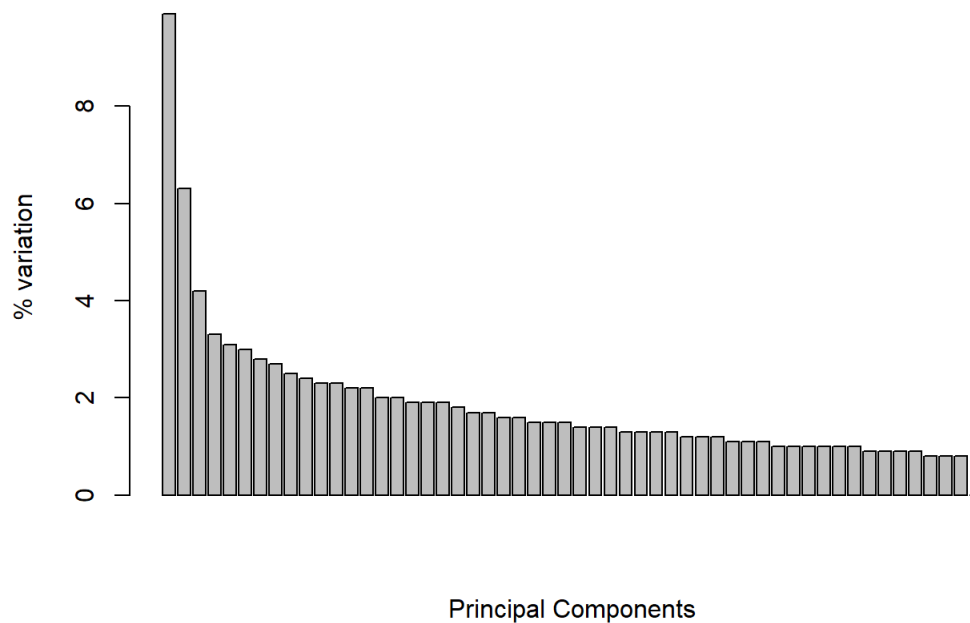
```
pca.var.per <- round(pca.var/sum(pca.var)*100, 1)
```

```
# since percentages make more sense then normal variation values
```

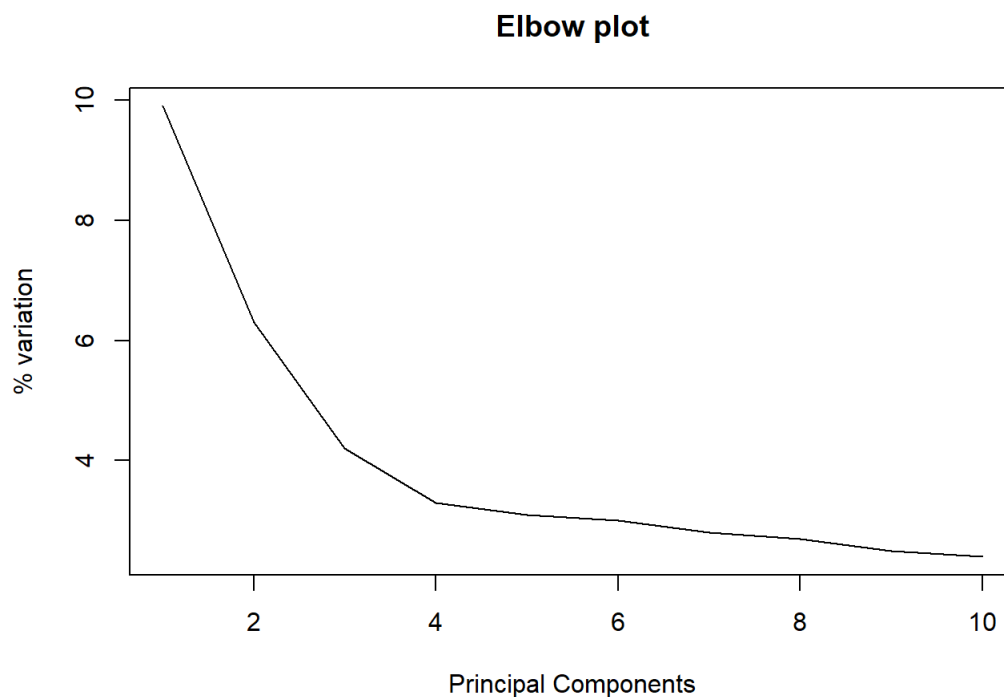
```
# calculate % or variation, which is much more interesting
```

```
barplot(pca.var.per, main = "Scree plot", xlab = "Principal Components", ylab = "% variation")
```

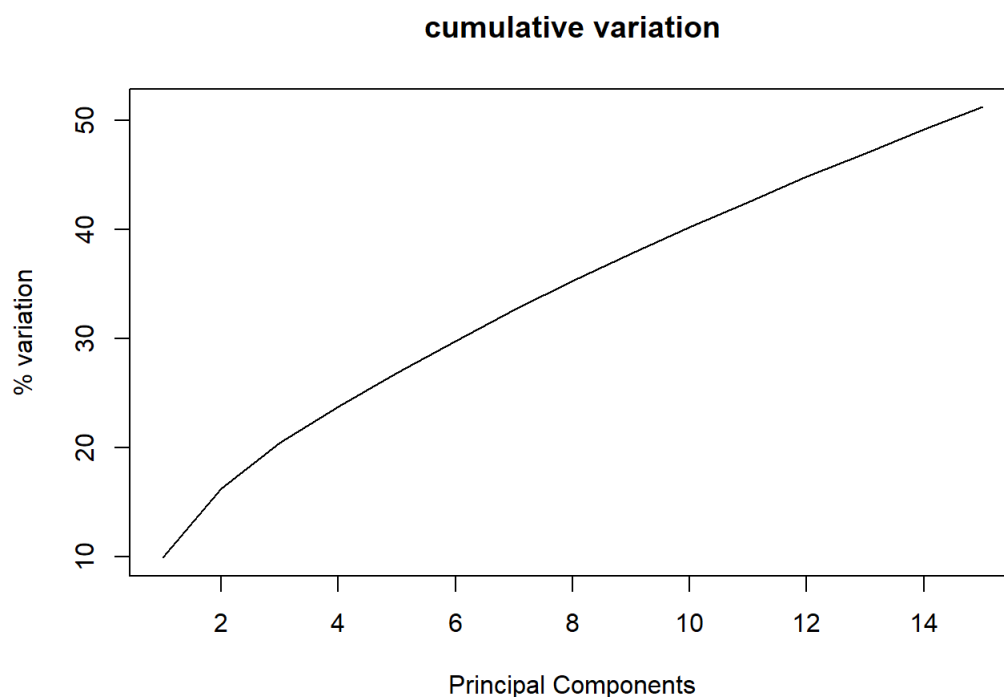
### Scree plot



```
plot(pca.var.per[1:10], main = "Elbow plot", type = "l", xlab = "Principal Components", ylab = "% variation")
```



```
plot(cumsum(pca.var.per[1:15]), main = "cumulative variation", type = "l", xlab = "Principal Components", ylab = "% variation")
```



```
pca.data <- data.frame(pca$x)
rownames(pca.data) <- gsub(x = rownames(pca.data), pattern = "X786", replacement = "786")
pca.data <- cbind(sample = rownames(pca.data), pca.data)
```

```
## get names of top 10 genes that contribute most to pc1
loading_scores_1 <- pca$rotation[,1]

gene_score <- abs(loading_scores_1) ## sort magnitude
gene_score_ranked <- sort(gene_score, decreasing = TRUE)

top_10_genes <- names(gene_score_ranked[1:10])
top_10_genes # show names of top 10 genes
```

```
## [1] "MIR3658//UCK2"      "EIF2S1"
## [3] "NOP16"              "UCHL5"
## [5] "HSPD1"              "ITM2B"
## [7] "MIR664B//SNORA56//DKC1" "KLHDC2"
## [9] "NXT1"               "PNO1"
```

```
### Metadata matrix for coloring
Metadata$sample <- gsub(x = Metadata$sample, pattern = "-", replacement = ".")
metad.cl <- subset(Metadata, sample %in% intersect(Metadata$sample, pca.data$sample))
metad.cl$msi <- Cellline_Annotation$Microsatellite_instability_status[match(metad.cl$cell, Cellline_Annotation$Cell_Line_Name)]
metad.cl$inoculation_d <- Cellline_Annotation$Inoculation_Density[match(metad.cl$cell, Cellline_Annotation$Cell_Line_Name)]
metad.cl$doubling_time <- Cellline_Annotation$Doubling_Time[match(metad.cl$cell, Cellline_Annotation$Cell_Line_Name)]
metad.cl$cancer_type <- Cellline_Annotation$Cancer_type[match(metad.cl$cell, Cellline_Annotation$Cell_Line_Name)]
```

```
#color vectors for coloring by msi and tissue
colormsi <- brewer.pal(3, "Set1")
color_msi = colormsi[metad.cl$msi]
msi <- levels(metad.cl$msi)

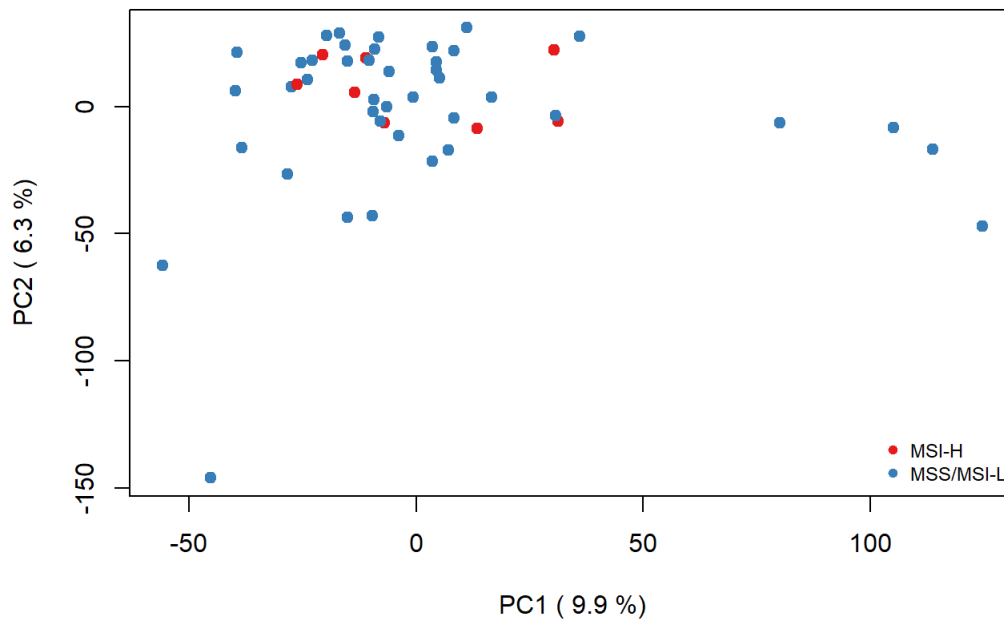
magma <- magma(9)
color_tissue = magma[metad.cl$tissue]
tissue <- levels(metad.cl$tissue)

## colored by msi
#plot PC1 and PC2
plot(pca$x[,1],
     pca$x[,2],
     col = color_msi,
     pch = 19,
     xlab = paste("PC1 (",pca.var.per[1],"%)"),
     ylab = paste("PC2 (",pca.var.per[2],"%)"))
#create legend
legend("bottomright",
      legend = msi,
      col = colormsi,
      pch = 19,
      xpd = "TRUE",
      bty = "n",
      cex = 0.75
)
```

```
## Warning in par(xpd = xpd): NAs durch Umwandlung erzeugt
```

```
#create title
mtext("PCA of Fold Change colored by MSI",
      side = 3,
      line = -2,
      cex = 1.2,
      font = 2,
      outer = TRUE)
```

## PCA of Fold Change colored by MSI

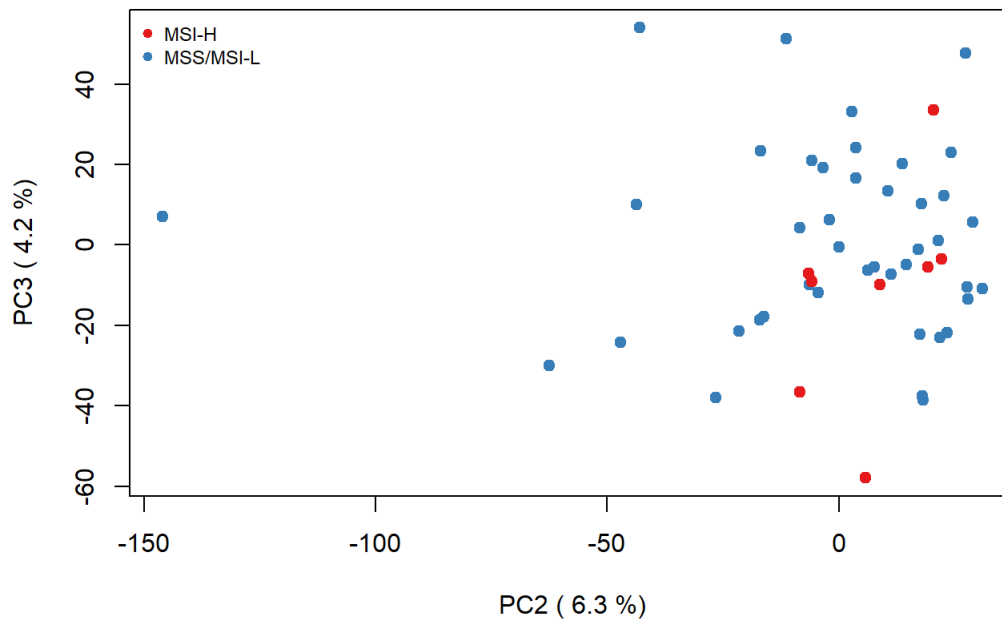


```
#plot PC2 and PC3
plot(pca$x[,2],
     pca$x[,3],
     col = color_msi,
     pch = 19,
     xlab = paste("PC2 (",pca.var.per[2],"%)",
     ylab = paste("PC3 (",pca.var.per[3],"%)",
#create legend
legend("topleft",
      legend = msi,
      col = colormsi,
      pch = 19,
      xpd = "TRUE",
      bty = "n",
      cex = 0.75
)
```

```
## Warning in par(xpd = xpd): NAs durch Umwandlung erzeugt
```

```
#create title
mtext("PCA of Fold Change colored by MSI",
      side = 3,
      line = -2,
      cex = 1.2,
      font = 2,
      outer = TRUE)
```

## PCA of Fold Change colored by MSI

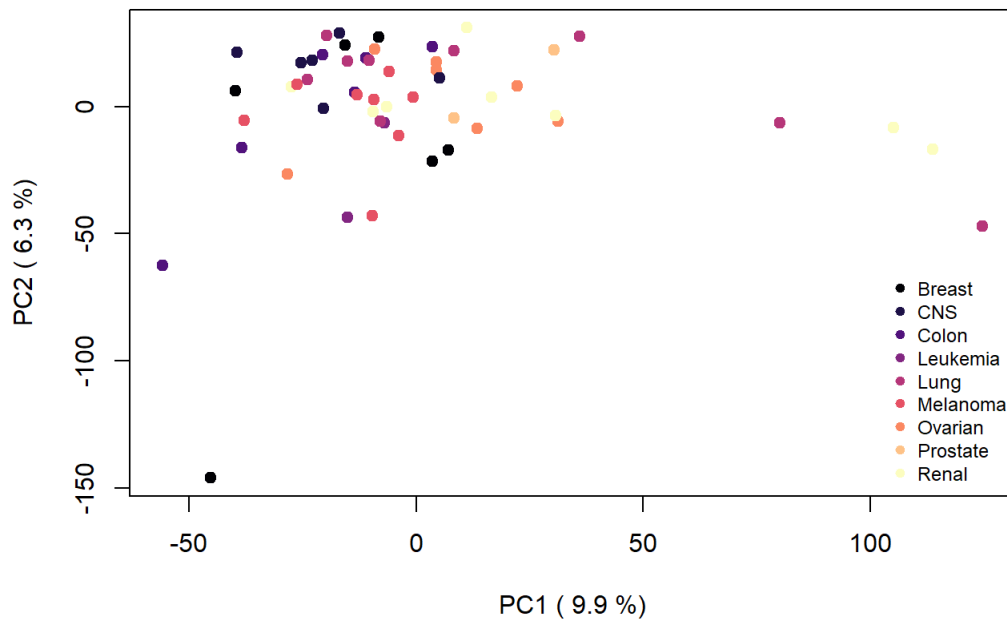


```
##colored by tissue
#plot PC1 and PC2
plot(pca$x[,1],
     pca$x[,2],
     col = color_tissue,
     pch = 19,
     xlab = paste("PC1 (",pca.var.per[1],"%)" ),
     ylab = paste("PC2 (",pca.var.per[2],"%)" ))
#create legend
legend("bottomright",
      legend = tissue,
      col = magma,
      pch = 19,
      xpd = "TRUE",
      bty = "n",
      cex = 0.75
)
```

```
## Warning in par(xpd = xpd): NAs durch Umwandlung erzeugt
```

```
#create title
mtext("PCA of Fold Change colored by tissue",
      side = 3,
      line = -2,
      cex = 1.2,
      font = 2,
      outer = TRUE)
```

## PCA of Fold Change colored by tissue



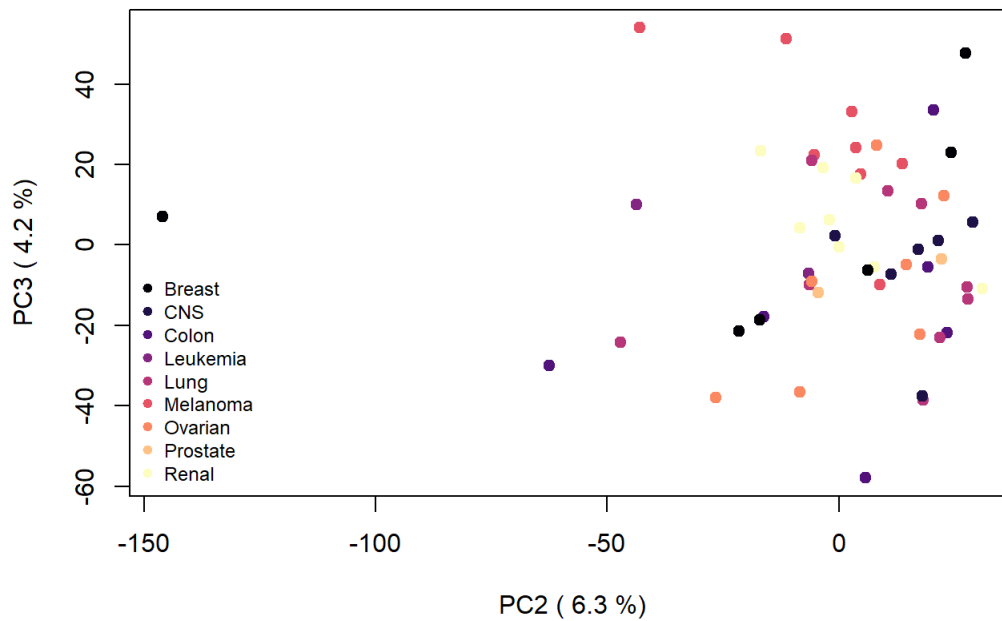
```
#plot PC2 and PC3
plot(pca$x[,2],
     pca$x[,3],
     col = color_tissue,
     pch = 19,
     xlab = paste("PC2 (",pca.var.per[2],"%)",
     ylab = paste("PC3 (",pca.var.per[3],"%)",
#create legend
legend("bottomleft",
      legend = tissue,
      col = magma,
      pch = 19,
      xpd = "TRUE",
      bty = "n",
      cex = 0.75
)
```

```
## Warning in par(xpd = xpd): NAs durch Umwandlung erzeugt
```

```
#create title
mtext("PCA of Fold Change colored by tissue",
      side = 3,
      line = -2,
      cex = 1.2,
      font = 2,
      outer = TRUE)
```



## PCA of Fold Change colored by tissue



## pearson and spearman correlation

```
# Pearson correlation
cor(Cellline_Annotation$Doubling_Time, Cellline_Annotation$Inoculation_Density, method = "pearson")
```

```
## [1] 0.3209821
```

```
# Spearman correlation
cor(Cellline_Annotation$Doubling_Time, Cellline_Annotation$Inoculation_Density, method = "spearman")
```

```
## [1] 0.5674381
```

## higher value with spearman method

```
plot(Cellline_Annotation$Doubling_Time, Cellline_Annotation$Inoculation_Density, pch= 16, col= "blue", ma
in = "Spearman correlation between Doubling Time and Inoculation Density", xlab = "Doubling Time", ylab =
"Inoculation Density")
lm(Cellline_Annotation$Inoculation_Density~ Cellline_Annotation$Doubling_Time)
```

```
##
## Call:
## lm(formula = Cellline_Annotation$Inoculation_Density ~ Cellline_Annotation$Doubling_Time)
##
## Coefficients:
##              (Intercept)  Cellline_Annotation$Doubling_Time
##                   9110.9                   169.4
```

```
abline(lm(Cellline_Annotation$Inoculation_Density ~ Cellline_Annotation$Doubling_Time), col = "red", lwd
= 2)
```

**Spearman correlation between Doubling Time and Inoculation Density**

