

Clustering of human and mouse counts_old and new RNASeq data

Purpose:

To assess the similarity of the samples examined in this experiment based on the counts for human and HBV genes OR counts for mouse genes. This analysis includes the samples most recently sequenced in July 2018.

Loading packages

```
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

library(stringr)
library(ggplot2)
library(reshape2)
library(openxlsx)
library(DESeq2)

## Loading required package: S4Vectors
## Loading required package: stats4
## Loading required package: BiocGenerics
## Loading required package: parallel

##
## Attaching package: 'BiocGenerics'

## The following objects are masked from 'package:parallel':
##
##   clusterApply, clusterApplyLB, clusterCall, clusterEvalQ,
##   clusterExport, clusterMap, parApply, parCapply, parLapply,
##   parLapplyLB, parRapply, parSapply, parSapplyLB

## The following objects are masked from 'package:dplyr':
##
##   combine, intersect, setdiff, union

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

## The following objects are masked from 'package:base':
##
##   anyDuplicated, append, as.data.frame, cbind, colnames,
##   do.call, duplicated, eval, evalq, Filter, Find, get, grep,
```

```

##      grepl, intersect, is.unsorted, lapply, lengths, 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, which.max,
##      which.min

##
## Attaching package: 'S4Vectors'

## The following objects are masked from 'package:dplyr':
##
##      first, rename

## The following objects are masked from 'package:base':
##
##      colMeans, colSums, expand.grid, rowMeans, rowSums

## Loading required package: IRanges

##
## Attaching package: 'IRanges'

## The following objects are masked from 'package:dplyr':
##
##      collapse, desc, slice

## Loading required package: GenomicRanges

## Loading required package: GenomeInfoDb

## Loading required package: SummarizedExperiment

## Loading required package: Biobase

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

library(gplots)

##
## Attaching package: 'gplots'

## The following object is masked from 'package:IRanges':
##
##      space

## The following object is masked from 'package:S4Vectors':
##
##      space

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

library(dplyr)
library(RColorBrewer)
library(stringr)
library(genefilter)
library(data.table)

```

```
##
## Attaching package: 'data.table'

## The following object is masked from 'package:SummarizedExperiment':
##
##     shift

## The following object is masked from 'package:GenomicRanges':
##
##     shift

## The following object is masked from 'package:IRanges':
##
##     shift

## The following objects are masked from 'package:S4Vectors':
##
##     first, second

## The following objects are masked from 'package:reshape2':
##
##     dcast, melt

## The following objects are masked from 'package:dplyr':
##
##     between, first, last
```

```
library(genefilter)
library(ggrepel)
library(viridis)
```

```
## Loading required package: viridisLite
```

PCA plot and heat map of sample-sample distances for i) the counts of all human and HBV genes and ii) the counts of all mouse genes.

```
graph_generation <- function(sampledirectory) {
  a <- basename(Sys.glob(file.path(sampledirectory, "*.txt")))
  sample_names <- sub('\.txt', '', a)
  ##Here the donors are renamed based off the Hurel names (i.e. HU___) - RNASeq reads were
  ##all named using a different ID system.
  sampleTable <- data.frame(sampleName = sample_names,
    sampleFile = a,
    treatment = ifelse(grepl("Ctrl", a), "mock",
      ifelse(grepl("*co|*HDV", a), "coinf", "HBV")),
    donor = ifelse(grepl("BD330*", a), "HU1019",
      ifelse(grepl("BD405*", a), "HU1020",
        ifelse(grepl("HU1016*", a), "HU1016", "HU1007"))),
    time = ifelse(grepl("*D8|Day 8", a), "d8", "d28"),
    replicate = ifelse(grepl("*sample_1h|*D8_ah|*D8_aa|*D8_am|*sample_1m", a), "a",
      ifelse(grepl("*sample_2h|D28_bh|D28_ba|D28_bm|*sample_2m", a), "b",
        ifelse(grepl("*sample_3h| * sample 1h|* sample 1m", a), "c",
          ifelse(grepl("* sample 2h|* sample 2m", a), "d",
            ifelse(grepl("* sample 3h|* sample 3m", a), "e", ""))))))
  sampleTable$sampleName <- with(sampleTable, paste(donor, treatment, time, replicate))
  dds <- DESeqDataSetFromHTSeqCount(sampleTable = sampleTable, directory = sampledirectory,
    design = ~ donor + treatment)

  dds@colData
  rld <- rlogTransformation(dds, blind = TRUE)
```

```

distsRL <- dist(t(assay(rld)))
mat <- as.matrix(distsRL)
rownames(mat) <- colnames(mat) <- colnames(rld)
png(file = file.path(sampldirectory, paste(Sys.Date(), "heatmap.png")), units = 'in',
    height = 15, width = 15, res = 300)
distance_heatmap <- heatmap.2(mat, trace="none", keysize = 0.7, col = viridis(100),
                             dendrogram = "both", density.info = "none", margin = c(18,
18), Rowv = TRUE, Colv = TRUE, cexRow = 1.5, cexCol = 1.5)

print(distance_heatmap)
dev.off()
PCA <- plotPCA(rld, intgroup = c("donor", "treatment", "time", "replicate")) +
  aes(colour = donor, shape = factor(treatment)) +
  geom_point(aes(size = 5)) +
  scale_color_brewer(palette = "Dark2") +
  geom_text_repel(aes(label = paste(donor, treatment, time, replicate))) +
  theme_bw() +
  theme(legend.position = "none",
        axis.title.x = element_text(face = "bold", size = 22),
        axis.text = element_text(size = 20),
        panel.grid.major = element_line(size = 0.65,
                                         color = "gray69"),
        panel.grid.minor = element_line(size = 0.3, color = "gray69"),
        axis.line = element_line(size = 2),
        axis.title.y = element_text(face = "bold", size = 22))
PCA
ggsave(file = file.path(sampldirectory, paste(Sys.Date(), "PCAplot.png")), plot = PCA,
        units = 'in', height = 10, width = 10, dpi = 300, device = "png")
}

all_graphed <- graph_generation("All human HBV genes")

```

```

## $rowInd
## [1] 15 17 1 5 6 4 40 3 2 39 16 20 18 19 35 27 29 28 33 34 43 9 25
## [24] 8 7 12 13 14 30 32 31 37 36 38 23 26 21 22 24 10 11 41 44 42
##
## $colInd
## [1] 15 17 1 5 6 4 40 3 2 39 16 20 18 19 35 27 29 28 33 34 43 9 25
## [24] 8 7 12 13 14 30 32 31 37 36 38 23 26 21 22 24 10 11 41 44 42
##
## $call
## heatmap.2(x = mat, Rowv = TRUE, Colv = TRUE, dendrogram = "both",
##           col = viridis(100), trace = "none", margins = c(18, 18),
##           cexRow = 1.5, cexCol = 1.5, keysize = 0.7, density.info = "none")
##
## $carpet
##
## HU1020 coinf d28 c HU1020 coinf d28 e
## HU1020 coinf d28 c 0.00000 62.87562
## HU1020 coinf d28 e 62.87562 0.00000
## HU1019 coinf d28 c 84.14423 77.21838
## HU1019 coinf d8 d 83.36706 79.54276
## HU1019 coinf d8 e 81.22378 75.98823
## HU1019 coinf d8 c 80.57514 73.00410
## HU1016 mock d8 90.58323 90.83354

```

## HU1019 coinf d28 e	87.95649	88.75493
## HU1019 coinf d28 d	89.93624	90.03462
## HU1016 mock d28	82.55230	84.63543
## HU1020 coinf d28 d	82.70050	84.32486
## HU1020 coinf d8 e	84.05151	84.04104
## HU1020 coinf d8 c	82.82144	85.04896
## HU1020 coinf d8 d	81.35958	83.06855
## HU1007 HBV d28 c	124.72112	127.26384
## HU1007 mock d28 a	123.16946	124.16533
## HU1007 mock d28 c	105.56823	107.51750
## HU1007 mock d28 b	113.49232	115.76792
## HU1007 HBV d28 a	106.10891	109.34786
## HU1007 HBV d28 b	107.53271	109.62048
## HU1016 HBV d28	108.21857	112.02814
## HU1019 HBV d28	99.81122	96.14617
## HU1020 coinf d28	81.17715	77.38825
## HU1019 mock d8	92.53749	90.89391
## HU1019 mock d28	93.92961	92.43225
## HU1019 coinf d28	97.77807	96.54483
## HU1019 coinf d8 a	100.52807	100.11221
## HU1019 coinf d8	98.60693	96.78601
## HU1007 mock d8 a	96.57141	98.62075
## HU1007 mock d8 c	92.54619	94.96014
## HU1007 mock d8 b	92.05638	95.25488
## HU1007 HBV d8 b	97.01582	100.35946
## HU1007 HBV d8 a	97.83954	101.88342
## HU1007 HBV d8 c	96.46441	100.28246
## HU1020 HBV d28	95.94356	100.70477
## HU1020 coinf d8	99.94240	104.37819
## HU1020 mock d28	85.96422	90.43796
## HU1020 mock d8	88.05890	92.63080
## HU1020 HBV d8	89.31984	93.61216
## HU1019 HBV d8	98.23978	101.00686
## HU1019 coinf d28 b	99.43155	102.50550
## HU1016 coinf d28	103.80177	108.79256
## HU1016 HBV d8	106.08513	110.46451
## HU1016 coinf d8	103.90974	108.38119
## HU1019 coinf d28 c HU1019 coinf d8 d HU1019 coinf d8 e		
## HU1020 coinf d28 c	84.14423	83.36706
## HU1020 coinf d28 e	77.21838	79.54276
## HU1019 coinf d28 c	0.00000	78.63096
## HU1019 coinf d8 d	78.63096	0.00000
## HU1019 coinf d8 e	65.26143	66.73342
## HU1019 coinf d8 c	69.66278	68.23344
## HU1016 mock d8	92.02350	99.63809
## HU1019 coinf d28 e	88.60139	94.16592
## HU1019 coinf d28 d	89.21025	96.25061
## HU1016 mock d28	95.65600	96.50625
## HU1020 coinf d28 d	94.07984	97.48356
## HU1020 coinf d8 e	86.10145	93.86968
## HU1020 coinf d8 c	88.54873	92.21226
## HU1020 coinf d8 d	91.60150	94.68832
## HU1007 HBV d28 c	131.59165	123.94556
## HU1007 mock d28 a	128.18958	121.84860

## HU1007 mock d28 c	113.53148	102.62219	101.57255
## HU1007 mock d28 b	121.17797	112.11626	111.92866
## HU1007 HBV d28 a	113.81886	107.39113	104.97503
## HU1007 HBV d28 b	114.66705	106.28668	106.06850
## HU1016 HBV d28	126.34035	114.09094	113.62350
## HU1019 HBV d28	108.08464	91.44434	92.61932
## HU1020 coinf d28	102.39886	88.85827	91.49358
## HU1019 mock d8	101.02744	85.86630	88.01652
## HU1019 mock d28	108.13835	92.49841	96.16287
## HU1019 coinf d28	95.46349	86.76051	81.50246
## HU1019 coinf d8 a	97.78171	85.81570	73.73169
## HU1019 coinf d8	102.14721	83.86041	84.87469
## HU1007 mock d8 a	107.21741	94.15262	92.14945
## HU1007 mock d8 c	100.20285	93.41622	87.13070
## HU1007 mock d8 b	101.67849	94.61200	89.45094
## HU1007 HBV d8 b	107.65094	99.73563	95.74875
## HU1007 HBV d8 a	107.58961	99.26673	94.38065
## HU1007 HBV d8 c	107.14147	99.03774	94.75304
## HU1020 HBV d28	114.38454	105.31041	102.52770
## HU1020 coinf d8	112.12124	103.15840	96.74464
## HU1020 mock d28	102.04206	96.59066	90.84926
## HU1020 mock d8	102.92228	97.20215	91.33665
## HU1020 HBV d8	106.78552	99.75572	95.30926
## HU1019 HBV d8	112.18844	98.37268	98.08880
## HU1019 coinf d28 b	111.62071	101.82856	99.29992
## HU1016 coinf d28	119.00576	108.90891	106.86113
## HU1016 HBV d8	121.13041	109.25949	108.45084
## HU1016 coinf d8	118.10029	107.68375	104.79435
## HU1019 coinf d8 c HU1016 mock d8 HU1019 coinf d28 e			
## HU1020 coinf d28 c	80.57514	90.58323	87.95649
## HU1020 coinf d28 e	73.00410	90.83354	88.75493
## HU1019 coinf d28 c	69.66278	92.02350	88.60139
## HU1019 coinf d8 d	68.23344	99.63809	94.16592
## HU1019 coinf d8 e	62.30340	90.57926	85.36979
## HU1019 coinf d8 c	0.00000	92.32231	91.16712
## HU1016 mock d8	92.32231	0.00000	87.67883
## HU1019 coinf d28 e	91.16712	87.67883	0.00000
## HU1019 coinf d28 d	92.28215	87.33715	67.50392
## HU1016 mock d28	94.75768	84.43749	82.00370
## HU1020 coinf d28 d	93.98880	79.63600	82.50137
## HU1020 coinf d8 e	86.85878	72.42599	82.84194
## HU1020 coinf d8 c	88.13927	70.58960	81.01350
## HU1020 coinf d8 d	89.61241	68.32951	81.16277
## HU1007 HBV d28 c	127.91865	134.66870	112.89333
## HU1007 mock d28 a	124.95871	134.53568	109.52174
## HU1007 mock d28 c	106.90017	118.52673	99.96833
## HU1007 mock d28 b	116.41207	123.84261	101.89178
## HU1007 HBV d28 a	110.30214	107.14258	93.73917
## HU1007 HBV d28 b	110.72533	117.24613	97.20163
## HU1016 HBV d28	119.90207	125.53720	108.16280
## HU1019 HBV d28	95.84058	129.45271	108.76625
## HU1020 coinf d28	93.10566	117.38897	98.88384
## HU1019 mock d8	90.81785	116.74762	94.85249
## HU1019 mock d28	98.16100	122.46089	101.10465

## HU1019 coinf d28	90.99978	118.88153	95.89058
## HU1019 coinf d8 a	90.19999	119.85269	99.34729
## HU1019 coinf d8	89.56808	123.02771	103.56639
## HU1007 mock d8 a	97.81694	103.94932	95.17348
## HU1007 mock d8 c	93.71002	94.66364	85.92046
## HU1007 mock d8 b	95.43847	88.67175	84.42389
## HU1007 HBV d8 b	101.47679	97.32334	87.37715
## HU1007 HBV d8 a	101.86965	98.10853	87.64400
## HU1007 HBV d8 c	101.07002	96.13626	87.32591
## HU1020 HBV d28	109.03109	108.73860	89.73103
## HU1020 coinf d8	106.54938	107.80287	93.58642
## HU1020 mock d28	98.45425	97.17946	79.02098
## HU1020 mock d8	98.38111	91.47870	78.79262
## HU1020 HBV d8	101.34620	97.15883	82.96293
## HU1019 HBV d8	102.73396	112.74752	93.96618
## HU1019 coinf d28 b	106.12636	114.67282	86.50218
## HU1016 coinf d28	113.33827	110.21915	95.11572
## HU1016 HBV d8	114.20762	113.02741	98.05063
## HU1016 coinf d8	111.38109	109.11117	96.34105
##			
## HU1020 coinf d28 c	89.93624	82.55230	82.70050
## HU1020 coinf d28 e	90.03462	84.63543	84.32486
## HU1019 coinf d28 c	89.21025	95.65600	94.07984
## HU1019 coinf d8 d	96.25061	96.50625	97.48356
## HU1019 coinf d8 e	87.41865	91.39659	89.68133
## HU1019 coinf d8 c	92.28215	94.75768	93.98880
## HU1016 mock d8	87.33715	84.43749	79.63600
## HU1019 coinf d28 e	67.50392	82.00370	82.50137
## HU1019 coinf d28 d	0.00000	84.69225	84.02089
## HU1016 mock d28	84.69225	0.00000	75.39655
## HU1020 coinf d28 d	84.02089	75.39655	0.00000
## HU1020 coinf d8 e	83.42123	78.03529	70.83198
## HU1020 coinf d8 c	83.06870	74.90806	66.33080
## HU1020 coinf d8 d	83.16566	73.19304	65.18738
## HU1007 HBV d28 c	119.97228	122.14899	130.40818
## HU1007 mock d28 a	116.24248	122.52793	132.31970
## HU1007 mock d28 c	107.20088	104.75002	114.55153
## HU1007 mock d28 b	109.49066	110.55276	120.29540
## HU1007 HBV d28 a	100.85271	97.43356	104.75725
## HU1007 HBV d28 b	104.02913	106.24515	114.37887
## HU1016 HBV d28	115.77037	106.02842	111.47135
## HU1019 HBV d28	115.59389	111.83657	120.40070
## HU1020 coinf d28	105.33499	96.06381	102.10229
## HU1019 mock d8	102.45752	98.22421	106.65656
## HU1019 mock d28	108.27873	101.31292	109.04295
## HU1019 coinf d28	103.15040	103.28504	108.57353
## HU1019 coinf d8 a	106.42768	105.05411	109.30437
## HU1019 coinf d8	110.39641	106.56873	112.91354
## HU1007 mock d8 a	101.87833	93.38780	99.70878
## HU1007 mock d8 c	92.45521	86.96438	92.67121
## HU1007 mock d8 b	90.45992	82.23429	87.77953
## HU1007 HBV d8 b	94.51376	89.41616	92.39874
## HU1007 HBV d8 a	95.12825	88.33991	90.49174
## HU1007 HBV d8 c	94.27250	87.45678	90.22951

## HU1020 HBV d28	97.68087	85.12593	89.65228
## HU1020 coinf d8	100.70288	90.34690	92.53792
## HU1020 mock d28	86.64716	75.32232	80.49486
## HU1020 mock d8	85.92795	74.49892	79.71551
## HU1020 HBV d8	90.23822	78.35569	82.57325
## HU1019 HBV d8	101.72159	93.84131	100.44861
## HU1019 coinf d28 b	95.18765	92.92503	98.07549
## HU1016 coinf d28	103.15130	93.47183	99.66697
## HU1016 HBV d8	106.32713	96.19365	101.82828
## HU1016 coinf d8	104.13871	94.60947	98.01277
## HU1020 coinf d8 e HU1020 coinf d8 c HU1020 coinf d8 d			
## HU1020 coinf d28 c	84.05151	82.82144	81.35958
## HU1020 coinf d28 e	84.04104	85.04896	83.06855
## HU1019 coinf d28 c	86.10145	88.54873	91.60150
## HU1019 coinf d8 d	93.86968	92.21226	94.68832
## HU1019 coinf d8 e	80.61301	78.05481	83.14289
## HU1019 coinf d8 c	86.85878	88.13927	89.61241
## HU1016 mock d8	72.42599	70.58960	68.32951
## HU1019 coinf d28 e	82.84194	81.01350	81.16277
## HU1019 coinf d28 d	83.42123	83.06870	83.16566
## HU1016 mock d28	78.03529	74.90806	73.19304
## HU1020 coinf d28 d	70.83198	66.33080	65.18738
## HU1020 coinf d8 e	0.00000	54.50807	55.86029
## HU1020 coinf d8 c	54.50807	0.00000	43.60894
## HU1020 coinf d8 d	55.86029	43.60894	0.00000
## HU1007 HBV d28 c	133.24969	128.93695	128.73124
## HU1007 mock d28 a	134.79529	132.96934	132.09141
## HU1007 mock d28 c	116.86663	112.52430	112.31314
## HU1007 mock d28 b	123.60965	119.91730	119.11406
## HU1007 HBV d28 a	107.33389	103.00478	101.92868
## HU1007 HBV d28 b	116.66787	112.63317	112.01463
## HU1016 HBV d28	118.03197	110.13856	108.90135
## HU1019 HBV d28	122.13753	118.04538	117.90821
## HU1020 coinf d28	106.81101	102.77349	101.93186
## HU1019 mock d8	108.80338	104.40744	105.23057
## HU1019 mock d28	114.22672	109.20892	108.84180
## HU1019 coinf d28	108.09832	104.26564	107.71654
## HU1019 coinf d8 a	106.83946	100.26030	104.73425
## HU1019 coinf d8	112.39783	107.66330	109.70737
## HU1007 mock d8 a	99.01112	91.50160	91.26464
## HU1007 mock d8 c	90.61591	83.31097	83.05409
## HU1007 mock d8 b	85.07025	76.97984	75.93493
## HU1007 HBV d8 b	91.26724	83.01512	82.54351
## HU1007 HBV d8 a	90.09840	80.29970	81.32308
## HU1007 HBV d8 c	89.36738	79.90185	79.72491
## HU1020 HBV d28	97.10275	88.80940	88.62850
## HU1020 coinf d8	90.81855	81.08159	82.86209
## HU1020 mock d28	85.70633	78.47072	78.54687
## HU1020 mock d8	80.31052	73.21200	71.75366
## HU1020 HBV d8	84.62132	76.37606	74.80286
## HU1019 HBV d8	102.89580	95.51887	94.48205
## HU1019 coinf d28 b	103.46831	96.57450	97.08413
## HU1016 coinf d28	104.90351	97.05876	95.35135
## HU1016 HBV d8	104.89535	96.97886	95.77487

## HU1016 coinf d8	100.14908	91.35907	90.39157
##	HU1007 HBV d28 c	HU1007 mock d28 a	HU1007 mock d28 c
## HU1020 coinf d28 c	124.72112	123.16946	105.56823
## HU1020 coinf d28 e	127.26384	124.16533	107.51750
## HU1019 coinf d28 c	131.59165	128.18958	113.53148
## HU1019 coinf d8 d	123.94556	121.84860	102.62219
## HU1019 coinf d8 e	122.86717	121.27988	101.57255
## HU1019 coinf d8 c	127.91865	124.95871	106.90017
## HU1016 mock d8	134.66870	134.53568	118.52673
## HU1019 coinf d28 e	112.89333	109.52174	99.96833
## HU1019 coinf d28 d	119.97228	116.24248	107.20088
## HU1016 mock d28	122.14899	122.52793	104.75002
## HU1020 coinf d28 d	130.40818	132.31970	114.55153
## HU1020 coinf d8 e	133.24969	134.79529	116.86663
## HU1020 coinf d8 c	128.93695	132.96934	112.52430
## HU1020 coinf d8 d	128.73124	132.09141	112.31314
## HU1007 HBV d28 c	0.00000	74.47929	68.91914
## HU1007 mock d28 a	74.47929	0.00000	59.09008
## HU1007 mock d28 c	68.91914	59.09008	0.00000
## HU1007 mock d28 b	65.42112	48.51692	40.29714
## HU1007 HBV d28 a	79.73342	76.25051	56.50880
## HU1007 HBV d28 b	73.67106	64.14769	55.28781
## HU1016 HBV d28	99.02895	104.47207	81.01296
## HU1019 HBV d28	100.07786	96.67739	72.20892
## HU1020 coinf d28	104.30163	103.88094	80.73981
## HU1019 mock d8	94.44488	92.91813	67.52592
## HU1019 mock d28	104.28055	104.12047	79.53011
## HU1019 coinf d28	98.93451	98.56625	75.66780
## HU1019 coinf d8 a	101.20168	103.16368	76.36371
## HU1019 coinf d8	100.04845	100.71391	73.67245
## HU1007 mock d8 a	90.71772	94.42218	64.29563
## HU1007 mock d8 c	86.98708	89.66394	64.14547
## HU1007 mock d8 b	94.13944	96.93317	71.08194
## HU1007 HBV d8 b	97.10161	100.96791	79.49076
## HU1007 HBV d8 a	95.70095	101.46008	76.72755
## HU1007 HBV d8 c	97.21068	101.89959	78.50466
## HU1020 HBV d28	101.36323	106.60944	82.61480
## HU1020 coinf d8	104.33690	110.56015	84.58562
## HU1020 mock d28	100.16431	103.56098	80.26430
## HU1020 mock d8	99.83795	102.79414	79.59194
## HU1020 HBV d8	102.44075	107.04417	83.54222
## HU1019 HBV d8	96.98915	101.83081	74.18438
## HU1019 coinf d28 b	99.02742	102.08136	79.60219
## HU1016 coinf d28	90.71100	95.00919	69.56419
## HU1016 HBV d8	95.32677	100.93605	75.34367
## HU1016 coinf d8	99.17977	105.54026	79.86557
##	HU1007 mock d28 b	HU1007 HBV d28 a	HU1007 HBV d28 b
## HU1020 coinf d28 c	113.49232	106.10891	107.53271
## HU1020 coinf d28 e	115.76792	109.34786	109.62048
## HU1019 coinf d28 c	121.17797	113.81886	114.66705
## HU1019 coinf d8 d	112.11626	107.39113	106.28668
## HU1019 coinf d8 e	111.92866	104.97503	106.06850
## HU1019 coinf d8 c	116.41207	110.30214	110.72533
## HU1016 mock d8	123.84261	107.14258	117.24613

## HU1019	coinf d28 e	101.89178	93.73917	97.20163
## HU1019	coinf d28 d	109.49066	100.85271	104.02913
## HU1016	mock d28	110.55276	97.43356	106.24515
## HU1020	coinf d28 d	120.29540	104.75725	114.37887
## HU1020	coinf d8 e	123.60965	107.33389	116.66787
## HU1020	coinf d8 c	119.91730	103.00478	112.63317
## HU1020	coinf d8 d	119.11406	101.92868	112.01463
## HU1007	HBV d28 c	65.42112	79.73342	73.67106
## HU1007	mock d28 a	48.51692	76.25051	64.14769
## HU1007	mock d28 c	40.29714	56.50880	55.28781
## HU1007	mock d28 b	0.00000	57.55328	51.50400
## HU1007	HBV d28 a	57.55328	0.00000	61.87954
## HU1007	HBV d28 b	51.50400	61.87954	0.00000
## HU1016	HBV d28	88.19542	90.93206	93.49418
## HU1019	HBV d28	86.29353	96.75513	90.48754
## HU1020	coinf d28	91.97982	96.01885	92.50642
## HU1019	mock d8	79.08428	86.26858	82.53156
## HU1019	mock d28	90.96284	96.48020	93.41787
## HU1019	coinf d28	87.22322	92.86582	89.21822
## HU1019	coinf d8 a	90.13079	94.75425	92.44012
## HU1019	coinf d8	87.94038	95.11438	91.26094
## HU1007	mock d8 a	75.33060	71.19038	75.00265
## HU1007	mock d8 c	72.02271	64.66046	69.87700
## HU1007	mock d8 b	79.08742	65.55603	76.49823
## HU1007	HBV d8 b	85.44902	76.76973	82.54062
## HU1007	HBV d8 a	84.19036	74.38489	82.19913
## HU1007	HBV d8 c	85.39824	75.55269	82.65881
## HU1020	HBV d28	90.72485	84.01995	92.12144
## HU1020	coinf d8	94.64960	88.37538	95.19593
## HU1020	mock d28	88.22644	80.21669	88.41623
## HU1020	mock d8	87.36087	77.63758	87.36538
## HU1020	HBV d8	91.80412	83.05885	91.13574
## HU1019	HBV d8	85.08109	84.19072	87.60596
## HU1019	coinf d28 b	88.41009	87.55022	90.61411
## HU1016	coinf d28	77.52901	73.32051	83.45597
## HU1016	HBV d8	84.07978	81.38260	88.34856
## HU1016	coinf d8	88.96930	84.38968	91.81381
##				
##	HU1016 HBV d28	HU1019 HBV d28	HU1020 coinf d28	
## HU1020	coinf d28 c	108.21857	99.81122	81.17715
## HU1020	coinf d28 e	112.02814	96.14617	77.38825
## HU1019	coinf d28 c	126.34035	108.08464	102.39886
## HU1019	coinf d8 d	114.09094	91.44434	88.85827
## HU1019	coinf d8 e	113.62350	92.61932	91.49358
## HU1019	coinf d8 c	119.90207	95.84058	93.10566
## HU1016	mock d8	125.53720	129.45271	117.38897
## HU1019	coinf d28 e	108.16280	108.76625	98.88384
## HU1019	coinf d28 d	115.77037	115.59389	105.33499
## HU1016	mock d28	106.02842	111.83657	96.06381
## HU1020	coinf d28 d	111.47135	120.40070	102.10229
## HU1020	coinf d8 e	118.03197	122.13753	106.81101
## HU1020	coinf d8 c	110.13856	118.04538	102.77349
## HU1020	coinf d8 d	108.90135	117.90821	101.93186
## HU1007	HBV d28 c	99.02895	100.07786	104.30163
## HU1007	mock d28 a	104.47207	96.67739	103.88094

## HU1007 mock d28 c	81.01296	72.20892	80.73981
## HU1007 mock d28 b	88.19542	86.29353	91.97982
## HU1007 HBV d28 a	90.93206	96.75513	96.01885
## HU1007 HBV d28 b	93.49418	90.48754	92.50642
## HU1016 HBV d28	0.00000	88.02247	79.35454
## HU1019 HBV d28	88.02247	0.00000	64.57726
## HU1020 coinf d28	79.35454	64.57726	0.00000
## HU1019 mock d8	79.43018	58.63091	59.21742
## HU1019 mock d28	78.96916	63.07716	58.22244
## HU1019 coinf d28	85.24158	68.11568	68.52091
## HU1019 coinf d8 a	84.25447	64.90593	72.18761
## HU1019 coinf d8	82.75050	55.51524	63.51035
## HU1007 mock d8 a	84.57612	81.75230	79.37086
## HU1007 mock d8 c	86.73119	86.97653	83.96618
## HU1007 mock d8 b	88.91759	92.96038	86.81552
## HU1007 HBV d8 b	88.76499	96.80795	86.49391
## HU1007 HBV d8 a	84.83026	95.62587	85.39581
## HU1007 HBV d8 c	86.74373	96.47678	86.18484
## HU1020 HBV d28	72.95336	91.26961	73.78205
## HU1020 coinf d8	77.21891	92.97344	79.64871
## HU1020 mock d28	77.00203	90.26376	72.96642
## HU1020 mock d8	79.52857	93.02933	78.64670
## HU1020 HBV d8	78.11415	91.90779	75.67638
## HU1019 HBV d8	70.66883	74.04846	68.79921
## HU1019 coinf d28 b	75.30709	82.42998	72.73051
## HU1016 coinf d28	61.81420	87.96195	79.58559
## HU1016 HBV d8	67.94614	88.80442	77.86714
## HU1016 coinf d8	69.43853	91.32890	79.69913
## HU1019 mock d8 HU1019 mock d28 HU1019 coinf d28			
## HU1020 coinf d28 c	92.53749	93.92961	97.77807
## HU1020 coinf d28 e	90.89391	92.43225	96.54483
## HU1019 coinf d28 c	101.02744	108.13835	95.46349
## HU1019 coinf d8 d	85.86630	92.49841	86.76051
## HU1019 coinf d8 e	88.01652	96.16287	81.50246
## HU1019 coinf d8 c	90.81785	98.16100	90.99978
## HU1016 mock d8	116.74762	122.46089	118.88153
## HU1019 coinf d28 e	94.85249	101.10465	95.89058
## HU1019 coinf d28 d	102.45752	108.27873	103.15040
## HU1016 mock d28	98.22421	101.31292	103.28504
## HU1020 coinf d28 d	106.65656	109.04295	108.57353
## HU1020 coinf d8 e	108.80338	114.22672	108.09832
## HU1020 coinf d8 c	104.40744	109.20892	104.26564
## HU1020 coinf d8 d	105.23057	108.84180	107.71654
## HU1007 HBV d28 c	94.44488	104.28055	98.93451
## HU1007 mock d28 a	92.91813	104.12047	98.56625
## HU1007 mock d28 c	67.52592	79.53011	75.66780
## HU1007 mock d28 b	79.08428	90.96284	87.22322
## HU1007 HBV d28 a	86.26858	96.48020	92.86582
## HU1007 HBV d28 b	82.53156	93.41787	89.21822
## HU1016 HBV d28	79.43018	78.96916	85.24158
## HU1019 HBV d28	58.63091	63.07716	68.11568
## HU1020 coinf d28	59.21742	58.22244	68.52091
## HU1019 mock d8	0.00000	51.89152	58.99226
## HU1019 mock d28	51.89152	0.00000	66.89808

## HU1019	coinf d28	58.99226	66.89808	0.00000		
## HU1019	coinf d8 a	60.68159	69.91518	51.39880		
## HU1019	coinf d8	51.40981	60.25234	53.38452		
## HU1007	mock d8 a	68.01099	77.27704	79.39294		
## HU1007	mock d8 c	72.77145	83.13866	80.95373		
## HU1007	mock d8 b	77.02377	85.76689	86.38415		
## HU1007	HBV d8 b	78.54867	86.27772	85.49949		
## HU1007	HBV d8 a	77.30540	84.61841	82.21447		
## HU1007	HBV d8 c	78.62301	85.85882	85.15588		
## HU1020	HBV d28	74.29494	75.80371	79.37717		
## HU1020	coinf d8	76.49136	81.14072	76.56241		
## HU1020	mock d28	72.70944	76.19896	77.22437		
## HU1020	mock d8	75.35549	81.29788	80.74306		
## HU1020	HBV d8	75.24492	79.32301	81.21345		
## HU1019	HBV d8	57.86209	62.24562	70.23732		
## HU1019	coinf d28 b	65.31538	66.46577	71.03495		
## HU1016	coinf d28	75.43142	78.56922	79.02037		
## HU1016	HBV d8	71.72714	75.83007	77.29132		
## HU1016	coinf d8	74.96238	78.92589	78.24812		
##	HU1019	coinf d8 a	HU1019	coinf d8	HU1007	mock d8 a
## HU1020	coinf d28 c	100.52807	98.60693	96.57141		
## HU1020	coinf d28 e	100.11221	96.78601	98.62075		
## HU1019	coinf d28 c	97.78171	102.14721	107.21741		
## HU1019	coinf d8 d	85.81570	83.86041	94.15262		
## HU1019	coinf d8 e	73.73169	84.87469	92.14945		
## HU1019	coinf d8 c	90.19999	89.56808	97.81694		
## HU1016	mock d8	119.85269	123.02771	103.94932		
## HU1019	coinf d28 e	99.34729	103.56639	95.17348		
## HU1019	coinf d28 d	106.42768	110.39641	101.87833		
## HU1016	mock d28	105.05411	106.56873	93.38780		
## HU1020	coinf d28 d	109.30437	112.91354	99.70878		
## HU1020	coinf d8 e	106.83946	112.39783	99.01112		
## HU1020	coinf d8 c	100.26030	107.66330	91.50160		
## HU1020	coinf d8 d	104.73425	109.70737	91.26464		
## HU1007	HBV d28 c	101.20168	100.04845	90.71772		
## HU1007	mock d28 a	103.16368	100.71391	94.42218		
## HU1007	mock d28 c	76.36371	73.67245	64.29563		
## HU1007	mock d28 b	90.13079	87.94038	75.33060		
## HU1007	HBV d28 a	94.75425	95.11438	71.19038		
## HU1007	HBV d28 b	92.44012	91.26094	75.00265		
## HU1016	HBV d28	84.25447	82.75050	84.57612		
## HU1019	HBV d28	64.90593	55.51524	81.75230		
## HU1020	coinf d28	72.18761	63.51035	79.37086		
## HU1019	mock d8	60.68159	51.40981	68.01099		
## HU1019	mock d28	69.91518	60.25234	77.27704		
## HU1019	coinf d28	51.39880	53.38452	79.39294		
## HU1019	coinf d8 a	0.00000	48.93821	75.91911		
## HU1019	coinf d8	48.93821	0.00000	74.37164		
## HU1007	mock d8 a	75.91911	74.37164	0.00000		
## HU1007	mock d8 c	78.72957	80.37684	52.37769		
## HU1007	mock d8 b	84.75478	85.66240	53.49591		
## HU1007	HBV d8 b	84.80717	85.56141	62.23192		
## HU1007	HBV d8 a	80.45700	82.64751	59.84105		
## HU1007	HBV d8 c	83.73566	85.18257	61.18571		

## HU1020 HBV d28	79.65240	79.84738	74.31627
## HU1020 coinf d8	71.88950	76.43527	72.34537
## HU1020 mock d28	77.52366	80.27415	71.38617
## HU1020 mock d8	80.17552	82.26053	69.19124
## HU1020 HBV d8	80.34316	80.78765	70.38525
## HU1019 HBV d8	68.23807	63.20439	64.82501
## HU1019 coinf d28 b	71.34560	70.78773	75.23070
## HU1016 coinf d28	79.43454	78.71368	72.72247
## HU1016 HBV d8	77.29229	74.58003	69.54183
## HU1016 coinf d8	76.98126	76.13737	71.57989
## HU1007 mock d8 c HU1007 mock d8 b HU1007 HBV d8 b			
## HU1020 coinf d28 c	92.54619	92.05638	97.01582
## HU1020 coinf d28 e	94.96014	95.25488	100.35946
## HU1019 coinf d28 c	100.20285	101.67849	107.65094
## HU1019 coinf d8 d	93.41622	94.61200	99.73563
## HU1019 coinf d8 e	87.13070	89.45094	95.74875
## HU1019 coinf d8 c	93.71002	95.43847	101.47679
## HU1016 mock d8	94.66364	88.67175	97.32334
## HU1019 coinf d28 e	85.92046	84.42389	87.37715
## HU1019 coinf d28 d	92.45521	90.45992	94.51376
## HU1016 mock d28	86.96438	82.23429	89.41616
## HU1020 coinf d28 d	92.67121	87.77953	92.39874
## HU1020 coinf d8 e	90.61591	85.07025	91.26724
## HU1020 coinf d8 c	83.31097	76.97984	83.01512
## HU1020 coinf d8 d	83.05409	75.93493	82.54351
## HU1007 HBV d28 c	86.98708	94.13944	97.10161
## HU1007 mock d28 a	89.66394	96.93317	100.96791
## HU1007 mock d28 c	64.14547	71.08194	79.49076
## HU1007 mock d28 b	72.02271	79.08742	85.44902
## HU1007 HBV d28 a	64.66046	65.55603	76.76973
## HU1007 HBV d28 b	69.87700	76.49823	82.54062
## HU1016 HBV d28	86.73119	88.91759	88.76499
## HU1019 HBV d28	86.97653	92.96038	96.80795
## HU1020 coinf d28	83.96618	86.81552	86.49391
## HU1019 mock d8	72.77145	77.02377	78.54867
## HU1019 mock d28	83.13866	85.76689	86.27772
## HU1019 coinf d28	80.95373	86.38415	85.49949
## HU1019 coinf d8 a	78.72957	84.75478	84.80717
## HU1019 coinf d8	80.37684	85.66240	85.56141
## HU1007 mock d8 a	52.37769	53.49591	62.23192
## HU1007 mock d8 c	0.00000	47.92227	59.74862
## HU1007 mock d8 b	47.92227	0.00000	57.00823
## HU1007 HBV d8 b	59.74862	57.00823	0.00000
## HU1007 HBV d8 a	56.90999	53.90629	54.47262
## HU1007 HBV d8 c	57.59494	54.47449	54.76333
## HU1020 HBV d28	75.14561	72.98027	70.06981
## HU1020 coinf d8	72.61012	70.52576	68.60844
## HU1020 mock d28	67.98943	66.79731	68.87304
## HU1020 mock d8	64.74655	60.74612	63.94261
## HU1020 HBV d8	68.05385	64.16677	64.18948
## HU1019 HBV d8	69.17515	68.36569	67.91374
## HU1019 coinf d28 b	76.55800	76.74687	72.73127
## HU1016 coinf d28	72.27595	71.31166	71.84091
## HU1016 HBV d8	72.15622	70.45728	66.35268

## HU1016 coinf d8	72.34412	70.63966	66.69922
##	HU1007 HBV d8 a	HU1007 HBV d8 c	HU1020 HBV d28
## HU1020 coinf d28 c	97.83954	96.46441	95.94356
## HU1020 coinf d28 e	101.88342	100.28246	100.70477
## HU1019 coinf d28 c	107.58961	107.14147	114.38454
## HU1019 coinf d8 d	99.26673	99.03774	105.31041
## HU1019 coinf d8 e	94.38065	94.75304	102.52770
## HU1019 coinf d8 c	101.86965	101.07002	109.03109
## HU1016 mock d8	98.10853	96.13626	108.73860
## HU1019 coinf d28 e	87.64400	87.32591	89.73103
## HU1019 coinf d28 d	95.12825	94.27250	97.68087
## HU1016 mock d28	88.33991	87.45678	85.12593
## HU1020 coinf d28 d	90.49174	90.22951	89.65228
## HU1020 coinf d8 e	90.09840	89.36738	97.10275
## HU1020 coinf d8 c	80.29970	79.90185	88.80940
## HU1020 coinf d8 d	81.32308	79.72491	88.62850
## HU1007 HBV d28 c	95.70095	97.21068	101.36323
## HU1007 mock d28 a	101.46008	101.89959	106.60944
## HU1007 mock d28 c	76.72755	78.50466	82.61480
## HU1007 mock d28 b	84.19036	85.39824	90.72485
## HU1007 HBV d28 a	74.38489	75.55269	84.01995
## HU1007 HBV d28 b	82.19913	82.65881	92.12144
## HU1016 HBV d28	84.83026	86.74373	72.95336
## HU1019 HBV d28	95.62587	96.47678	91.26961
## HU1020 coinf d28	85.39581	86.18484	73.78205
## HU1019 mock d8	77.30540	78.62301	74.29494
## HU1019 mock d28	84.61841	85.85882	75.80371
## HU1019 coinf d28	82.21447	85.15588	79.37717
## HU1019 coinf d8 a	80.45700	83.73566	79.65240
## HU1019 coinf d8	82.64751	85.18257	79.84738
## HU1007 mock d8 a	59.84105	61.18571	74.31627
## HU1007 mock d8 c	56.90999	57.59494	75.14561
## HU1007 mock d8 b	53.90629	54.47449	72.98027
## HU1007 HBV d8 b	54.47262	54.76333	70.06981
## HU1007 HBV d8 a	0.00000	51.19784	65.50938
## HU1007 HBV d8 c	51.19784	0.00000	68.29565
## HU1020 HBV d28	65.50938	68.29565	0.00000
## HU1020 coinf d8	62.54381	65.87217	57.24184
## HU1020 mock d28	64.49525	66.60653	50.24344
## HU1020 mock d8	61.01747	62.35271	54.29608
## HU1020 HBV d8	61.55935	63.01715	51.16350
## HU1019 HBV d8	65.32048	66.93062	58.36546
## HU1019 coinf d28 b	69.43817	71.90620	56.21469
## HU1016 coinf d28	67.44829	69.88199	57.28306
## HU1016 HBV d8	61.98062	64.96425	54.28015
## HU1016 coinf d8	62.40208	64.98779	56.31810
##	HU1020 coinf d8	HU1020 mock d28	HU1020 mock d8
## HU1020 coinf d28 c	99.94240	85.96422	88.05890
## HU1020 coinf d28 e	104.37819	90.43796	92.63080
## HU1019 coinf d28 c	112.12124	102.04206	102.92228
## HU1019 coinf d8 d	103.15840	96.59066	97.20215
## HU1019 coinf d8 e	96.74464	90.84926	91.33665
## HU1019 coinf d8 c	106.54938	98.45425	98.38111
## HU1016 mock d8	107.80287	97.17946	91.47870

## HU1019	coinf d28 e	93.58642	79.02098	78.79262
## HU1019	coinf d28 d	100.70288	86.64716	85.92795
## HU1016	mock d28	90.34690	75.32232	74.49892
## HU1020	coinf d28 d	92.53792	80.49486	79.71551
## HU1020	coinf d8 e	90.81855	85.70633	80.31052
## HU1020	coinf d8 c	81.08159	78.47072	73.21200
## HU1020	coinf d8 d	82.86209	78.54687	71.75366
## HU1007	HBV d28 c	104.33690	100.16431	99.83795
## HU1007	mock d28 a	110.56015	103.56098	102.79414
## HU1007	mock d28 c	84.58562	80.26430	79.59194
## HU1007	mock d28 b	94.64960	88.22644	87.36087
## HU1007	HBV d28 a	88.37538	80.21669	77.63758
## HU1007	HBV d28 b	95.19593	88.41623	87.36538
## HU1016	HBV d28	77.21891	77.00203	79.52857
## HU1019	HBV d28	92.97344	90.26376	93.02933
## HU1020	coinf d28	79.64871	72.96642	78.64670
## HU1019	mock d8	76.49136	72.70944	75.35549
## HU1019	mock d28	81.14072	76.19896	81.29788
## HU1019	coinf d28	76.56241	77.22437	80.74306
## HU1019	coinf d8 a	71.88950	77.52366	80.17552
## HU1019	coinf d8	76.43527	80.27415	82.26053
## HU1007	mock d8 a	72.34537	71.38617	69.19124
## HU1007	mock d8 c	72.61012	67.98943	64.74655
## HU1007	mock d8 b	70.52576	66.79731	60.74612
## HU1007	HBV d8 b	68.60844	68.87304	63.94261
## HU1007	HBV d8 a	62.54381	64.49525	61.01747
## HU1007	HBV d8 c	65.87217	66.60653	62.35271
## HU1020	HBV d28	57.24184	50.24344	54.29608
## HU1020	coinf d8	0.00000	58.69792	55.99186
## HU1020	mock d28	58.69792	0.00000	47.32897
## HU1020	mock d8	55.99186	47.32897	0.00000
## HU1020	HBV d8	53.94866	47.98302	44.29321
## HU1019	HBV d8	59.64892	62.33152	60.92535
## HU1019	coinf d28 b	62.07022	58.44733	62.60889
## HU1016	coinf d28	62.22992	62.36244	60.24297
## HU1016	HBV d8	55.55654	61.87903	58.69122
## HU1016	coinf d8	54.08673	62.21970	58.17329
##				
	HU1020 HBV d8		HU1019 HBV d8	HU1019 coinf d28 b
## HU1020	coinf d28 c	89.31984	98.23978	99.43155
## HU1020	coinf d28 e	93.61216	101.00686	102.50550
## HU1019	coinf d28 c	106.78552	112.18844	111.62071
## HU1019	coinf d8 d	99.75572	98.37268	101.82856
## HU1019	coinf d8 e	95.30926	98.08880	99.29992
## HU1019	coinf d8 c	101.34620	102.73396	106.12636
## HU1016	mock d8	97.15883	112.74752	114.67282
## HU1019	coinf d28 e	82.96293	93.96618	86.50218
## HU1019	coinf d28 d	90.23822	101.72159	95.18765
## HU1016	mock d28	78.35569	93.84131	92.92503
## HU1020	coinf d28 d	82.57325	100.44861	98.07549
## HU1020	coinf d8 e	84.62132	102.89580	103.46831
## HU1020	coinf d8 c	76.37606	95.51887	96.57450
## HU1020	coinf d8 d	74.80286	94.48205	97.08413
## HU1007	HBV d28 c	102.44075	96.98915	99.02742
## HU1007	mock d28 a	107.04417	101.83081	102.08136

## HU1007 mock d28 c	83.54222	74.18438	79.60219
## HU1007 mock d28 b	91.80412	85.08109	88.41009
## HU1007 HBV d28 a	83.05885	84.19072	87.55022
## HU1007 HBV d28 b	91.13574	87.60596	90.61411
## HU1016 HBV d28	78.11415	70.66883	75.30709
## HU1019 HBV d28	91.90779	74.04846	82.42998
## HU1020 coinf d28	75.67638	68.79921	72.73051
## HU1019 mock d8	75.24492	57.86209	65.31538
## HU1019 mock d28	79.32301	62.24562	66.46577
## HU1019 coinf d28	81.21345	70.23732	71.03495
## HU1019 coinf d8 a	80.34316	68.23807	71.34560
## HU1019 coinf d8	80.78765	63.20439	70.78773
## HU1007 mock d8 a	70.38525	64.82501	75.23070
## HU1007 mock d8 c	68.05385	69.17515	76.55800
## HU1007 mock d8 b	64.16677	68.36569	76.74687
## HU1007 HBV d8 b	64.18948	67.91374	72.73127
## HU1007 HBV d8 a	61.55935	65.32048	69.43817
## HU1007 HBV d8 c	63.01715	66.93062	71.90620
## HU1020 HBV d28	51.16350	58.36546	56.21469
## HU1020 coinf d8	53.94866	59.64892	62.07022
## HU1020 mock d28	47.98302	62.33152	58.44733
## HU1020 mock d8	44.29321	60.92535	62.60889
## HU1020 HBV d8	0.00000	56.48987	59.60221
## HU1019 HBV d8	56.48987	0.00000	53.71802
## HU1019 coinf d28 b	59.60221	53.71802	0.00000
## HU1016 coinf d28	60.82748	59.44677	62.17276
## HU1016 HBV d8	55.36122	51.59443	57.38556
## HU1016 coinf d8	55.53109	54.92507	59.73689
##	HU1016 coinf d28	HU1016 HBV d8	HU1016 coinf d8
## HU1020 coinf d28 c	103.80177	106.08513	103.90974
## HU1020 coinf d28 e	108.79256	110.46451	108.38119
## HU1019 coinf d28 c	119.00576	121.13041	118.10029
## HU1019 coinf d8 d	108.90891	109.25949	107.68375
## HU1019 coinf d8 e	106.86113	108.45084	104.79435
## HU1019 coinf d8 c	113.33827	114.20762	111.38109
## HU1016 mock d8	110.21915	113.02741	109.11117
## HU1019 coinf d28 e	95.11572	98.05063	96.34105
## HU1019 coinf d28 d	103.15130	106.32713	104.13871
## HU1016 mock d28	93.47183	96.19365	94.60947
## HU1020 coinf d28 d	99.66697	101.82828	98.01277
## HU1020 coinf d8 e	104.90351	104.89535	100.14908
## HU1020 coinf d8 c	97.05876	96.97886	91.35907
## HU1020 coinf d8 d	95.35135	95.77487	90.39157
## HU1007 HBV d28 c	90.71100	95.32677	99.17977
## HU1007 mock d28 a	95.00919	100.93605	105.54026
## HU1007 mock d28 c	69.56419	75.34367	79.86557
## HU1007 mock d28 b	77.52901	84.07978	88.96930
## HU1007 HBV d28 a	73.32051	81.38260	84.38968
## HU1007 HBV d28 b	83.45597	88.34856	91.81381
## HU1016 HBV d28	61.81420	67.94614	69.43853
## HU1019 HBV d28	87.96195	88.80442	91.32890
## HU1020 coinf d28	79.58559	77.86714	79.69913
## HU1019 mock d8	75.43142	71.72714	74.96238
## HU1019 mock d28	78.56922	75.83007	78.92589


```

## HU1019 coinf d28          79.02037      77.29132      78.24812
## HU1019 coinf d8 a        79.43454      77.29229      76.98126
## HU1019 coinf d8          78.71368      74.58003      76.13737
## HU1007 mock d8 a         72.72247      69.54183      71.57989
## HU1007 mock d8 c         72.27595      72.15622      72.34412
## HU1007 mock d8 b         71.31166      70.45728      70.63966
## HU1007 HBV d8 b          71.84091      66.35268      66.69922
## HU1007 HBV d8 a          67.44829      61.98062      62.40208
## HU1007 HBV d8 c          69.88199      64.96425      64.98779
## HU1020 HBV d28           57.28306      54.28015      56.31810
## HU1020 coinf d8          62.22992      55.55654      54.08673
## HU1020 mock d28          62.36244      61.87903      62.21970
## HU1020 mock d8           60.24297      58.69122      58.17329
## HU1020 HBV d8            60.82748      55.36122      55.53109
## HU1019 HBV d8            59.44677      51.59443      54.92507
## HU1019 coinf d28 b        62.17276      57.38556      59.73689
## HU1016 coinf d28          0.00000      47.60981      50.04841
## HU1016 HBV d8            47.60981      0.00000      42.93289
## HU1016 coinf d8          50.04841      42.93289      0.00000
##
## $rowDendrogram
## 'dendrogram' with 2 branches and 44 members total, at height 302.3886
##
## $colDendrogram
## 'dendrogram' with 2 branches and 44 members total, at height 302.3886
##
## $breaks
## [1] 0.000000 1.347953 2.695906 4.043859 5.391812 6.739764
## [7] 8.087717 9.435670 10.783623 12.131576 13.479529 14.827482
## [13] 16.175435 17.523388 18.871341 20.219293 21.567246 22.915199
## [19] 24.263152 25.611105 26.959058 28.307011 29.654964 31.002917
## [25] 32.350869 33.698822 35.046775 36.394728 37.742681 39.090634
## [31] 40.438587 41.786540 43.134493 44.482446 45.830398 47.178351
## [37] 48.526304 49.874257 51.222210 52.570163 53.918116 55.266069
## [43] 56.614022 57.961974 59.309927 60.657880 62.005833 63.353786
## [49] 64.701739 66.049692 67.397645 68.745598 70.093551 71.441503
## [55] 72.789456 74.137409 75.485362 76.833315 78.181268 79.529221
## [61] 80.877174 82.225127 83.573079 84.921032 86.268985 87.616938
## [67] 88.964891 90.312844 91.660797 93.008750 94.356703 95.704656
## [73] 97.052608 98.400561 99.748514 101.096467 102.444420 103.792373
## [79] 105.140326 106.488279 107.836232 109.184184 110.532137 111.880090
## [85] 113.228043 114.575996 115.923949 117.271902 118.619855 119.967808
## [91] 121.315761 122.663713 124.011666 125.359619 126.707572 128.055525
## [97] 129.403478 130.751431 132.099384 133.447337 134.795289
##
## $col
## [1] "#440154FF" "#450558FF" "#46085CFF" "#470D60FF" "#471063FF"
## [6] "#481467FF" "#481769FF" "#481B6DFF" "#481E70FF" "#482173FF"
## [11] "#482576FF" "#482878FF" "#472C7AFF" "#472F7CFF" "#46327EFF"
## [16] "#453581FF" "#453882FF" "#443B84FF" "#433E85FF" "#424186FF"
## [21] "#404587FF" "#3F4788FF" "#3E4A89FF" "#3D4D8AFF" "#3C508BFF"
## [26] "#3B528BFF" "#39558CFF" "#38598CFF" "#375B8DFF" "#355E8DFF"
## [31] "#34608DFF" "#33638DFF" "#32658EFF" "#31688EFF" "#2F6B8EFF"
## [36] "#2E6D8EFF" "#2D708EFF" "#2C718EFF" "#2B748EFF" "#2A768EFF"

```

```

## [41] "#29798EFF" "#287C8EFF" "#277E8EFF" "#26818EFF" "#26828EFF"
## [46] "#25858EFF" "#24878EFF" "#238A8DFF" "#228D8DFF" "#218F8DFF"
## [51] "#20928CFF" "#20938CFF" "#1F968BFF" "#1F998AFF" "#1E9B8AFF"
## [56] "#1F9E89FF" "#1FA088FF" "#1FA287FF" "#20A486FF" "#22A785FF"
## [61] "#24AA83FF" "#25AC82FF" "#28AE80FF" "#2BB07FFF" "#2EB37CFF"
## [66] "#31B67BFF" "#35B779FF" "#39BA76FF" "#3DBC74FF" "#41BE71FF"
## [71] "#47C06FFF" "#4CC26CFF" "#51C56AFF" "#56C667FF" "#5BC863FF"
## [76] "#61CA60FF" "#67CC5CFF" "#6DCD59FF" "#73D056FF" "#78D152FF"
## [81] "#7FD34EFF" "#85D54AFF" "#8CD646FF" "#92D741FF" "#99D83DFF"
## [86] "#A0DA39FF" "#A7DB35FF" "#ADDC30FF" "#B4DE2CFF" "#BBDE28FF"
## [91] "#C2DF23FF" "#C9E020FF" "#D0E11CFF" "#D7E219FF" "#DDE318FF"
## [96] "#E4E419FF" "#EBE51AFF" "#F1E51DFF" "#F7E620FF" "#FDE725FF"
##
## $colorTable
##      low      high      color
## 1      0.000000  1.347953 #440154FF
## 2      1.347953  2.695906 #450558FF
## 3      2.695906  4.043859 #46085CFF
## 4      4.043859  5.391812 #470D60FF
## 5      5.391812  6.739764 #471063FF
## 6      6.739764  8.087717 #481467FF
## 7      8.087717  9.435670 #481769FF
## 8      9.435670 10.783623 #481B6DFF
## 9     10.783623 12.131576 #481E70FF
## 10     12.131576 13.479529 #482173FF
## 11     13.479529 14.827482 #482576FF
## 12     14.827482 16.175435 #482878FF
## 13     16.175435 17.523388 #472C7AFF
## 14     17.523388 18.871341 #472F7CFF
## 15     18.871341 20.219293 #46327EFF
## 16     20.219293 21.567246 #453581FF
## 17     21.567246 22.915199 #453882FF
## 18     22.915199 24.263152 #443B84FF
## 19     24.263152 25.611105 #433E85FF
## 20     25.611105 26.959058 #424186FF
## 21     26.959058 28.307011 #404587FF
## 22     28.307011 29.654964 #3F4788FF
## 23     29.654964 31.002917 #3E4A89FF
## 24     31.002917 32.350869 #3D4D8AFF
## 25     32.350869 33.698822 #3C508BFF
## 26     33.698822 35.046775 #3B528BFF
## 27     35.046775 36.394728 #39558CFF
## 28     36.394728 37.742681 #38598CFF
## 29     37.742681 39.090634 #375B8DFF
## 30     39.090634 40.438587 #355E8DFF
## 31     40.438587 41.786540 #34608DFF
## 32     41.786540 43.134493 #33638DFF
## 33     43.134493 44.482446 #32658EFF
## 34     44.482446 45.830398 #31688EFF
## 35     45.830398 47.178351 #2F6B8EFF
## 36     47.178351 48.526304 #2E6D8EFF
## 37     48.526304 49.874257 #2D708EFF
## 38     49.874257 51.222210 #2C718EFF
## 39     51.222210 52.570163 #2B748EFF

```

## 40	52.570163	53.918116	#2A768EFF
## 41	53.918116	55.266069	#29798EFF
## 42	55.266069	56.614022	#287C8EFF
## 43	56.614022	57.961974	#277E8EFF
## 44	57.961974	59.309927	#26818EFF
## 45	59.309927	60.657880	#26828EFF
## 46	60.657880	62.005833	#25858EFF
## 47	62.005833	63.353786	#24878EFF
## 48	63.353786	64.701739	#238A8DFF
## 49	64.701739	66.049692	#228D8DFF
## 50	66.049692	67.397645	#218F8DFF
## 51	67.397645	68.745598	#20928CFF
## 52	68.745598	70.093551	#20938CFF
## 53	70.093551	71.441503	#1F968BFF
## 54	71.441503	72.789456	#1F998AFF
## 55	72.789456	74.137409	#1E9B8AFF
## 56	74.137409	75.485362	#1F9E89FF
## 57	75.485362	76.833315	#1FA088FF
## 58	76.833315	78.181268	#1FA287FF
## 59	78.181268	79.529221	#20A486FF
## 60	79.529221	80.877174	#22A785FF
## 61	80.877174	82.225127	#24AA83FF
## 62	82.225127	83.573079	#25AC82FF
## 63	83.573079	84.921032	#28AE80FF
## 64	84.921032	86.268985	#2BB07FFF
## 65	86.268985	87.616938	#2EB37CFF
## 66	87.616938	88.964891	#31B67BFF
## 67	88.964891	90.312844	#35B779FF
## 68	90.312844	91.660797	#39BA76FF
## 69	91.660797	93.008750	#3DBC74FF
## 70	93.008750	94.356703	#41BE71FF
## 71	94.356703	95.704656	#47C06FFF
## 72	95.704656	97.052608	#4CC26CFF
## 73	97.052608	98.400561	#51C56AFF
## 74	98.400561	99.748514	#56C667FF
## 75	99.748514	101.096467	#5BC863FF
## 76	101.096467	102.444420	#61CA60FF
## 77	102.444420	103.792373	#67CC5CFF
## 78	103.792373	105.140326	#6DCD59FF
## 79	105.140326	106.488279	#73D056FF
## 80	106.488279	107.836232	#78D152FF
## 81	107.836232	109.184184	#7FD34EFF
## 82	109.184184	110.532137	#85D54AFF
## 83	110.532137	111.880090	#8CD646FF
## 84	111.880090	113.228043	#92D741FF
## 85	113.228043	114.575996	#99D83DFF
## 86	114.575996	115.923949	#A0DA39FF
## 87	115.923949	117.271902	#A7DB35FF
## 88	117.271902	118.619855	#ADDC30FF
## 89	118.619855	119.967808	#B4DE2CFF
## 90	119.967808	121.315761	#BBDE28FF
## 91	121.315761	122.663713	#C2DF23FF
## 92	122.663713	124.011666	#C9E020FF
## 93	124.011666	125.359619	#D0E11CFF

```
## 94 125.359619 126.707572 #D7E219FF
## 95 126.707572 128.055525 #DDE318FF
## 96 128.055525 129.403478 #E4E419FF
## 97 129.403478 130.751431 #EBE51AFF
## 98 130.751431 132.099384 #F1E51DFF
## 99 132.099384 133.447337 #F7E620FF
## 100 133.447337 134.795289 #FDE725FF
```

```
##
## $layout
## $layout$lmat
##      [,1] [,2]
## [1,]    4    3
## [2,]    2    1
##
## $layout$lhei
## [1] 0.7 4.0
##
## $layout$lwid
## [1] 0.7 4.0
```

```
mouse_graphed <- graph_generation("All mouse genes")
```

```
## $rowInd
## [1] 1 40 6 18 19 5 4 20 3 39 15 17 2 16 31 30 32 37 36 38 33 34 27
## [24] 35 29 28 22 24 21 25 7 8 23 11 9 13 12 43 26 14 41 44 10 42
```

```
##
## $colInd
## [1] 1 40 6 18 19 5 4 20 3 39 15 17 2 16 31 30 32 37 36 38 33 34 27
## [24] 35 29 28 22 24 21 25 7 8 23 11 9 13 12 43 26 14 41 44 10 42
```

```
##
## $call
## heatmap.2(x = mat, Rowv = TRUE, Colv = TRUE, dendrogram = "both",
##           col = viridis(100), trace = "none", margins = c(18, 18),
##           cexRow = 1.5, cexCol = 1.5, keysize = 0.7, density.info = "none")
##
```

```
## $carpet
##
##           HU1019 coinf d28 c HU1016 mock d8 HU1019 coinf d8 e
## HU1019 coinf d28 c           0.00000          54.75023          53.49551
## HU1016 mock d8           54.75023           0.00000          59.24272
## HU1019 coinf d8 e           53.49551          59.24272           0.00000
## HU1020 coinf d8 c           56.15196          51.36958          42.60103
## HU1020 coinf d8 d           64.69363          54.93752          51.58528
## HU1019 coinf d8 d           58.36525          59.30717          55.16401
## HU1019 coinf d8 c           51.53186          52.39376          52.54154
## HU1020 coinf d8 e           48.58968          47.48256          51.33366
## HU1019 coinf d28 e           48.43180          52.85110          53.09949
## HU1016 mock d28           54.04399          53.47744          58.44159
## HU1020 coinf d28 c           51.81072          51.93137          57.24057
## HU1020 coinf d28 e           50.73101          51.29668          59.05415
## HU1019 coinf d28 d           48.43679          51.41035          55.45203
## HU1020 coinf d28 d           49.18885          51.38033          56.20469
## HU1007 mock d8 b           83.52617          78.63886          72.23774
## HU1007 mock d8 a           93.90565          90.32556          80.29666
## HU1007 mock d8           88.42256          85.00974          75.16336
## HU1007 HBV d8 b           90.50264          86.36750          77.81629
```

## HU1007 HBV d8 a	91.19432	87.66791	77.53114
## HU1007 HBV d8	90.16410	85.88418	76.71827
## HU1007 HBV d28 a	94.78495	91.70916	82.14889
## HU1007 HBV d28 b	99.38440	96.40902	85.97875
## HU1007 mock d28 a	105.37876	103.79402	93.39704
## HU1007 HBV d28	106.16928	104.50687	92.82362
## HU1007 mock d28	103.87429	102.14186	89.95784
## HU1007 mock d28 b	104.50220	102.84729	92.07947
## HU1020 mock d8	66.33373	68.46849	61.16567
## HU1020 HBV d8	71.03546	72.35417	66.30769
## HU1020 mock d28	63.35024	71.84593	64.88768
## HU1020 coinf d28	73.47780	77.91490	70.09541
## HU1019 mock d28	80.51392	84.06926	76.35016
## HU1019 mock d8	76.26143	81.08906	71.41781
## HU1020 HBV d28	74.87880	80.94919	72.08229
## HU1019 coinf d28 b	77.98089	83.06295	72.21664
## HU1019 HBV d28	86.02120	84.30669	71.21652
## HU1019 coinf d8 a	81.66209	89.08232	62.48649
## HU1019 coinf d28	69.88248	86.78456	69.77649
## HU1016 HBV d28	89.09818	91.04879	80.01797
## HU1020 coinf d8	80.03644	84.05299	70.37087
## HU1019 coinf d8	83.15224	87.76710	74.03887
## HU1016 coinf d28	84.56363	85.29474	75.53362
## HU1016 HBV d8	88.90289	89.65176	79.92757
## HU1019 HBV d8	82.54594	85.80003	76.39967
## HU1016 coinf d8	83.78549	87.06045	76.84825
## HU1020 coinf d8 c HU1020 coinf d8 d HU1019 coinf d8 d			
## HU1019 coinf d28 c	56.15196	64.69363	58.36525
## HU1016 mock d8	51.36958	54.93752	59.30717
## HU1019 coinf d8 e	42.60103	51.58528	55.16401
## HU1020 coinf d8 c	0.00000	38.18292	53.49976
## HU1020 coinf d8 d	38.18292	0.00000	61.00505
## HU1019 coinf d8 d	53.49976	61.00505	0.00000
## HU1019 coinf d8 c	49.52965	55.94262	47.40105
## HU1020 coinf d8 e	46.14490	52.55145	51.12232
## HU1019 coinf d28 e	51.02199	56.65178	51.55584
## HU1016 mock d28	55.42182	58.58459	53.10396
## HU1020 coinf d28 c	53.72131	57.22546	51.53364
## HU1020 coinf d28 e	53.80126	56.94380	54.96794
## HU1019 coinf d28 d	52.68203	57.69441	53.79604
## HU1020 coinf d28 d	53.71266	57.98700	55.29538
## HU1007 mock d8 b	66.02976	68.25046	71.87485
## HU1007 mock d8 a	74.96973	76.68060	80.16994
## HU1007 mock d8	69.54466	71.59875	77.27697
## HU1007 HBV d8 b	71.14330	72.78969	77.60118
## HU1007 HBV d8 a	71.51760	73.67007	77.93020
## HU1007 HBV d8	70.07248	71.76809	76.94608
## HU1007 HBV d28 a	76.95281	78.29086	82.24028
## HU1007 HBV d28 b	81.39327	82.45164	85.22200
## HU1007 mock d28 a	90.01792	91.17725	93.37943
## HU1007 HBV d28	88.71733	90.14339	92.95088
## HU1007 mock d28	86.43896	88.12916	90.66697
## HU1007 mock d28 b	88.50390	90.12154	91.46094
## HU1020 mock d8	59.84829	65.55372	56.16228

## HU1020 HBV d8	62.74741	66.59816	60.54104
## HU1020 mock d28	64.09282	68.97330	58.55469
## HU1020 coinf d28	68.86836	72.91569	62.35492
## HU1019 mock d28	75.06086	78.18112	67.29102
## HU1019 mock d8	71.94628	77.59463	64.33360
## HU1020 HBV d28	71.42802	75.64327	65.40782
## HU1019 coinf d28 b	73.00701	77.30532	67.22820
## HU1019 HBV d28	66.97567	68.31864	71.56661
## HU1019 coinf d8 a	68.55986	75.70595	71.53402
## HU1019 coinf d28	75.07616	83.25224	69.27169
## HU1016 HBV d28	79.45880	82.36974	75.00657
## HU1020 coinf d8	70.25701	76.51147	65.72432
## HU1019 coinf d8	74.58233	80.45192	66.87373
## HU1016 coinf d28	73.17426	76.54588	69.03649
## HU1016 HBV d8	78.37256	82.65354	72.77077
## HU1019 HBV d8	75.72909	79.94230	69.98844
## HU1016 coinf d8	76.76070	81.82656	71.29950
## HU1019 coinf d8 c HU1020 coinf d8 e HU1019 coinf d28 e			
## HU1019 coinf d28 c	51.53186	48.58968	48.43180
## HU1016 mock d8	52.39376	47.48256	52.85110
## HU1019 coinf d8 e	52.54154	51.33366	53.09949
## HU1020 coinf d8 c	49.52965	46.14490	51.02199
## HU1020 coinf d8 d	55.94262	52.55145	56.65178
## HU1019 coinf d8 d	47.40105	51.12232	51.55584
## HU1019 coinf d8 c	0.00000	43.33176	47.29040
## HU1020 coinf d8 e	43.33176	0.00000	48.12932
## HU1019 coinf d28 e	47.29040	48.12932	0.00000
## HU1016 mock d28	49.24697	48.86151	39.38724
## HU1020 coinf d28 c	47.87081	46.68834	39.10617
## HU1020 coinf d28 e	47.35270	45.19746	40.10271
## HU1019 coinf d28 d	49.09834	48.38800	32.05594
## HU1020 coinf d28 d	50.56029	47.73190	40.61986
## HU1007 mock d8 b	72.65253	73.86167	75.60451
## HU1007 mock d8 a	82.80980	85.01862	84.95182
## HU1007 mock d8	78.26319	80.00051	81.06092
## HU1007 HBV d8 b	79.51643	81.27068	81.23641
## HU1007 HBV d8 a	80.08982	81.78917	81.68595
## HU1007 HBV d8	78.86788	80.18490	80.93215
## HU1007 HBV d28 a	84.98309	86.98125	86.77955
## HU1007 HBV d28 b	89.11145	91.45620	91.37991
## HU1007 mock d28 a	95.39135	98.37709	97.77668
## HU1007 HBV d28	95.79083	98.84795	97.71626
## HU1007 mock d28	93.16917	96.28278	95.77411
## HU1007 mock d28 b	94.32329	97.18985	96.76034
## HU1020 mock d8	55.71336	58.44949	49.75331
## HU1020 HBV d8	60.10147	61.76628	58.12351
## HU1020 mock d28	58.77868	60.19768	50.28005
## HU1020 coinf d28	63.36899	66.71253	56.33851
## HU1019 mock d28	69.40963	73.53524	62.61854
## HU1019 mock d8	66.33893	70.20860	60.58418
## HU1020 HBV d28	67.40037	70.64120	58.75960
## HU1019 coinf d28 b	69.09059	73.04954	58.13262
## HU1019 HBV d28	72.87623	75.78308	70.93849
## HU1019 coinf d8 a	74.15141	77.10601	73.37446

## HU1019 coinf d28	71.11676	74.51889	67.39660
## HU1016 HBV d28	78.16657	80.51525	73.83594
## HU1020 coinf d8	68.16786	69.08155	69.22965
## HU1019 coinf d8	69.42812	75.06117	71.13268
## HU1016 coinf d28	71.56563	74.02540	68.46992
## HU1016 HBV d8	75.65765	79.45484	73.96462
## HU1019 HBV d8	71.61892	75.00276	69.35528
## HU1016 coinf d8	73.15771	76.44552	69.94274
## HU1016 mock d28 HU1020 coinf d28 c HU1020 coinf d28 e			
## HU1019 coinf d28 c	54.04399	51.81072	50.73101
## HU1016 mock d8	53.47744	51.93137	51.29668
## HU1019 coinf d8 e	58.44159	57.24057	59.05415
## HU1020 coinf d8 c	55.42182	53.72131	53.80126
## HU1020 coinf d8 d	58.58459	57.22546	56.94380
## HU1019 coinf d8 d	53.10396	51.53364	54.96794
## HU1019 coinf d8 c	49.24697	47.87081	47.35270
## HU1020 coinf d8 e	48.86151	46.68834	45.19746
## HU1019 coinf d28 e	39.38724	39.10617	40.10271
## HU1016 mock d28	0.00000	38.14283	41.58573
## HU1020 coinf d28 c	38.14283	0.00000	32.70269
## HU1020 coinf d28 e	41.58573	32.70269	0.00000
## HU1019 coinf d28 d	41.84567	40.01740	40.32753
## HU1020 coinf d28 d	42.47992	39.59066	39.97326
## HU1007 mock d8 b	75.74558	78.37778	80.15617
## HU1007 mock d8 a	85.65278	88.64581	90.59779
## HU1007 mock d8	82.51502	84.79271	86.43325
## HU1007 HBV d8 b	82.37892	84.82294	86.40340
## HU1007 HBV d8 a	83.15716	85.61646	87.20424
## HU1007 HBV d8	81.75031	84.23386	85.86636
## HU1007 HBV d28 a	88.21307	89.86035	91.53465
## HU1007 HBV d28 b	92.60917	94.44752	96.54327
## HU1007 mock d28 a	98.90546	100.91204	102.18726
## HU1007 HBV d28	99.22944	101.73639	103.28866
## HU1007 mock d28	96.91983	99.40697	100.97276
## HU1007 mock d28 b	97.69157	99.85833	101.48949
## HU1020 mock d8	53.24981	56.55549	58.56672
## HU1020 HBV d8	56.20446	59.90269	61.77856
## HU1020 mock d28	49.81523	53.37414	55.70471
## HU1020 coinf d28	58.06498	56.08865	55.40943
## HU1019 mock d28	61.93371	64.61927	66.64408
## HU1019 mock d8	63.04033	66.34533	68.75892
## HU1020 HBV d28	57.35973	62.25749	65.30411
## HU1019 coinf d28 b	59.60302	64.79164	68.61672
## HU1019 HBV d28	71.65288	74.52120	76.43168
## HU1019 coinf d8 a	77.36330	80.18027	82.23155
## HU1019 coinf d28	71.91067	74.30288	76.17447
## HU1016 HBV d28	72.03966	74.96391	77.74980
## HU1020 coinf d8	70.31374	72.66678	74.48815
## HU1019 coinf d8	72.88816	75.64556	77.47234
## HU1016 coinf d28	67.47539	70.86493	73.12488
## HU1016 HBV d8	73.89886	77.94054	80.37468
## HU1019 HBV d8	68.85171	73.18278	75.87001
## HU1016 coinf d8	71.85804	75.86644	78.11339
## HU1019 coinf d28 d HU1020 coinf d28 d HU1007 mock d8 b			

## HU1019	coinf d28 c	48.43679	49.18885	83.52617
## HU1016	mock d8	51.41035	51.38033	78.63886
## HU1019	coinf d8 e	55.45203	56.20469	72.23774
## HU1020	coinf d8 c	52.68203	53.71266	66.02976
## HU1020	coinf d8 d	57.69441	57.98700	68.25046
## HU1019	coinf d8 d	53.79604	55.29538	71.87485
## HU1019	coinf d8 c	49.09834	50.56029	72.65253
## HU1020	coinf d8 e	48.38800	47.73190	73.86167
## HU1019	coinf d28 e	32.05594	40.61986	75.60451
## HU1016	mock d28	41.84567	42.47992	75.74558
## HU1020	coinf d28 c	40.01740	39.59066	78.37778
## HU1020	coinf d28 e	40.32753	39.97326	80.15617
## HU1019	coinf d28 d	0.00000	40.42780	80.82303
## HU1020	coinf d28 d	40.42780	0.00000	82.57639
## HU1007	mock d8 b	80.82303	82.57639	0.00000
## HU1007	mock d8 a	90.86681	92.32856	37.64133
## HU1007	mock d8	86.45037	88.35706	35.75008
## HU1007	HBV d8 b	86.87860	88.68840	36.26777
## HU1007	HBV d8 a	87.51353	89.08395	36.36896
## HU1007	HBV d8	86.53074	87.80539	35.48784
## HU1007	HBV d28 a	92.22079	93.90567	42.99801
## HU1007	HBV d28 b	96.76403	98.28739	47.67215
## HU1007	mock d28 a	103.56114	105.14989	53.65781
## HU1007	HBV d28	103.55385	105.47749	51.93583
## HU1007	mock d28	101.76290	103.26867	48.08894
## HU1007	mock d28 b	102.49503	104.09781	50.47564
## HU1020	mock d8	57.24112	59.72643	59.19264
## HU1020	HBV d8	65.03648	64.97610	54.88591
## HU1020	mock d28	57.32889	55.95685	64.56590
## HU1020	coinf d28	63.65189	63.76571	66.47388
## HU1019	mock d28	69.85947	70.23524	68.07548
## HU1019	mock d8	68.55433	71.23554	62.06408
## HU1020	HBV d28	66.54715	66.59669	64.92953
## HU1019	coinf d28 b	66.20210	69.07213	67.82505
## HU1019	HBV d28	77.70320	78.58436	57.68653
## HU1019	coinf d8 a	80.44728	81.38585	63.68137
## HU1019	coinf d28	74.77446	75.72725	68.13262
## HU1016	HBV d28	80.74474	79.71756	71.59559
## HU1020	coinf d8	76.50913	76.44487	59.87042
## HU1019	coinf d8	78.69303	80.18989	61.70009
## HU1016	coinf d28	75.99799	76.02192	60.76699
## HU1016	HBV d8	81.85400	82.67817	60.73237
## HU1019	HBV d8	76.76679	78.30761	61.75091
## HU1016	coinf d8	77.72990	79.70365	62.53400
##	HU1007 mock d8 a	HU1007 mock d8	HU1007 HBV d8 b	
## HU1019	coinf d28 c	93.90565	88.42256	90.50264
## HU1016	mock d8	90.32556	85.00974	86.36750
## HU1019	coinf d8 e	80.29666	75.16336	77.81629
## HU1020	coinf d8 c	74.96973	69.54466	71.14330
## HU1020	coinf d8 d	76.68060	71.59875	72.78969
## HU1019	coinf d8 d	80.16994	77.27697	77.60118
## HU1019	coinf d8 c	82.80980	78.26319	79.51643
## HU1020	coinf d8 e	85.01862	80.00051	81.27068
## HU1019	coinf d28 e	84.95182	81.06092	81.23641

## HU1016 mock d28	85.65278	82.51502	82.37892
## HU1020 coinf d28 c	88.64581	84.79271	84.82294
## HU1020 coinf d28 e	90.59779	86.43325	86.40340
## HU1019 coinf d28 d	90.86681	86.45037	86.87860
## HU1020 coinf d28 d	92.32856	88.35706	88.68840
## HU1007 mock d8 b	37.64133	35.75008	36.26777
## HU1007 mock d8 a	0.00000	37.01092	36.17062
## HU1007 mock d8	37.01092	0.00000	36.34378
## HU1007 HBV d8 b	36.17062	36.34378	0.00000
## HU1007 HBV d8 a	35.62121	36.38653	32.42240
## HU1007 HBV d8	36.41899	36.64855	33.01798
## HU1007 HBV d28 a	40.35135	40.73793	39.06487
## HU1007 HBV d28 b	44.37490	45.25689	43.98704
## HU1007 mock d28 a	49.74625	50.99523	50.58440
## HU1007 HBV d28	45.55005	47.99365	46.11221
## HU1007 mock d28	42.60923	44.67575	44.58202
## HU1007 mock d28 b	45.58554	47.83025	46.87490
## HU1020 mock d8	65.75178	64.49453	63.76042
## HU1020 HBV d8	61.52576	61.07065	59.34461
## HU1020 mock d28	70.52570	69.77945	68.30260
## HU1020 coinf d28	70.92578	71.24541	69.18730
## HU1019 mock d28	70.91541	72.51851	69.74274
## HU1019 mock d8	65.37331	66.47607	64.95610
## HU1020 HBV d28	68.11464	69.19165	66.73739
## HU1019 coinf d28 b	70.54031	71.54031	69.53478
## HU1019 HBV d28	57.77894	59.34738	57.65459
## HU1019 coinf d8 a	63.53411	63.44470	64.58738
## HU1019 coinf d28	70.51755	70.30990	70.70509
## HU1016 HBV d28	72.87795	75.20527	73.43272
## HU1020 coinf d8	62.29305	63.34363	62.45686
## HU1019 coinf d8	62.84220	64.31426	63.09591
## HU1016 coinf d28	62.58785	64.89925	62.98861
## HU1016 HBV d8	61.37755	64.39816	61.89581
## HU1019 HBV d8	64.45040	66.18177	64.97830
## HU1016 coinf d8	64.41932	65.96904	64.69202
## HU1007 HBV d8 a HU1007 HBV d8 HU1007 HBV d28 a			
## HU1019 coinf d28 c	91.19432	90.16410	94.78495
## HU1016 mock d8	87.66791	85.88418	91.70916
## HU1019 coinf d8 e	77.53114	76.71827	82.14889
## HU1020 coinf d8 c	71.51760	70.07248	76.95281
## HU1020 coinf d8 d	73.67007	71.76809	78.29086
## HU1019 coinf d8 d	77.93020	76.94608	82.24028
## HU1019 coinf d8 c	80.08982	78.86788	84.98309
## HU1020 coinf d8 e	81.78917	80.18490	86.98125
## HU1019 coinf d28 e	81.68595	80.93215	86.77955
## HU1016 mock d28	83.15716	81.75031	88.21307
## HU1020 coinf d28 c	85.61646	84.23386	89.86035
## HU1020 coinf d28 e	87.20424	85.86636	91.53465
## HU1019 coinf d28 d	87.51353	86.53074	92.22079
## HU1020 coinf d28 d	89.08395	87.80539	93.90567
## HU1007 mock d8 b	36.36896	35.48784	42.99801
## HU1007 mock d8 a	35.62121	36.41899	40.35135
## HU1007 mock d8	36.38653	36.64855	40.73793
## HU1007 HBV d8 b	32.42240	33.01798	39.06487

## HU1007 HBV d8 a	0.00000	31.67768	38.34150
## HU1007 HBV d8	31.67768	0.00000	39.78986
## HU1007 HBV d28 a	38.34150	39.78986	0.00000
## HU1007 HBV d28 b	43.32925	44.34777	39.11597
## HU1007 mock d28 a	48.54114	51.27505	43.11194
## HU1007 HBV d28	44.75176	47.53905	42.11112
## HU1007 mock d28	42.02557	44.96898	38.76076
## HU1007 mock d28 b	44.93460	47.62184	39.24296
## HU1020 mock d8	62.77861	63.25142	69.49357
## HU1020 HBV d8	58.62039	58.98798	66.04212
## HU1020 mock d28	67.42011	67.65759	74.41151
## HU1020 coinf d28	67.85618	68.63141	73.86782
## HU1019 mock d28	68.90183	69.65788	75.78781
## HU1019 mock d8	63.20907	64.75455	69.87417
## HU1020 HBV d28	65.39163	66.56387	72.24046
## HU1019 coinf d28 b	67.84668	69.07696	74.69767
## HU1019 HBV d28	56.45551	57.59894	63.29804
## HU1019 coinf d8 a	61.27564	63.63490	67.87460
## HU1019 coinf d28	68.58525	70.72017	74.21571
## HU1016 HBV d28	71.35484	72.63046	77.83902
## HU1020 coinf d8	60.00833	61.58865	67.62014
## HU1019 coinf d8	61.25728	63.11359	67.93506
## HU1016 coinf d28	61.51551	62.38458	68.90063
## HU1016 HBV d8	59.60545	61.56150	67.01812
## HU1019 HBV d8	63.27043	64.79707	69.72942
## HU1016 coinf d8	62.81359	64.66576	69.21485
## HU1007 HBV d28 b HU1007 mock d28 a HU1007 HBV d28			
## HU1019 coinf d28 c	99.38440	105.37876	106.16928
## HU1016 mock d8	96.40902	103.79402	104.50687
## HU1019 coinf d8 e	85.97875	93.39704	92.82362
## HU1020 coinf d8 c	81.39327	90.01792	88.71733
## HU1020 coinf d8 d	82.45164	91.17725	90.14339
## HU1019 coinf d8 d	85.22200	93.37943	92.95088
## HU1019 coinf d8 c	89.11145	95.39135	95.79083
## HU1020 coinf d8 e	91.45620	98.37709	98.84795
## HU1019 coinf d28 e	91.37991	97.77668	97.71626
## HU1016 mock d28	92.60917	98.90546	99.22944
## HU1020 coinf d28 c	94.44752	100.91204	101.73639
## HU1020 coinf d28 e	96.54327	102.18726	103.28866
## HU1019 coinf d28 d	96.76403	103.56114	103.55385
## HU1020 coinf d28 d	98.28739	105.14989	105.47749
## HU1007 mock d8 b	47.67215	53.65781	51.93583
## HU1007 mock d8 a	44.37490	49.74625	45.55005
## HU1007 mock d8	45.25689	50.99523	47.99365
## HU1007 HBV d8 b	43.98704	50.58440	46.11221
## HU1007 HBV d8 a	43.32925	48.54114	44.75176
## HU1007 HBV d8	44.34777	51.27505	47.53905
## HU1007 HBV d28 a	39.11597	43.11194	42.11112
## HU1007 HBV d28 b	0.00000	47.19267	45.39779
## HU1007 mock d28 a	47.19267	0.00000	41.78621
## HU1007 HBV d28	45.39779	41.78621	0.00000
## HU1007 mock d28	42.23083	37.39935	35.89187
## HU1007 mock d28 b	43.40048	38.60038	38.39692
## HU1020 mock d8	73.57042	75.65076	75.54917

## HU1020 HBV d8	70.31085	71.85521	71.40679
## HU1020 mock d28	78.39830	81.26729	80.96885
## HU1020 coinf d28	78.01479	78.91547	78.81625
## HU1019 mock d28	79.04364	79.83646	78.55619
## HU1019 mock d8	73.38105	73.11226	72.39328
## HU1020 HBV d28	76.32916	77.49275	76.16495
## HU1019 coinf d28 b	78.10819	78.90488	77.67381
## HU1019 HBV d28	66.36558	67.82497	64.38631
## HU1019 coinf d8 a	70.47035	71.10274	68.26085
## HU1019 coinf d28	77.49737	76.67661	75.77718
## HU1016 HBV d28	80.75935	80.42685	78.32459
## HU1020 coinf d8	70.77392	70.79645	69.06581
## HU1019 coinf d8	70.80407	69.19074	67.28000
## HU1016 coinf d28	72.09116	72.22201	69.80577
## HU1016 HBV d8	69.77615	67.62368	65.78095
## HU1019 HBV d8	72.92997	71.19522	70.24115
## HU1016 coinf d8	72.27881	69.85952	68.85236
## HU1007 mock d28 HU1007 mock d28 b HU1020 mock d8			
## HU1019 coinf d28 c	103.87429	104.50220	66.33373
## HU1016 mock d8	102.14186	102.84729	68.46849
## HU1019 coinf d8 e	89.95784	92.07947	61.16567
## HU1020 coinf d8 c	86.43896	88.50390	59.84829
## HU1020 coinf d8 d	88.12916	90.12154	65.55372
## HU1019 coinf d8 d	90.66697	91.46094	56.16228
## HU1019 coinf d8 c	93.16917	94.32329	55.71336
## HU1020 coinf d8 e	96.28278	97.18985	58.44949
## HU1019 coinf d28 e	95.77411	96.76034	49.75331
## HU1016 mock d28	96.91983	97.69157	53.24981
## HU1020 coinf d28 c	99.40697	99.85833	56.55549
## HU1020 coinf d28 e	100.97276	101.48949	58.56672
## HU1019 coinf d28 d	101.76290	102.49503	57.24112
## HU1020 coinf d28 d	103.26867	104.09781	59.72643
## HU1007 mock d8 b	48.08894	50.47564	59.19264
## HU1007 mock d8 a	42.60923	45.58554	65.75178
## HU1007 mock d8	44.67575	47.83025	64.49453
## HU1007 HBV d8 b	44.58202	46.87490	63.76042
## HU1007 HBV d8 a	42.02557	44.93460	62.77861
## HU1007 HBV d8	44.96898	47.62184	63.25142
## HU1007 HBV d28 a	38.76076	39.24296	69.49357
## HU1007 HBV d28 b	42.23083	43.40048	73.57042
## HU1007 mock d28 a	37.39935	38.60038	75.65076
## HU1007 HBV d28	35.89187	38.39692	75.54917
## HU1007 mock d28	0.00000	33.87697	72.56027
## HU1007 mock d28 b	33.87697	0.00000	74.35256
## HU1020 mock d8	72.56027	74.35256	0.00000
## HU1020 HBV d8	68.61081	70.35023	31.14788
## HU1020 mock d28	78.60922	79.85480	33.82825
## HU1020 coinf d28	76.30362	77.61573	37.16453
## HU1019 mock d28	76.95412	78.33401	42.17562
## HU1019 mock d8	69.83011	71.56995	31.34548
## HU1020 HBV d28	74.30358	75.64612	36.87824
## HU1019 coinf d28 b	75.56616	77.52228	35.75860
## HU1019 HBV d28	62.67800	65.98455	46.69454
## HU1019 coinf d8 a	65.30305	68.97272	49.48560

## HU1019	coinf d28	73.29355	75.04511	44.76740
## HU1016	HBV d28	76.24803	78.26216	49.41968
## HU1020	coinf d8	66.13187	68.83826	38.26251
## HU1019	coinf d8	64.94238	67.36811	39.98093
## HU1016	coinf d28	67.59142	70.06422	39.60443
## HU1016	HBV d8	63.35848	65.77192	39.87045
## HU1019	HBV d8	67.34785	69.26854	36.58798
## HU1016	coinf d8	66.07095	68.19738	35.71299
##				
	HU1020 HBV d8		HU1020 mock d28	HU1020 coinf d28
## HU1019	coinf d28 c	71.03546	63.35024	73.47780
## HU1016	mock d8	72.35417	71.84593	77.91490
## HU1019	coinf d8 e	66.30769	64.88768	70.09541
## HU1020	coinf d8 c	62.74741	64.09282	68.86836
## HU1020	coinf d8 d	66.59816	68.97330	72.91569
## HU1019	coinf d8 d	60.54104	58.55469	62.35492
## HU1019	coinf d8 c	60.10147	58.77868	63.36899
## HU1020	coinf d8 e	61.76628	60.19768	66.71253
## HU1019	coinf d28 e	58.12351	50.28005	56.33851
## HU1016	mock d28	56.20446	49.81523	58.06498
## HU1020	coinf d28 c	59.90269	53.37414	56.08865
## HU1020	coinf d28 e	61.77856	55.70471	55.40943
## HU1019	coinf d28 d	65.03648	57.32889	63.65189
## HU1020	coinf d28 d	64.97610	55.95685	63.76571
## HU1007	mock d8 b	54.88591	64.56590	66.47388
## HU1007	mock d8 a	61.52576	70.52570	70.92578
## HU1007	mock d8	61.07065	69.77945	71.24541
## HU1007	HBV d8 b	59.34461	68.30260	69.18730
## HU1007	HBV d8 a	58.62039	67.42011	67.85618
## HU1007	HBV d8	58.98798	67.65759	68.63141
## HU1007	HBV d28 a	66.04212	74.41151	73.86782
## HU1007	HBV d28 b	70.31085	78.39830	78.01479
## HU1007	mock d28 a	71.85521	81.26729	78.91547
## HU1007	HBV d28	71.40679	80.96885	78.81625
## HU1007	mock d28	68.61081	78.60922	76.30362
## HU1007	mock d28 b	70.35023	79.85480	77.61573
## HU1020	mock d8	31.14788	33.82825	37.16453
## HU1020	HBV d8	0.00000	31.93142	36.80578
## HU1020	mock d28	31.93142	0.00000	34.00834
## HU1020	coinf d28	36.80578	34.00834	0.00000
## HU1019	mock d28	40.01556	38.53479	34.84948
## HU1019	mock d8	35.53777	37.21275	35.13787
## HU1020	HBV d28	33.89233	28.45810	33.23663
## HU1019	coinf d28 b	39.16239	35.52255	37.17206
## HU1019	HBV d28	43.54597	51.48006	48.59402
## HU1019	coinf d8 a	51.10782	55.81400	54.51801
## HU1019	coinf d28	45.83848	43.16758	47.41770
## HU1016	HBV d28	46.81606	49.82985	44.54978
## HU1020	coinf d8	36.31910	43.57175	41.79395
## HU1019	coinf d8	39.91238	46.85707	42.38707
## HU1016	coinf d28	35.51778	42.18494	37.57149
## HU1016	HBV d8	37.11945	46.32454	42.21596
## HU1019	HBV d8	34.07686	42.50873	41.68997
## HU1016	coinf d8	37.90044	44.91056	43.49615
##				
	HU1019 mock d28		HU1019 mock d8	HU1020 HBV d28

## HU1019 coinf d28 c	80.51392	76.26143	74.87880
## HU1016 mock d8	84.06926	81.08906	80.94919
## HU1019 coinf d8 e	76.35016	71.41781	72.08229
## HU1020 coinf d8 c	75.06086	71.94628	71.42802
## HU1020 coinf d8 d	78.18112	77.59463	75.64327
## HU1019 coinf d8 d	67.29102	64.33360	65.40782
## HU1019 coinf d8 c	69.40963	66.33893	67.40037
## HU1020 coinf d8 e	73.53524	70.20860	70.64120
## HU1019 coinf d28 e	62.61854	60.58418	58.75960
## HU1016 mock d28	61.93371	63.04033	57.35973
## HU1020 coinf d28 c	64.61927	66.34533	62.25749
## HU1020 coinf d28 e	66.64408	68.75892	65.30411
## HU1019 coinf d28 d	69.85947	68.55433	66.54715
## HU1020 coinf d28 d	70.23524	71.23554	66.59669
## HU1007 mock d8 b	68.07548	62.06408	64.92953
## HU1007 mock d8 a	70.91541	65.37331	68.11464
## HU1007 mock d8	72.51851	66.47607	69.19165
## HU1007 HBV d8 b	69.74274	64.95610	66.73739
## HU1007 HBV d8 a	68.90183	63.20907	65.39163
## HU1007 HBV d8	69.65788	64.75455	66.56387
## HU1007 HBV d28 a	75.78781	69.87417	72.24046
## HU1007 HBV d28 b	79.04364	73.38105	76.32916
## HU1007 mock d28 a	79.83646	73.11226	77.49275
## HU1007 HBV d28	78.55619	72.39328	76.16495
## HU1007 mock d28	76.95412	69.83011	74.30358
## HU1007 mock d28 b	78.33401	71.56995	75.64612
## HU1020 mock d8	42.17562	31.34548	36.87824
## HU1020 HBV d8	40.01556	35.53777	33.89233
## HU1020 mock d28	38.53479	37.21275	28.45810
## HU1020 coinf d28	34.84948	35.13787	33.23663
## HU1019 mock d28	0.00000	37.76187	34.96843
## HU1019 mock d8	37.76187	0.00000	34.04237
## HU1020 HBV d28	34.96843	34.04237	0.00000
## HU1019 coinf d28 b	36.46015	32.20252	30.38057
## HU1019 HBV d28	48.39957	46.60374	47.51559
## HU1019 coinf d8 a	57.23764	48.07645	52.83735
## HU1019 coinf d28	51.16386	40.33842	43.45879
## HU1016 HBV d28	42.70267	44.18804	43.06195
## HU1020 coinf d8	44.41700	35.27487	41.87415
## HU1019 coinf d8	43.19171	33.90912	42.05827
## HU1016 coinf d28	35.21906	33.92055	36.73413
## HU1016 HBV d8	42.08603	32.37108	38.57338
## HU1019 HBV d8	41.58039	31.26476	37.93322
## HU1016 coinf d8	43.92135	31.23334	40.16323
## HU1019 coinf d28 b HU1019 HBV d28 HU1019 coinf d8 a			
## HU1019 coinf d28 c	77.98089	86.02120	81.66209
## HU1016 mock d8	83.06295	84.30669	89.08232
## HU1019 coinf d8 e	72.21664	71.21652	62.48649
## HU1020 coinf d8 c	73.00701	66.97567	68.55986
## HU1020 coinf d8 d	77.30532	68.31864	75.70595
## HU1019 coinf d8 d	67.22820	71.56661	71.53402
## HU1019 coinf d8 c	69.09059	72.87623	74.15141
## HU1020 coinf d8 e	73.04954	75.78308	77.10601
## HU1019 coinf d28 e	58.13262	70.93849	73.37446

## HU1016 mock d28	59.60302	71.65288	77.36330
## HU1020 coinf d28 c	64.79164	74.52120	80.18027
## HU1020 coinf d28 e	68.61672	76.43168	82.23155
## HU1019 coinf d28 d	66.20210	77.70320	80.44728
## HU1020 coinf d28 d	69.07213	78.58436	81.38585
## HU1007 mock d8 b	67.82505	57.68653	63.68137
## HU1007 mock d8 a	70.54031	57.77894	63.53411
## HU1007 mock d8	71.54031	59.34738	63.44470
## HU1007 HBV d8 b	69.53478	57.65459	64.58738
## HU1007 HBV d8 a	67.84668	56.45551	61.27564
## HU1007 HBV d8	69.07696	57.59894	63.63490
## HU1007 HBV d28 a	74.69767	63.29804	67.87460
## HU1007 HBV d28 b	78.10819	66.36558	70.47035
## HU1007 mock d28 a	78.90488	67.82497	71.10274
## HU1007 HBV d28	77.67381	64.38631	68.26085
## HU1007 mock d28	75.56616	62.67800	65.30305
## HU1007 mock d28 b	77.52228	65.98455	68.97272
## HU1020 mock d8	35.75860	46.69454	49.48560
## HU1020 HBV d8	39.16239	43.54597	51.10782
## HU1020 mock d28	35.52255	51.48006	55.81400
## HU1020 coinf d28	37.17206	48.59402	54.51801
## HU1019 mock d28	36.46015	48.39957	57.23764
## HU1019 mock d8	32.20252	46.60374	48.07645
## HU1020 HBV d28	30.38057	47.51559	52.83735
## HU1019 coinf d28 b	0.00000	47.98227	51.03814
## HU1019 HBV d28	47.98227	0.00000	46.96475
## HU1019 coinf d8 a	51.03814	46.96475	0.00000
## HU1019 coinf d28	46.25897	56.19047	44.43891
## HU1016 HBV d28	45.23179	46.88696	53.97323
## HU1020 coinf d8	42.98083	44.71235	42.24772
## HU1019 coinf d8	41.69734	44.48792	42.66264
## HU1016 coinf d28	38.02535	39.25508	48.73243
## HU1016 HBV d8	39.27919	42.00227	47.38048
## HU1019 HBV d8	38.33212	44.09843	48.68239
## HU1016 coinf d8	38.78956	45.88358	46.88744
## HU1019 coinf d28 c	69.88248	89.09818	80.03644
## HU1016 mock d8	86.78456	91.04879	84.05299
## HU1019 coinf d8 e	69.77649	80.01797	70.37087
## HU1020 coinf d8 c	75.07616	79.45880	70.25701
## HU1020 coinf d8 d	83.25224	82.36974	76.51147
## HU1019 coinf d8 d	69.27169	75.00657	65.72432
## HU1019 coinf d8 c	71.11676	78.16657	68.16786
## HU1020 coinf d8 e	74.51889	80.51525	69.08155
## HU1019 coinf d28 e	67.39660	73.83594	69.22965
## HU1016 mock d28	71.91067	72.03966	70.31374
## HU1020 coinf d28 c	74.30288	74.96391	72.66678
## HU1020 coinf d28 e	76.17447	77.74980	74.48815
## HU1019 coinf d28 d	74.77446	80.74474	76.50913
## HU1020 coinf d28 d	75.72725	79.71756	76.44487
## HU1007 mock d8 b	68.13262	71.59559	59.87042
## HU1007 mock d8 a	70.51755	72.87795	62.29305
## HU1007 mock d8	70.30990	75.20527	63.34363
## HU1007 HBV d8 b	70.70509	73.43272	62.45686

## HU1007 HBV d8 a	68.58525	71.35484	60.00833
## HU1007 HBV d8	70.72017	72.63046	61.58865
## HU1007 HBV d28 a	74.21571	77.83902	67.62014
## HU1007 HBV d28 b	77.49737	80.75935	70.77392
## HU1007 mock d28 a	76.67661	80.42685	70.79645
## HU1007 HBV d28	75.77718	78.32459	69.06581
## HU1007 mock d28	73.29355	76.24803	66.13187
## HU1007 mock d28 b	75.04511	78.26216	68.83826
## HU1020 mock d8	44.76740	49.41968	38.26251
## HU1020 HBV d8	45.83848	46.81606	36.31910
## HU1020 mock d28	43.16758	49.82985	43.57175
## HU1020 coinf d28	47.41770	44.54978	41.79395
## HU1019 mock d28	51.16386	42.70267	44.41700
## HU1019 mock d8	40.33842	44.18804	35.27487
## HU1020 HBV d28	43.45879	43.06195	41.87415
## HU1019 coinf d28 b	46.25897	45.23179	42.98083
## HU1019 HBV d28	56.19047	46.88696	44.71235
## HU1019 coinf d8 a	44.43891	53.97323	42.24772
## HU1019 coinf d28	0.00000	54.59697	41.55917
## HU1016 HBV d28	54.59697	0.00000	45.05590
## HU1020 coinf d8	41.55917	45.05590	0.00000
## HU1019 coinf d8	41.37434	45.39720	30.95417
## HU1016 coinf d28	48.47795	35.47387	34.42219
## HU1016 HBV d8	46.38499	42.48565	33.46860
## HU1019 HBV d8	43.38415	41.83610	34.71286
## HU1016 coinf d8	41.94422	44.63446	34.22962
##			
## HU1019 coinf d28 c	83.15224	84.56363	88.90289
## HU1016 mock d8	87.76710	85.29474	89.65176
## HU1019 coinf d8 e	74.03887	75.53362	79.92757
## HU1020 coinf d8 c	74.58233	73.17426	78.37256
## HU1020 coinf d8 d	80.45192	76.54588	82.65354
## HU1019 coinf d8 d	66.87373	69.03649	72.77077
## HU1019 coinf d8 c	69.42812	71.56563	75.65765
## HU1020 coinf d8 e	75.06117	74.02540	79.45484
## HU1019 coinf d28 e	71.13268	68.46992	73.96462
## HU1016 mock d28	72.88816	67.47539	73.89886
## HU1020 coinf d28 c	75.64556	70.86493	77.94054
## HU1020 coinf d28 e	77.47234	73.12488	80.37468
## HU1019 coinf d28 d	78.69303	75.99799	81.85400
## HU1020 coinf d28 d	80.18989	76.02192	82.67817
## HU1007 mock d8 b	61.70009	60.76699	60.73237
## HU1007 mock d8 a	62.84220	62.58785	61.37755
## HU1007 mock d8	64.31426	64.89925	64.39816
## HU1007 HBV d8 b	63.09591	62.98861	61.89581
## HU1007 HBV d8 a	61.25728	61.51551	59.60545
## HU1007 HBV d8	63.11359	62.38458	61.56150
## HU1007 HBV d28 a	67.93506	68.90063	67.01812
## HU1007 HBV d28 b	70.80407	72.09116	69.77615
## HU1007 mock d28 a	69.19074	72.22201	67.62368
## HU1007 HBV d28	67.28000	69.80577	65.78095
## HU1007 mock d28	64.94238	67.59142	63.35848
## HU1007 mock d28 b	67.36811	70.06422	65.77192
## HU1020 mock d8	39.98093	39.60443	39.87045

## HU1020 HBV d8	39.91238	35.51778	37.11945
## HU1020 mock d28	46.85707	42.18494	46.32454
## HU1020 coinf d28	42.38707	37.57149	42.21596
## HU1019 mock d28	43.19171	35.21906	42.08603
## HU1019 mock d8	33.90912	33.92055	32.37108
## HU1020 HBV d28	42.05827	36.73413	38.57338
## HU1019 coinf d28 b	41.69734	38.02535	39.27919
## HU1019 HBV d28	44.48792	39.25508	42.00227
## HU1019 coinf d8 a	42.66264	48.73243	47.38048
## HU1019 coinf d28	41.37434	48.47795	46.38499
## HU1016 HBV d28	45.39720	35.47387	42.48565
## HU1020 coinf d8	30.95417	34.42219	33.46860
## HU1019 coinf d8	0.00000	35.24661	30.75069
## HU1016 coinf d28	35.24661	0.00000	30.78248
## HU1016 HBV d8	30.75069	30.78248	0.00000
## HU1019 HBV d8	33.85579	31.49571	29.14384
## HU1016 coinf d8	32.70936	34.62378	29.56036
##	HU1019 HBV d8	HU1016 coinf d8	
## HU1019 coinf d28 c	82.54594	83.78549	
## HU1016 mock d8	85.80003	87.06045	
## HU1019 coinf d8 e	76.39967	76.84825	
## HU1020 coinf d8 c	75.72909	76.76070	
## HU1020 coinf d8 d	79.94230	81.82656	
## HU1019 coinf d8 d	69.98844	71.29950	
## HU1019 coinf d8 c	71.61892	73.15771	
## HU1020 coinf d8 e	75.00276	76.44552	
## HU1019 coinf d28 e	69.35528	69.94274	
## HU1016 mock d28	68.85171	71.85804	
## HU1020 coinf d28 c	73.18278	75.86644	
## HU1020 coinf d28 e	75.87001	78.11339	
## HU1019 coinf d28 d	76.76679	77.72990	
## HU1020 coinf d28 d	78.30761	79.70365	
## HU1007 mock d8 b	61.75091	62.53400	
## HU1007 mock d8 a	64.45040	64.41932	
## HU1007 mock d8	66.18177	65.96904	
## HU1007 HBV d8 b	64.97830	64.69202	
## HU1007 HBV d8 a	63.27043	62.81359	
## HU1007 HBV d8	64.79707	64.66576	
## HU1007 HBV d28 a	69.72942	69.21485	
## HU1007 HBV d28 b	72.92997	72.27881	
## HU1007 mock d28 a	71.19522	69.85952	
## HU1007 HBV d28	70.24115	68.85236	
## HU1007 mock d28	67.34785	66.07095	
## HU1007 mock d28 b	69.26854	68.19738	
## HU1020 mock d8	36.58798	35.71299	
## HU1020 HBV d8	34.07686	37.90044	
## HU1020 mock d28	42.50873	44.91056	
## HU1020 coinf d28	41.68997	43.49615	
## HU1019 mock d28	41.58039	43.92135	
## HU1019 mock d8	31.26476	31.23334	
## HU1020 HBV d28	37.93322	40.16323	
## HU1019 coinf d28 b	38.33212	38.78956	
## HU1019 HBV d28	44.09843	45.88358	
## HU1019 coinf d8 a	48.68239	46.88744	


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## HU1019 coinf d28          43.38415          41.94422
## HU1016 HBV d28           41.83610          44.63446
## HU1020 coinf d8          34.71286          34.22962
## HU1019 coinf d8          33.85579          32.70936
## HU1016 coinf d28         31.49571          34.62378
## HU1016 HBV d8           29.14384          29.56036
## HU1019 HBV d8            0.00000          28.25360
## HU1016 coinf d8         28.25360          0.00000
##
## $rowDendrogram
## 'dendrogram' with 2 branches and 44 members total, at height 295.5067
##
## $colDendrogram
## 'dendrogram' with 2 branches and 44 members total, at height 295.5067
##
## $breaks
## [1] 0.000000 1.061693 2.123386 3.185078 4.246771 5.308464
## [7] 6.370157 7.431850 8.493543 9.555235 10.616928 11.678621
## [13] 12.740314 13.802007 14.863700 15.925392 16.987085 18.048778
## [19] 19.110471 20.172164 21.233857 22.295549 23.357242 24.418935
## [25] 25.480628 26.542321 27.604014 28.665706 29.727399 30.789092
## [31] 31.850785 32.912478 33.974171 35.035863 36.097556 37.159249
## [37] 38.220942 39.282635 40.344328 41.406020 42.467713 43.529406
## [43] 44.591099 45.652792 46.714485 47.776177 48.837870 49.899563
## [49] 50.961256 52.022949 53.084642 54.146334 55.208027 56.269720
## [55] 57.331413 58.393106 59.454799 60.516491 61.578184 62.639877
## [61] 63.701570 64.763263 65.824956 66.886648 67.948341 69.010034
## [67] 70.071727 71.133420 72.195113 73.256805 74.318498 75.380191
## [73] 76.441884 77.503577 78.565270 79.626962 80.688655 81.750348
## [79] 82.812041 83.873734 84.935426 85.997119 87.058812 88.120505
## [85] 89.182198 90.243891 91.305583 92.367276 93.428969 94.490662
## [91] 95.552355 96.614048 97.675740 98.737433 99.799126 100.860819
## [97] 101.922512 102.984205 104.045897 105.107590 106.169283
##
## $col
## [1] "#440154FF" "#450558FF" "#46085CFF" "#470D60FF" "#471063FF"
## [6] "#481467FF" "#481769FF" "#481B6DFF" "#481E70FF" "#482173FF"
## [11] "#482576FF" "#482878FF" "#472C7AFF" "#472F7CFF" "#46327EFF"
## [16] "#453581FF" "#453882FF" "#443B84FF" "#433E85FF" "#424186FF"
## [21] "#404587FF" "#3F4788FF" "#3E4A89FF" "#3D4D8AFF" "#3C508BFF"
## [26] "#3B528BFF" "#39558CFF" "#38598CFF" "#375B8DFF" "#355E8DFF"
## [31] "#34608DFF" "#33638DFF" "#32658EFF" "#31688EFF" "#2F6B8EFF"
## [36] "#2E6D8EFF" "#2D708EFF" "#2C718EFF" "#2B748EFF" "#2A768EFF"
## [41] "#29798EFF" "#287C8EFF" "#277E8EFF" "#26818EFF" "#26828EFF"
## [46] "#25858EFF" "#24878EFF" "#238A8DFF" "#228D8DFF" "#218F8DFF"
## [51] "#20928CFF" "#20938CFF" "#1F968BFF" "#1F998AFF" "#1E9B8AFF"
## [56] "#1F9E89FF" "#1FA088FF" "#1FA287FF" "#20A486FF" "#22A785FF"
## [61] "#24AA83FF" "#25AC82FF" "#28AE80FF" "#2BB07FFF" "#2EB37CFF"
## [66] "#31B67BFF" "#35B779FF" "#39BA76FF" "#3DBC74FF" "#41BE71FF"
## [71] "#47C06FFF" "#4CC26CFF" "#51C56AFF" "#56C667FF" "#5BC863FF"
## [76] "#61CA60FF" "#67CC5CFF" "#6DCD59FF" "#73D056FF" "#78D152FF"
## [81] "#7FD34EFF" "#85D54AFF" "#8CD646FF" "#92D741FF" "#99D83DFF"
## [86] "#A0DA39FF" "#A7DB35FF" "#ADDC30FF" "#B4DE2CFF" "#BBDE28FF"
## [91] "#C2DF23FF" "#C9E020FF" "#D0E11CFF" "#D7E219FF" "#DDE318FF"

```

```

## [96] "#E4E419FF" "#EBE51AFF" "#F1E51DFF" "#F7E620FF" "#FDE725FF"
##
## $colorTable
##      low      high      color
## 1  0.000000  1.061693 #440154FF
## 2  1.061693  2.123386 #450558FF
## 3  2.123386  3.185078 #46085CFF
## 4  3.185078  4.246771 #470D60FF
## 5  4.246771  5.308464 #471063FF
## 6  5.308464  6.370157 #481467FF
## 7  6.370157  7.431850 #481769FF
## 8  7.431850  8.493543 #481B6DFF
## 9  8.493543  9.555235 #481E70FF
## 10 9.555235 10.616928 #482173FF
## 11 10.616928 11.678621 #482576FF
## 12 11.678621 12.740314 #482878FF
## 13 12.740314 13.802007 #472C7AFF
## 14 13.802007 14.863700 #472F7CFF
## 15 14.863700 15.925392 #46327EFF
## 16 15.925392 16.987085 #453581FF
## 17 16.987085 18.048778 #453882FF
## 18 18.048778 19.110471 #443B84FF
## 19 19.110471 20.172164 #433E85FF
## 20 20.172164 21.233857 #424186FF
## 21 21.233857 22.295549 #404587FF
## 22 22.295549 23.357242 #3F4788FF
## 23 23.357242 24.418935 #3E4A89FF
## 24 24.418935 25.480628 #3D4D8AFF
## 25 25.480628 26.542321 #3C508BFF
## 26 26.542321 27.604014 #3B528BFF
## 27 27.604014 28.665706 #39558CFF
## 28 28.665706 29.727399 #38598CFF
## 29 29.727399 30.789092 #375B8DFF
## 30 30.789092 31.850785 #355E8DFF
## 31 31.850785 32.912478 #34608DFF
## 32 32.912478 33.974171 #33638DFF
## 33 33.974171 35.035863 #32658EFF
## 34 35.035863 36.097556 #31688EFF
## 35 36.097556 37.159249 #2F6B8EFF
## 36 37.159249 38.220942 #2E6D8EFF
## 37 38.220942 39.282635 #2D708EFF
## 38 39.282635 40.344328 #2C718EFF
## 39 40.344328 41.406020 #2B748EFF
## 40 41.406020 42.467713 #2A768EFF
## 41 42.467713 43.529406 #29798EFF
## 42 43.529406 44.591099 #287C8EFF
## 43 44.591099 45.652792 #277E8EFF
## 44 45.652792 46.714485 #26818EFF
## 45 46.714485 47.776177 #26828EFF
## 46 47.776177 48.837870 #25858EFF
## 47 48.837870 49.899563 #24878EFF
## 48 49.899563 50.961256 #238A8DFF
## 49 50.961256 52.022949 #228D8DFF
## 50 52.022949 53.084642 #218F8DFF

```

```

## 51 53.084642 54.146334 #20928CFF
## 52 54.146334 55.208027 #20938CFF
## 53 55.208027 56.269720 #1F968BFF
## 54 56.269720 57.331413 #1F998AFF
## 55 57.331413 58.393106 #1E9B8AFF
## 56 58.393106 59.454799 #1F9E89FF
## 57 59.454799 60.516491 #1FA088FF
## 58 60.516491 61.578184 #1FA287FF
## 59 61.578184 62.639877 #20A486FF
## 60 62.639877 63.701570 #22A785FF
## 61 63.701570 64.763263 #24AA83FF
## 62 64.763263 65.824956 #25AC82FF
## 63 65.824956 66.886648 #28AE80FF
## 64 66.886648 67.948341 #2BB07FFF
## 65 67.948341 69.010034 #2EB37CFF
## 66 69.010034 70.071727 #31B67BFF
## 67 70.071727 71.133420 #35B779FF
## 68 71.133420 72.195113 #39BA76FF
## 69 72.195113 73.256805 #3DBC74FF
## 70 73.256805 74.318498 #41BE71FF
## 71 74.318498 75.380191 #47C06FFF
## 72 75.380191 76.441884 #4CC26CFF
## 73 76.441884 77.503577 #51C56AFF
## 74 77.503577 78.565270 #56C667FF
## 75 78.565270 79.626962 #5BC863FF
## 76 79.626962 80.688655 #61CA60FF
## 77 80.688655 81.750348 #67CC5CFF
## 78 81.750348 82.812041 #6DCD59FF
## 79 82.812041 83.873734 #73D056FF
## 80 83.873734 84.935426 #78D152FF
## 81 84.935426 85.997119 #7FD34EFF
## 82 85.997119 87.058812 #85D54AFF
## 83 87.058812 88.120505 #8CD646FF
## 84 88.120505 89.182198 #92D741FF
## 85 89.182198 90.243891 #99D83DFF
## 86 90.243891 91.305583 #A0DA39FF
## 87 91.305583 92.367276 #A7DB35FF
## 88 92.367276 93.428969 #ADDC30FF
## 89 93.428969 94.490662 #B4DE2CFF
## 90 94.490662 95.552355 #BBDE28FF
## 91 95.552355 96.614048 #C2DF23FF
## 92 96.614048 97.675740 #C9E020FF
## 93 97.675740 98.737433 #D0E11CFF
## 94 98.737433 99.799126 #D7E219FF
## 95 99.799126 100.860819 #DDE318FF
## 96 100.860819 101.922512 #E4E419FF
## 97 101.922512 102.984205 #EBE51AFF
## 98 102.984205 104.045897 #F1E51DFF
## 99 104.045897 105.107590 #F7E620FF
## 100 105.107590 106.169283 #FDE725FF
##
## $layout
## $layout$lmats
##      [,1] [,2]

```

```

## [1,]    4    3
## [2,]    2    1
##
## $layout$lhei
## [1] 0.7 4.0
##
## $layout$lwid
## [1] 0.7 4.0

##Saving the sample table that was generated in the above function for reference sake
##For human
a <- basename(Sys.glob(file.path("All human HBV genes", "*.txt")))
sample_names <- sub('.txt', '', a)
##Here the donors are renamed based off the Hurel names (i.e. HU__) - RNASeq reads were
##all named using a different ID system.
sampleTable_human <- data.frame(sampleName = sample_names,
                                sampleFile = a,
                                treatment = ifelse(grepl("Ctrl", a), "mock",
                                                      ifelse(grepl("*co|*HDV", a), "coinf", "HBV")),
                                donor = ifelse(grepl("BD330*", a), "HU1019",
                                                  ifelse(grepl("BD405*", a), "HU1020",
                                                            ifelse(grepl("HU1016*", a), "HU1016", "HU1007"))),
                                time = ifelse(grepl("*D8|Day 8", a), "d8", "d28"),
                                replicate = ifelse(grepl("*sample_1h|*D8_ah|*D8_aa|*D8_am|*sample_1m", a), "a",
                                                  ifelse(grepl("*sample_2h|D28_bh|D28_ba|D28_bm|*sample_2m", a), "b",
                                                            ifelse(grepl("*sample_3h| * sample 1h|* sample 1m", a), "c",
                                                                      ifelse(grepl("* sample 2h|* sample 2m", a), "d",
                                                                                ifelse(grepl("* sample 3h|* sample 3m", a), "e", ""))))))
write.table(sampleTable_human, file = file.path("Sample Tables",
                                                "sampleTable_human.txt"), col.names = TRUE, row.names=FALSE, sep="\t", quote=FALSE)

##For mouse
b <- basename(Sys.glob(file.path("All mouse genes", "*.txt")))
sample_names <- sub('.txt', '', a)
##Here the donors are renamed based off the Hurel names (i.e. HU__) - RNASeq reads were
##all named using a different ID system.
sampleTable_mouse <- data.frame(sampleName = sample_names,
                                sampleFile = b,
                                treatment = ifelse(grepl("Ctrl", b), "mock",
                                                      ifelse(grepl("*co|*HDV", b), "coinf", "HBV")),
                                donor = ifelse(grepl("BD330*", b), "HU1019",
                                                  ifelse(grepl("BD405*", b), "HU1020",
                                                            ifelse(grepl("HU1016*", b), "HU1016", "HU1007"))),
                                time = ifelse(grepl("*D8|Day 8", b), "d8", "d28"),
                                replicate = ifelse(grepl("*sample_1h|*D8_ah|*D8_aa|*D8_am|*sample_1m", b), "a",
                                                  ifelse(grepl("*sample_2h|D28_bh|D28_ba|D28_bm|*sample_2m", b), "b",
                                                            ifelse(grepl("*sample_3h| * sample 1h|* sample 1m", a), "c",
                                                                      ifelse(grepl("* sample 2h|* sample 2m", b), "d",
                                                                                ifelse(grepl("* sample 3h|* sample 3m", b), "e", ""))))))
write.table(sampleTable_mouse, file = file.path("Sample Tables", "sampleTable_mouse.txt"),
            col.names = TRUE, row.names=FALSE, sep="\t", quote=FALSE)

```

Session Info

sessionInfo()

```
## R version 3.3.3 (2017-03-06)
## Platform: x86_64-apple-darwin13.4.0 (64-bit)
## Running under: macOS Sierra 10.12.6
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] parallel stats4      stats      graphics  grDevices utils      datasets
## [8] methods   base
##
## other attached packages:
## [1] viridis_0.5.1          viridisLite_0.3.0
## [3] ggrepel_0.7.0          data.table_1.11.0
## [5] genefilter_1.56.0      RColorBrewer_1.1-2
## [7] gplots_3.0.1           DESeq2_1.14.1
## [9] SummarizedExperiment_1.4.0 Biobase_2.34.0
## [11] GenomicRanges_1.26.4   GenomeInfoDb_1.10.3
## [13] IRanges_2.8.2          S4Vectors_0.12.2
## [15] BiocGenerics_0.20.0    openxlsx_4.0.17
## [17] reshape2_1.4.3         ggplot2_2.2.1
## [19] stringr_1.3.0          dplyr_0.7.4
##
## loaded via a namespace (and not attached):
## [1] bit64_0.9-7            splines_3.3.3          gtools_3.5.0
## [4] Formula_1.2-2          assertthat_0.2.0       latticeExtra_0.6-28
## [7] blob_1.1.1             yaml_2.1.19            pillar_1.2.2
## [10] RSQlite_2.1.0          backports_1.1.2        lattice_0.20-34
## [13] glue_1.2.0             digest_0.6.15          XVector_0.14.1
## [16] checkmate_1.8.5        colorspace_1.3-2       htmltools_0.3.6
## [19] Matrix_1.2-8           plyr_1.8.4             XML_3.98-1.11
## [22] pkgconfig_2.0.1        zlibbioc_1.20.0        xtable_1.8-2
## [25] scales_0.5.0           gdata_2.18.0           BiocParallel_1.8.2
## [28] htmlTable_1.11.2       tibble_1.4.2           annotate_1.52.1
## [31] nnet_7.3-12            lazyeval_0.2.1         survival_2.40-1
## [34] magrittr_1.5           memoise_1.1.0          evaluate_0.10.1
## [37] foreign_0.8-67         tools_3.3.3            locfit_1.5-9.1
## [40] munsell_0.4.3          cluster_2.0.5          AnnotationDbi_1.36.2
## [43] bindrcpp_0.2.2         caTools_1.17.1         rlang_0.2.0
## [46] grid_3.3.3            RCurl_1.95-4.10        rstudioapi_0.7
## [49] htmlwidgets_1.2        labeling_0.3           bitops_1.0-6
## [52] base64enc_0.1-3        rmarkdown_1.9          gtable_0.2.0
## [55] DBI_0.8                R6_2.2.2              gridExtra_2.3
## [58] knitr_1.20            bit_1.1-12            bindr_0.1.1
## [61] Hmisc_4.1-1           rprojroot_1.3-2        KernSmooth_2.23-15
## [64] stringi_1.1.7          Rcpp_0.12.16           geneplotter_1.52.0
## [67] rpart_4.1-10          acepack_1.4.1
```