

clustering-2

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R Markdown

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When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
library(Biobase)

## Loading required package: BiocGenerics

##
## Attaching package: 'BiocGenerics'

## The following objects are masked from 'package:stats':
##       IQR, mad, sd, var, xtabs

## The following objects are masked from 'package:base':
##       anyDuplicated, aperm, append, as.data.frame, basename, cbind,
##       colnames, dirname, do.call, duplicated, eval, evalq, Filter, Find,
##       get, grep, grepl, intersect, is.unsorted, lapply, Map, mapply,
##       match, mget, order, paste, pmax, pmax.int, pmin, pmin.int,
##       Position, rank, rbind, Reduce, rownames, sapply, setdiff, sort,
##       table, tapply, union, unique, unsplit, which.max, which.min

## Welcome to Bioconductor
##
## Vignettes contain introductory material; view with
##   'browseVignettes()'. To cite Bioconductor, see
##   'citation("Biobase")', and for packages 'citation("pkgname")'.
```

```
library(dendextend)

##
## -----
## Welcome to dendextend version 1.17.1
## Type citation('dendextend') for how to cite the package.
```

```

## 
## Type browseVignettes(package = 'dendextend') for the package vignette.
## The github page is: https://github.com/talgalili/dendextend/
## 
## Suggestions and bug-reports can be submitted at: https://github.com/talgalili/dendextend/issues
## You may ask questions at stackoverflow, use the r and dendextend tags:
##   https://stackoverflow.com/questions/tagged/dendextend
## 
## To suppress this message use: suppressPackageStartupMessages(library(dendextend))
## -----
## 
## Attaching package: 'dendextend'

## The following object is masked from 'package:stats':
## 
##     cutree

```

Loading data

```

## [1] "con"           "edata"          "fdata"          "montpick.eset"
## [5] "pdata"

```

Clustering-2

```

set.seed(123)
edata2 = edata[rowMeans(edata) < 100,]

dist2 = dist(t(edata2))
dist2

```

	NA06985	NA06986	NA06994	NA07000	NA07037	NA07051	NA07346
## NA06986	1237.6716						
## NA06994	1209.8789	1084.3468					
## NA07000	1302.0995	1317.0505	1107.7220				
## NA07037	1338.2746	1277.9476	1283.7500	1160.1440			
## NA07051	1374.6403	1223.8901	1005.9259	1219.1583	1269.2923		
## NA07346	1211.5317	1241.0109	978.7369	1014.0404	1292.8016	1166.2140	
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## NA07357	1227.9169	1207.2858	1059.0737	1313.9189	1414.1800	1154.4315	1172.6487
## NA10847	1195.7579	1160.7213	791.3002	870.4734	1077.7950	983.8918	876.9287
## NA10851	1122.3097	1112.0737	901.4988	995.6927	1116.9064	996.5656	954.9670
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## NA11831	2085.4208	2012.3258	1919.2517	1895.8241	2024.0373	1797.3169	2029.3967
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## NA11881	1415.5868	1317.3568	1116.4887	1111.4455	1199.1234	1202.8358	1194.2918
## NA11894	1735.9654	1631.7852	1549.3757	1614.6074	1725.3849	1600.5168	1656.3994
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## NA11993 1818.9920 1819.0099 1678.4663 1648.4384 1839.1359 1856.9949 1711.7964
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## NA19137 2710.9126 2541.1761 2738.5668 2402.1074 2400.6033 2533.7141 2638.0766
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## NA12763  1108.8278 1171.0448 1001.7619  984.8751 2323.8427 1102.8613 1749.2953
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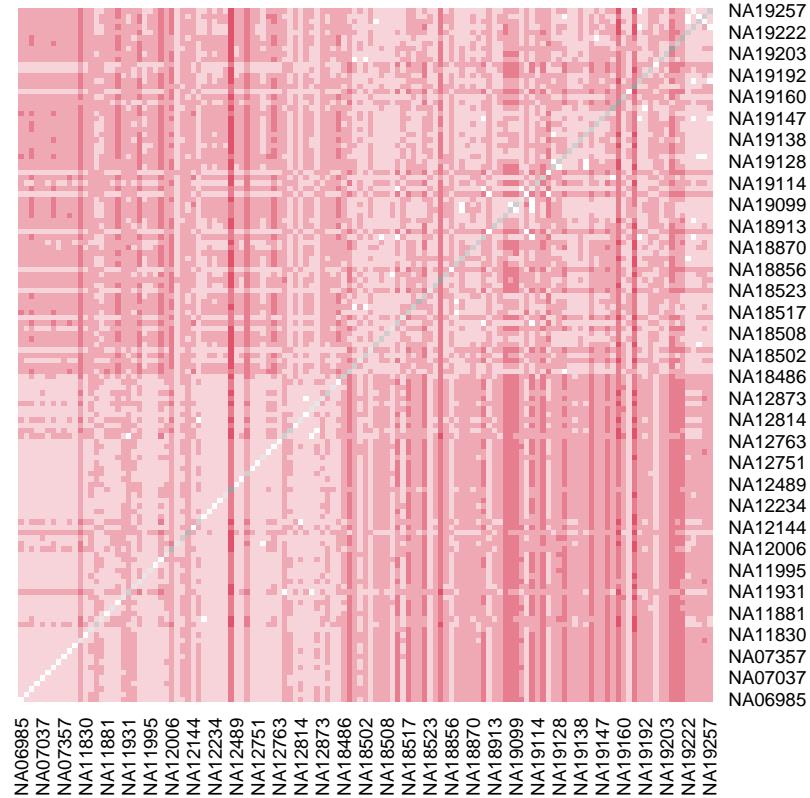
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## NA19204
## NA19209
## NA19210
## NA19222
## NA19225
## NA19238
```

```
## NA19239 1418.3910
## NA19257 2084.2452 2186.6703
```

```
#Buat heatmap
colramp = colorRampPalette(c(8,"white",18))(9)
heatmap(as.matrix(dist2), col=colramp, Colv=NA, Rowv=NA)
```

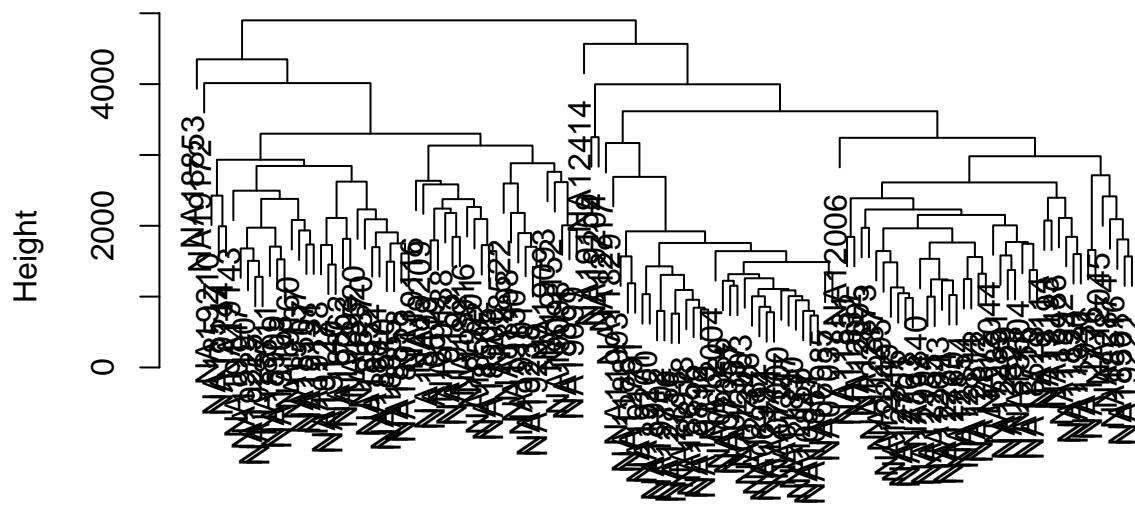


```
hclust2 = hclust(dist2)
hclust2
```

```
##
## Call:
## hclust(d = dist2)
##
## Cluster method : complete
## Distance       : euclidean
## Number of objects: 129
```

```
plot(hclust2)
```

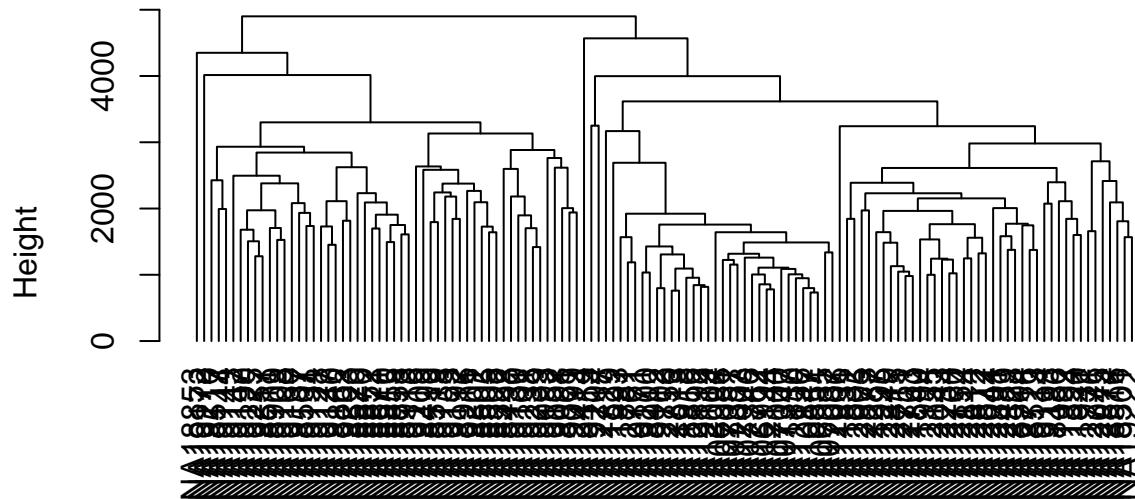
Cluster Dendrogram



```
dist2  
hclust (*, "complete")
```

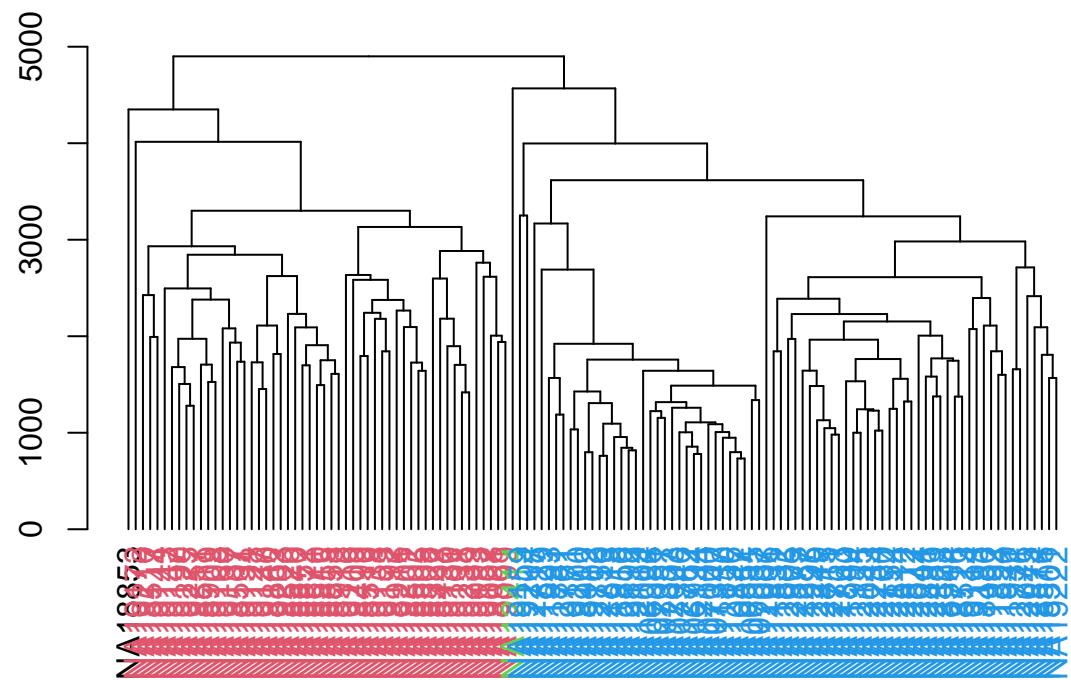
```
plot(hclust2,hang=-1)
```

Cluster Dendrogram

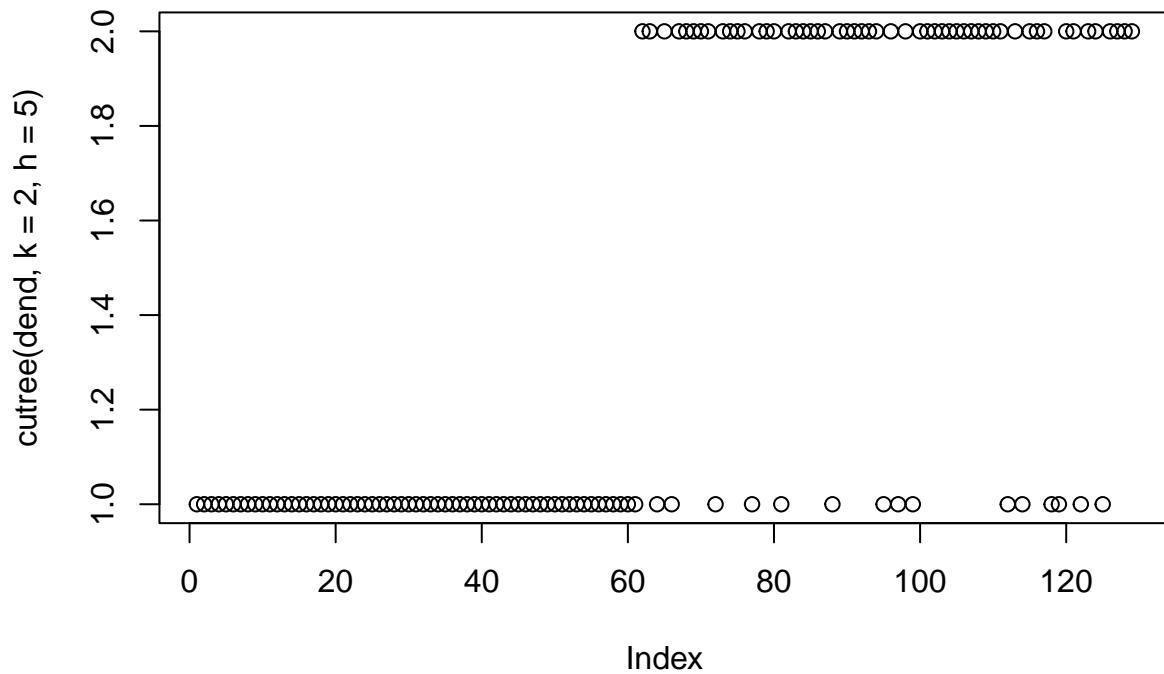


dist2
hclust (*, "complete")

```
#Buat dendrogram
dend = as.dendrogram(hclust2)
dend = color_labels(hclust2,4,col=1:4)
plot(dend)
```



```
#Cutree  
plot(cutree(dend, k=2, h=5))
```



Clustering dengan kmeans

```

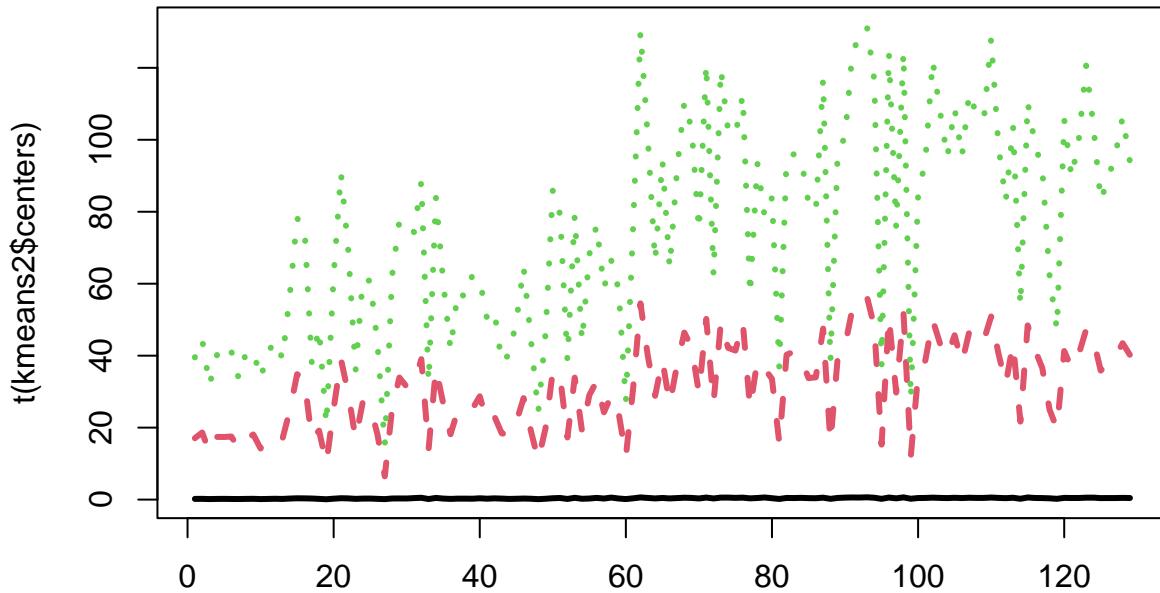
kmeans2 = kmeans(edata2,centers=3)
names(kmeans2)

## [1] "cluster"      "centers"       "totss"        "withinss"      "tot.withinss"
## [6] "betweenss"    "size"          "iter"          "ifault"

####Plot pusat cluster

matplot(t(kmeans2$centers),col=1:3,type="l",lwd=3)

```



```
# cek berapa banyak gen di masing2 cluster
table(kmeans2$cluster)
```

```
##
##      1      2      3
## 47228 1429   851
```

```
# cek cluster mana yang dikasih ke setiap gen
kmeans2$cluster[1:15]
```

```
## ENSG0000000003 ENSG0000000005 ENSG00000000419 ENSG00000000457 ENSG00000000460
##           1           1           2           3           1
## ENSG0000000938 ENSG0000000971 ENSG00000001036 ENSG00000001084 ENSG00000001460
##           2           1           2           1           1
## ENSG00000001461 ENSG00000001497 ENSG00000001617 ENSG00000001626 ENSG00000001629
##           1           1           1           1           1
```

```
#Heatmap dengan cluster yang sudah disortir
heatmap(as.matrix(edata)[order(kmeans2$cluster),], col=colramp, Colv=NA, Rowv=NA)
```

