Supporting Appendix: Calculation and analysis of Relative Exon Usage Coefficients (REUCs)

Alejandro Reyes, Simon Anders, Robert J. Weatheritt,
Toby Gibson, Lars M. Steinmetz, Wolfgang Huber

Contents

1 Downloading path and setting environment variables

Download the following directory:

`http://www-huber.embl.de/pub/DEUprimates_supplement/SupplementaryFile3`

Then, you should make the variable PRIMATES reflect the path to this directory:

```
cd ~/
wget -r -nH --cut-dirs=2 \
  --reject="index.html*" \
  http://www-huber.embl.de/pub/DEUprimates_supplement/SupplementaryFile3
export PRIMATES=~/SupplementaryFile3
```

Then you are ready to reproduce the results from the paper:

2 Loading of the data

We use these packages for the analysis of REUCs

```
library( DEXSeq )
library( statmod )
library( multicore )
```

```
library( abind )
library( genefilter )
cores=15
```

The following loads an ExonCountSet with only the count values and the design but no intermediate or final results

```
setwd(Sys.getenv("PRIMATES"))
load( "inputs/ecsTRT.RData" )
```

Normalize factor levels

```
geneIDs(ecs) <- factor( geneIDs(ecs) )
```

3 Model matrix

We construct the model frame by taking the design frame (i.e., sample meta data) from the ecs argument and concatenate it to itself. This is because each sample appears with two rows in the model matrix, once with the counts for the exon described by the row and once with the sum of all other exons.

```
modelFrame <- cbind(
   sample = sampleNames(ecs),
   design(ecs),
   sizeFactor = sizeFactors(ecs) )
modelFrame <- rbind(
   cbind( modelFrame, exon="this" ),
   cbind( modelFrame, exon="others" ) )
rownames(modelFrame) <- paste( modelFrame$sample,
   modelFrame$exon, sep="-" )
```

The model frame now:

```
modelFrame
```

```
                            sample species tissue sex sizeFactor   exon
ggo-br-F-1-ggo-this   ggo-br-F-1-ggo     ggo     br   F  2.0067414   this
ggo-br-M-1-ggo-this   ggo-br-M-1-ggo     ggo     br   M  1.0526627   this
ggo-cb-F-1-ggo-this   ggo-cb-F-1-ggo     ggo     cb   F  1.6221341   this
ggo-cb-M-1-ggo-this   ggo-cb-M-1-ggo     ggo     cb   M  0.8665522   this
ggo-ht-F-1-ggo-this   ggo-ht-F-1-ggo     ggo     ht   F  0.5751154   this
```

ggo-ht-M-1-ggo-this	ggo-ht-M-1-ggo	ggo	ht	M	0.3945627	this
ggo-kd-F-1-ggo-this	ggo-kd-F-1-ggo	ggo	kd	F	1.2493353	this
ggo-kd-M-1-ggo-this	ggo-kd-M-1-ggo	ggo	kd	M	1.3566434	this
ggo-lv-F-1-ggo-this	ggo-lv-F-1-ggo	ggo	lv	F	1.0174225	this
ggo-lv-M-1-ggo-this	ggo-lv-M-1-ggo	ggo	lv	M	1.1105119	this
hsa-br-F-1-hsa-this	hsa-br-F-1-hsa	hsa	br	F	1.6377571	this
hsa-br-M-1-hsa-this	hsa-br-M-1-hsa	hsa	br	M	1.1801184	this
hsa-br-M-2-hsa-this	hsa-br-M-2-hsa	hsa	br	M	1.2849264	this
hsa-br-M-3-hsa-this	hsa-br-M-3-hsa	hsa	br	M	0.9329287	this
hsa-br-M-4-hsa-this	hsa-br-M-4-hsa	hsa	br	M	0.8513831	this
hsa-br-M-5-hsa-this	hsa-br-M-5-hsa	hsa	br	M	0.2589920	this
hsa-cb-F-1-hsa-this	hsa-cb-F-1-hsa	hsa	cb	F	1.6327022	this
hsa-cb-M-1-hsa-this	hsa-cb-M-1-hsa	hsa	cb	M	2.6374909	this
hsa-ht-F-1-hsa-this	hsa-ht-F-1-hsa	hsa	ht	F	0.8321838	this
hsa-ht-M-1-hsa-this	hsa-ht-M-1-hsa	hsa	ht	M	1.1546257	this
hsa-ht-M-2-hsa-this	hsa-ht-M-2-hsa	hsa	ht	M	1.1002540	this
hsa-kd-F-1-hsa-this	hsa-kd-F-1-hsa	hsa	kd	F	1.4297802	this
hsa-kd-M-1-hsa-this	hsa-kd-M-1-hsa	hsa	kd	M	0.9659092	this
hsa-kd-M-2-hsa-this	hsa-kd-M-2-hsa	hsa	kd	M	1.2008835	this
hsa-lv-M-1-hsa-this	hsa-lv-M-1-hsa	hsa	lv	M	0.7943727	this
hsa-lv-M-2-hsa-this	hsa-lv-M-2-hsa	hsa	lv	M	0.8464109	this
mml-br-F-1-mml-this	mml-br-F-1-mml	mml	br	F	1.0363749	this
mml-br-M-1-mml-this	mml-br-M-1-mml	mml	br	M	1.0454692	this
mml-br-M-2-mml-this	mml-br-M-2-mml	mml	br	M	1.3040308	this
mml-cb-F-1-mml-this	mml-cb-F-1-mml	mml	cb	F	1.2432106	this
mml-cb-M-1-mml-this	mml-cb-M-1-mml	mml	cb	M	1.1965691	this
mml-ht-F-1-mml-this	mml-ht-F-1-mml	mml	ht	F	0.6214446	this
mml-ht-M-1-mml-this	mml-ht-M-1-mml	mml	ht	M	0.7366023	this
mml-kd-F-1-mml-this	mml-kd-F-1-mml	mml	kd	F	0.7966258	this
mml-kd-M-1-mml-this	mml-kd-M-1-mml	mml	kd	M	0.6366425	this
mml-lv-F-1-mml-this	mml-lv-F-1-mml	mml	lv	F	0.6254235	this
mml-lv-M-1-mml-this	mml-lv-M-1-mml	mml	lv	M	0.8636917	this
ppa-br-F-1-ptr-this	ppa-br-F-1-ptr	ppa	br	F	1.0709630	this
ppa-br-F-2-ptr-this	ppa-br-F-2-ptr	ppa	br	F	1.0990228	this
ppa-br-M-1-ptr-this	ppa-br-M-1-ptr	ppa	br	M	2.0790194	this
ppa-cb-F-1-ptr-this	ppa-cb-F-1-ptr	ppa	cb	F	1.4753921	this
ppa-cb-M-1-ptr-this	ppa-cb-M-1-ptr	ppa	cb	M	2.0698628	this
ppa-ht-F-1-ptr-this	ppa-ht-F-1-ptr	ppa	ht	F	1.1533740	this
ppa-ht-M-1-ptr-this	ppa-ht-M-1-ptr	ppa	ht	M	0.6629949	this
ppa-kd-F-1-ptr-this	ppa-kd-F-1-ptr	ppa	kd	F	1.3788909	this

ppa-kd-M-1-ptr-this	ppa-kd-M-1-ptr	ppa	kd	M	1.1443873	this
ppa-lv-F-1-ptr-this	ppa-lv-F-1-ptr	ppa	lv	F	0.6962407	this
ppa-lv-M-1-ptr-this	ppa-lv-M-1-ptr	ppa	lv	M	0.4914894	this
ppy-br-F-1-ppy-this	ppy-br-F-1-ppy	ppy	br	F	1.7079544	this
ppy-br-M-1-ppy-this	ppy-br-M-1-ppy	ppy	br	M	0.7396834	this
ppy-cb-F-1-ppy-this	ppy-cb-F-1-ppy	ppy	cb	F	1.0849149	this
ppy-ht-F-1-ppy-this	ppy-ht-F-1-ppy	ppy	ht	F	0.8499079	this
ppy-ht-M-1-ppy-this	ppy-ht-M-1-ppy	ppy	ht	M	0.4420630	this
ppy-kd-F-1-ppy-this	ppy-kd-F-1-ppy	ppy	kd	F	1.0844965	this
ppy-kd-M-1-ppy-this	ppy-kd-M-1-ppy	ppy	kd	M	1.2865658	this
ppy-lv-F-1-ppy-this	ppy-lv-F-1-ppy	ppy	lv	F	0.5737885	this
ppy-lv-M-1-ppy-this	ppy-lv-M-1-ppy	ppy	lv	M	1.0396424	this
ptr-br-F-1-ptr-this	ptr-br-F-1-ptr	ptr	br	F	1.0693073	this
ptr-br-M-1-ptr-this	ptr-br-M-1-ptr	ptr	br	M	0.7861358	this
ptr-br-M-2-ptr-this	ptr-br-M-2-ptr	ptr	br	M	0.6777453	this
ptr-br-M-3-ptr-this	ptr-br-M-3-ptr	ptr	br	M	0.6998900	this
ptr-br-M-4-ptr-this	ptr-br-M-4-ptr	ptr	br	M	1.1018289	this
ptr-br-M-5-ptr-this	ptr-br-M-5-ptr	ptr	br	M	1.0169716	this
ptr-cb-F-1-ptr-this	ptr-cb-F-1-ptr	ptr	cb	F	2.1463258	this
ptr-cb-M-1-ptr-this	ptr-cb-M-1-ptr	ptr	cb	M	1.2443930	this
ptr-ht-F-1-ptr-this	ptr-ht-F-1-ptr	ptr	ht	F	1.0107497	this
ptr-ht-M-1-ptr-this	ptr-ht-M-1-ptr	ptr	ht	M	1.0698054	this
ptr-kd-F-1-ptr-this	ptr-kd-F-1-ptr	ptr	kd	F	1.6584041	this
ptr-kd-M-1-ptr-this	ptr-kd-M-1-ptr	ptr	kd	M	2.1690272	this
ptr-lv-F-1-ptr-this	ptr-lv-F-1-ptr	ptr	lv	F	1.2792646	this
ptr-lv-M-1-ptr-this	ptr-lv-M-1-ptr	ptr	lv	M	0.5350664	this
ggo-br-F-1-ggo-others	ggo-br-F-1-ggo	ggo	br	F	2.0067414	others
ggo-br-M-1-ggo-others	ggo-br-M-1-ggo	ggo	br	M	1.0526627	others
ggo-cb-F-1-ggo-others	ggo-cb-F-1-ggo	ggo	cb	F	1.6221341	others
ggo-cb-M-1-ggo-others	ggo-cb-M-1-ggo	ggo	cb	M	0.8665522	others
ggo-ht-F-1-ggo-others	ggo-ht-F-1-ggo	ggo	ht	F	0.5751154	others
ggo-ht-M-1-ggo-others	ggo-ht-M-1-ggo	ggo	ht	M	0.3945627	others
ggo-kd-F-1-ggo-others	ggo-kd-F-1-ggo	ggo	kd	F	1.2493353	others
ggo-kd-M-1-ggo-others	ggo-kd-M-1-ggo	ggo	kd	M	1.3566434	others
ggo-lv-F-1-ggo-others	ggo-lv-F-1-ggo	ggo	lv	F	1.0174225	others
ggo-lv-M-1-ggo-others	ggo-lv-M-1-ggo	ggo	lv	M	1.1105119	others
hsa-br-F-1-hsa-others	hsa-br-F-1-hsa	hsa	br	F	1.6377571	others
hsa-br-M-1-hsa-others	hsa-br-M-1-hsa	hsa	br	M	1.1801184	others
hsa-br-M-2-hsa-others	hsa-br-M-2-hsa	hsa	br	M	1.2849264	others
hsa-br-M-3-hsa-others	hsa-br-M-3-hsa	hsa	br	M	0.9329287	others

hsa-br-M-4-hsa-others	hsa-br-M-4-hsa	hsa	br	M	0.8513831	others
hsa-br-M-5-hsa-others	hsa-br-M-5-hsa	hsa	br	M	0.2589920	others
hsa-cb-F-1-hsa-others	hsa-cb-F-1-hsa	hsa	cb	F	1.6327022	others
hsa-cb-M-1-hsa-others	hsa-cb-M-1-hsa	hsa	cb	M	2.6374909	others
hsa-ht-F-1-hsa-others	hsa-ht-F-1-hsa	hsa	ht	F	0.8321838	others
hsa-ht-M-1-hsa-others	hsa-ht-M-1-hsa	hsa	ht	M	1.1546257	others
hsa-ht-M-2-hsa-others	hsa-ht-M-2-hsa	hsa	ht	M	1.1002540	others
hsa-kd-F-1-hsa-others	hsa-kd-F-1-hsa	hsa	kd	F	1.4297802	others
hsa-kd-M-1-hsa-others	hsa-kd-M-1-hsa	hsa	kd	M	0.9659092	others
hsa-kd-M-2-hsa-others	hsa-kd-M-2-hsa	hsa	kd	M	1.2008835	others
hsa-lv-M-1-hsa-others	hsa-lv-M-1-hsa	hsa	lv	M	0.7943727	others
hsa-lv-M-2-hsa-others	hsa-lv-M-2-hsa	hsa	lv	M	0.8464109	others
mml-br-F-1-mml-others	mml-br-F-1-mml	mml	br	F	1.0363749	others
mml-br-M-1-mml-others	mml-br-M-1-mml	mml	br	M	1.0454692	others
mml-br-M-2-mml-others	mml-br-M-2-mml	mml	br	M	1.3040308	others
mml-cb-F-1-mml-others	mml-cb-F-1-mml	mml	cb	F	1.2432106	others
mml-cb-M-1-mml-others	mml-cb-M-1-mml	mml	cb	M	1.1965691	others
mml-ht-F-1-mml-others	mml-ht-F-1-mml	mml	ht	F	0.6214446	others
mml-ht-M-1-mml-others	mml-ht-M-1-mml	mml	ht	M	0.7366023	others
mml-kd-F-1-mml-others	mml-kd-F-1-mml	mml	kd	F	0.7966258	others
mml-kd-M-1-mml-others	mml-kd-M-1-mml	mml	kd	M	0.6366425	others
mml-lv-F-1-mml-others	mml-lv-F-1-mml	mml	lv	F	0.6254235	others
mml-lv-M-1-mml-others	mml-lv-M-1-mml	mml	lv	M	0.8636917	others
ppa-br-F-1-ptr-others	ppa-br-F-1-ptr	ppa	br	F	1.0709630	others
ppa-br-F-2-ptr-others	ppa-br-F-2-ptr	ppa	br	F	1.0990228	others
ppa-br-M-1-ptr-others	ppa-br-M-1-ptr	ppa	br	M	2.0790194	others
ppa-cb-F-1-ptr-others	ppa-cb-F-1-ptr	ppa	cb	F	1.4753921	others
ppa-cb-M-1-ptr-others	ppa-cb-M-1-ptr	ppa	cb	M	2.0698628	others
ppa-ht-F-1-ptr-others	ppa-ht-F-1-ptr	ppa	ht	F	1.1533740	others
ppa-ht-M-1-ptr-others	ppa-ht-M-1-ptr	ppa	ht	M	0.6629949	others
ppa-kd-F-1-ptr-others	ppa-kd-F-1-ptr	ppa	kd	F	1.3788909	others
ppa-kd-M-1-ptr-others	ppa-kd-M-1-ptr	ppa	kd	M	1.1443873	others
ppa-lv-F-1-ptr-others	ppa-lv-F-1-ptr	ppa	lv	F	0.6962407	others
ppa-lv-M-1-ptr-others	ppa-lv-M-1-ptr	ppa	lv	M	0.4914894	others
ppy-br-F-1-ppy-others	ppy-br-F-1-ppy	ppy	br	F	1.7079544	others
ppy-br-M-1-ppy-others	ppy-br-M-1-ppy	ppy	br	M	0.7396834	others
ppy-cb-F-1-ppy-others	ppy-cb-F-1-ppy	ppy	cb	F	1.0849149	others
ppy-ht-F-1-ppy-others	ppy-ht-F-1-ppy	ppy	ht	F	0.8499079	others
ppy-ht-M-1-ppy-others	ppy-ht-M-1-ppy	ppy	ht	M	0.4420630	others
ppy-kd-F-1-ppy-others	ppy-kd-F-1-ppy	ppy	kd	F	1.0844965	others

```
ppy-kd-M-1-ppy-others ppy-kd-M-1-ppy     ppy     kd   M  1.2865658 others
ppy-lv-F-1-ppy-others ppy-lv-F-1-ppy     ppy     lv   F  0.5737885 others
ppy-lv-M-1-ppy-others ppy-lv-M-1-ppy     ppy     lv   M  1.0396424 others
ptr-br-F-1-ptr-others ptr-br-F-1-ptr     ptr     br   F  1.0693073 others
ptr-br-M-1-ptr-others ptr-br-M-1-ptr     ptr     br   M  0.7861358 others
ptr-br-M-2-ptr-others ptr-br-M-2-ptr     ptr     br   M  0.6777453 others
ptr-br-M-3-ptr-others ptr-br-M-3-ptr     ptr     br   M  0.6998900 others
ptr-br-M-4-ptr-others ptr-br-M-4-ptr     ptr     br   M  1.1018289 others
ptr-br-M-5-ptr-others ptr-br-M-5-ptr     ptr     br   M  1.0169716 others
ptr-cb-F-1-ptr-others ptr-cb-F-1-ptr     ptr     cb   F  2.1463258 others
ptr-cb-M-1-ptr-others ptr-cb-M-1-ptr     ptr     cb   M  1.2443930 others
ptr-ht-F-1-ptr-others ptr-ht-F-1-ptr     ptr     ht   F  1.0107497 others
ptr-ht-M-1-ptr-others ptr-ht-M-1-ptr     ptr     ht   M  1.0698054 others
ptr-kd-F-1-ptr-others ptr-kd-F-1-ptr     ptr     kd   F  1.6584041 others
ptr-kd-M-1-ptr-others ptr-kd-M-1-ptr     ptr     kd   M  2.1690272 others
ptr-lv-F-1-ptr-others ptr-lv-F-1-ptr     ptr     lv   F  1.2792646 others
ptr-lv-M-1-ptr-others ptr-lv-M-1-ptr     ptr     lv   M  0.5350664 others
```

To construct the model matrix, we first set "index variable", which indicate which columns of the model matrix refer to which factors.

```
sampleIdx <- data.frame( sample = levels(modelFrame$sample),
   col = seq_along( levels(modelFrame$sample) ) )
exonAvgIdx <- max(sampleIdx$col) + 1
sexIdx <- exonAvgIdx + 1
crossIdx <- expand.grid( tissue=levels(modelFrame$tissue),
   species=levels(modelFrame$species) )
crossIdx$col = sexIdx + 1:nrow(crossIdx)

head(sampleIdx)
```

```
          sample col
1 ggo-br-F-1-ggo   1
2 ggo-br-M-1-ggo   2
3 ggo-cb-F-1-ggo   3
4 ggo-cb-M-1-ggo   4
5 ggo-ht-F-1-ggo   5
6 ggo-ht-M-1-ggo   6
```

```
exonAvgIdx
```

```
[1] 72

sexIdx

[1] 73

head(crossIdx)

  tissue species col
1     br     ggo  74
2     cb     ggo  75
3     ht     ggo  76
4     kd     ggo  77
5     lv     ggo  78
6     br     hsa  79
```

Next, fill the matrix according to the indexes

```
mm <- matrix( 0, nrow = nrow(modelFrame), ncol = max(crossIdx$col) )
colnames(mm) <- rep( NA, ncol(mm) )
colnames(mm)[sampleIdx$col] <- paste( "sample", sampleIdx$sample, sep="_" )
colnames(mm)[exonAvgIdx] <- "exonAvg"
colnames(mm)[sexIdx] <- "sex"
colnames(mm)[crossIdx$col] <- sprintf( "tissue_%s:species_%s",
   crossIdx$tissue, crossIdx$species )

for( i in 1:nrow(modelFrame) ) {
   mm[ i, sampleIdx$col[ sampleIdx$sample == modelFrame$sample[i] ] ] <- 1
   mm[ i, exonAvgIdx ] <- { if( modelFrame$exon[i] == "this" ) 1 else 0 }
   mm[ i, sexIdx ] <- {
      if( modelFrame$sex[i] == "M" && modelFrame$exon[i] == "this" ) .5 else -.5 }
   mm[ i, crossIdx$col[ crossIdx$tissue == modelFrame$tissue[i]
      & crossIdx$species == modelFrame$species[i] ] ] <-
      { if( modelFrame$exon[i] == "this" ) .5 else -.5 }
}
```

Make the table of "other" counts (i.e., of counts for all exons in the gene but the exon under consideration)

```
a <- do.call( rbind,
   tapply( 1:nrow(ecs), geneIDs(ecs), function(i) {
```

```
      sct <- counts(ecs)[i,,drop=FALSE]
      t( sapply( 1:nrow(sct), function(r)
 colSums( sct[-r,,drop=FALSE] ) ) )
} ) )
assayData(ecs)[["otherCounts"]] <- a
```

An accessor for this count, and a look into it.

```
otherCounts <- function( ecs ) assayData(ecs)[["otherCounts"]]

str( otherCounts(ecs) )
```

```
num [1:119344, 1:71] 206 213 235 225 188 153 146 156 150 143 ...
- attr(*, "dimnames")=List of 2
 ..$ : NULL
 ..$ : chr [1:71] "ggo-br-F-1-ggo" "ggo-br-M-1-ggo" "ggo-cb-F-1-ggo" "ggo-cb-M-1-ggo"
```

4 Preparations for shrinkage fitting

The likelihood of the negative binomial (without terms that do not depend on muhat) and its gradient w.r.t. muhat

```
ll <- function( muhat, y, disp )
   sum( y * log( muhat ) - ( y + 1/disp ) * log( muhat + 1/disp ) )

dll <- function( muhat, y, disp )
   y / muhat - ( y + 1/disp ) / ( muhat + 1/disp )
```

The function to perform the shrinkage fit.

This function takes a model matrix (mm), a model frame (mf), initial values (beta0), a boolean vector indicating which coefficients to shrink (beta0) and a prior standard deviation as shrinkage goal (priorsd) and performs a GLM fit

```
shrinkageFit <- function( mm, counts,
   dispersions, sizeFactors,
   beta0, shrink, priorsd ) {
   ofit <- optim(
     beta0,
     function(beta) {
```

```
muhat <- exp( mm %*% beta ) * sizeFactors
-ll( muhat, counts, dispersions ) + sum( beta[shrink]^2 ) / priorsd^2 / 2 } ,
     function(beta) {
muhat <- exp( mm %*% beta ) * sizeFactors
-t( dll( muhat, counts, dispersions ) * muhat ) %*% mm
          + beta*shrink / priorsd^2 },
     method="L-BFGS-B",
     control = list( trace=0, maxit=400, factr=1e2 ) )

   if( ofit$convergence != 0 )
      warning( "L-BFGS optimization did not converge." )

   ofit$par
}
```

This function does the work, with mclapply

```
fitAllExons <- function( ecs, mm, shrink, priorsd ) {
   sf <- rep( sizeFactors(ecs), 2 )
   rows <- 1:nrow(ecs)
   allCoefs <- mclapply( rows,
      function(i) {
 if( i %% 1000 == 0 )
    print( i )
 if( fData(ecs)$testable[i] ) {
    cnts <- c( counts(ecs)[i,], otherCounts(ecs)[i,] )
    disps <- pmax( 3e-3,
       ifelse( modelFrame$exon=="this",
                 fData(ecs)$dispThis[i],
                 fData(ecs)$dispOthers ) )
    beta0 <- rep( 2, ncol(mm) )
    ans <- try(
       shrinkageFit( mm, cnts,
                 disps, sf, beta0, shrink, priorsd ) )
    if( !inherits( ans, "try-error" ) )
       ans
    else
       rep( NA, ncol(mm) ) }
 else
    rep( NA, ncol(mm) ) },
```

```
      mc.cores = cores )
   allCoefs <- do.call( rbind, allCoefs )
   rownames(allCoefs) <- featureNames(ecs)[rows]
   colnames(allCoefs) <- colnames(mm)
   allCoefs
}
```

These coefficients should be subject to shrinkage

```
shrink <- 1:ncol(mm) %in% c( sexIdx, crossIdx$col )
```

5 Fit coefficients with minimal shrinkage

For the initial fit, we set all dispersions to a a plausible inital value. We have two dispersion values for each exon, one for the response variable with exon=="this" in the model frame and one for those with exon=="others".

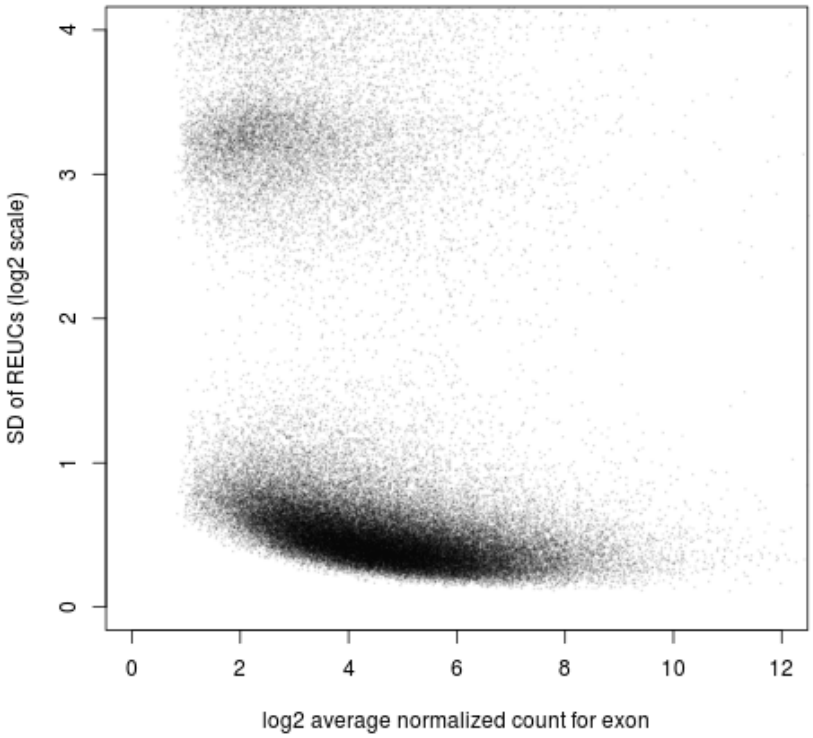
```
fData(ecs)$dispThis <- .1
fData(ecs)$dispOthers <- .1
```

Now, run the fit.

```
allCoefsWeakShrinkage <- fitAllExons( ecs, mm, shrink, priorsd=1000 )
```

Plot the SD of the cross coefficients against the means of the sample coefficients.

```
plot(
   log2( rowMeans( counts( ecs, normalized=TRUE ) ) ),
   rowSds( allCoefsWeakShrinkage[,crossIdx$col] ) / log(2),
   xlim=c(0,12), ylim=c(0,4), pch=20, cex=.3, col="#00000010",
   xlab="log2 average normalized count for exon",
   ylab="SD of REUCs (log2 scale)" )
```



It seems that for sample effects above 8 on a log2 scale, there is only little heteroscadasticity left. Therefore, we take the square root of the mean of these varaiances as shrinkage prior:

```
priorsd <- sqrt( mean( rowVars( allCoefsWeakShrinkage[
   rowMeans( log2( counts( ecs, normalized=TRUE ) ) ) > 8,
   crossIdx$col ] ), na.rm=TRUE ) )
priorsd
```

```
[1] 0.3240358
```

6 Fit the dispersions

The Cox-Reid adjusted log likelihood

```
llCR <- function( muhat, y, disp, mm ) {
```

```
   ll <- sum( sapply( seq(along=y), function(i)
      dnbinom( y[i], mu=muhat[i], size=1/disp[i], log=TRUE ) ) )
   z <- log(muhat) + ( y - muhat ) / muhat
   v0 <- muhat + disp * muhat^2
   w <- 1 / ( ( 1 / muhat )^2 * v0 )
   qrres <- qr( mm*sqrt(w) )
   cr <- sum( log( abs( diag( qrres$qr )[ seq_len(qrres$rank) ] ) ) )
   ll - cr
}
```

This function maximizes the adjusted likelihood

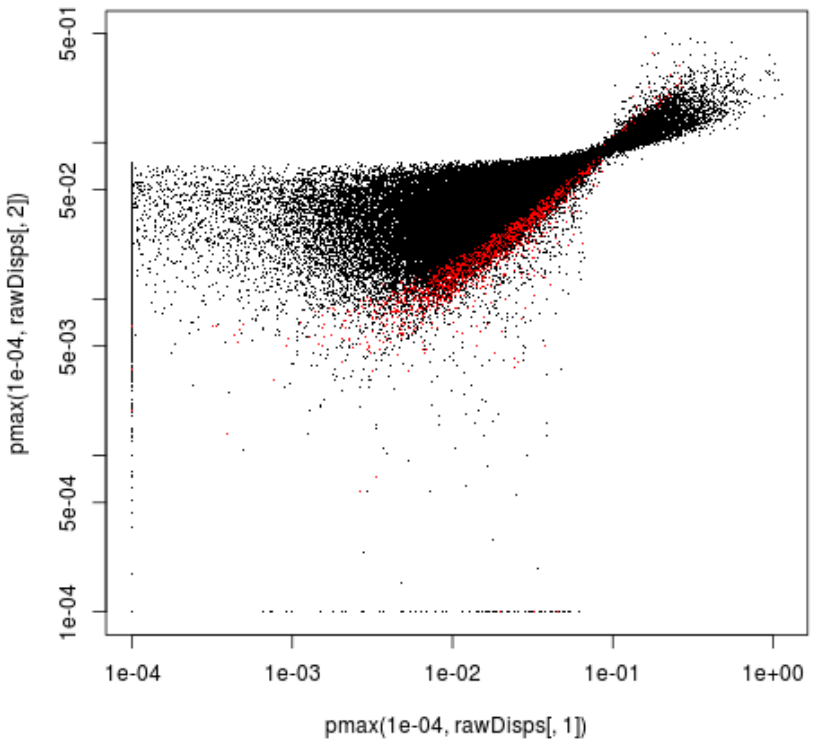
```
estimateDispForExon <- function( muhat, y, mm, isThis,
      startDispThis=.1, startDispOthers=.1 ) {
  a <- optim(
     log( c( startDispThis, startDispOthers ) ),
     function( x ) {
disps <- ifelse( isThis, exp(x[1]), exp(x[2]) )
-llCR( muhat, y, disps, mm ) } )
  names(a$par) <- c( "dispThis", "dispOthers" )
  exp(a$par)
}
```

Calculate the dispersions.

```
rawDisps <- do.call( rbind, mclapply( 1:nrow(ecs), function(i) {
   disps <- try(
      estimateDispForExon(
 as.vector( exp( mm %*% allCoefsWeakShrinkage[i,] ) *
    rep( sizeFactors(ecs), 2 ) ),
 c( counts(ecs)[i,], otherCounts(ecs)[i,] ),
 mm,
 modelFrame$exon == "this" ), silent=TRUE )
   if( !inherits( disps, "try-error" ) )
      disps
   else
      c( NA, NA ) },
   mc.cores=cores ) )
```

Plot the "others" dispersions against the "this" dispersions, highlighting stronger exons in red.

```
plot(
   pmax( 1e-4, rawDisps[,1] ),
   pmax( 1e-4, rawDisps[,2] ), log="xy", pch=".", asp=1,
   col=1+( rowMeans(log10(counts(ecs,normalized=TRUE))) > 2 ) )
```



Write the results into the ecs object.

```
fData(ecs)$dispThis <- ifelse( !is.na(rawDisps[,"dispThis"]),
   rawDisps[,"dispThis"], mean( rawDisps[,"dispThis"], na.rm=TRUE ) )
fData(ecs)$dispOthers <- ifelse( !is.na(rawDisps[,"dispOthers"]),
   rawDisps[,"dispOthers"], mean( rawDisps[,"dispOthers"], na.rm=TRUE ) )
```

7 Fit coefficients with proper shrinkage

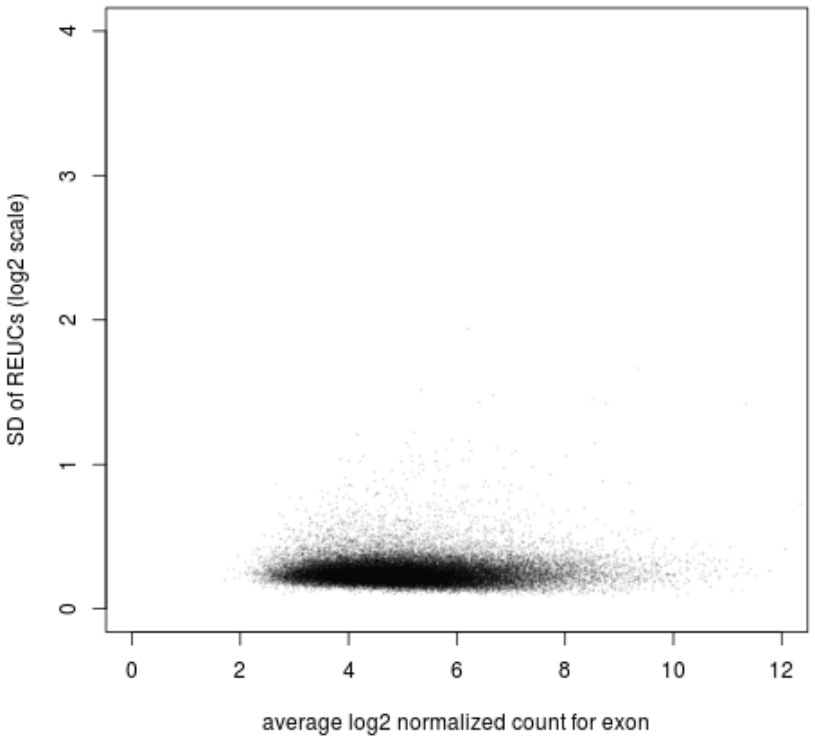
Do the fitting again, now using the priorsd and dispersion values found in the initial fit.

```
allCoefs <- fitAllExons( ecs, mm, shrink, priorsd )
```

Do the plot again.

Plot the SD of the cross coefficients against the means of the sample coefficients.

```
plot(
   rowMeans( log2( counts( ecs, normalized=TRUE ) ) ),
   rowSds( allCoefs[,crossIdx$col] ) / log(2),
   xlim=c(0,12), ylim=c(0,4), pch=20, cex=.3, col="#00000010",
   xlab="average log2 normalized count for exon",
   ylab="SD of REUCs (log2 scale)" )
```



8 Standard errors from likelihood

Determine standard errors for the coefficients by calculating the second derivative of the likelihood wrt the coefficients.

```
hStep <- .1
sf <- rep( sizeFactors(ecs), 2 )
allSE <- sqrt( do.call( rbind,
   mclapply( 1:nrow(allCoefs), function(i) {
      if( i %% 1000 == 0 )
 print(i)
      if( any( is.na(allCoefs[i,]) ) )
 rep( NA, ncol(allCoefs) )
      else {
 y <- c( counts(ecs)[i,], otherCounts(ecs)[i,] )
 disps <-
            rep( c( fData(ecs)$dispThis[i], fData(ecs)$dispOthers[i] ),
      each = ncol(ecs) )
 sapply( 1:ncol(allCoefs), function(j) {
    beta <- allCoefs[i,]
    lln <- sapply( c( -hStep, 0, hStep ), function(dbeta) {
       beta[j] <- allCoefs[i,j] + dbeta
       muhat <- exp( mm %*% beta ) * sf
       -ll( muhat, y, disps ) } )
    hStep^2 / ( lln[1] - 2*lln[2] + lln[3] ) } ) } },
     mc.cores=cores ) )
dimnames(allSE) <- dimnames(allCoefs)
```

```
[1] 1000
[1] 2000
[1] 3000
[1] 4000
[1] 5000
[1] 6000
[1] 7000
[1] 8000
[1] 9000
[1] 10000
[1] 11000
[1] 12000
```

```
[1] 13000
[1] 14000
[1] 15000
[1] 16000
[1] 17000
[1] 18000
[1] 19000
[1] 20000
[1] 21000
[1] 22000
[1] 23000
[1] 24000
[1] 25000
[1] 26000
[1] 27000
[1] 28000
[1] 29000
[1] 30000
[1] 31000
[1] 32000
[1] 33000
[1] 34000
[1] 35000
[1] 36000
[1] 37000
[1] 38000
[1] 39000
[1] 40000
[1] 41000
[1] 42000
[1] 43000
[1] 44000
[1] 45000
[1] 46000
[1] 47000
[1] 48000
[1] 49000
[1] 50000
[1] 51000
[1] 52000
```

```
[1] 53000
[1] 54000
[1] 55000
[1] 56000
[1] 57000
[1] 58000
[1] 59000
[1] 60000
[1] 61000
[1] 62000
[1] 63000
[1] 64000
[1] 65000
[1] 66000
[1] 67000
[1] 68000
[1] 69000
[1] 70000
[1] 71000
[1] 72000
[1] 73000
[1] 74000
[1] 75000
[1] 76000
[1] 77000
[1] 78000
[1] 79000
[1] 80000
[1] 81000
[1] 82000
[1] 83000
[1] 84000
[1] 85000
[1] 86000
[1] 87000
[1] 88000
[1] 89000
[1] 90000
[1] 91000
[1] 92000
```

```
[1] 93000
[1] 94000
[1] 95000
[1] 96000
[1] 97000
[1] 98000
[1] 99000
[1] 100000
[1] 101000
[1] 102000
[1] 103000
[1] 104000
[1] 105000
[1] 106000
[1] 107000
[1] 108000
[1] 109000
[1] 110000
[1] 111000
[1] 112000
[1] 113000
[1] 114000
[1] 115000
[1] 116000
[1] 117000
[1] 118000
[1] 119000
Warning message:
In sqrt(do.call(rbind, mclapply(1:nrow(allCoefs), function(i) { :
  NaNs produced

str(allSE)

num [1:119344, 1:103] 0.178 0.16 0.162 0.147 0.129 ...
- attr(*, "dimnames")=List of 2
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:103] "sample_ggo-br-F-1-ggo" "sample_ggo-br-M-1-ggo" "sample_ggo-cb-F-1-
```

9 Rearrange and summerize REUCs

Rearrange cross coefficients (REUCs) into a 3D array.

```
crossCoefs <- do.call( abind, c( along=3,
   tapply( 1:nrow(crossIdx), crossIdx$tissue, function(i) {
      x <- allCoefs[,crossIdx$col[i]];
      colnames(x) <- crossIdx$species[i];
      x} ) ) )

str(crossCoefs)
```

```
num [1:119344, 1:6, 1:5] -0.368 -0.191 -0.277 -0.171 0.122 ...
- attr(*, "dimnames")=List of 3
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:6] "ggo" "hsa" "mml" "ppa" ...
 ..$ : chr [1:5] "br" "cb" "ht" "kd" ...
```

Do the same for their standard errors.

```
crossCoefSEs <- do.call( abind, c( along=3,
   tapply( 1:nrow(crossIdx), crossIdx$tissue, function(i) {
      x <- allSE[,crossIdx$col[i]];
      colnames(x) <- crossIdx$species[i];
      x} ) ) )

str(crossCoefSEs)
```

```
num [1:119344, 1:6, 1:5] 0.274 0.25 0.255 0.237 0.208 ...
- attr(*, "dimnames")=List of 3
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:6] "ggo" "hsa" "mml" "ppa" ...
 ..$ : chr [1:5] "br" "cb" "ht" "kd" ...
```

Calculate standard deviations across tissues:

```
spSDs <- apply( crossCoefs, 1:2, sd )
str( spSDs )
```

```
num [1:119344, 1:6] 0.144 0.172 0.273 0.218 0.135 ...
- attr(*, "dimnames")=List of 2
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:6] "ggo" "hsa" "mml" "ppa" ...
```

Species pairs:

```
spPairs <- t( combn( levels(modelFrame$species), 2 ) )
rownames(spPairs) <- paste( spPairs[,1], spPairs[,2], sep=":" )
head( spPairs )
```

```
        [,1]  [,2]
ggo:hsa "ggo" "hsa"
ggo:mml "ggo" "mml"
ggo:ppa "ggo" "ppa"
ggo:ppy "ggo" "ppy"
ggo:ptr "ggo" "ptr"
hsa:mml "hsa" "mml"
```

Calculate covariances

```
sppCovs <- apply( spPairs, 1, function(spp)
   apply( crossCoefs, 1, function(a)
      cov( a[ spp[1], ], a[ spp[2], ] ) ) )
str( sppCovs )
```

```
num [1:119344, 1:15] 0.00724 -0.00471 0.03738 0.01067 0.00687 ...
- attr(*, "dimnames")=List of 2
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:15] "ggo:hsa" "ggo:mml" "ggo:ppa" "ggo:ppy" ...
```

and correlations

```
sppCors <- apply( spPairs, 1, function(spp)
   apply( crossCoefs, 1, function(a)
      cor( a[ spp[1], ], a[ spp[2], ] ) ) )
str( sppCors )
```

```
num [1:119344, 1:15] 0.473 -0.26 0.716 0.563 0.605 ...
- attr(*, "dimnames")=List of 2
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:15] "ggo:hsa" "ggo:mml" "ggo:ppa" "ggo:ppy" ...
```

10 Tissue dependence score

Get maximum deviation from the average across tissues, within a species

```
maxDevSp <- apply( crossCoefs, 1:2, function(x) {
   xm <- x - mean(x)
   wm <- which.max(abs(xm))
   if( length(wm)!=0 ) xm[wm] else NA } )
str( maxDevSp )
```

```
num [1:119344, 1:6] 0.188 -0.225 -0.289 -0.279 0.146 ...
- attr(*, "dimnames")=List of 2
 ..$ : chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG00000000419:E
 ..$ : chr [1:6] "ggo" "hsa" "mml" "ppa" ...
```

Maximize over species

```
maxDev <- apply( maxDevSp, 1, function(x) {
   wm <- which.max(abs(x))
   if( length(wm)!=0 ) x[wm] else NA } )
str( maxDev )
```

```
Named num [1:119344] -0.426 -0.247 0.416 -0.279 -0.229 ...
- attr(*, "names")= chr [1:119344] "ENSG00000000419:E005" "ENSG00000000419:E010" "ENSG
```

Table

```
addmargins( table( cut( abs(maxDev), c( -Inf, 1/2, 1, Inf ) * log(2) ) ) )
```

```
(-Inf,0.347] (0.347,0.693]  (0.693, Inf]           Sum
       58033         30985          2578         91596
```

```
addmargins( table( cut( abs(maxDevSp[,"hsa"]), c( -Inf, 1/2, 1, Inf ) * log(2) ) ) )
```

```
(-Inf,0.347] (0.347,0.693]  (0.693, Inf]           Sum
       80032         10185          1379         91596
```

11 Test for conservation

```
padjCov <- apply( sppCovs, 2, function(a)
   ecdf( a )( -a ) / ( 1 - ecdf( a )( a )  ) )
rownames( padjCov ) <- rownames( sppCovs )
str( padjCov )
```

```
      ggo:hsa ggo:mml ggo:ppa ggo:ppy ggo:ptr hsa:mml hsa:ppa hsa:ppy hsa:ptr
FALSE   76677   86776   77631   86342   86679   87680   69590   84346   82793
TRUE    14918    4819   13964    5253    4916    3915   22005    7249    8802
      mml:ppa mml:ppy mml:ptr ppa:ppy ppa:ptr ppy:ptr
FALSE   88038   86802   86955   82543   76051   86710
TRUE     3557    4793    4640    9052   15544    4885
```

What are the thresholds?

```
covThrSp <- sapply( rownames(spPairs),
               function(spp)
                  min( sppCovs[ which( padjCov[,spp] < .1), spp ] ) )
covThrSp
max(covThrSp)
```

```
   ggo:hsa    ggo:mml    ggo:ppa    ggo:ppy    ggo:ptr    hsa:mml    hsa:ppa
0.01920610 0.03548043 0.01938005 0.03092064 0.03507048 0.04659819 0.01623985
   hsa:ppy    hsa:ptr    mml:ppa    mml:ppy    mml:ptr    ppa:ppy    ppa:ptr
0.02848151 0.02774398 0.04708521 0.03461425 0.03949056 0.02379542 0.01991629
   ppy:ptr
0.03606846
[1] 0.04708521
```

The same on log2 scale

```
covThrSp / log(2)^2
max(covThrSp) / log(2)^2
```

```
   ggo:hsa    ggo:mml    ggo:ppa    ggo:ppy    ggo:ptr    hsa:mml    hsa:ppa
0.03997497 0.07384787 0.04033703 0.06435726 0.07299461 0.09698803 0.03380112
   hsa:ppy    hsa:ptr    mml:ppa    mml:ppy    mml:ptr    ppa:ppy    ppa:ptr
0.05928054 0.05774547 0.09800170 0.07204503 0.08219443 0.04952705 0.04145316
   ppy:ptr
0.07507177
[1] 0.0980017
```

Let's round this to 0.1

```
covThr <- 0.1 * log(2)^2
```

How many surpass this maximum threshold?

```
apply( sppCovs, 2, function(x) table( x > covThr ) )
```

```
      ggo:hsa ggo:mml ggo:ppa ggo:ppy ggo:ptr hsa:mml hsa:ppa hsa:ppy hsa:ptr
FALSE   87097   88378   87372   88572   88168   87796   86152   87820   86836
TRUE     4499    3218    4224    3024    3428    3800    5444    3776    4760
      mml:ppa mml:ppy mml:ptr ppa:ppy ppa:ptr ppy:ptr
FALSE   88131   88379   87980   88068   86799   88112
TRUE     3465    3217    3616    3528    4797    3484
```

And how many genes?

```
apply( sppCovs, 2, function(x)
   length( unique( substr(
      rownames(sppCovs)[ which( x > covThr ) ],
      1, 15 )
) ) )
```

```
ggo:hsa ggo:mml ggo:ppa ggo:ppy ggo:ptr hsa:mml hsa:ppa hsa:ppy hsa:ptr mml:ppa
   2044    1487    1924    1380    1568    1643    2310    1653    2023    1584
mml:ppy mml:ptr ppa:ppy ppa:ptr ppy:ptr
   1462    1617    1615    2148    1564
```

Compare conservation between human and macaque with tissue dependence score for human:

```
addmargins( table(
   TDS =  cut( abs(maxDevSp[,"hsa"]),
             c( -Inf, 1/2, 1, Inf ) * log(2) ),
   cons = sppCovs[,"hsa:mml"] > covThr ) )
```

```
               cons
TDS             FALSE  TRUE   Sum
  (-Inf,0.347]  79607   425 80032
  (0.347,0.693]  7917  2268 10185
  (0.693, Inf]    272  1107  1379
  Sum           87796  3800 91596
```

12 Explained variance

```
msq <- do.call( rbind, mclapply(
   1:nrow(allCoefs),
```

```
   function(i) {
      reucs <- allCoefs[i,crossIdx$col]
      if( any(is.na( reucs )) )
 rep( NA, 3 )
      else
anova( lm( REUC ~ species + tissue,
          data.frame( crossIdx,
            REUC = allCoefs[i,crossIdx$col] ) ) )$`Mean Sq` },
   mc.cores=cores ) )
rownames(msq) <- rownames(allCoefs)
colnames(msq) <- c( "species", "tissue", "residual" )
save(msq, file="objects/explainedVariance.RData")
save.image("objects/REUC_analysis.rda")

gamma <- .3
plot( asinh( msq[,"tissue"] / log(2)^2 / gamma ),
   asinh( msq[,"species"] / log(2)^2 / gamma ),
   pch=20, cex=.2, xaxt="n", yaxt="n", asp=1,
   xlab="variance explained by tissue",
   ylab="variance explained by species",
   col=ifelse( rowSums(sppCovs>covThr) == 15, "#FF000060",
      ifelse( sppCovs[,"hsa:mml"] > covThr, "#FF00FF60", "#00000060" ) ) )
ticks <- c( 0, .1*(1:9), 1:10, 20 )
longTicks <- c( 0, .1, 1, 10 )
for( ax in 1:2 ) {
   labeledTicks <- c( 0, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20 )
   axis( ax, asinh( labeledTicks / gamma ), labeledTicks,
     tcl=0, las=1 )
   axis( ax, asinh( c( 0, .1, 1, 10 ) / gamma ),
     FALSE, tcl=-.8 )
   axis( ax, asinh( c( .1*(2:9), 2:9, 20 ) / gamma ),
     FALSE, tcl=-.4 ) }
abline( h = asinh(0.75/gamma), v = asinh(0.75/gamma),
   col="#00000060", lty="dashed" )
```

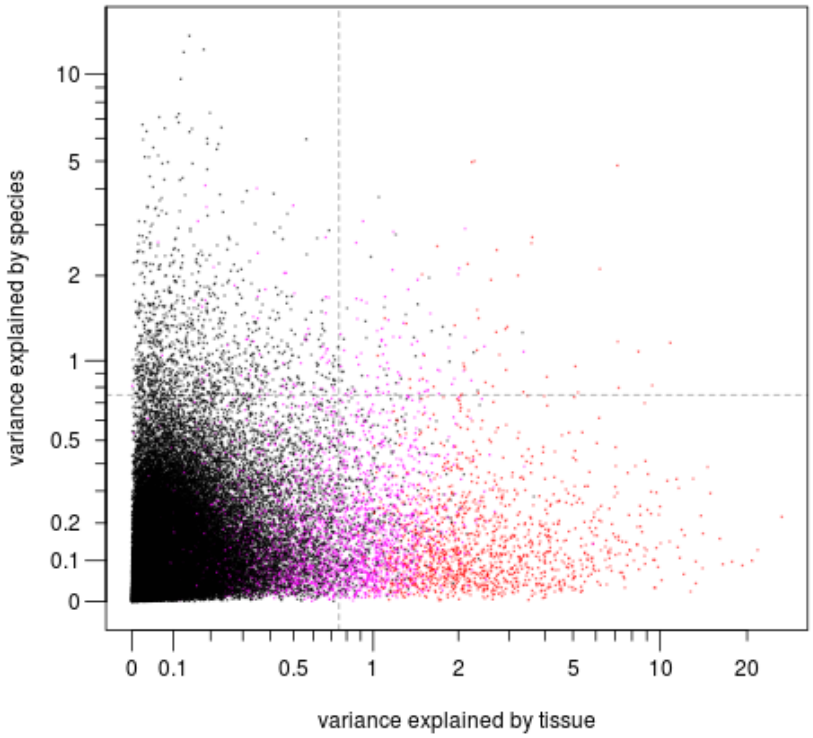


Table:

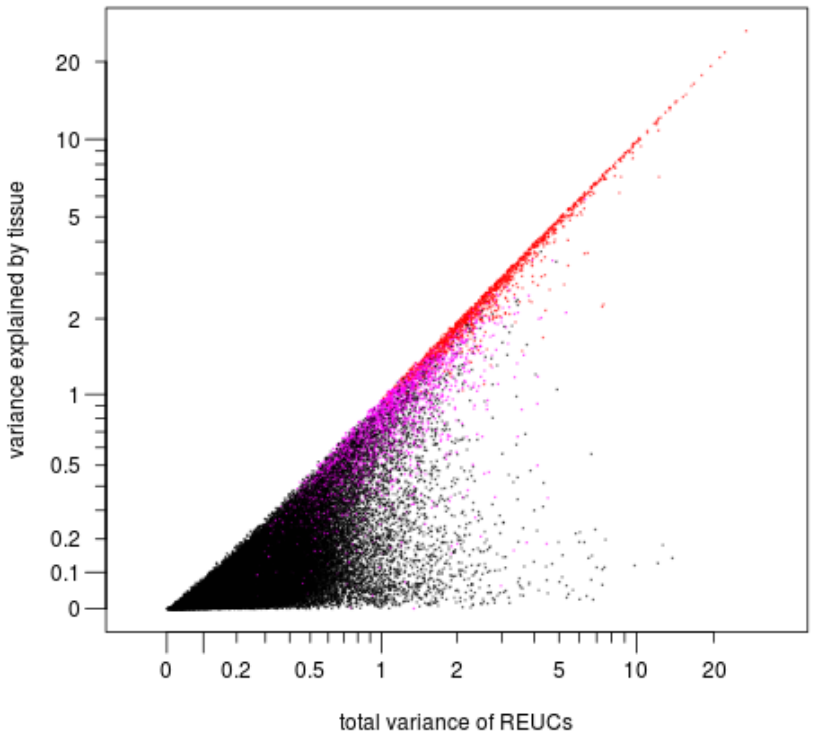
```
table( ‘tissue > 0.75‘ = msq[,"tissue"] / log(2)^2 > .75,
   ‘species > 0.75‘ = msq[,"species"] / log(2)^2 > .75 )
```

```
             species > 0.75
tissue > 0.75 FALSE  TRUE
        FALSE 87591  1189
        TRUE   2668   148
```

Showing tissue versus all variation

```
gamma <- .3
plot( asinh( rowSums(msq) / log(2)^2 / gamma ),
   asinh( msq[,"tissue"] / log(2)^2 / gamma ),
   pch=20, cex=.2, xaxt="n", yaxt="n", asp=1,
   xlab="total variance of REUCs",
```

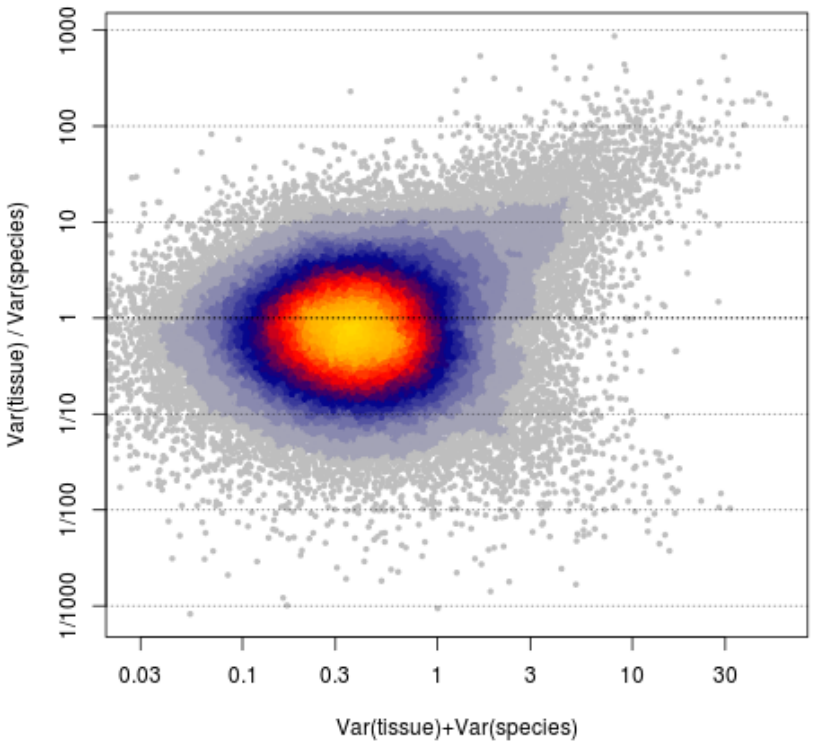
```
   ylab="variance explained by tissue",
   col=ifelse( rowSums(sppCovs>covThr) == 15, "#FF000060",
      ifelse( sppCovs[,"hsa:mml"] > covThr, "#FF00FF60", "#00000060" ) ) )
ticks <- c( 0, .1*(1:9), 1:10, 20 )
longTicks <- c( 0, .1, 1, 10 )
for( ax in 1:2 ) {
   labeledTicks <- c( 0, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20 )
   axis( ax, asinh( labeledTicks / gamma ),
     labeledTicks, tcl=0, las=1 )
   axis( ax, asinh( c( 0, .1, 1, 10 ) / gamma ),
     FALSE, tcl=-.8 )
   axis( ax, asinh( c( .1*(2:9), 2:9, 20 ) / gamma ),
     FALSE, tcl=-.4 ) }
```



Varation explained by tissue and species plotted in an MA plot

```
library(LSD)
```

```
heatscatter(
   log10( ( msq[,"tissue"] + msq[,"species"] ) / log(2) / gamma ),
   log10( msq[,"tissue"] / msq[,"species"] ),
   xaxt="n", yaxt="n", main="", cor=FALSE, xlim=c(-1.7, 1.9 ), xaxs="i",
   xlab = "Var(tissue)+Var(species)",
   ylab = "Var(tissue) / Var(species)" )
axis( 1, log10( c( .03, .1, .3, 1, 3, 10, 30 ) ),
   c( "0.03", "0.1", "0.3", "1", "3", "10", "30" ) )
axis( 2, (-3:3),
   c( "1/1000", "1/100", "1/10", "1", "10", "100", "1000" ) )
abline( h = -3:3, col="#00000080", lty="dotted" )
abline( h = 0, lty="dotted" )
```



13 Load all libraries for plots

```
library(lattice)
library(latticeExtra)
library(DEXSeq)
library(DESeq)
library(parallel)
library(RColorBrewer)
library(MatchIt)
library(geneplotter)
library( plotrix )
library(gplots)
library(Vennerable)
library(ggplot2)
library(GenomicRanges)
library(GenomicFeatures)
## PRIMATES should reflect the path to supplementaryFile3
setwd(Sys.getenv("PRIMATES"))
colSpecies <- brewer.pal(7, "Set1")[-6]
load("objects/REUC_analysis.rda")
load("inputs/ecsTRT.RData")
```

Change the object types for easier acces in further plots

```
species <- dimnames( crossCoefs[ 1, , ] )[[1]]
tissues <- dimnames( crossCoefs[ 1, , ] )[[2]]
allEffects <- lapply( species, function(y){
  vect <- lapply( tissues, function(x){ crossCoefs[ , y , x] } )
  vect <- do.call( cbind,  vect )
  colnames( vect ) <- paste(y, tissues, sep="_" )
  vect
} )
names( allEffects ) <- species
allEffects <- do.call( cbind, allEffects )
save(allEffects, file="objects/allEffects.RData")
ctsr <- names( which( rowSums( sppCovs > max( covThr ) )
   == ncol( sppCovs ) ) )
save(ctsr, file="objects/ctsr.RData")
```

14 Backgrounds for enrichments

Exon backgrounds

```
load("inputs/ecsTRT.RData")
load("objects/ctsr.RData")

df <- data.frame(
  significant=as.numeric(featureNames(ecs) %in% ctsr),
  mean=rowMeans(counts(ecs)),
  length=fData(ecs)$end-fData(ecs)$start,
  dispersion=fData(ecs)$dispersion
)

df <- df[!is.na( df$significant ),]
back <- c()
for( i in 1:4 ){
  mmcts <- matchit(
    significant ~ mean + length + dispersion,
    df, distance="mahalanobis")
  back <- c(back, mmcts$match.matrix[,1])
  df <- df[-which( rownames(df) %in% back ),]
}

save(back, file="objects/back-exon.RData")


df <- data.frame(
  significant=as.numeric(featureNames(ecs) %in% ctsr),
  mean=rowMeans(counts(ecs)),
  length=fData(ecs)$end-fData(ecs)$start,
  dispersion=fData(ecs)$dispersion
)

df <- df[!is.na( df$significant ),]
domains <- read.delim("inputs/mappedExons_proteinscores.txt",
  header=TRUE, comment.char="#")
domains$exonID <- sub(":", ":E", domains$exonID)
df <- df[which( rownames( df ) %in% domains$exonID ),]
```

```
back <- c()
for( i in 1:4 ){
  mmcts <- matchit(
    significant ~ mean + length + dispersion,
    df, distance="mahalanobis")
  back <- c(back, mmcts$match.matrix[,1])
  df <- df[-which( rownames(df) %in% back ),]
}
save(back, file="objects/back-coding.RData")
```

15 Figures

15.1 Figure 1B: visualization of REUCs in a CTDU case

A shingle plot with an example of CTDU exons, and a representation of a species specific exon usage case. We first prepare the data:

```
geneIDs <- sapply(
  strsplit( dimnames(crossCoefs)[[1]], ":" ), "[[", 1)

getGeneExonLevelDF <- function( gn, zlim=2.5 ) {

   x <- crossCoefs[ which(geneIDs %in% gn), , ]
   zlim=2.5
   # Makes a shingles plot from the a cross-coefficients array

     dimCC <- dim(x)
     names( dimCC ) <- c("exon", "species", "tissue")
     names( dimnames(x) ) <- c("exon", "species", "tissue")
     dimnames(x)$exon <- sub("\\S+:", "", dimnames(x)$exon)

     crossCoefsDF <- data.frame(
exon = factor(
   rep( dimnames(x)$exon,
             each = dimCC["species"] * dimCC["tissue"] ) ),
   levels = c( dimnames(x)$exon ),
species = factor(
   rep( rep( dimnames(x)$species,
             each=dimCC["tissue"] ), dimCC["exon"] ),
   levels = dimnames(x)$species ),
```

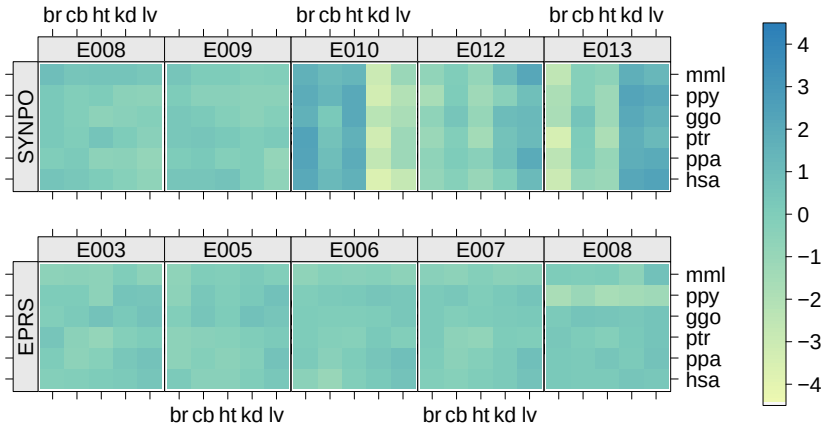
```
tissue = factor(
   rep( dimnames(x)$tissue,
             dimCC["exon"]* dimCC["species"] ),
   levels = dimnames(x)$tissue ),
effect = NA_real_ )


     for( ex in unique( crossCoefsDF$exon )){
       gex <- paste(gn, ex, sep=":")
       anyZero <- tapply( counts(ecs)[gex,],
         list(design(ecs)$specie, design(ecs)$tissue), sum ) == 0
       w <- which( anyZero, arr.ind=TRUE )
       if( length(w) > 0 ){
 for( i in 1:nrow(w) ){
   x[ex,w[,"row"][i],w[,"col"][i]] <- -100
 }
       }
     }

     for( r in 1:nrow(crossCoefsDF) )
crossCoefsDF$effect[r] <- x[ as.character(crossCoefsDF$exon[r]),
   as.character(crossCoefsDF$species[r]),
           as.character(crossCoefsDF$tissue[r]) ]

     crossCoefsDF$effect <- pmin( zlim,
       pmax( -zlim, crossCoefsDF$effect ) )
     crossCoefsDF[which( is.na( crossCoefsDF$effect ) ),"effect"]
       <- -zlim

     cbind( crossCoefsDF, geneID=gn )

}

     colors <- colorRampPalette(brewer.pal(3, name="YlGnBu"))(100)
     colors <- c("#F8F8F8", colors)

forcts <- getGeneExonLevelDF( "ENSG00000171992" )
forcts <- forcts[forcts$exon %in% tail( levels( forcts$exon ), 5 ),]
forcts$exon <- factor( forcts$exon )
levels(forcts$geneID) <- "SYNPO"
```

```
forcts$species <- factor( forcts$species,
  levels=c("hsa", "ppa", "ptr", "ggo", "ppy", "mml"))

forss <- getGeneExonLevelDF( "ENSG00000136628" )
forss <- forss[forss$exon %in% levels( forss$exon )[2:6],]
forss$exon <- factor( forss$exon )
levels( forss$geneID ) <- "EPRS"
forss$species <- factor( forss$species,
  levels=c("hsa", "ppa", "ptr", "ggo", "ppy", "mml"))


lp <- levelplot(
  effect ~ tissue * species | exon + geneID,
  forcts,
  col.regions=colors,
  as.table=TRUE,
  strip=strip.custom(bg="#E8E8E8"),
  at=seq( -2.5, 2.5, length.out=100 ),
  scales=list(x=list(cex=1.3,
    alternating=c(2, 0, 2, 0, 2, 0, 2, 0)),
    y=list(cex=1.3, alternating=2 ) ),
  ylab=list(label=""),
  xlab=list(label=""),
  colorkey=NULL,
  par.strip.text=list(cex=1.3),
  between=list(x=0, y=1),
)
pr1 <- useOuterStrips( lp,
  strip=strip.custom(bg=c("#E8E8E8", "#E8E8E8") ),
  strip.left=strip.custom(bg=c("#E8E8E8", "#E8E8E8") )
)


lp <- levelplot(
  effect ~ tissue * species | exon + geneID,
  forss,
  col.regions=colors,
  as.table=TRUE,
  at=seq( -2.5, 2.5, length.out=100 ),
  strip=strip.custom(bg="#E8E8E8"),
```

```
  scales=list(x=list(cex=1.3,
    alternating=c(0, 1, 0, 1,0, 1, 0, 1)),
    y=list(cex=1.3, alternating=2 ) ),
  ylab=list(label=""),
  xlab=list(label=""),
  colorkey=NULL,
  par.strip.text=list(cex=1.3),
  between=list(x=0, y=1),
)
pr2 <-  useOuterStrips( lp,
  strip=strip.custom(bg=c("#E8E8E8", "#E8E8E8") ),
  strip.left=strip.custom(bg=c("#E8E8E8", "#E8E8E8") ))

Warning message:
In max(i) : no non-missing arguments to max; returning -Inf
```

Now we plot it in a shingle matrix heatmap representation, to make figure 1B:

```
print( pr1, position=c(0, 0.45, 0.9, 1), more=TRUE )
print( pr2, position=c(0, 0, 0.9, 0.55), more=TRUE )
draw.colorkey(
  key=list(
    col=colors,
    at=seq( -4.5, 4.5, length.out=100), labels=list(cex=1.3)
  ),
  draw=TRUE,
  vp=grid::viewport(
    x=grid::unit(0.95, "npc"),
    y=grid::unit(0.5, "npc"),
    height=grid::unit(0.8, "npc")
  )
)
```



15.2 Figure 2A: PCA analysis

Principal component analysis of REUCs with the full data set and two subsets restricting to specific species or tissues. A comparison to gene expression levels was also done:

```
load("objects/allEffects.RData")
sds <- apply( allEffects, 1, sd, na.rm=TRUE)
threshold <- quantile(sds,
  probs=seq(0, 1, 0.1), na.rm=TRUE)["90%"]
newany <- names( which(sds >  threshold) )
allEffects <- allEffects[rownames(allEffects) %in% newany,]

pca <- prcomp( t( allEffects ) )
cmp <- rownames(pca$x)
sp <- sapply( strsplit( cmp, "_" ), "[[", 1)
ts <- sapply( strsplit( cmp, "_" ), "[[", 2)
fullNames <-
  c("gorilla", "human", "rhesus monkey", "bonobo", "orangutan", "chimpanzee")
names(fullNames) <-
  c("ggo", "hsa", "mml", "ppa", "ppy", "ptr")
fullNamesTS <- c("brain", "cerebellum", "heart", "kidney", "liver")
names(fullNamesTS) <- c("br", "cb", "ht", "kd", "lv")
pcaData <- data.frame(
  PC1=pca$x[,"PC1"], PC2=pca$x[,"PC2"],
  which="Exon usage (all)",
```

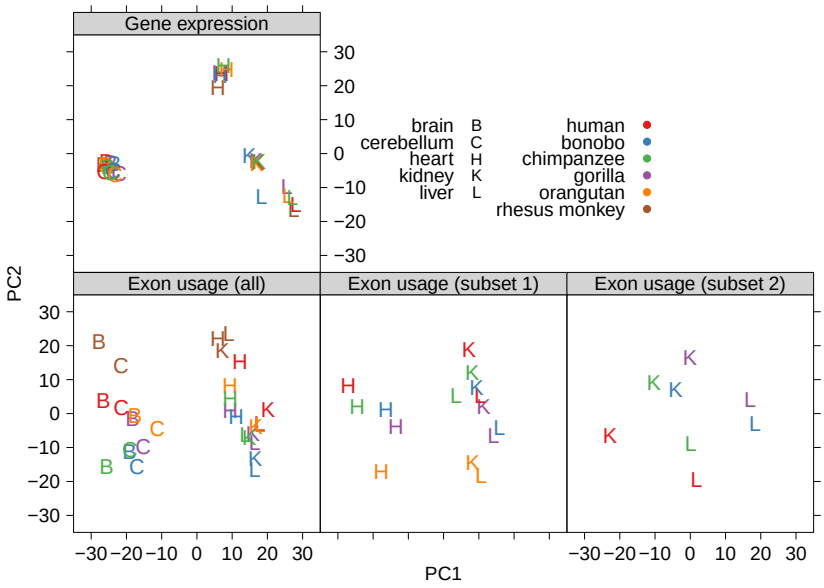
```
  species=fullNames[sp],
  tissue=fullNamesTS[ts])

allEffects2 <- allEffects[,!grepl("br|cb|mml", colnames( allEffects ))]
pca <- prcomp( t( allEffects2 ) )
cmp <- rownames(pca$x)
sp <- sapply( strsplit( cmp, "_" ), "[[", 1)
ts <- sapply( strsplit( cmp, "_" ), "[[", 2)
pcaData <- rbind( pcaData,
  data.frame(
    PC1=pca$x[,"PC1"],
    PC2=pca$x[,"PC2"],
    which="Exon usage (subset 1)",
    species=fullNames[sp],
    tissue=fullNamesTS[ts]))

allEffects3 <- allEffects[,!grepl("mml|cb|br|ht|ppy", colnames( allEffects ))]
pca <- prcomp( t( allEffects3 ) )
cmp <- rownames(pca$x)
sp <- sapply( strsplit( cmp, "_" ), "[[", 1)
ts <- sapply( strsplit( cmp, "_" ), "[[", 2)
pcaData <- rbind( pcaData,
  data.frame(
    PC1=pca$x[,"PC1"],
    PC2=pca$x[,"PC2"],
    which="Exon usage (subset 2)",
    species=fullNames[sp],
    tissue=fullNamesTS[ts]))


load("inputs/ecsTRT.RData")
geneCounts <- geneCountTable( ecs )
cds <- newCountDataSet( as.matrix(geneCounts), conditions=design(ecs))
cds <- estimateSizeFactors( cds )
norCounts <- counts(cds, normalized=TRUE)

forPCA <- sapply( rownames( norCounts ), function(gn){
  singleGene <- tapply(norCounts[gn,],
    INDEX=list( pData(cds)$specie, pData(cds)$tissue ),
    mean)
```

```
  singleGeneVec <- as.vector( singleGene )
  names(singleGeneVec) <- as.vector(
    sapply(colnames(singleGene),
    function(x){
      paste(x, rownames(singleGene), sep="_")
    } ) )
  singleGeneVec
})

forPCA <- t( forPCA )
forPCA <- log( forPCA )
forPCA[ which( is.infinite( forPCA ) ) ] <- NA
NAS <- apply( forPCA, 1, function(x){!any(is.na(x))})
forPCA <- forPCA[NAS,]

thesholdExp <- quantile(apply( forPCA, 1, sd ),
  seq(0, 1, 0.1))["90%"]
forPCA <-
  forPCA[which( apply( forPCA, 1, sd ) > thesholdExp ),]
pca <- prcomp( t( forPCA ) )
cmp <- rownames(pca$x)
sp <- sapply( strsplit( cmp, "_" ), "[[", 2)
ts <- sapply( strsplit( cmp, "_" ), "[[", 1)
pcaData <- rbind(data.frame(
  PC1=pca$x[,"PC1"],
  PC2=pca$x[,"PC2"],
  which="Gene expression",
  species=fullNames[sp],
  tissue=fullNamesTS[ts]), pcaData)
save(pcaData, file="objects/pcaData.RData")

pcaData$species <- factor(pcaData$species,
  levels=c("human", "bonobo",
    "chimpanzee", "gorilla", "orangutan", "rhesus monkey"))
signs <- c("B", "C", "H", "K", "L")
colSpecies <- brewer.pal(7, "Set1")[-6]

pcaData[pcaData[,3] == "Gene expression",c(1,2)] <-
  pcaData[pcaData[,3] == "Gene expression",c(1,2)] * 0.5
```

We plot the different PCA panels in the same panel

```
theme.novpadding <-
   list(layout.heights =
list(top.padding = 0,
    main.key.padding = 0,
    key.axis.padding = 0,
    axis.xlab.padding = 0,
    xlab.key.padding = 0,
    key.sub.padding = 0,
    bottom.padding = 0.1),
layout.widths =
list(left.padding = 0.2,
    key.ylab.padding = 0,
    ylab.axis.padding = 0,
    axis.key.padding = 0,
    right.padding = 0))

with( pcaData,
  xyplot( PC2 ~ PC1 | which, layout=c(3,2), cex=1,
    panel=function(x, y, ..., subscripts){
      pch<-signs[tissue[subscripts]];
      col=colSpecies[species[subscripts]];
      panel.xyplot(x, y, pch=pch, col=col, cex=2.3 )
    },
    xlim=c(-35, 35),
    ylim=c(-35, 35),
    index.cond=list(c(2, 3, 4, 1)),
    ylab=list(label="PC2", cex=1.3),
    xlab=list(label="PC1", cex=1.3),
    scales=list(x=list(cex=1.3), y=list(cex=1.3)),
    par.strip.text=list(cex=1.3),
    strip=strip.custom(bg="lightgray"),
    par.settings = theme.novpadding,
    panel.error=NULL,
    key=list(
      x=0.38, y=0.80, adj=1,
      text=list( levels(tissue), cex=1.3 ),
      points = list( pch=signs, cex=1.7 ),
      text = list( levels(species), cex=1.3),
```

```
      points = list( pch=20, col=colSpecies, cex=1.5),
      rep=FALSE)
   )
)
```

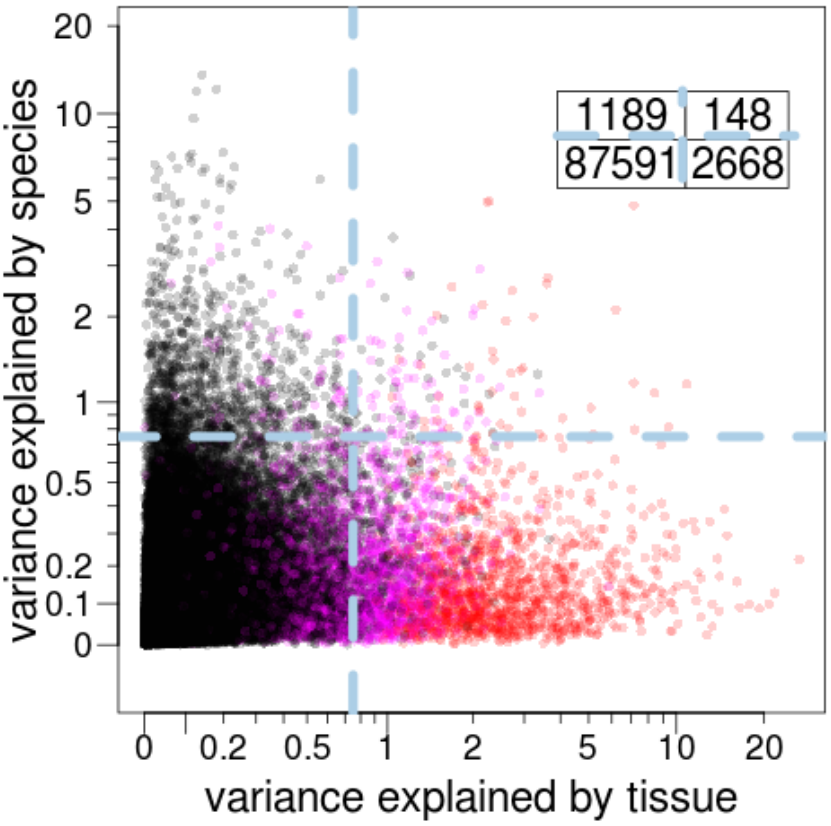


15.3 Figure 2B: variance analysis

We plotted the variance explained by tissues vs the variance explain by species, as in figure 2B:

```
gamma <- .3
par(mar=c(5, 5, 1, 1))
plot(
 asinh( msq[,"tissue"] / log(2)^2 / gamma ),
 asinh( msq[,"species"] / log(2)^2 / gamma ),
 pch=16, cex=1, xaxt="n", yaxt="n", asp=1,
 xlab="variance explained by tissue",
 ylab="variance explained by species",
 col=ifelse( rowSums(sppCovs>covThr) == 15, "#FF000030",
    ifelse( sppCovs[,"hsa:mml"] > covThr, "#FF00FF30", "#00000030" ) ), cex.lab=2)
ticks <- c( 0, .1*(1:9), 1:10, 20 )
longTicks <- c( 0, .1, 1, 10 )
for( ax in 1:2 ) {
```

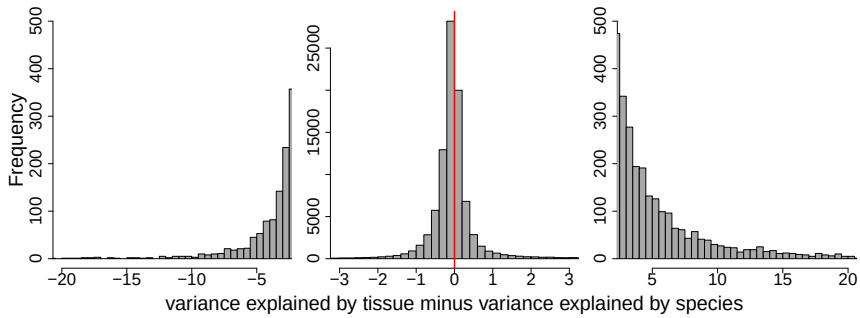
```
   labeledTicks <- c( 0, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20 )
   axis( ax,
     asinh( labeledTicks / gamma ),
     labeledTicks, tcl=0, las=1, cex.axis=1.6)
   axis( ax,
     asinh( c( 0, .1, 1, 10 ) / gamma ),
     FALSE, tcl=-.8, cex.axis=1.6)
   axis( ax, asinh( c( .1*(2:9), 2:9, 20 ) / gamma ),
     FALSE, tcl=-.4, cex.axis=1.6) }
abline( h = asinh(0.75/gamma),
  v = asinh(0.75/gamma),
  col="#ACCEE6", lty="dashed",
  lwd=7)
mat <- as.matrix (
  table(
    asinh( msq[,"species"] / log(2)^2 / gamma )
      > asinh(0.75/gamma),
    asinh( msq[,"tissue"] / log(2)^2 / gamma )
      > asinh(0.75/gamma))  ) [2:1,]
addtable2plot(x=asinh(13), y=asinh(18.5), table=mat,
  display.colnames=FALSE, cex=2, lwd=0,
  hlines=FALSE, vlines=FALSE, box.col="blue")
segments(asinh(35), asinh(20),
  asinh(35), asinh(40), lty="dashed", lwd=7, col="#ACCEE6" )
segments(asinh(13),
  asinh(28), asinh(85), asinh(28),
  lty="dashed", lwd=7, col="#ACCEE6" )
```



As in figure S3, we plot the histogram of the ratio between the variance explained by tissue and the variance explained by species:

```
par(mfrow=c(1, 3))
par(mar=c(6, 5, 1, 0.1))
hist(
  (msq[,"tissue"] / log(2)^2/0.3 ) -
    ( msq[,"species"] / log(2)^2 /0.3 ),
  breaks=450, xlim=c(-20, -3), cex.axis=2.2, main="",
  ylim=c(0, 500), xlab="", cex.lab=2.5, col="darkgray")
par(mar=c(6, 4, 1, 0.1))
hist(
  (msq[,"tissue"] / log(2)^2/0.3 ) -
     ( msq[,"species"] / log(2)^2 /0.3 ),
  breaks=900, xlim=c(-3, 3), cex.axis=2.2, main="", ylab="",
  xlab="", col="darkgray")
```

```
text(x=0, y=-5500,
  label="variance explained by
    tissue minus variance explained by species",
    xpd=NA, cex=2.5)
abline( v=0, col="red", lwd=2)
par(mar=c(6, 4, 1, 1))
hist(  (msq[,"tissue"] / log(2)^2/0.3 ) -
  ( msq[,"species"] / log(2)^2 /0.3 ),
  breaks=450, xlim=c(3, 20), cex.axis=2.2,
  main="", ylim=c(0, 500),
  ylab="", xlab="", col="darkgray")
```



15.4 Figure 2C: conserved tissue-specific vs mya

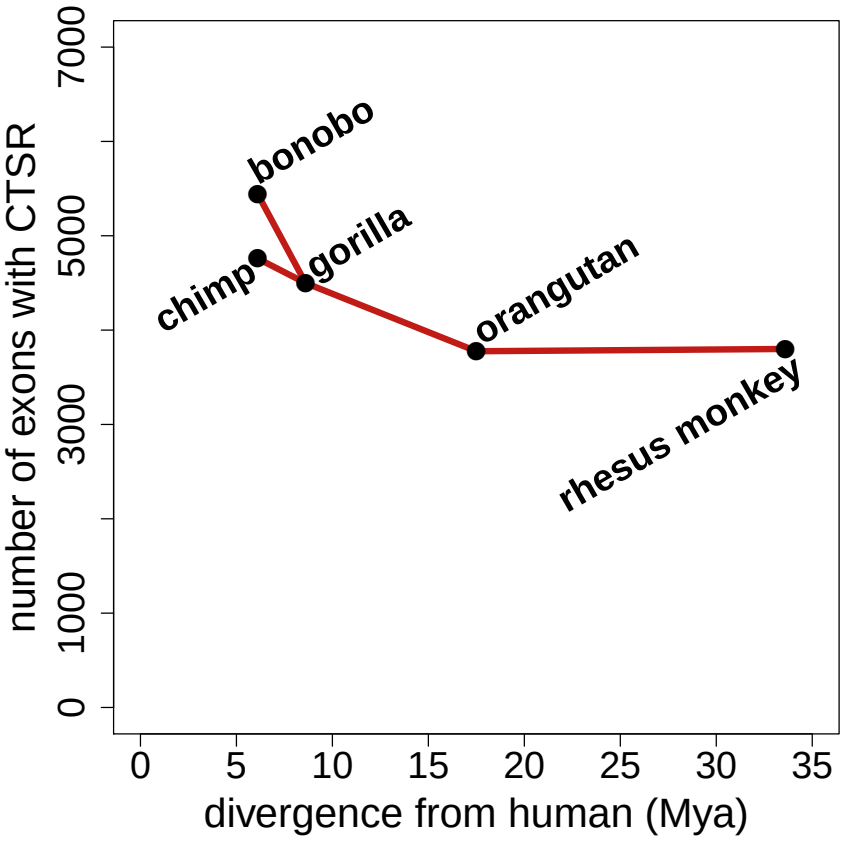
We plot the number of CTDU exons between human and the rest of the primates vs divergence time in million years (according to Israfil et al, 2011). We do some data preparation:

```
spPairsDist <- c( 8.6, 33.6, 8.6,
  17.5, 8.6, 33.6, 6.1, 17.5, 6.1,
  33.6, 33.6, 33.6, 17.5, 3.9, 17.5 )
names( spPairsDist ) <- colnames( sppCovs )
human <- sppCovs[,which( grepl("hsa", colnames( padjCov )) )]
numb <- colSums( human > covThr, na.rm=TRUE )
extra <- numb[c("hsa:ppa", "ggo:hsa")]
good <- numb[c("hsa:ptr", "ggo:hsa", "hsa:ppy", "hsa:mml")]
```

Now we can do the plot from figure 2B. In which we can see that the number of CTDU exons decreases with evolutionary time.

```
par(mar=c(5, 5, 1, 0.5))
```

```
plot( spPairsDist[names(good)],
  good, lwd=5, cex.lab=2, ylab="number of exons with CTDU",
  xlab="divergence from human (Mya)",
  cex.axis=1.8, xlim=c(0, 35),
  ylim=c(0, 7000), type="l", col="#C11B17")
lines( spPairsDist[names(extra)],
  extra, type="l", lwd=5, col="#C11B17")
points( spPairsDist[names(numb)], numb, cex=2, pch=16)
text(spPairsDist[names(extra)[1]],
  extra[1]+250, label="bonobo", adj=0.05,
  cex=1.8, srt=30, font=2 )
text(spPairsDist[names(good)[1]]-4.9,
  good[1]-680, label="chimp", adj=0.05,
  cex=1.8, srt=30, font=2 )
text(spPairsDist[names(good)[2]]+0.5,
  good[2]+150, label="gorilla",
  adj=0.05, cex=1.8, srt=30, font=2 )
text(spPairsDist[names(good)[3]]+0.5, good[3]+190,
  label="orangutan", adj=0.05, cex=1.8, srt=30, font=2 )
text(spPairsDist[names(good)[4]]-11,
  good[4]-1580, label="rhesus monkey",
  adj=0.05, cex=1.8, srt=30, font=2 )
```

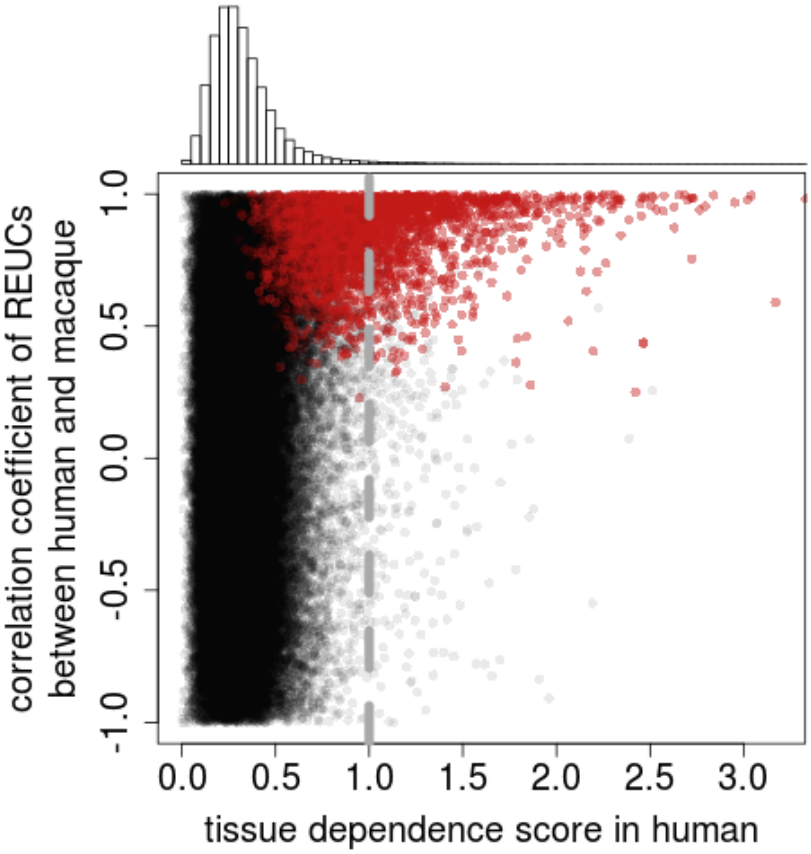


15.5 Figure 2D: Tissue strength vs conservation

In order to see the relation between conservation of the regulation and strenght of tissue-dependent usage, we plot this two variables. This results in figure 2D.

```
layout(mat=as.matrix(c(1, 2), ncol=2),
  heights=c(1, 4), widths=c(1, 1))
par(mar=c(0, 8, 0.1, 0.3))
hist(abs(maxDevSp[,"hsa"])/log(2),
  100, xlim=c(0, 3.2), xaxt="n",
  main="", cex.axis=1.8, cex.lab=1.8,
  ylab="", yaxt="n", lwd=3)
par(mar=c(4.5, 8, 0.1, 0.3))
cols <- ifelse( sppCovs[,"hsa:mml"] < covThr,
```

```
  "#00000015", "#C11B1770")
plot(
  abs(maxDevSp[,"hsa"])/log(2),
  sppCors[,"hsa:mml"], pch=16,
  cex=1, cex.lab=1.65, cex.axis=1.65,
  xlim=c(0, 3.2),
  ylab="correlation coefficient of REUCs
    \nbetween human and macaque",
  xlab="tissue dependence score in human",
  col=cols, lwd=3)
abline(v=1, col="darkgray", lty=2, lwd=7)
```



15.6 Figure 3D: heatmap of tissue dependence

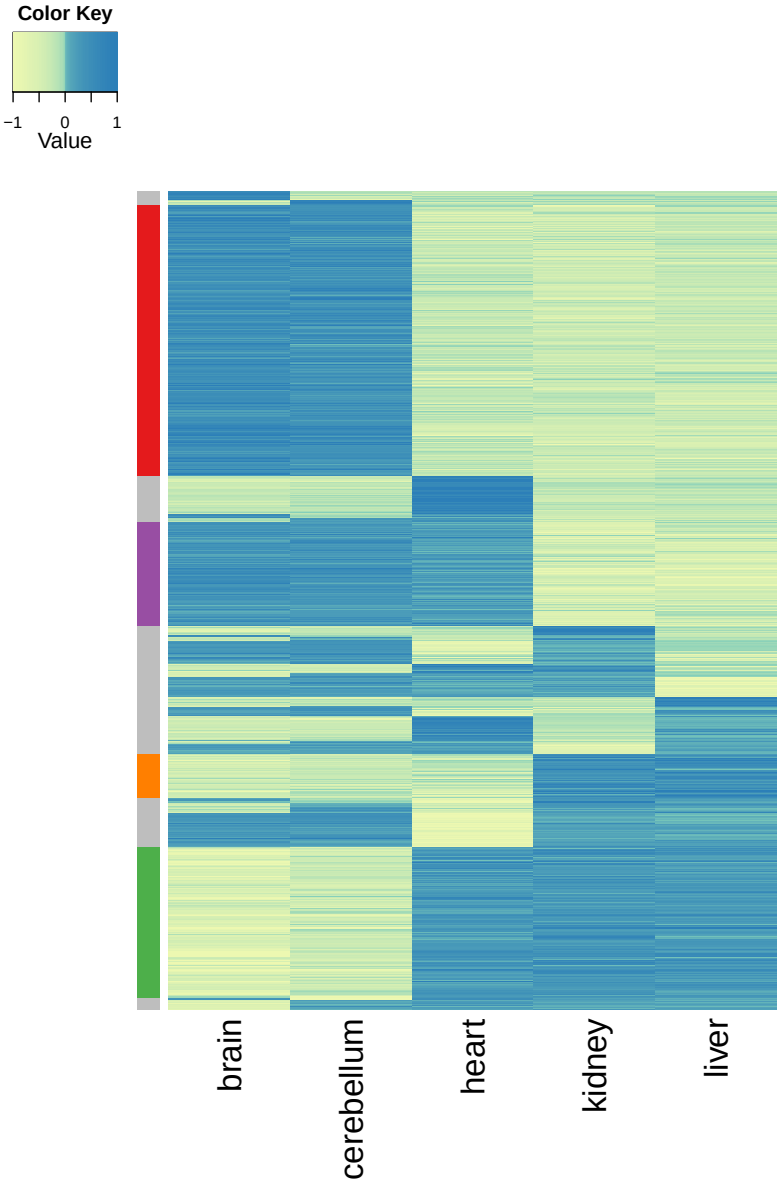
We classify our set of strictly conserved exons according to their mean REUC accross species. We represent this in a heatmap, which we present in figure 3.

```
load("objects/allEffects.RData")
load("objects/ctsr.RData")
meanTiCoefs <- apply( crossCoefs, c( 1, 3 ), mean )
forClust <- meanTiCoefs[ctsr,]
tiDirs <- do.call( expand.grid,
  sapply( colnames(meanTiCoefs),
    function(ti) c( -1, 1 ),
  simplify=FALSE ) )
save( tiDirs, file="objects/classesDefinition.RData")
tiDirClass <- apply(
  meanTiCoefs[ ctsr, ] %*% t( as.matrix(tiDirs) ),
  1, which.max )
save(tiDirClass, file="objects/CDUT-class.RData")
sortedClasses <- sort( tiDirClass )
forClust <- forClust[names( sort( tiDirClass ) ),]
colors <- colorRampPalette(
  brewer.pal(3, name="YlGnBu"))(100)
colors2 <- brewer.pal(n=5, "Set1")
colors2 <- colors2[-2]
cols <- rep("gray", nrow(forClust))
goodClasses <- names( head( sort(
  sapply( split( names( sortedClasses ), sortedClasses ),
  length ), decreasing=TRUE ), 4 ) )
goodClasses <- as.numeric( goodClasses )
for( i in 1:4) {
  cols[which( sortedClasses == goodClasses[i] )] <-
    colors2[i]
}
```

We make the heatmap

```
heatmap.2( forClust, col=colors,
   breaks=seq( -1, 1, length.out=101)^3,
   trace="none", dendrogram="none", Rowv=FALSE,
   keysize=1.3, labRow=rep("", nrow(forClust)),
```

```
labCol=c("brain", "cerebellum", "heart", "kidney", "liver"),
densadj=1, Colv=FALSE, margins=c(10, 1), RowSideColors=cols,
lhei=c(2, 10), cexCol=2.3, density.info="none")
```



15.7 Figure 3A: disordered regions

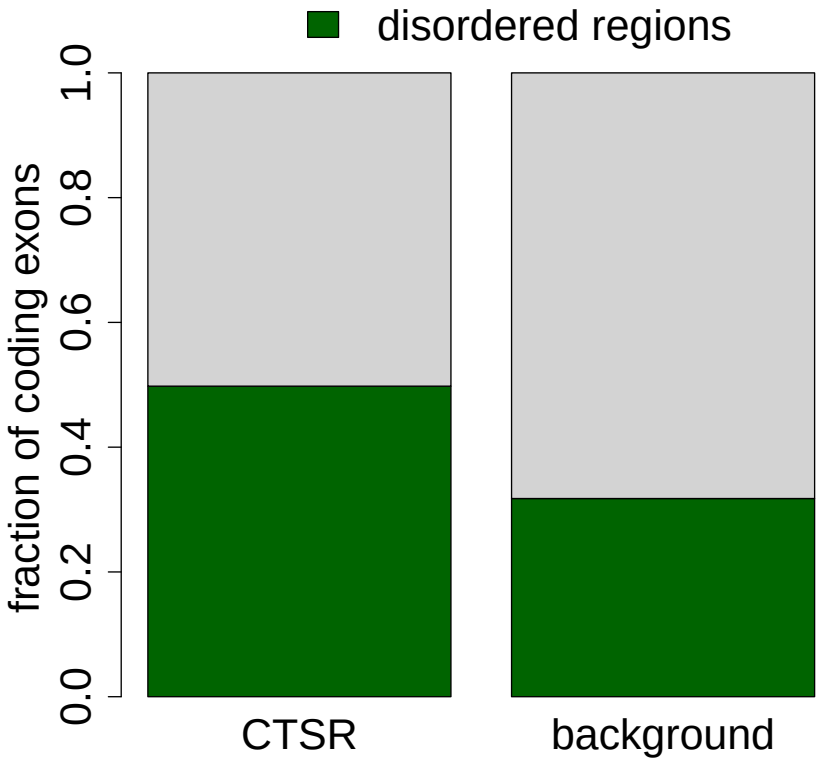
TDU is known to be enriched in protein disordered regions that are often mediate protein-protein interactions. We verify this in our set of CTDU exons and strengthen this result.

We first load and prepare all the relevant data. Including the predictions from IUPRED.

```
protFeatures <- read.table(
  "inputs/mappedExons_proteinscores.txt",
  header=TRUE, stringsAsFactors=FALSE)
rownames( protFeatures ) <-
  gsub(":", ":E", as.character(protFeatures$exonID))
load("objects/ctsr.RData")
load("inputs/ecsTRT.RData")
load("objects/CDUT-class.RData")
load("objects/back-coding.RData")
goodmat <- rbind(
  ctsr=table(
    protFeatures
      [which(rownames(protFeatures) %in% ctsr),
        "IUPred_disorder.0.4"] ),
  back=table(
    protFeatures
      [which(rownames(protFeatures) %in% back),
        "IUPred_disorder.0.4"] ))[,2:1]
goodData <- t( goodmat / rowSums( goodmat ) )
```

We can then do a barchart to see how it compares to out set of CTDU exons.

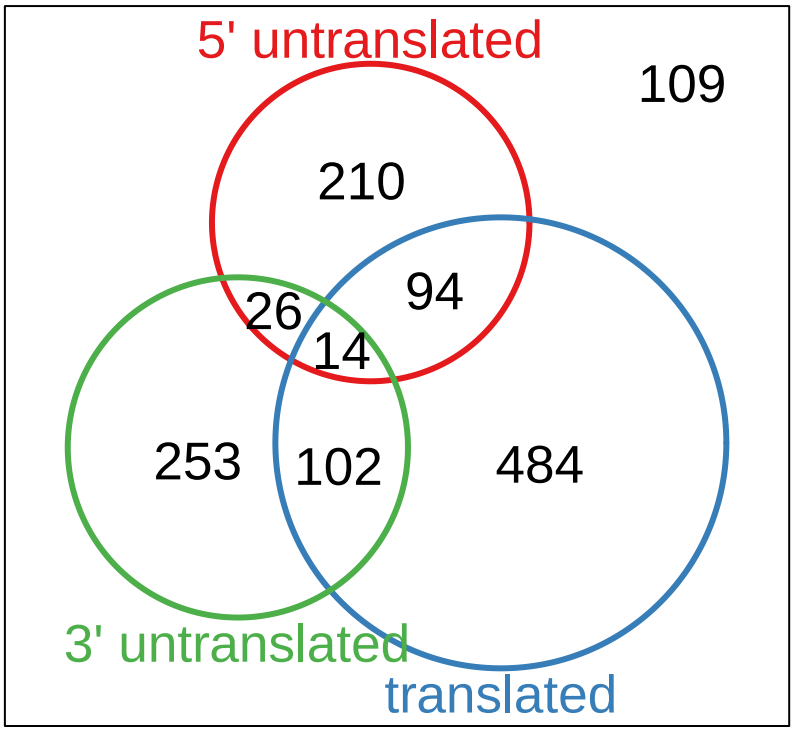
```
par(mar=c(3, 5, 4, 0.5))
barplot(goodData,
  col=c("darkgreen", "lightgray"),
  names=c("CTSR", "background"),
  cex.axis=2, ylab="fraction of coding exons",
  cex.lab=2, xpd=FALSE, cex.names=2)
legend(x=0.6, y=1.16,
  legend="disordered regions",
  fill="darkgreen", xpd=TRUE,
  cex=2, box.lty=0)
```



15.8 Figure 3B: venn diagram

```
load("inputs/ecsTRT.RData")
load("inputs/utrRanges.RData")
codexons <- read.table("inputs/frames.txt", header=FALSE)
coding <- unique( sub(":", ":E", codexons$V1) )

exons <- GRanges(
  seqname=fData(ecs)$chr,
  ranges=IRanges(start=fData(ecs)$start,
    end=fData(ecs)$end, names=featureNames(ecs)),
    strand=fData(ecs)$strand)
fiveExons <- unique(
  names( exons[queryHits(
    findOverlaps( exons, fiveRanges ) )] ) )
threeExons <- unique(
```

```
  names( exons[queryHits(
    findOverlaps( exons, threeRanges ) )] ) )
load("objects/ctsr.RData")

Vtypes <- Venn(
  list(
    'all'=ctsr, '5' UTR'=ctsr[ctsr %in% fiveExons],
    'coding exon'=ctsr[ctsr %in% coding],
    '3' UTR'=ctsr[ctsr %in% threeExons] ))
Vtypes <- Vtypes[,2:4]
colnames( Vtypes@IndicatorWeight )[1:3] <-
  c("5' untranslated", "translated", "3' untranslated")
plot( Vtypes, show=list(Faces=FALSE) )
```



15.9 Figure 3C: CTDU barchart in different cathegories and comparison with background set of exons

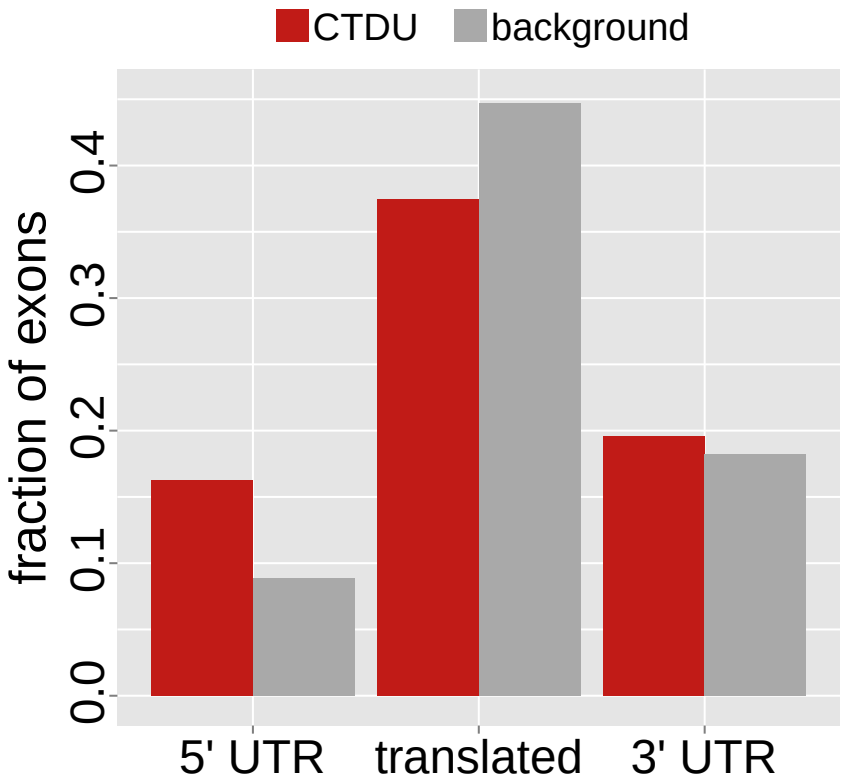
```
load("inputs/ecsTRT.RData")
exons <- GRanges(
  seqnames=fData(ecs)$chr,
  ranges=IRanges(
    fData(ecs)$start,
    fData(ecs)$end,
    names=rownames(fData(ecs)) ),
  strand=fData(ecs)$strand )
load("objects/back-exon.RData")
load("objects/ctsr.RData")

makeContTable <- function(utrs, exons ){
   a <- length( intersect( exons, utrs ) )
   b <- length( intersect( back, utrs ) )
   mat <- rbind(
    fore=c( UTR=a, nonUTR=abs( a-length( ctsr ) ) ),
    back=c( UTR=b, nonUTR=abs(b - length( back )) )
  )
  return( mat )
}

load("inputs/codingornot.RData")
utr3 <- makeContTable( goodthreeExons, ctsr )
utr5 <- makeContTable( goodfiveExons, ctsr )
coding <- makeContTable( goodcoding, ctsr )

fisher.test( rbind( utr3[,1], utr5[,1], coding[,1]) )

nums <- c( (utr5[,1] / rowSums( utr5 )),
  c(coding[,1]/rowSums(coding)),
  (utr3[,1] / rowSums( utr3 ) ) )
df <- data.frame(
  fraction=nums, set=names(nums),
  region=
  c("5' UTR", "5' UTR",
    "translated", "translated",
    "3' UTR", "3' UTR" ) )
```

```
df$region <- factor(
  df$region,
  levels=levels(df$region)[c(2,3,1)] )
df$set <- factor(
  df$set,
  levels=c("fore", "back"))
```

```
        Fisher's Exact Test for Count Data

data:  rbind(utr3[, 1], utr5[, 1], coding[, 1])
p-value = 2.697e-14
alternative hypothesis: two.sided
```

We plot the result in a barplot

```
bp <- qplot(
  region, data=df, geom="bar",
  fill=set, weight=fraction,
  position="dodge" ) +
  scale_fill_manual(name="",
    values=c("#C11B17", "darkgray"),
    labels=c("CTDU   ", "background")) +
  scale_x_discrete("") +
  theme(
    axis.title.y = element_text(size=27, vjust=.3),
    axis.text.x=element_text(size=25, colour="black"),
    axis.text.y=element_text(size=25, colour="black",
    angle=90, hjust=0.45),
    legend.text=element_text(size=20, colour="black"),
    legend.position="top", legend.direction="horizontal",
    panel.grid.minor=element_line(size=0.5, color="white"))
  + scale_y_continuous(limits=c(0, .45) )
bp$labels$y <- "fraction of exons"
bp
```



15.10 Figure 3E: splicing factor motif enrichments

For each of the groups we calculate the ratio of the number of predicted binding motifs foreach of the splicing factors. We also calculate 95% confidence intervals.

```
load("inputs/ecsTRT.RData")
load("objects/CDUT-class.RData")
load("objects/classesDefinition.RData")
goodCathegories <- names(
  head( sort(table( tiDirClass ), decreasing=TRUE), 4) )
classes <- split( names( tiDirClass ), tiDirClass )

sf <- read.table(
  "inputs/sfmapTable.tab", header=TRUE, row.names=1)
```

```
sf <- split(sf,
  sapply( strsplit( rownames( sf ), "-" ), "[[", 1))
rn <- sapply( strsplit( rownames(sf[[1]]), "-"), "[[", 2 )
rn <- sapply( strsplit( rownames(sf[[1]]), "-"), "[[", 2 )
rownames( sf[[1]] ) <- rn
rownames( sf[[2]] ) <- rn
sf <- sf[[1]] + sf[[2]]
load("objects/ctsr.RData")
load("objects/back-exon.RData")
goodCathegories <- names(
  head( sort(table( tiDirClass ), decreasing=TRUE), 4) )

exons <- classes[[goodCathegories[1]]]

confidences <- mclapply( goodCathegories, function(x){
  exons <- classes[[x]]
  exonRows <- which( rownames(sf) %in% exons )
  backRows <- which( rownames(sf) %in% back )
  foreboot <- replicate(10000,
    colMeans( sf[sample( exonRows, replace=TRUE),] ) )
  backboot <-  replicate(10000,
    colMeans( sf[sample( backRows, replace=TRUE),] ) )
  real <- log2(colMeans( sf[exonRows,] )
    / colMeans( sf[backRows,] ))
  conf <- t( sapply(
    rownames(foreboot), function(x){
      quantile( log2( foreboot[x,] / backboot[x,] ),
      c(0.05, 0.95) ) } ) )
  pval <- sapply(colnames(sf), function(x){
    wilcox.test(  sf[backRows,x], sf[exonRows,x] )$p.value } )
  res <- cbind( real, conf, pval )
  return( res )
}, mc.cores=1 )

confidences <- lapply(confidences,
  function(x){
    x[-which(rownames(x) %in% c("SRp55","hnRNPAB")),] } )

df <- confidences[[1]]
num <- nrow( df )
```

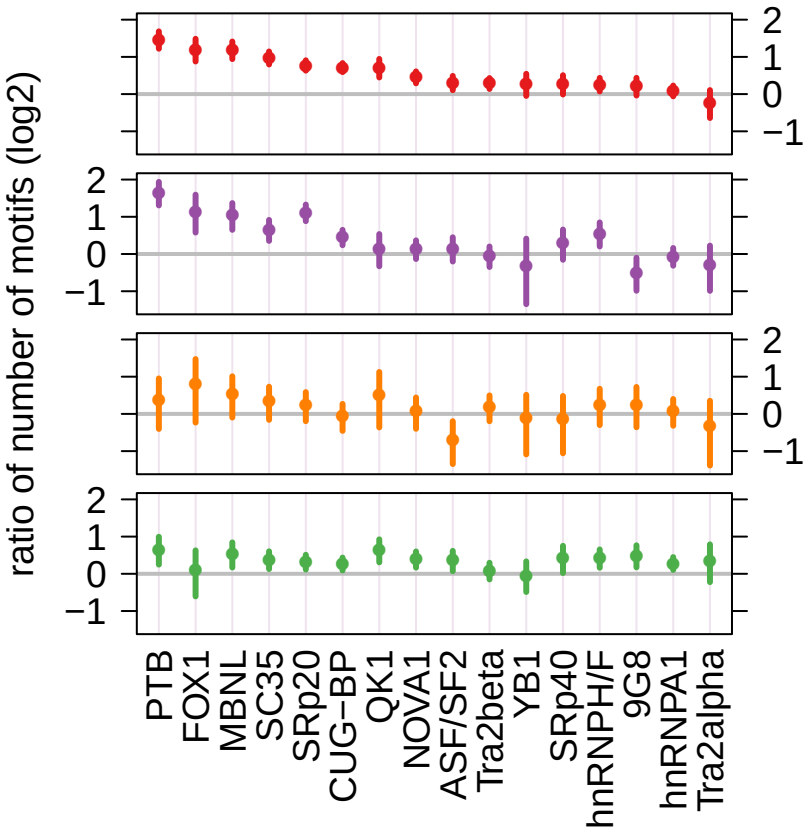
```
  colors2 <- brewer.pal(n=5, "Set1")
  colors2 <- colors2[-2]
  cols <- colors2
  goodNames <- gsub("X9G8",
    "9G8",
    gsub("SF2ASF",
      "ASF/SF2",
    gsub("G\\.B", "G-B",
    gsub("H\\.F", "H/F",
    rownames(confidences[[1]])))))
#  goodorder <- 1:18
  goodorder <- c(11, 16, 1, 3, 6, 10, 12, 13, 15, 2, 8, 4, 14, 7, 9, 5)

  goodorder <- order( confidences[[1]][,"real"], decreasing=TRUE )
  confidences2 <- lapply(confidences,
    function(x) x[goodorder,] )
  confidences2 <- lapply(confidences2,
    as.data.frame )
  confidences2 <- lapply( seq(along=confidences2),
    function(x) cbind(confidences2[[x]], class=x) )
  confidences2 <- lapply( seq(along=confidences2),
    function(x) cbind(confidences2[[x]],
      splicingFactor=goodNames[goodorder] ))
  confidences2 <- lapply( 1:length(confidences2),
    function(x) cbind(confidences2[[x]],
      color=as.character(cols[x])) )

  confidences2 <- do.call(rbind, confidences2)
  confidences2$splicingFactor <- factor(
    confidences2$splicingFactor, levels=goodNames[goodorder])
```

After calculating what is necessary and doing some data ordering and formating, we can finally make a plot with this results:

```
prepanel.ci <- function(x, y, ly, uy,
  subscripts, ...)
{
    y <- as.numeric(y)
    ly <- as.numeric(ly[subscripts])
```

```
    uy <- as.numeric(uy[subscripts])
    list(ylim = range(y, uy, ly, finite = TRUE))
}

panel.ci <- function(x, y, ly, uy, cols,
  subscripts, pch = 16, ...)
{
    x <- as.numeric(x)
    y <- as.numeric(y)
    ly <- as.numeric(ly[subscripts])
    uy <- as.numeric(uy[subscripts])
    colorsA <- cols[subscripts]
    panel.arrows(x, ly, x, uy, col = colorsA,
 length = 0, unit = "native",
 angle = 90, code = 3, lwd=3)
    panel.xyplot(x, y, pch = pch, ...)
}

trellis.par.set(superpose.symbol=
  list(col=as.character(unique(confidences2$color))))
with( confidences2,
  dotplot( real ~ splicingFactor|class,
  index.cond=list(c(2, 4, 3, 1)),
  uy=‘95%‘,
  ly=‘5%‘,
  cols=as.character(color),
  groups=class,
  prepanel=prepanel.ci,
  panel=function(x, y, ...){
    panel.abline(v = unique( as.numeric(x) ), col="#D8BFD870" )
    panel.abline( h=0, col="grey", lwd=2)
    panel.superpose(x, y, ... )
  },
  panel.groups=panel.ci,
  pch=16,
  strip=FALSE,
  layout=c(1, 4),
  between=list(y=0.5),
  scales=list(x=list(rot=90, cex=1.2), y=list(cex=1.2)),
  ylab=list(
```

```
    label="ratio of number of motifs (log2)", cex=1.2)
))
```



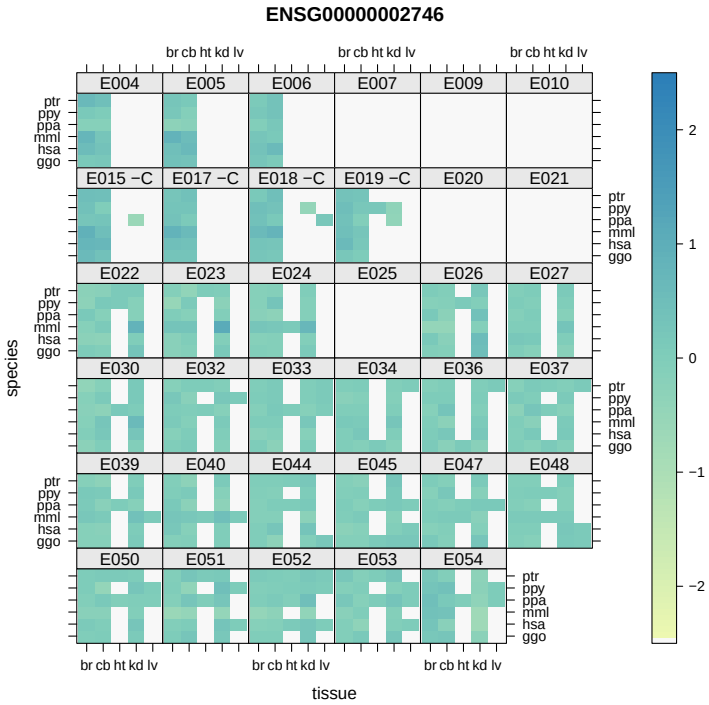
16 Session Info

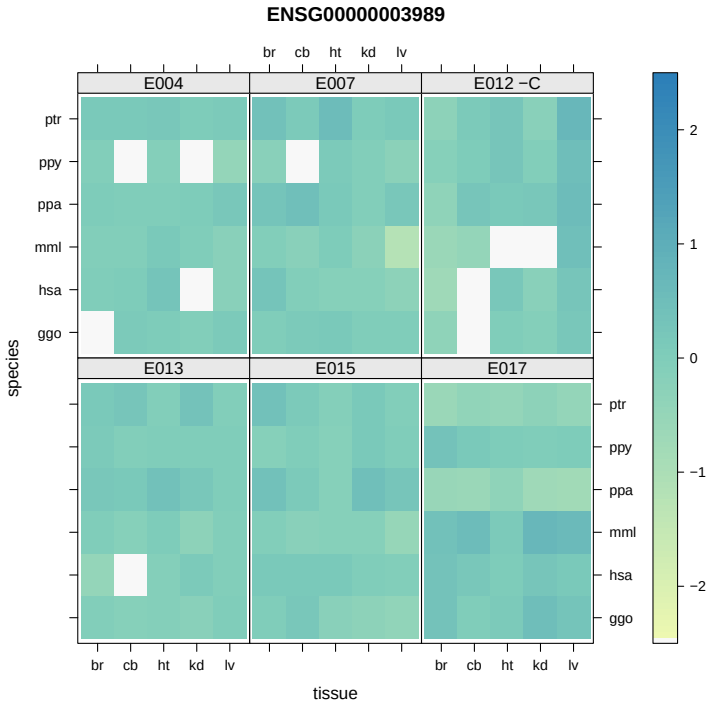
```
sessionInfo()

R Under development (unstable) (2013-02-06 r61845)
Platform: x86_64-unknown-linux-gnu (64-bit)

locale:
 [1] LC_CTYPE=en_US.UTF-8       LC_NUMERIC=C
```

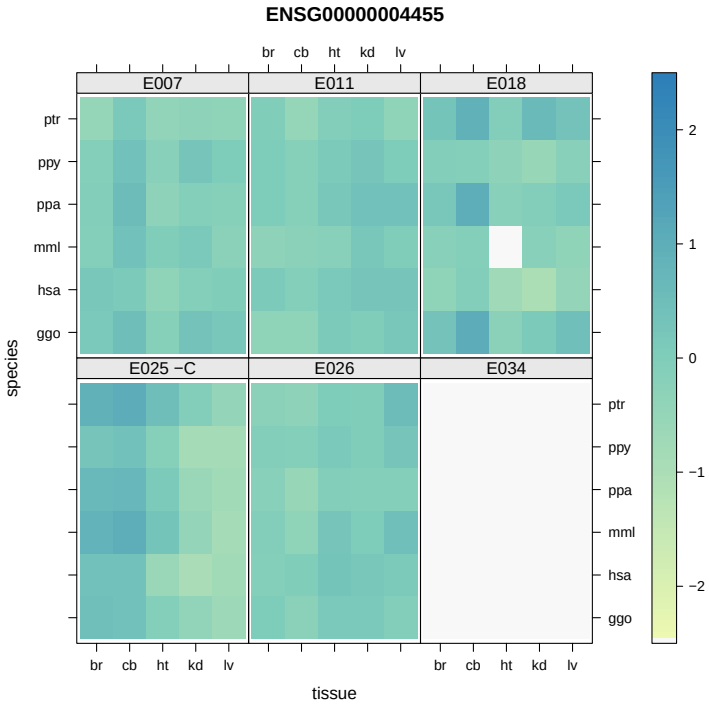
```
 [3] LC_TIME=en_US.UTF-8        LC_COLLATE=en_US.UTF-8
 [5] LC_MONETARY=en_US.UTF-8    LC_MESSAGES=en_US.UTF-8
 [7] LC_PAPER=C                 LC_NAME=C
 [9] LC_ADDRESS=C               LC_TELEPHONE=C
[11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C

attached base packages:
[1] grid      parallel  stats     graphics  grDevices utils     datasets
[8] methods   base

other attached packages:
 [1] GenomicFeatures_1.12.2 GenomicRanges_1.12.4   IRanges_1.18.1
 [4] ggplot2_0.9.3.1        Vennerable_2.2         xtable_1.7-1
 [7] reshape_0.8.4          plyr_1.8               RBGL_1.36.2
[10] graph_1.38.2           gplots_2.11.3          KernSmooth_2.23-10
[13] caTools_1.14           gdata_2.13.2           plotrix_3.4-8
[16] geneplotter_1.38.0     annotate_1.38.0        AnnotationDbi_1.22.6
[19] MatchIt_2.4-21         DESeq_1.12.0           locfit_1.5-9.1
[22] latticeExtra_0.6-24    lattice_0.20-15        LSD_2.5
[25] ellipse_0.3-8          schoolmath_0.4         colorRamps_2.3
[28] RColorBrewer_1.0-5     gtools_3.0.0           MASS_7.3-27
[31] genefilter_1.42.0      abind_1.4-0            multicore_0.1-7
[34] statmod_1.4.17         DEXSeq_1.6.0           Biobase_2.20.1
[37] BiocGenerics_0.6.0     BiocInstaller_1.10.2

loaded via a namespace (and not attached):
 [1] biomaRt_2.16.0     Biostrings_2.28.0  bitops_1.0-5       BSgenome_1.28.0
 [5] colorspace_1.2-2   DBI_0.2-7          dichromat_2.0-0    digest_0.6.3
 [9] gtable_0.1.2       hwriter_1.3        labeling_0.2       munsell_0.4
[13] proto_0.3-10       RCurl_1.95-4.1     reshape2_1.2.2     Rsamtools_1.12.3
[17] RSQLite_0.11.4     rtracklayer_1.20.2 scales_0.2.3       splines_3.0.0
[21] stats4_3.0.0       stringr_0.6.2      survival_2.37-4    tools_3.0.0
[25] XML_3.98-1.1       zlibbioc_1.6.0
```

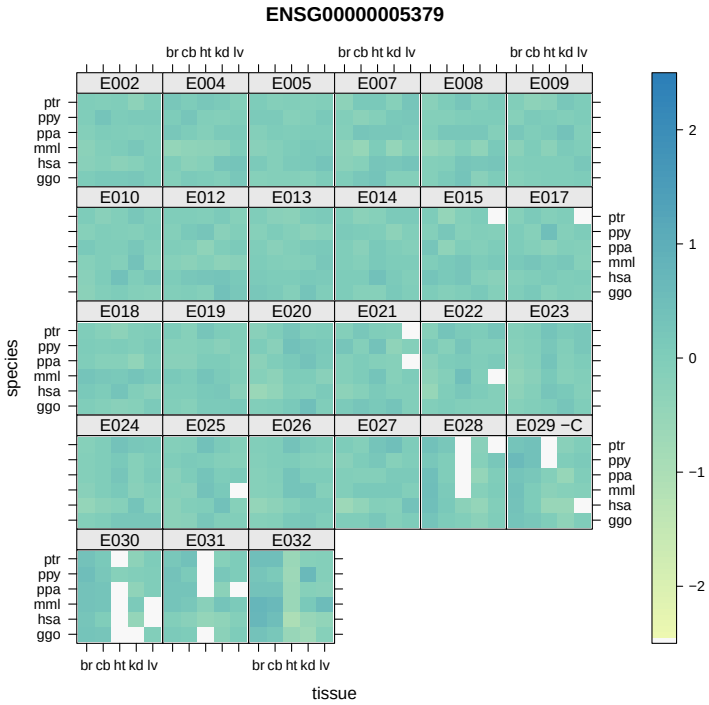
17 All genes with strictly CTDU exons.

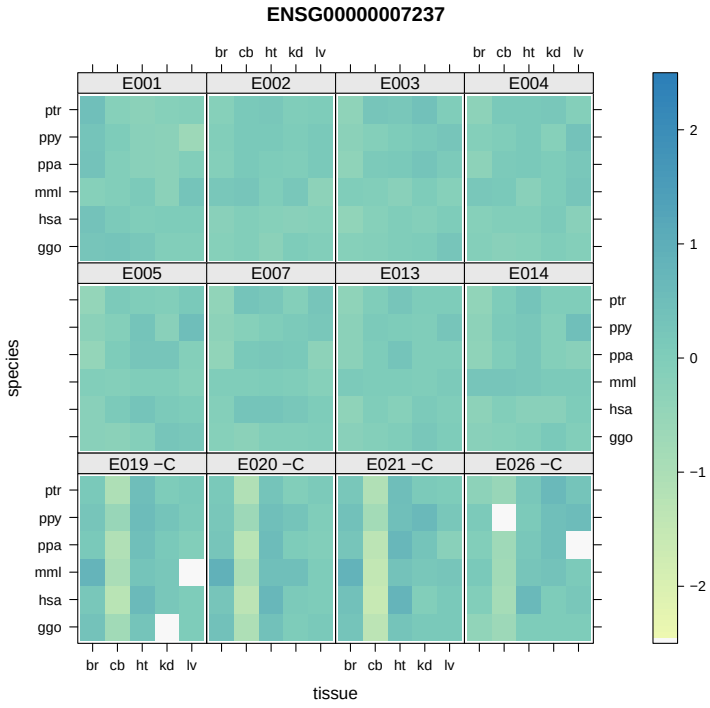
In the next pages, the heatmap plots (as in Figure 1) of each gene that contained strictly CTDU exons are presented. Check Figure 1 for legends.

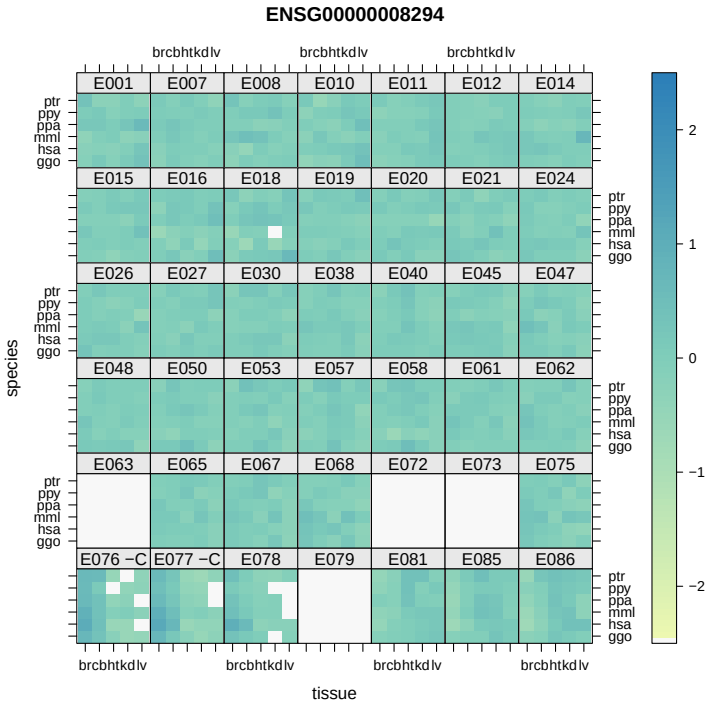

ENSG00000002746
br cb ht kd lv
E004
E005
E006
E007
E009
E010
E015 −C
E017 −C
E018 −C
E019 −C
E020
E021
E022
E023
E024
E025
E026
E027
E030
E032
E033
E034
E036
E037
E039
E040
E044
E045
E047
E048
E050
E051
E052
E053
E054
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

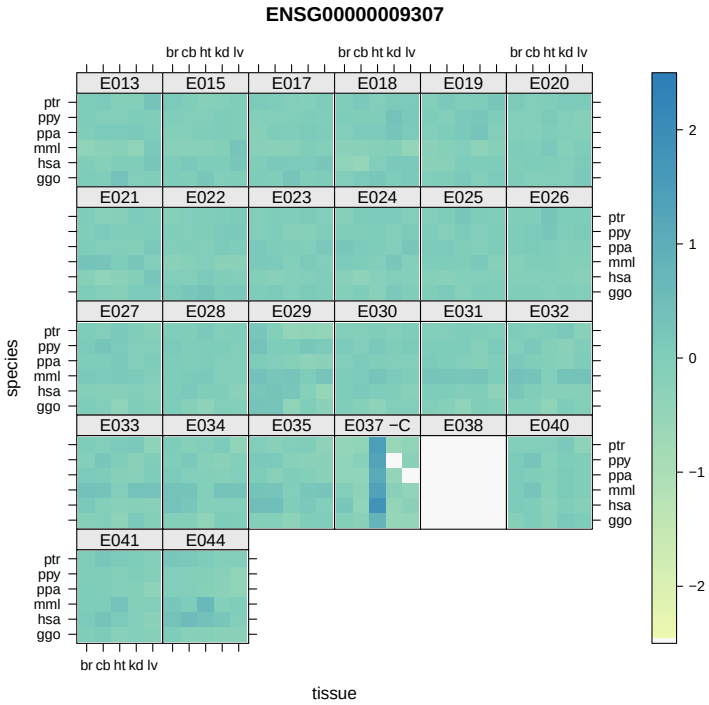

ENSG00000003989
br cb ht kd lv
E004
E007
E012 −C
E013
E015
E017
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

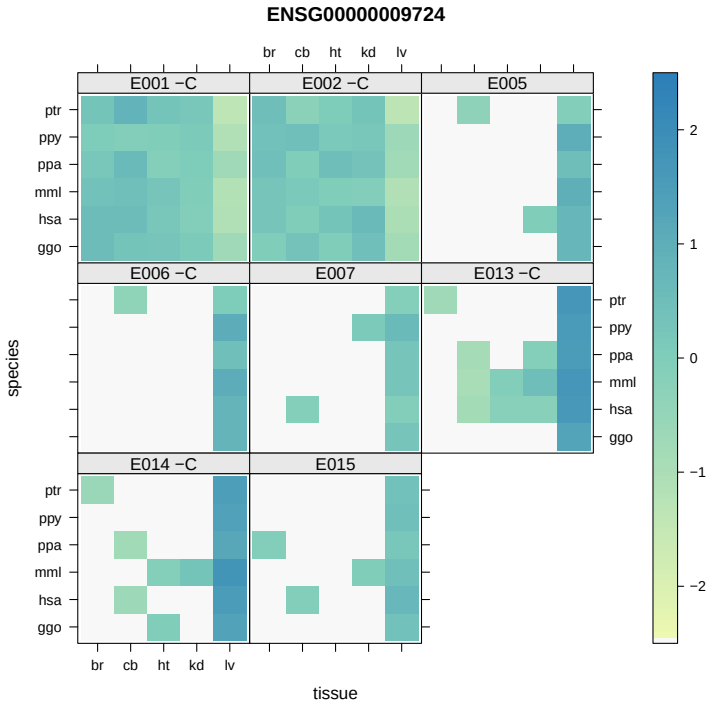

ENSG00000004455
br cb ht kd lv
E007
E011
E018
E025 −C
E026
E034
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

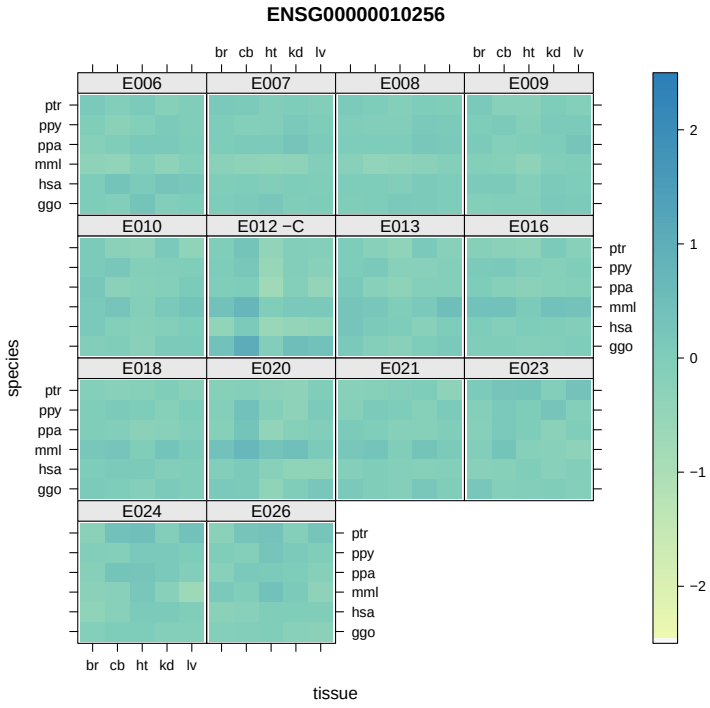

ENSG00000005379
br cb ht kd lv
E002
E004
E005
E007
E008
E009
E010
E012
E013
E014
E015
E017
E018
E019
E020
E021
E022
E023
E024
E025
E026
E027
E028
E029 −C
E030
E031
E032
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

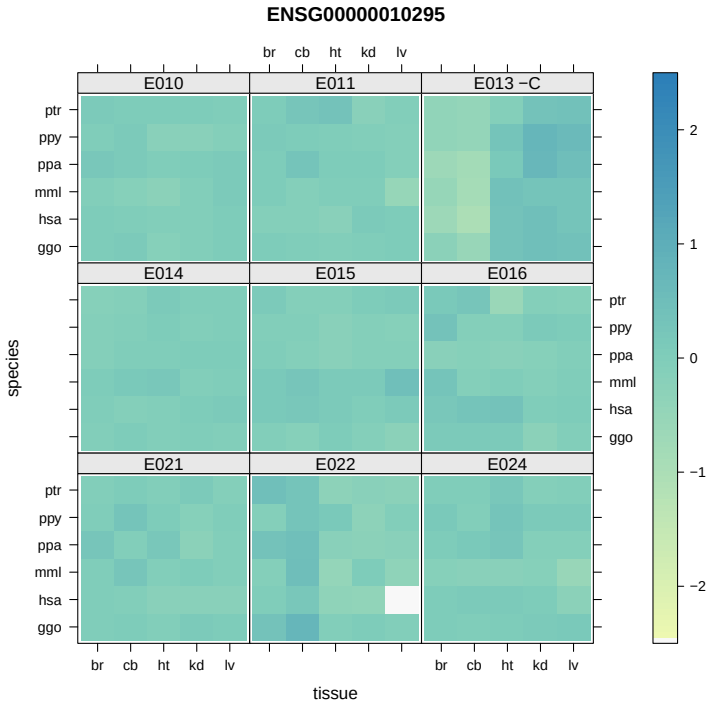

ENSG00000007237
E001
E002
E003
E004
E005
E007
E013
E014
E019 −C
E020 −C
E021 −C
E026 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

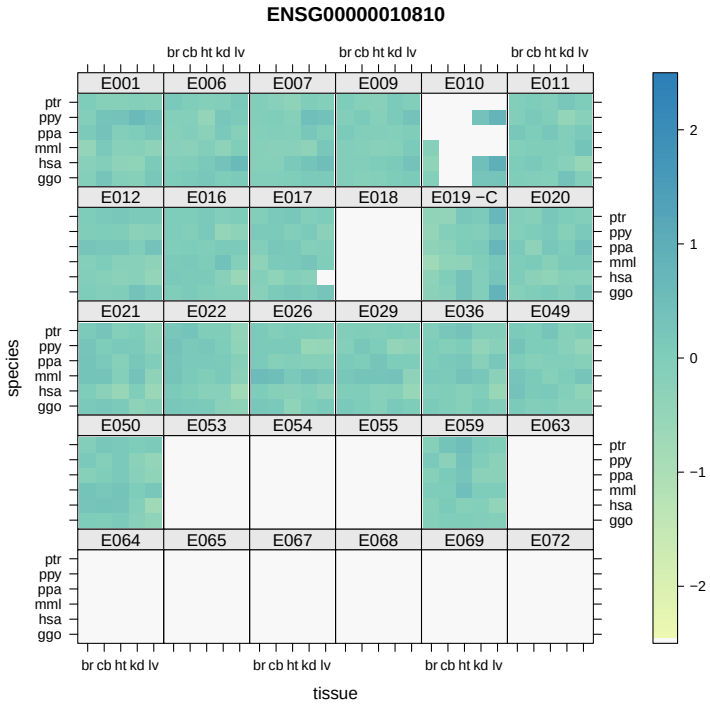

ENSG00000008294
brcbhtkdlv
E001
E007
E008
E010
E011
E012
E014
E015
E016
E018
E019
E020
E021
E024
E026
E027
E030
E038
E040
E045
E047
E048
E050
E053
E057
E058
E061
E062
E063
E065
E067
E068
E072
E073
E075
E076 −C
E077 −C
E078
E079
E081
E085
E086
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

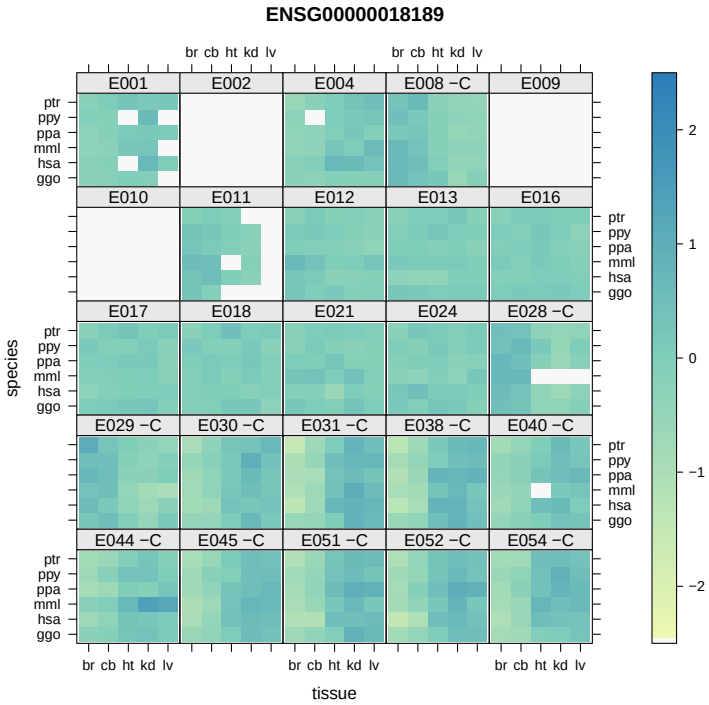

ENSG00000009307
br cb ht kd lv
E013
E015
E017
E018
E019
E020
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E035
E037 −C
E038
E040
E041
E044
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

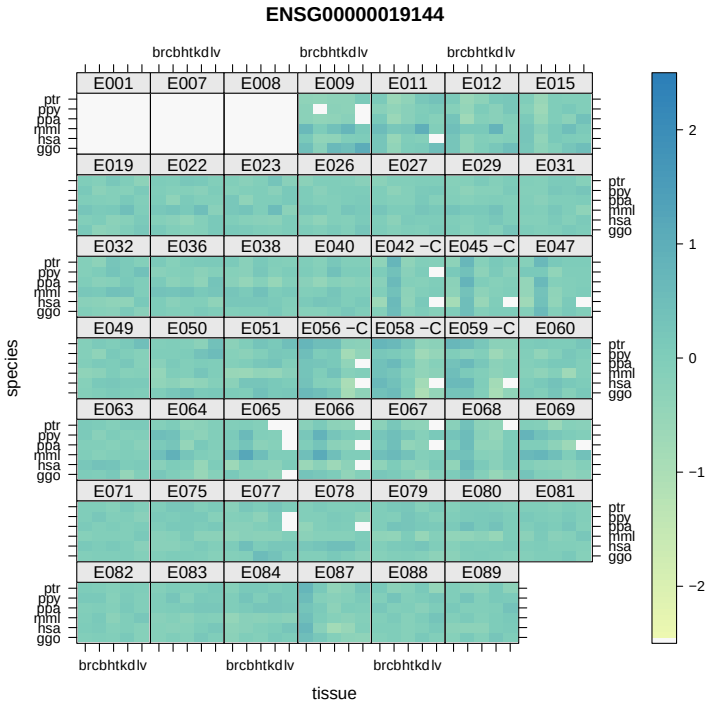

ENSG00000009724
br cb ht kd lv
E001 −C
E002 −C
E005
E006 −C
E007
E013 −C
E014 −C
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

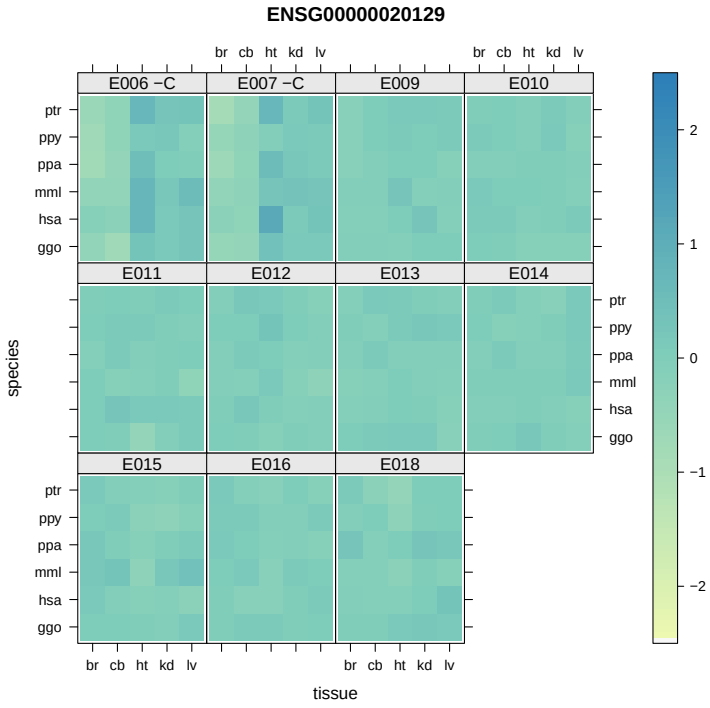

ENSG00000010256
br cb ht kd lv
E006
E007
E008
E009
E010
E012 −C
E013
E016
E018
E020
E021
E023
E024
E026
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

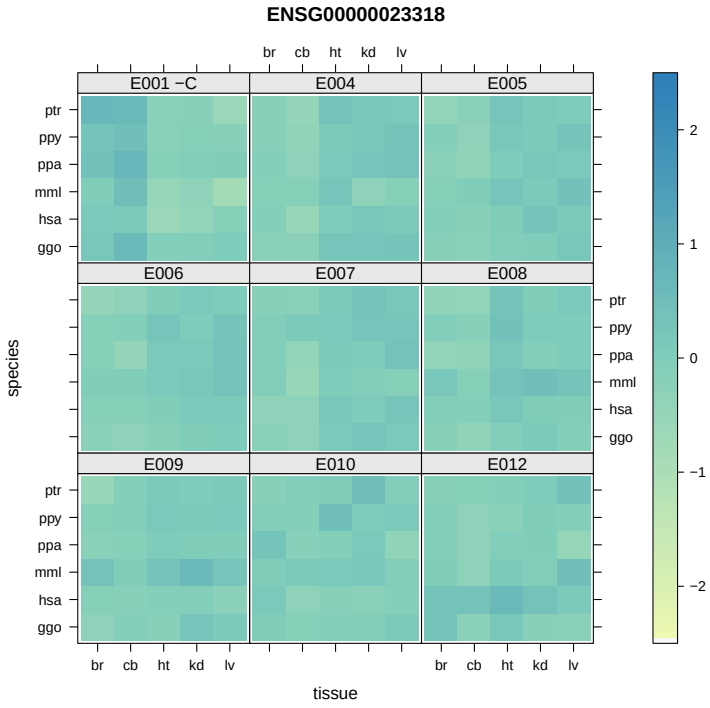

ENSG00000010295
br cb ht kd lv
E010
E011
E013 −C
E014
E015
E016
E021
E022
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

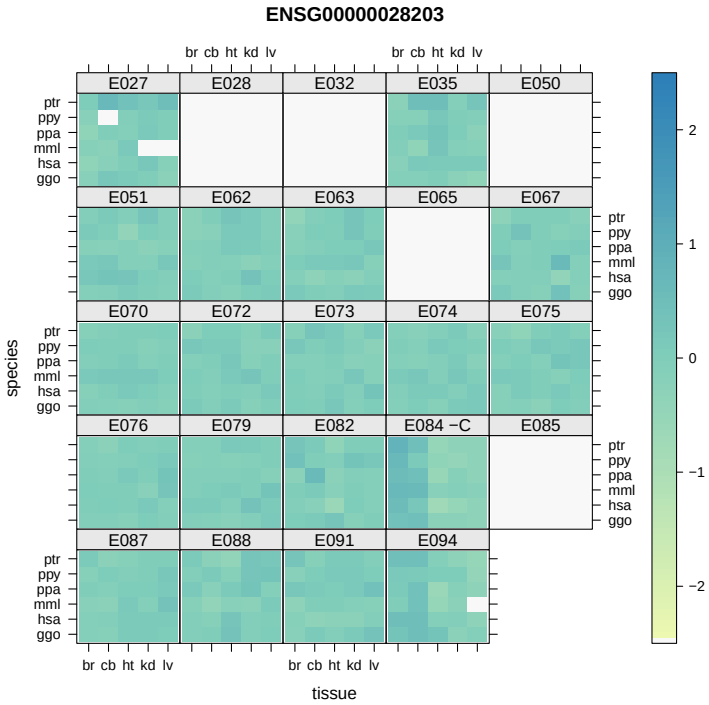

ENSG00000010810
br cb ht kd lv
E001
E006
E007
E009
E010
E011
E012
E016
E017
E018
E019 −C
E020
E021
E022
E026
E029
E036
E049
E050
E053
E054
E055
E059
E063
E064
E065
E067
E068
E069
E072
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

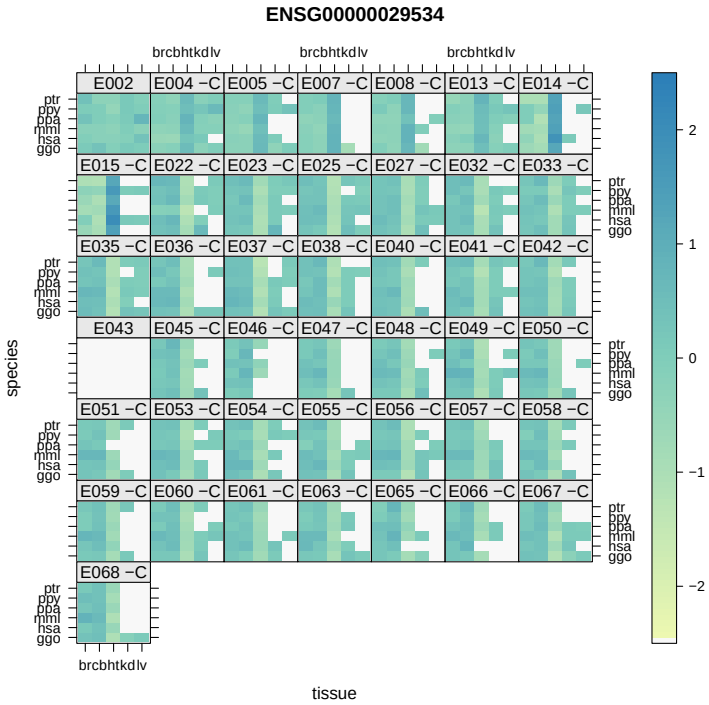

ENSG00000018189
E001
E002
E004
E008 −C
E009
E010
E011
E012
E013
E016
E017
E018
E021
E024
E028 −C
E029 −C
E030 −C
E031 −C
E038 −C
E040 −C
E044 −C
E045 −C
E051 −C
E052 −C
E054 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

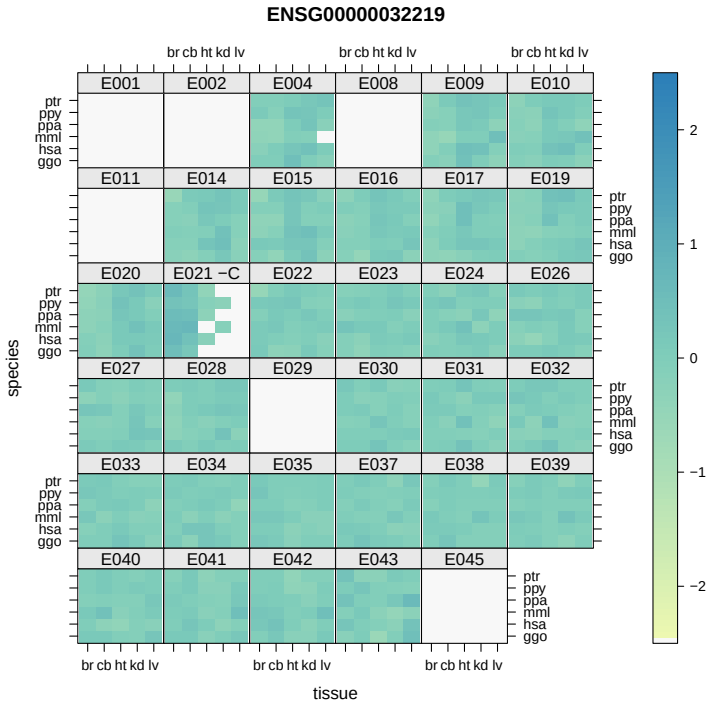

ENSG00000019144
brcbhtkdlv
E001
E007
E008
E009
E011
E012
E015
E019
E022
E023
E026
E027
E029
E031
E032
E036
E038
E040
E042 −C
E045 −C
E047
E049
E050
E051
E056 −C
E058 −C
E059 −C
E060
E063
E064
E065
E066
E067
E068
E069
E071
E075
E077
E078
E079
E080
E081
E082
E083
E084
E087
E088
E089
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

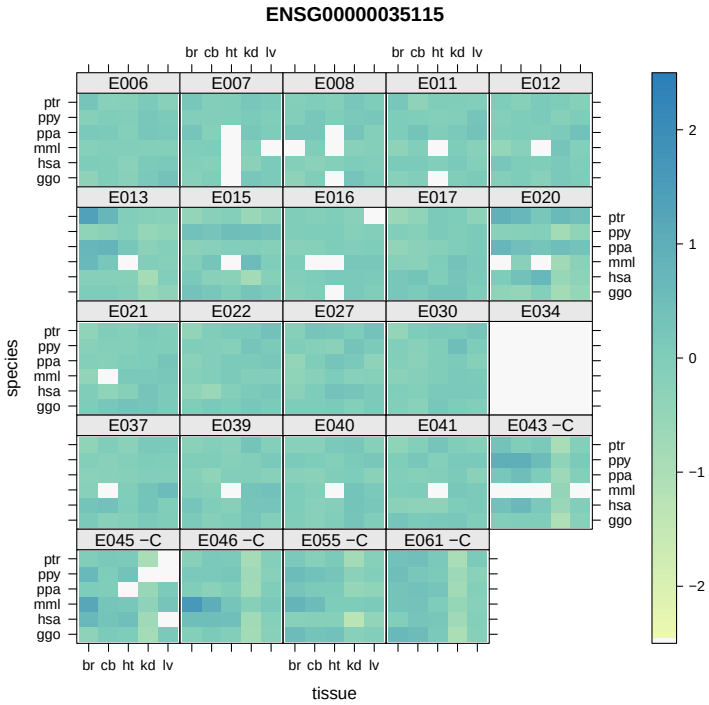

ENSG00000020129
br cb ht kd lv
E006 −C
E007 −C
E009
E010
E011
E012
E013
E014
E015
E016
E018
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

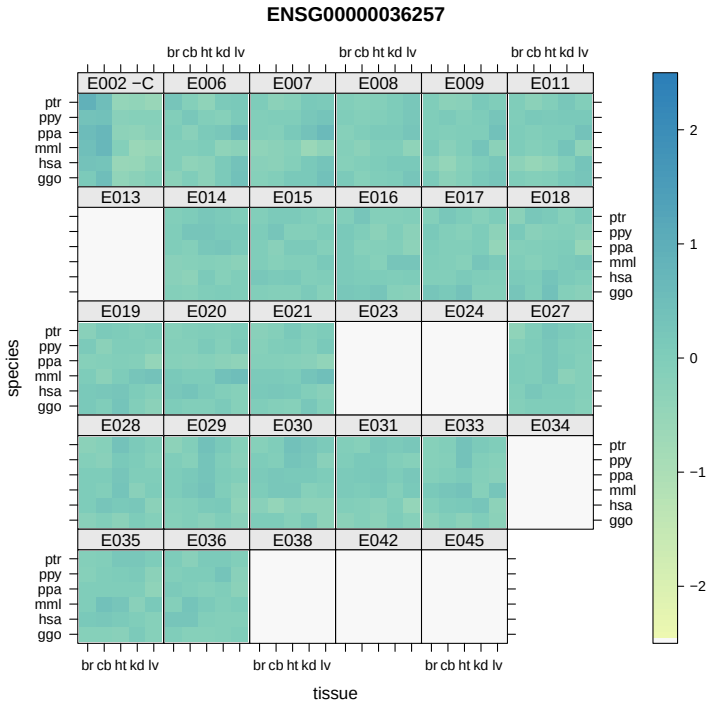

ENSG00000023318
br cb ht kd lv
E001 −C
E004
E005
E006
E007
E008
E009
E010
E012
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

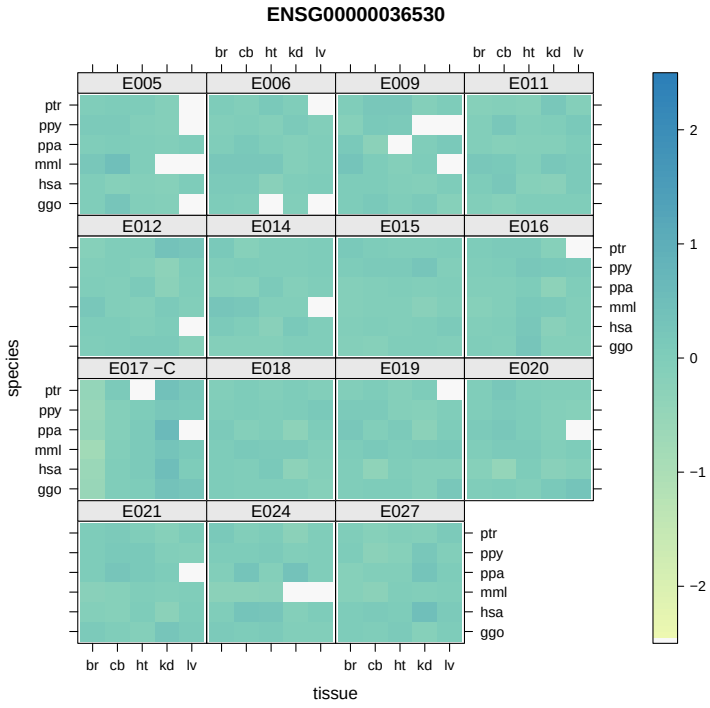

ENSG00000028203
E027
E028
E032
E035
E050
E051
E062
E063
E065
E067
E070
E072
E073
E074
E075
E076
E079
E082
E084 −C
E085
E087
E088
E091
E094
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

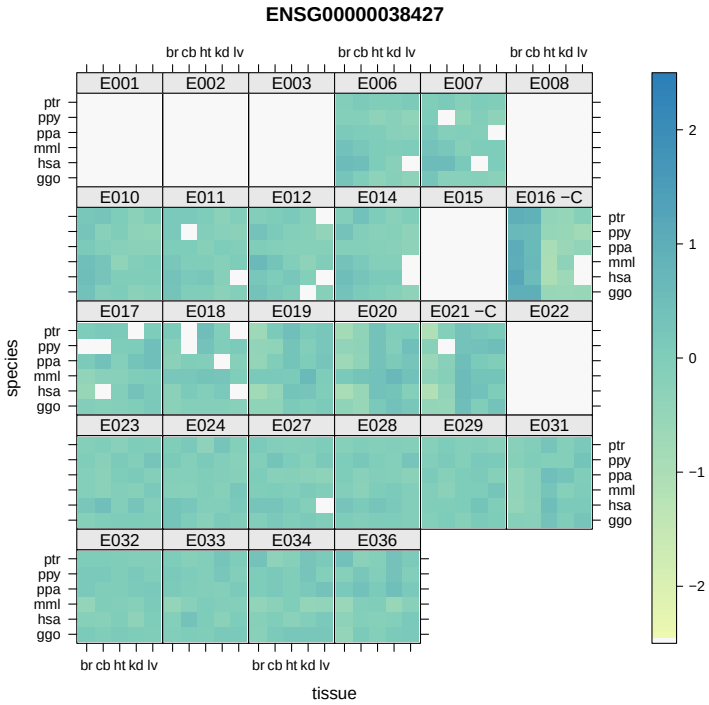

ENSG00000029534
brcbhtkdlv
E002
E004 −C
E005 −C
E007 −C
E008 −C
E013 −C
E014 −C
E015 −C
E022 −C
E023 −C
E025 −C
E027 −C
E032 −C
E033 −C
E035 −C
E036 −C
E037 −C
E038 −C
E040 −C
E041 −C
E042 −C
E043
E045 −C
E046 −C
E047 −C
E048 −C
E049 −C
E050 −C
E051 −C
E053 −C
E054 −C
E055 −C
E056 −C
E057 −C
E058 −C
E059 −C
E060 −C
E061 −C
E063 −C
E065 −C
E066 −C
E067 −C
E068 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

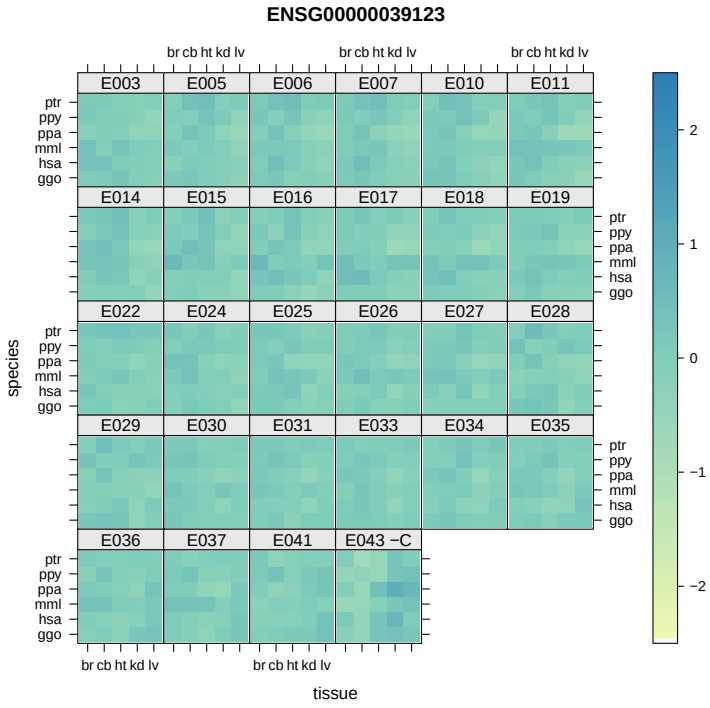

ENSG00000032219
br cb ht kd lv
E001
E002
E004
E008
E009
E010
E011
E014
E015
E016
E017
E019
E020
E021 −C
E022
E023
E024
E026
E027
E028
E029
E030
E031
E032
E033
E034
E035
E037
E038
E039
E040
E041
E042
E043
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

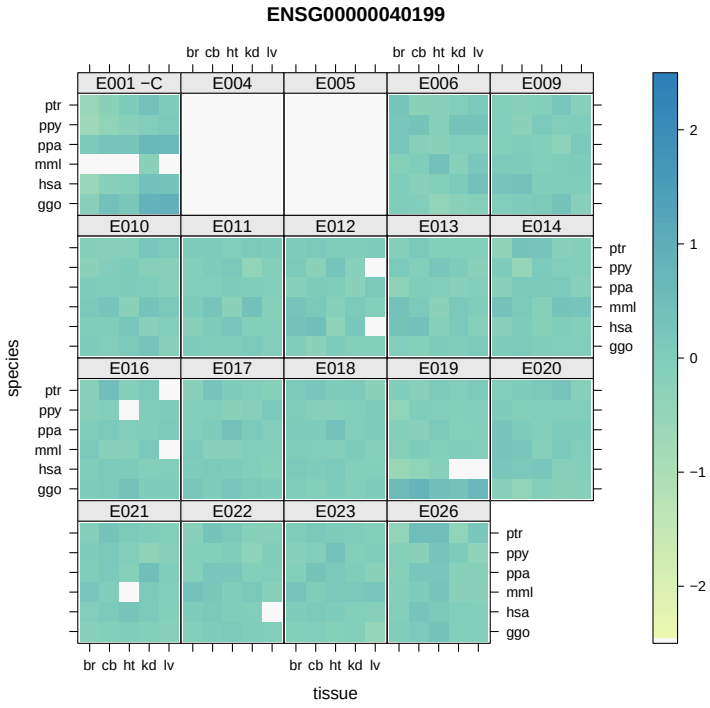

ENSG00000035115
br cb ht kd lv
E006
E007
E008
E011
E012
E013
E015
E016
E017
E020
E021
E022
E027
E030
E034
E037
E039
E040
E041
E043 −C
E045 −C
E046 −C
E055 −C
E061 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

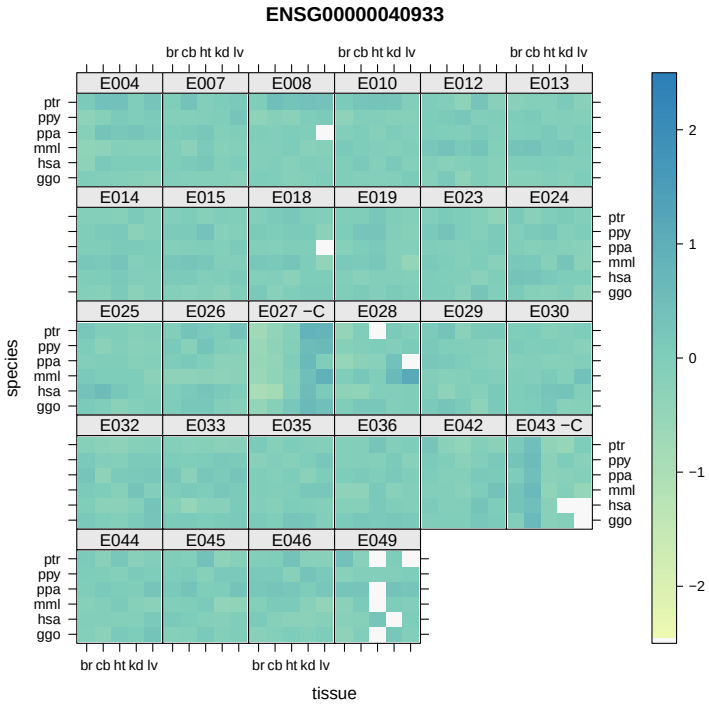

ENSG00000036257
br cb ht kd lv
E002 −C
E006
E007
E008
E009
E011
E013
E014
E015
E016
E017
E018
E019
E020
E021
E023
E024
E027
E028
E029
E030
E031
E033
E034
E035
E036
E038
E042
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

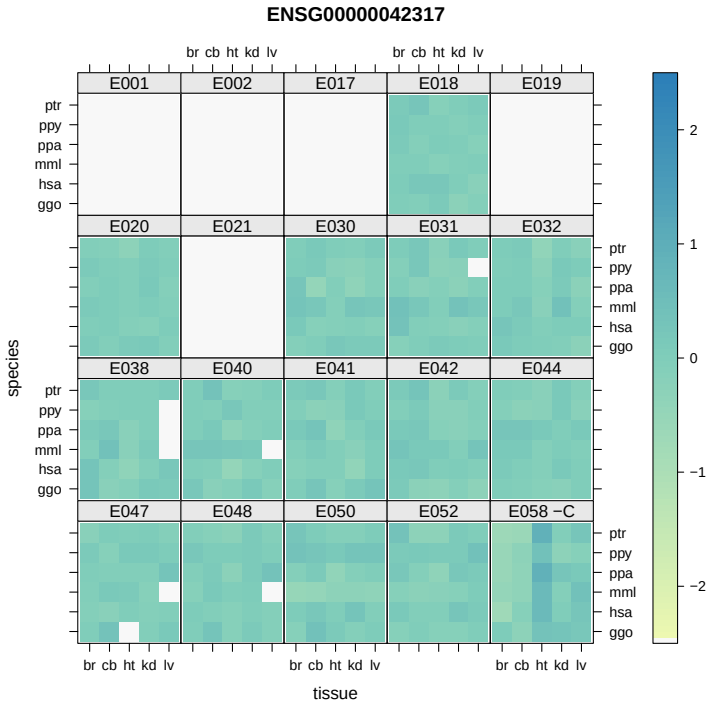

ENSG00000036530
E005
E006
E009
E011
E012
E014
E015
E016
E017 −C
E018
E019
E020
E021
E024
E027
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

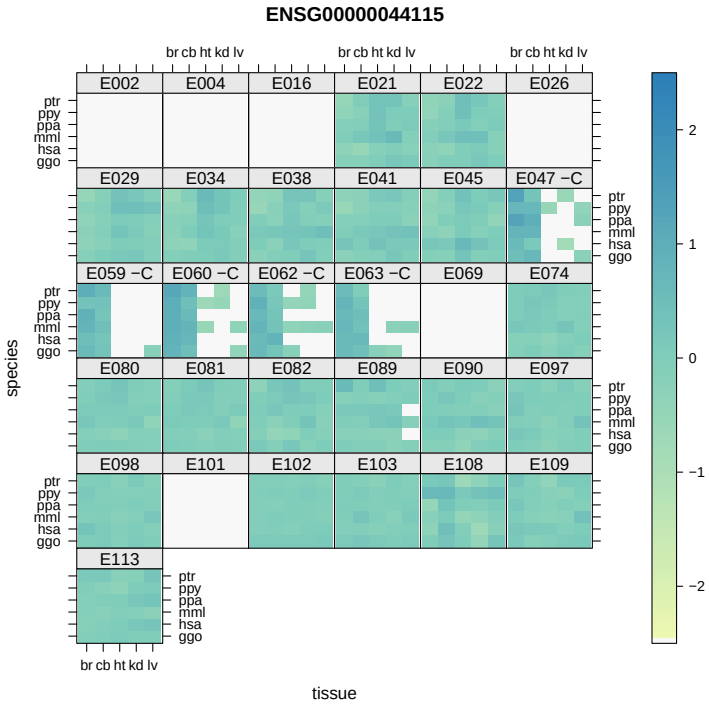

ENSG00000038427
br cb ht kd lv
E001
E002
E003
E006
E007
E008
E010
E011
E012
E014
E015
E016 −C
E017
E018
E019
E020
E021 −C
E022
E023
E024
E027
E028
E029
E031
E032
E033
E034
E036
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

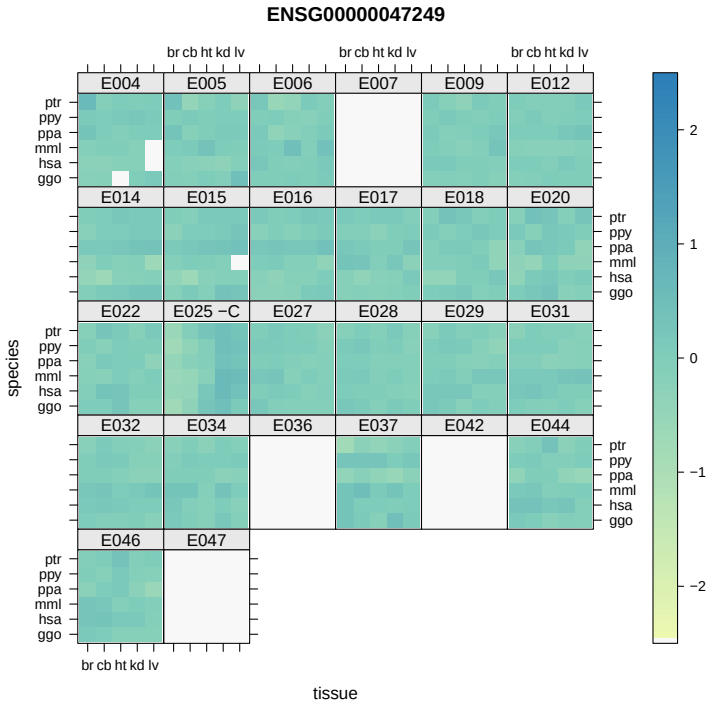

ENSG00000039123
br cb ht kd lv
E003
E005
E006
E007
E010
E011
E014
E015
E016
E017
E018
E019
E022
E024
E025
E026
E027
E028
E029
E030
E031
E033
E034
E035
E036
E037
E041
E043 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

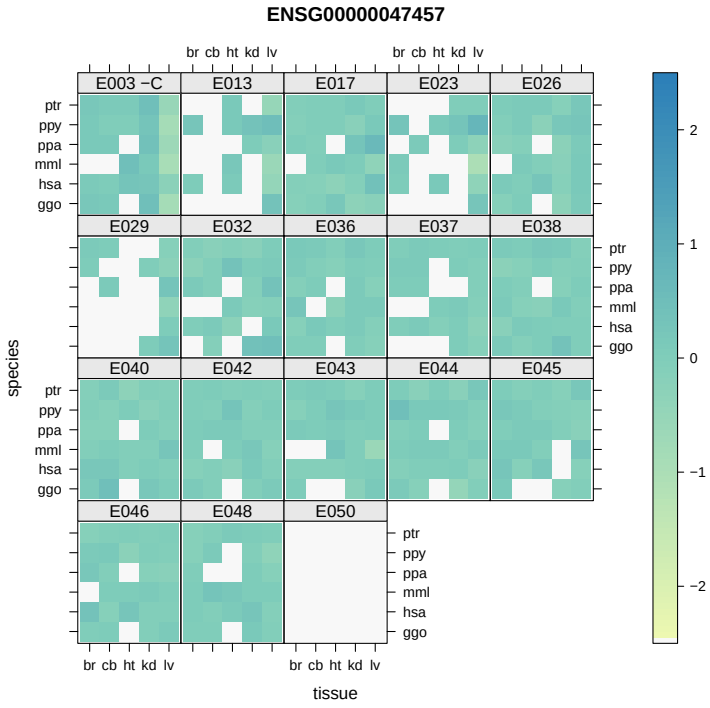

ENSG00000040199
E001 −C
E004
E005
E006
E009
E010
E011
E012
E013
E014
E016
E017
E018
E019
E020
E021
E022
E023
E026
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

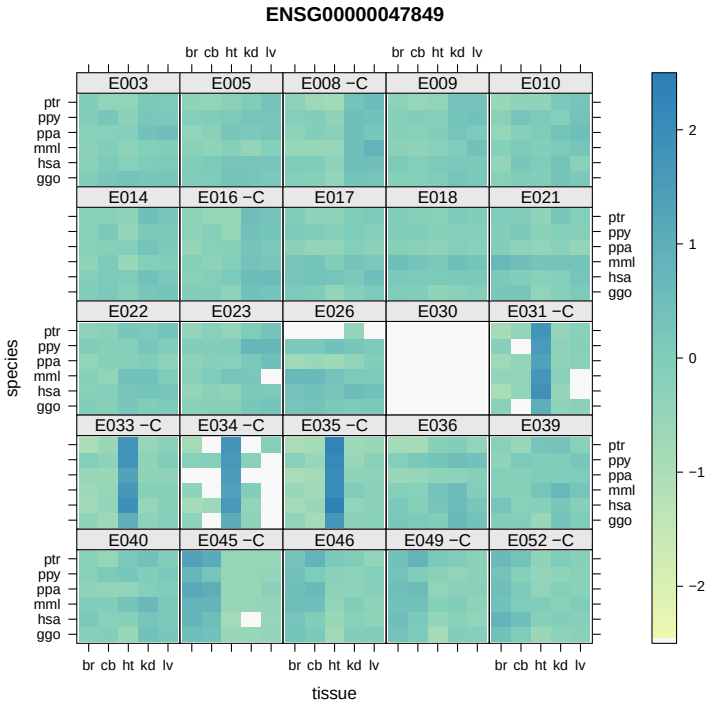

ENSG00000040933
br cb ht kd lv
E004
E007
E008
E010
E012
E013
E014
E015
E018
E019
E023
E024
E025
E026
E027 −C
E028
E029
E030
E032
E033
E035
E036
E042
E043 −C
E044
E045
E046
E049
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

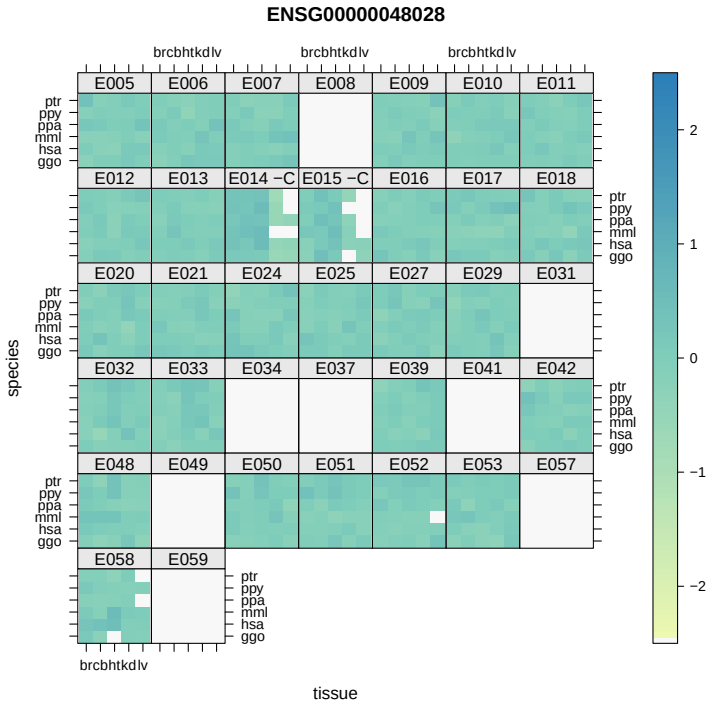

ENSG00000042317
E001
E002
E017
E018
E019
E020
E021
E030
E031
E032
E038
E040
E041
E042
E044
E047
E048
E050
E052
E058 −C
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

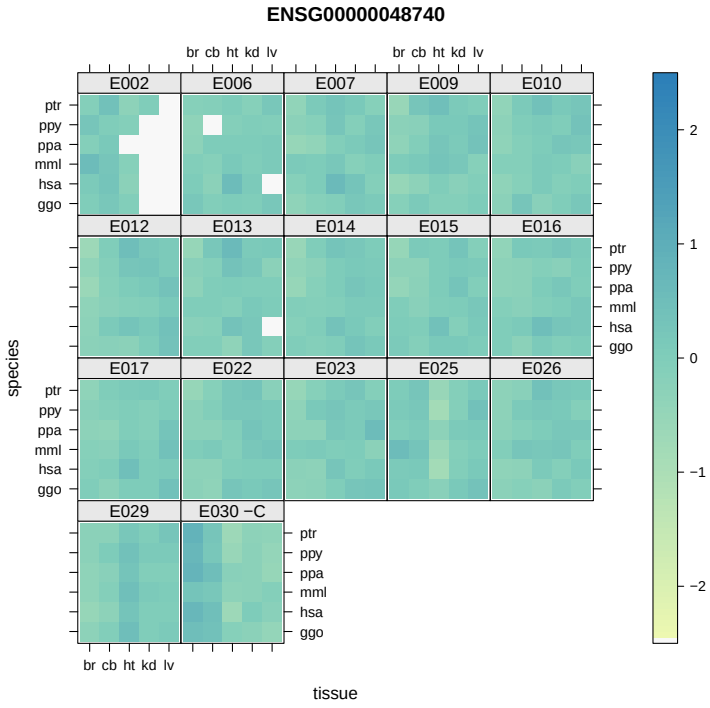

ENSG00000044115
br cb ht kd lv
E002
E004
E016
E021
E022
E026
E029
E034
E038
E041
E045
E047 −C
E059 −C
E060 −C
E062 −C
E063 −C
E069
E074
E080
E081
E082
E089
E090
E097
E098
E101
E102
E103
E108
E109
E113
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

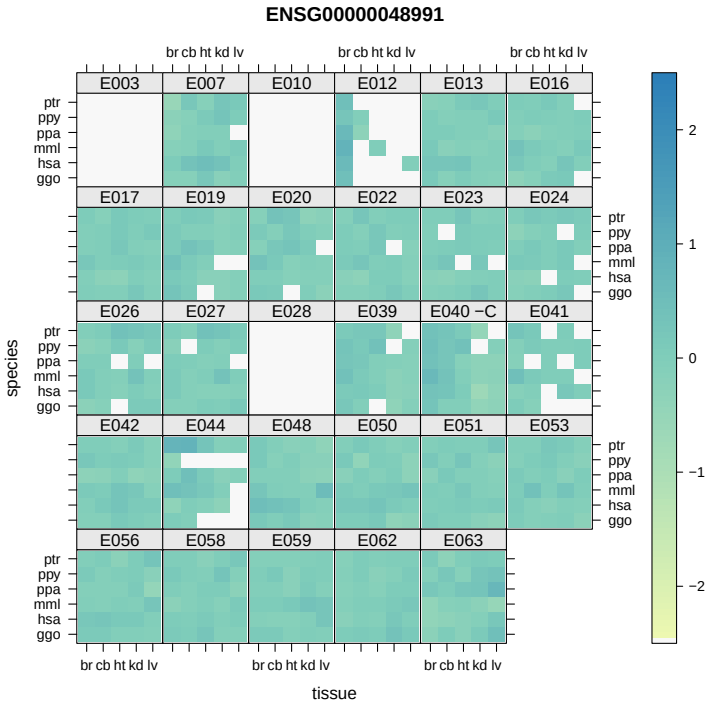

ENSG00000047249
br cb ht kd lv
E004
E005
E006
E007
E009
E012
E014
E015
E016
E017
E018
E020
E022
E025 −C
E027
E028
E029
E031
E032
E034
E036
E037
E042
E044
E046
E047
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

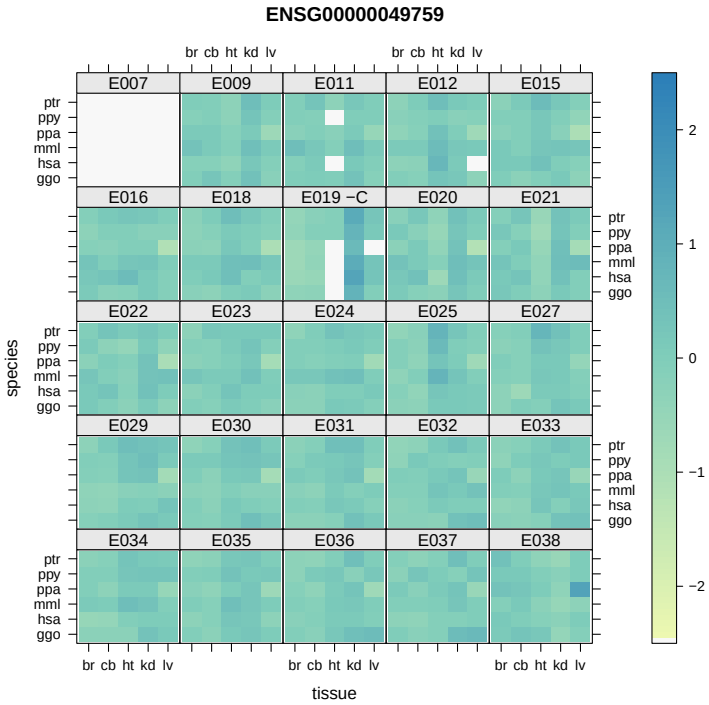

ENSG00000047457
E003 −C
E013
E017
E023
E026
E029
E032
E036
E037
E038
E040
E042
E043
E044
E045
E046
E048
E050
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

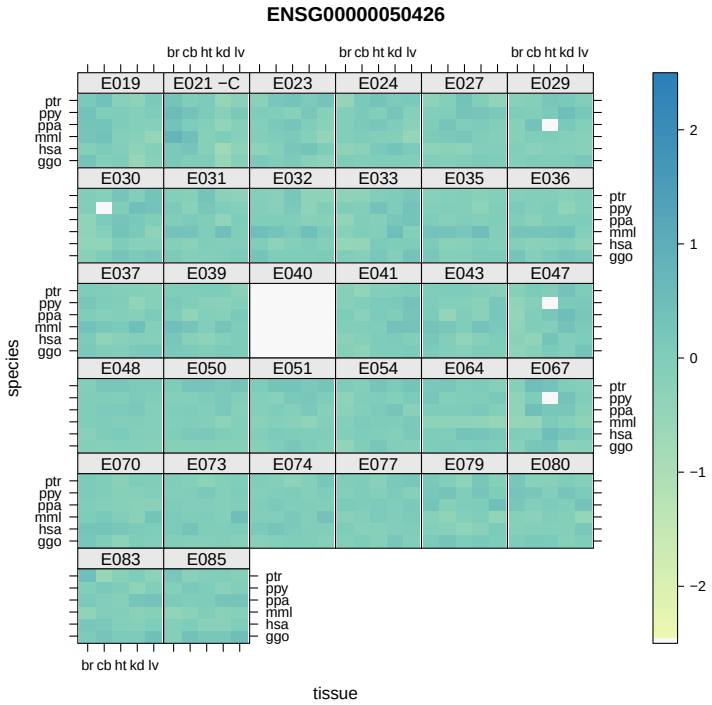

ENSG00000047849
E003
E005
E008 −C
E009
E010
E014
E016 −C
E017
E018
E021
E022
E023
E026
E030
E031 −C
E033 −C
E034 −C
E035 −C
E036
E039
E040
E045 −C
E046
E049 −C
E052 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

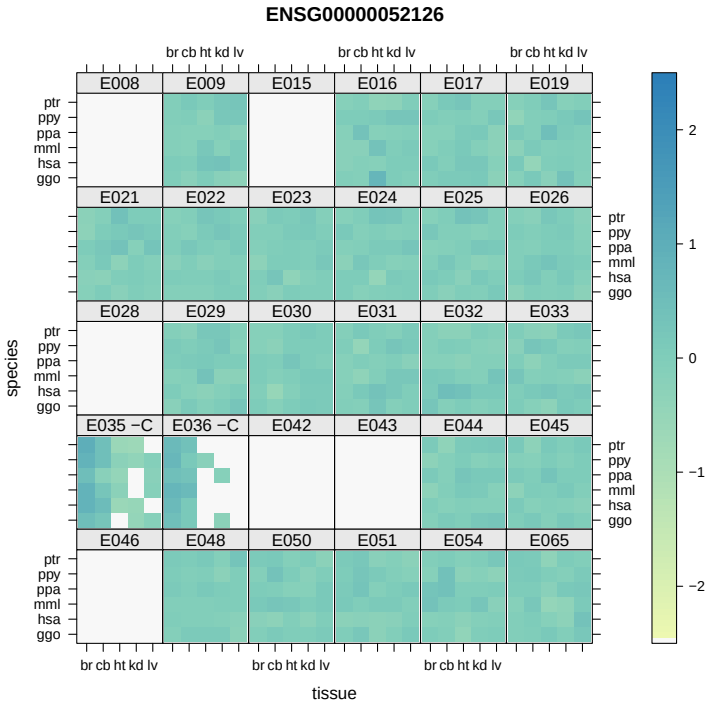

ENSG00000048028
brcbhtkdlv
brcbhtkdlv
brcbhtkdlv
E005
E006
E007
E008
E009
E010
E011
E012
E013
E014 −C
E015 −C
E016
E017
E018
E020
E021
E024
E025
E027
E029
E031
E032
E033
E034
E037
E039
E041
E042
E048
E049
E050
E051
E052
E053
E057
E058
E059
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

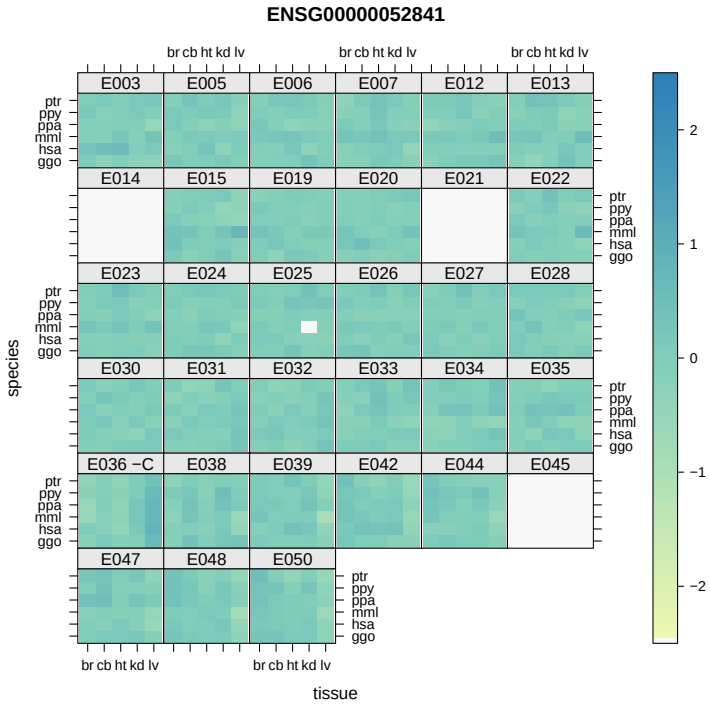

ENSG00000048740
E002
E006
E007
E009
E010
E012
E013
E014
E015
E016
E017
E022
E023
E025
E026
E029
E030 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

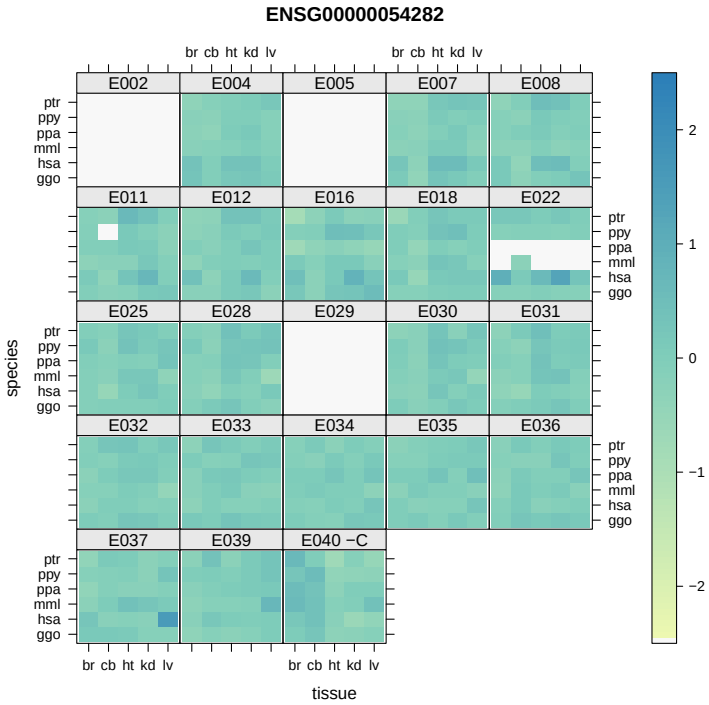

ENSG00000048991
br cb ht kd lv
E003
E007
E010
E012
E013
E016
E017
E019
E020
E022
E023
E024
E026
E027
E028
E039
E040 −C
E041
E042
E044
E048
E050
E051
E053
E056
E058
E059
E062
E063
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

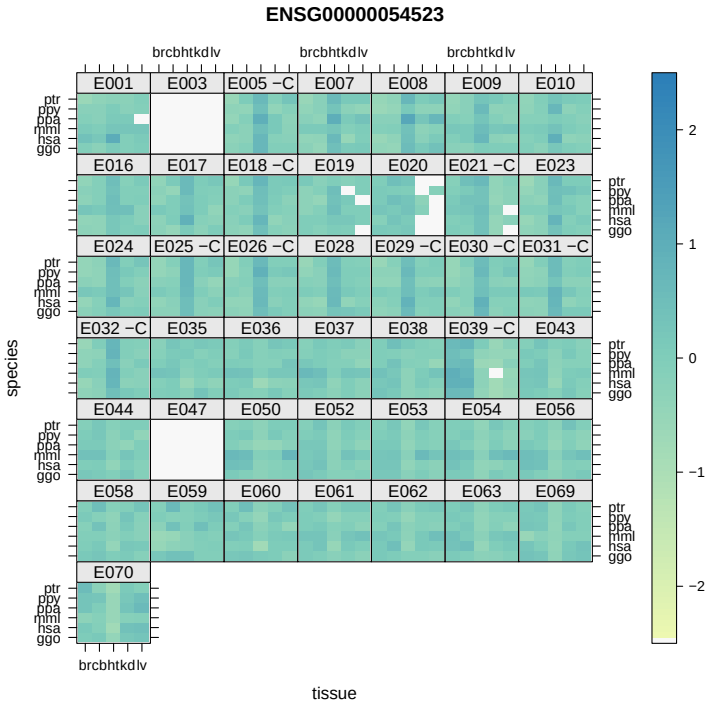

ENSG00000049759
E007
E009
E011
E012
E015
E016
E018
E019 −C
E020
E021
E022
E023
E024
E025
E027
E029
E030
E031
E032
E033
E034
E035
E036
E037
E038
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

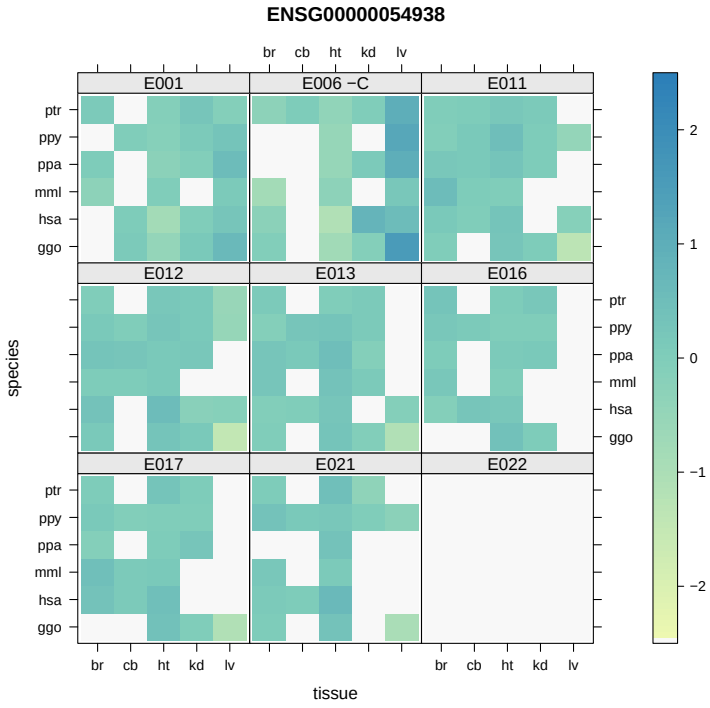

ENSG00000050426
br cb ht kd lv
E019
E021 −C
E023
E024
E027
E029
E030
E031
E032
E033
E035
E036
E037
E039
E040
E041
E043
E047
E048
E050
E051
E054
E064
E067
E070
E073
E074
E077
E079
E080
E083
E085
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

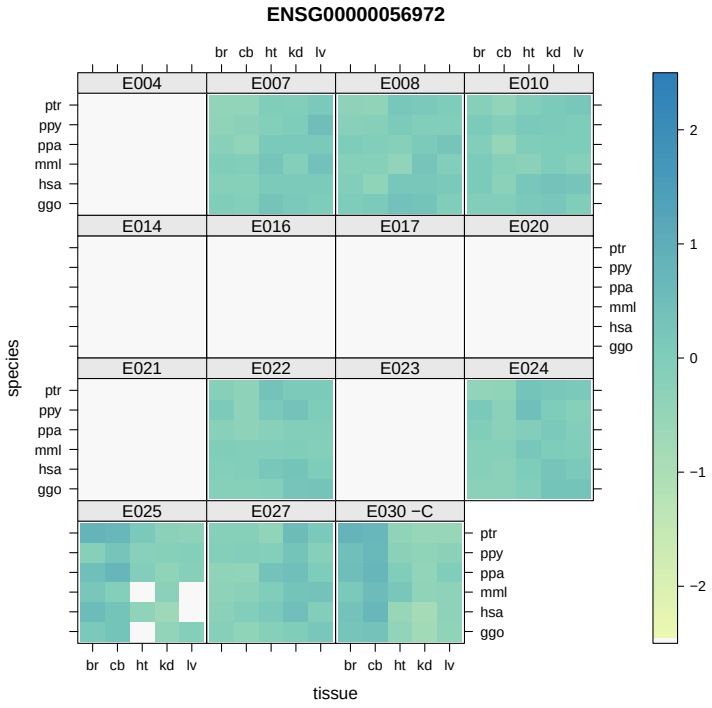

ENSG00000052126
br cb ht kd lv
E008
E009
E015
E016
E017
E019
E021
E022
E023
E024
E025
E026
E028
E029
E030
E031
E032
E033
E035 −C
E036 −C
E042
E043
E044
E045
E046
E048
E050
E051
E054
E065
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

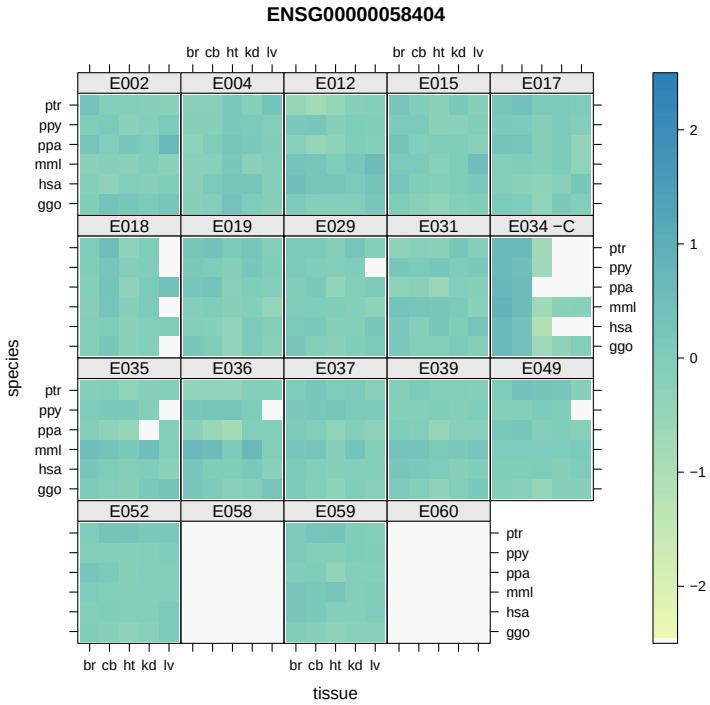

ENSG00000052841
E003
E005
E006
E007
E012
E013
E014
E015
E019
E020
E021
E022
E023
E024
E025
E026
E027
E028
E030
E031
E032
E033
E034
E035
E036 −C
E038
E039
E042
E044
E045
E047
E048
E050
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

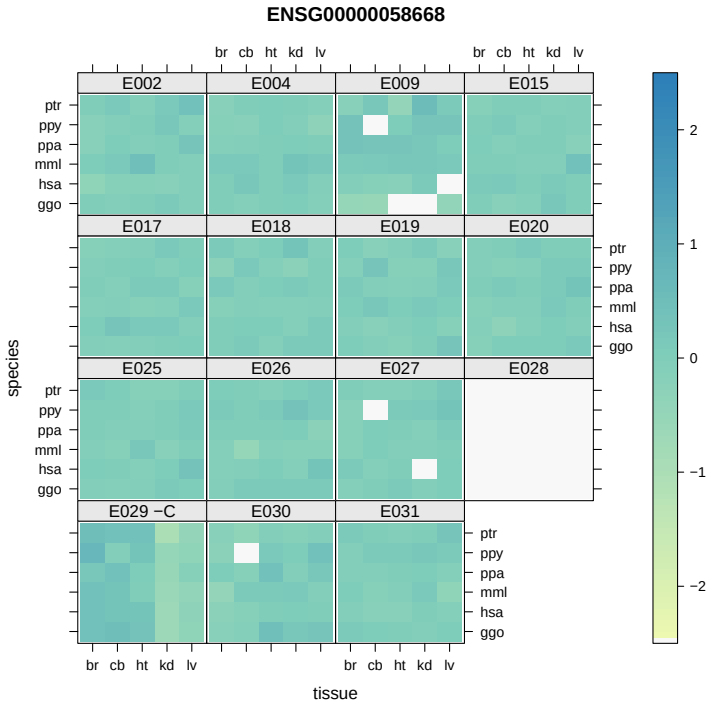

ENSG00000054282
E002
E004
E005
E007
E008
E011
E012
E016
E018
E022
E025
E028
E029
E030
E031
E032
E033
E034
E035
E036
E037
E039
E040 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

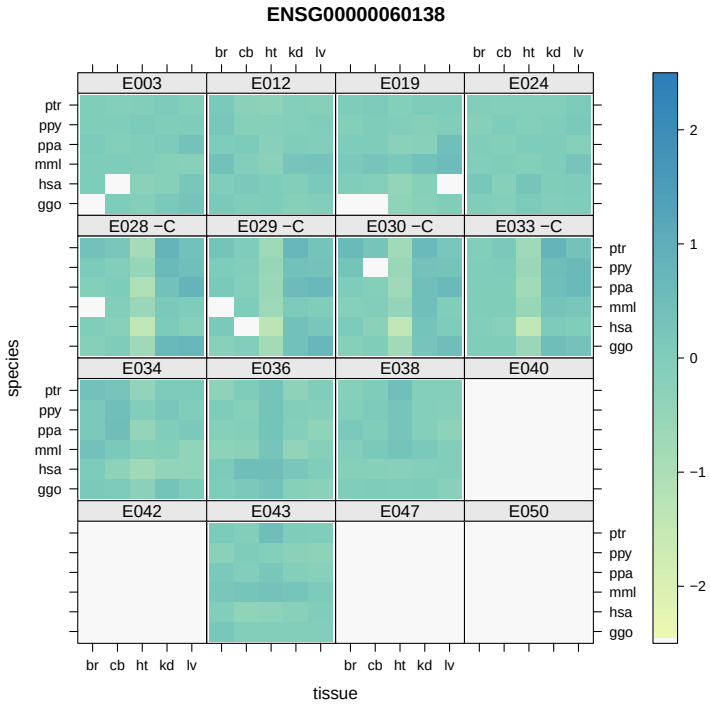

ENSG00000054523
brcbhtkdlv
E001
E003
E005 −C
E007
E008
E009
E010
E016
E017
E018 −C
E019
E020
E021 −C
E023
E024
E025 −C
E026 −C
E028
E029 −C
E030 −C
E031 −C
E032 −C
E035
E036
E037
E038
E039 −C
E043
E044
E047
E050
E052
E053
E054
E056
E058
E059
E060
E061
E062
E063
E069
E070
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

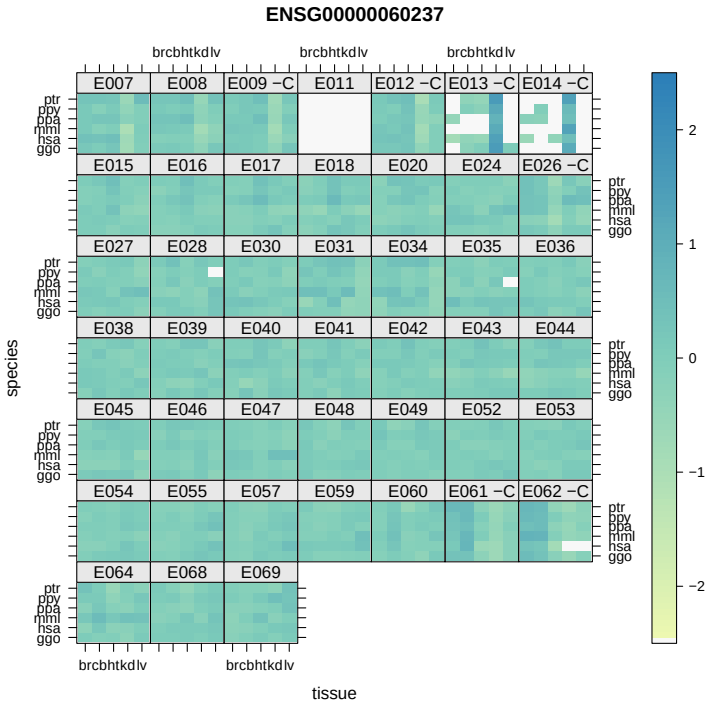

ENSG00000054938
E001
E006 −C
E011
E012
E013
E016
E017
E021
E022
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

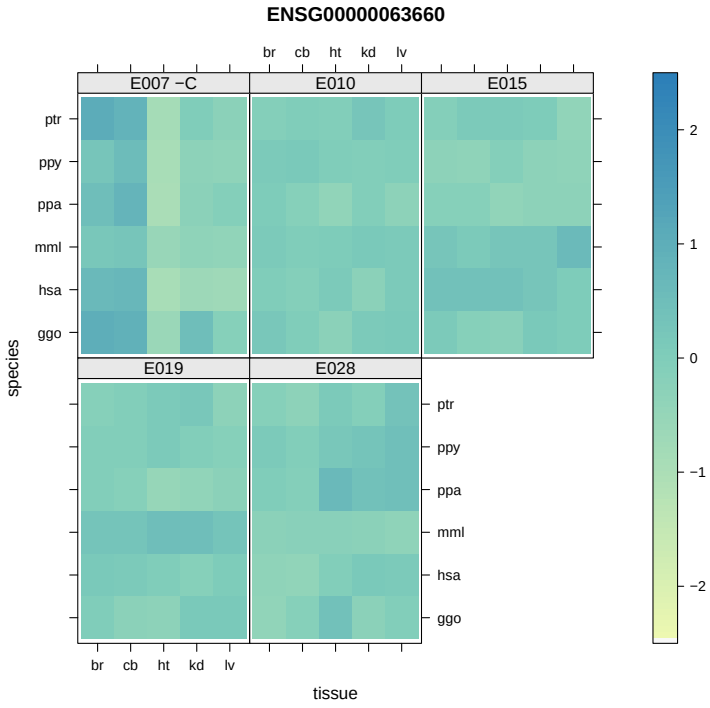

ENSG00000056972
E004
E007
E008
E010
E014
E016
E017
E020
E021
E022
E023
E024
E025
E027
E030 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

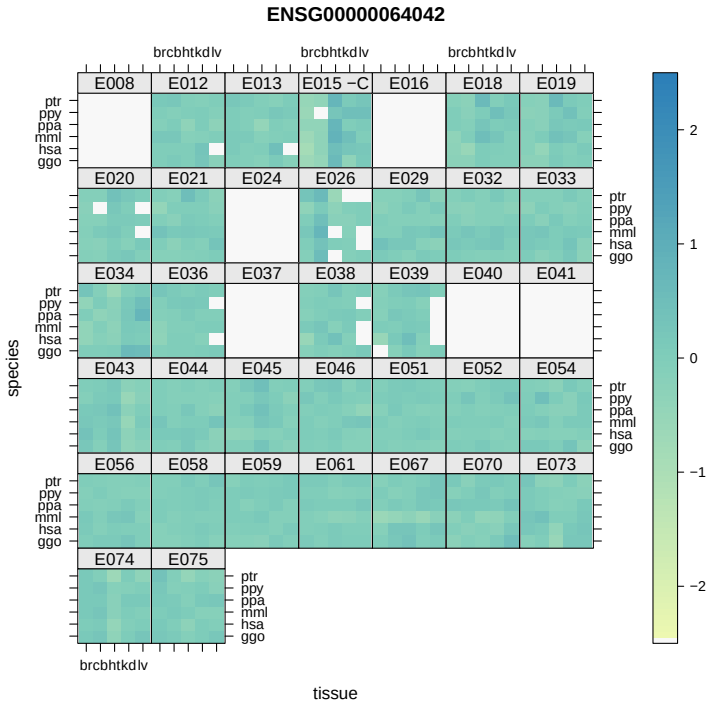

ENSG00000058404
E002
E004
E012
E015
E017
E018
E019
E029
E031
E034 −C
E035
E036
E037
E039
E049
E052
E058
E059
E060
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

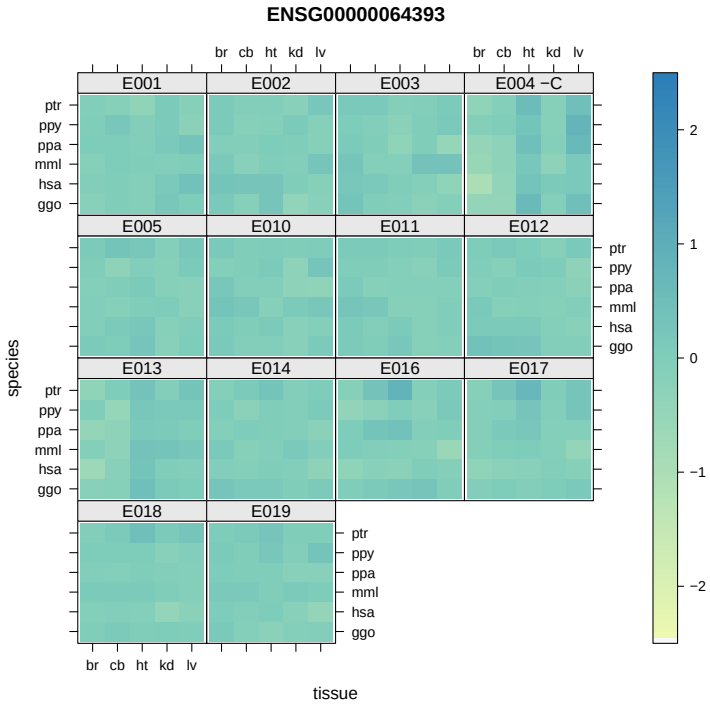

ENSG00000058668
E002
E004
E009
E015
E017
E018
E019
E020
E025
E026
E027
E028
E029 −C
E030
E031
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

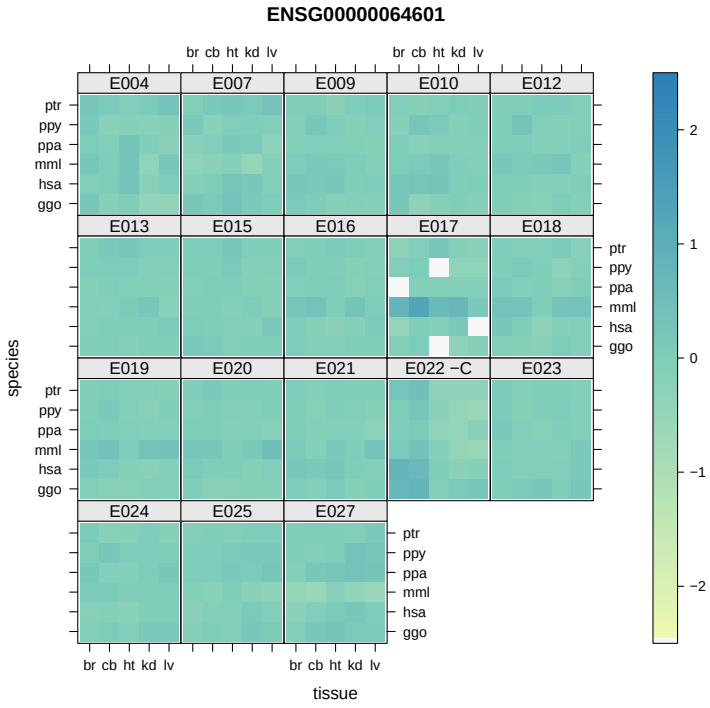

ENSG00000060138
E003
E012
E019
E024
E028 −C
E029 −C
E030 −C
E033 −C
E034
E036
E038
E040
E042
E043
E047
E050
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

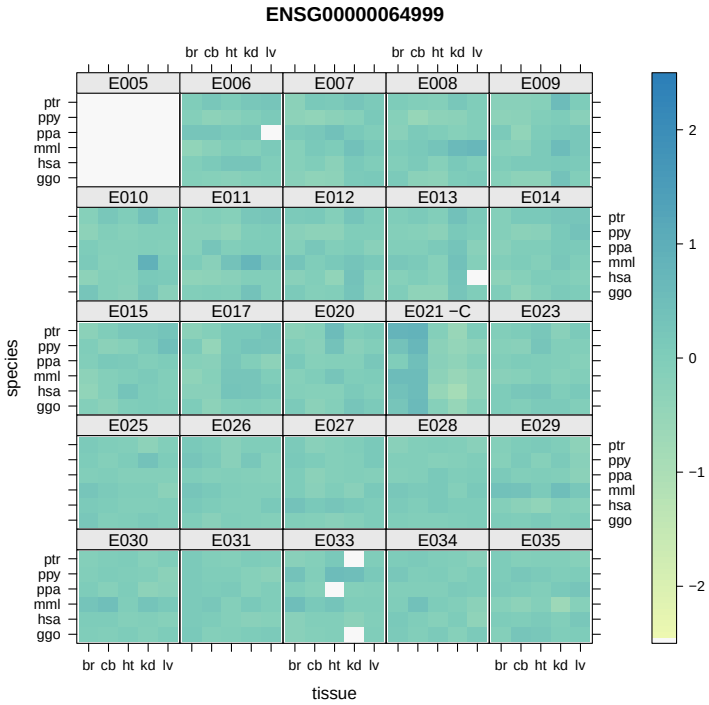

ENSG00000060237
brcbhtkdlv
E007
E008
E009 −C
E011
E012 −C
E013 −C
E014 −C
E015
E016
E017
E018
E020
E024
E026 −C
E027
E028
E030
E031
E034
E035
E036
E038
E039
E040
E041
E042
E043
E044
E045
E046
E047
E048
E049
E052
E053
E054
E055
E057
E059
E060
E061 −C
E062 −C
E064
E068
E069
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

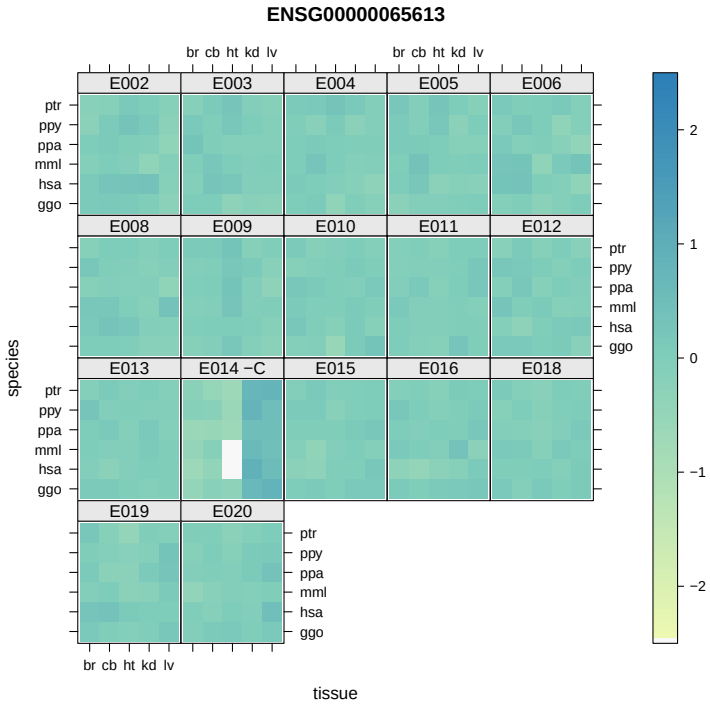

ENSG00000063660
br cb ht kd lv
E007 −C
E010
E015
E019
E028
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

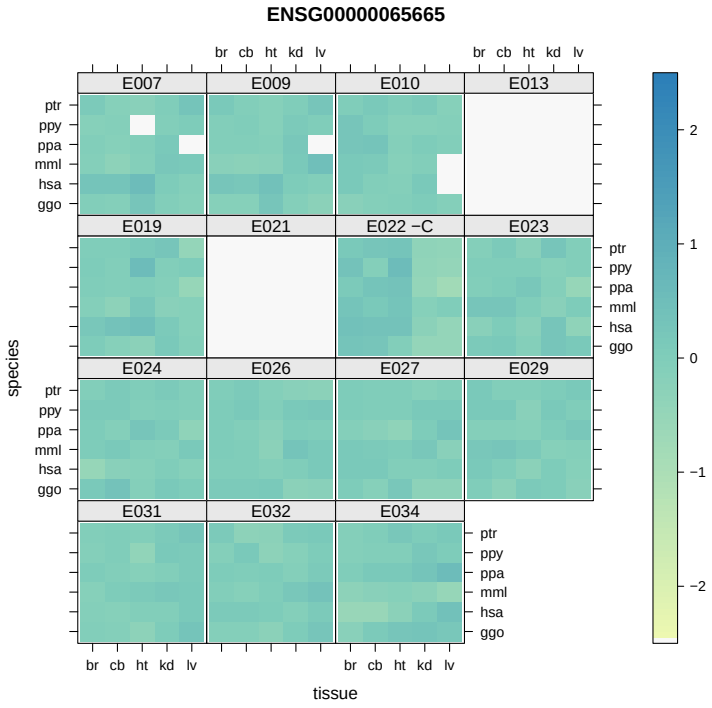

ENSG00000064042
brcbhtkdlv
brcbhtkdlv
brcbhtkdlv
E008
E012
E013
E015 −C
E016
E018
E019
E020
E021
E024
E026
E029
E032
E033
E034
E036
E037
E038
E039
E040
E041
E043
E044
E045
E046
E051
E052
E054
E056
E058
E059
E061
E067
E070
E073
E074
E075
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

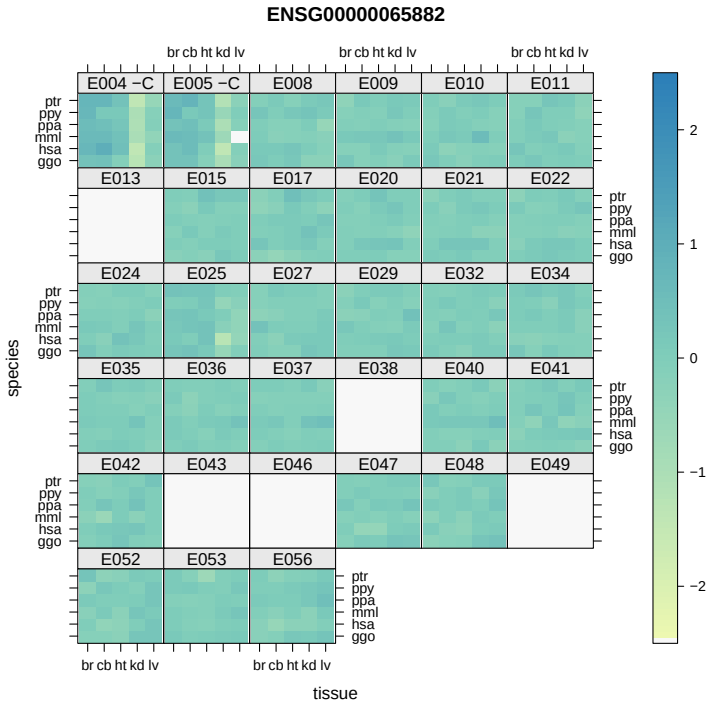

ENSG00000064393
E001
E002
E003
E004 −C
E005
E010
E011
E012
E013
E014
E016
E017
E018
E019
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

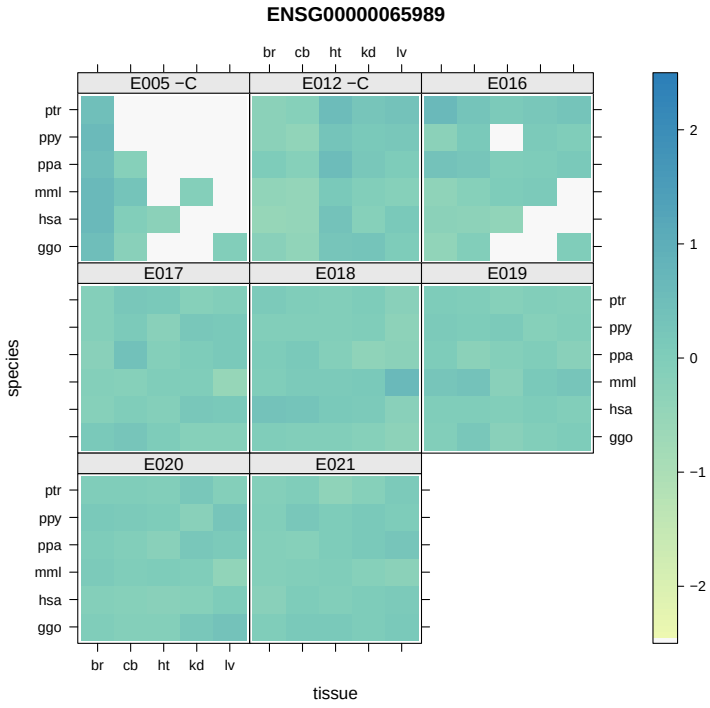

ENSG00000064601
E004
E007
E009
E010
E012
E013
E015
E016
E017
E018
E019
E020
E021
E022 −C
E023
E024
E025
E027
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

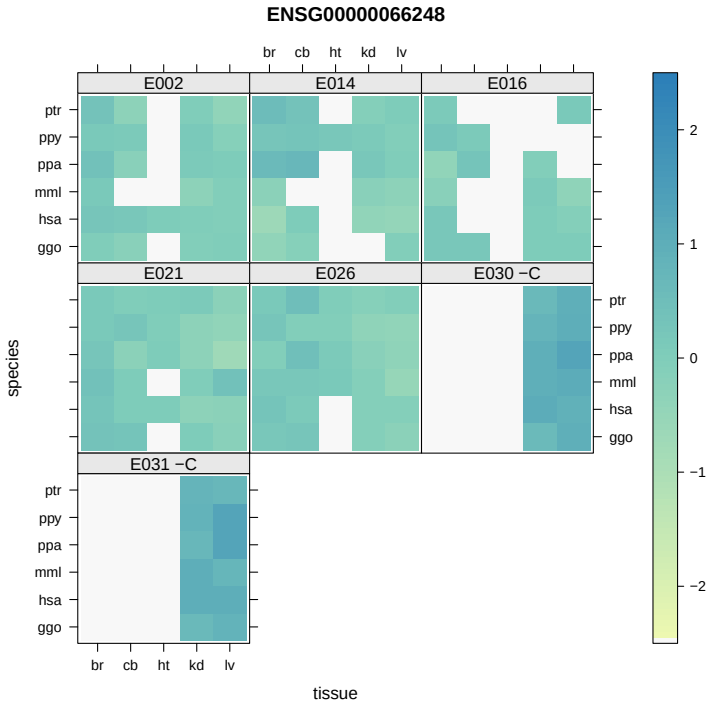

ENSG00000064999
E005
E006
E007
E008
E009
E010
E011
E012
E013
E014
E015
E017
E020
E021 −C
E023
E025
E026
E027
E028
E029
E030
E031
E033
E034
E035
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

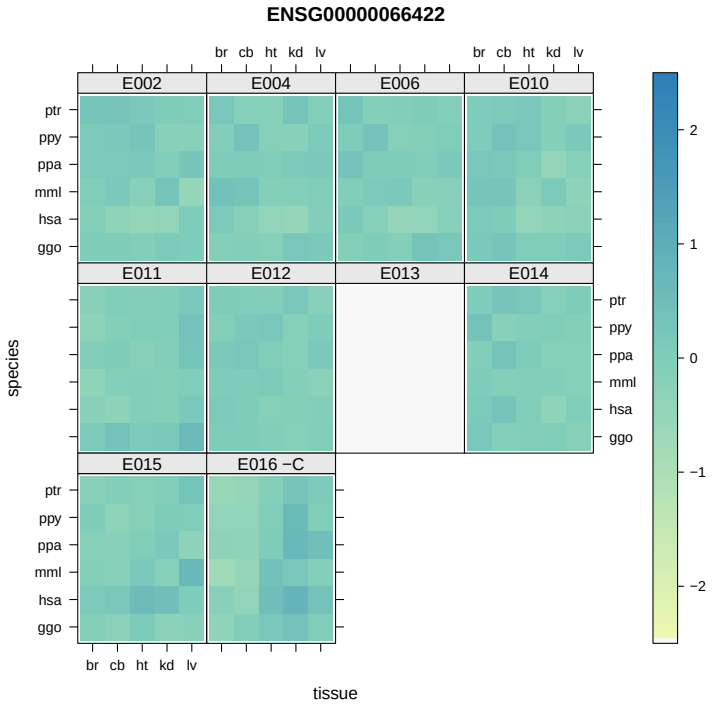

ENSG00000065613
br cb ht kd lv
E002
E003
E004
E005
E006
E008
E009
E010
E011
E012
E013
E014 −C
E015
E016
E018
E019
E020
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

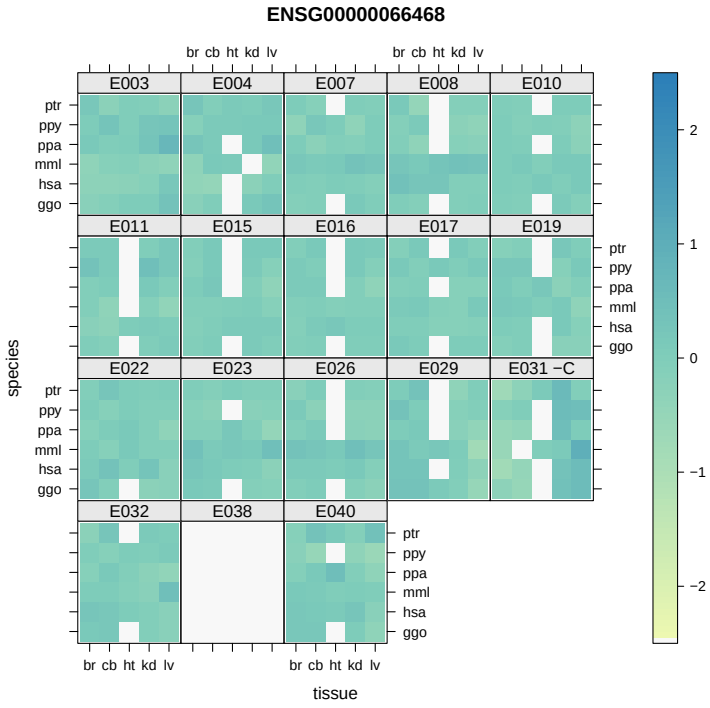

ENSG00000065665
E007
E009
E010
E013
E019
E021
E022 −C
E023
E024
E026
E027
E029
E031
E032
E034
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

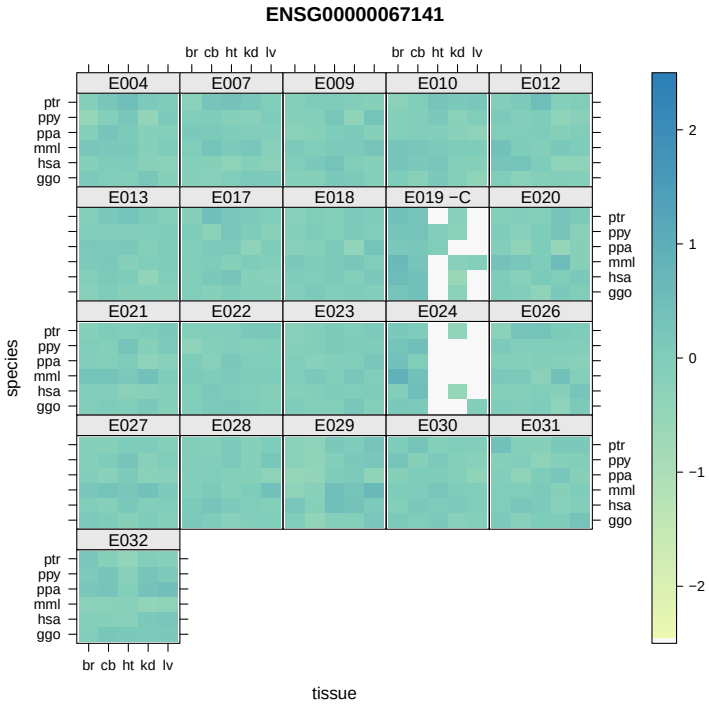

ENSG00000065882
br cb ht kd lv
E004 −C
E005 −C
E008
E009
E010
E011
E013
E015
E017
E020
E021
E022
E024
E025
E027
E029
E032
E034
E035
E036
E037
E038
E040
E041
E042
E043
E046
E047
E048
E049
E052
E053
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

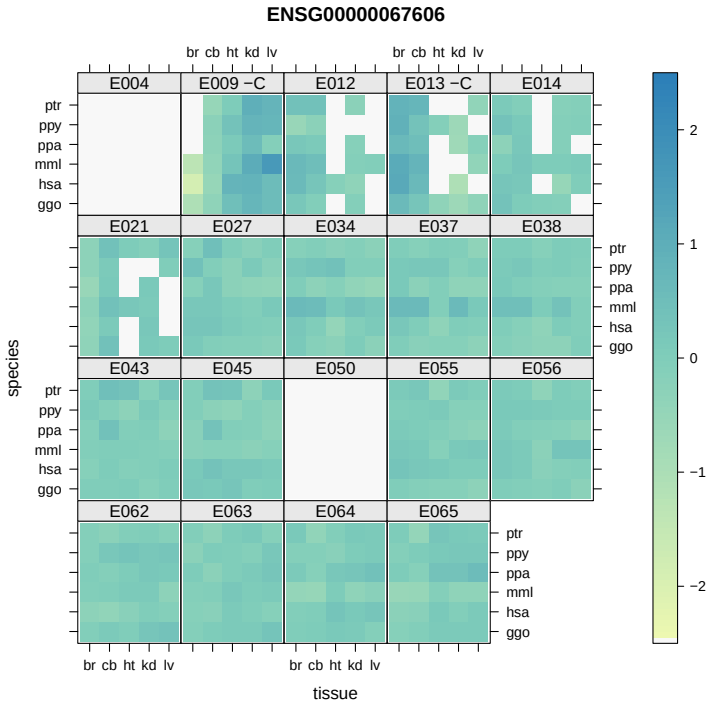

ENSG00000065989
br cb ht kd lv
E005 −C
E012 −C
E016
E017
E018
E019
E020
E021
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

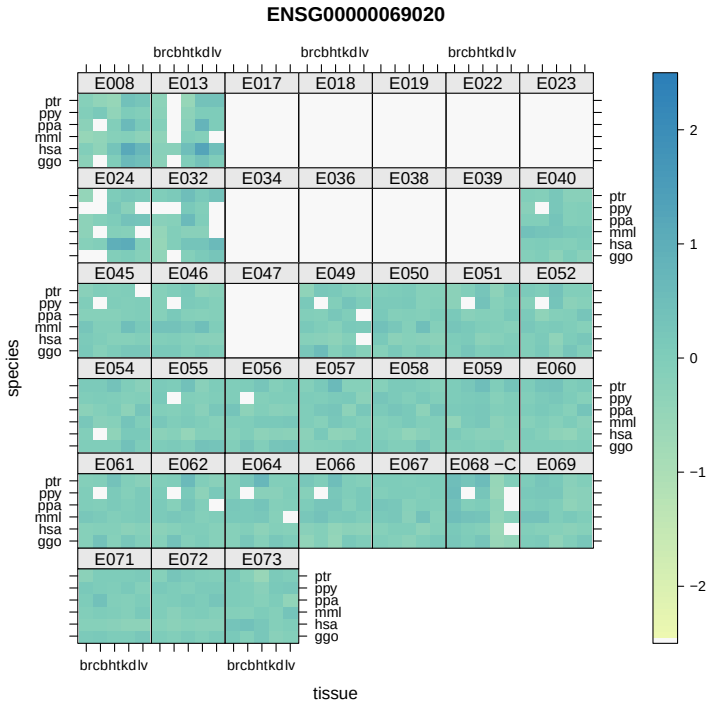

ENSG00000066248
br cb ht kd lv
E002
E014
E016
E021
E026
E030 −C
E031 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

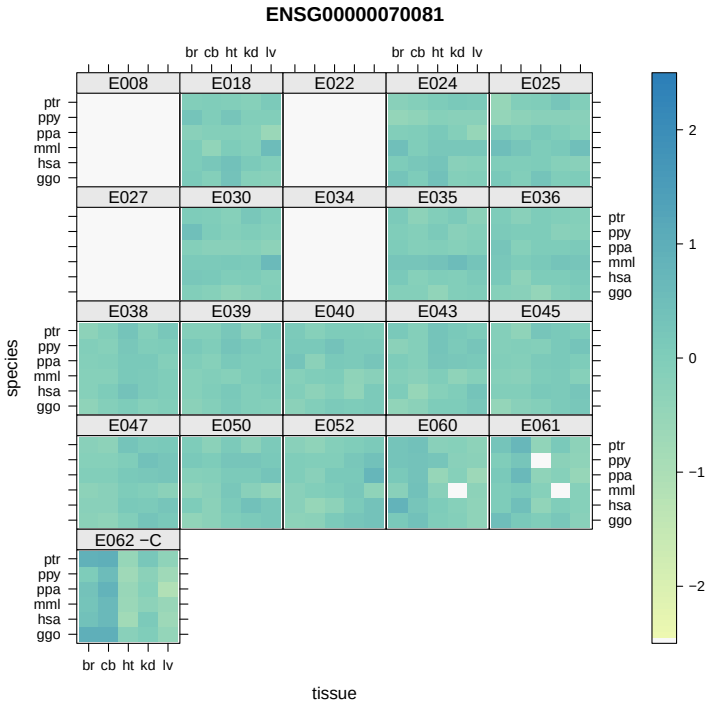

ENSG00000066422
E002
E004
E006
E010
E011
E012
E013
E014
E015
E016 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

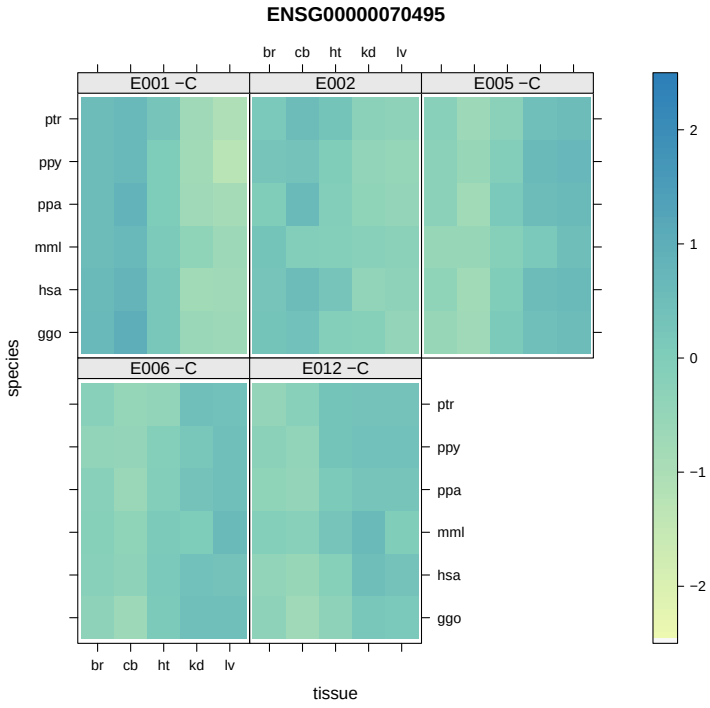

ENSG00000066468
E003
E004
E007
E008
E010
E011
E015
E016
E017
E019
E022
E023
E026
E029
E031 −C
E032
E038
E040
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

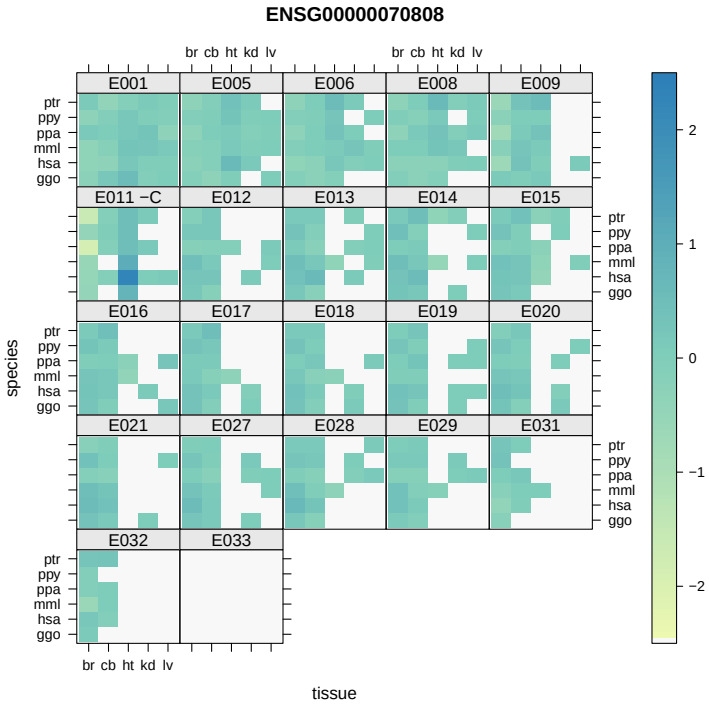

ENSG00000067141
br cb ht kd lv
E004
E007
E009
E010
E012
E013
E017
E018
E019 −C
E020
E021
E022
E023
E024
E026
E027
E028
E029
E030
E031
E032
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

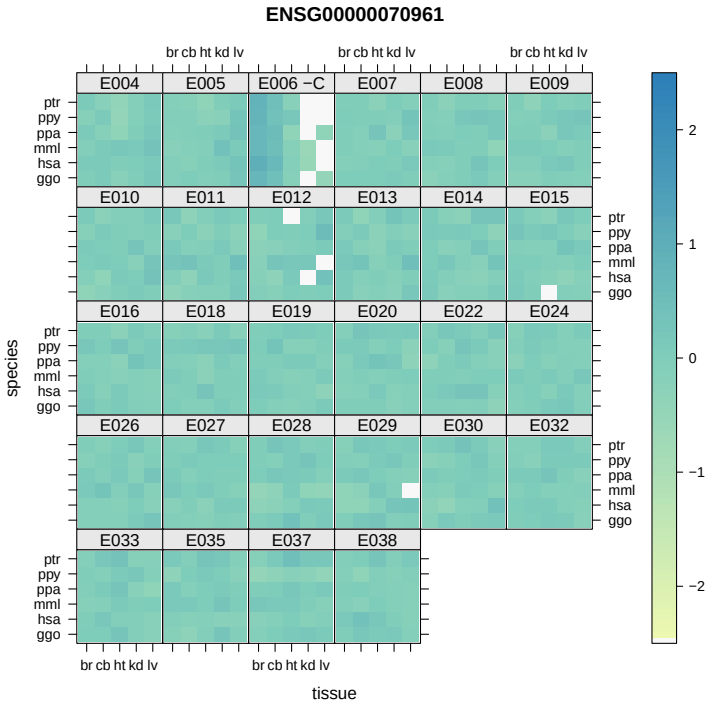

ENSG00000067606
E004
E009 −C
E012
E013 −C
E014
E021
E027
E034
E037
E038
E043
E045
E050
E055
E056
E062
E063
E064
E065
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

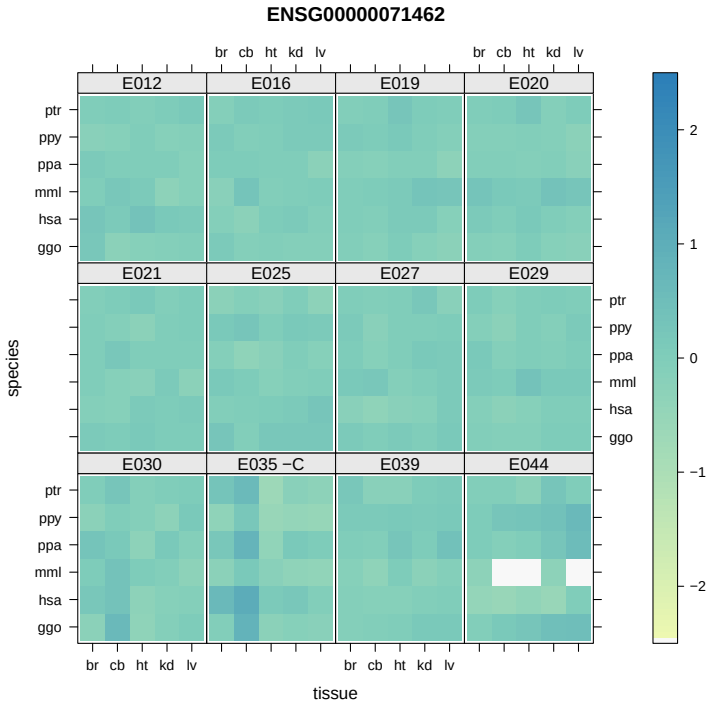

ENSG00000069020
brcbhtkdlv
E008
E013
E017
E018
E019
E022
E023
E024
E032
E034
E036
E038
E039
E040
E045
E046
E047
E049
E050
E051
E052
E054
E055
E056
E057
E058
E059
E060
E061
E062
E064
E066
E067
E068 −C
E069
E071
E072
E073
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

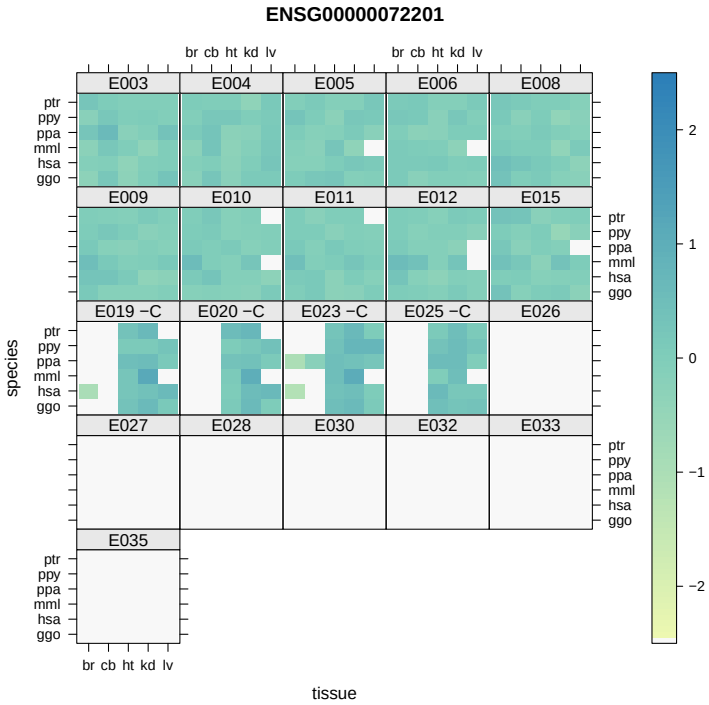

ENSG00000070081
br cb ht kd lv
E008
E018
E022
E024
E025
E027
E030
E034
E035
E036
E038
E039
E040
E043
E045
E047
E050
E052
E060
E061
E062 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

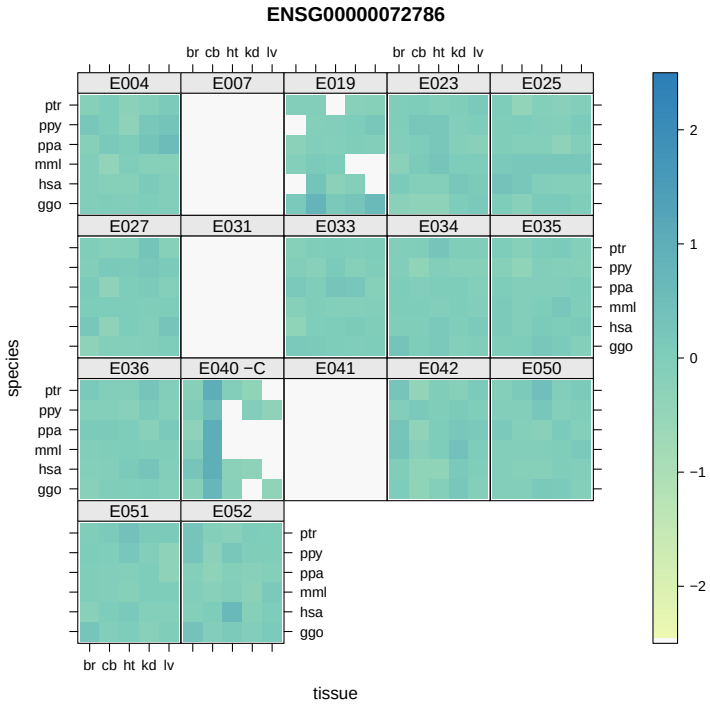

ENSG00000070495
br cb ht kd lv
E001 −C
E002
E005 −C
E006 −C
E012 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

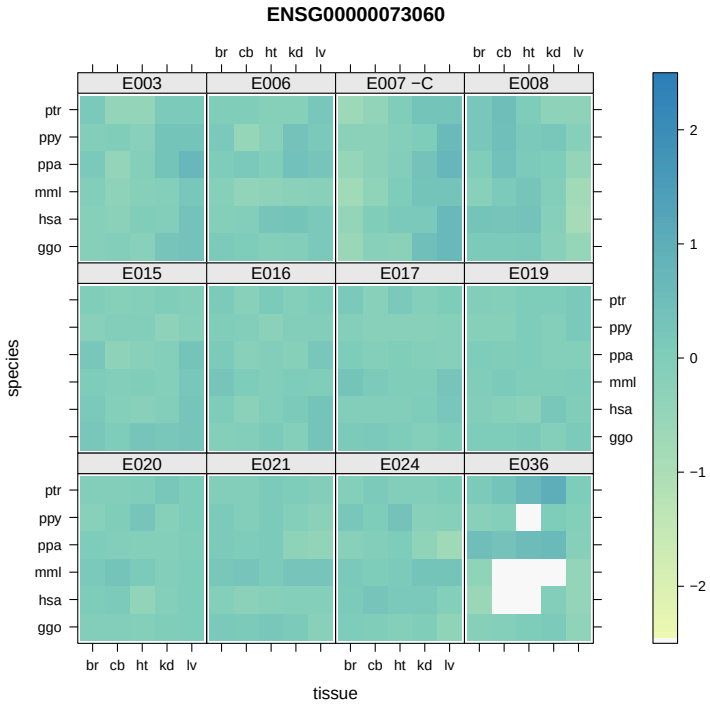

ENSG00000070808
br cb ht kd lv
E001
E005
E006
E008
E009
E011 −C
E012
E013
E014
E015
E016
E017
E018
E019
E020
E021
E027
E028
E029
E031
E032
E033
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

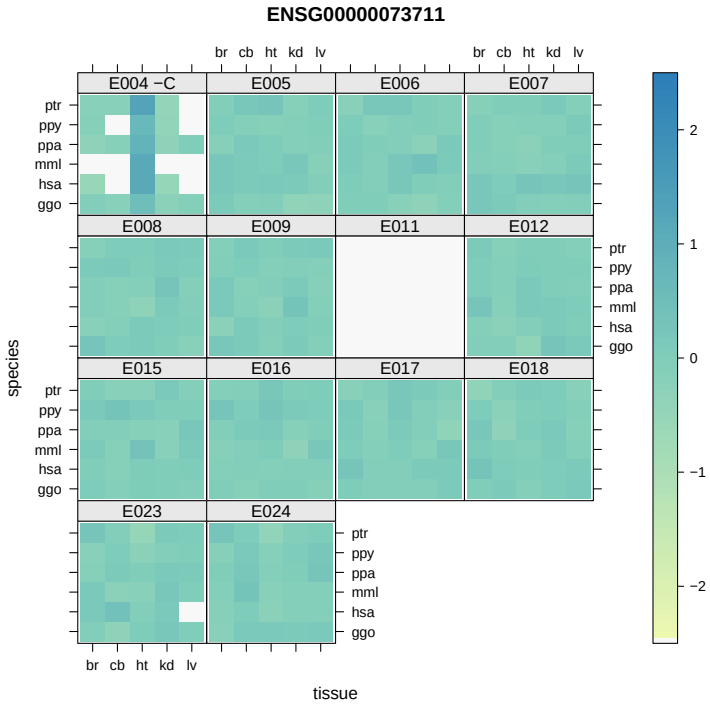

ENSG00000070961
br cb ht kd lv
E004
E005
E006 −C
E007
E008
E009
E010
E011
E012
E013
E014
E015
E016
E018
E019
E020
E022
E024
E026
E027
E028
E029
E030
E032
E033
E035
E037
E038
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

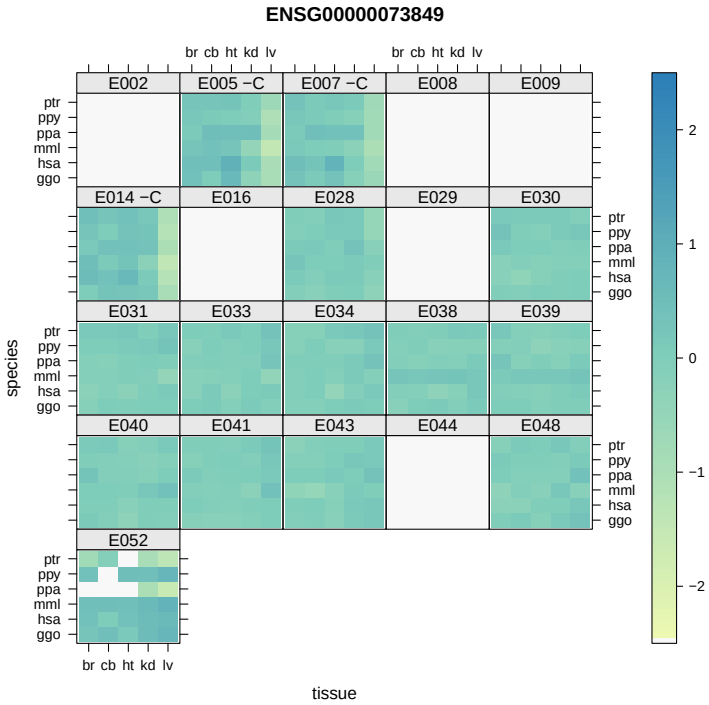

ENSG00000071462
E012
E016
E019
E020
E021
E025
E027
E029
E030
E035 −C
E039
E044
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

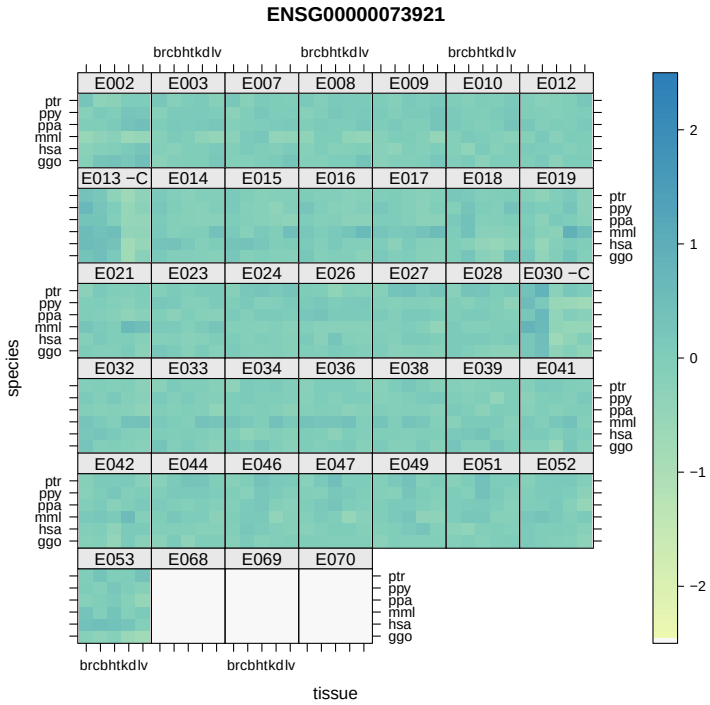

ENSG00000072201
br cb ht kd lv
E003
E004
E005
E006
E008
E009
E010
E011
E012
E015
E019 −C
E020 −C
E023 −C
E025 −C
E026
E027
E028
E030
E032
E033
E035
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

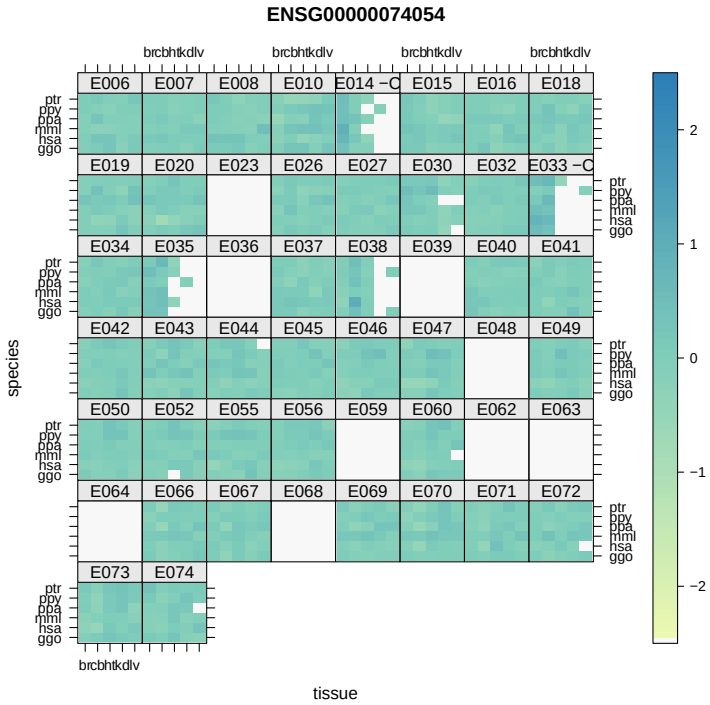

ENSG00000072786
br cb ht kd lv
E004
E007
E019
E023
E025
E027
E031
E033
E034
E035
E036
E040 −C
E041
E042
E050
E051
E052
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

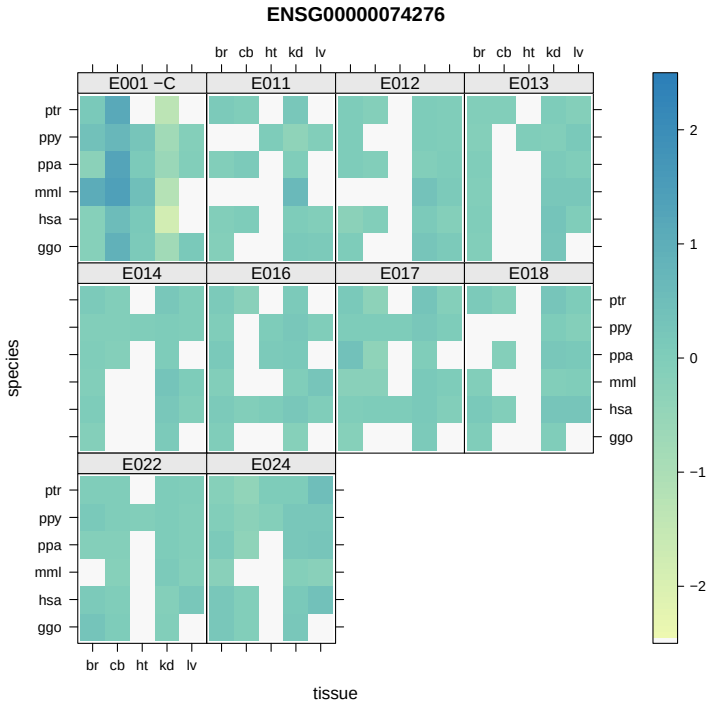

ENSG00000073060
E003
E006
E007 −C
E008
E015
E016
E017
E019
E020
E021
E024
E036
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

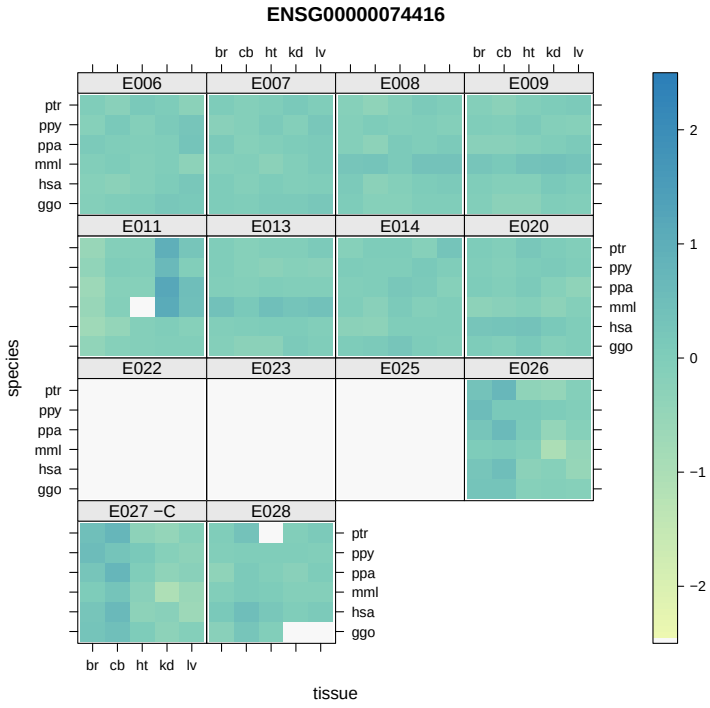

ENSG00000073711
E004 −C
E005
E006
E007
E008
E009
E011
E012
E015
E016
E017
E018
E023
E024
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

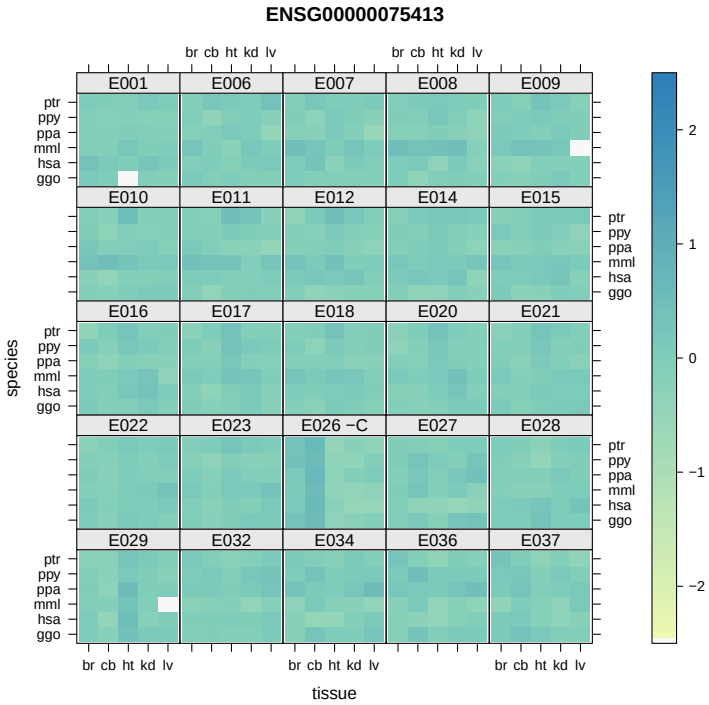

ENSG00000073849
br cb ht kd lv
E002
E005 −C
E007 −C
E008
E009
E014 −C
E016
E028
E029
E030
E031
E033
E034
E038
E039
E040
E041
E043
E044
E048
E052
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

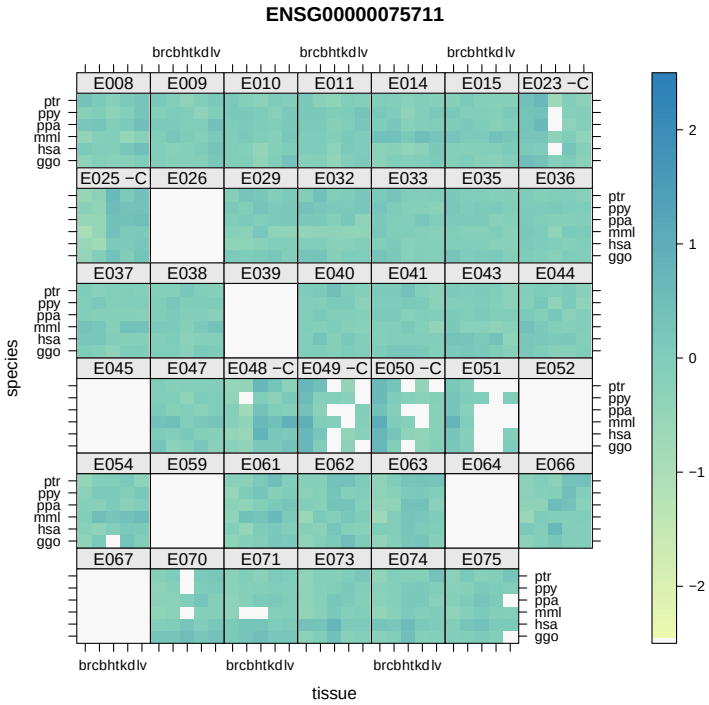

ENSG00000073921
brcbhtkdlv
E002
E003
E007
E008
E009
E010
E012
E013 −C
E014
E015
E016
E017
E018
E019
E021
E023
E024
E026
E027
E028
E030 −C
E032
E033
E034
E036
E038
E039
E041
E042
E044
E046
E047
E049
E051
E052
E053
E068
E069
E070
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

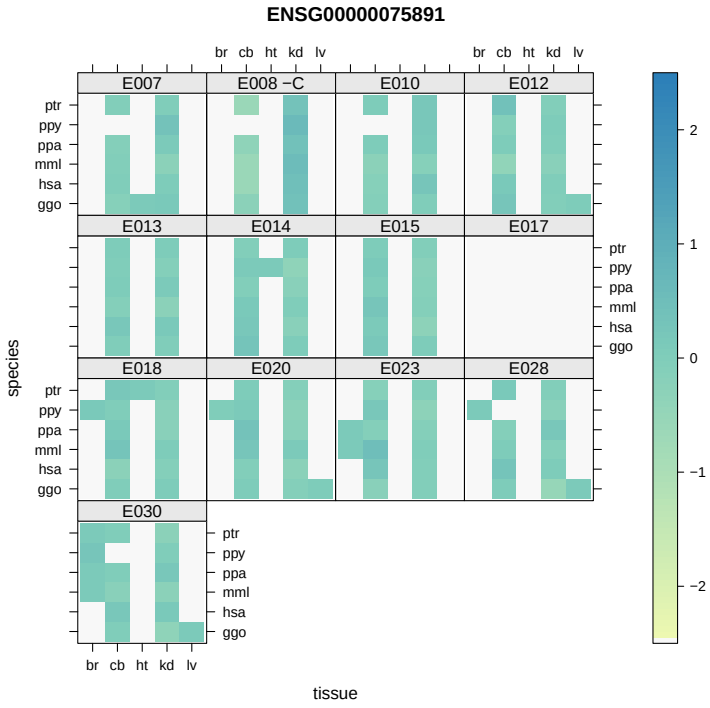

ENSG00000074054
brcbhtkdlv
E006
E007
E008
E010
E014 −C
E015
E016
E018
E019
E020
E023
E026
E027
E030
E032
E033 −C
E034
E035
E036
E037
E038
E039
E040
E041
E042
E043
E044
E045
E046
E047
E048
E049
E050
E052
E055
E056
E059
E060
E062
E063
E064
E066
E067
E068
E069
E070
E071
E072
E073
E074
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

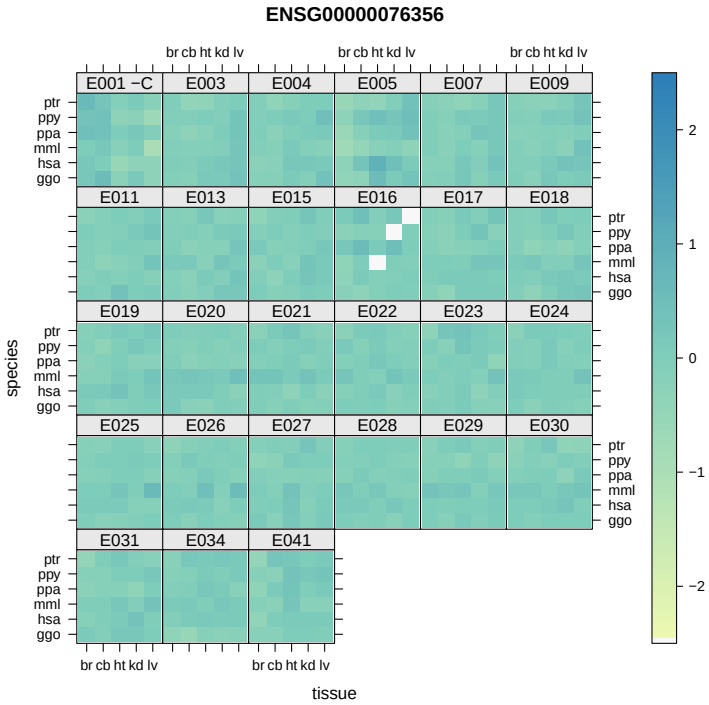

ENSG00000074276
E001 −C
E011
E012
E013
E014
E016
E017
E018
E022
E024
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

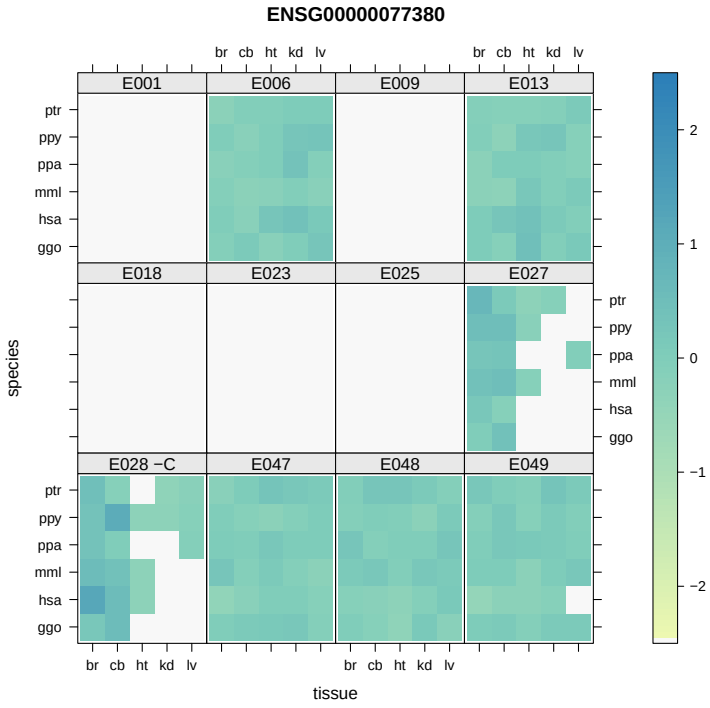

ENSG00000074416
br cb ht kd lv
E006
E007
E008
E009
E011
E013
E014
E020
E022
E023
E025
E026
E027 −C
E028
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

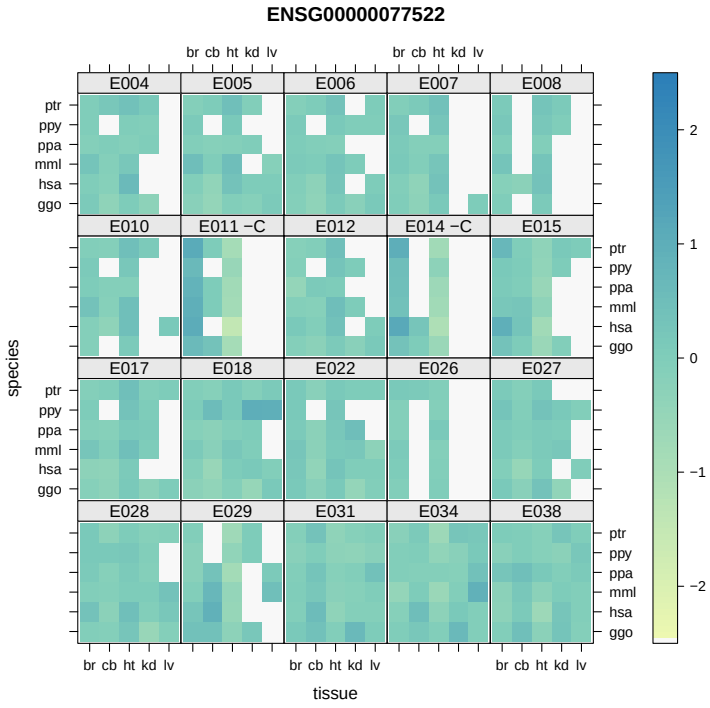

ENSG00000075413
E001
E006
E007
E008
E009
E010
E011
E012
E014
E015
E016
E017
E018
E020
E021
E022
E023
E026 −C
E027
E028
E029
E032
E034
E036
E037
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

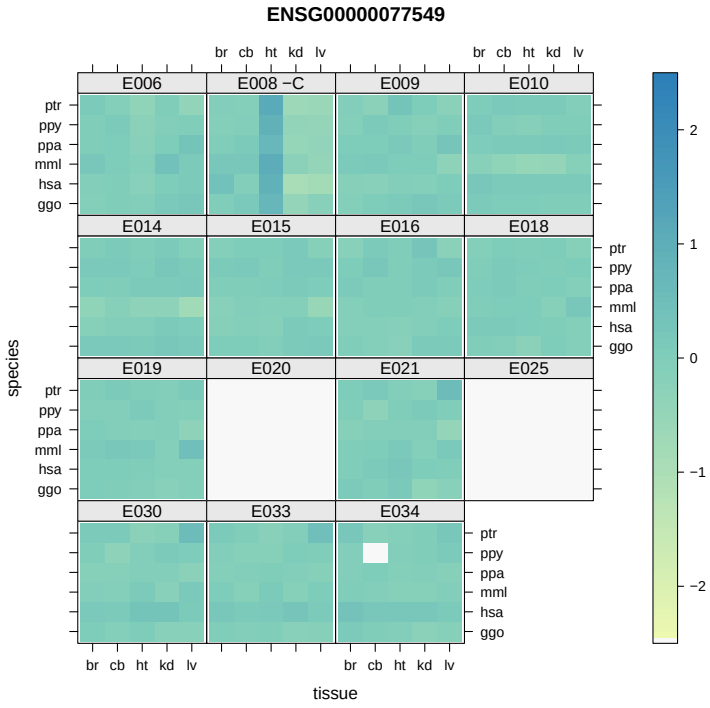

ENSG00000075711
brcbhtkdlv
E008
E009
E010
E011
E014
E015
E023 −C
E025 −C
E026
E029
E032
E033
E035
E036
E037
E038
E039
E040
E041
E043
E044
E045
E047
E048 −C
E049 −C
E050 −C
E051
E052
E054
E059
E061
E062
E063
E064
E066
E067
E070
E071
E073
E074
E075
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

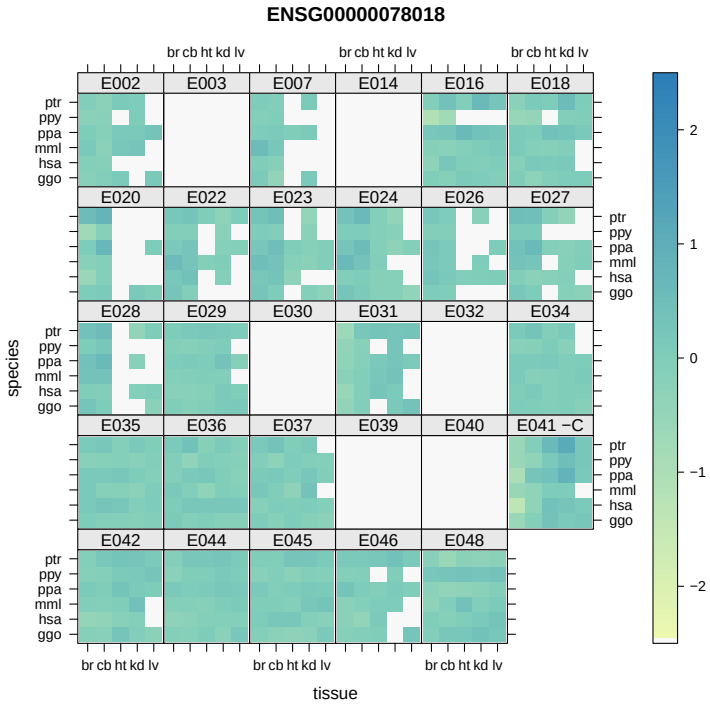

ENSG00000075891
E007
E008 −C
E010
E012
E013
E014
E015
E017
E018
E020
E023
E028
E030
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

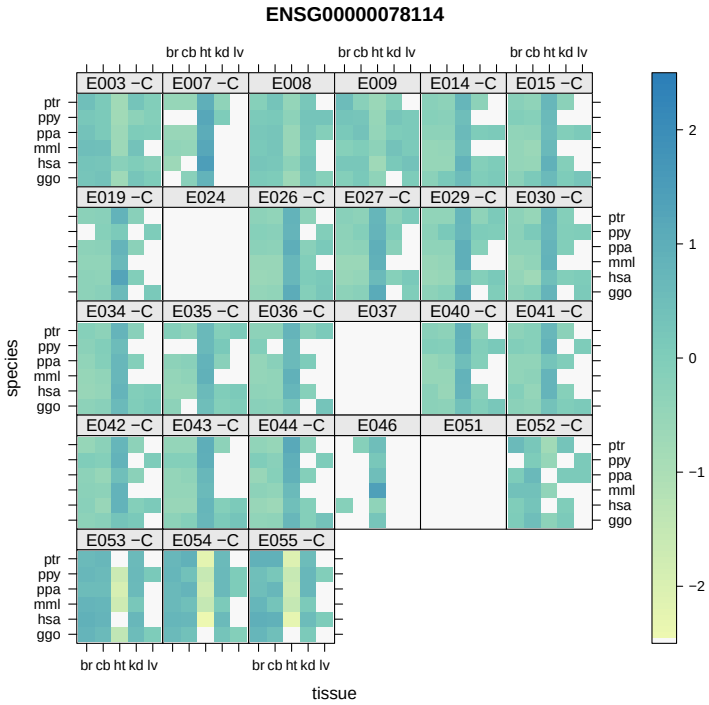

ENSG00000076356
br cb ht kd lv
E001 −C
E003
E004
E005
E007
E009
E011
E013
E015
E016
E017
E018
E019
E020
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E034
E041
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

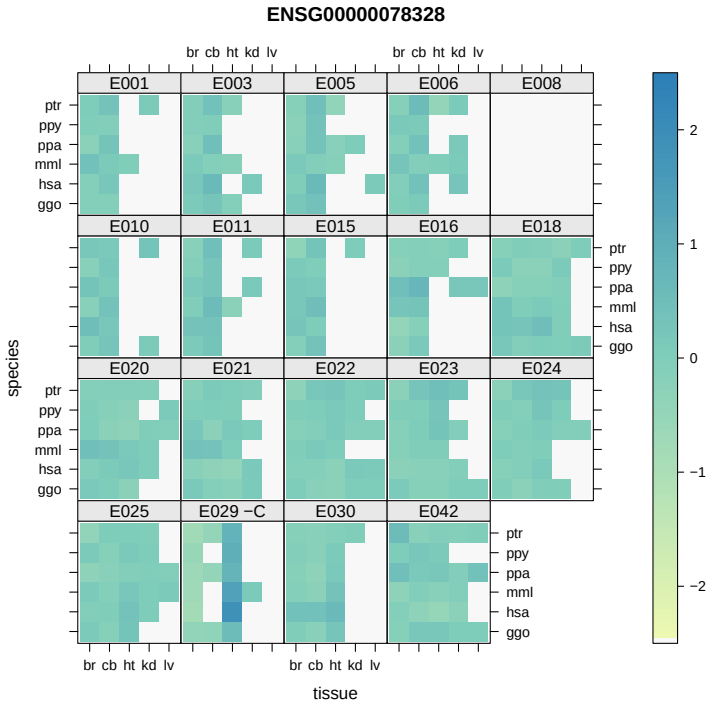

ENSG00000077380
E001
E006
E009
E013
E018
E023
E025
E027
E028 −C
E047
E048
E049
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

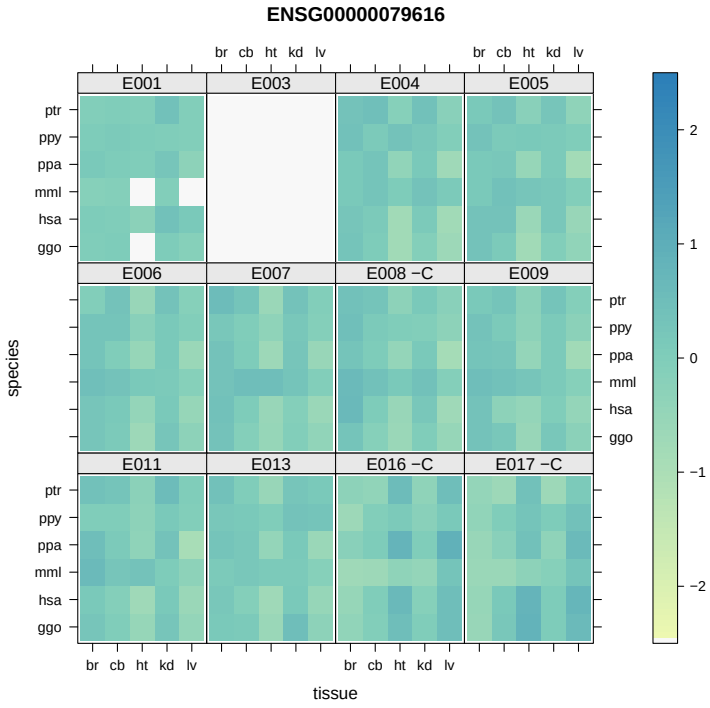

ENSG00000077522
E004
E005
E006
E007
E008
E010
E011 −C
E012
E014 −C
E015
E017
E018
E022
E026
E027
E028
E029
E031
E034
E038
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

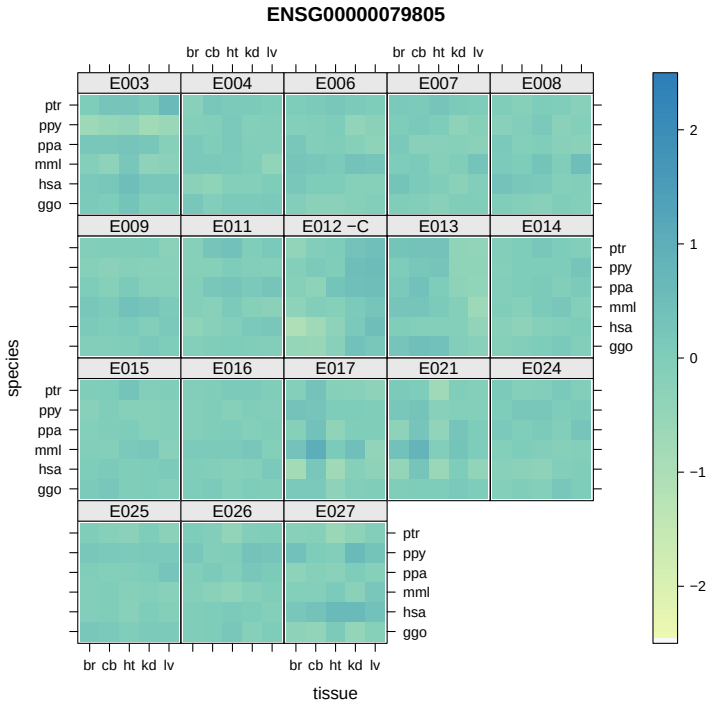

ENSG00000077549
E006
E008 −C
E009
E010
E014
E015
E016
E018
E019
E020
E021
E025
E030
E033
E034
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

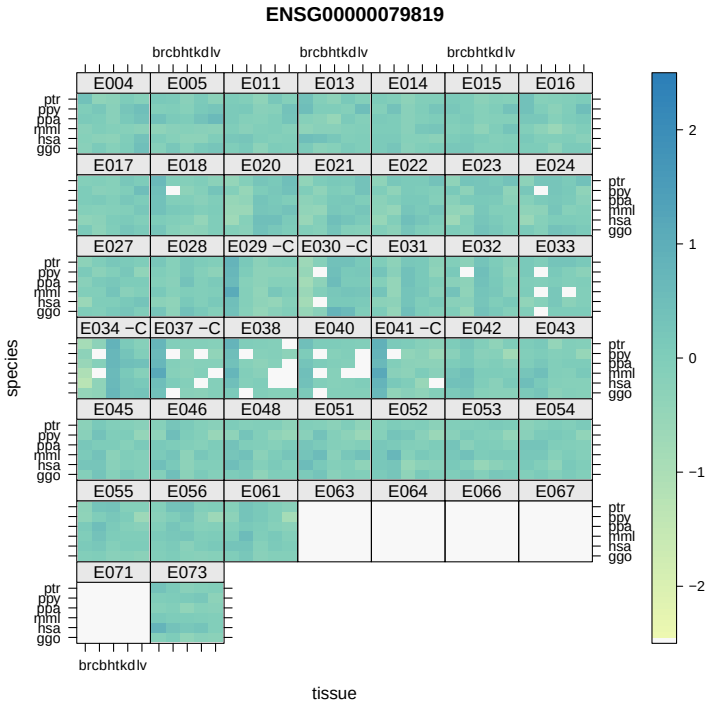

ENSG00000078018
br cb ht kd lv
E002
E003
E007
E014
E016
E018
E020
E022
E023
E024
E026
E027
E028
E029
E030
E031
E032
E034
E035
E036
E037
E039
E040
E041 −C
E042
E044
E045
E046
E048
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

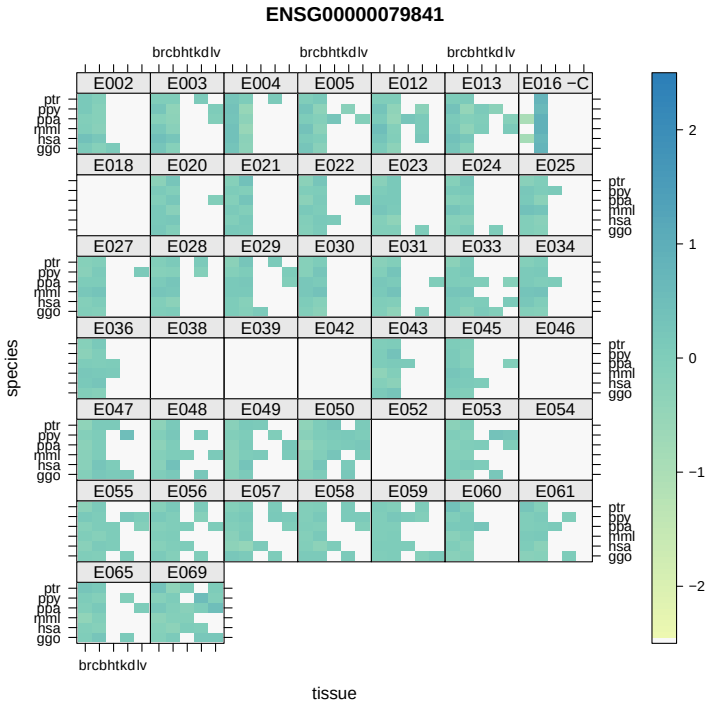

ENSG00000078114
br cb ht kd lv
E003 −C
E007 −C
E008
E009
E014 −C
E015 −C
E019 −C
E024
E026 −C
E027 −C
E029 −C
E030 −C
E034 −C
E035 −C
E036 −C
E037
E040 −C
E041 −C
E042 −C
E043 −C
E044 −C
E046
E051
E052 −C
E053 −C
E054 −C
E055 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

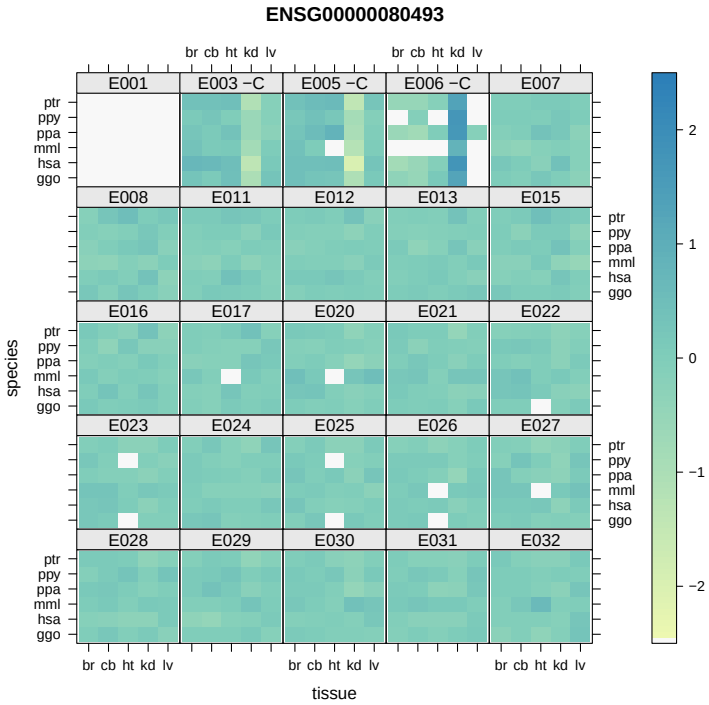

ENSG00000078328
E001
E003
E005
E006
E008
E010
E011
E015
E016
E018
E020
E021
E022
E023
E024
E025
E029 −C
E030
E042
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

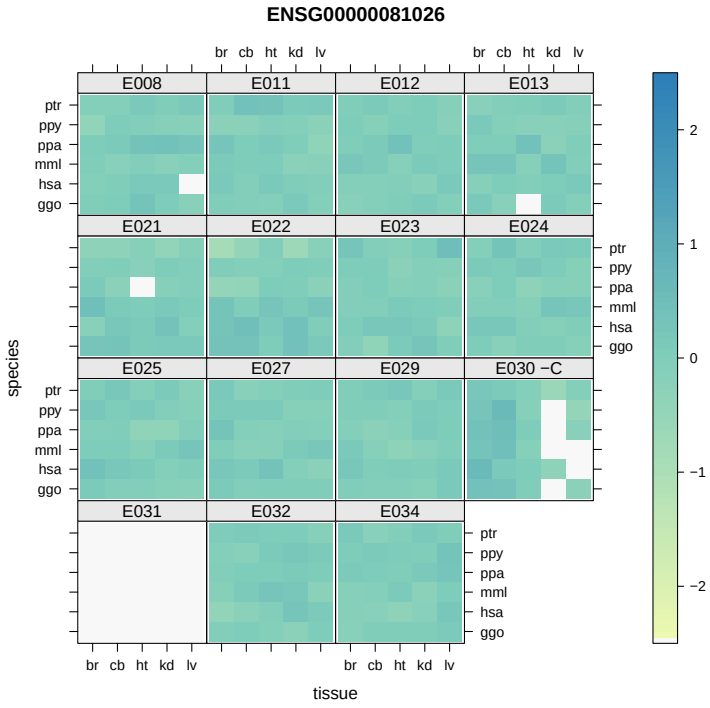

ENSG00000079616
E001
E003
E004
E005
E006
E007
E008 −C
E009
E011
E013
E016 −C
E017 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

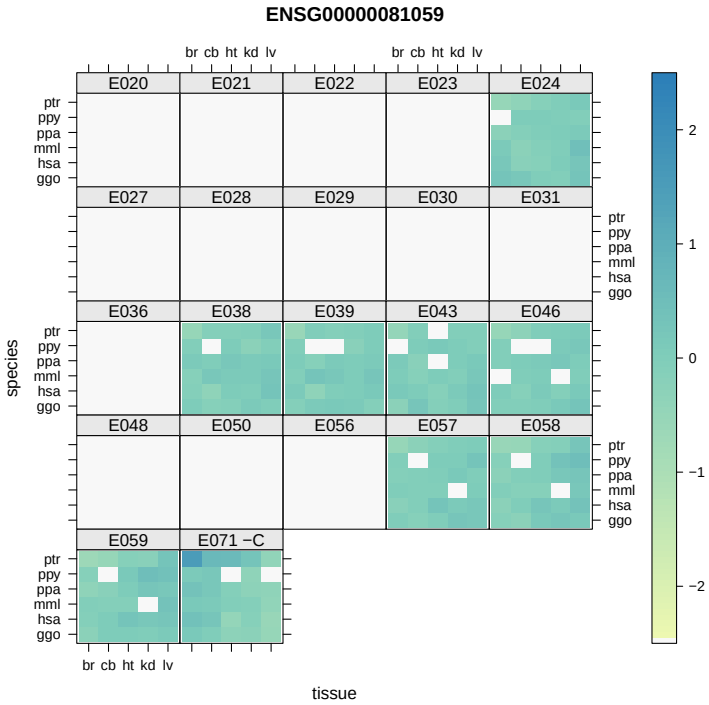

ENSG00000079805
E003
E004
E006
E007
E008
E009
E011
E012 −C
E013
E014
E015
E016
E017
E021
E024
E025
E026
E027
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

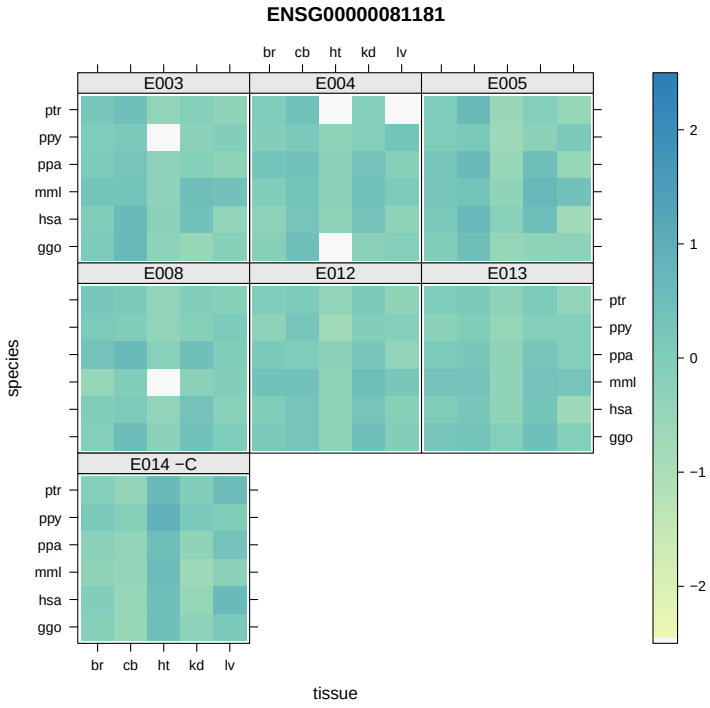

ENSG00000079819
brcbhtkdlv
E004
E005
E011
E013
E014
E015
E016
E017
E018
E020
E021
E022
E023
E024
E027
E028
E029 −C
E030 −C
E031
E032
E033
E034 −C
E037 −C
E038
E040
E041 −C
E042
E043
E045
E046
E048
E051
E052
E053
E054
E055
E056
E061
E063
E064
E066
E067
E071
E073
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

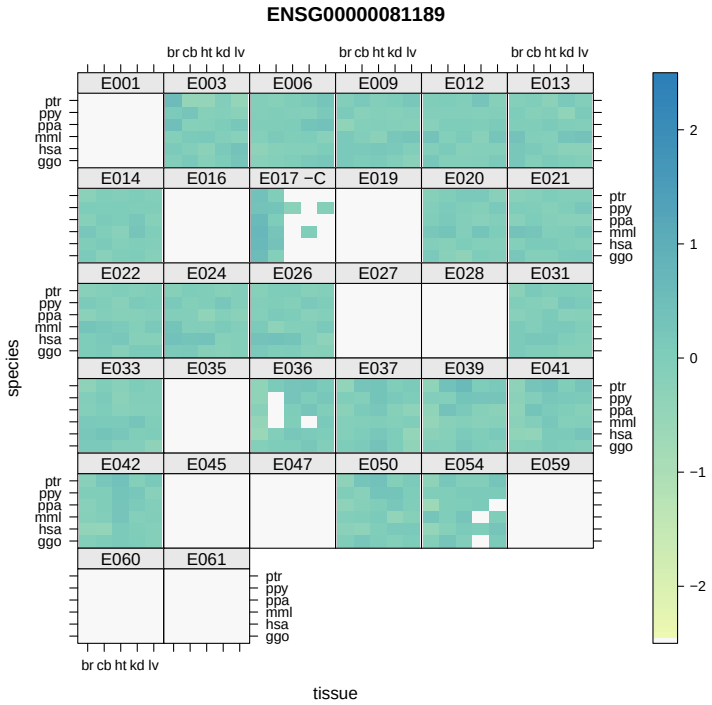

ENSG00000079841
brcbhtkdlv
E002
E003
E004
E005
E012
E013
E016 −C
E018
E020
E021
E022
E023
E024
E025
E027
E028
E029
E030
E031
E033
E034
E036
E038
E039
E042
E043
E045
E046
E047
E048
E049
E050
E052
E053
E054
E055
E056
E057
E058
E059
E060
E061
E065
E069
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

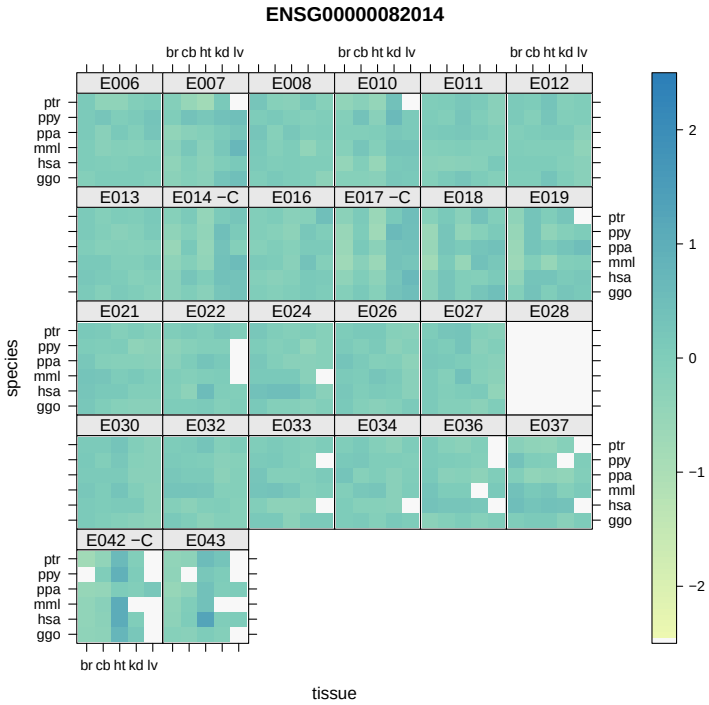

ENSG00000080493
E001
E003 −C
E005 −C
E006 −C
E007
E008
E011
E012
E013
E015
E016
E017
E020
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

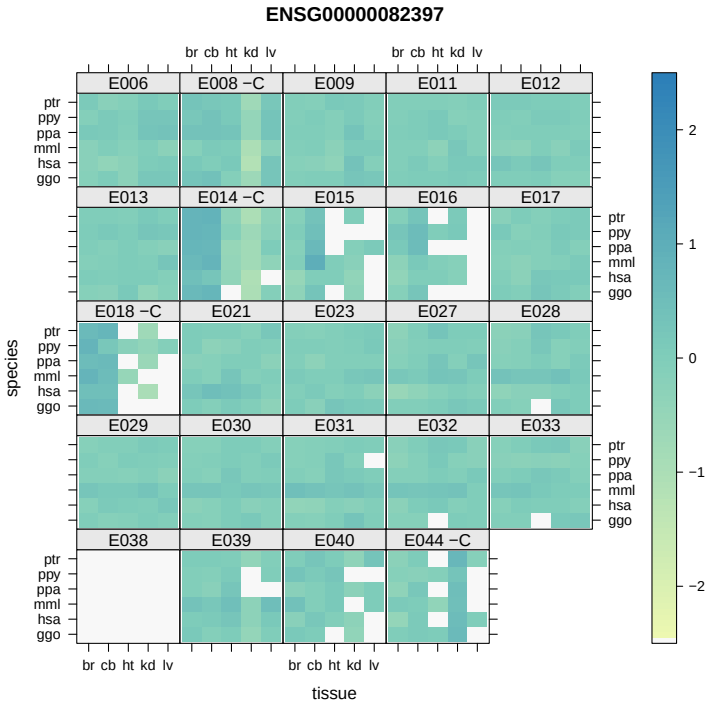

ENSG00000081026
E008
E011
E012
E013
E021
E022
E023
E024
E025
E027
E029
E030 −C
E031
E032
E034
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

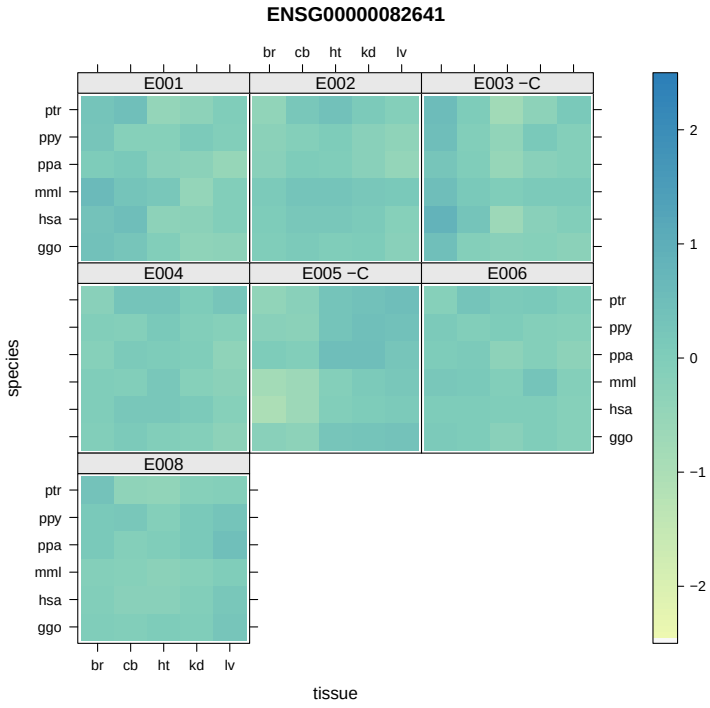

ENSG00000081059
E020
E021
E022
E023
E024
E027
E028
E029
E030
E031
E036
E038
E039
E043
E046
E048
E050
E056
E057
E058
E059
E071 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

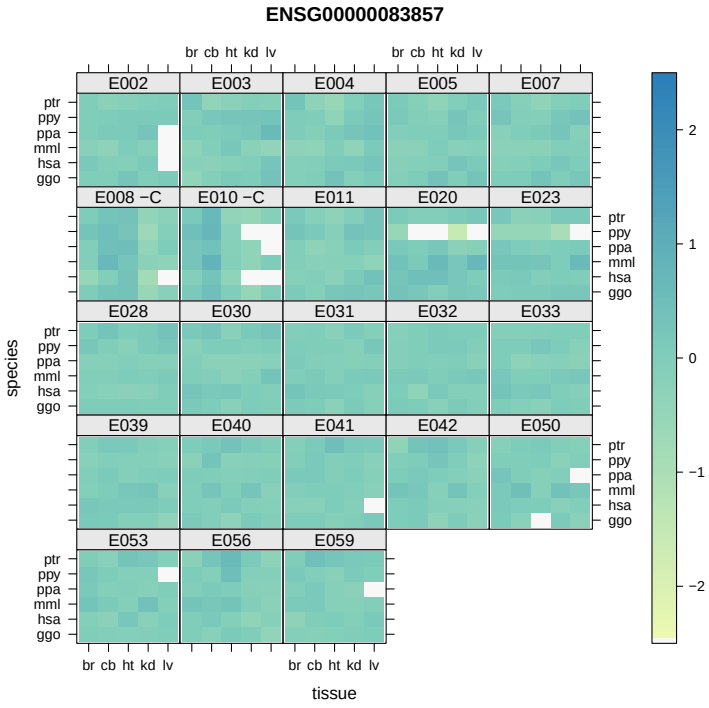

ENSG00000081181
br cb ht kd lv
E003
E004
E005
E008
E012
E013
E014 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

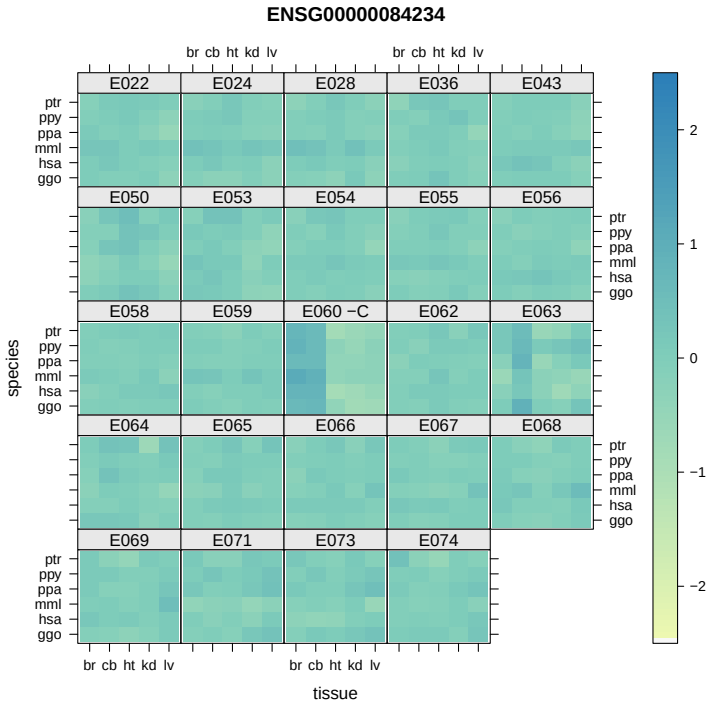

ENSG00000081189
br cb ht kd lv
E001
E003
E006
E009
E012
E013
E014
E016
E017 −C
E019
E020
E021
E022
E024
E026
E027
E028
E031
E033
E035
E036
E037
E039
E041
E042
E045
E047
E050
E054
E059
E060
E061
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

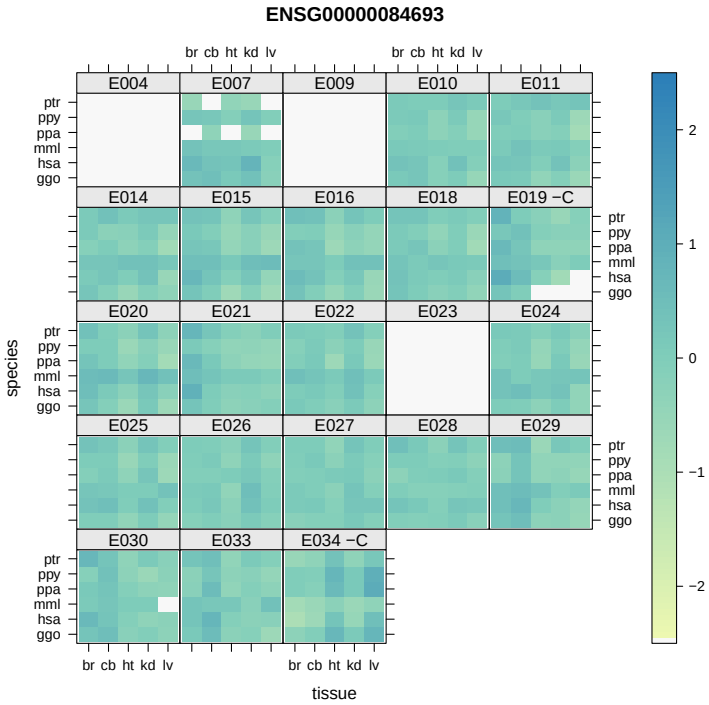

ENSG00000082014
br cb ht kd lv
E006
E007
E008
E010
E011
E012
E013
E014 −C
E016
E017 −C
E018
E019
E021
E022
E024
E026
E027
E028
E030
E032
E033
E034
E036
E037
E042 −C
E043
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

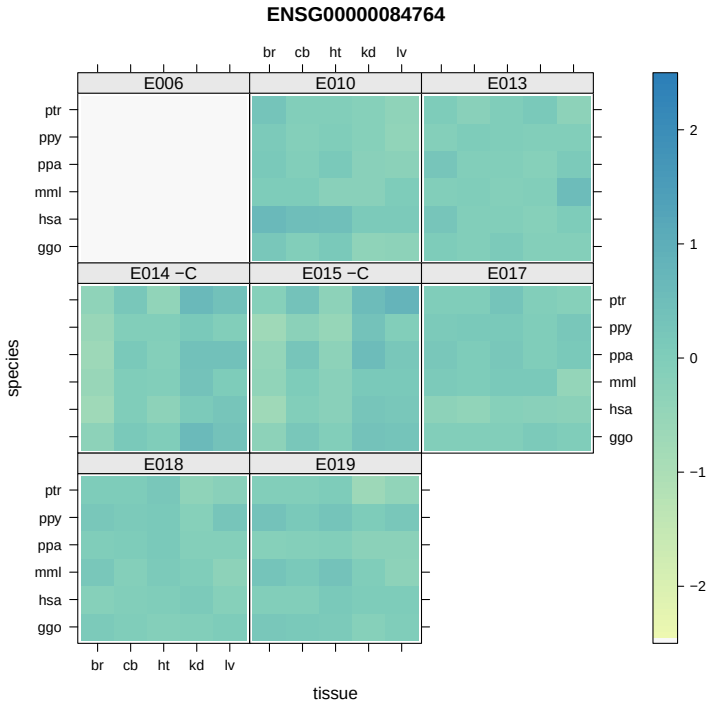

ENSG00000082397
E006
E008 −C
E009
E011
E012
E013
E014 −C
E015
E016
E017
E018 −C
E021
E023
E027
E028
E029
E030
E031
E032
E033
E038
E039
E040
E044 −C
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

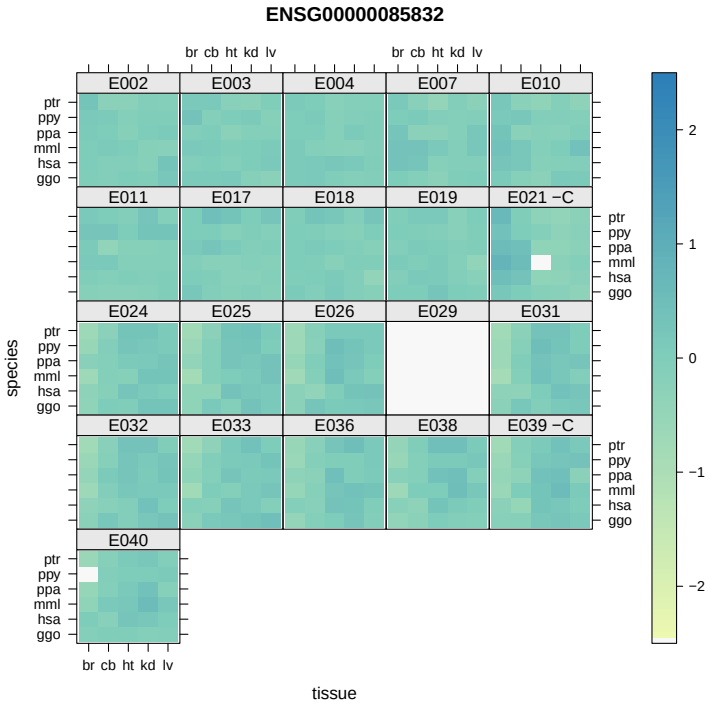

ENSG00000082641
br cb ht kd lv
E001
E002
E003 −C
E004
E005 −C
E006
E008
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

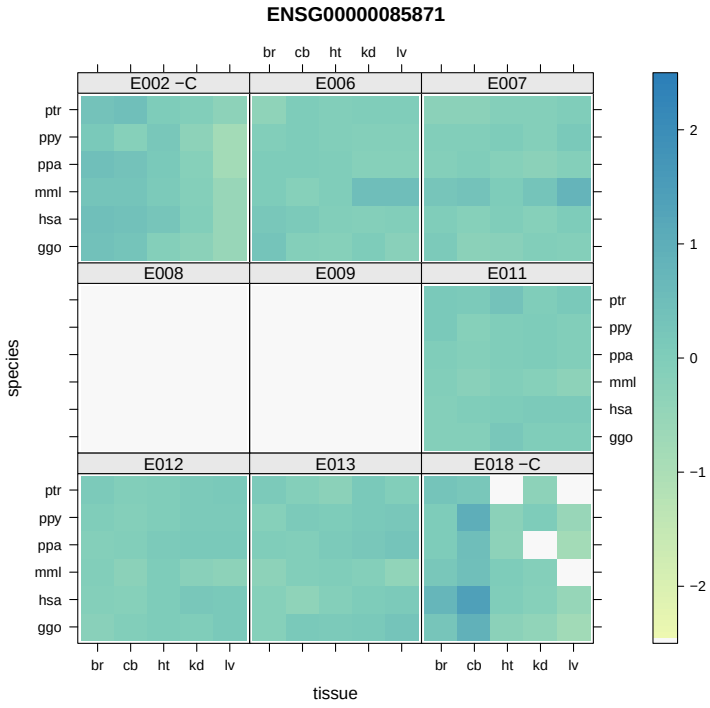

ENSG00000083857
br cb ht kd lv
E002
E003
E004
E005
E007
E008 −C
E010 −C
E011
E020
E023
E028
E030
E031
E032
E033
E039
E040
E041
E042
E050
E053
E056
E059
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

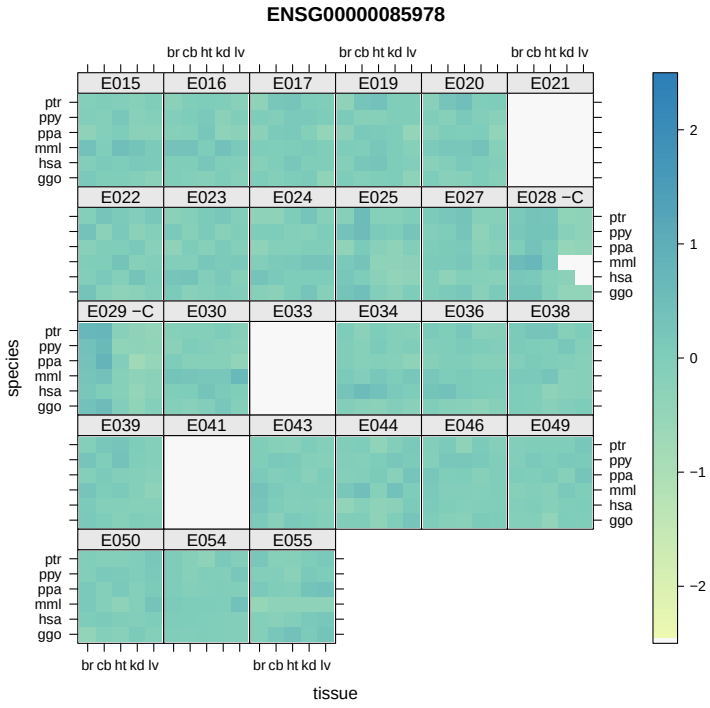

ENSG00000084234
E022
E024
E028
E036
E043
E050
E053
E054
E055
E056
E058
E059
E060 −C
E062
E063
E064
E065
E066
E067
E068
E069
E071
E073
E074
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

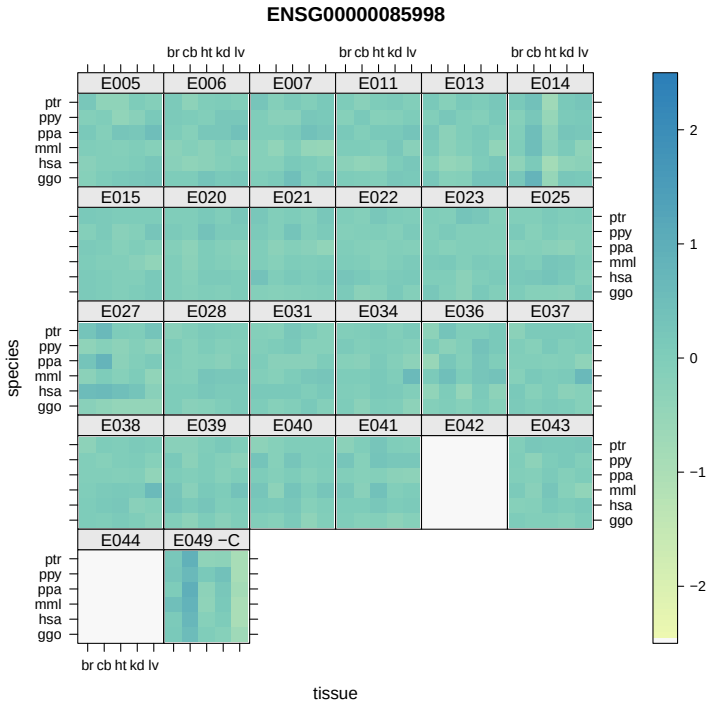

ENSG00000084693
E004
E007
E009
E010
E011
E014
E015
E016
E018
E019 −C
E020
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E033
E034 −C
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

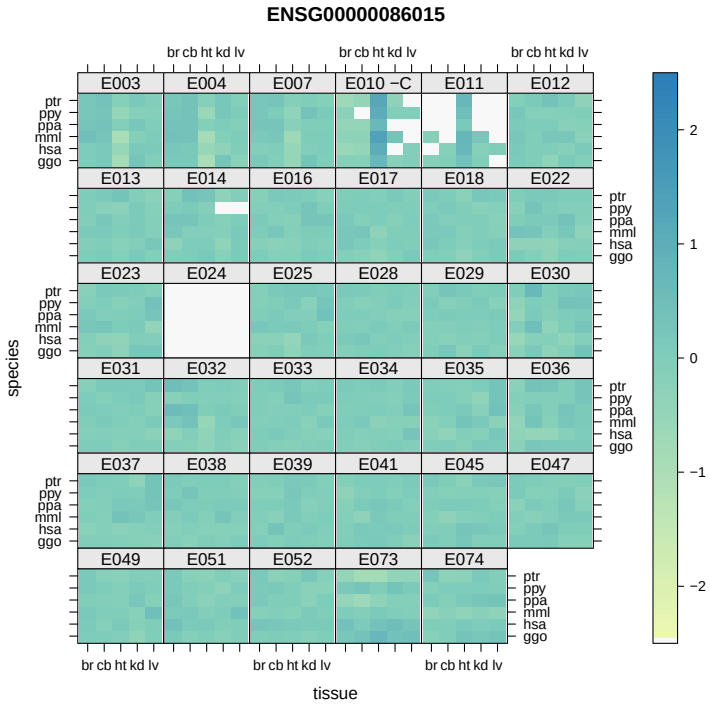

ENSG00000084764
br cb ht kd lv
E006
E010
E013
E014 −C
E015 −C
E017
E018
E019
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

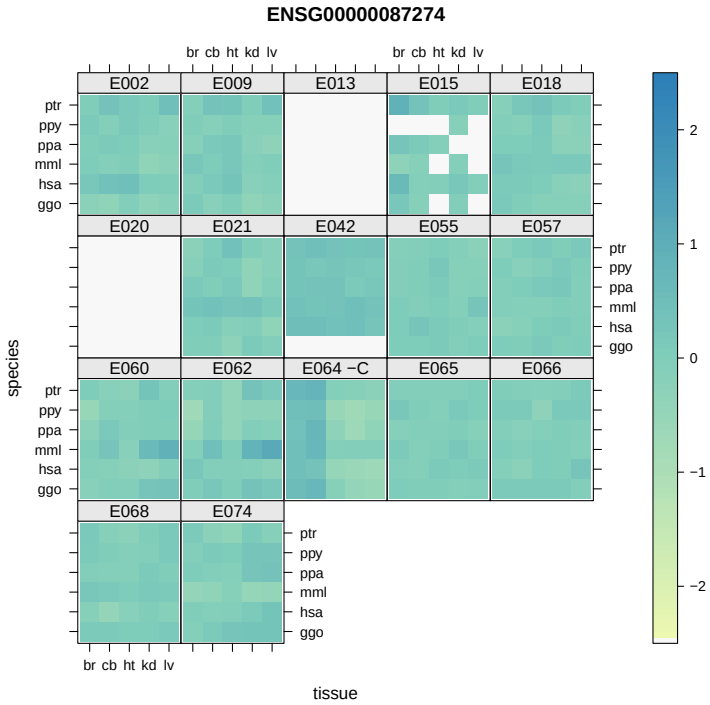

ENSG00000085832
br cb ht kd lv
E002
E003
E004
E007
E010
E011
E017
E018
E019
E021 −C
E024
E025
E026
E029
E031
E032
E033
E036
E038
E039 −C
E040
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

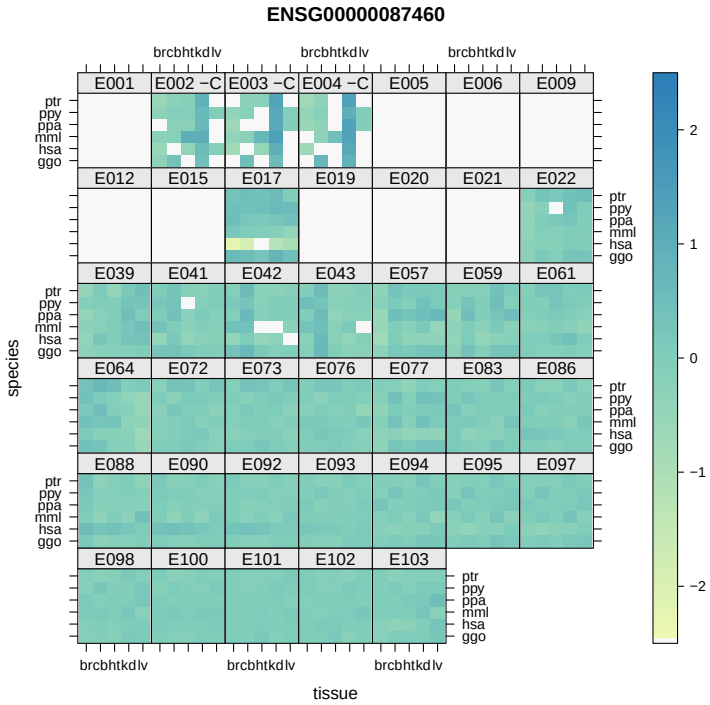

ENSG00000085871
br cb ht kd lv
E002 −C
E006
E007
E008
E009
E011
E012
E013
E018 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

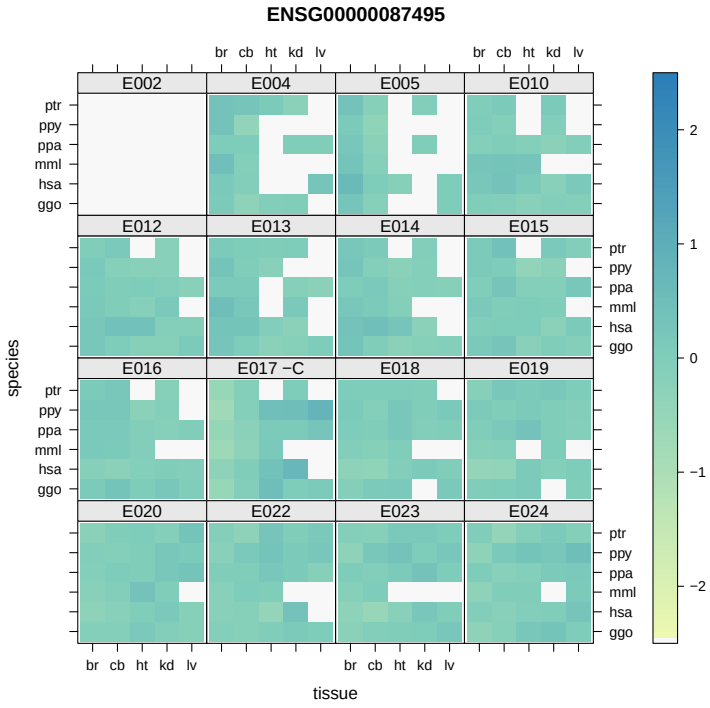

ENSG00000085978
br cb ht kd lv
E015
E016
E017
E019
E020
E021
E022
E023
E024
E025
E027
E028 −C
E029 −C
E030
E033
E034
E036
E038
E039
E041
E043
E044
E046
E049
E050
E054
E055
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

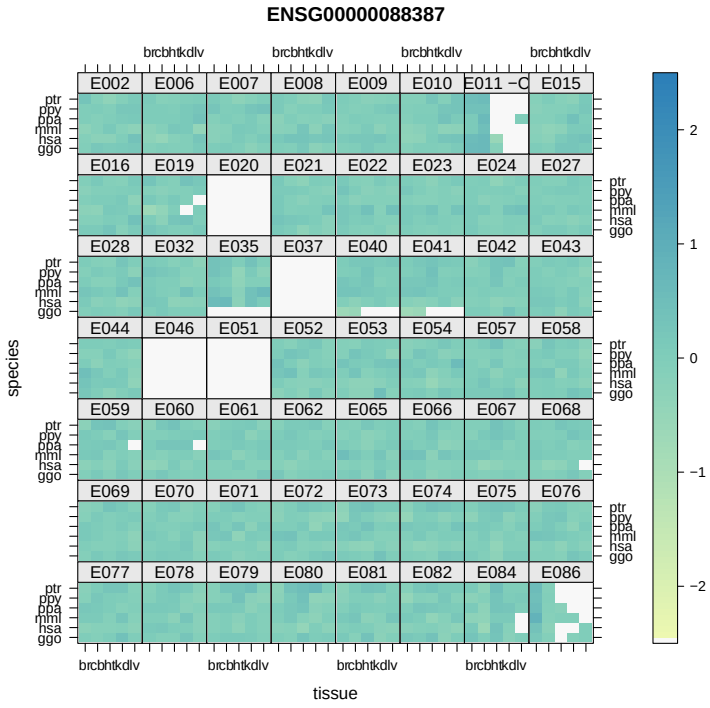

ENSG00000085998
br cb ht kd lv
E005
E006
E007
E011
E013
E014
E015
E020
E021
E022
E023
E025
E027
E028
E031
E034
E036
E037
E038
E039
E040
E041
E042
E043
E044
E049 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

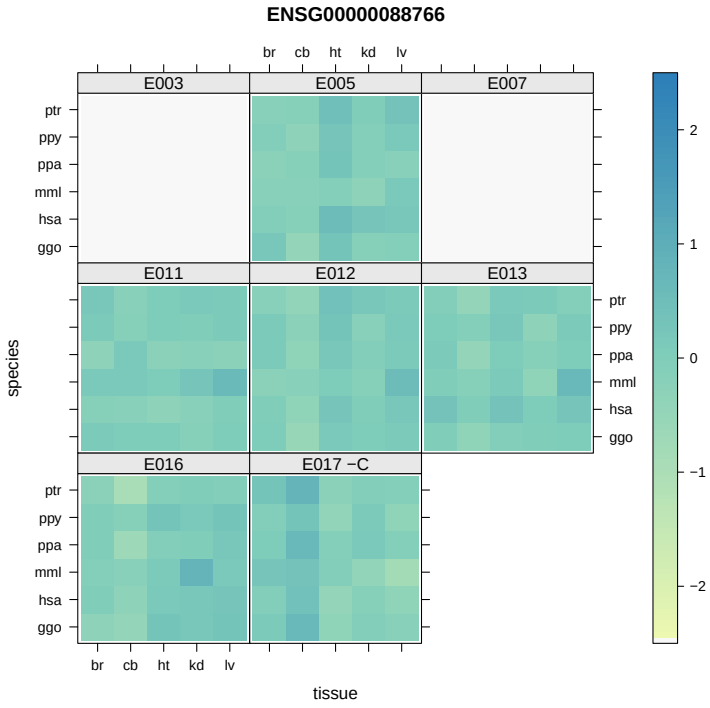

ENSG00000086015
E003
E004
E007
E010 −C
E011
E012
E013
E014
E016
E017
E018
E022
E023
E024
E025
E028
E029
E030
E031
E032
E033
E034
E035
E036
E037
E038
E039
E041
E045
E047
E049
E051
E052
E073
E074
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

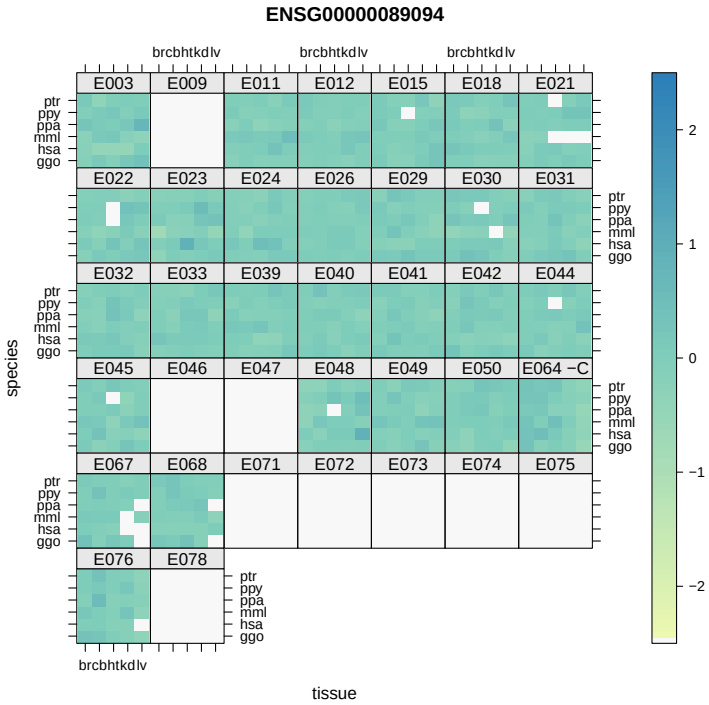

ENSG00000087274
E002
E009
E013
E015
E018
E020
E021
E042
E055
E057
E060
E062
E064 −C
E065
E066
E068
E074
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

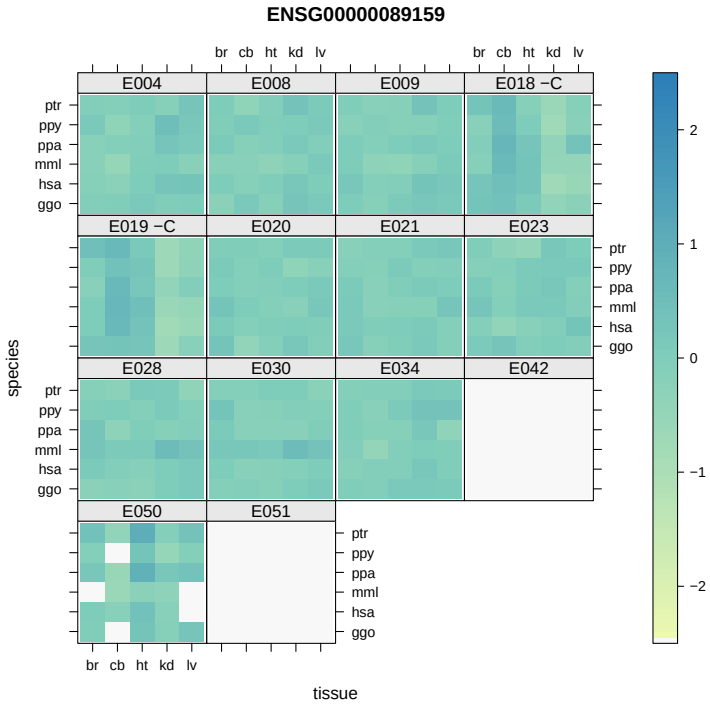

ENSG00000087460
brcbhtkdlv
E001
E002 −C
E003 −C
E004 −C
E005
E006
E009
E012
E015
E017
E019
E020
E021
E022
E039
E041
E042
E043
E057
E059
E061
E064
E072
E073
E076
E077
E083
E086
E088
E090
E092
E093
E094
E095
E097
E098
E100
E101
E102
E103
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

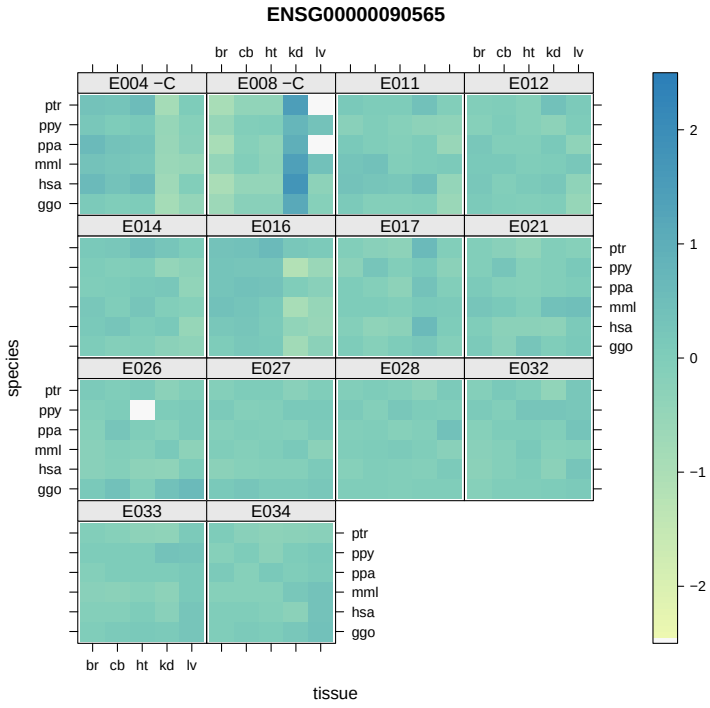

ENSG00000087495
E002
E004
E005
E010
E012
E013
E014
E015
E016
E017 −C
E018
E019
E020
E022
E023
E024
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

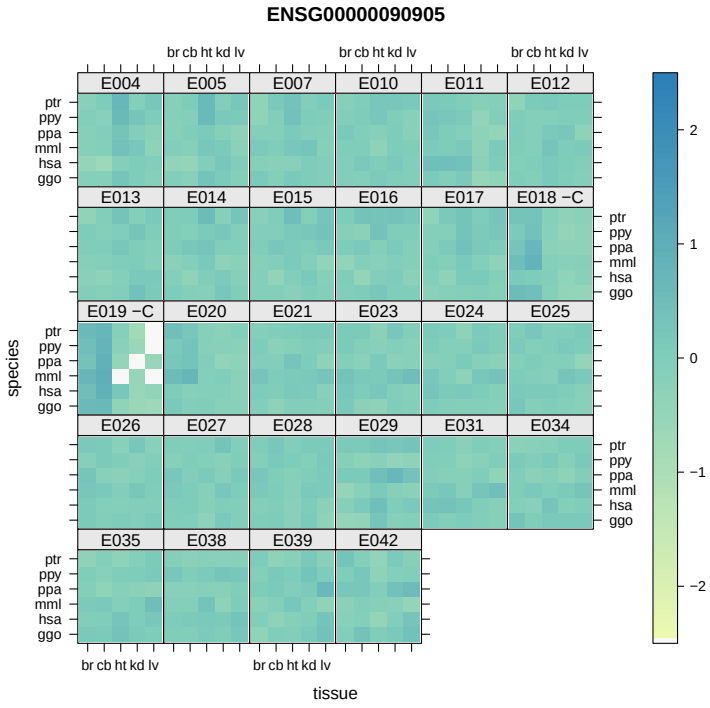

ENSG00000088387
brcbhtkdlv
E002
E006
E007
E008
E009
E010
E011
E015
E016
E019
E020
E021
E022
E023
E024
E027
E028
E032
E035
E037
E040
E041
E042
E043
E044
E046
E051
E052
E053
E054
E057
E058
E059
E060
E061
E062
E065
E066
E067
E068
E069
E070
E071
E072
E073
E074
E075
E076
E077
E078
E079
E080
E081
E082
E084
E086
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

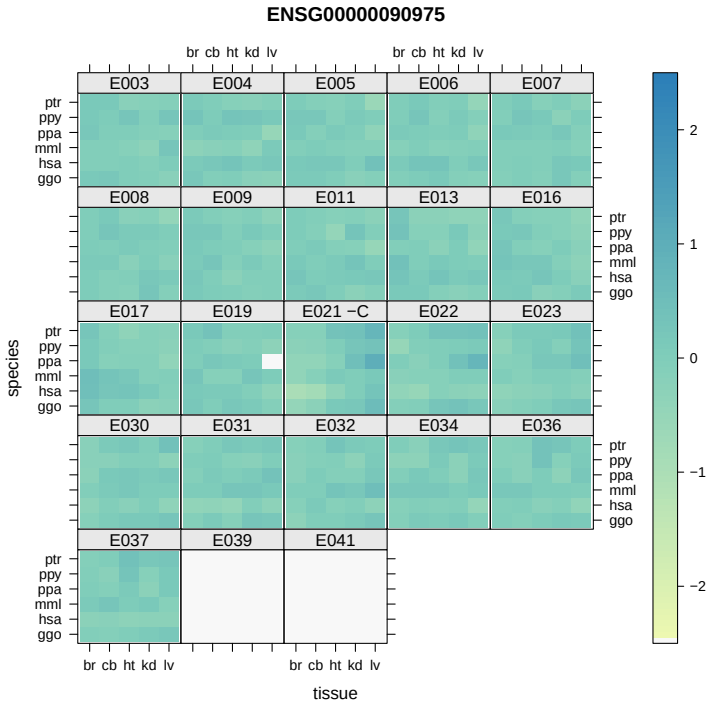

ENSG00000088766
br cb ht kd lv
E003
E005
E007
E011
E012
E013
E016
E017 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

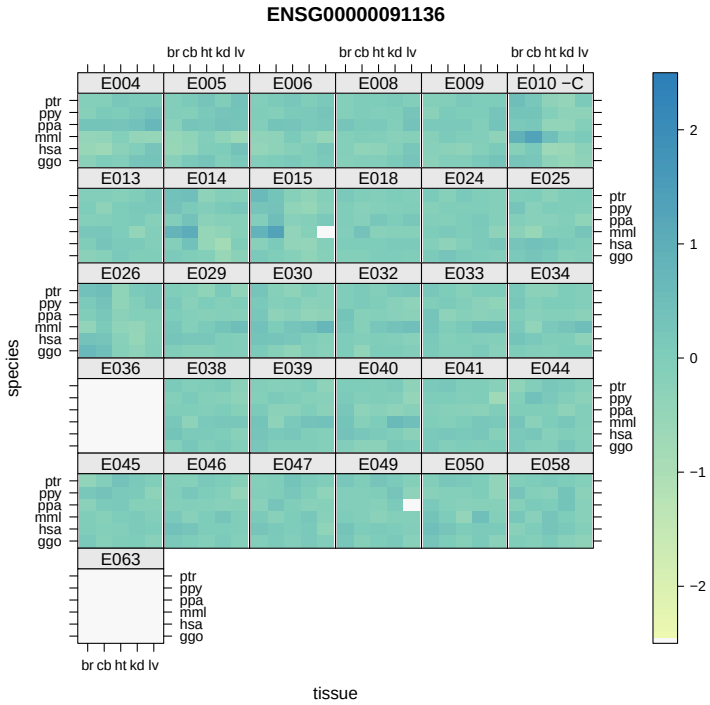

ENSG00000089094
brcbhtkdlv
E003
E009
E011
E012
E015
E018
E021
E022
E023
E024
E026
E029
E030
E031
E032
E033
E039
E040
E041
E042
E044
E045
E046
E047
E048
E049
E050
E064 −C
E067
E068
E071
E072
E073
E074
E075
E076
E078
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

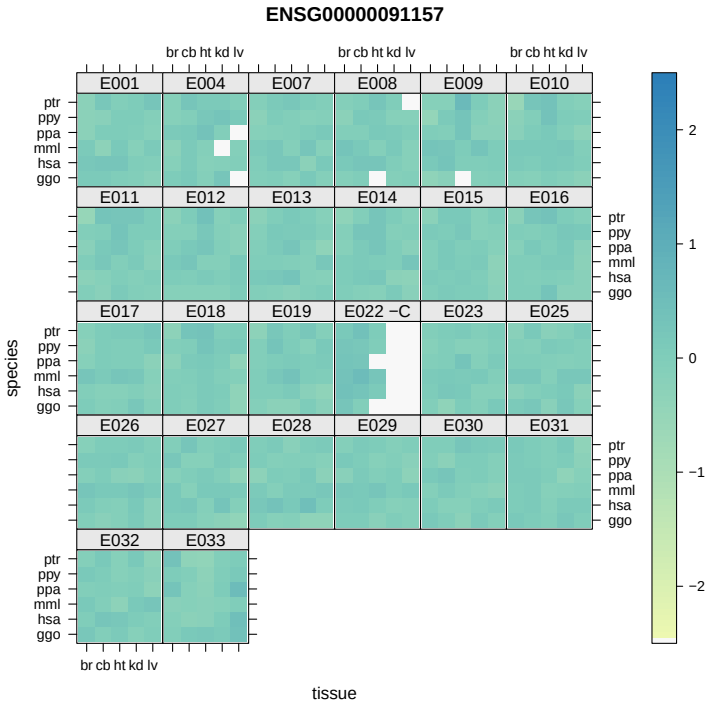

ENSG00000089159
E004
E008
E009
E018 −C
E019 −C
E020
E021
E023
E028
E030
E034
E042
E050
E051
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

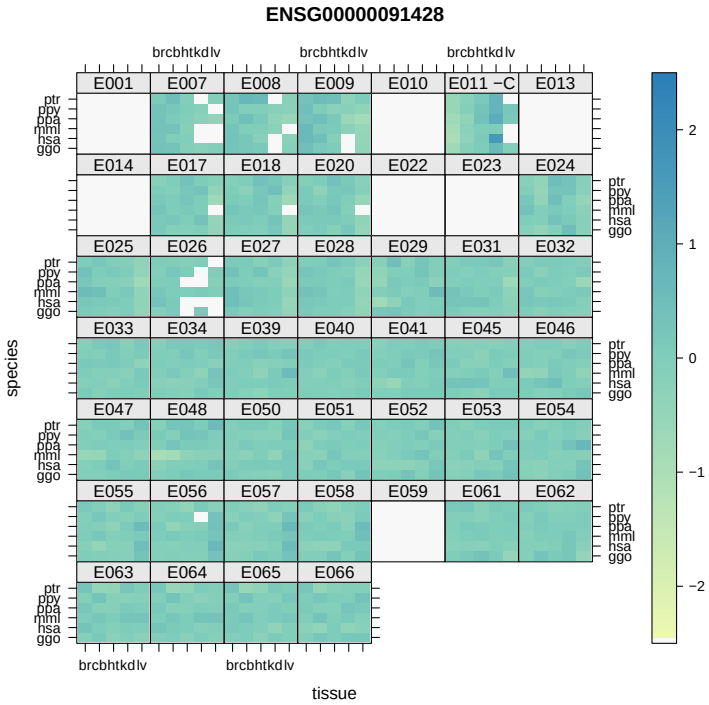

ENSG00000090565
E004 −C
E008 −C
E011
E012
E014
E016
E017
E021
E026
E027
E028
E032
E033
E034
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

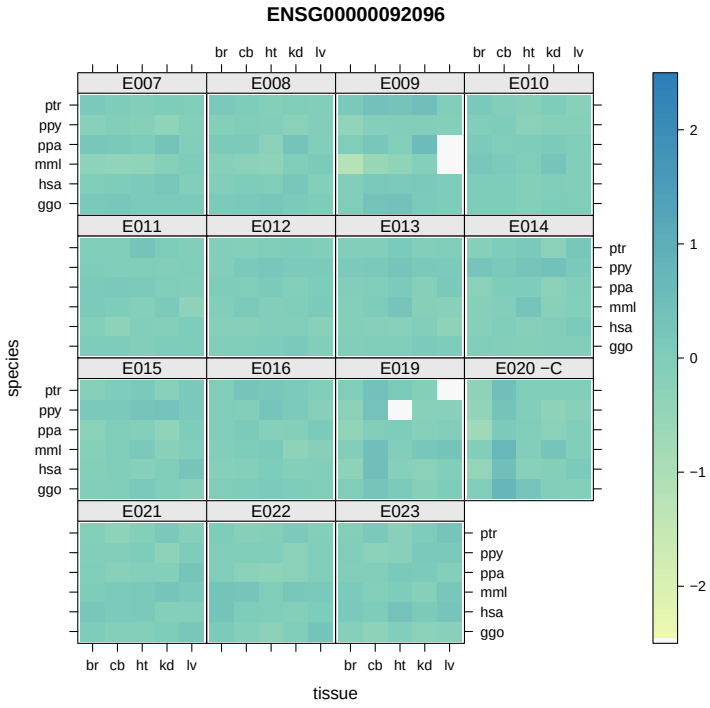

ENSG00000090905
br cb ht kd lv
E004
E005
E007
E010
E011
E012
E013
E014
E015
E016
E017
E018 −C
E019 −C
E020
E021
E023
E024
E025
E026
E027
E028
E029
E031
E034
E035
E038
E039
E042
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

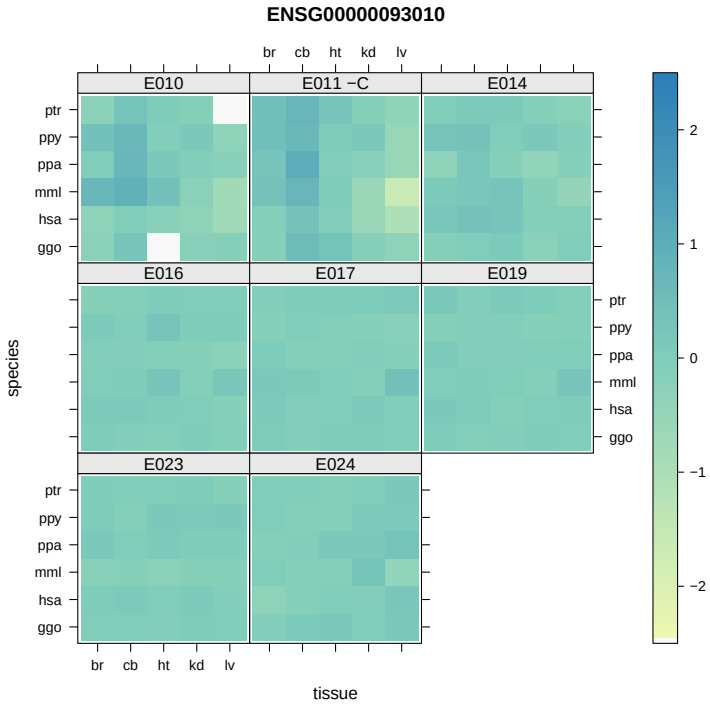

ENSG00000090975
br cb ht kd lv
E003
E004
E005
E006
E007
E008
E009
E011
E013
E016
E017
E019
E021 −C
E022
E023
E030
E031
E032
E034
E036
E037
E039
E041
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

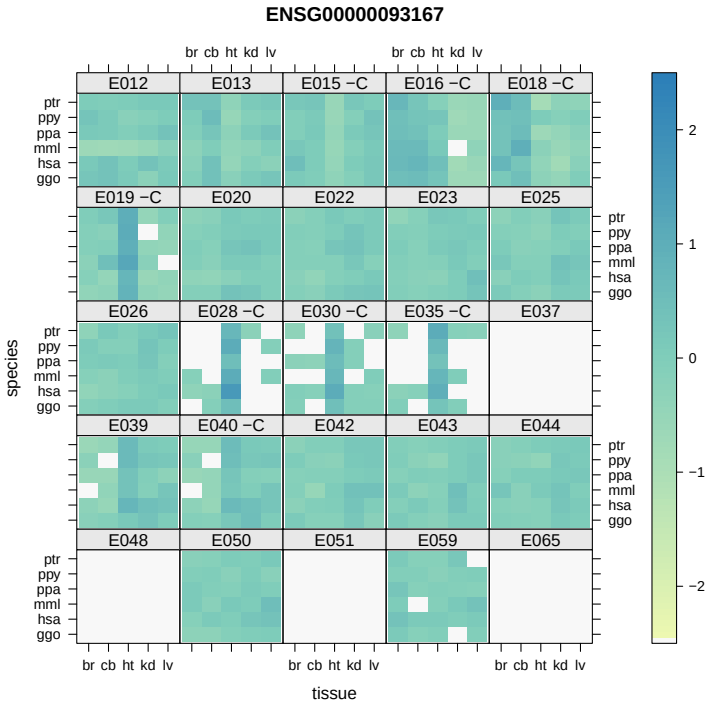

ENSG00000091136
br cb ht kd lv
E004
E005
E006
E008
E009
E010 −C
E013
E014
E015
E018
E024
E025
E026
E029
E030
E032
E033
E034
E036
E038
E039
E040
E041
E044
E045
E046
E047
E049
E050
E058
E063
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

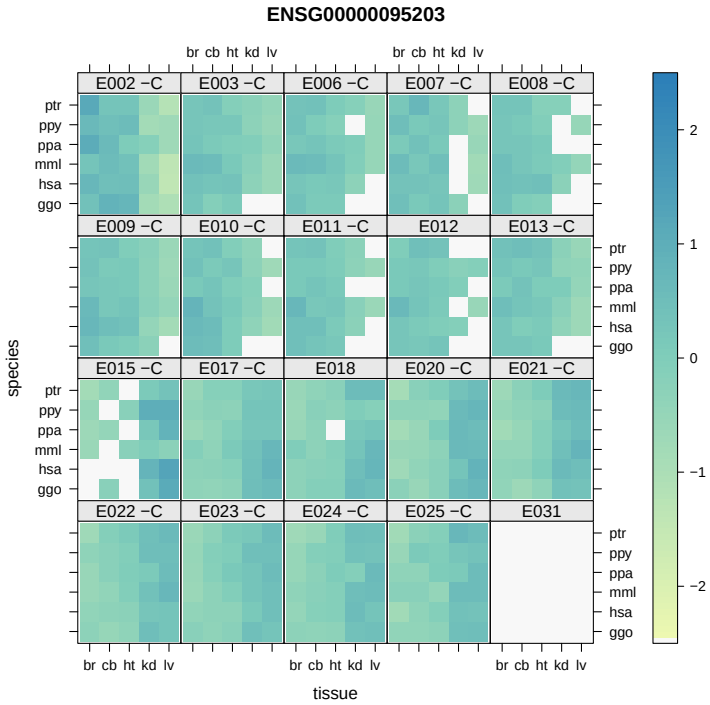

ENSG00000091157
br cb ht kd lv
E001
E004
E007
E008
E009
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E022 −C
E023
E025
E026
E027
E028
E029
E030
E031
E032
E033
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

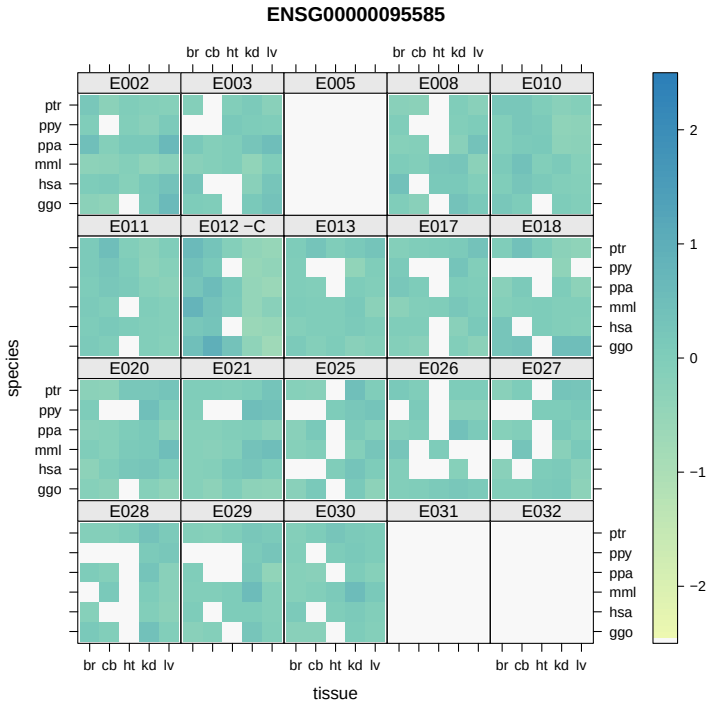

ENSG00000091428
brcbhtkdlv
E001
E007
E008
E009
E010
E011 −C
E013
E014
E017
E018
E020
E022
E023
E024
E025
E026
E027
E028
E029
E031
E032
E033
E034
E039
E040
E041
E045
E046
E047
E048
E050
E051
E052
E053
E054
E055
E056
E057
E058
E059
E061
E062
E063
E064
E065
E066
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

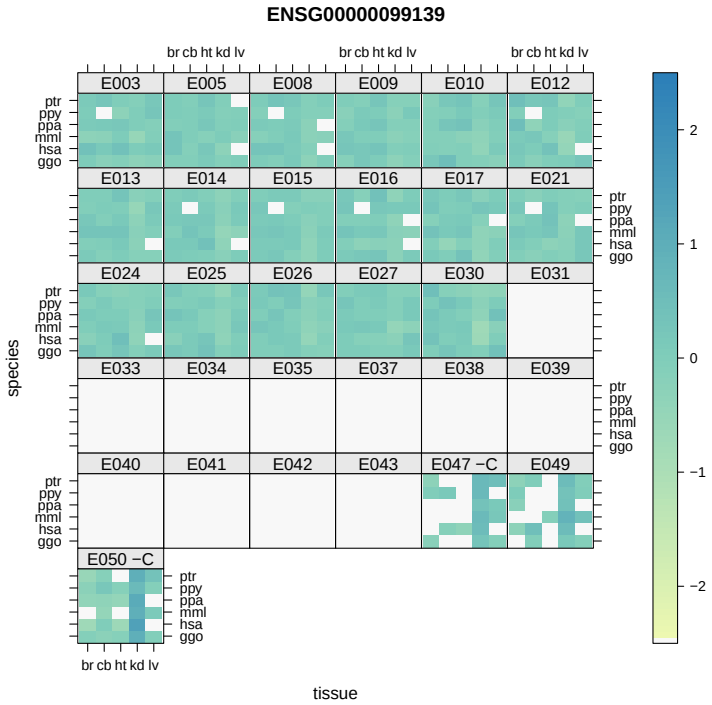

ENSG00000092096
E007
E008
E009
E010
E011
E012
E013
E014
E015
E016
E019
E020 −C
E021
E022
E023
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

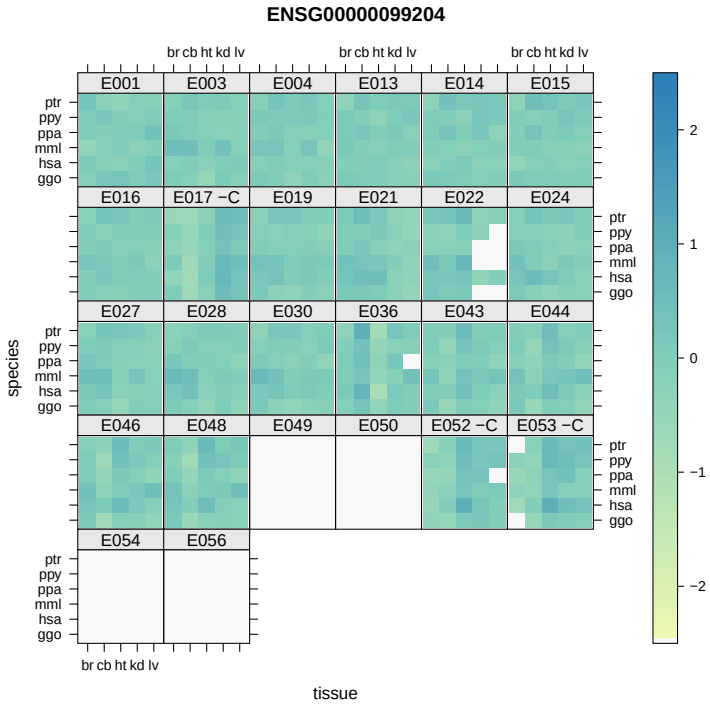

ENSG00000093010
br cb ht kd lv
E010
E011 −C
E014
E016
E017
E019
E023
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

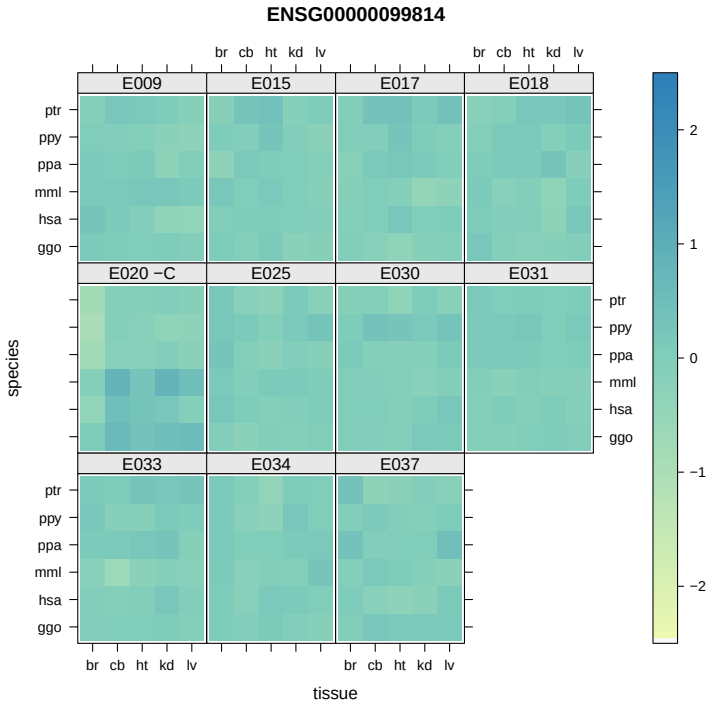

ENSG00000093167
E012
E013
E015 −C
E016 −C
E018 −C
E019 −C
E020
E022
E023
E025
E026
E028 −C
E030 −C
E035 −C
E037
E039
E040 −C
E042
E043
E044
E048
E050
E051
E059
E065
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

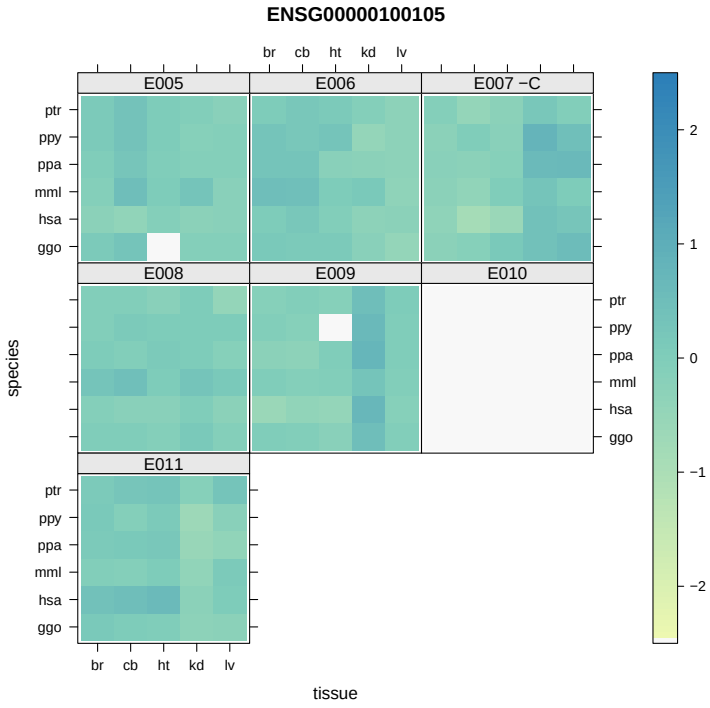

ENSG00000095203
E002 −C
E003 −C
E006 −C
E007 −C
E008 −C
E009 −C
E010 −C
E011 −C
E012
E013 −C
E015 −C
E017 −C
E018
E020 −C
E021 −C
E022 −C
E023 −C
E024 −C
E025 −C
E031
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

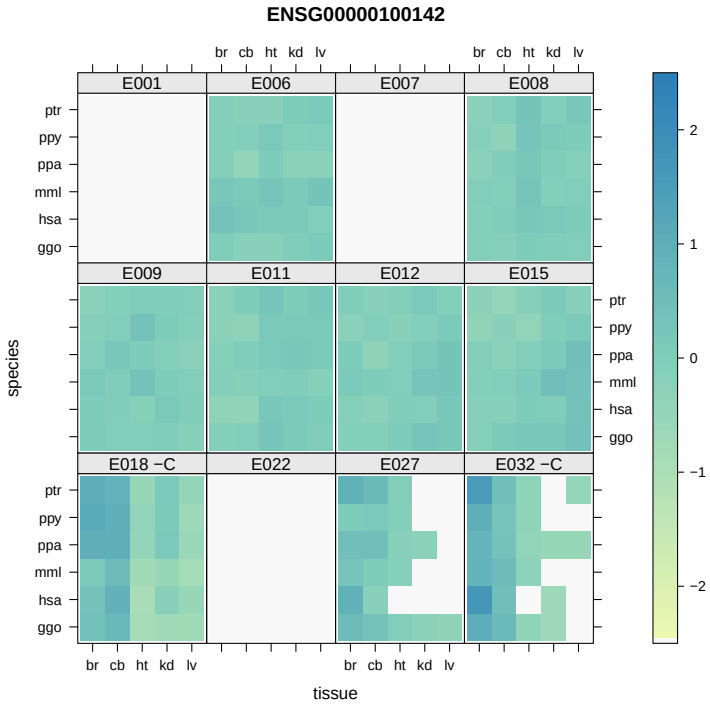

ENSG00000095585
E002
E003
E005
E008
E010
E011
E012 −C
E013
E017
E018
E020
E021
E025
E026
E027
E028
E029
E030
E031
E032
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

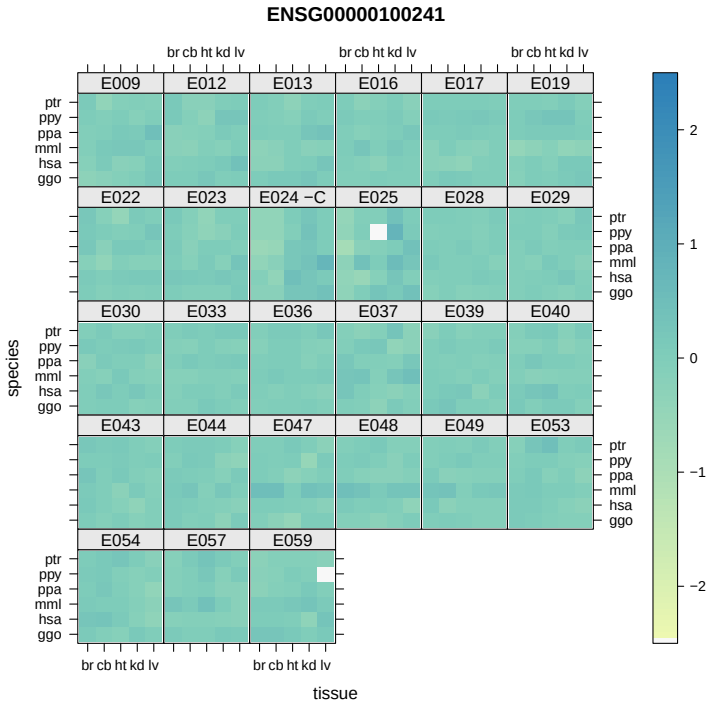

ENSG00000099139
br cb ht kd lv
E003
E005
E008
E009
E010
E012
E013
E014
E015
E016
E017
E021
E024
E025
E026
E027
E030
E031
E033
E034
E035
E037
E038
E039
E040
E041
E042
E043
E047 −C
E049
E050 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

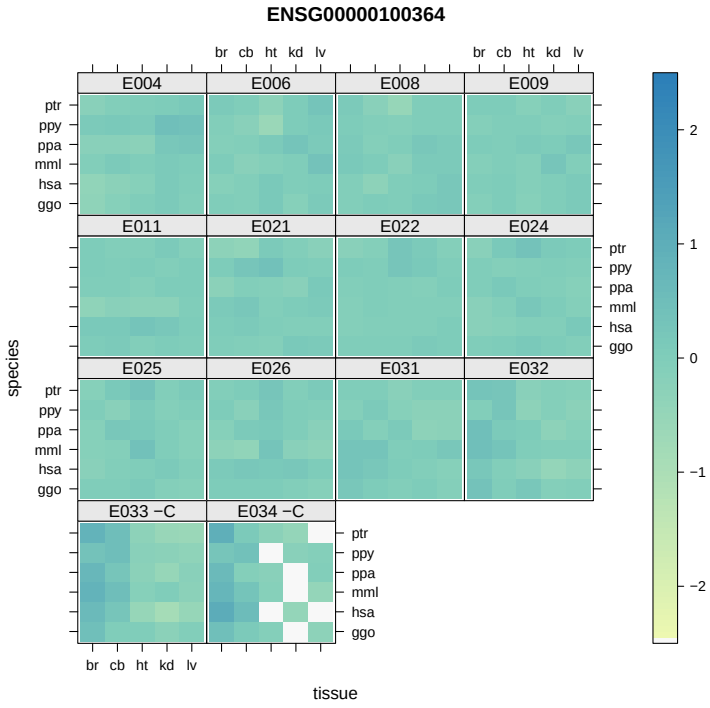

ENSG00000099204
br cb ht kd lv
E001
E003
E004
E013
E014
E015
E016
E017 −C
E019
E021
E022
E024
E027
E028
E030
E036
E043
E044
E046
E048
E049
E050
E052 −C
E053 −C
E054
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

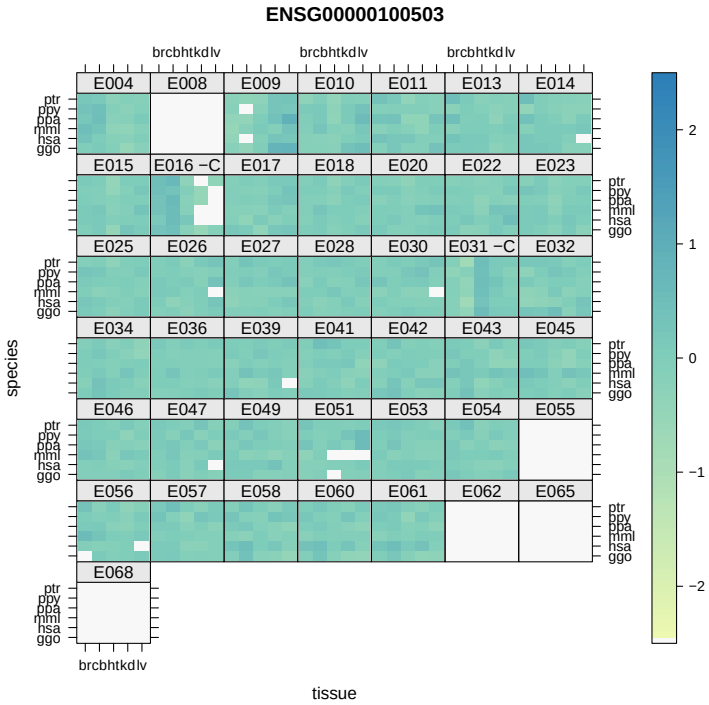

ENSG00000099814
E009
E015
E017
E018
E020 −C
E025
E030
E031
E033
E034
E037
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

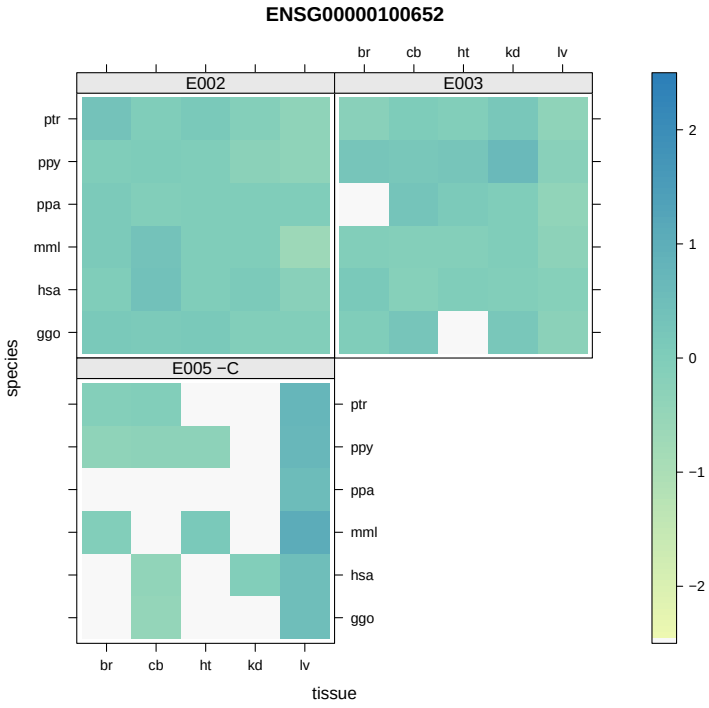

ENSG00000100105
br cb ht kd lv
E005
E006
E007 −C
E008
E009
E010
E011
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

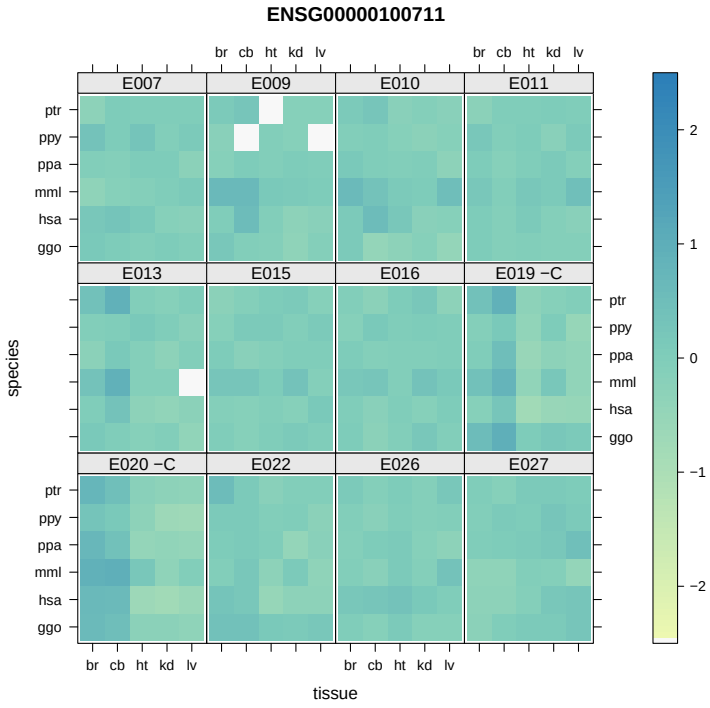

ENSG00000100142
E001
E006
E007
E008
E009
E011
E012
E015
E018 −C
E022
E027
E032 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

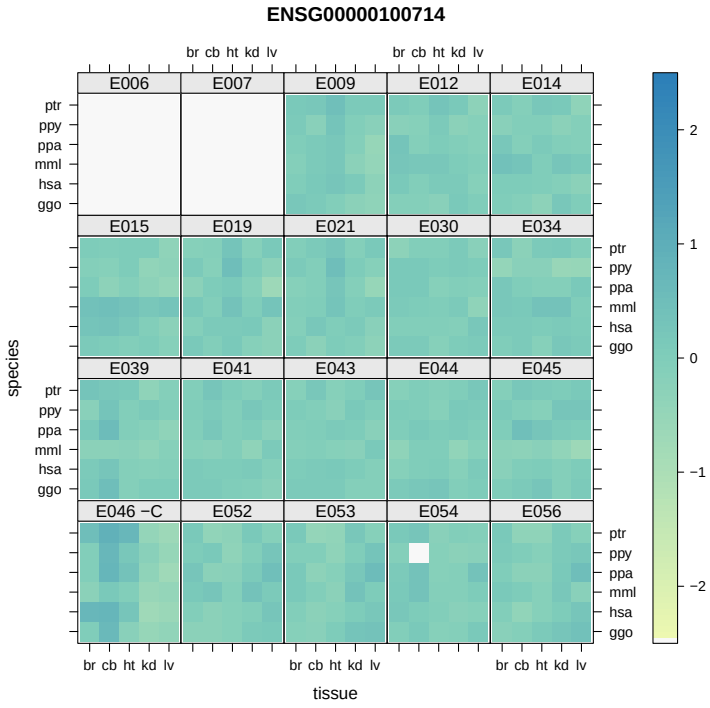

ENSG00000100241
br cb ht kd lv
E009
E012
E013
E016
E017
E019
E022
E023
E024 −C
E025
E028
E029
E030
E033
E036
E037
E039
E040
E043
E044
E047
E048
E049
E053
E054
E057
E059
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

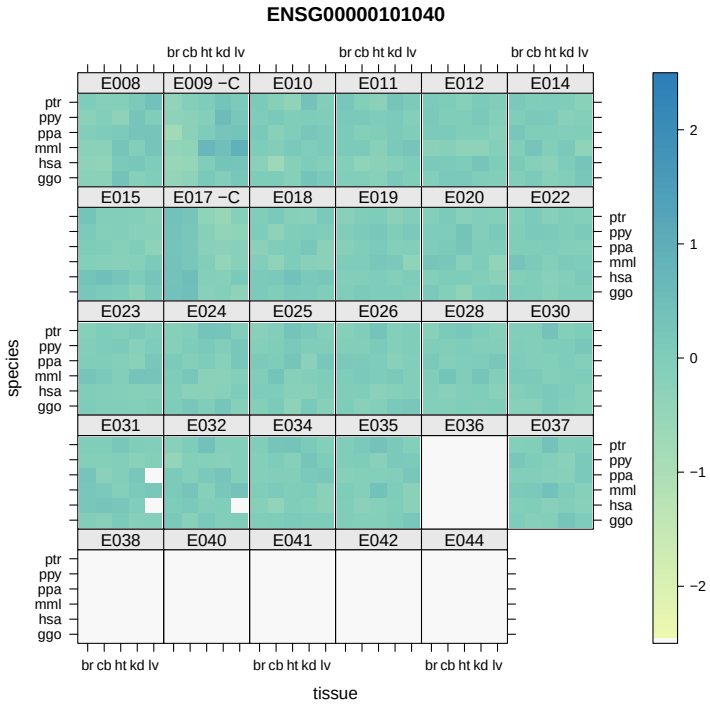

ENSG00000100364
E004
E006
E008
E009
E011
E021
E022
E024
E025
E026
E031
E032
E033 −C
E034 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

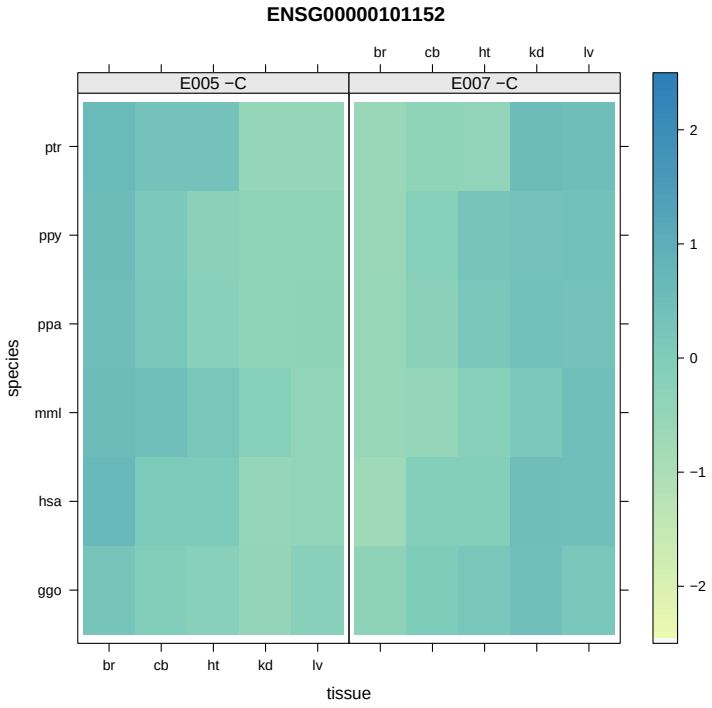

ENSG00000100503
brcbhtkdlv
E004
E008
E009
E010
E011
E013
E014
E015
E016 −C
E017
E018
E020
E022
E023
E025
E026
E027
E028
E030
E031 −C
E032
E034
E036
E039
E041
E042
E043
E045
E046
E047
E049
E051
E053
E054
E055
E056
E057
E058
E060
E061
E062
E065
E068
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

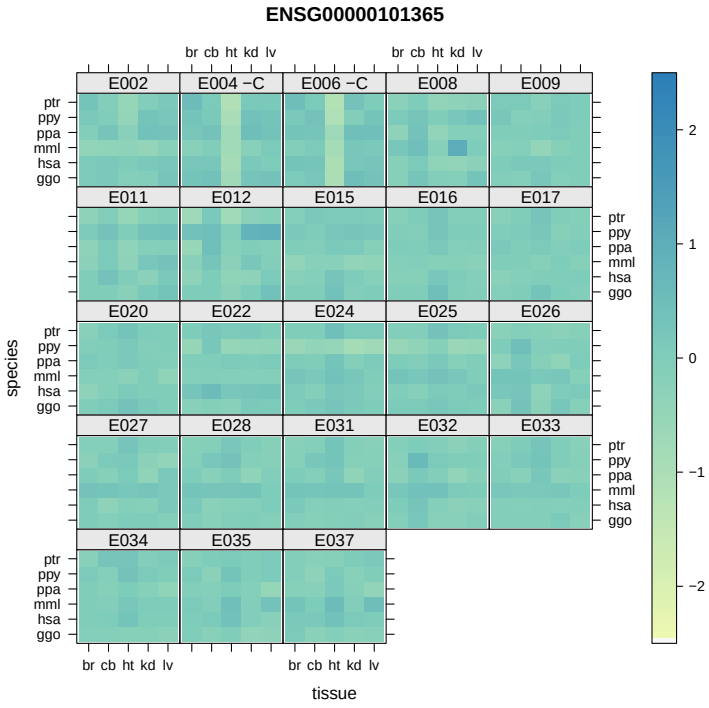

ENSG00000100652
br
cb
ht
kd
lv
E002
E003
E005 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

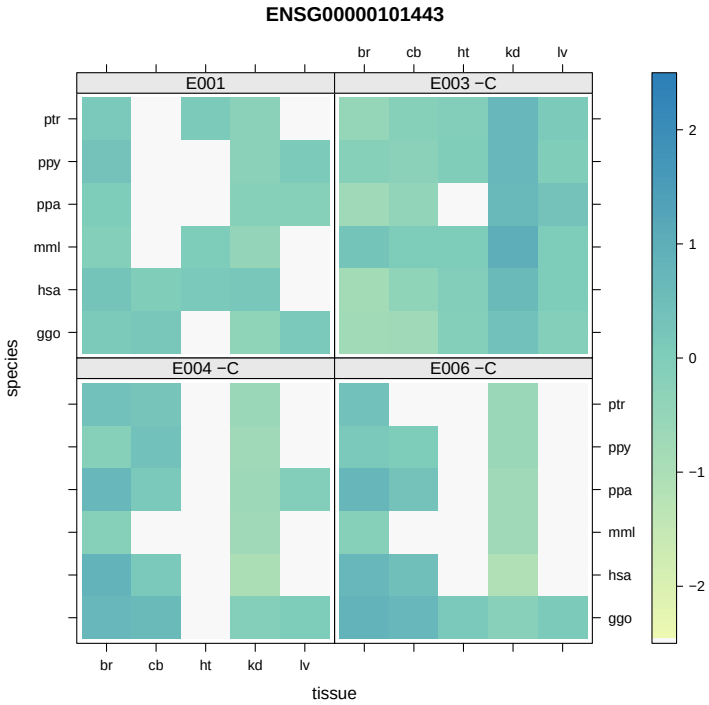

ENSG00000100711
E007
E009
E010
E011
E013
E015
E016
E019 −C
E020 −C
E022
E026
E027
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

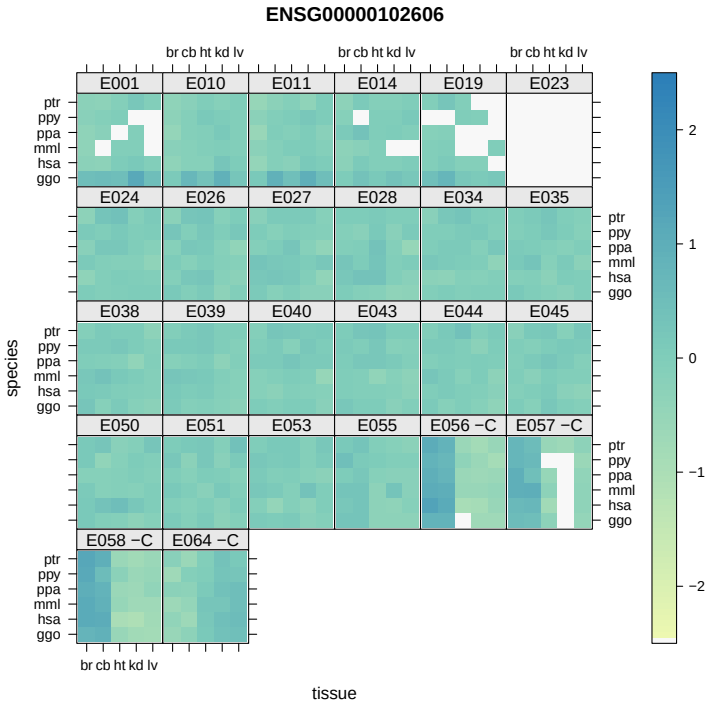

ENSG00000100714
E006
E007
E009
E012
E014
E015
E019
E021
E030
E034
E039
E041
E043
E044
E045
E046 −C
E052
E053
E054
E056
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

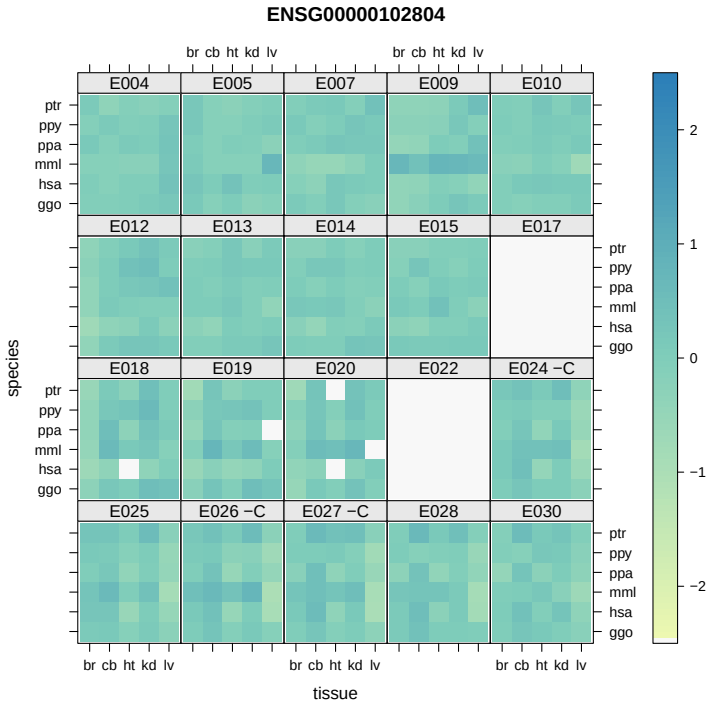

ENSG00000101040
br cb ht kd lv
E008
E009 −C
E010
E011
E012
E014
E015
E017 −C
E018
E019
E020
E022
E023
E024
E025
E026
E028
E030
E031
E032
E034
E035
E036
E037
E038
E040
E041
E042
E044
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

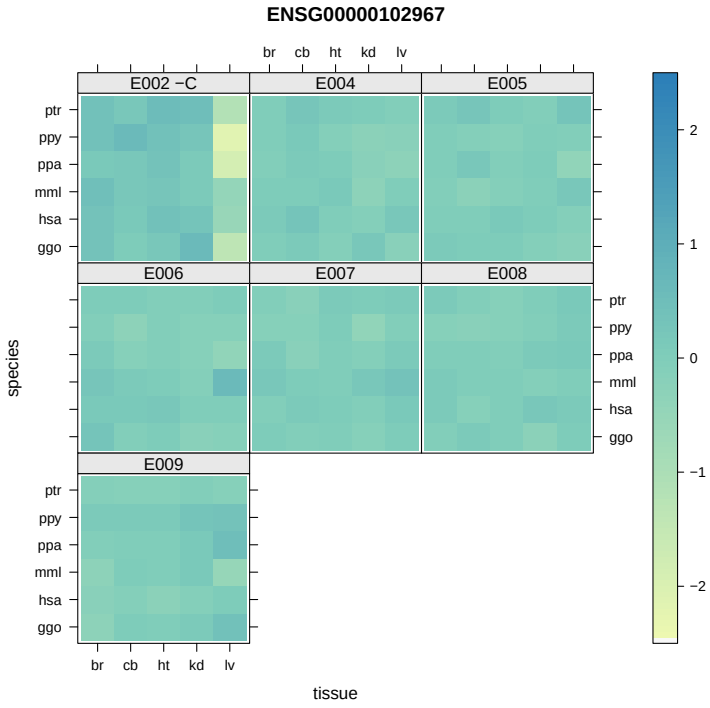

ENSG00000101152
E005 −C
E007 −C
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

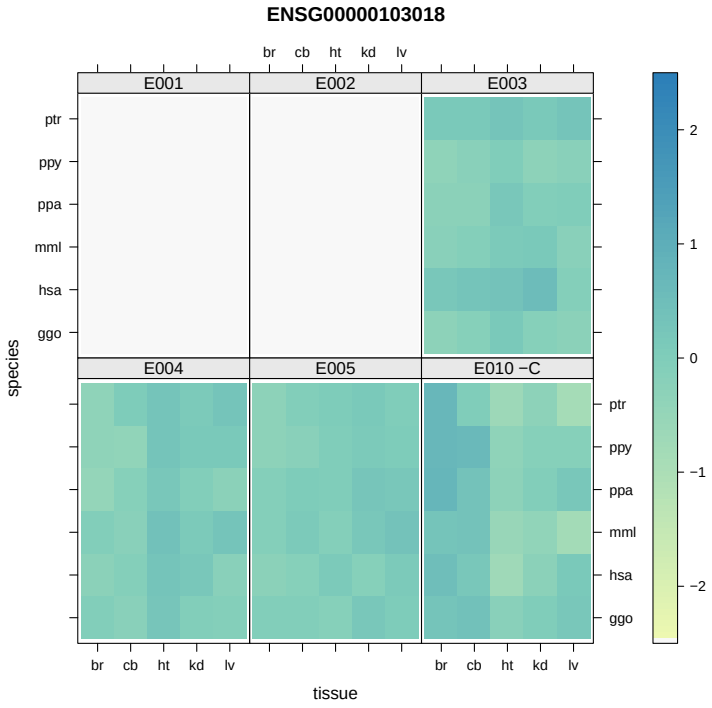

ENSG00000101365
E002
E004 −C
E006 −C
E008
E009
E011
E012
E015
E016
E017
E020
E022
E024
E025
E026
E027
E028
E031
E032
E033
E034
E035
E037
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

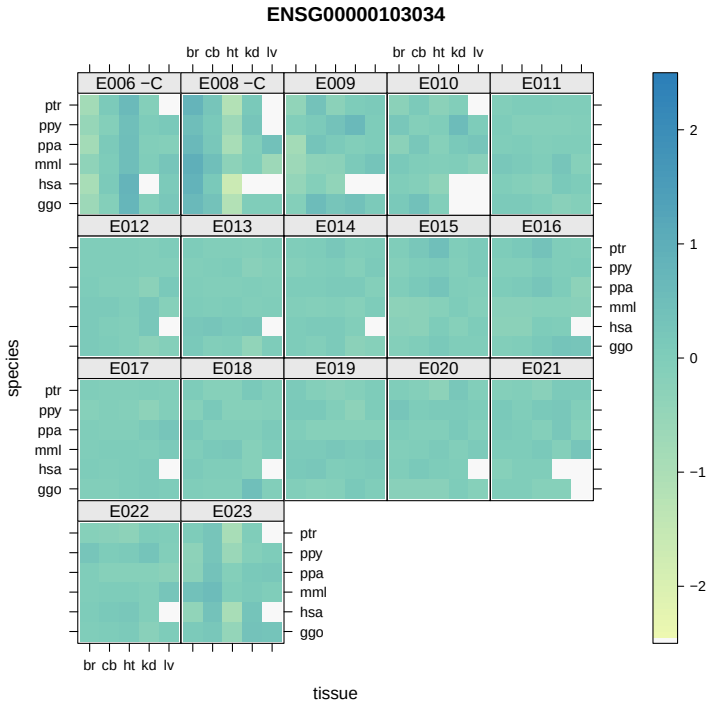

ENSG00000101443
E001
E003 −C
E004 −C
E006 −C
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

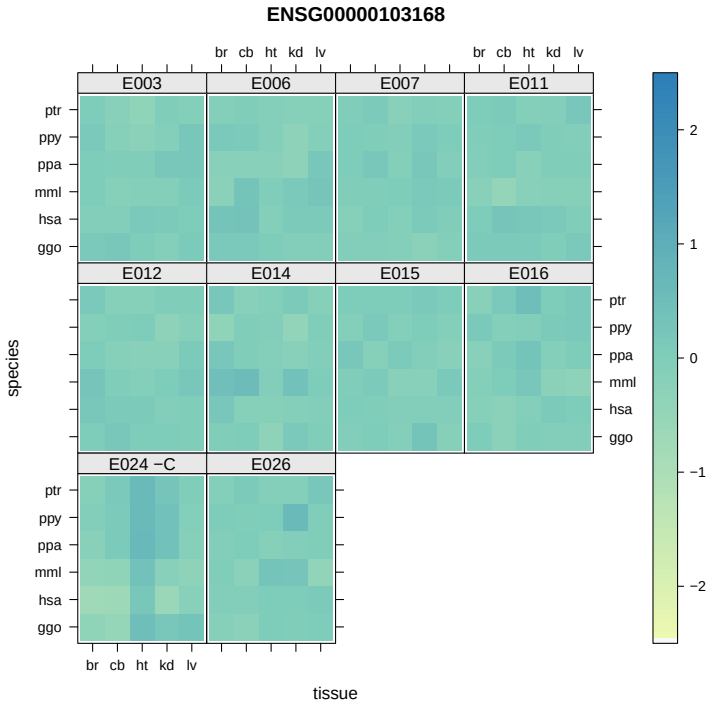

ENSG00000102606
br cb ht kd lv
E001
E010
E011
E014
E019
E023
E024
E026
E027
E028
E034
E035
E038
E039
E040
E043
E044
E045
E050
E051
E053
E055
E056 −C
E057 −C
E058 −C
E064 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

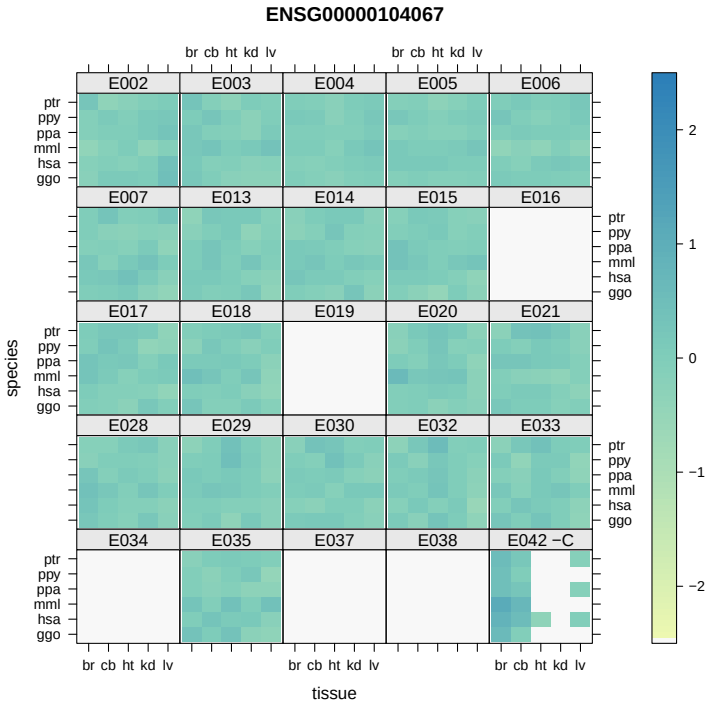

ENSG00000102804
E004
E005
E007
E009
E010
E012
E013
E014
E015
E017
E018
E019
E020
E022
E024 −C
E025
E026 −C
E027 −C
E028
E030
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

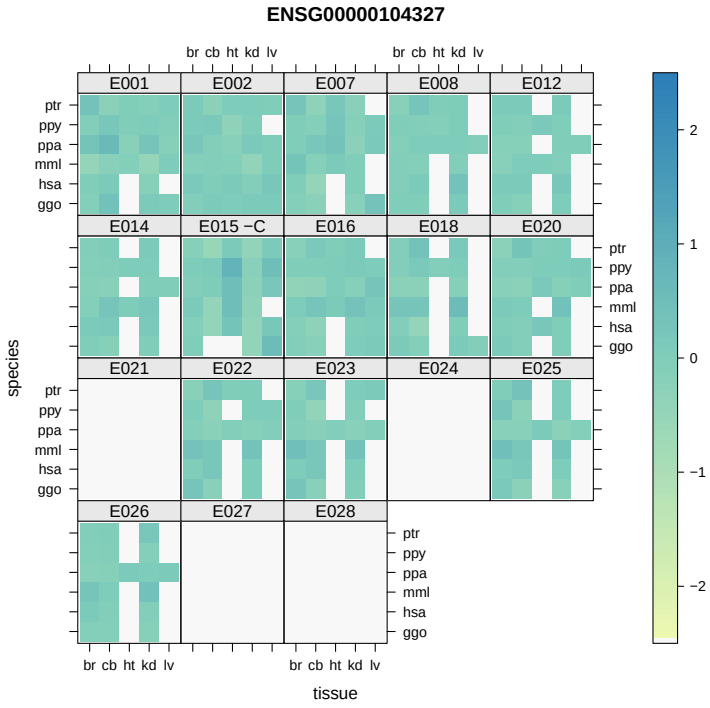

ENSG00000102967
br cb ht kd lv
E002 −C
E004
E005
E006
E007
E008
E009
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

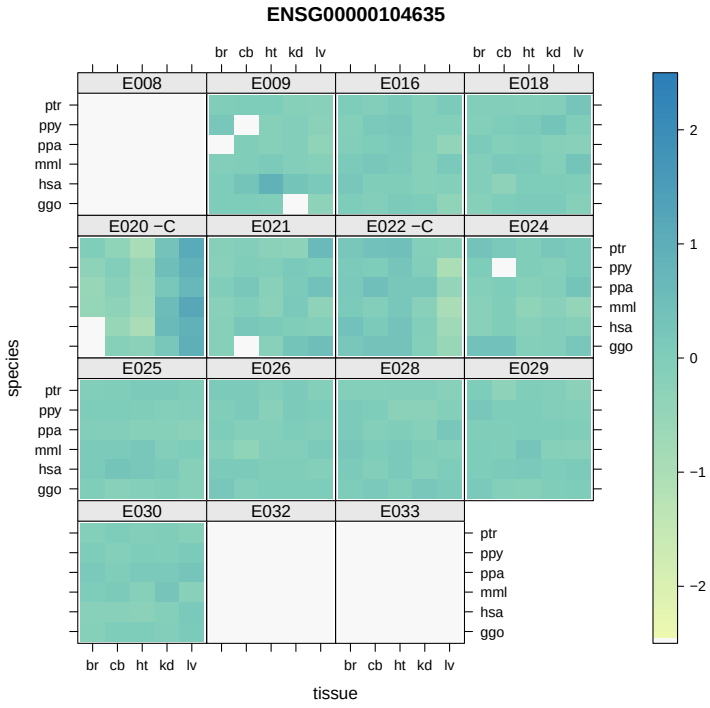

ENSG00000103018
br cb ht kd lv
E001
E002
E003
E004
E005
E010 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

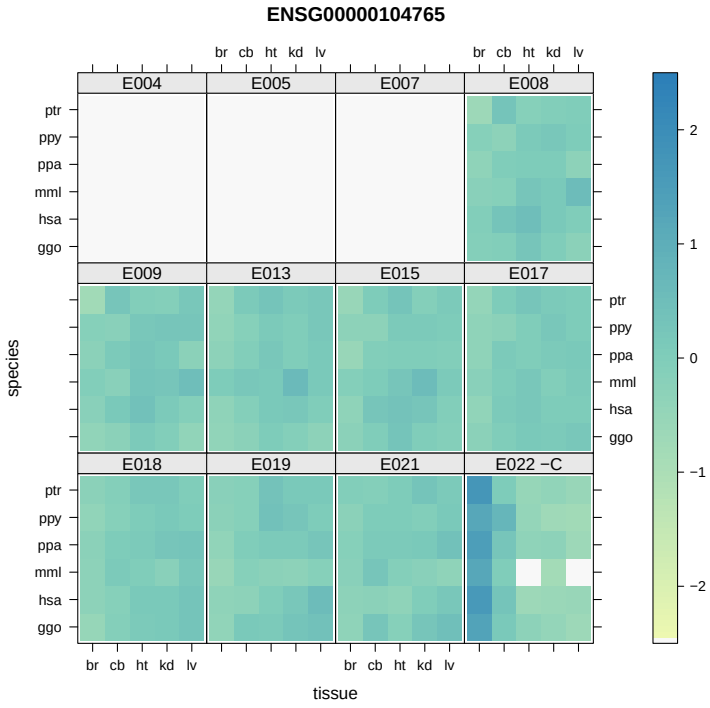

ENSG00000103034
E006 −C
E008 −C
E009
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E020
E021
E022
E023
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

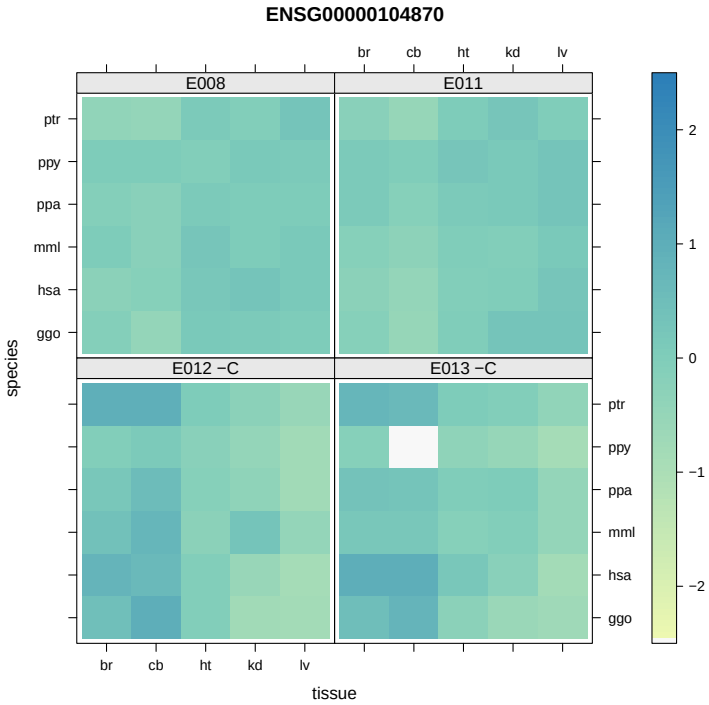

ENSG00000103168
br cb ht kd lv
E003
E006
E007
E011
E012
E014
E015
E016
E024 −C
E026
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

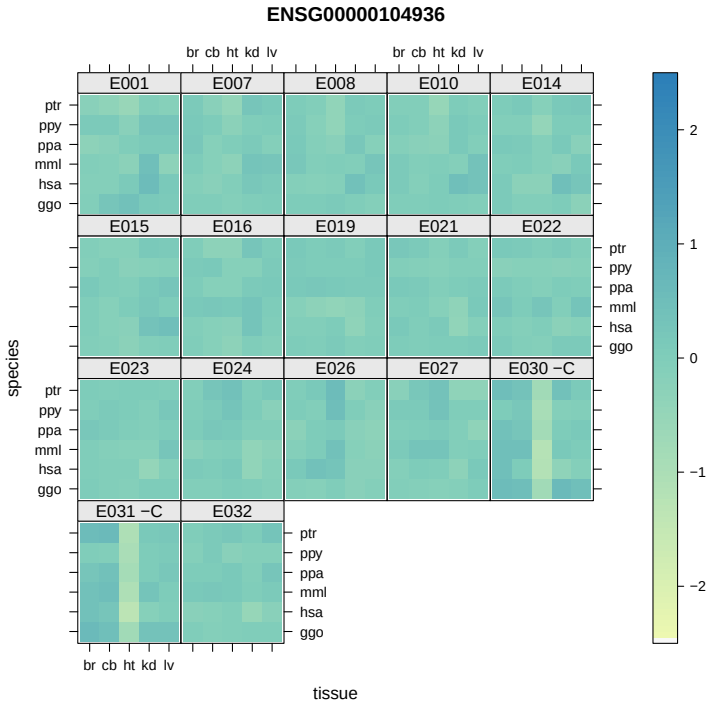

ENSG00000104067
br cb ht kd lv
E002
E003
E004
E005
E006
E007
E013
E014
E015
E016
E017
E018
E019
E020
E021
E028
E029
E030
E032
E033
E034
E035
E037
E038
E042 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

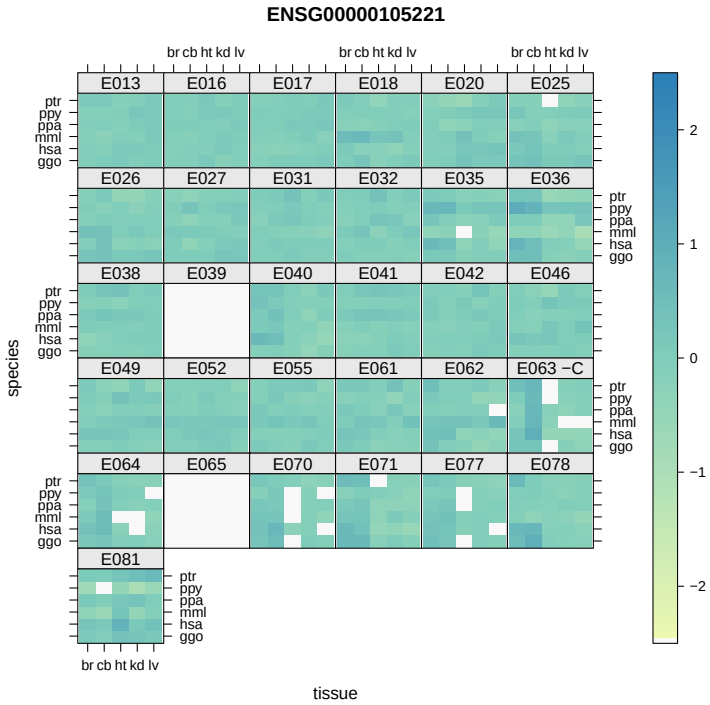

ENSG00000104327
E001
E002
E007
E008
E012
E014
E015 −C
E016
E018
E020
E021
E022
E023
E024
E025
E026
E027
E028
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

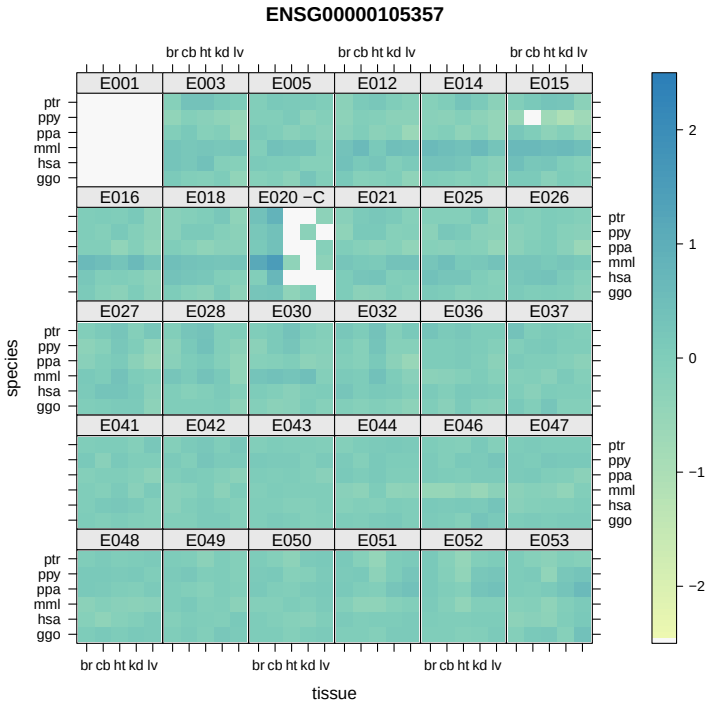

ENSG00000104635
E008
E009
E016
E018
E020 −C
E021
E022 −C
E024
E025
E026
E028
E029
E030
E032
E033
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

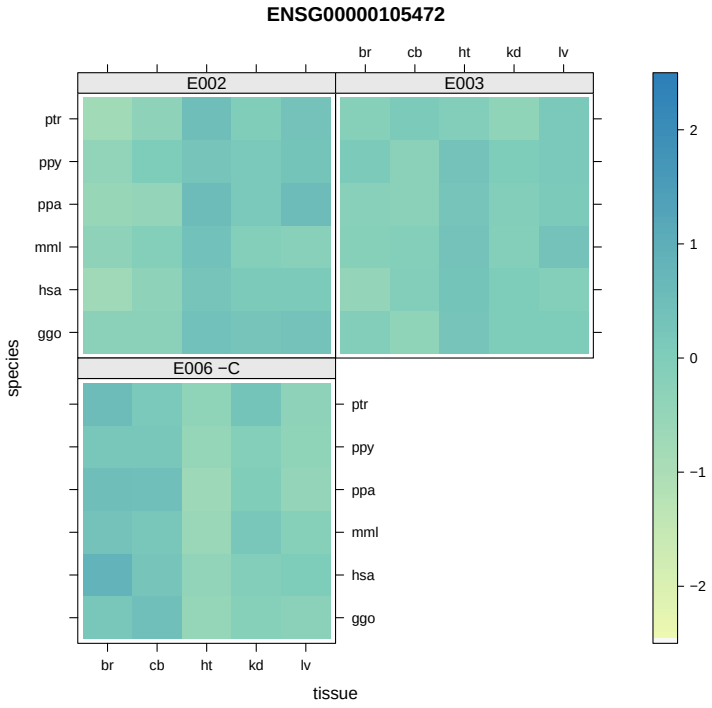

ENSG00000104765
E004
E005
E007
E008
E009
E013
E015
E017
E018
E019
E021
E022 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

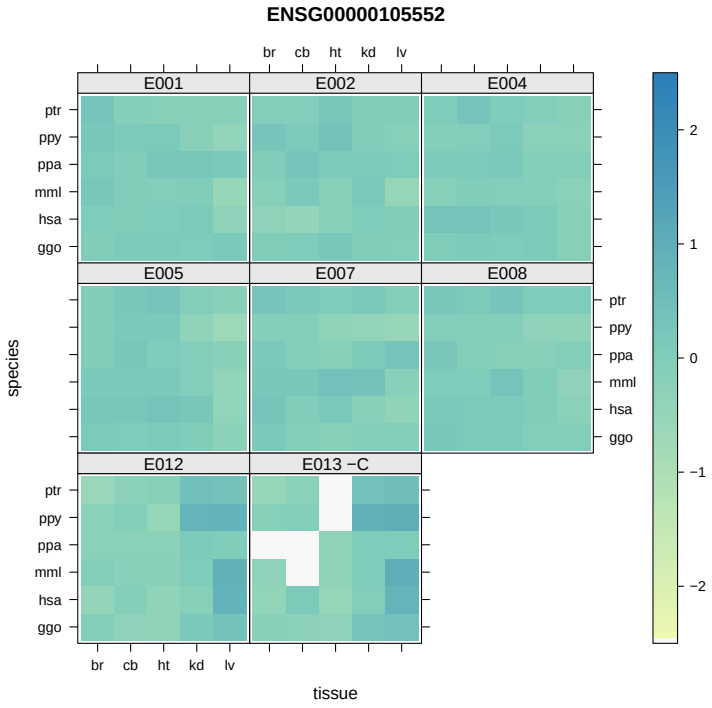

ENSG00000104870
br
cb
ht
kd
lv
E008
E011
E012 −C
E013 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

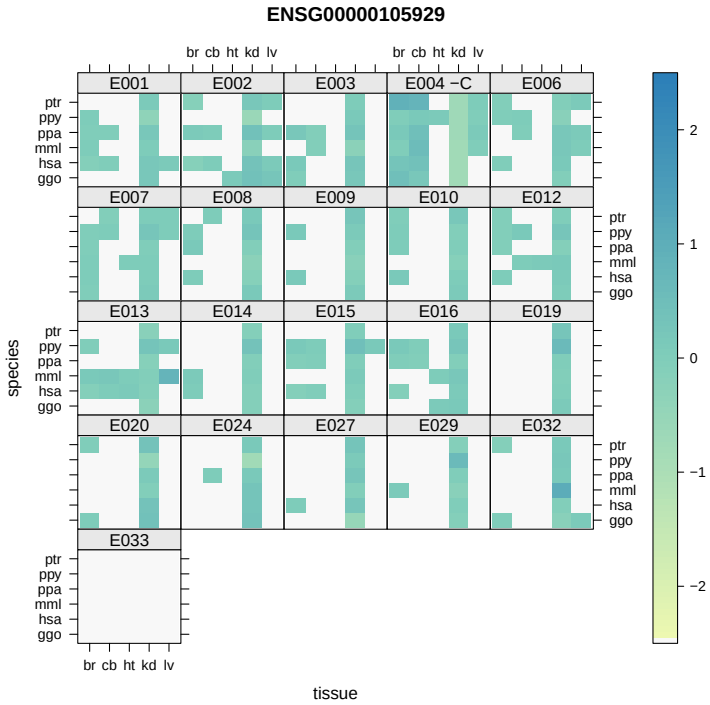

ENSG00000104936
br cb ht kd lv
E001
E007
E008
E010
E014
E015
E016
E019
E021
E022
E023
E024
E026
E027
E030 −C
E031 −C
E032
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

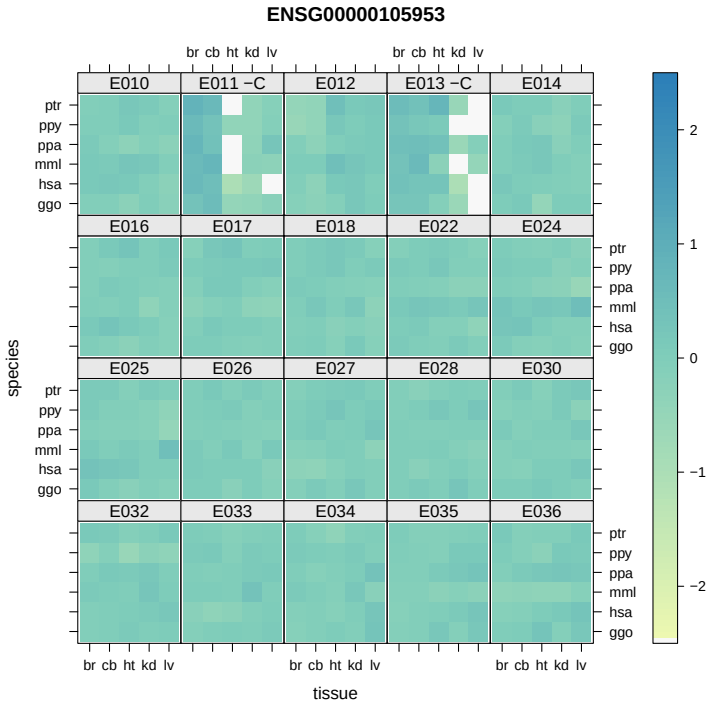

ENSG00000105221
br cb ht kd lv
E013
E016
E017
E018
E020
E025
E026
E027
E031
E032
E035
E036
E038
E039
E040
E041
E042
E046
E049
E052
E055
E061
E062
E063 −C
E064
E065
E070
E071
E077
E078
E081
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

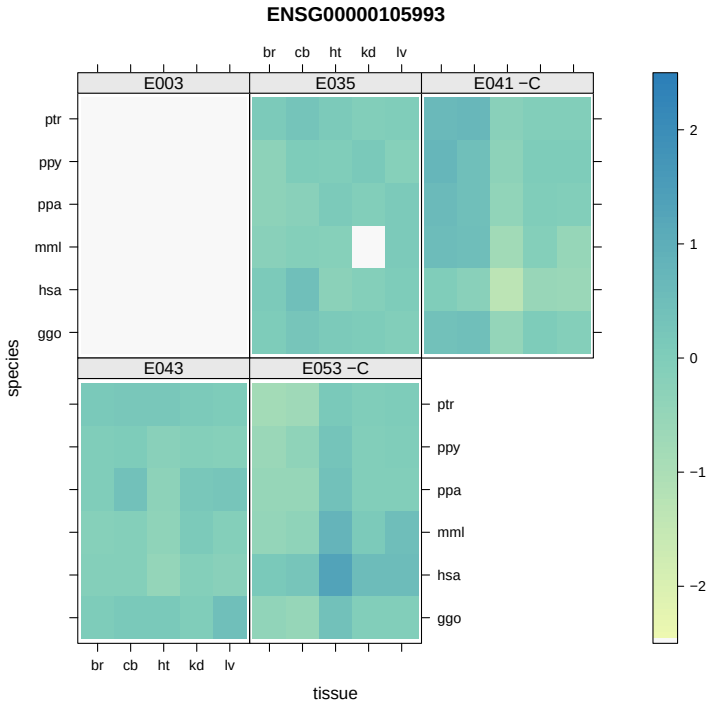

ENSG00000105357
br cb ht kd lv
E001
E003
E005
E012
E014
E015
E016
E018
E020 −C
E021
E025
E026
E027
E028
E030
E032
E036
E037
E041
E042
E043
E044
E046
E047
E048
E049
E050
E051
E052
E053
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

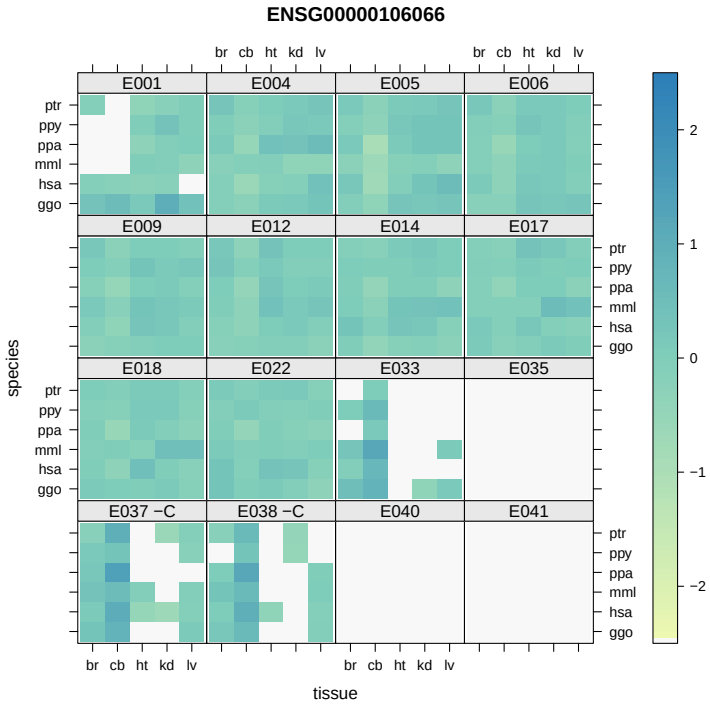

ENSG00000105472
br
cb
ht
kd
lv
E002
E003
E006 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

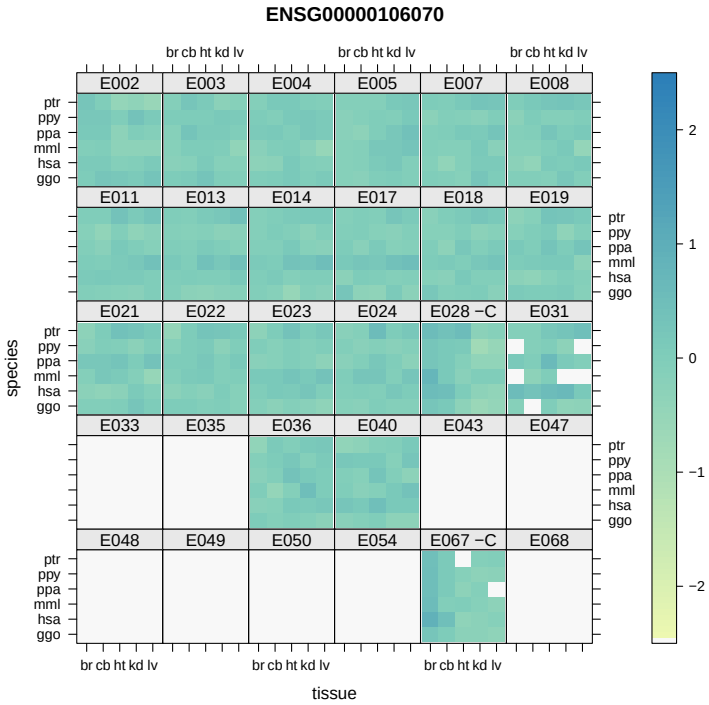

ENSG00000105552
br cb ht kd lv
E001
E002
E004
E005
E007
E008
E012
E013 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

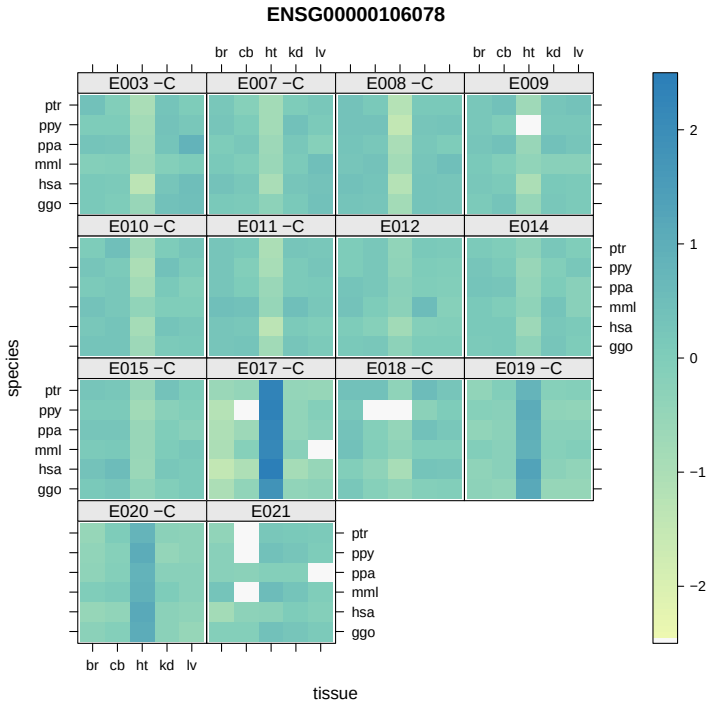

ENSG00000105929
br cb ht kd lv
E001
E002
E003
E004 −C
E006
E007
E008
E009
E010
E012
E013
E014
E015
E016
E019
E020
E024
E027
E029
E032
E033
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

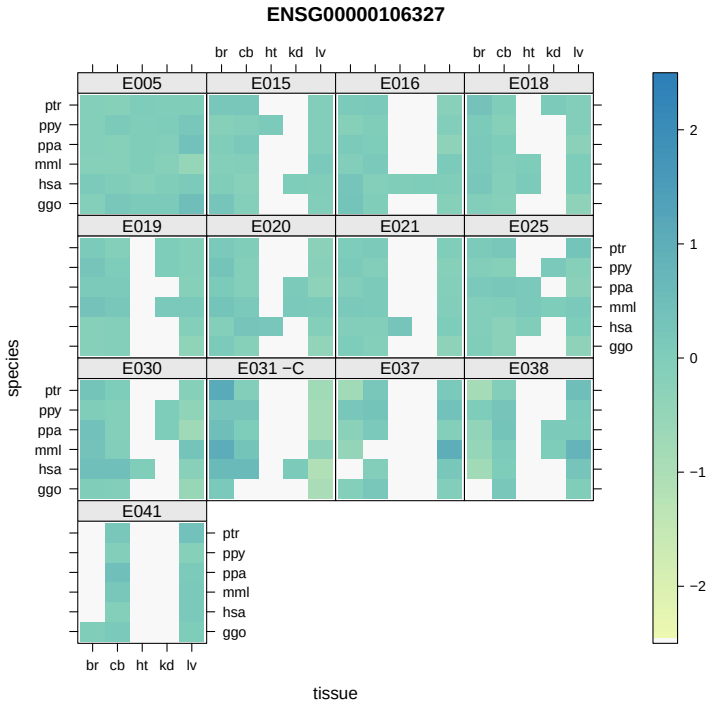

ENSG00000105953
E010
E011 −C
E012
E013 −C
E014
E016
E017
E018
E022
E024
E025
E026
E027
E028
E030
E032
E033
E034
E035
E036
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

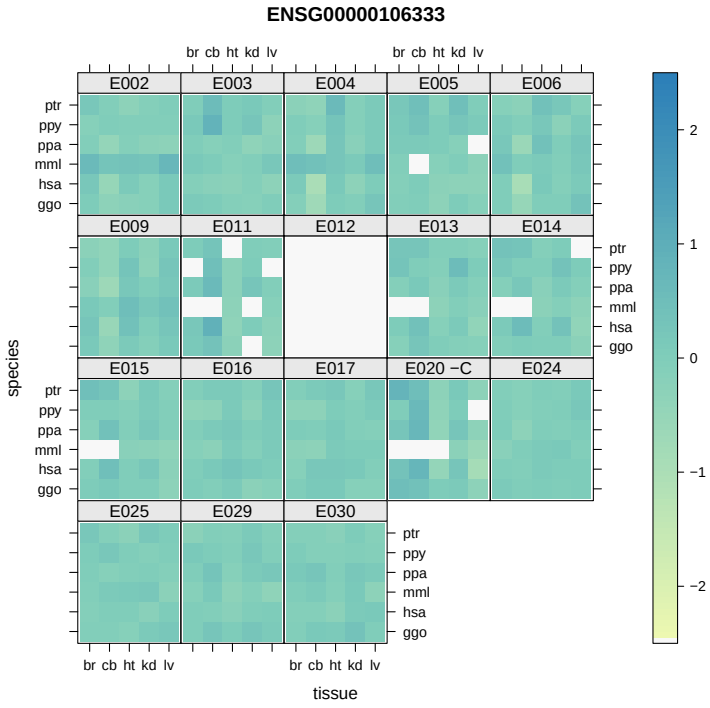

ENSG00000105993
br cb ht kd lv
E003
E035
E041 −C
E043
E053 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

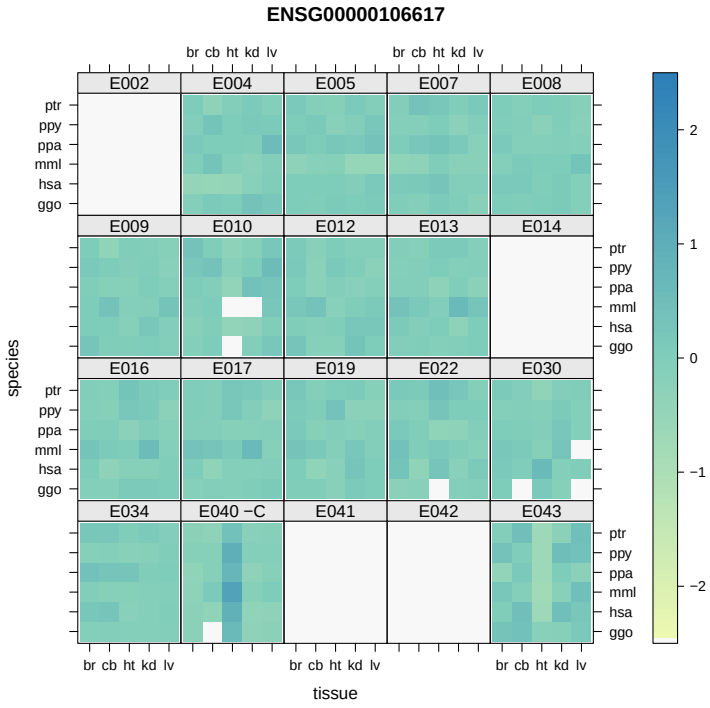

ENSG00000106066
E001
E004
E005
E006
E009
E012
E014
E017
E018
E022
E033
E035
E037 −C
E038 −C
E040
E041
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

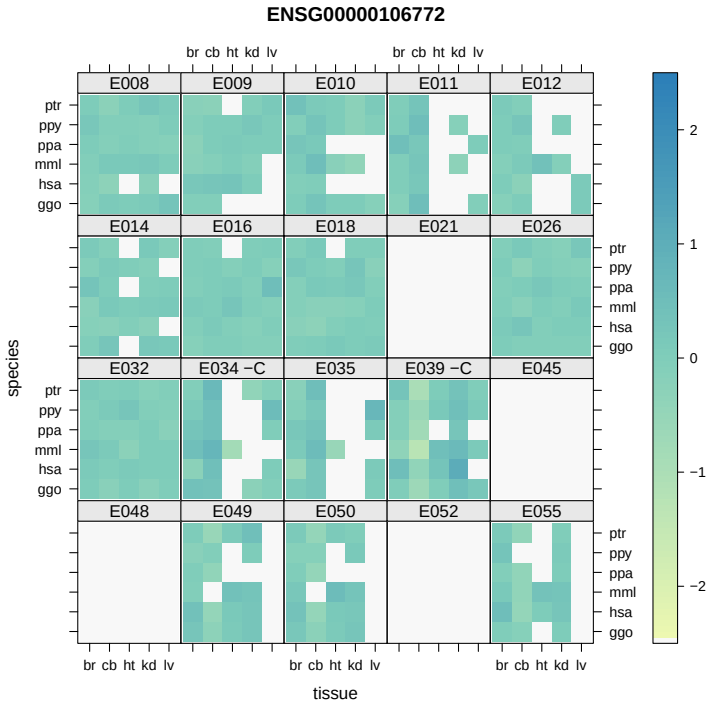

ENSG00000106070
br cb ht kd lv
E002
E003
E004
E005
E007
E008
E011
E013
E014
E017
E018
E019
E021
E022
E023
E024
E028 −C
E031
E033
E035
E036
E040
E043
E047
E048
E049
E050
E054
E067 −C
E068
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

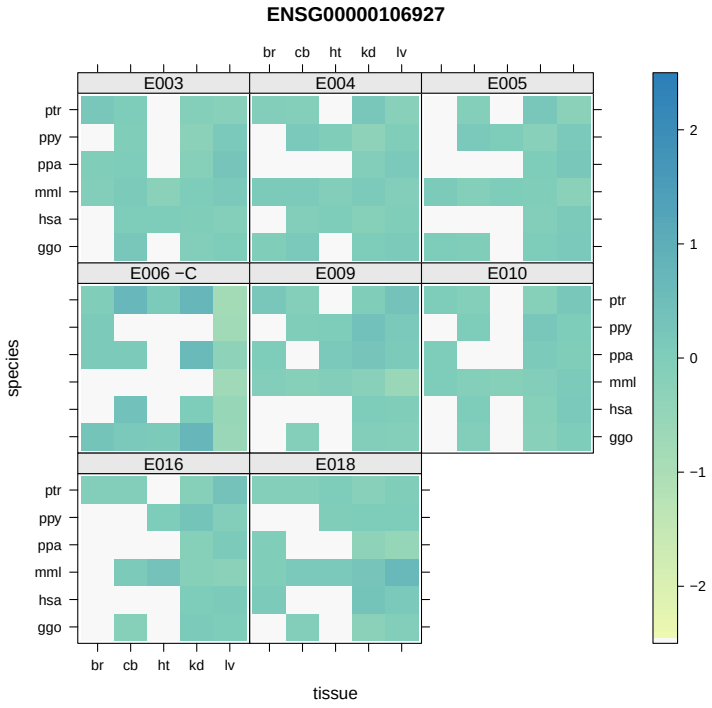

ENSG00000106078
E003 −C
E007 −C
E008 −C
E009
E010 −C
E011 −C
E012
E014
E015 −C
E017 −C
E018 −C
E019 −C
E020 −C
E021
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

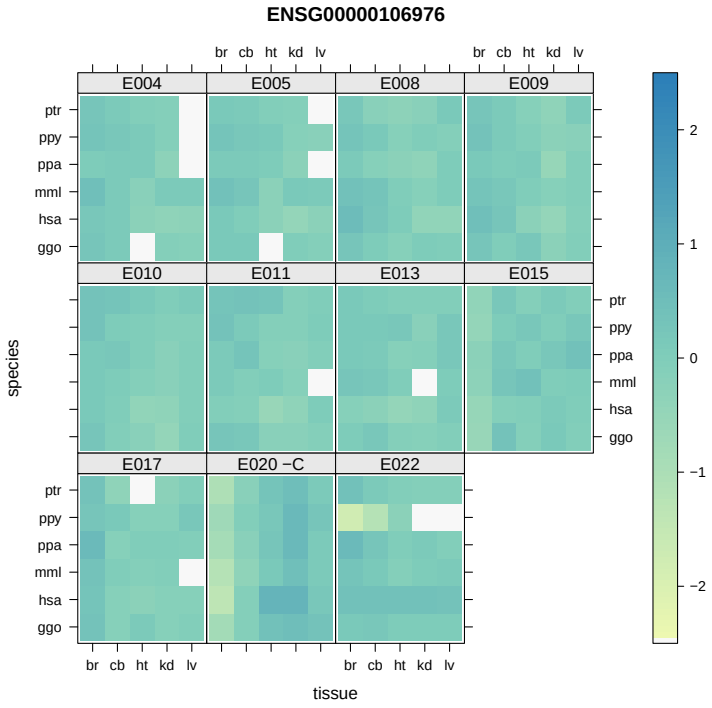

ENSG00000106327
E005
E015
E016
E018
E019
E020
E021
E025
E030
E031 −C
E037
E038
E041
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

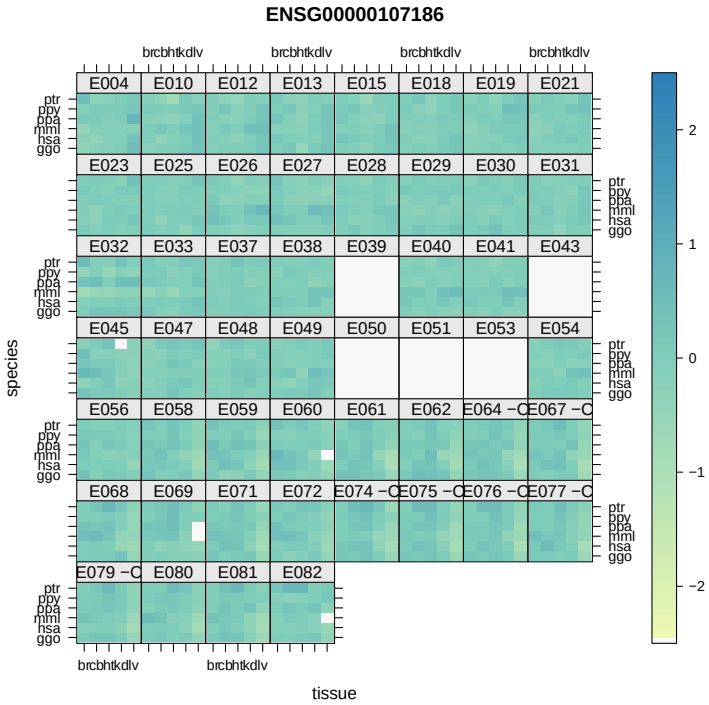

ENSG00000106333
E002
E003
E004
E005
E006
E009
E011
E012
E013
E014
E015
E016
E017
E020 −C
E024
E025
E029
E030
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

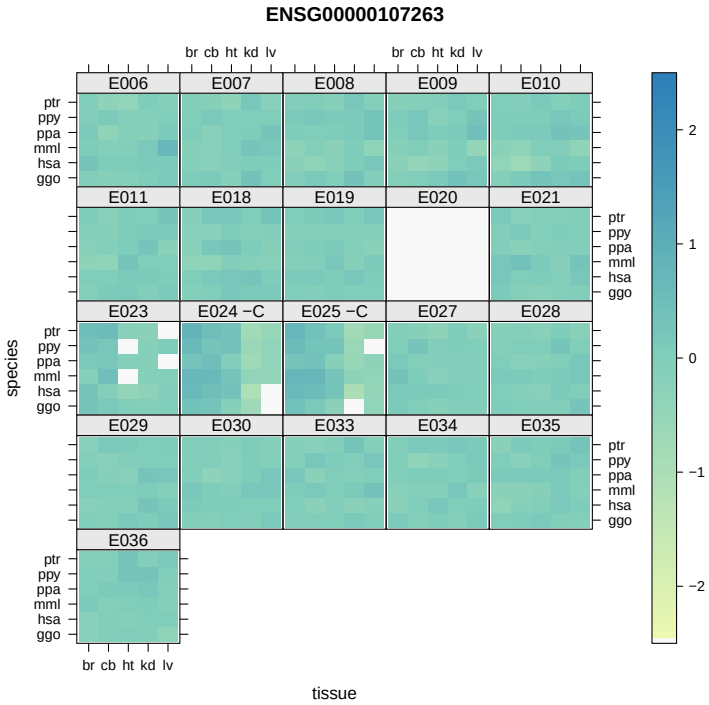

ENSG00000106617
br cb ht kd lv
E002
E004
E005
E007
E008
E009
E010
E012
E013
E014
E016
E017
E019
E022
E030
E034
E040 −C
E041
E042
E043
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

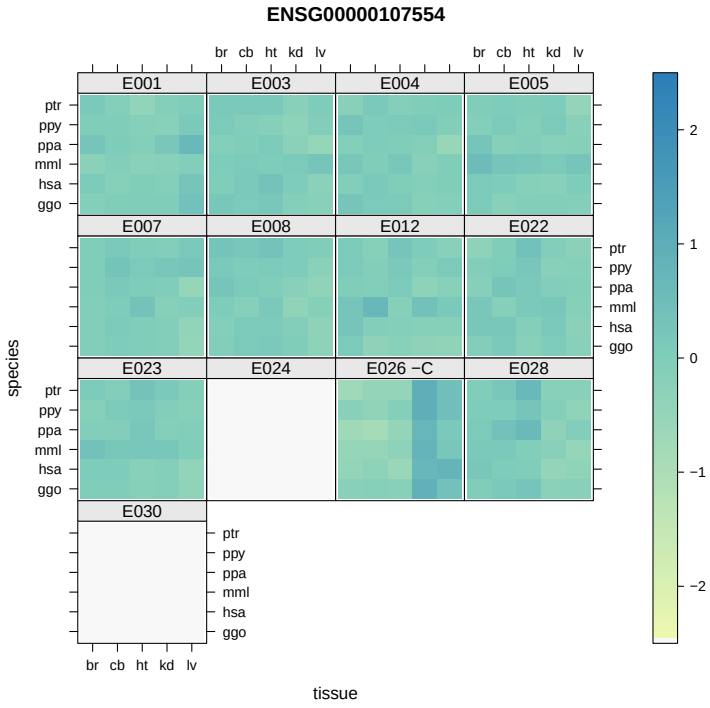

ENSG00000106772
E008
E009
E010
E011
E012
E014
E016
E018
E021
E026
E032
E034 −C
E035
E039 −C
E045
E048
E049
E050
E052
E055
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

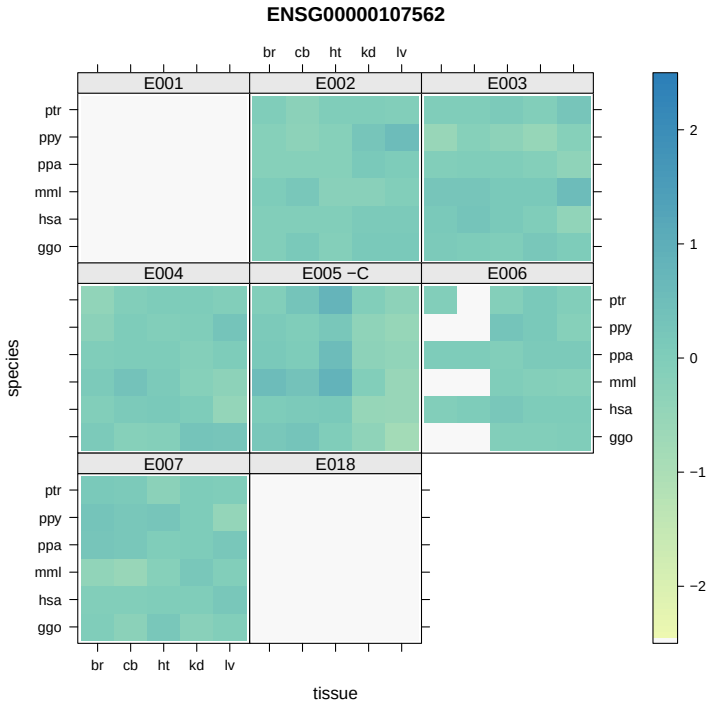

ENSG00000106927
br cb ht kd lv
E003
E004
E005
E006 −C
E009
E010
E016
E018
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

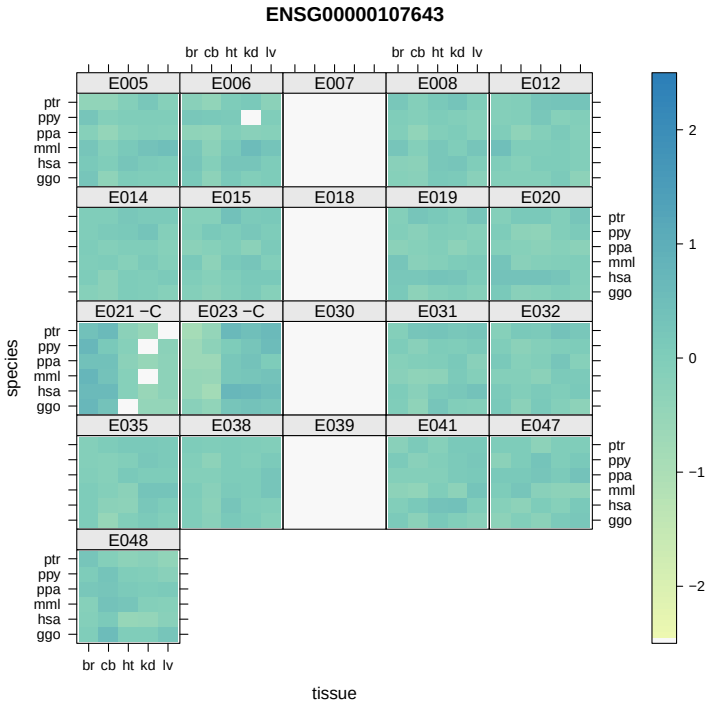

ENSG00000106976
E004
E005
E008
E009
E010
E011
E013
E015
E017
E020 −C
E022
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

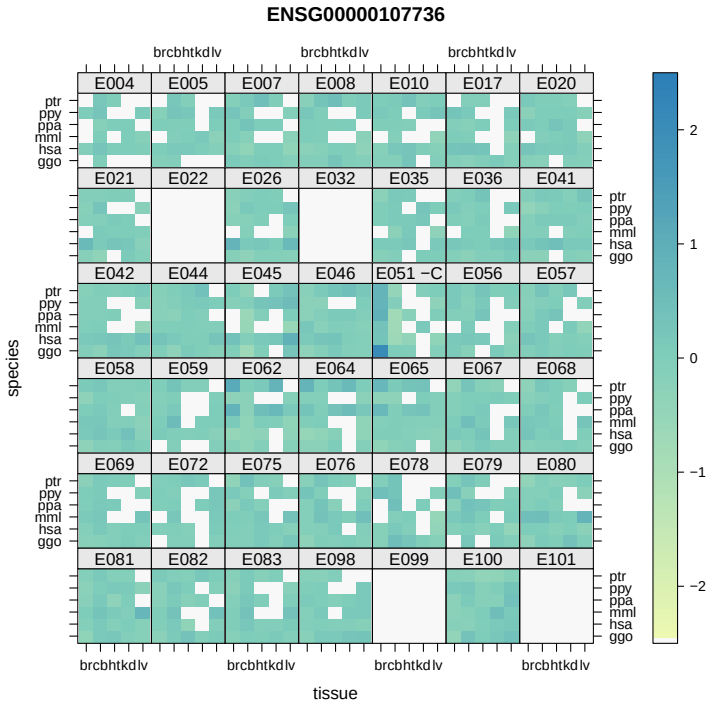

ENSG00000107186
brcbhtkdlv
E004
E010
E012
E013
E015
E018
E019
E021
E023
E025
E026
E027
E028
E029
E030
E031
E032
E033
E037
E038
E039
E040
E041
E043
E045
E047
E048
E049
E050
E051
E053
E054
E056
E058
E059
E060
E061
E062
E064 −C
E067 −C
E068
E069
E071
E072
E074 −C
E075 −C
E076 −C
E077 −C
E079 −C
E080
E081
E082
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

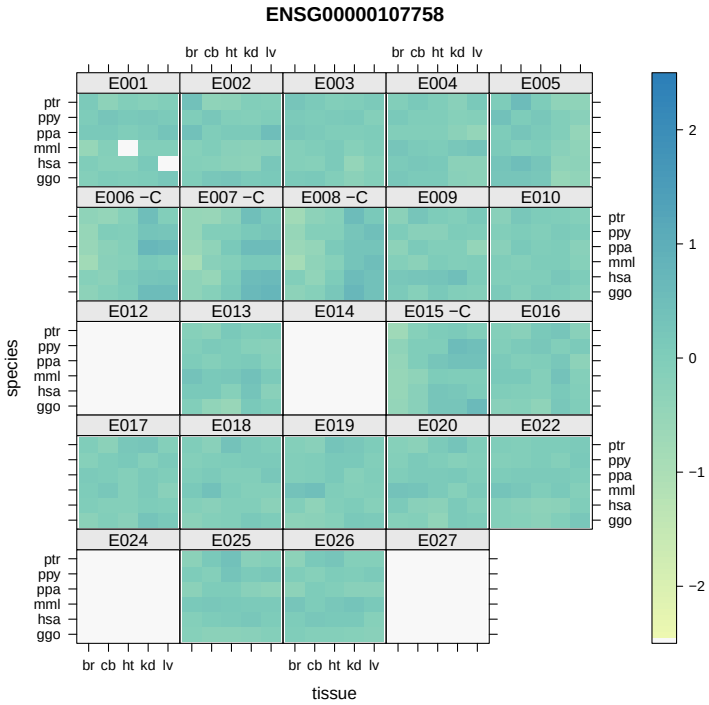

ENSG00000107263
E006
E007
E008
E009
E010
E011
E018
E019
E020
E021
E023
E024 −C
E025 −C
E027
E028
E029
E030
E033
E034
E035
E036
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

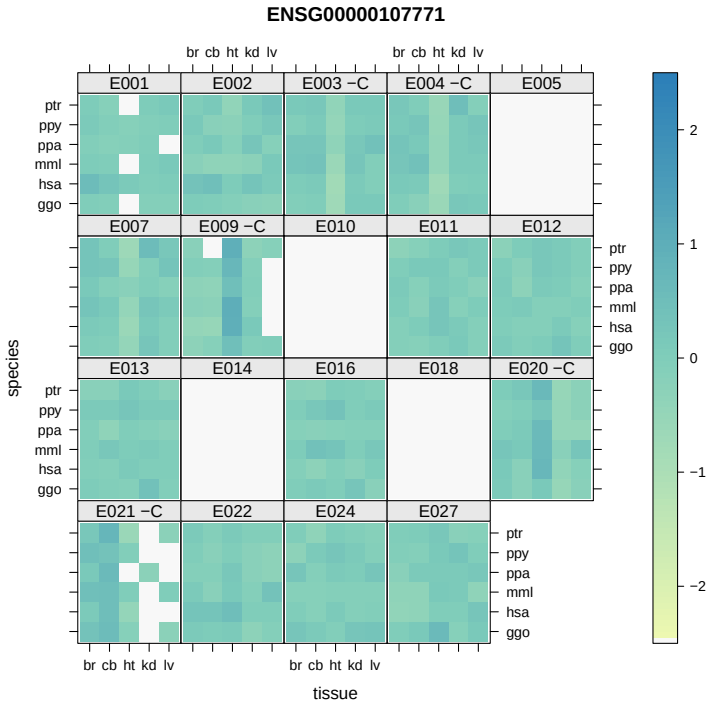

ENSG00000107554
br cb ht kd lv
E001
E003
E004
E005
E007
E008
E012
E022
E023
E024
E026 −C
E028
E030
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

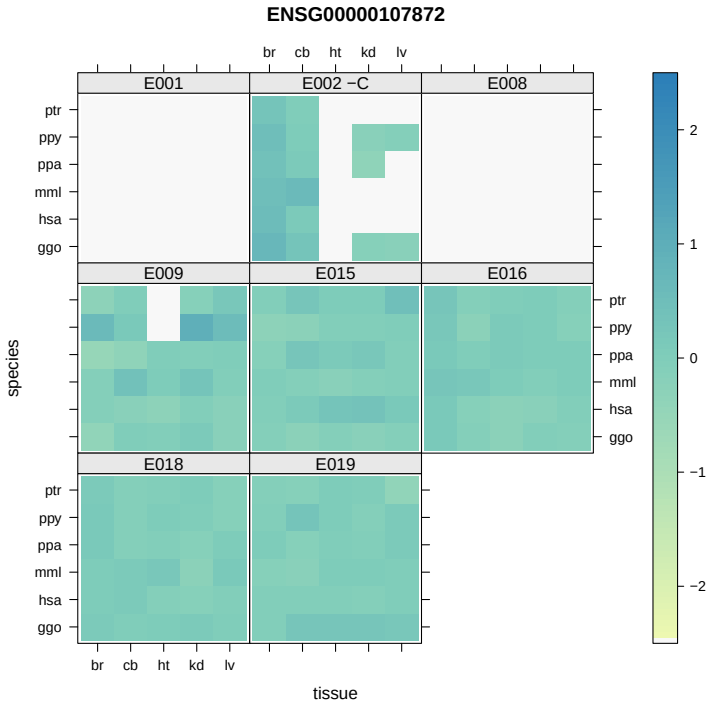

ENSG00000107562
br cb ht kd lv
E001
E002
E003
E004
E005 −C
E006
E007
E018
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

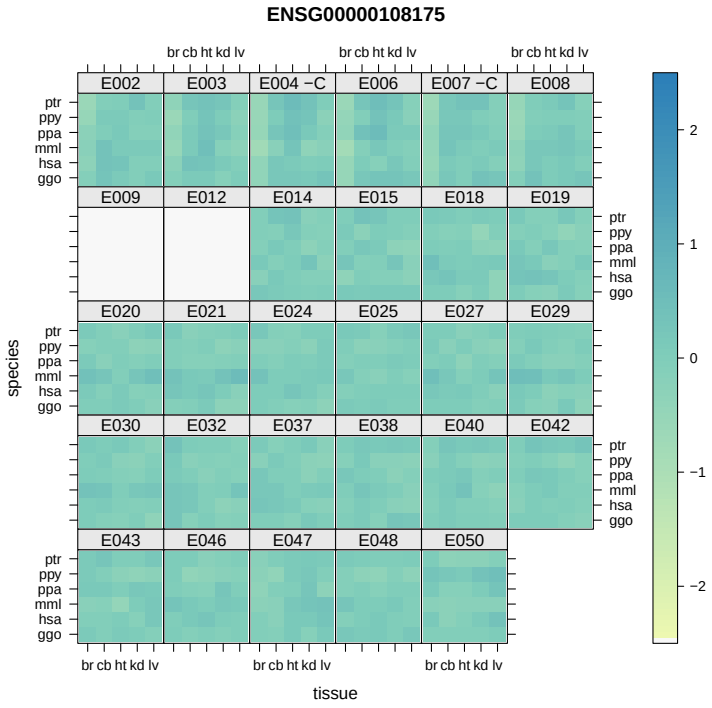

ENSG00000107643
br cb ht kd lv
E005
E006
E007
E008
E012
E014
E015
E018
E019
E020
E021 −C
E023 −C
E030
E031
E032
E035
E038
E039
E041
E047
E048
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

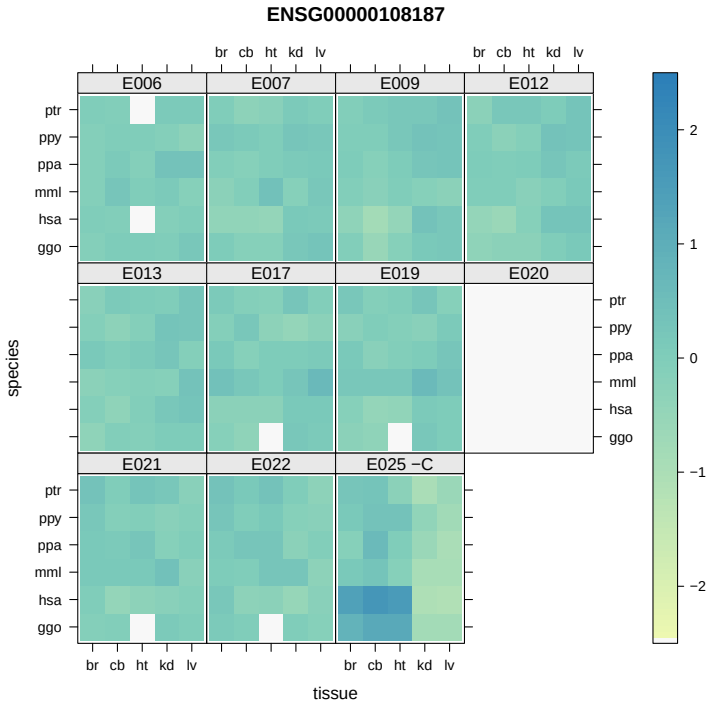

ENSG00000107736
brcbhtkdlv
E004
E005
E007
E008
E010
E017
E020
E021
E022
E026
E032
E035
E036
E041
E042
E044
E045
E046
E051 −C
E056
E057
E058
E059
E062
E064
E065
E067
E068
E069
E072
E075
E076
E078
E079
E080
E081
E082
E083
E098
E099
E100
E101
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

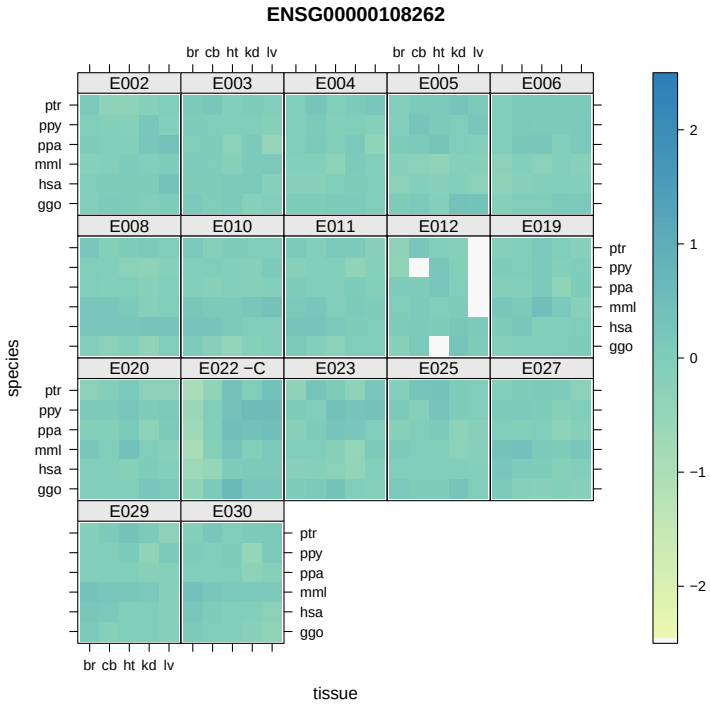

ENSG00000107758
E001
E002
E003
E004
E005
E006 −C
E007 −C
E008 −C
E009
E010
E012
E013
E014
E015 −C
E016
E017
E018
E019
E020
E022
E024
E025
E026
E027
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

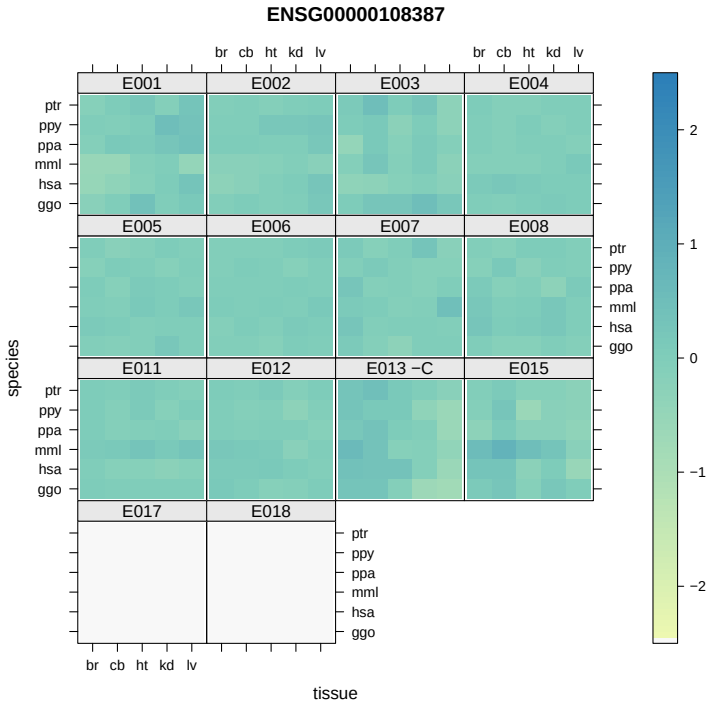

ENSG00000107771
E001
E002
E003 −C
E004 −C
E005
E007
E009 −C
E010
E011
E012
E013
E014
E016
E018
E020 −C
E021 −C
E022
E024
E027
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

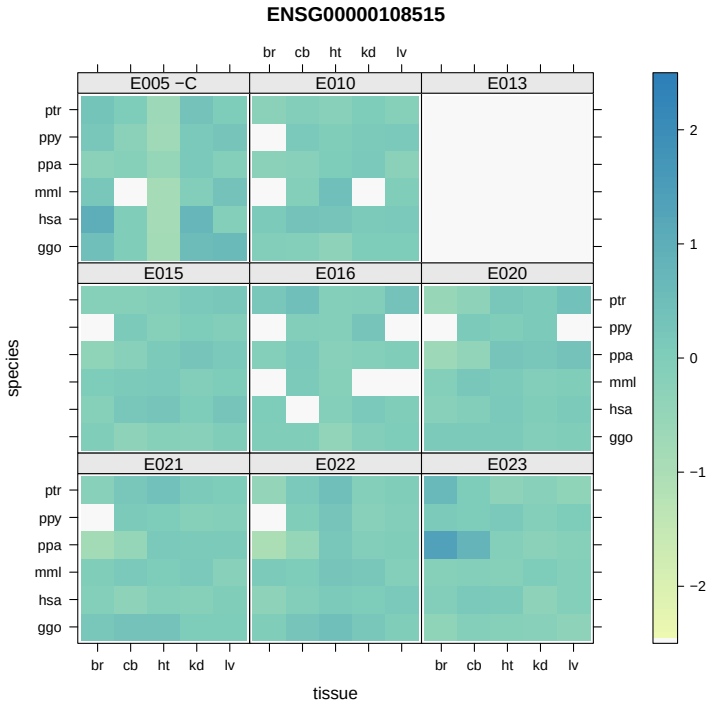

ENSG00000107872
br cb ht kd lv
E001
E002 −C
E008
E009
E015
E016
E018
E019
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

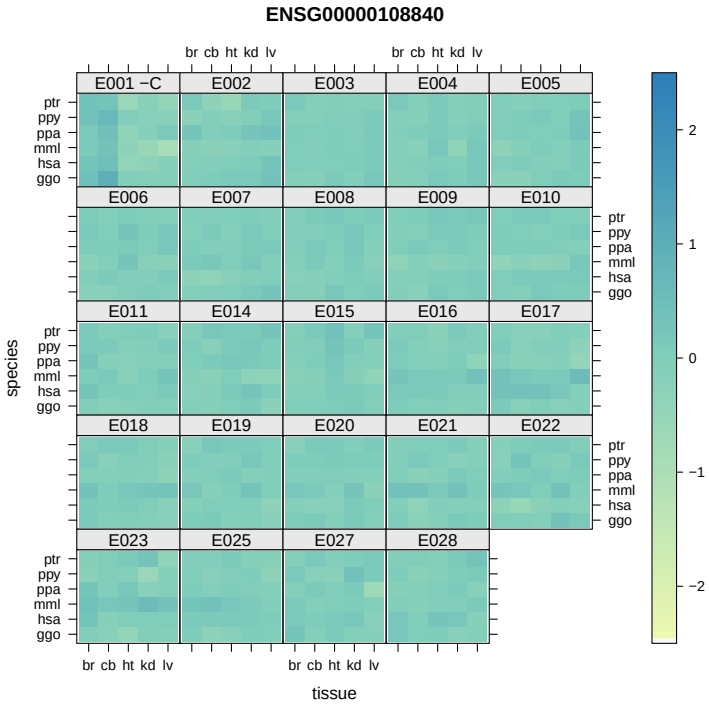

ENSG00000108175
br cb ht kd lv
E002
E003
E004 −C
E006
E007 −C
E008
E009
E012
E014
E015
E018
E019
E020
E021
E024
E025
E027
E029
E030
E032
E037
E038
E040
E042
E043
E046
E047
E048
E050
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

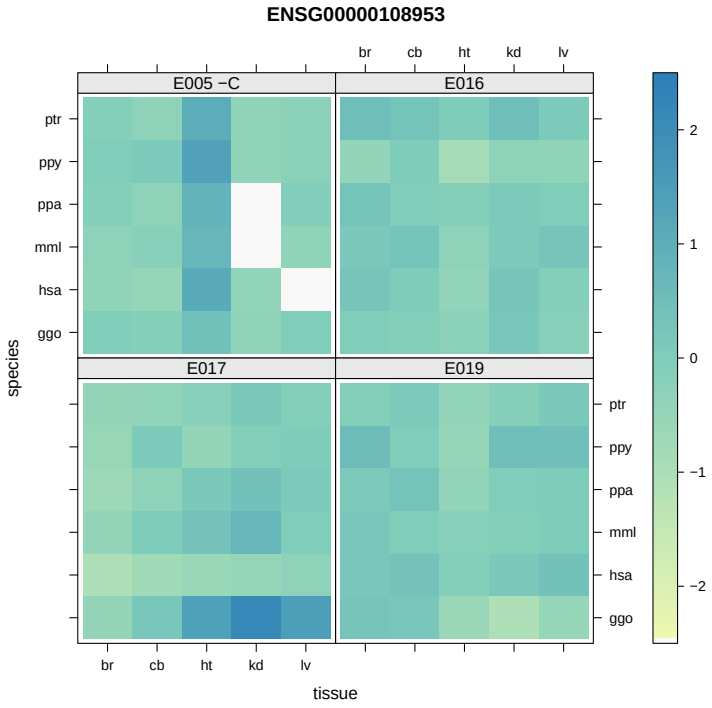

ENSG00000108187
E006
E007
E009
E012
E013
E017
E019
E020
E021
E022
E025 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

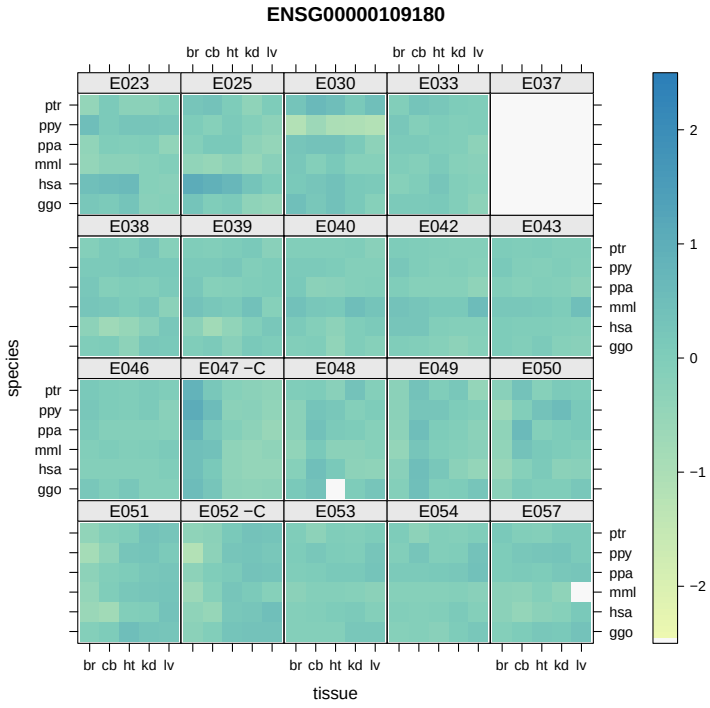

ENSG00000108262
E002
E003
E004
E005
E006
E008
E010
E011
E012
E019
E020
E022 −C
E023
E025
E027
E029
E030
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

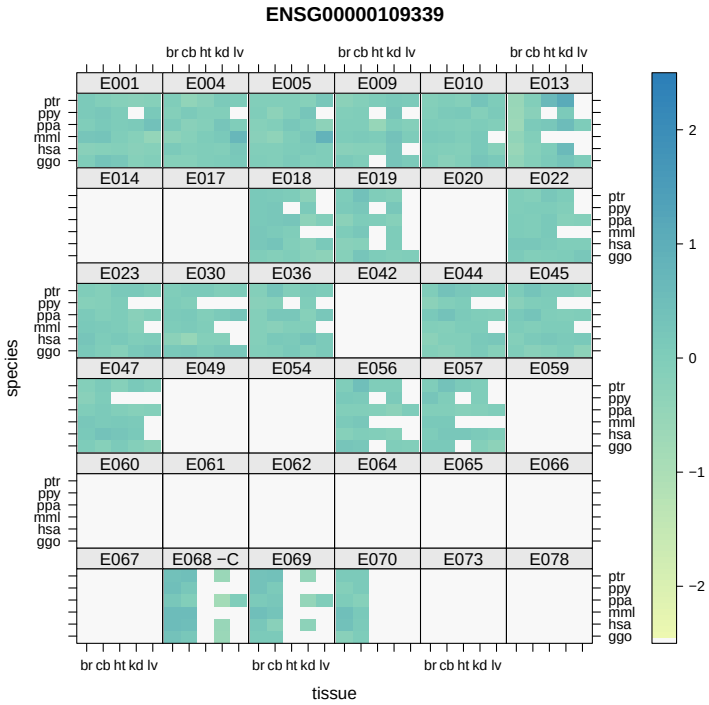

ENSG00000108387
E001
E002
E003
E004
E005
E006
E007
E008
E011
E012
E013 −C
E015
E017
E018
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

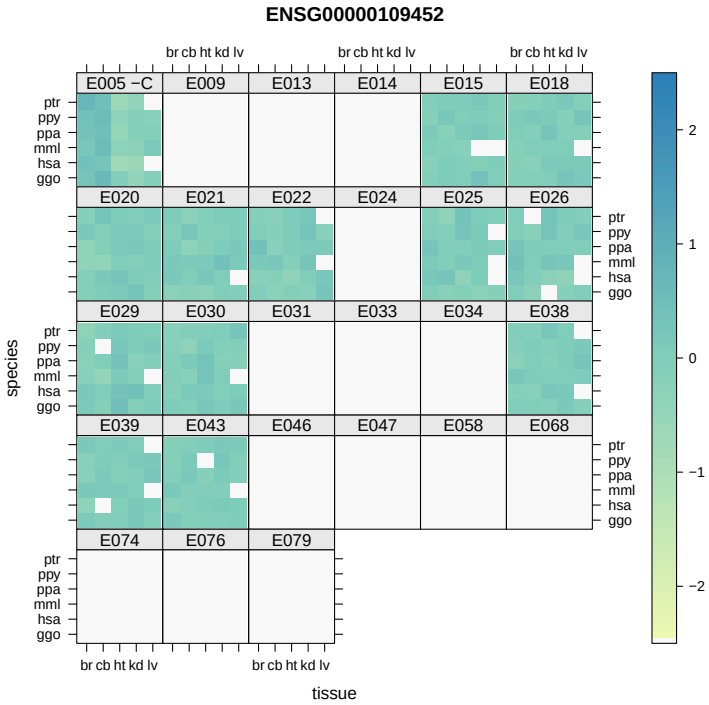

ENSG00000108515
br cb ht kd lv
E005 −C
E010
E013
E015
E016
E020
E021
E022
E023
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

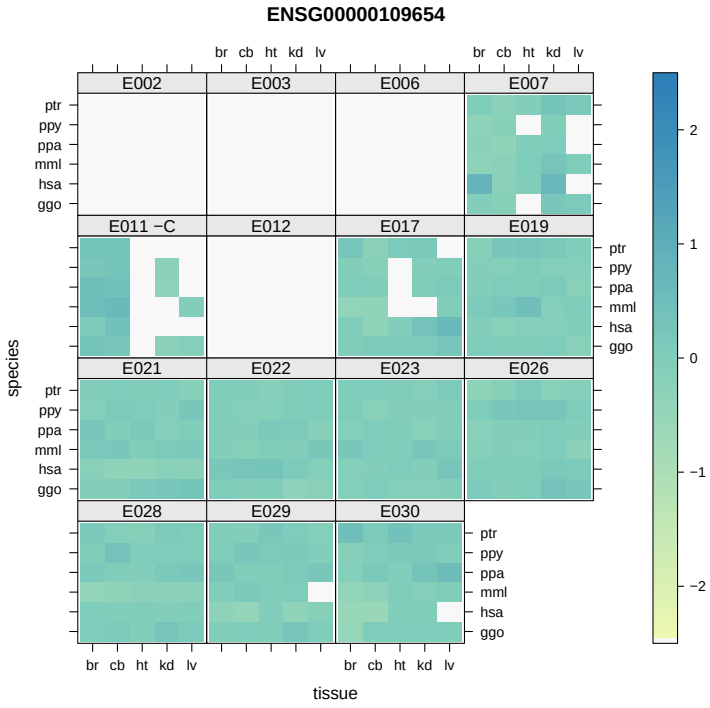

ENSG00000108840
E001 −C
E002
E003
E004
E005
E006
E007
E008
E009
E010
E011
E014
E015
E016
E017
E018
E019
E020
E021
E022
E023
E025
E027
E028
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

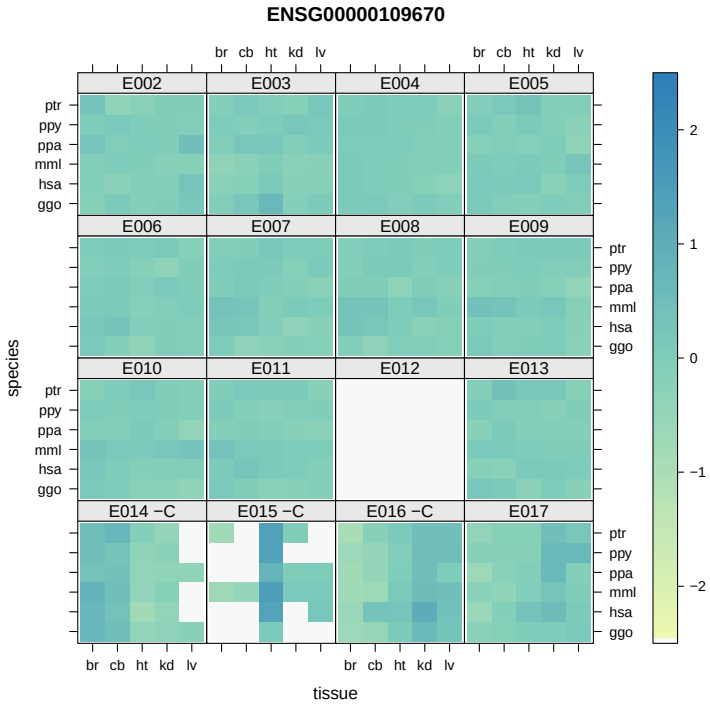

ENSG00000108953
br
cb
ht
kd
lv
E005 −C
E016
E017
E019
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

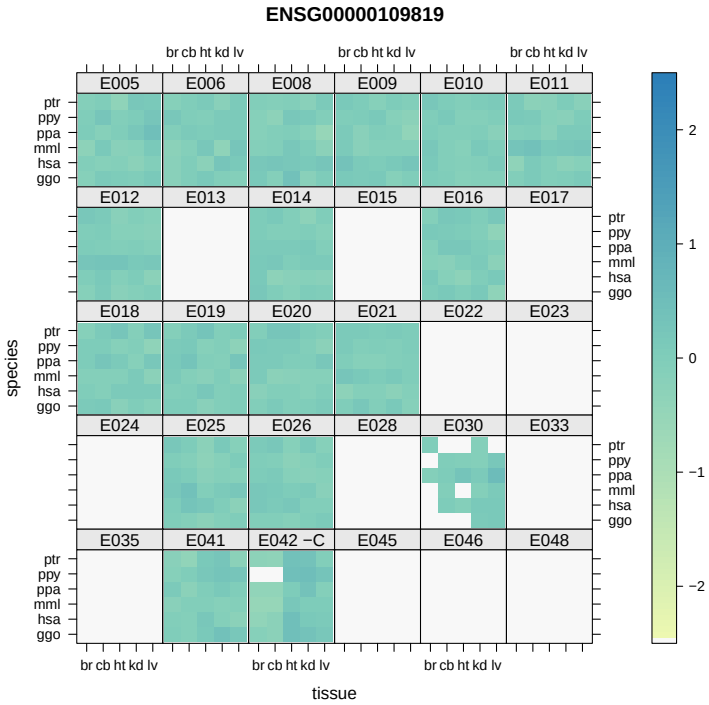

ENSG00000109180
E023
E025
E030
E033
E037
E038
E039
E040
E042
E043
E046
E047 −C
E048
E049
E050
E051
E052 −C
E053
E054
E057
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

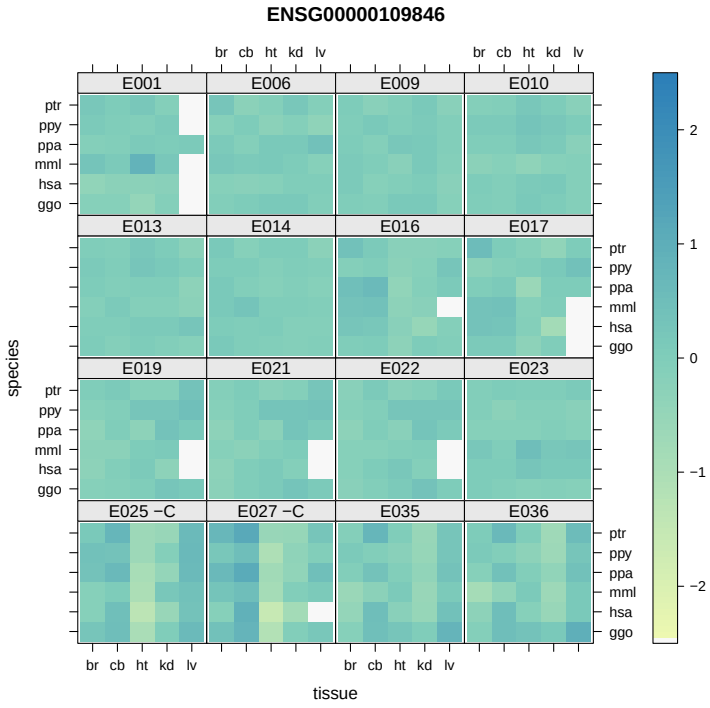

ENSG00000109339
br cb ht kd lv
E001
E004
E005
E009
E010
E013
E014
E017
E018
E019
E020
E022
E023
E030
E036
E042
E044
E045
E047
E049
E054
E056
E057
E059
E060
E061
E062
E064
E065
E066
E067
E068 −C
E069
E070
E073
E078
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

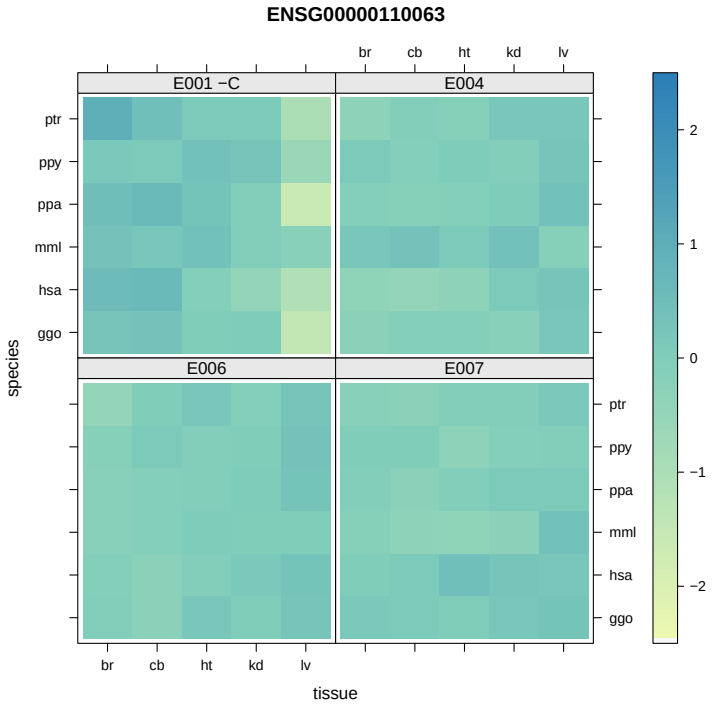

ENSG00000109452
br cb ht kd lv
E005 −C
E009
E013
E014
E015
E018
E020
E021
E022
E024
E025
E026
E029
E030
E031
E033
E034
E038
E039
E043
E046
E047
E058
E068
E074
E076
E079
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

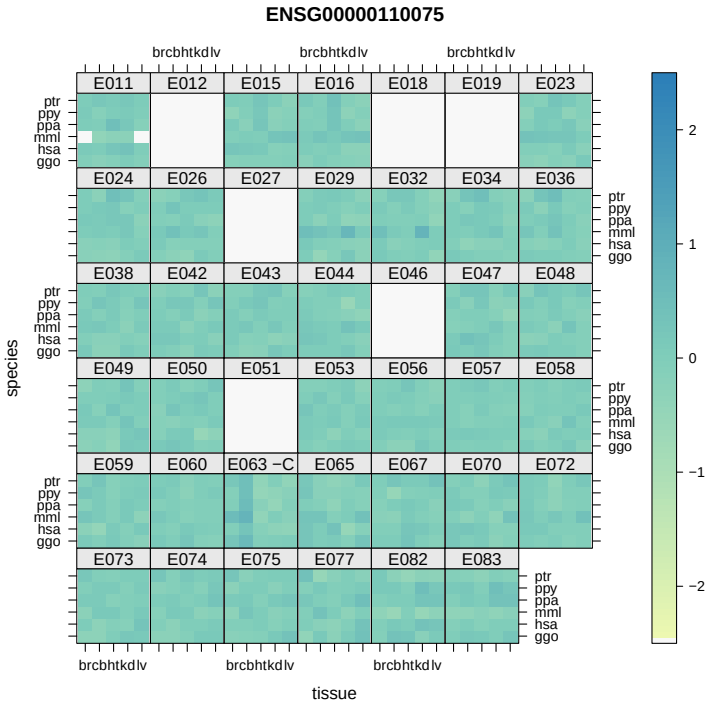

ENSG00000109654
E002
E003
E006
E007
E011 −C
E012
E017
E019
E021
E022
E023
E026
E028
E029
E030
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

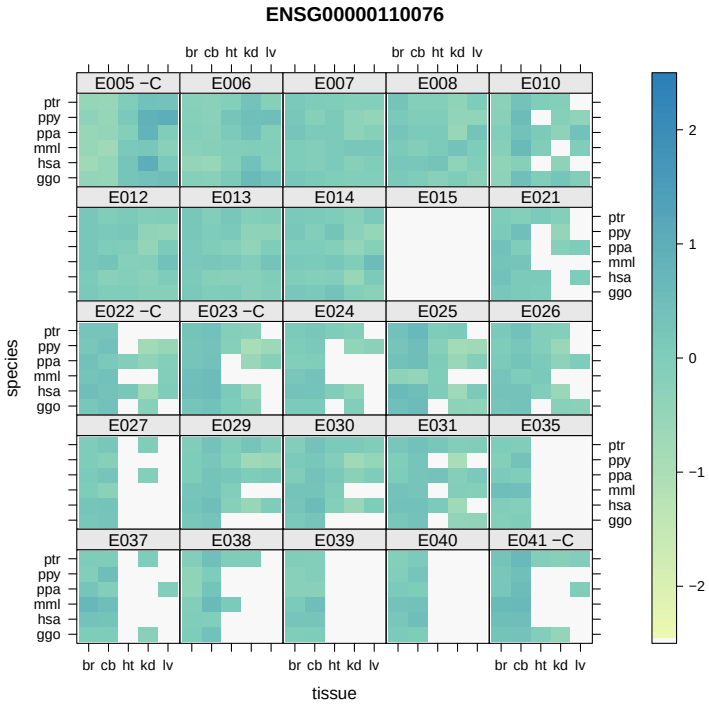

ENSG00000109670
E002
E003
E004
E005
E006
E007
E008
E009
E010
E011
E012
E013
E014 −C
E015 −C
E016 −C
E017
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

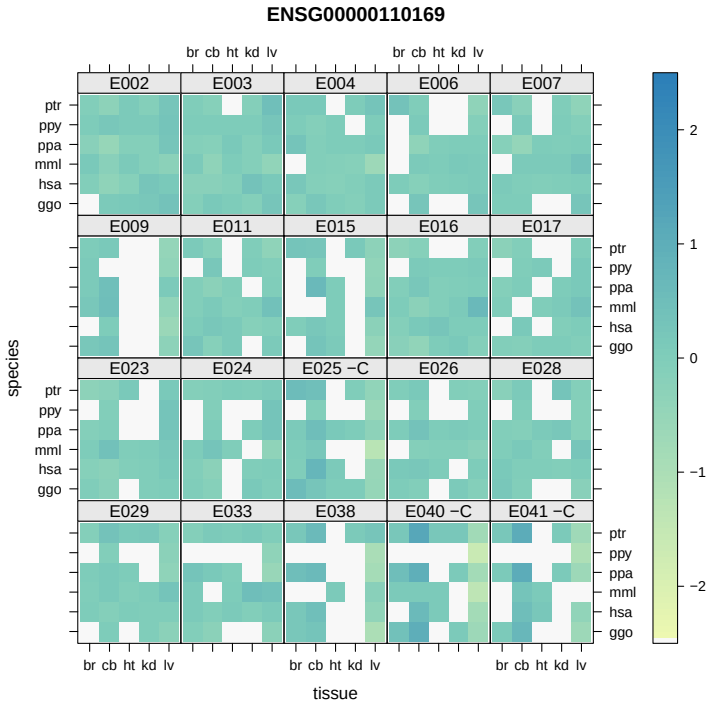

ENSG00000109819
br cb ht kd lv
E005
E006
E008
E009
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E020
E021
E022
E023
E024
E025
E026
E028
E030
E033
E035
E041
E042 −C
E045
E046
E048
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

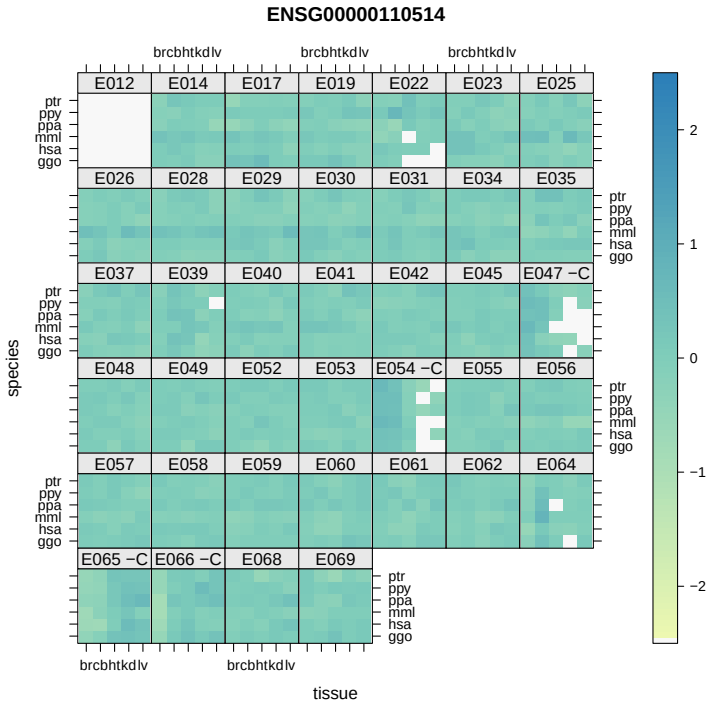

ENSG00000109846
E001
E006
E009
E010
E013
E014
E016
E017
E019
E021
E022
E023
E025 −C
E027 −C
E035
E036
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

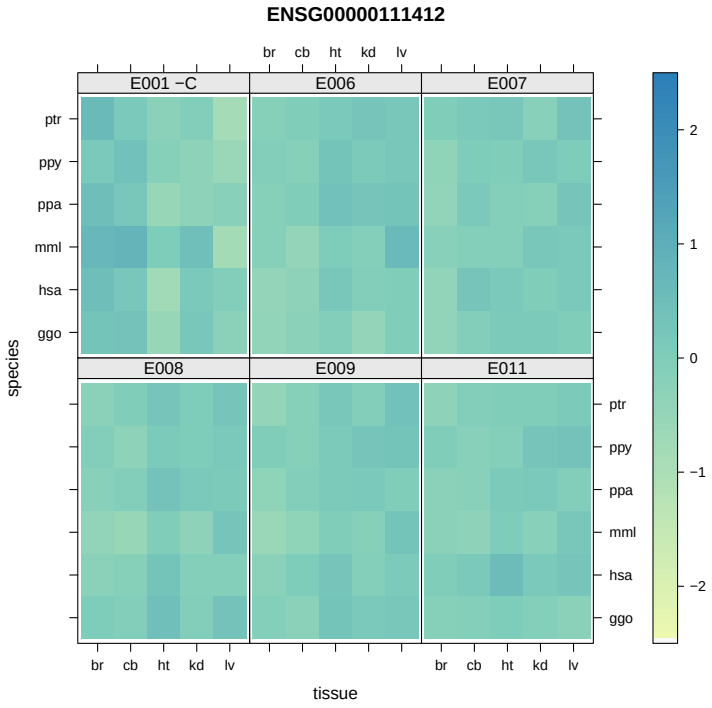

ENSG00000110063
E001 −C
E004
E006
E007
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

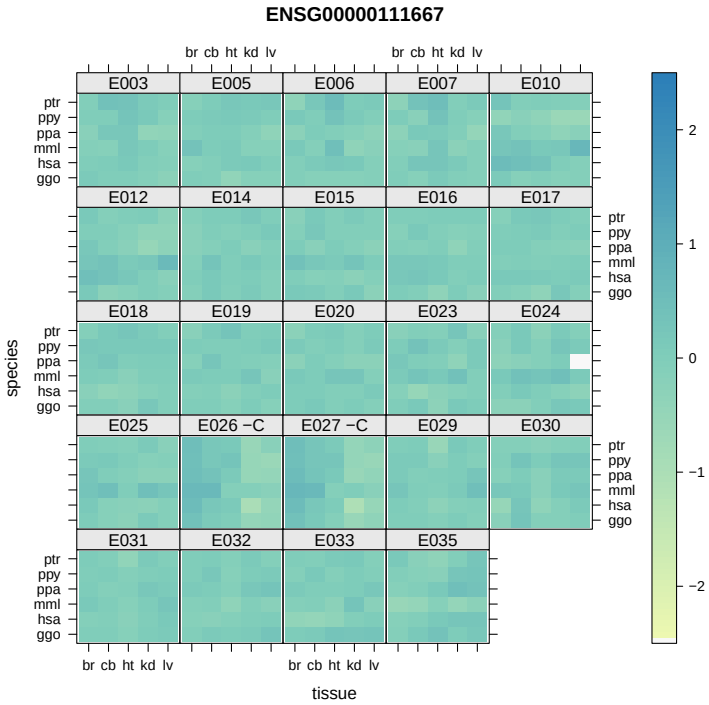

ENSG00000110075
brcbhtkdlv
E011
E012
E015
E016
E018
E019
E023
E024
E026
E027
E029
E032
E034
E036
E038
E042
E043
E044
E046
E047
E048
E049
E050
E051
E053
E056
E057
E058
E059
E060
E063 −C
E065
E067
E070
E072
E073
E074
E075
E077
E082
E083
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

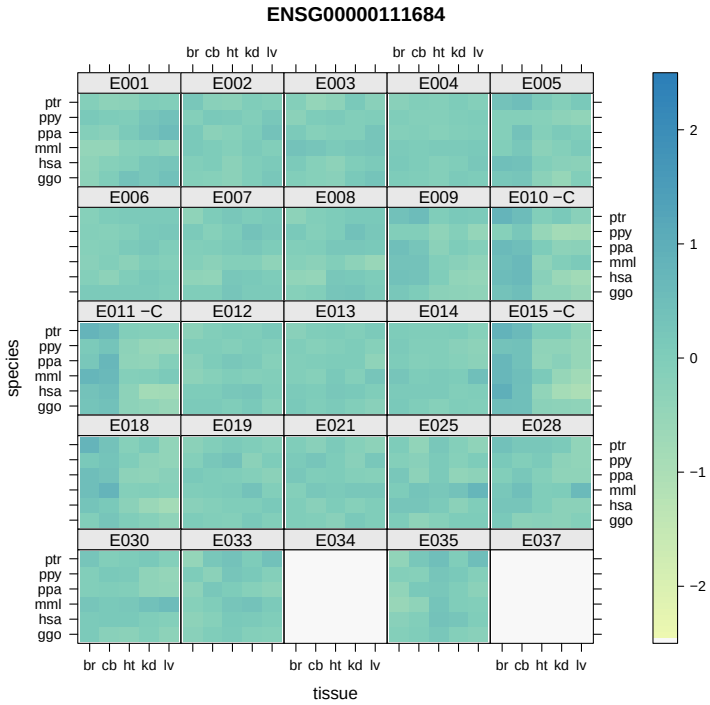

ENSG00000110076
br cb ht kd lv
E005 −C
E006
E007
E008
E010
E012
E013
E014
E015
E021
E022 −C
E023 −C
E024
E025
E026
E027
E029
E030
E031
E035
E037
E038
E039
E040
E041 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

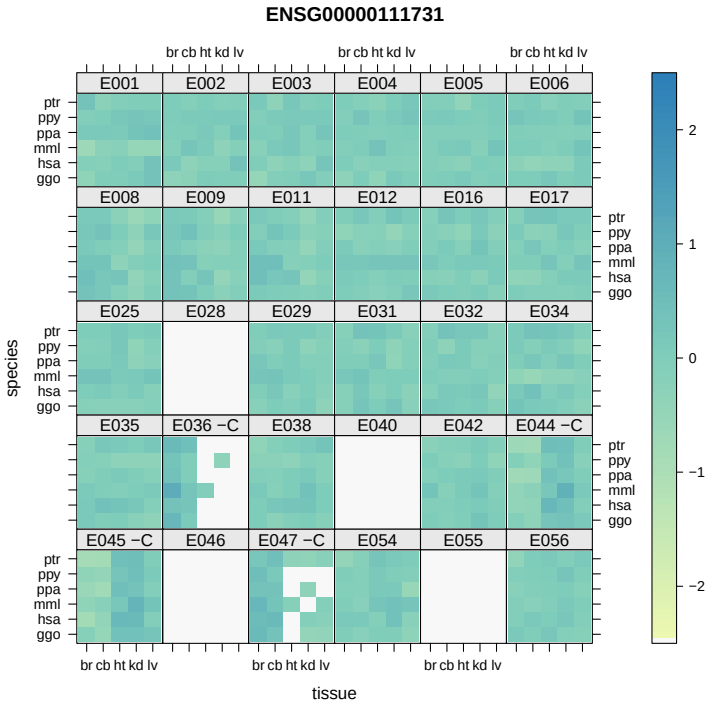

ENSG00000110169
E002
E003
E004
E006
E007
E009
E011
E015
E016
E017
E023
E024
E025 −C
E026
E028
E029
E033
E038
E040 −C
E041 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

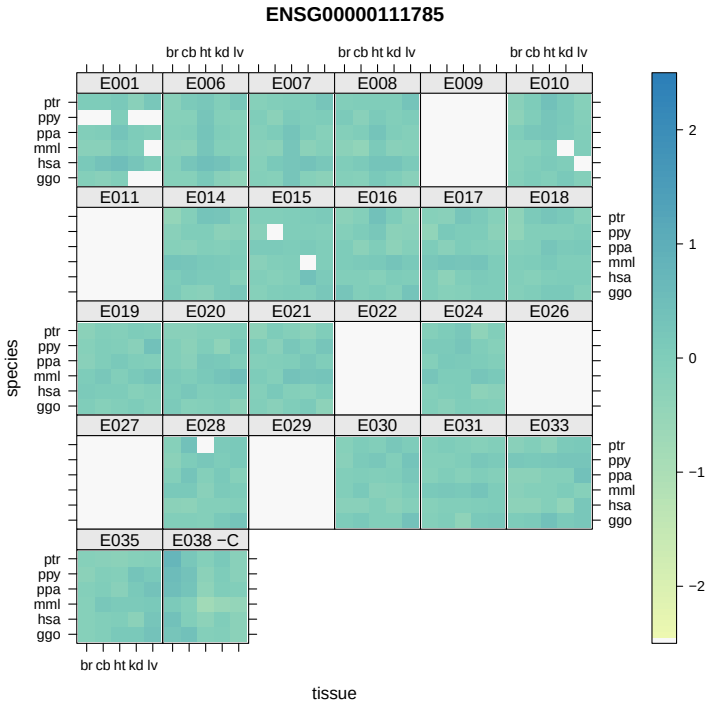

ENSG00000110514
brcbhtkdlv
E012
E014
E017
E019
E022
E023
E025
E026
E028
E029
E030
E031
E034
E035
E037
E039
E040
E041
E042
E045
E047 −C
E048
E049
E052
E053
E054 −C
E055
E056
E057
E058
E059
E060
E061
E062
E064
E065 −C
E066 −C
E068
E069
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

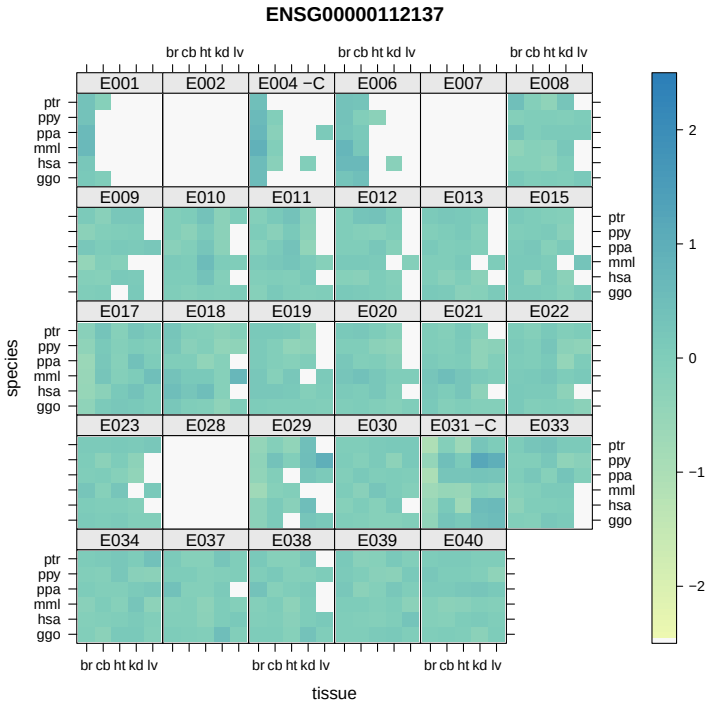

ENSG00000111412
br cb ht kd lv
E001 −C
E006
E007
E008
E009
E011
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

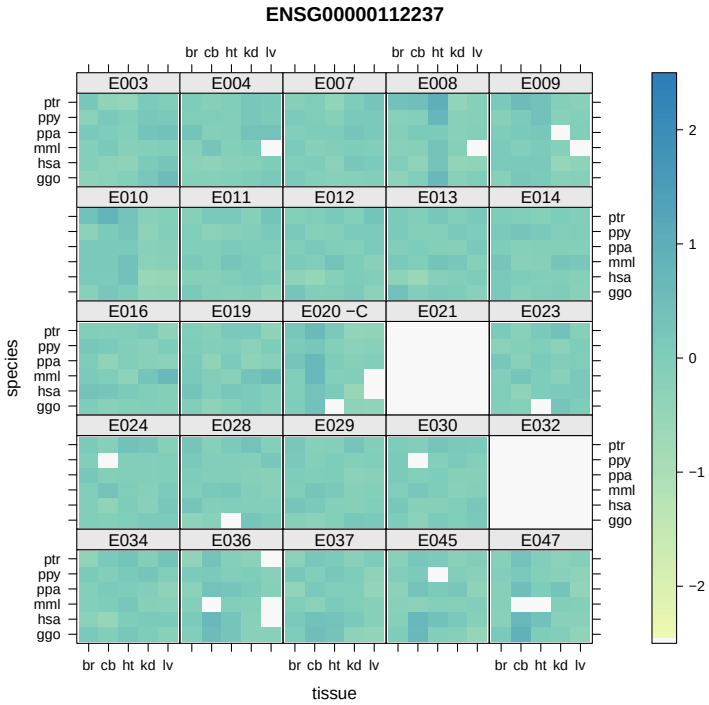

ENSG00000111667
E003
E005
E006
E007
E010
E012
E014
E015
E016
E017
E018
E019
E020
E023
E024
E025
E026 −C
E027 −C
E029
E030
E031
E032
E033
E035
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

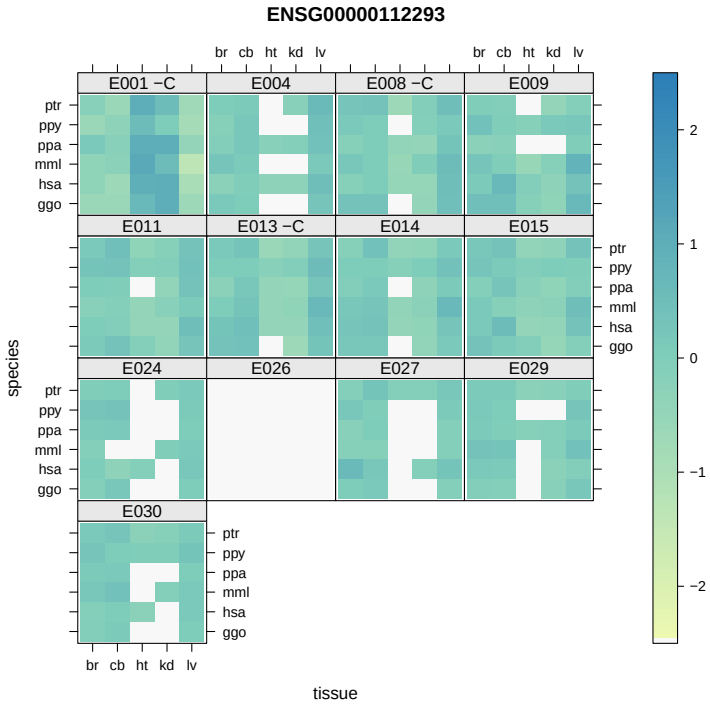

ENSG00000111684
E001
E002
E003
E004
E005
E006
E007
E008
E009
E010 −C
E011 −C
E012
E013
E014
E015 −C
E018
E019
E021
E025
E028
E030
E033
E034
E035
E037
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

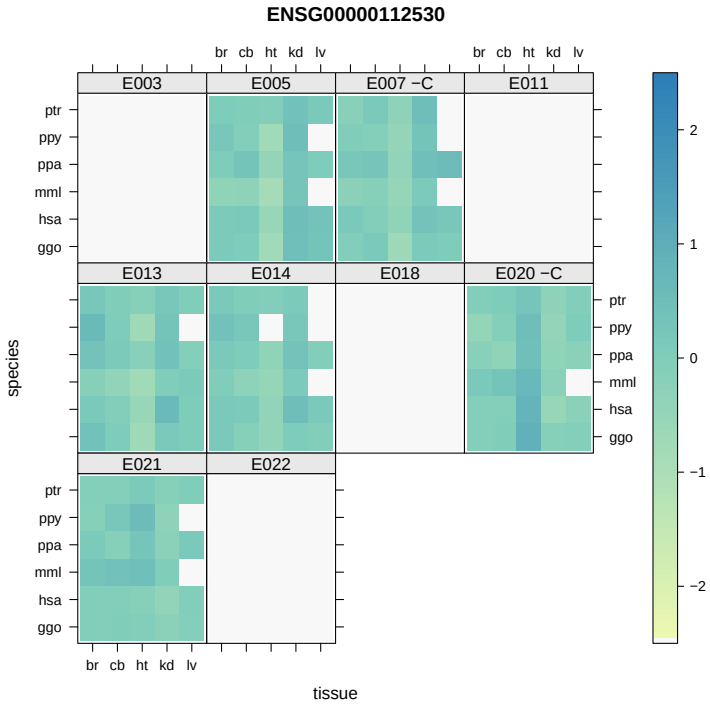

ENSG00000111731
br cb ht kd lv
E001
E002
E003
E004
E005
E006
E008
E009
E011
E012
E016
E017
E025
E028
E029
E031
E032
E034
E035
E036 −C
E038
E040
E042
E044 −C
E045 −C
E046
E047 −C
E054
E055
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

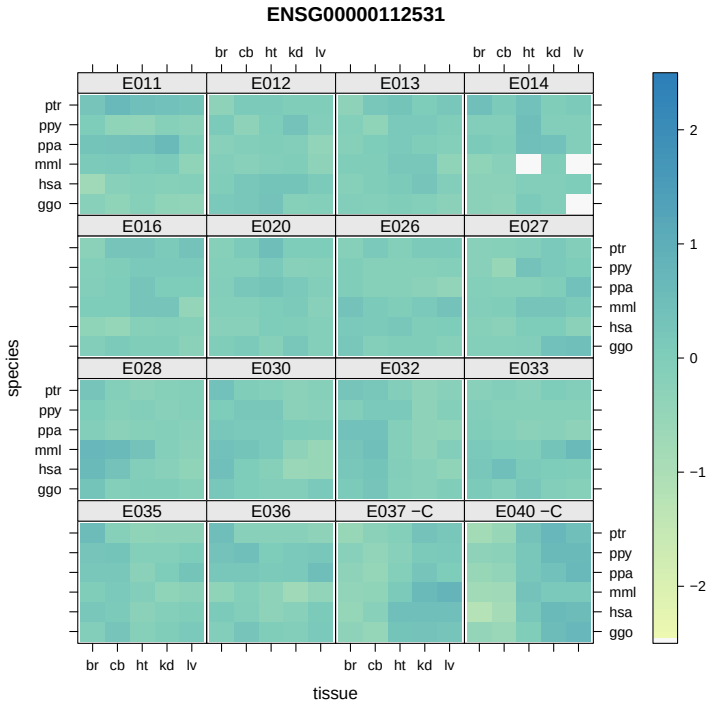

ENSG00000111785
br cb ht kd lv
E001
E006
E007
E008
E009
E010
E011
E014
E015
E016
E017
E018
E019
E020
E021
E022
E024
E026
E027
E028
E029
E030
E031
E033
E035
E038 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

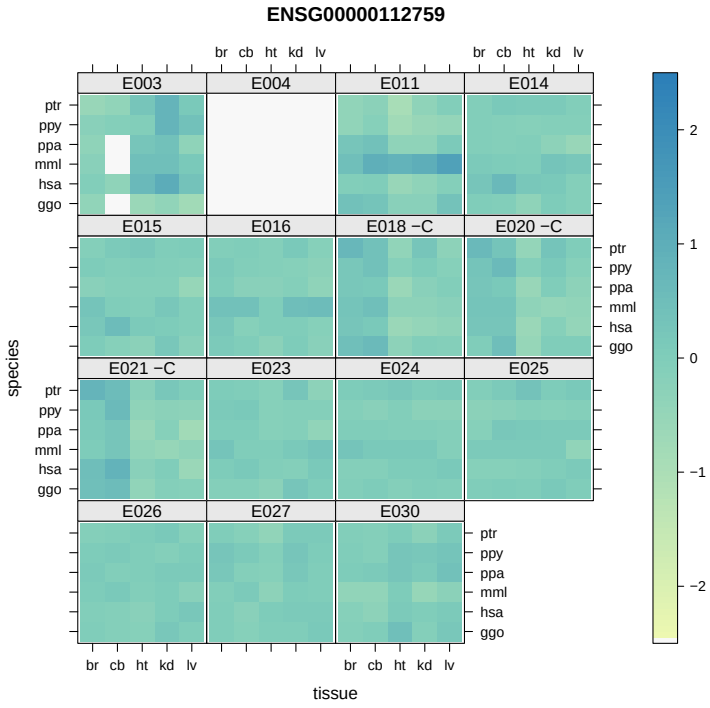

ENSG00000112137
E001
E002
E004 −C
E006
E007
E008
E009
E010
E011
E012
E013
E015
E017
E018
E019
E020
E021
E022
E023
E028
E029
E030
E031 −C
E033
E034
E037
E038
E039
E040
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

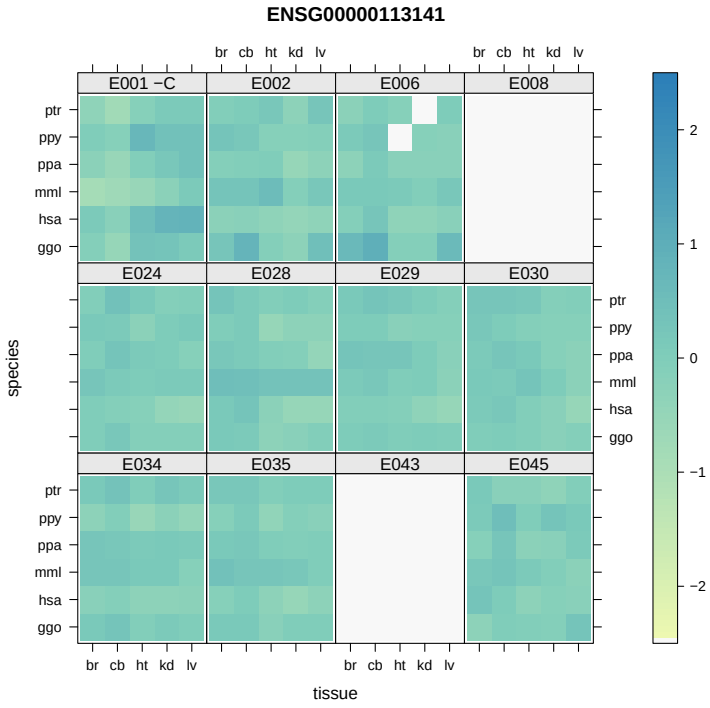

ENSG00000112237
E003
E004
E007
E008
E009
E010
E011
E012
E013
E014
E016
E019
E020 −C
E021
E023
E024
E028
E029
E030
E032
E034
E036
E037
E045
E047
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

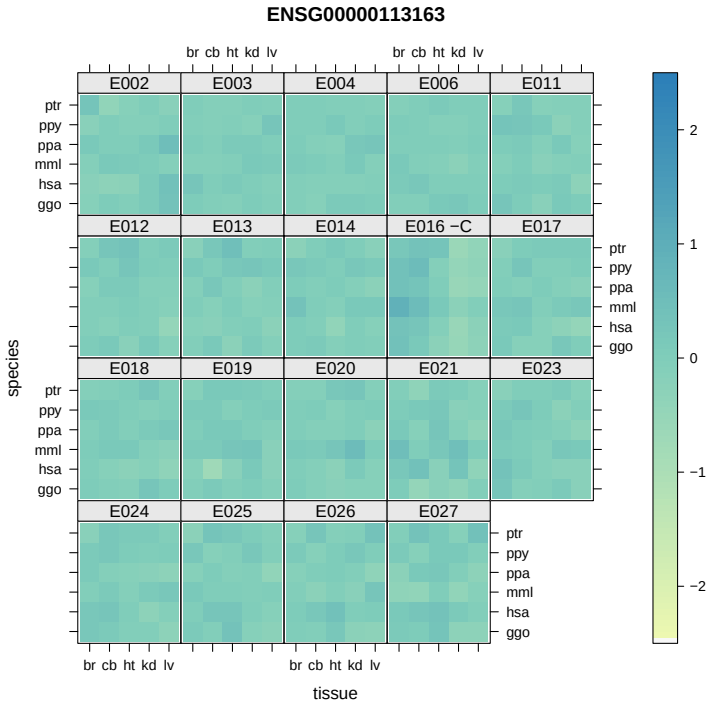

ENSG00000112293
E001 −C
E004
E008 −C
E009
E011
E013 −C
E014
E015
E024
E026
E027
E029
E030
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

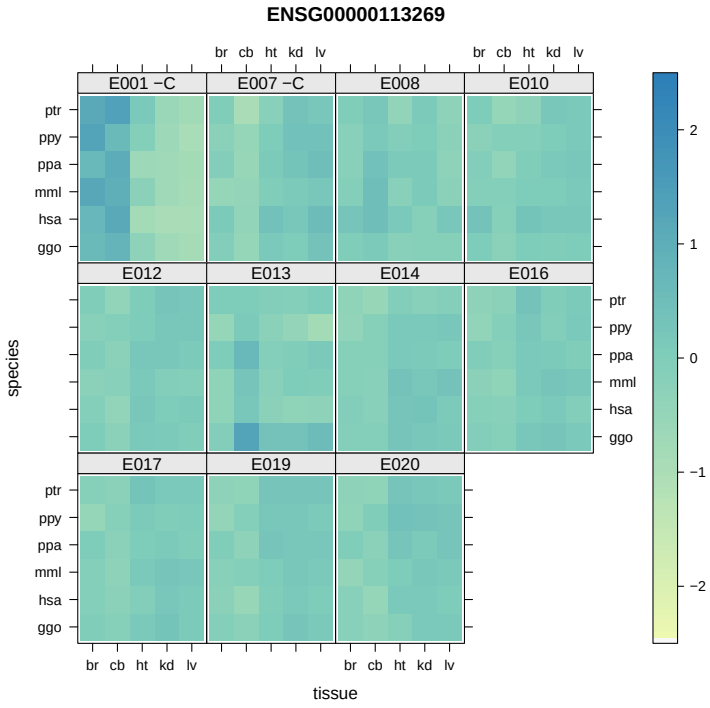

ENSG00000112530
E003
E005
E007 −C
E011
E013
E014
E018
E020 −C
E021
E022
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

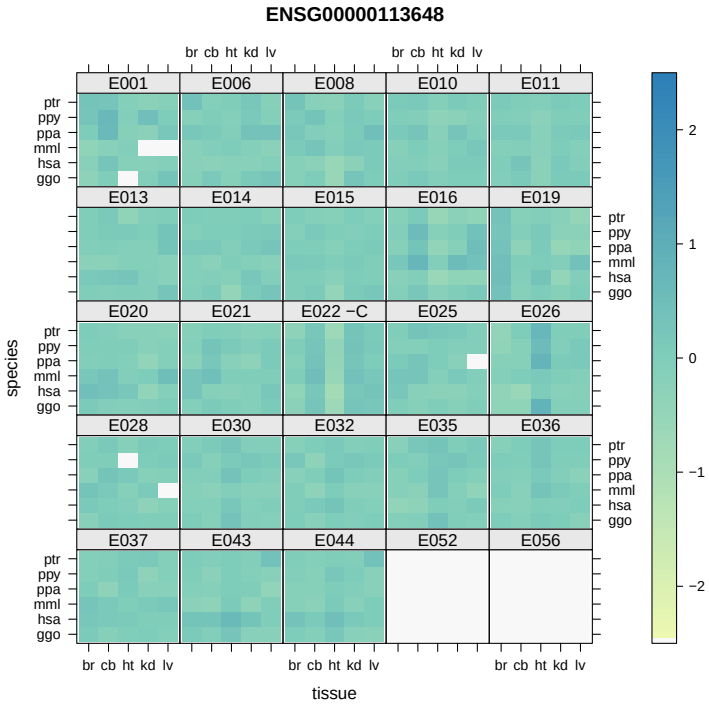

ENSG00000112531
E011
E012
E013
E014
E016
E020
E026
E027
E028
E030
E032
E033
E035
E036
E037 −C
E040 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

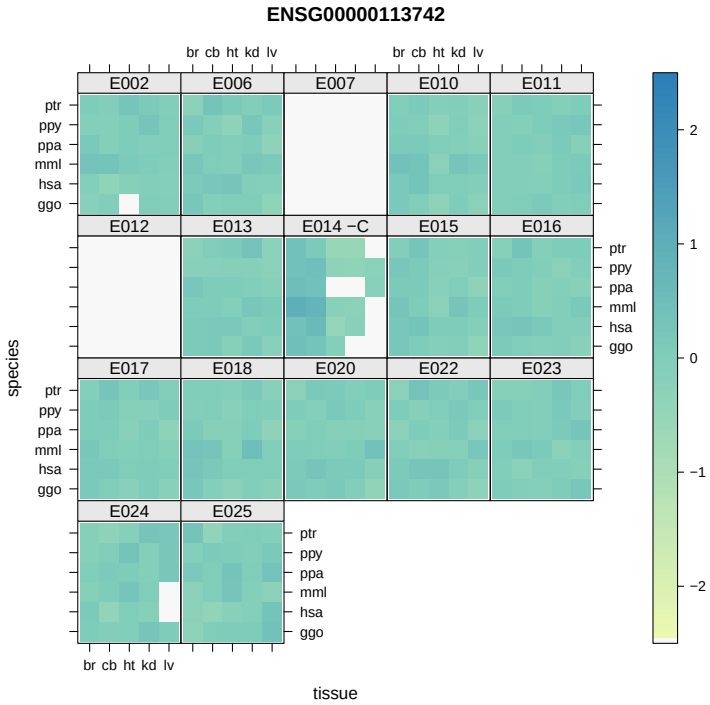

ENSG00000112759
E003
E004
E011
E014
E015
E016
E018 −C
E020 −C
E021 −C
E023
E024
E025
E026
E027
E030
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

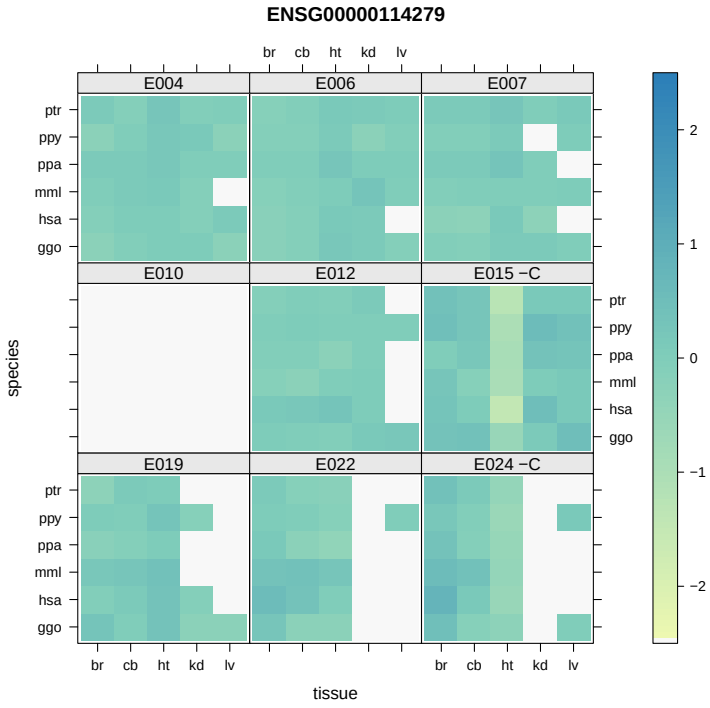

ENSG00000113141
E001 −C
E002
E006
E008
E024
E028
E029
E030
E034
E035
E043
E045
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

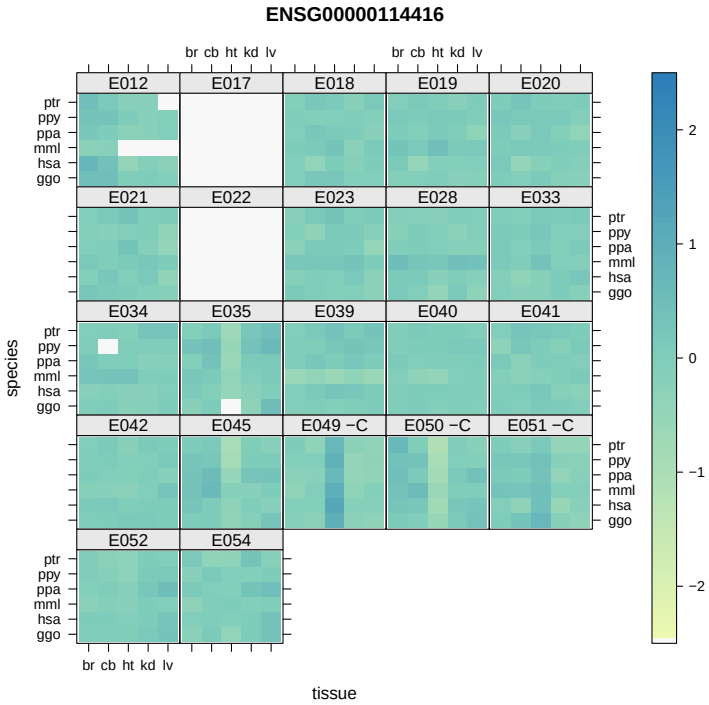

ENSG00000113163
E002
E003
E004
E006
E011
E012
E013
E014
E016 −C
E017
E018
E019
E020
E021
E023
E024
E025
E026
E027
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

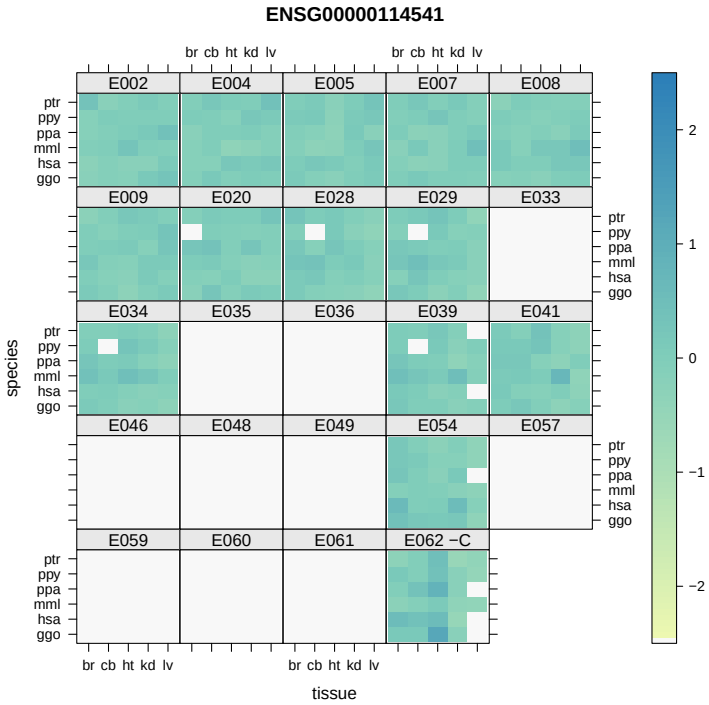

ENSG00000113269
E001 −C
E007 −C
E008
E010
E012
E013
E014
E016
E017
E019
E020
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

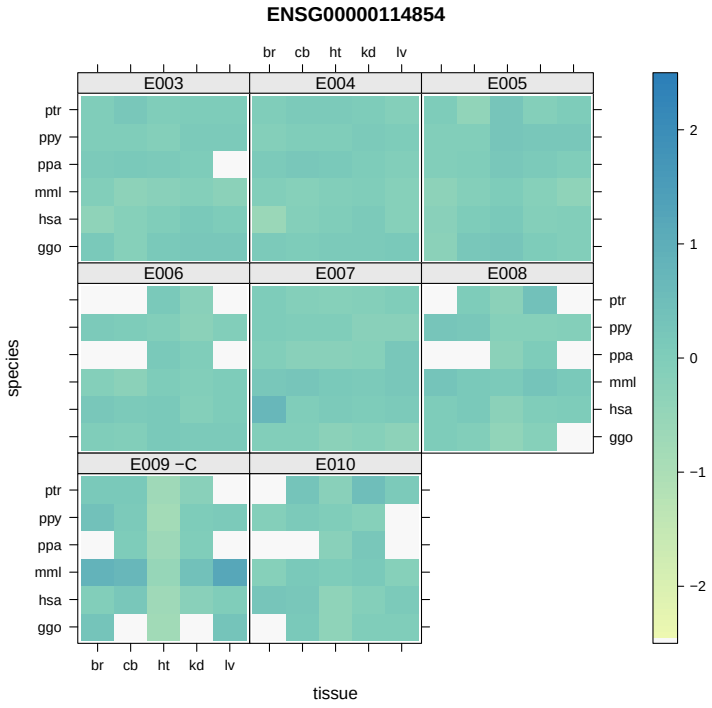

ENSG00000113648
br cb ht kd lv
E001
E006
E008
E010
E011
E013
E014
E015
E016
E019
E020
E021
E022 −C
E025
E026
E028
E030
E032
E035
E036
E037
E043
E044
E052
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

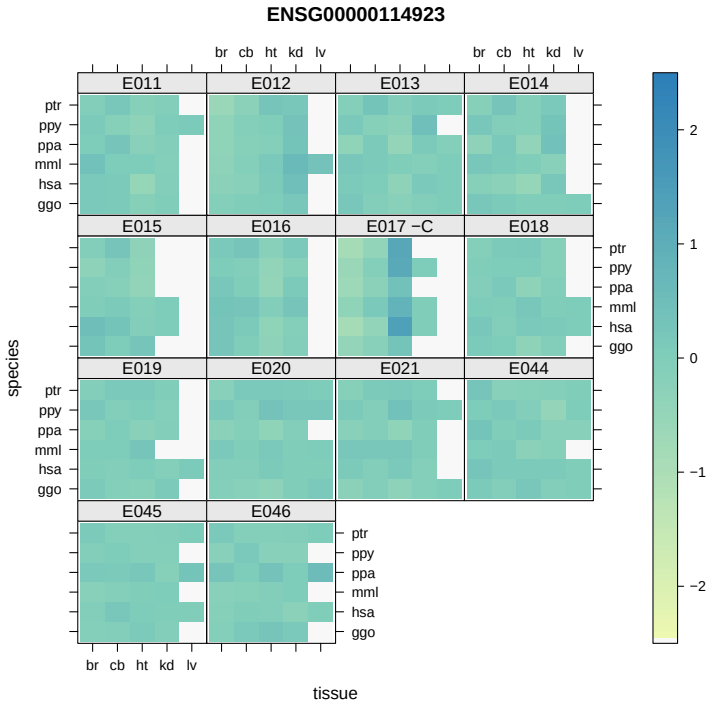

ENSG00000113742
br cb ht kd lv
E002
E006
E007
E010
E011
E012
E013
E014 −C
E015
E016
E017
E018
E020
E022
E023
E024
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

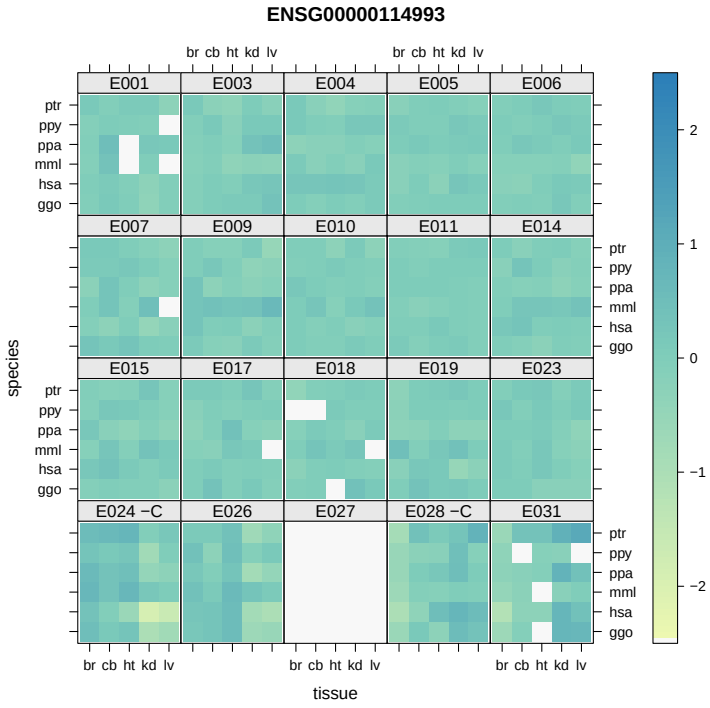

ENSG00000114279
br cb ht kd lv
E004
E006
E007
E010
E012
E015 −C
E019
E022
E024 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

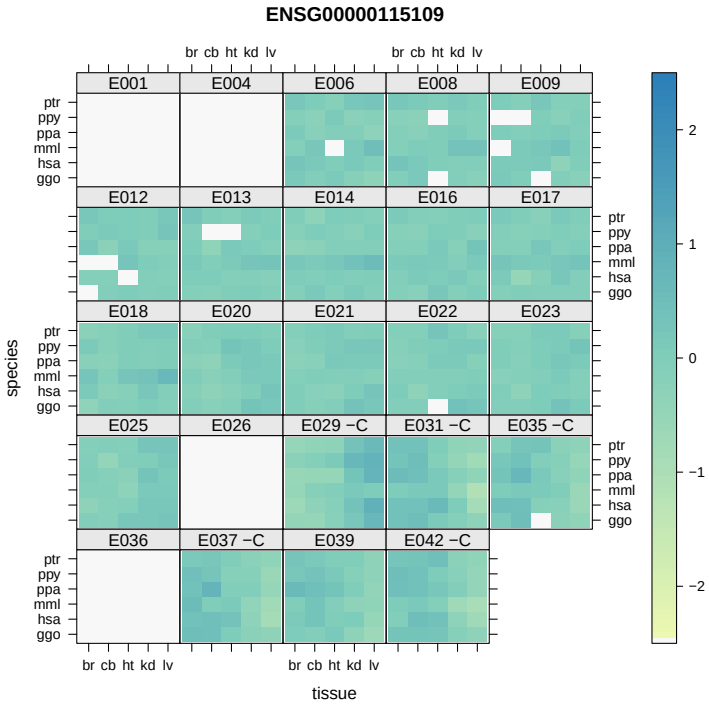

ENSG00000114416
br cb ht kd lv
E012
E017
E018
E019
E020
E021
E022
E023
E028
E033
E034
E035
E039
E040
E041
E042
E045
E049 −C
E050 −C
E051 −C
E052
E054
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

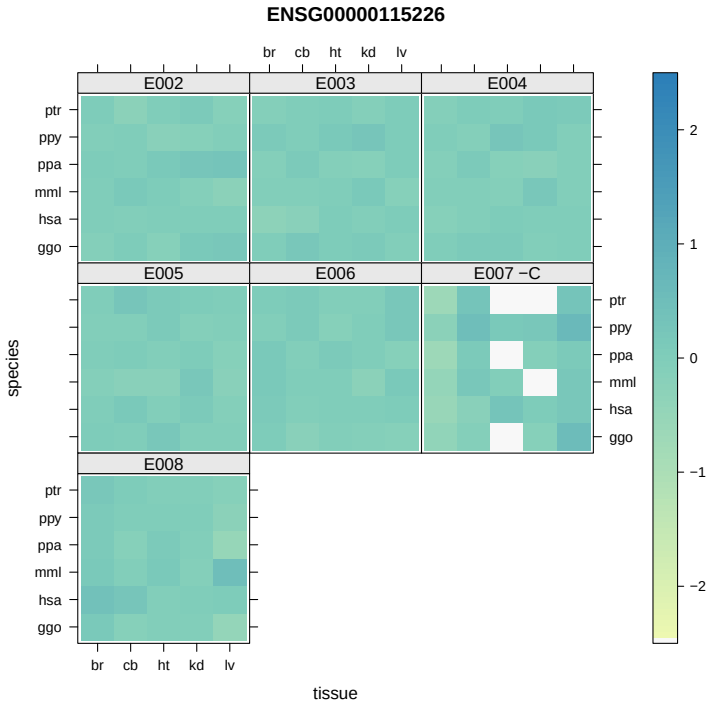

ENSG00000114541
br cb ht kd lv
E002
E004
E005
E007
E008
E009
E020
E028
E029
E033
E034
E035
E036
E039
E041
E046
E048
E049
E054
E057
E059
E060
E061
E062 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

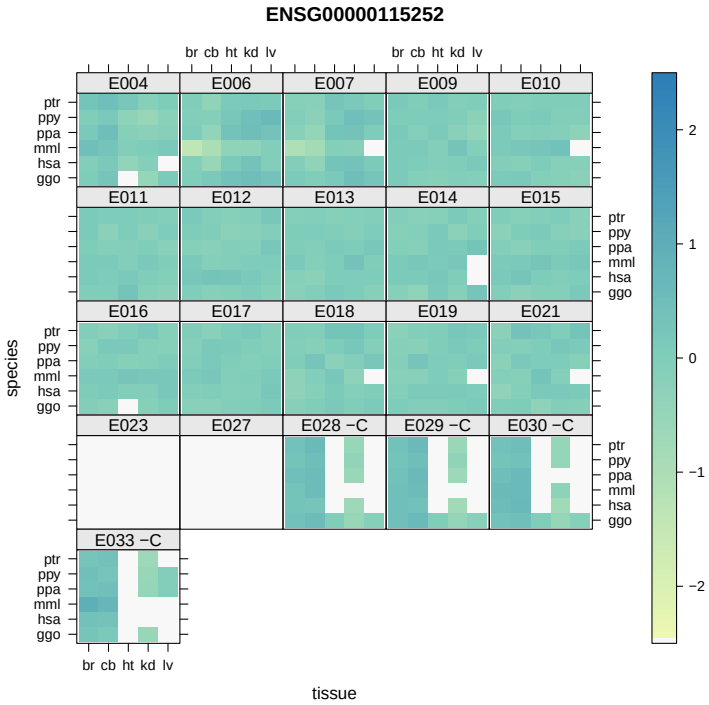

ENSG00000114854
br cb ht kd lv
E003
E004
E005
E006
E007
E008
E009 −C
E010
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

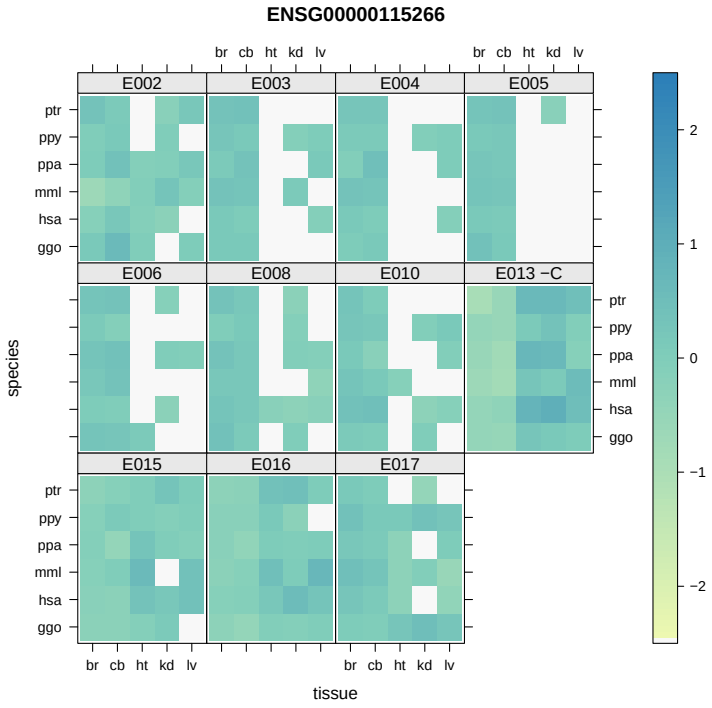

ENSG00000114923
E011
E012
E013
E014
E015
E016
E017 −C
E018
E019
E020
E021
E044
E045
E046
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

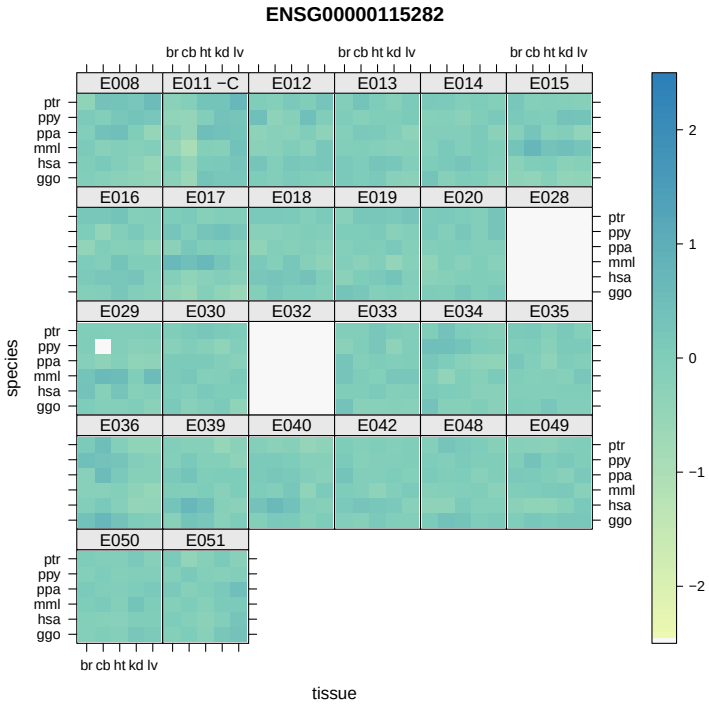

ENSG00000114993
E001
E003
E004
E005
E006
E007
E009
E010
E011
E014
E015
E017
E018
E019
E023
E024 −C
E026
E027
E028 −C
E031
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

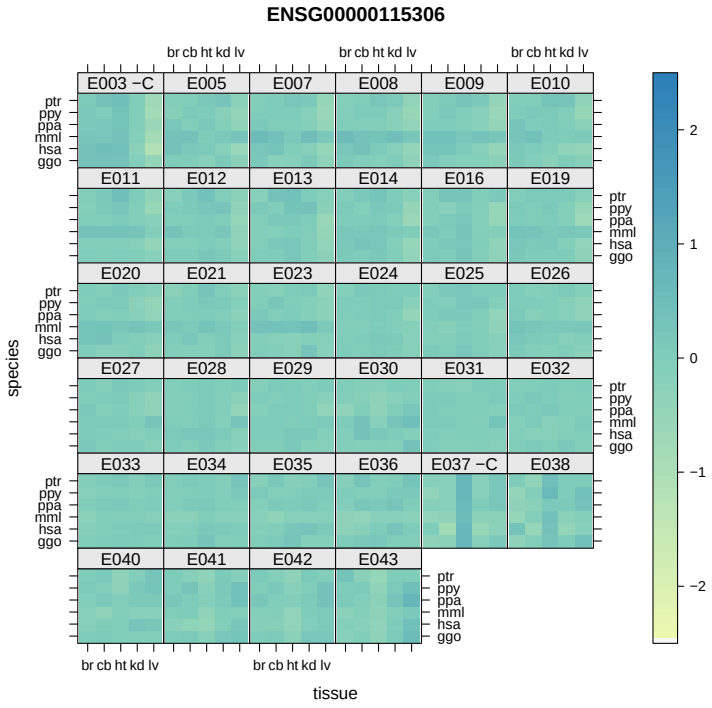

ENSG00000115109
E001
E004
E006
E008
E009
E012
E013
E014
E016
E017
E018
E020
E021
E022
E023
E025
E026
E029 −C
E031 −C
E035 −C
E036
E037 −C
E039
E042 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

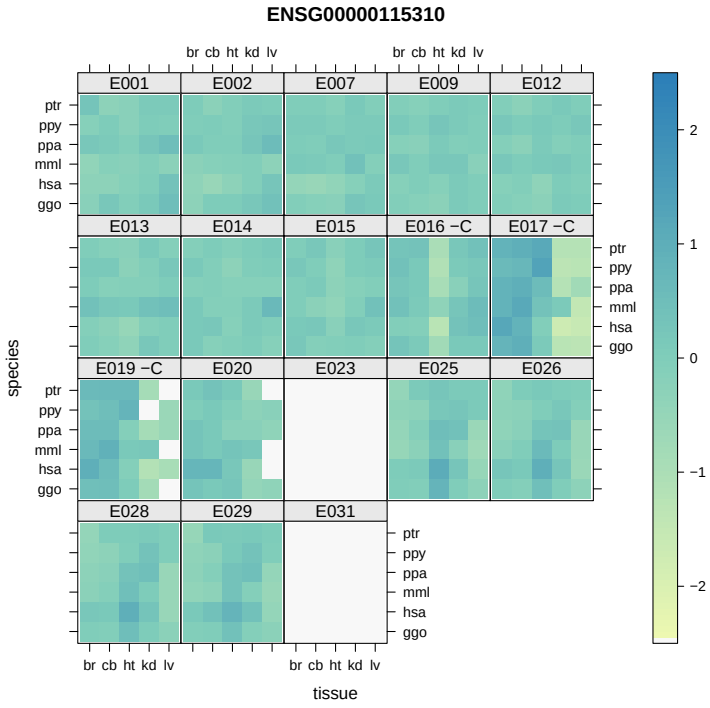

ENSG00000115226
br cb ht kd lv
E002
E003
E004
E005
E006
E007 −C
E008
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

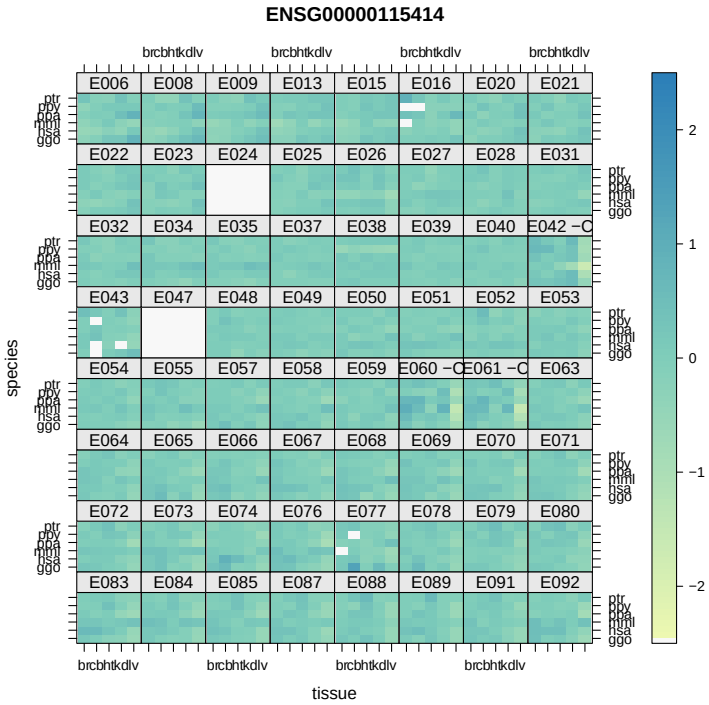

ENSG00000115252
br cb ht kd lv
E004
E006
E007
E009
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E021
E023
E027
E028 −C
E029 −C
E030 −C
E033 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

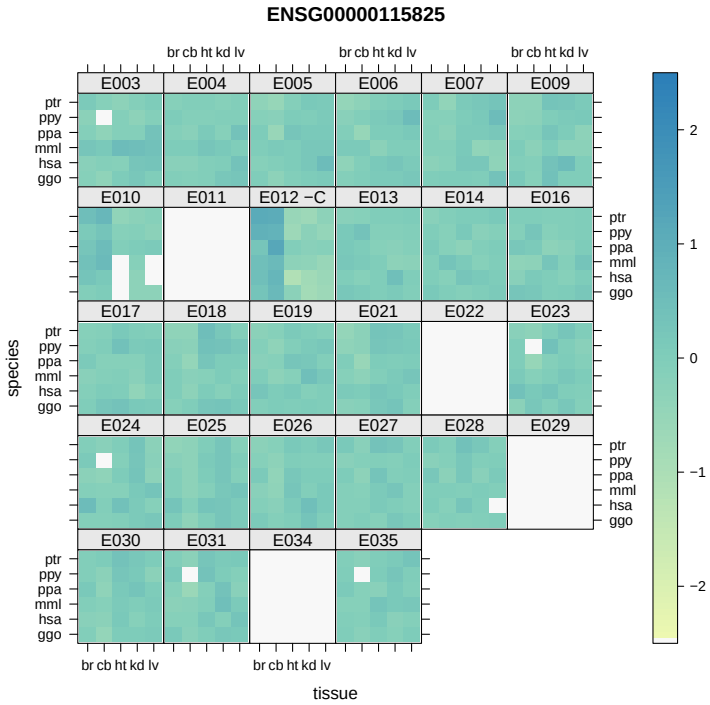

ENSG00000115266
E002
E003
E004
E005
E006
E008
E010
E013 −C
E015
E016
E017
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

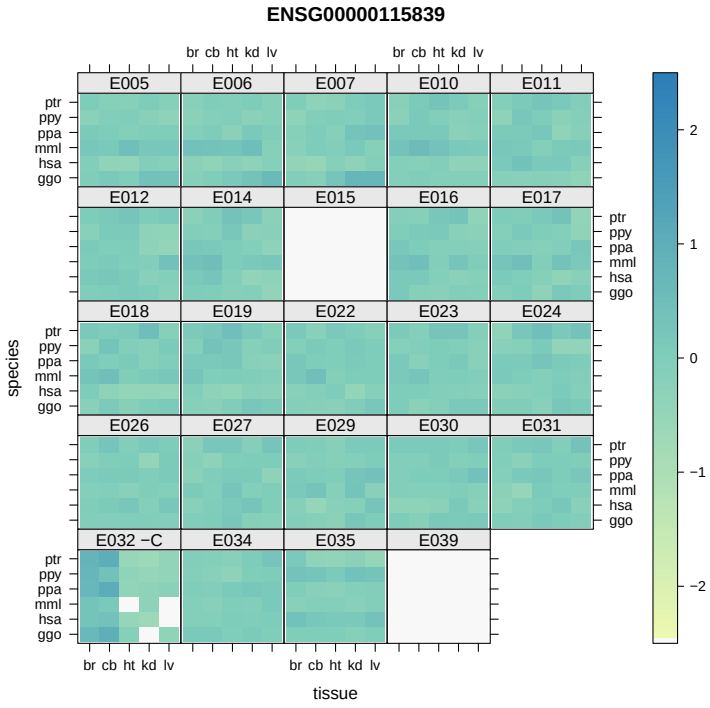

ENSG00000115282
br cb ht kd lv
E008
E011 −C
E012
E013
E014
E015
E016
E017
E018
E019
E020
E028
E029
E030
E032
E033
E034
E035
E036
E039
E040
E042
E048
E049
E050
E051
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

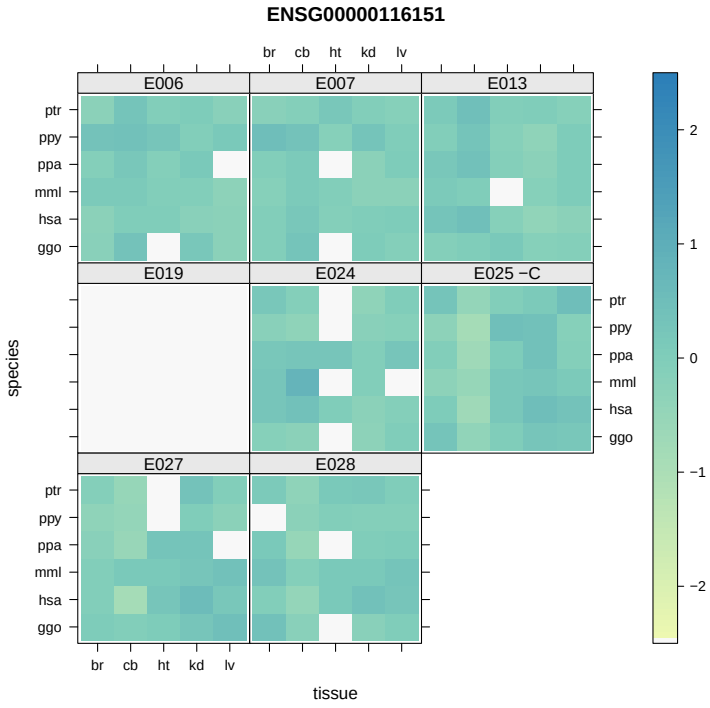

ENSG00000115306
br cb ht kd lv
E003 −C
E005
E007
E008
E009
E010
E011
E012
E013
E014
E016
E019
E020
E021
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E035
E036
E037 −C
E038
E040
E041
E042
E043
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

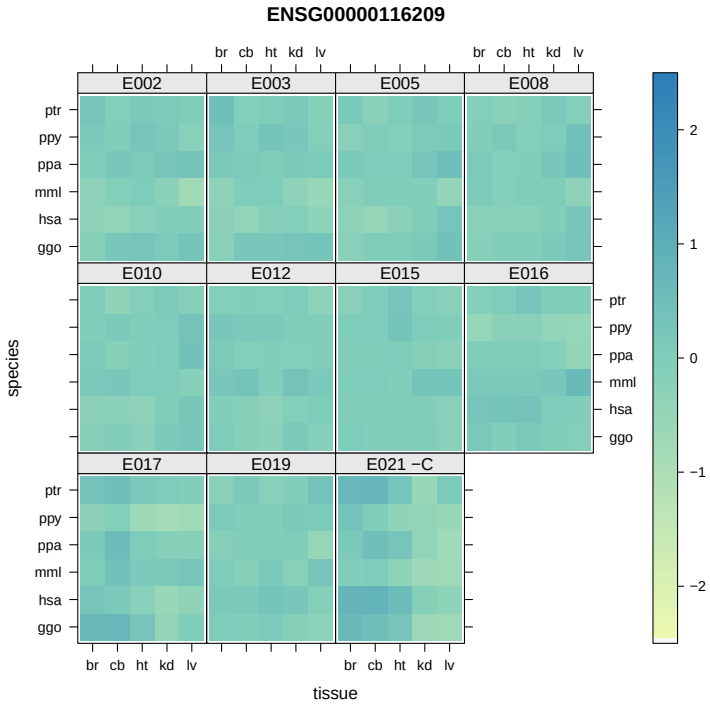

ENSG00000115310
E001
E002
E007
E009
E012
E013
E014
E015
E016 −C
E017 −C
E019 −C
E020
E023
E025
E026
E028
E029
E031
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

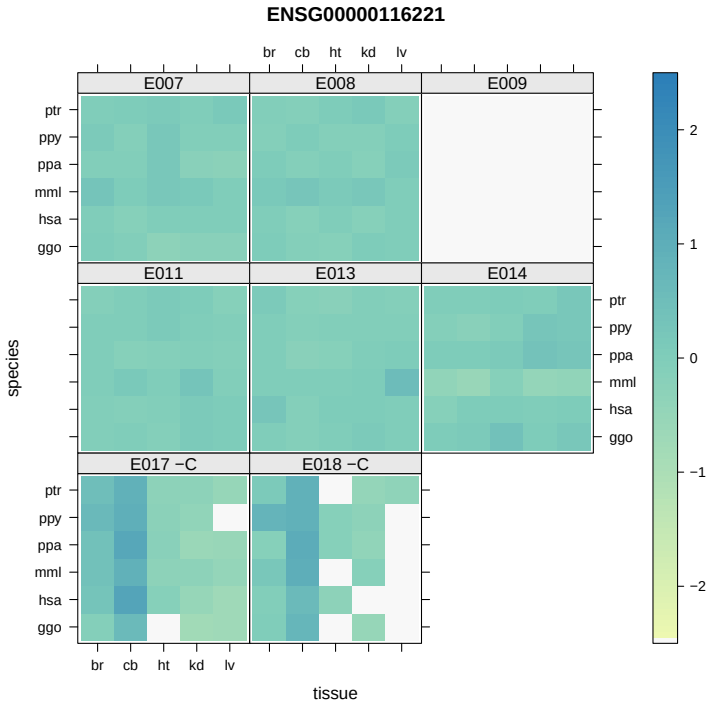

ENSG00000115414
brcbhtkdlv
E006
E008
E009
E013
E015
E016
E020
E021
E022
E023
E024
E025
E026
E027
E028
E031
E032
E034
E035
E037
E038
E039
E040
E042 −C
E043
E047
E048
E049
E050
E051
E052
E053
E054
E055
E057
E058
E059
E060 −C
E061 −C
E063
E064
E065
E066
E067
E068
E069
E070
E071
E072
E073
E074
E076
E077
E078
E079
E080
E083
E084
E085
E087
E088
E089
E091
E092
ptr
ppy
ppa
mmul
nsa
ggo
species
tissue
2
1
0
−1
−2

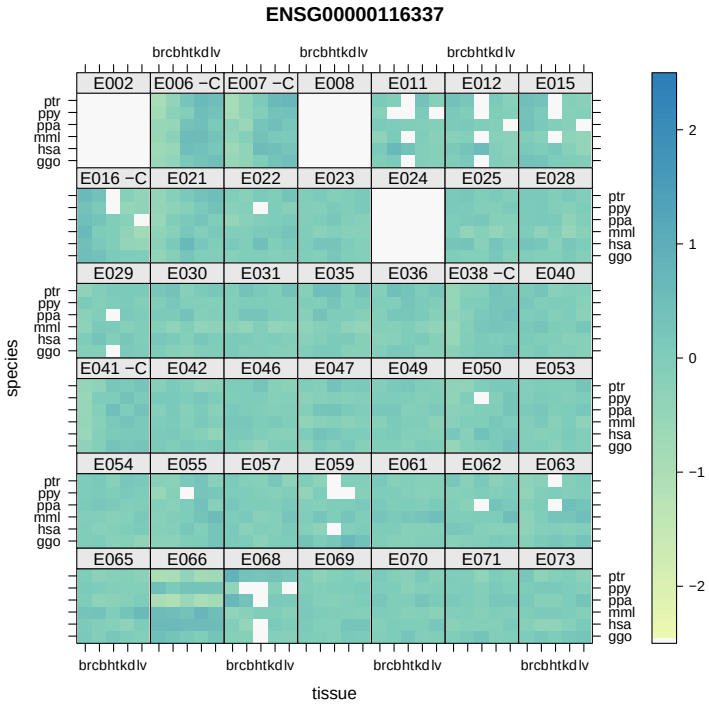

ENSG00000115825
br cb ht kd lv
E003
E004
E005
E006
E007
E009
E010
E011
E012 −C
E013
E014
E016
E017
E018
E019
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E034
E035
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

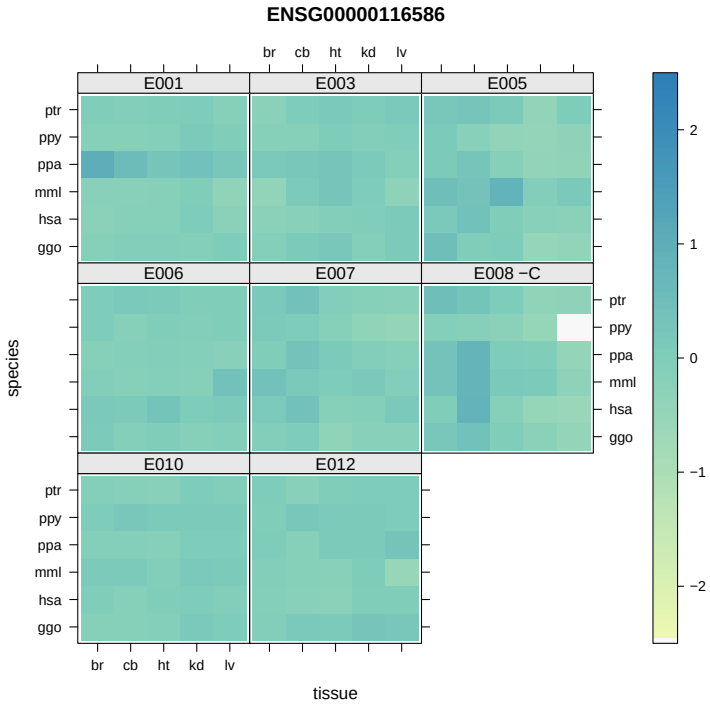

ENSG00000115839
E005
E006
E007
E010
E011
E012
E014
E015
E016
E017
E018
E019
E022
E023
E024
E026
E027
E029
E030
E031
E032 −C
E034
E035
E039
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

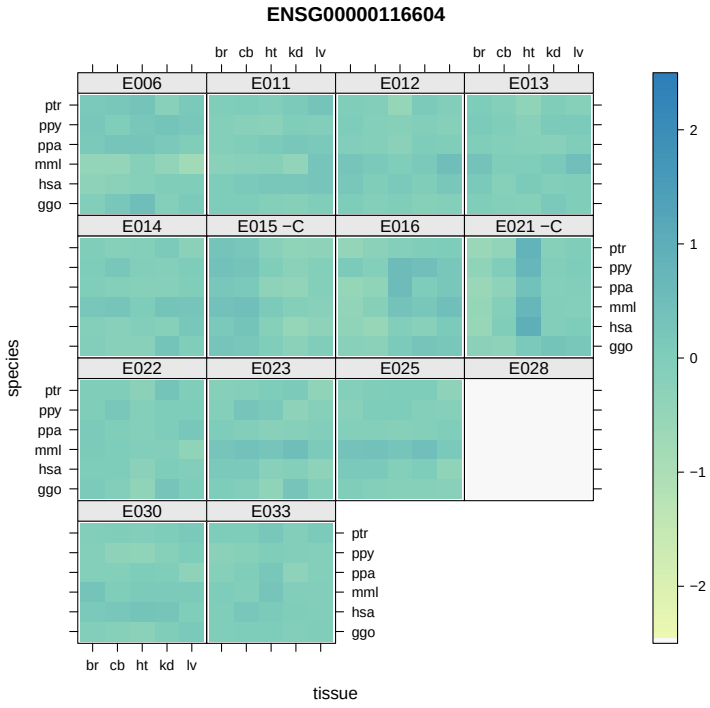

ENSG00000116151
br cb ht kd lv
E006
E007
E013
E019
E024
E025 −C
E027
E028
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

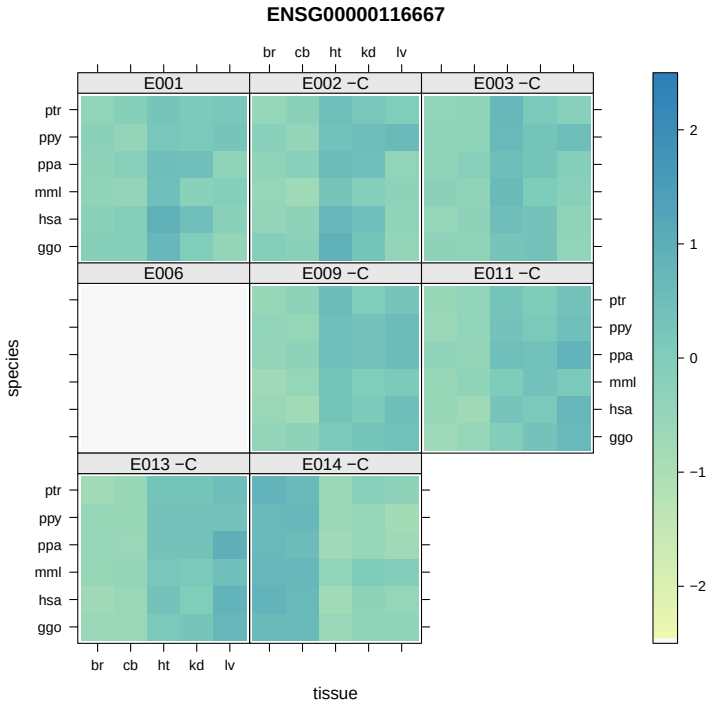

ENSG00000116209
E002
E003
E005
E008
E010
E012
E015
E016
E017
E019
E021 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

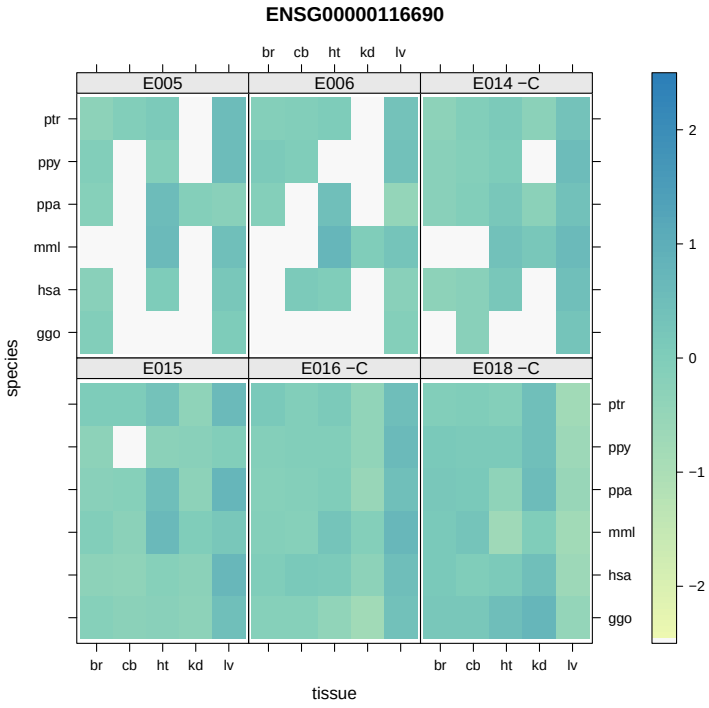

ENSG00000116221
br cb ht kd lv
E007
E008
E009
E011
E013
E014
E017 −C
E018 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

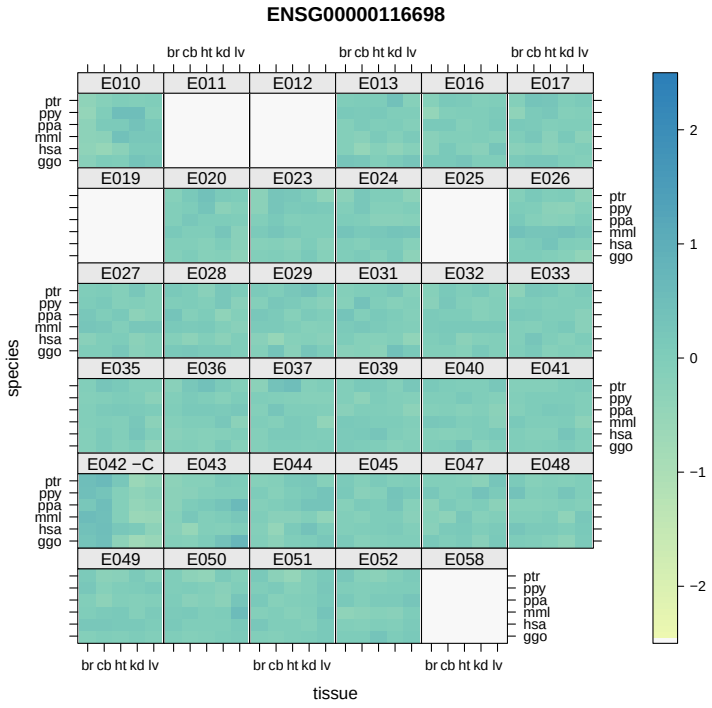

ENSG00000116337
brcbhtkdlv
E002
E006 −C
E007 −C
E008
E011
E012
E015
E016 −C
E021
E022
E023
E024
E025
E028
E029
E030
E031
E035
E036
E038 −C
E040
E041 −C
E042
E046
E047
E049
E050
E053
E054
E055
E057
E059
E061
E062
E063
E065
E066
E068
E069
E070
E071
E073
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

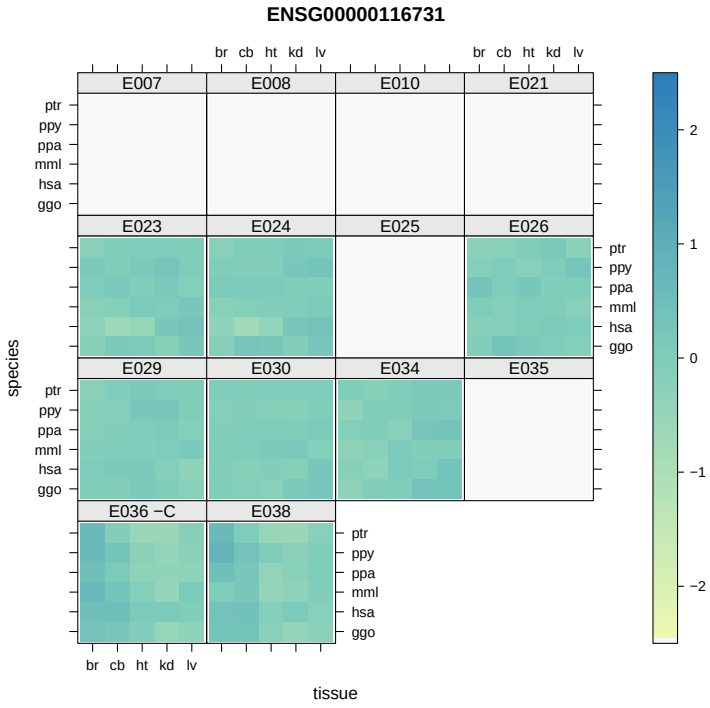

ENSG00000116586
br cb ht kd lv
E001
E003
E005
E006
E007
E008 −C
E010
E012
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

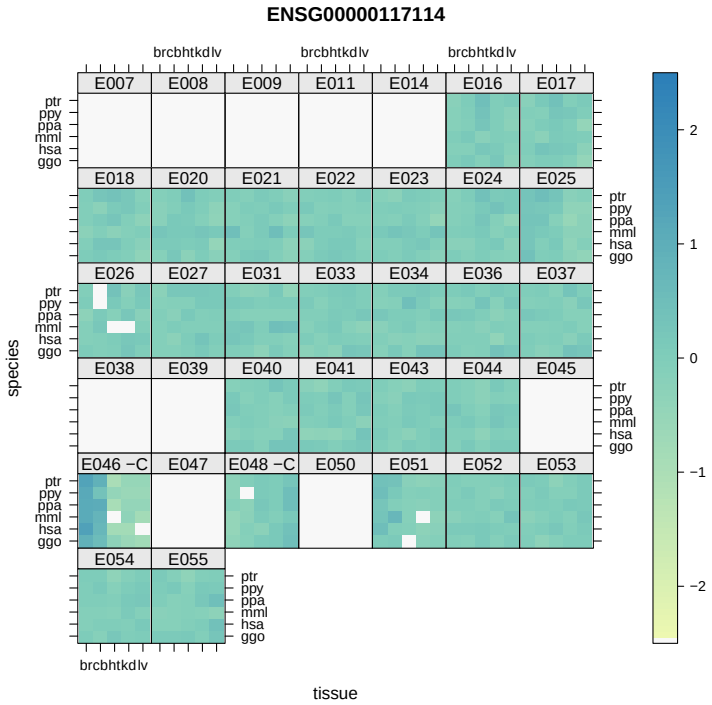

ENSG00000116604
E006
E011
E012
E013
E014
E015 −C
E016
E021 −C
E022
E023
E025
E028
E030
E033
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

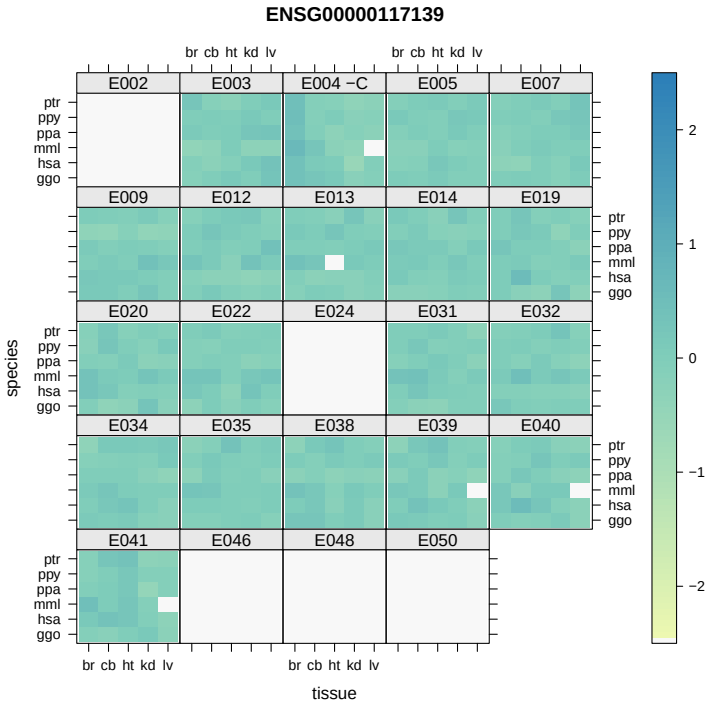

ENSG00000116667
br cb ht kd lv
E001
E002 −C
E003 −C
E006
E009 −C
E011 −C
E013 −C
E014 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

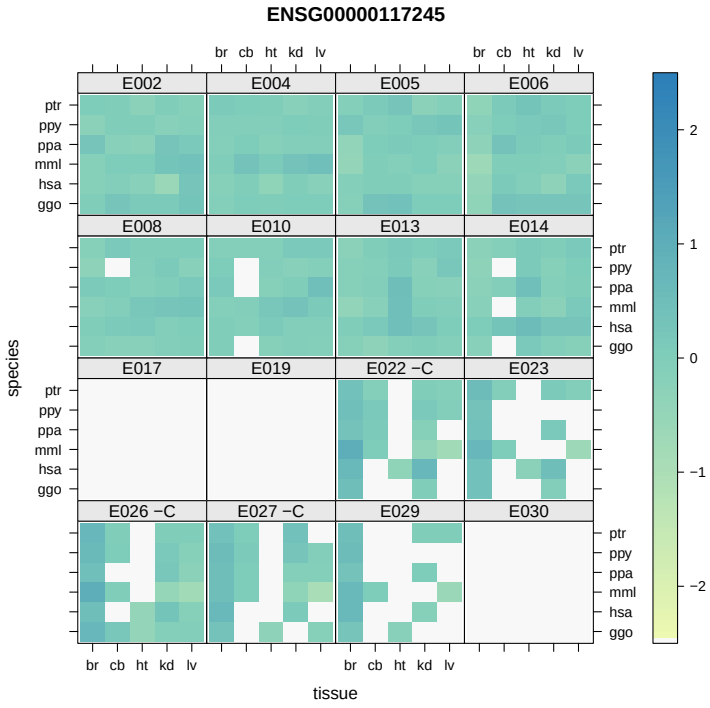

ENSG00000116690
br cb ht kd lv
E005
E006
E014 −C
E015
E016 −C
E018 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

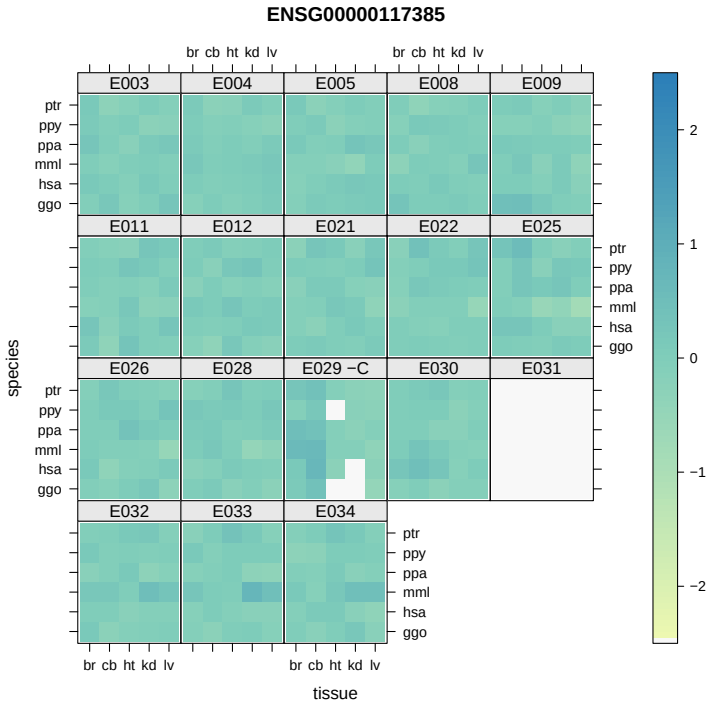

ENSG00000116698
br cb ht kd lv
E010
E011
E012
E013
E016
E017
E019
E020
E023
E024
E025
E026
E027
E028
E029
E031
E032
E033
E035
E036
E037
E039
E040
E041
E042 −C
E043
E044
E045
E047
E048
E049
E050
E051
E052
E058
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

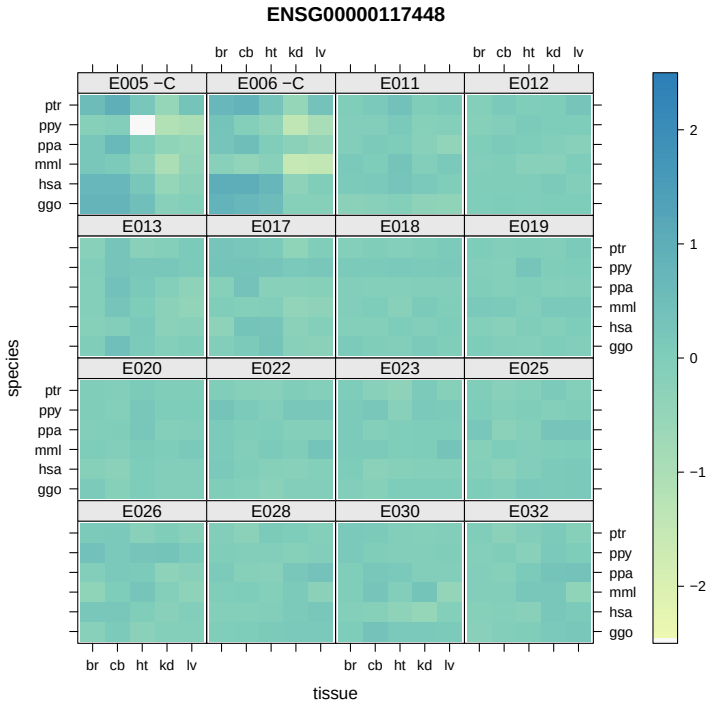

ENSG00000116731
E007
E008
E010
E021
E023
E024
E025
E026
E029
E030
E034
E035
E036 −C
E038
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

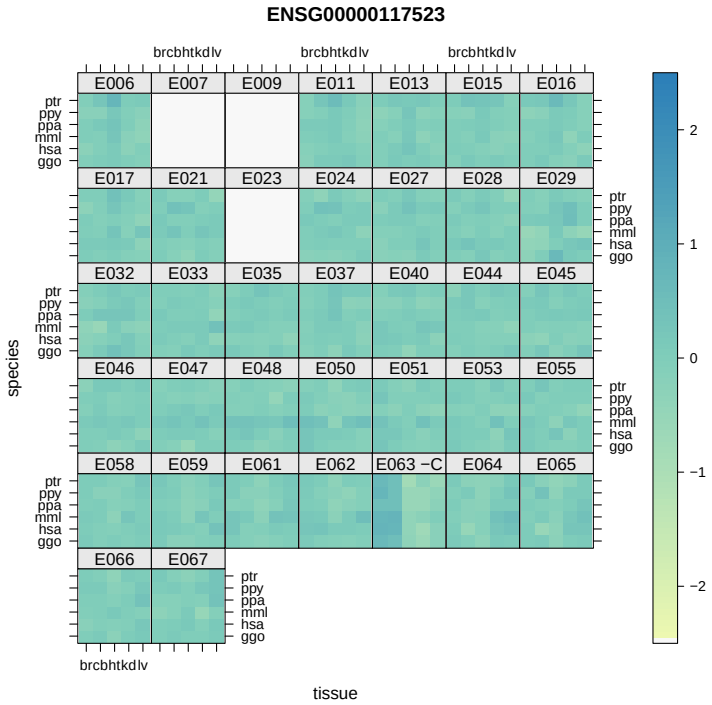

ENSG00000117114
brcbhtkdlv
brcbhtkdlv
brcbhtkdlv
E007
E008
E009
E011
E014
E016
E017
E018
E020
E021
E022
E023
E024
E025
E026
E027
E031
E033
E034
E036
E037
E038
E039
E040
E041
E043
E044
E045
E046 −C
E047
E048 −C
E050
E051
E052
E053
E054
E055
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

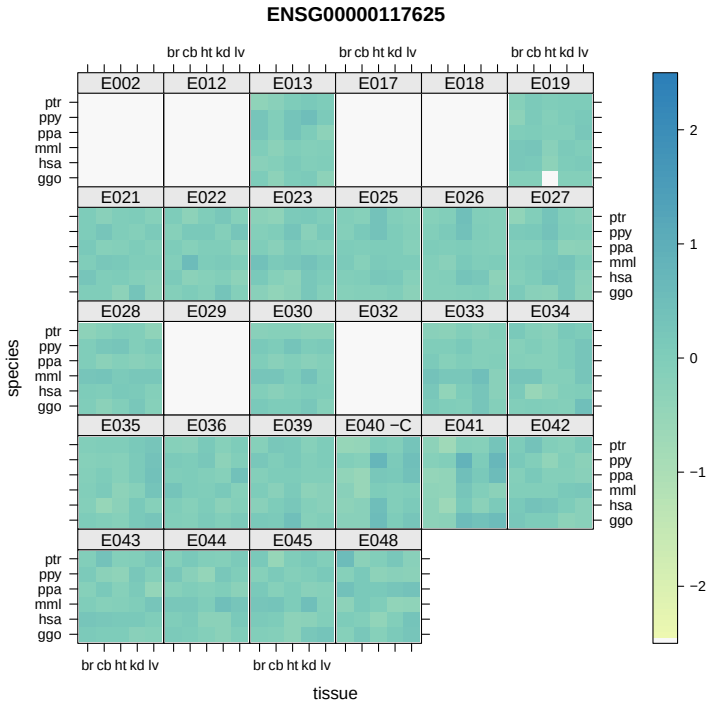

ENSG00000117139
E002
E003
E004 −C
E005
E007
E009
E012
E013
E014
E019
E020
E022
E024
E031
E032
E034
E035
E038
E039
E040
E041
E046
E048
E050
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

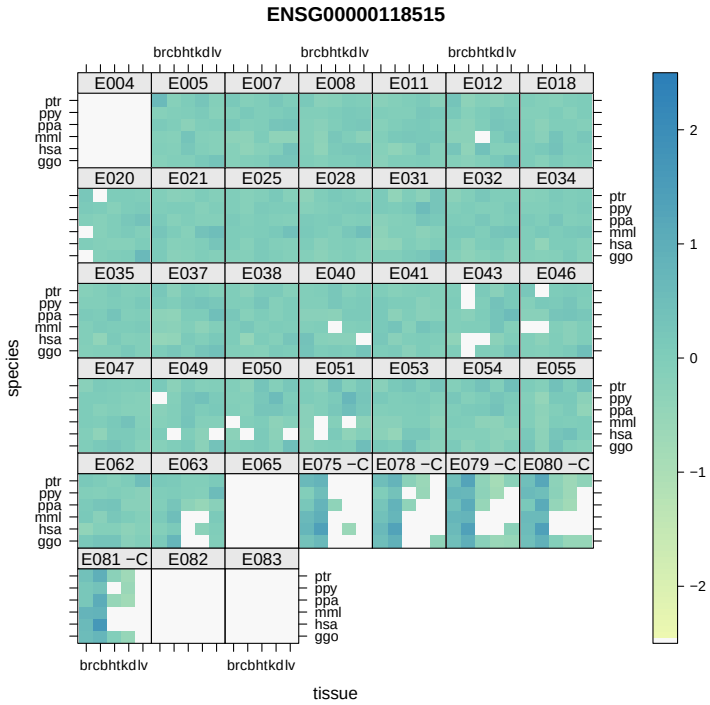

ENSG00000117245
E002
E004
E005
E006
E008
E010
E013
E014
E017
E019
E022 −C
E023
E026 −C
E027 −C
E029
E030
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

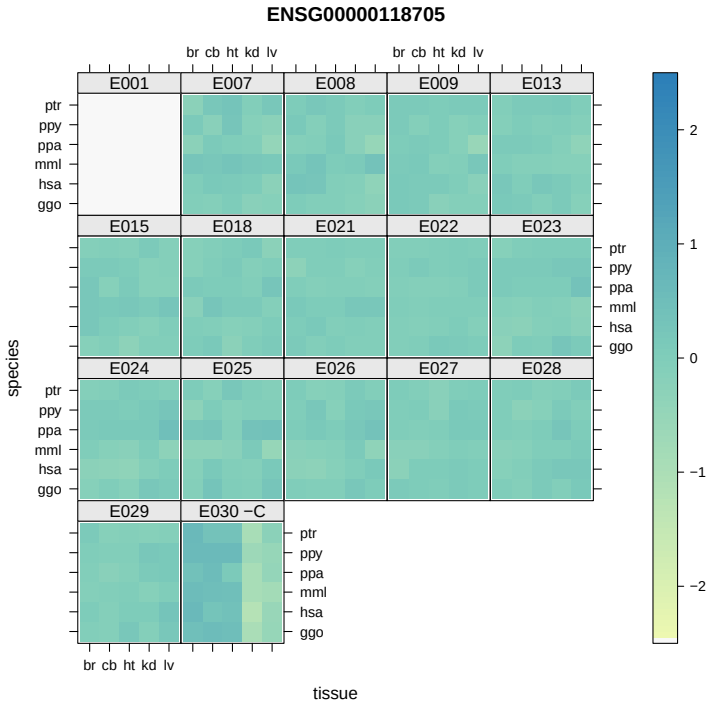

ENSG00000117385
E003
E004
E005
E008
E009
E011
E012
E021
E022
E025
E026
E028
E029 −C
E030
E031
E032
E033
E034
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

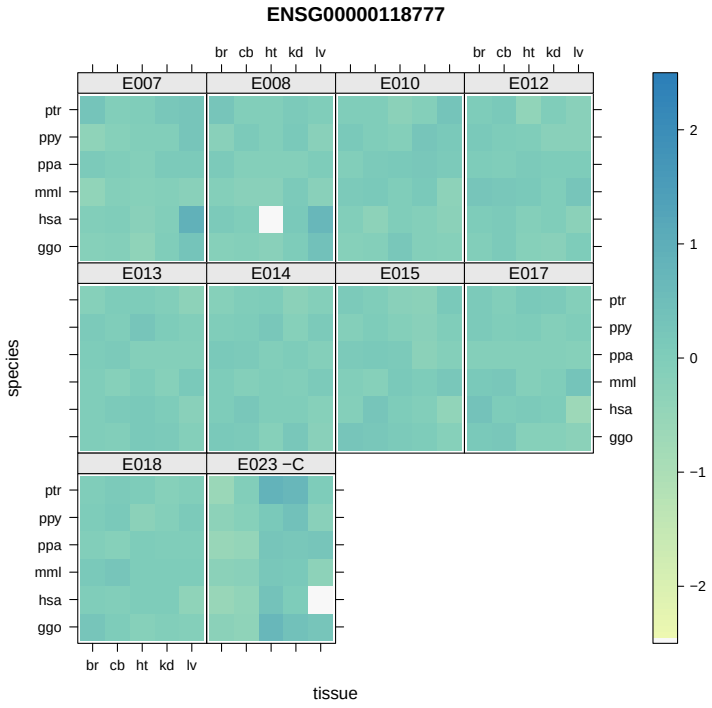

ENSG00000117448
E005 −C
E006 −C
E011
E012
E013
E017
E018
E019
E020
E022
E023
E025
E026
E028
E030
E032
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

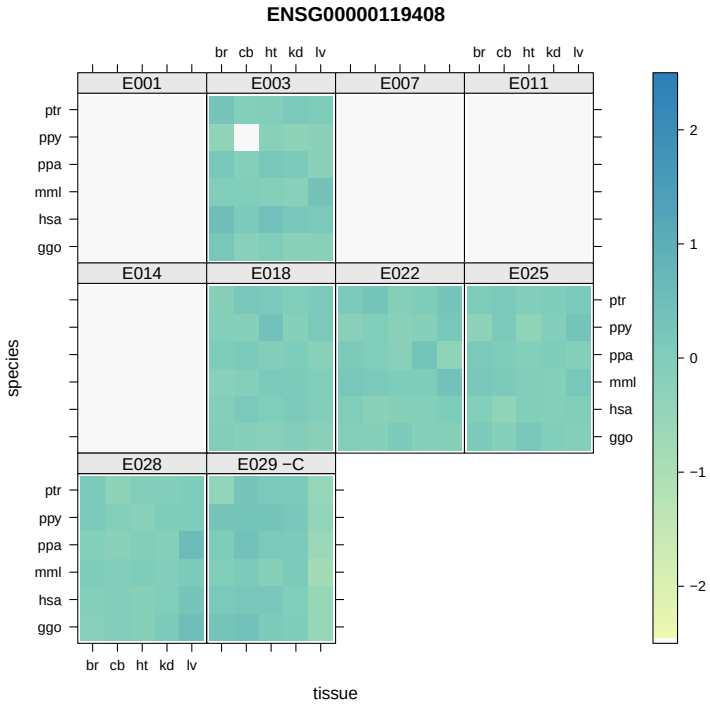

ENSG00000117523
brcbhtkdlv
E006
E007
E009
E011
E013
E015
E016
E017
E021
E023
E024
E027
E028
E029
E032
E033
E035
E037
E040
E044
E045
E046
E047
E048
E050
E051
E053
E055
E058
E059
E061
E062
E063 −C
E064
E065
E066
E067
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

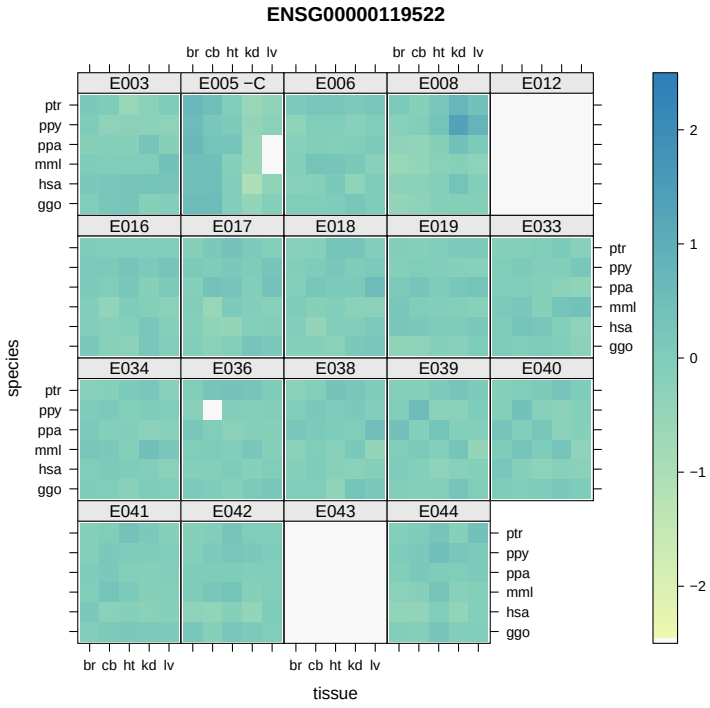

ENSG00000117625
br cb ht kd lv
E002
E012
E013
E017
E018
E019
E021
E022
E023
E025
E026
E027
E028
E029
E030
E032
E033
E034
E035
E036
E039
E040 −C
E041
E042
E043
E044
E045
E048
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

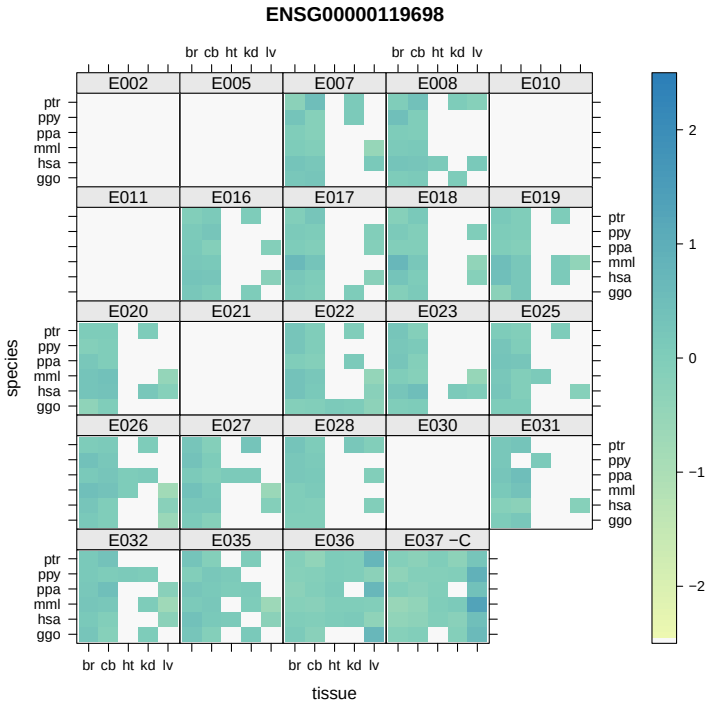

ENSG00000118515
brcbhtkdlv
E004
E005
E007
E008
E011
E012
E018
E020
E021
E025
E028
E031
E032
E034
E035
E037
E038
E040
E041
E043
E046
E047
E049
E050
E051
E053
E054
E055
E062
E063
E065
E075 −C
E078 −C
E079 −C
E080 −C
E081 −C
E082
E083
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

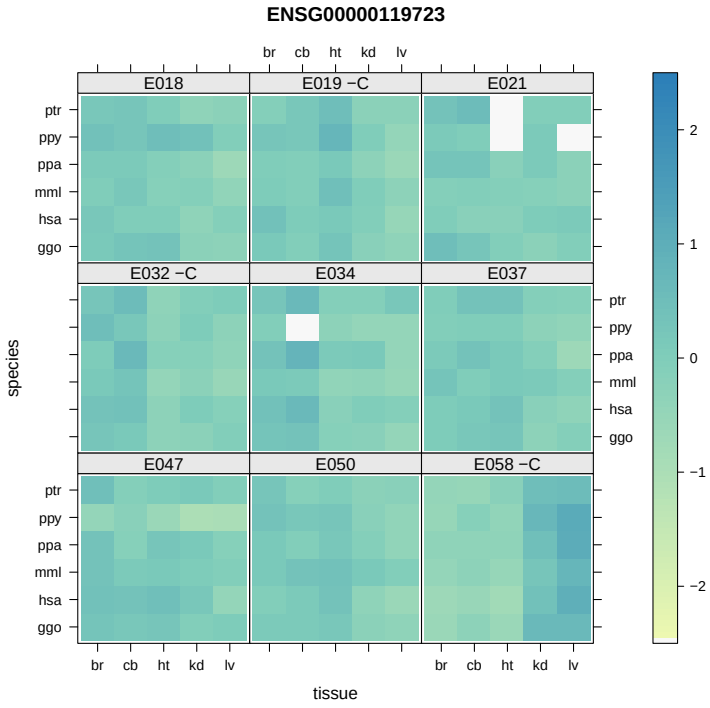

ENSG00000118705
br cb ht kd lv
E001
E007
E008
E009
E013
E015
E018
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

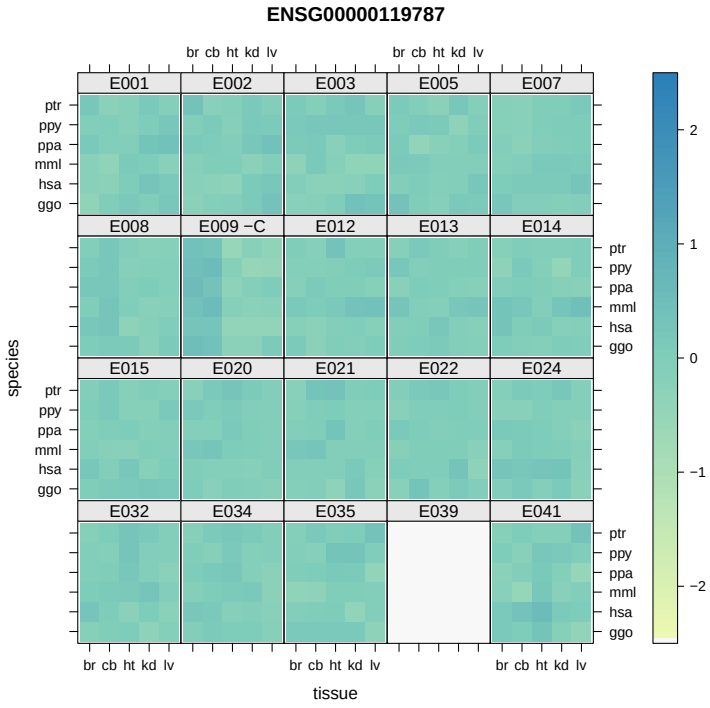

ENSG00000118777
E007
E008
E010
E012
E013
E014
E015
E017
E018
E023 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

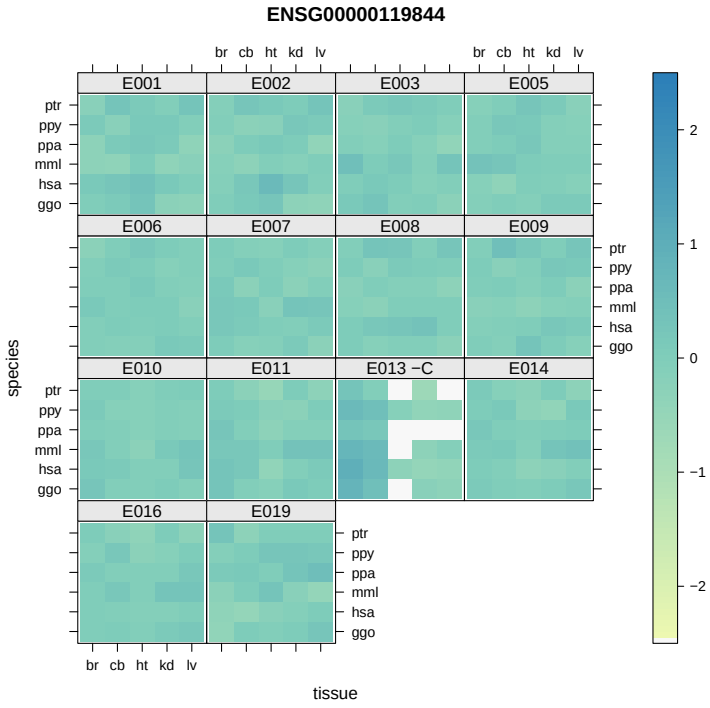

ENSG00000119408
E001
E003
E007
E011
E014
E018
E022
E025
E028
E029 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

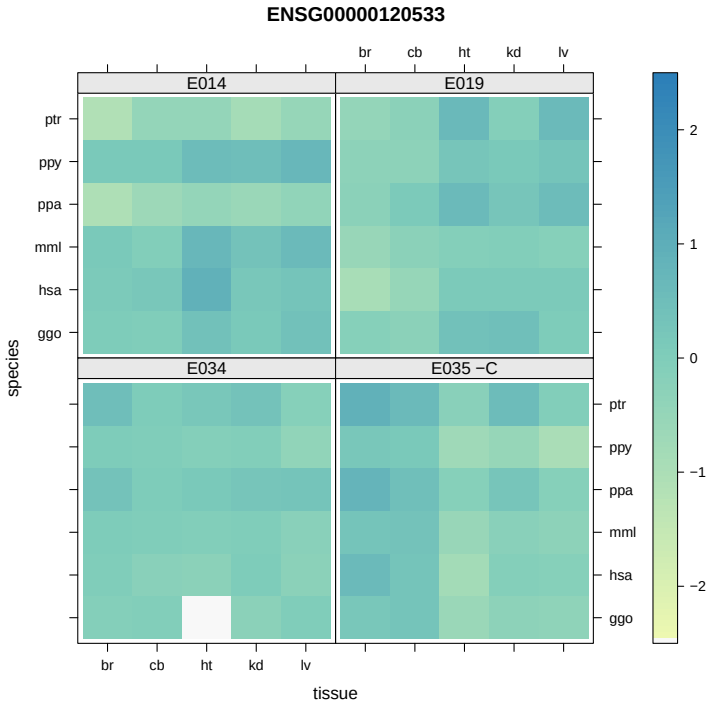

ENSG00000119522
E003
E005 −C
E006
E008
E012
E016
E017
E018
E019
E033
E034
E036
E038
E039
E040
E041
E042
E043
E044
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

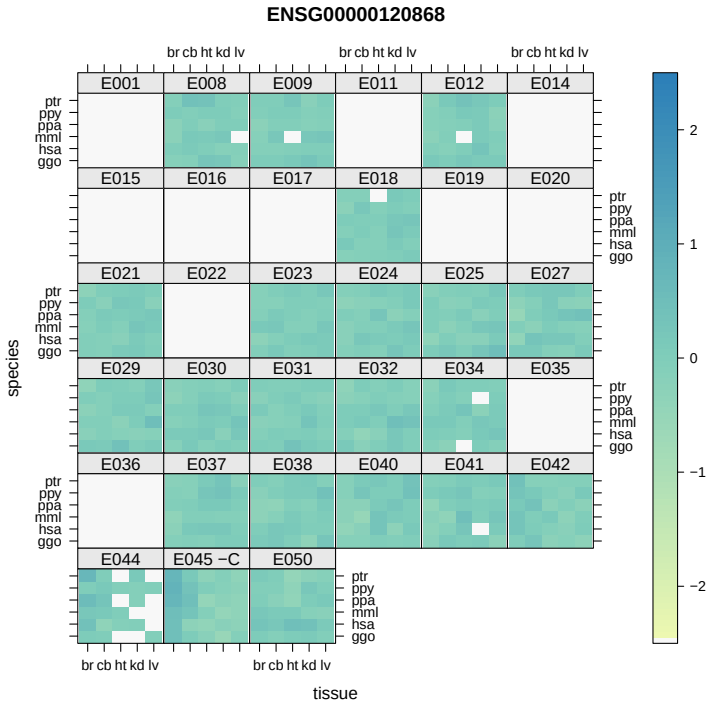

ENSG00000119698
E002
E005
E007
E008
E010
E011
E016
E017
E018
E019
E020
E021
E022
E023
E025
E026
E027
E028
E030
E031
E032
E035
E036
E037 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

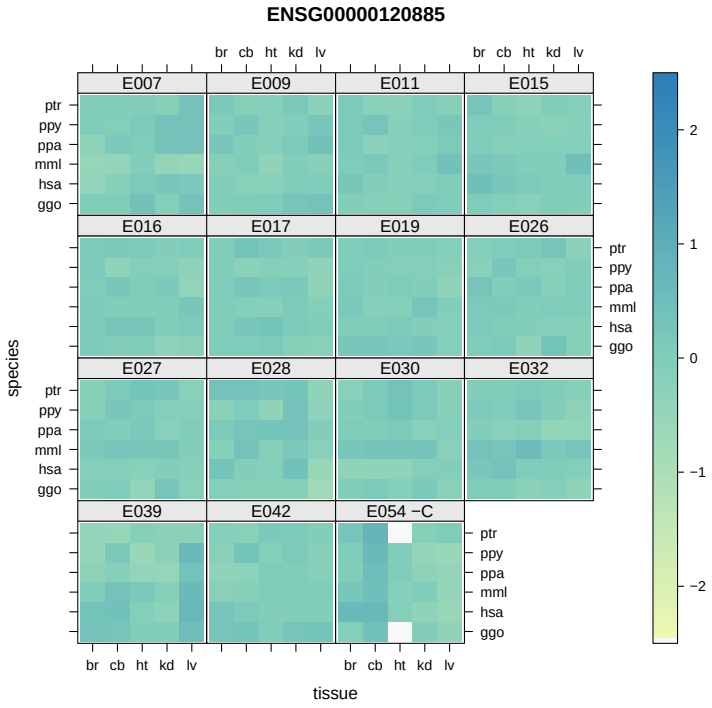

ENSG00000119723
br cb ht kd lv
E018
E019 −C
E021
E032 −C
E034
E037
E047
E050
E058 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

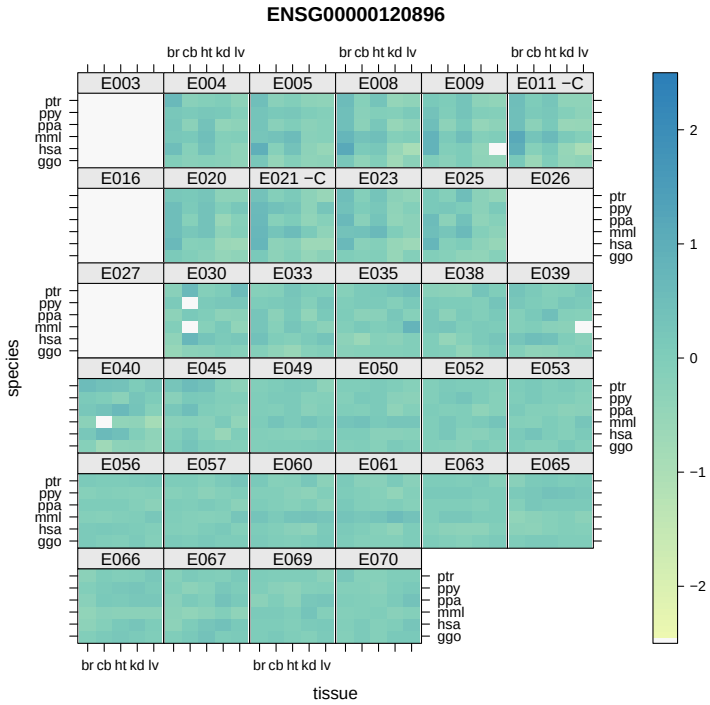

ENSG00000119787
br cb ht kd lv
E001
E002
E003
E005
E007
E008
E009 −C
E012
E013
E014
E015
E020
E021
E022
E024
E032
E034
E035
E039
E041
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

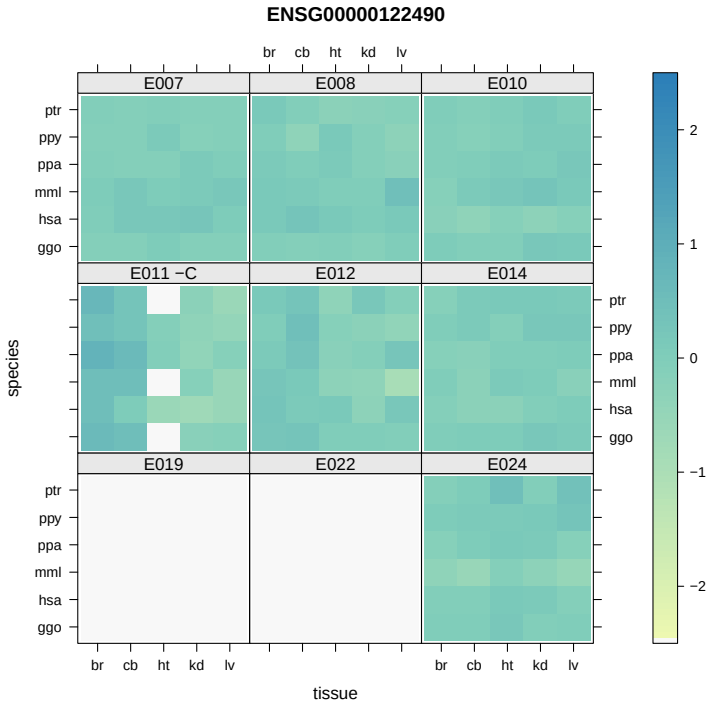

ENSG00000119844
br cb ht kd lv
E001
E002
E003
E005
E006
E007
E008
E009
E010
E011
E013 −C
E014
E016
E019
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

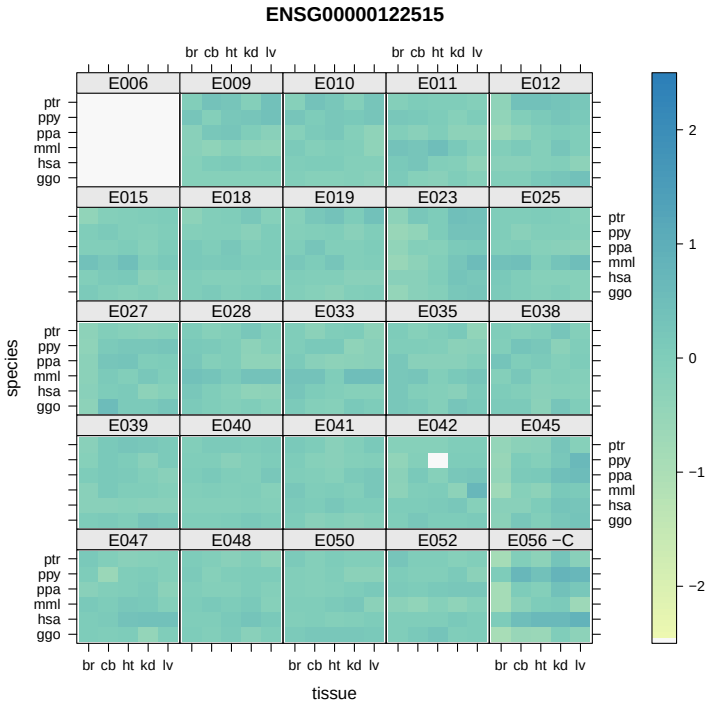

ENSG00000120533
br
cb
ht
kd
lv
E014
E019
E034
E035 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

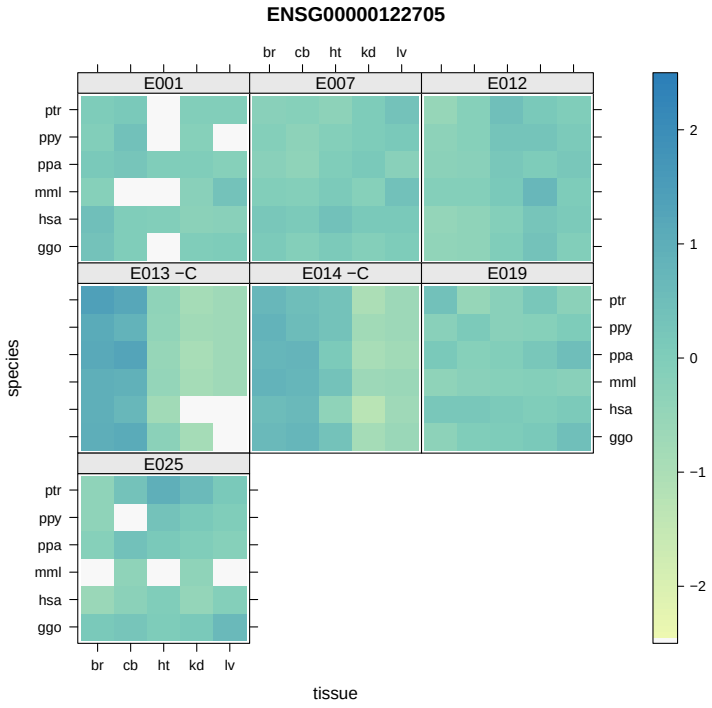

ENSG00000120868
E001
E008
E009
E011
E012
E014
E015
E016
E017
E018
E019
E020
E021
E022
E023
E024
E025
E027
E029
E030
E031
E032
E034
E035
E036
E037
E038
E040
E041
E042
E044
E045 −C
E050
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

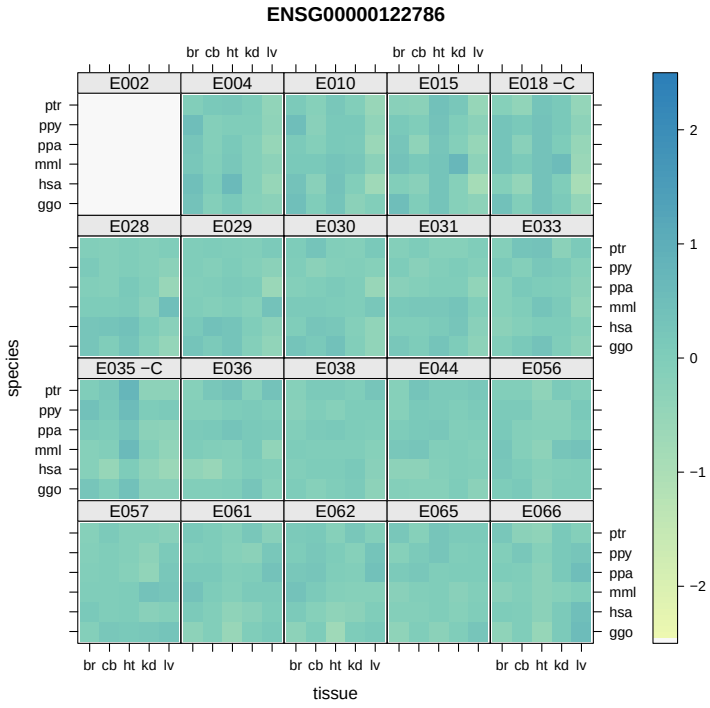

ENSG00000120885
E007
E009
E011
E015
E016
E017
E019
E026
E027
E028
E030
E032
E039
E042
E054 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

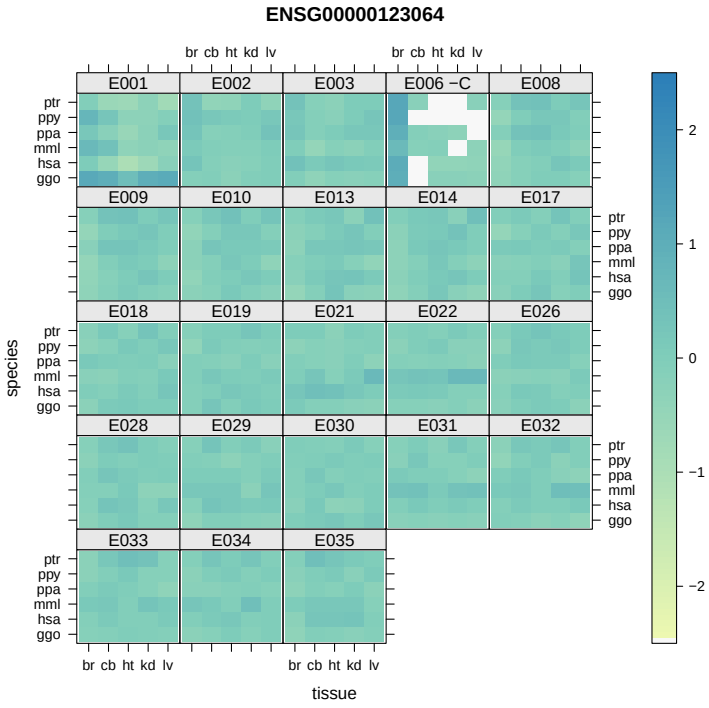

ENSG00000120896
br cb ht kd lv
E003
E004
E005
E008
E009
E011 −C
E016
E020
E021 −C
E023
E025
E026
E027
E030
E033
E035
E038
E039
E040
E045
E049
E050
E052
E053
E056
E057
E060
E061
E063
E065
E066
E067
E069
E070
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

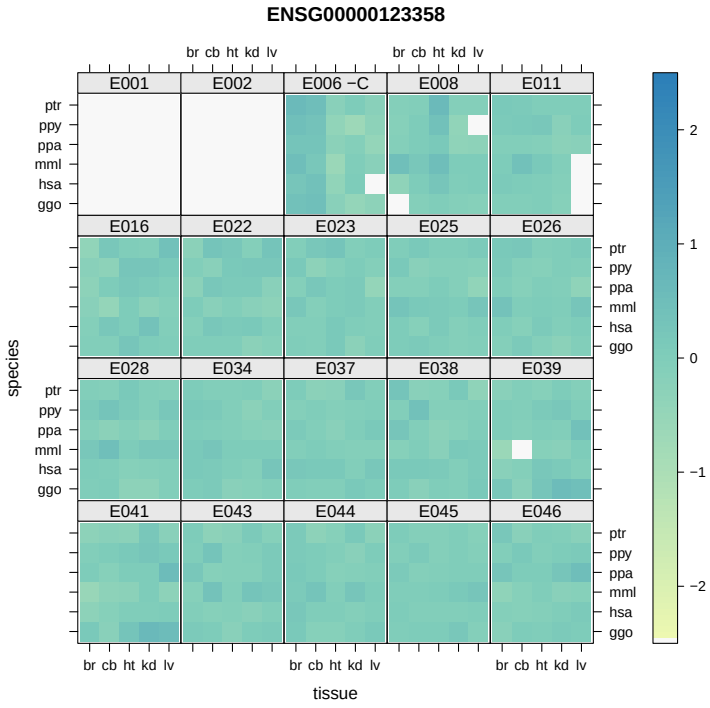

ENSG00000122490
br cb ht kd lv
E007
E008
E010
E011 −C
E012
E014
E019
E022
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

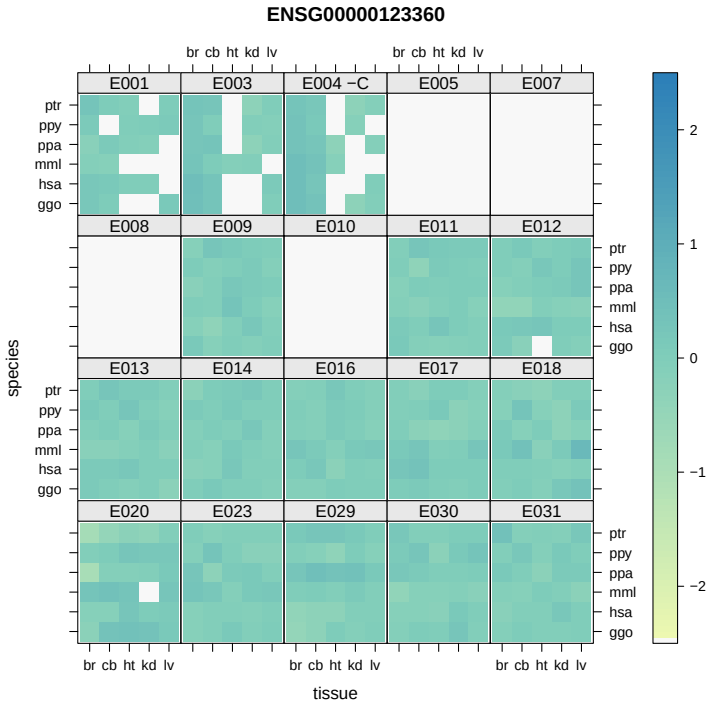

ENSG00000122515
E006
E009
E010
E011
E012
E015
E018
E019
E023
E025
E027
E028
E033
E035
E038
E039
E040
E041
E042
E045
E047
E048
E050
E052
E056 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

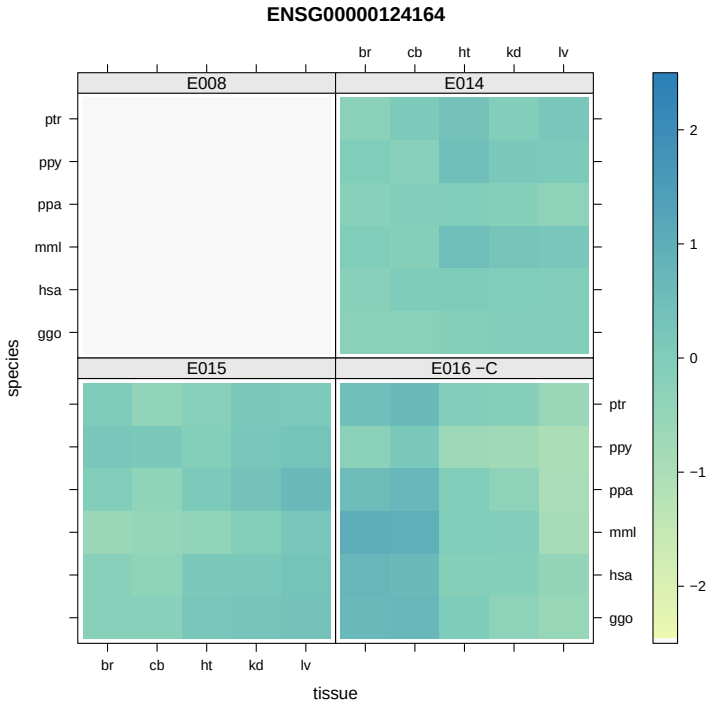

ENSG00000122705
br cb ht kd lv
E001
E007
E012
E013 −C
E014 −C
E019
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

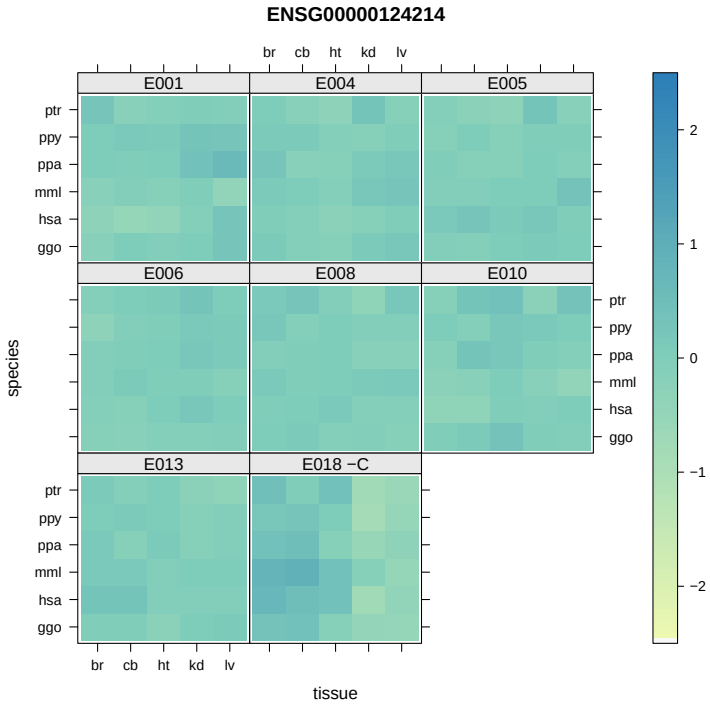

ENSG00000122786
E002
E004
E010
E015
E018 −C
E028
E029
E030
E031
E033
E035 −C
E036
E038
E044
E056
E057
E061
E062
E065
E066
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

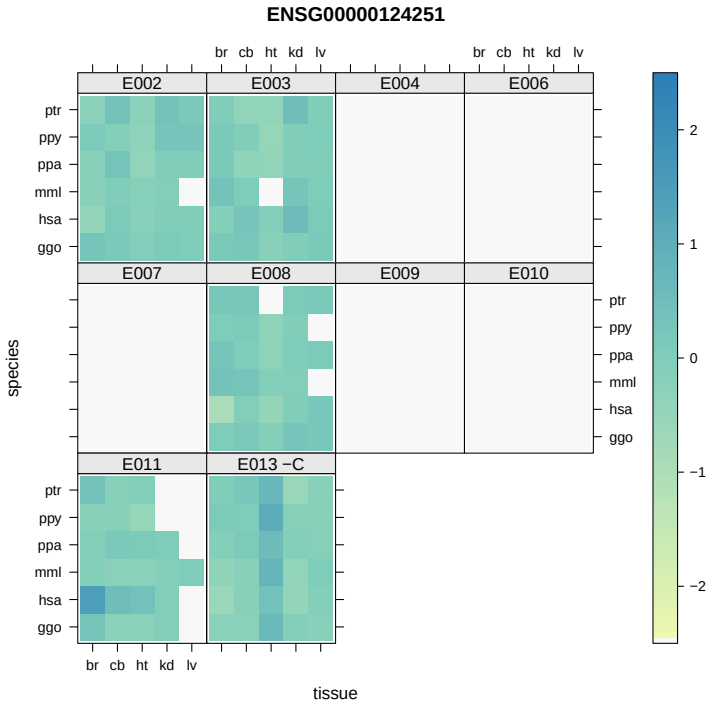

ENSG00000123064
E001
E002
E003
E006 −C
E008
E009
E010
E013
E014
E017
E018
E019
E021
E022
E026
E028
E029
E030
E031
E032
E033
E034
E035
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

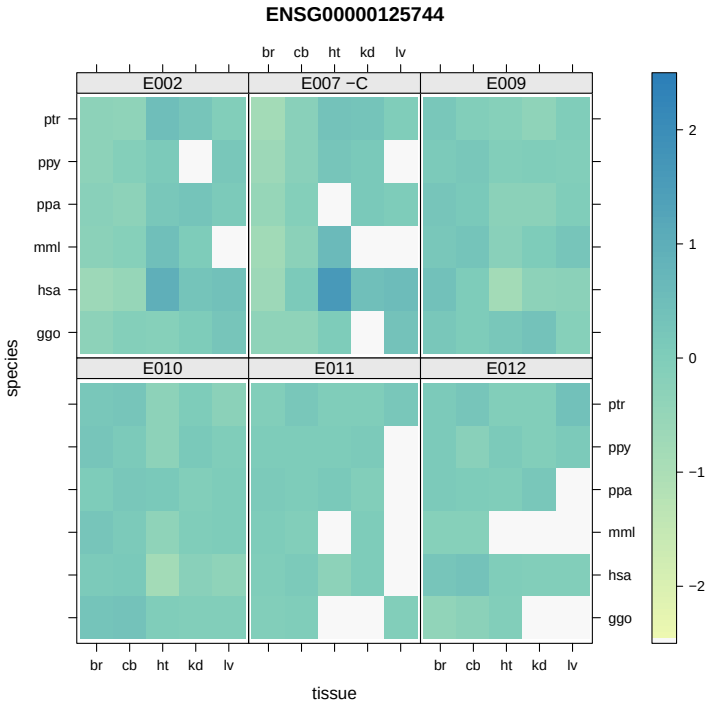

ENSG00000123358
E001
E002
E006 −C
E008
E011
E016
E022
E023
E025
E026
E028
E034
E037
E038
E039
E041
E043
E044
E045
E046
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

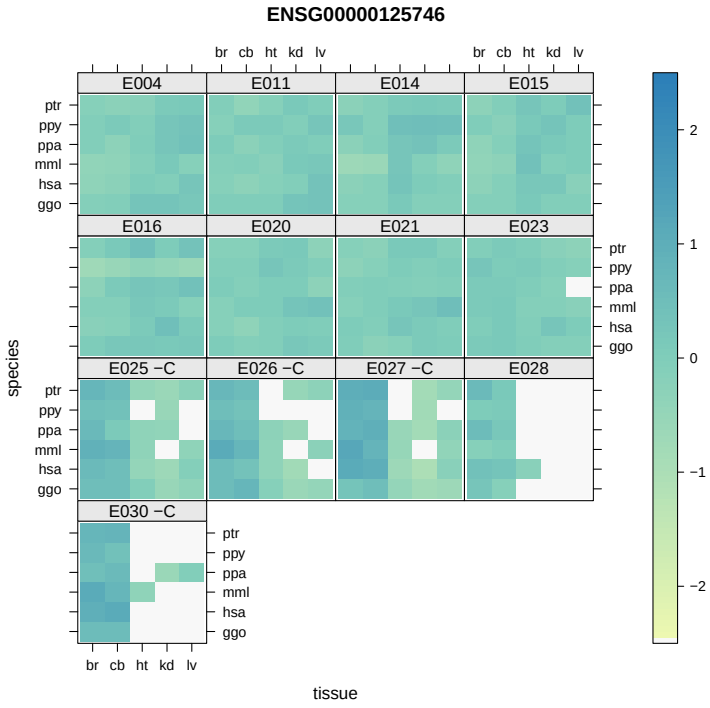

ENSG00000123360
E001
E003
E004 −C
E005
E007
E008
E009
E010
E011
E012
E013
E014
E016
E017
E018
E020
E023
E029
E030
E031
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

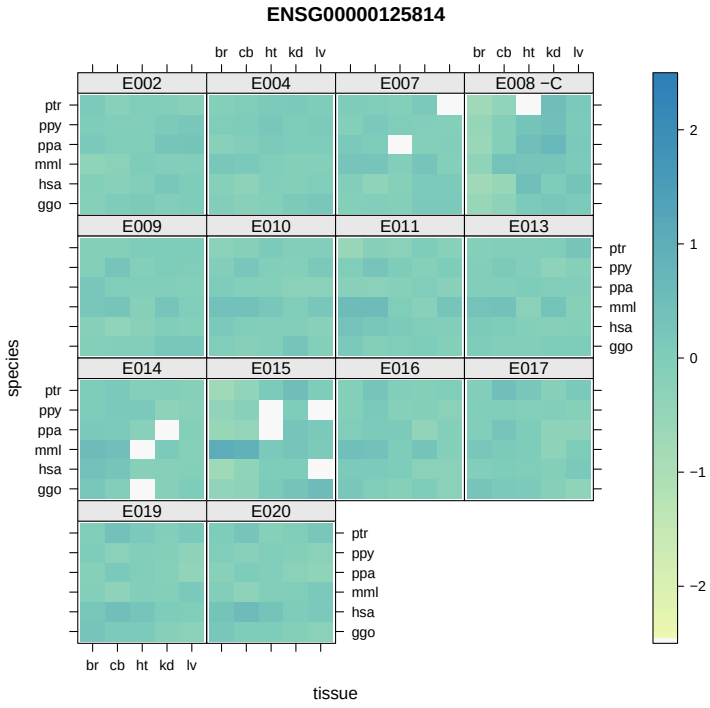

ENSG00000124164
br
cb
ht
kd
lv
E008
E014
E015
E016 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

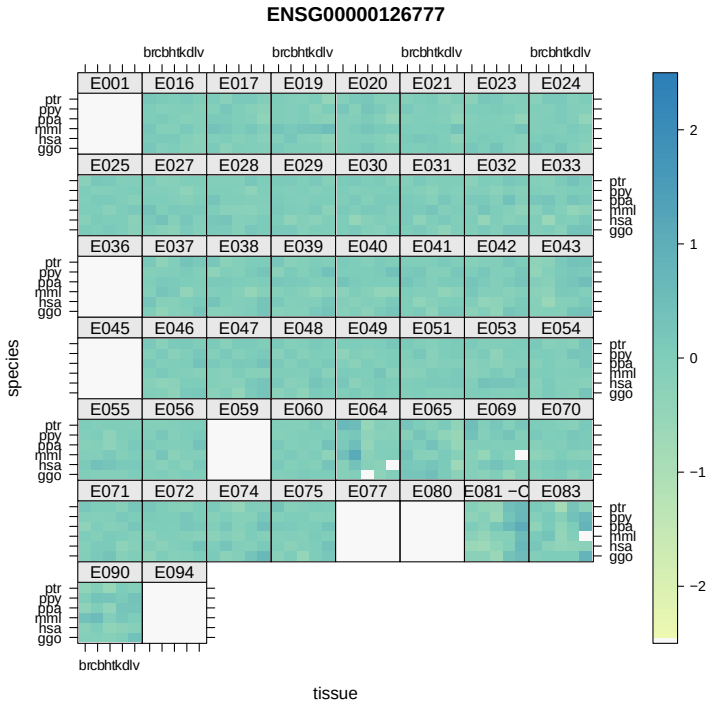

ENSG00000124214
br cb ht kd lv
E001
E004
E005
E006
E008
E010
E013
E018 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

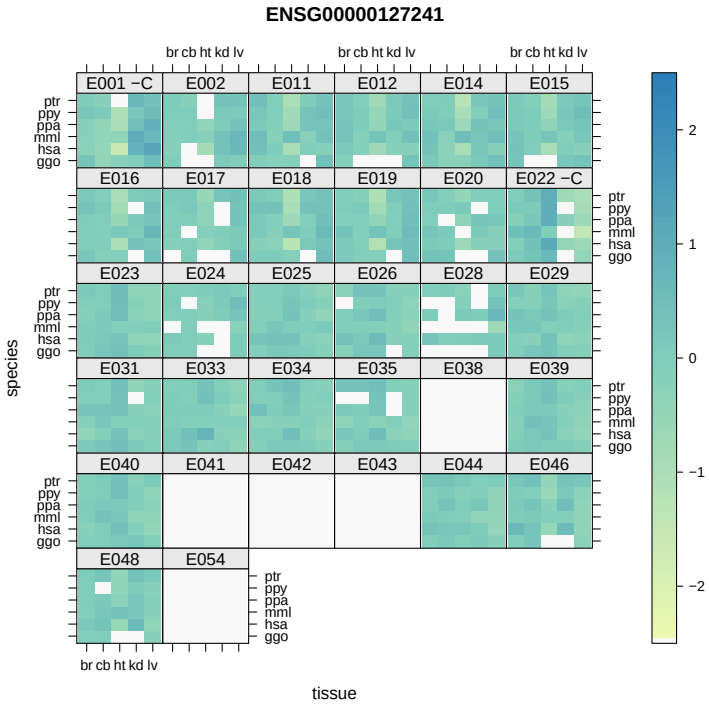

ENSG00000124251
E002
E003
E004
E006
E007
E008
E009
E010
E011
E013 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

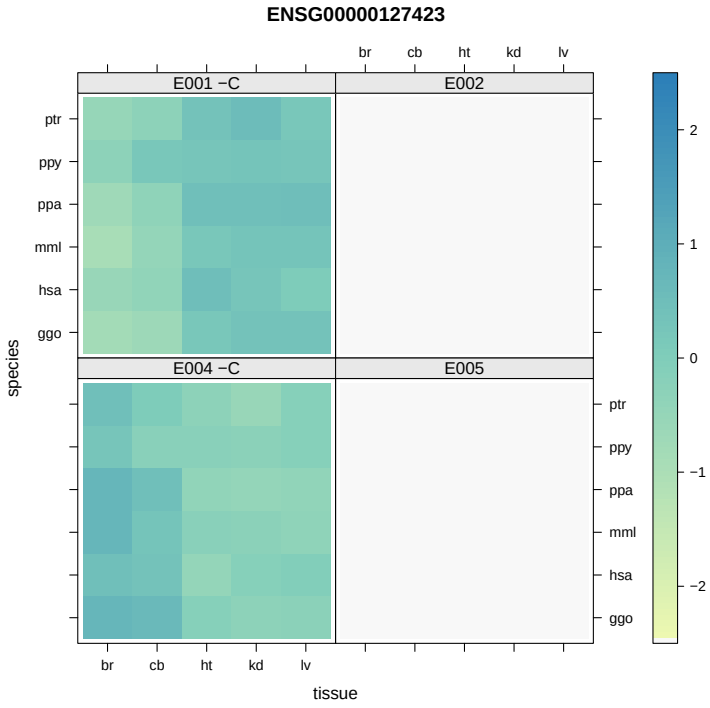

ENSG00000125744
br cb ht kd lv
E002
E007 −C
E009
E010
E011
E012
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

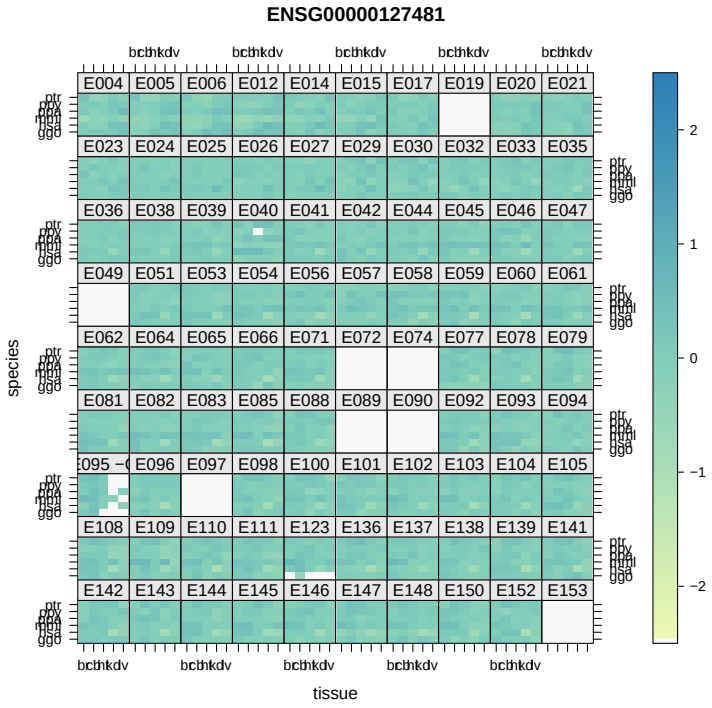

ENSG00000125746
E004
E011
E014
E015
E016
E020
E021
E023
E025 −C
E026 −C
E027 −C
E028
E030 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

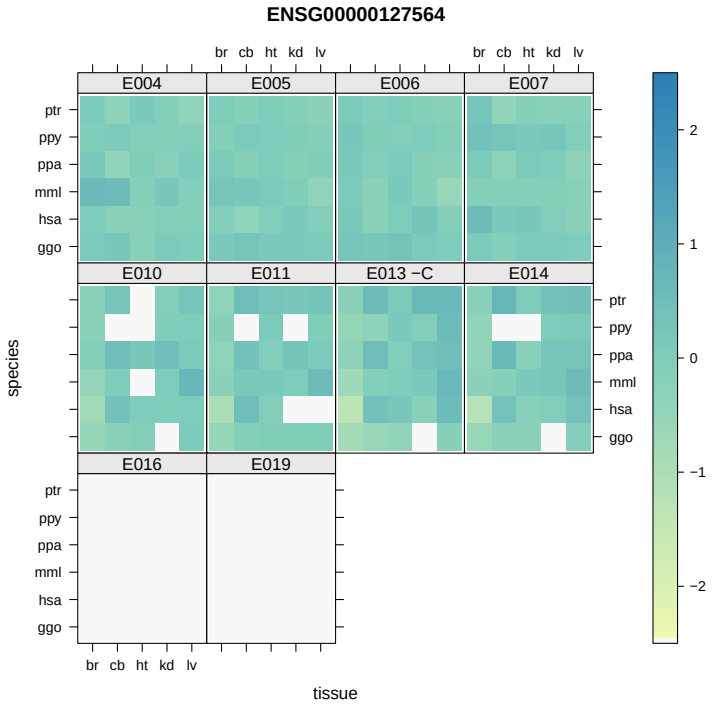

ENSG00000125814
E002
E004
E007
E008 −C
E009
E010
E011
E013
E014
E015
E016
E017
E019
E020
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

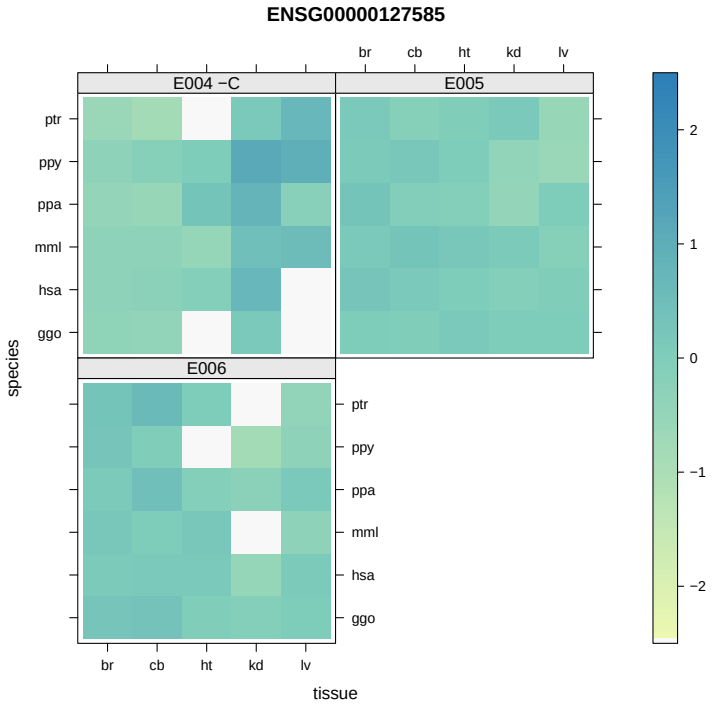

ENSG00000126777
brcbhtkdlv
E001
E016
E017
E019
E020
E021
E023
E024
E025
E027
E028
E029
E030
E031
E032
E033
E036
E037
E038
E039
E040
E041
E042
E043
E045
E046
E047
E048
E049
E051
E053
E054
E055
E056
E059
E060
E064
E065
E069
E070
E071
E072
E074
E075
E077
E080
E081
E083
E090
E094
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

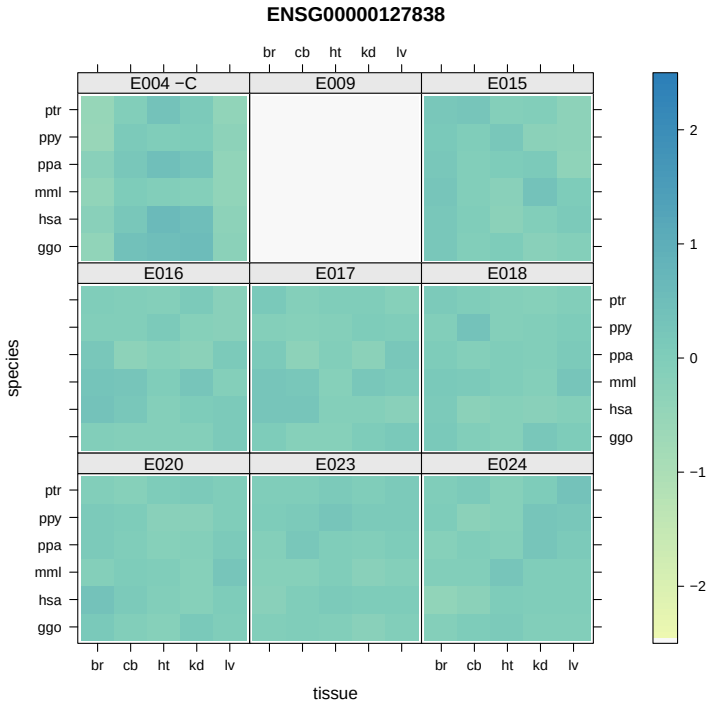

ENSG00000127241
br cb ht kd lv
E001 −C
E002
E011
E012
E014
E015
E016
E017
E018
E019
E020
E022 −C
E023
E024
E025
E026
E028
E029
E031
E033
E034
E035
E038
E039
E040
E041
E042
E043
E044
E046
E048
E054
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

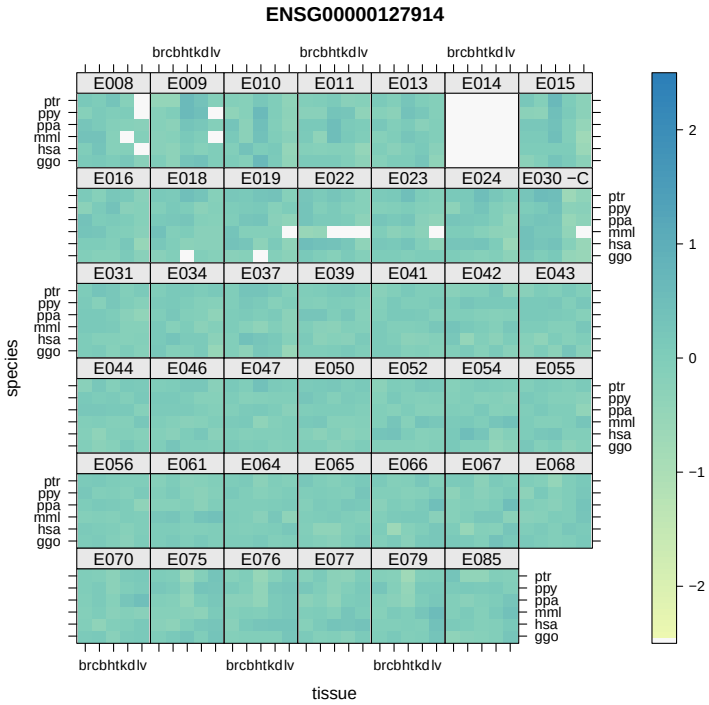

ENSG00000127423
E001 −C
E002
E004 −C
E005
species
tissue
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
2
1
0
−1
−2

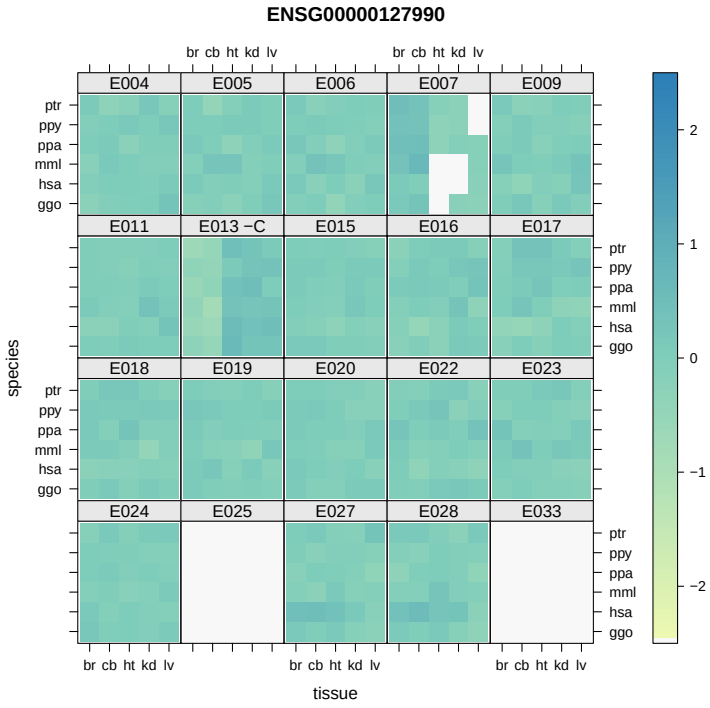

ENSG00000127481
E004 E005 E006 E012 E014 E015 E017 E019 E020 E021
E023 E024 E025 E026 E027 E029 E030 E032 E033 E035
E036 E038 E039 E040 E041 E042 E044 E045 E046 E047
E049 E051 E053 E054 E056 E057 E058 E059 E060 E061
E062 E064 E065 E066 E071 E072 E074 E077 E078 E079
E081 E082 E083 E085 E088 E089 E090 E092 E093 E094
E096 E097 E098 E100 E101 E102 E103 E104 E105
E108 E109 E110 E111 E123 E136 E137 E138 E139 E141
E142 E143 E144 E145 E146 E147 E148 E150 E152 E153
bcthkdv
ptr
ppy
nle
mmu
rno
ggo
species
tissue
2
1
0
−1
−2

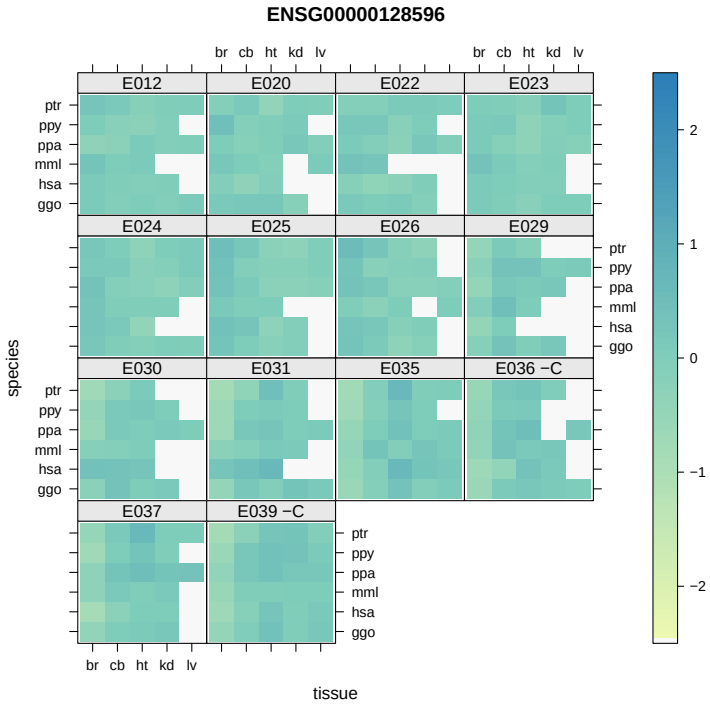

ENSG00000127564
E004
E005
E006
E007
E010
E011
E013 −C
E014
E016
E019
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

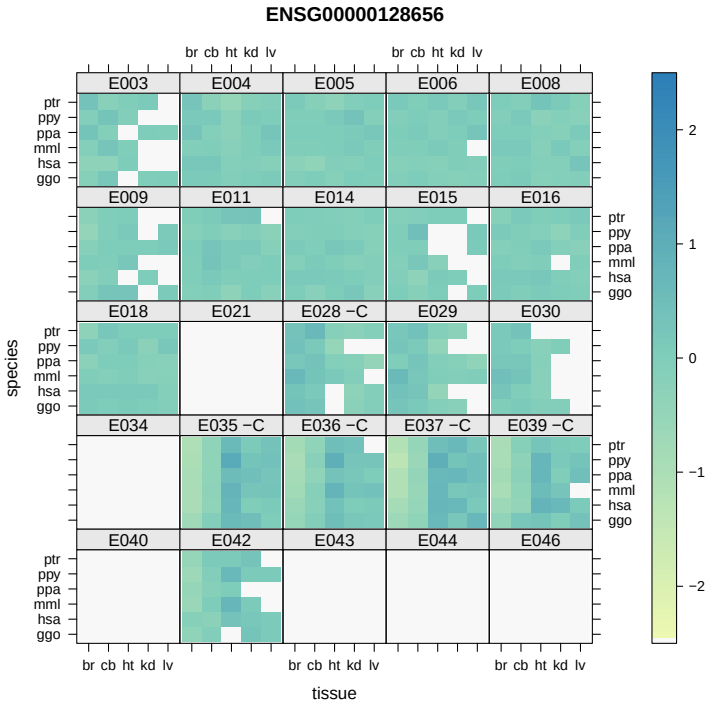

ENSG00000127585
E004 −C
E005
E006
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

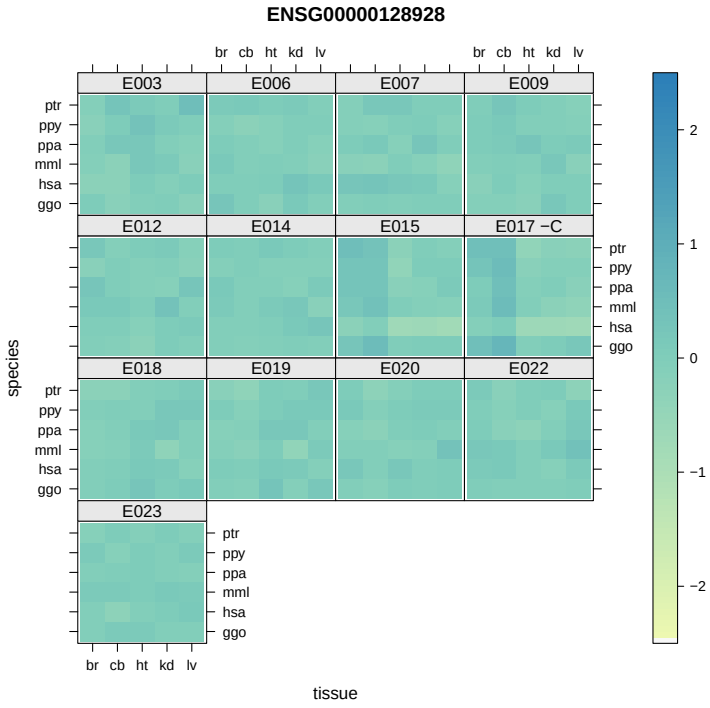

ENSG00000127838
E004 −C
E009
E015
E016
E017
E018
E020
E023
E024
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

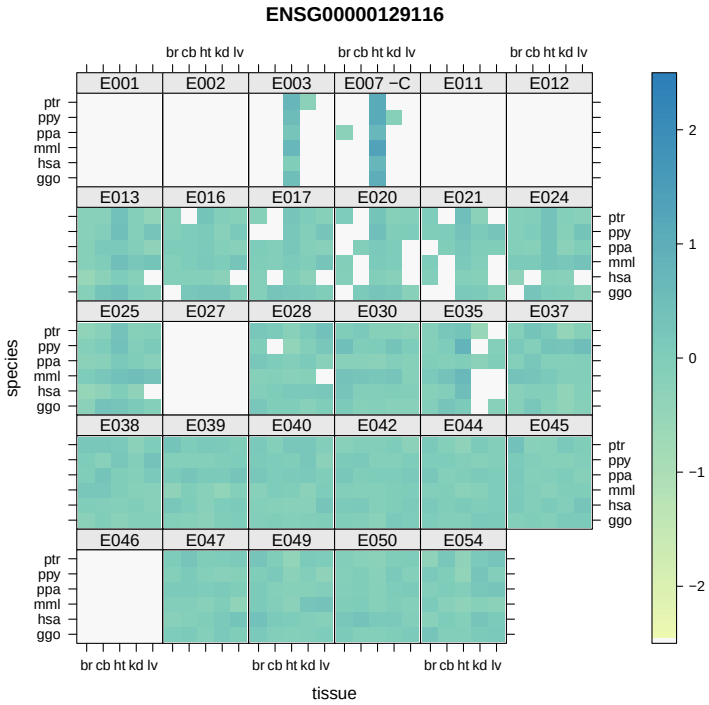

ENSG00000127914
brcbhtkdlv
E008
E009
E010
E011
E013
E014
E015
E016
E018
E019
E022
E023
E024
E030 −C
E031
E034
E037
E039
E041
E042
E043
E044
E046
E047
E050
E052
E054
E055
E056
E061
E064
E065
E066
E067
E068
E070
E075
E076
E077
E079
E085
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

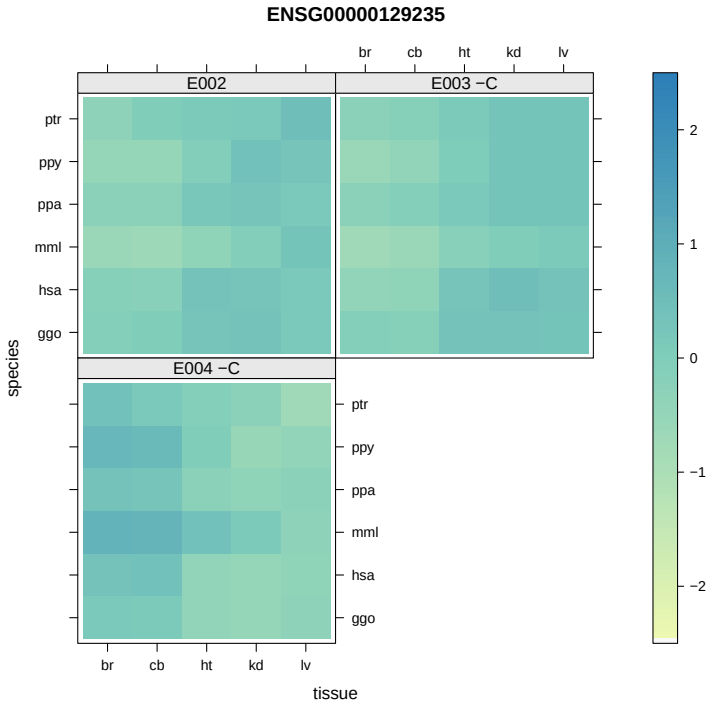

ENSG00000127990
E004
E005
E006
E007
E009
E011
E013 −C
E015
E016
E017
E018
E019
E020
E022
E023
E024
E025
E027
E028
E033
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

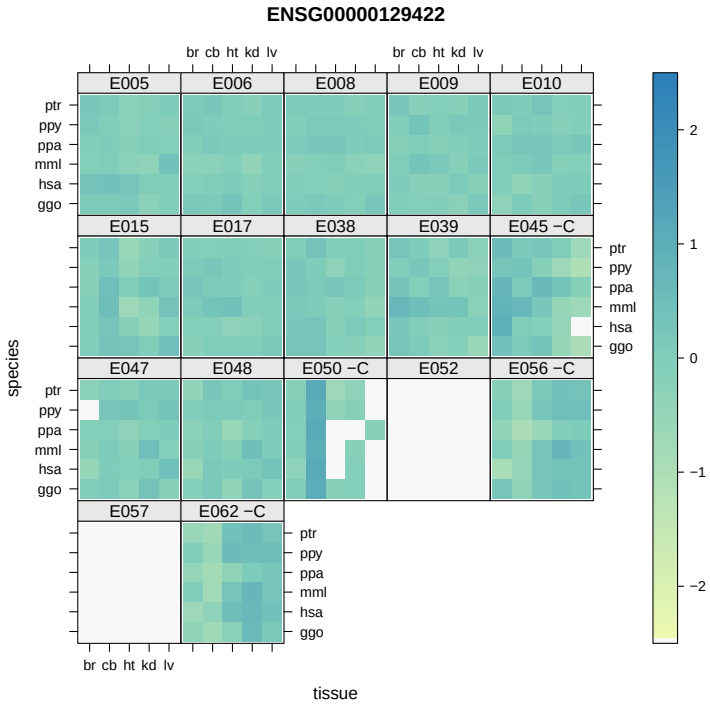

ENSG00000128596
E012
E020
E022
E023
E024
E025
E026
E029
E030
E031
E035
E036 −C
E037
E039 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

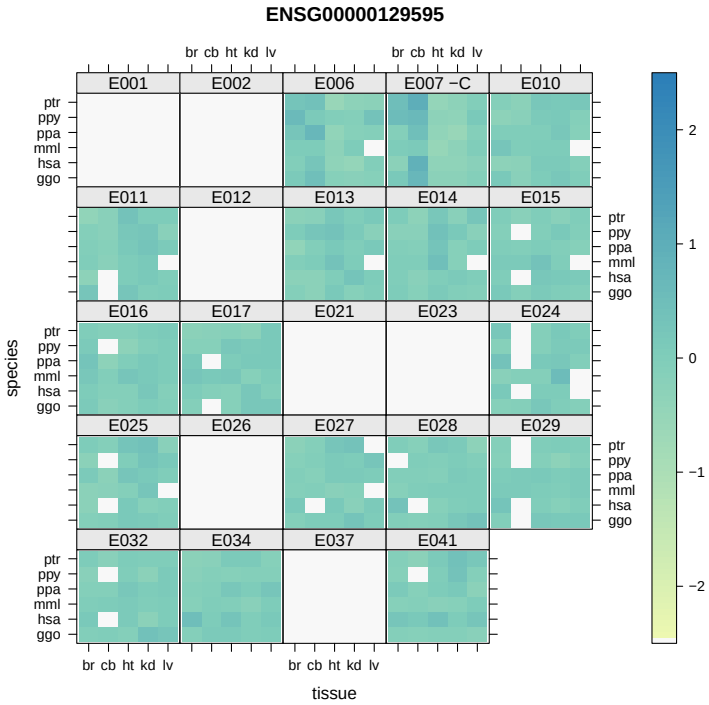

ENSG00000128656
E003
E004
E005
E006
E008
E009
E011
E014
E015
E016
E018
E021
E028 −C
E029
E030
E034
E035 −C
E036 −C
E037 −C
E039 −C
E040
E042
E043
E044
E046
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

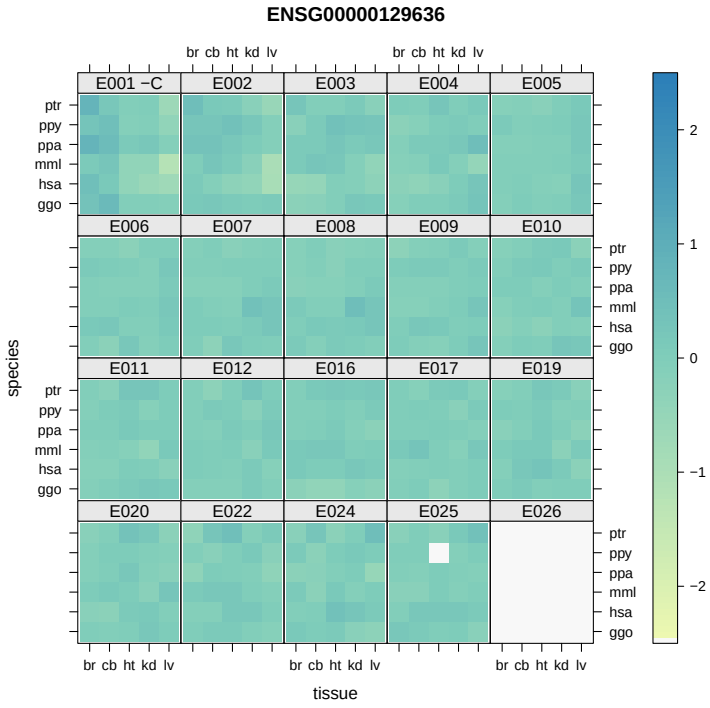

ENSG00000128928
E003
E006
E007
E009
E012
E014
E015
E017 −C
E018
E019
E020
E022
E023
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

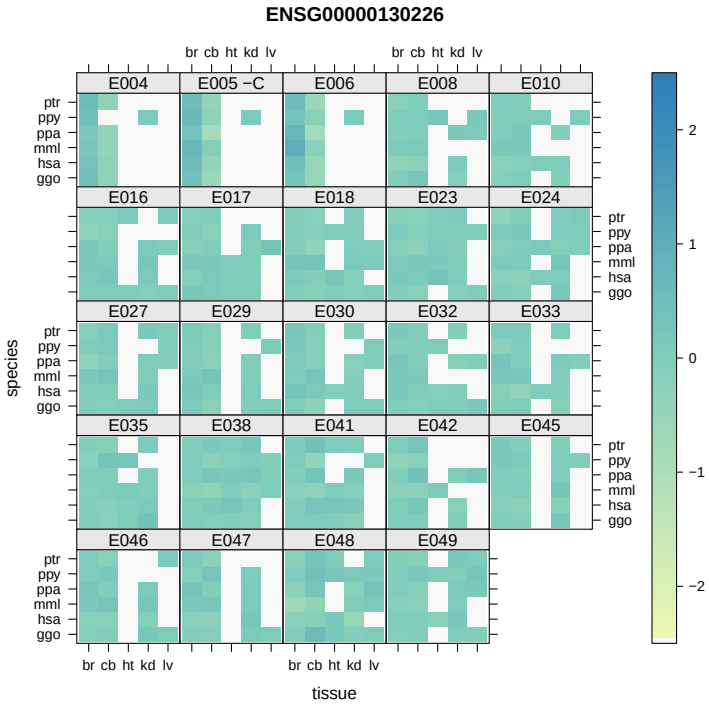

ENSG00000129116
br cb ht kd lv
E001
E002
E003
E007 −C
E011
E012
E013
E016
E017
E020
E021
E024
E025
E027
E028
E030
E035
E037
E038
E039
E040
E042
E044
E045
E046
E047
E049
E050
E054
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

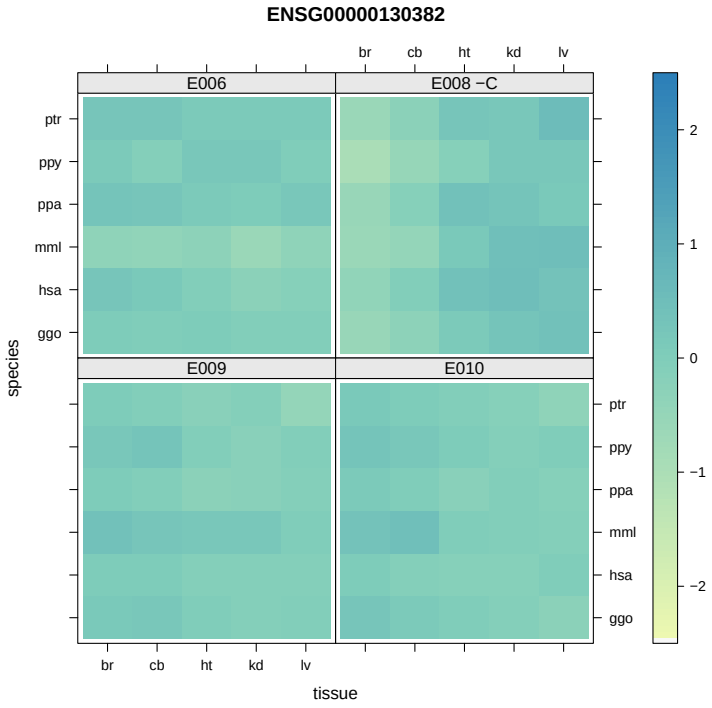

ENSG00000129235
br
cb
ht
kd
lv
E002
E003 −C
E004 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

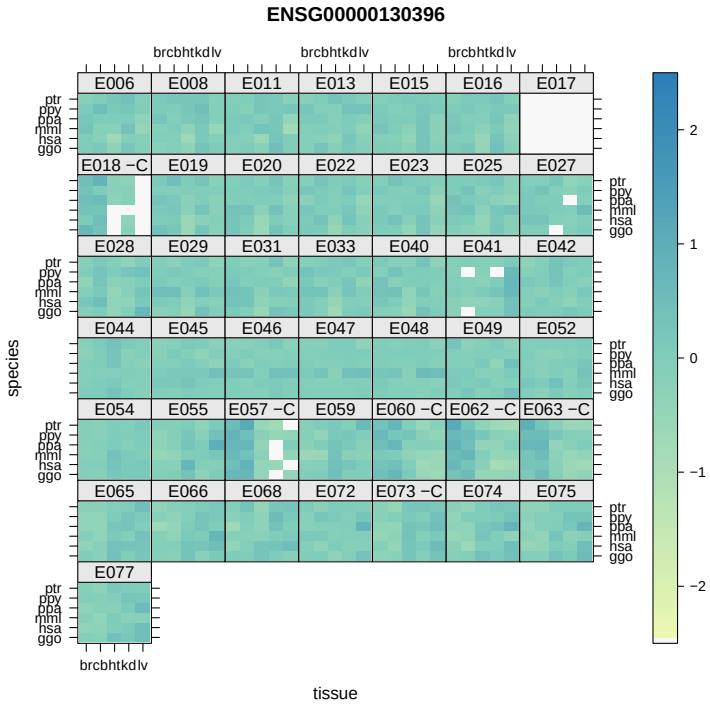

ENSG00000129422
E005
E006
E008
E009
E010
E015
E017
E038
E039
E045 −C
E047
E048
E050 −C
E052
E056 −C
E057
E062 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

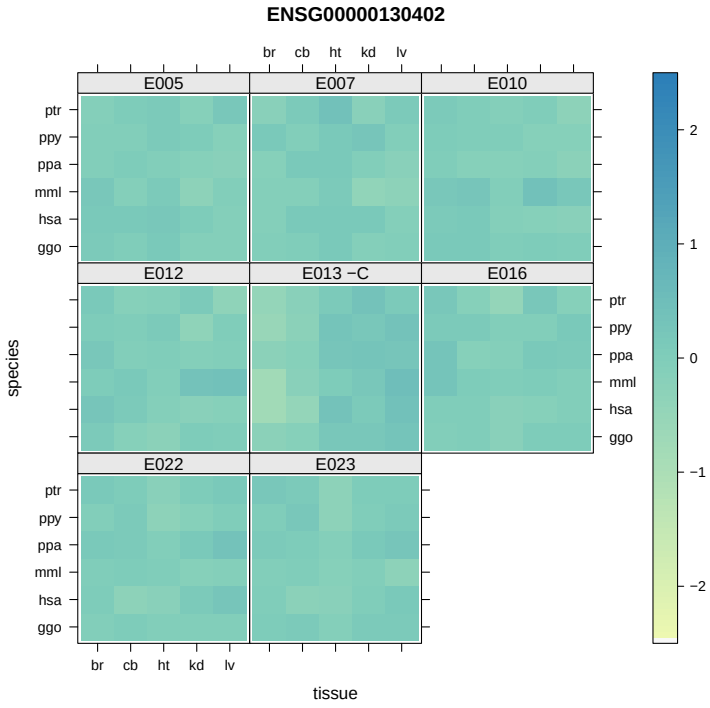

ENSG00000129595
br cb ht kd lv
E001
E002
E006
E007 −C
E010
E011
E012
E013
E014
E015
E016
E017
E021
E023
E024
E025
E026
E027
E028
E029
E032
E034
E037
E041
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

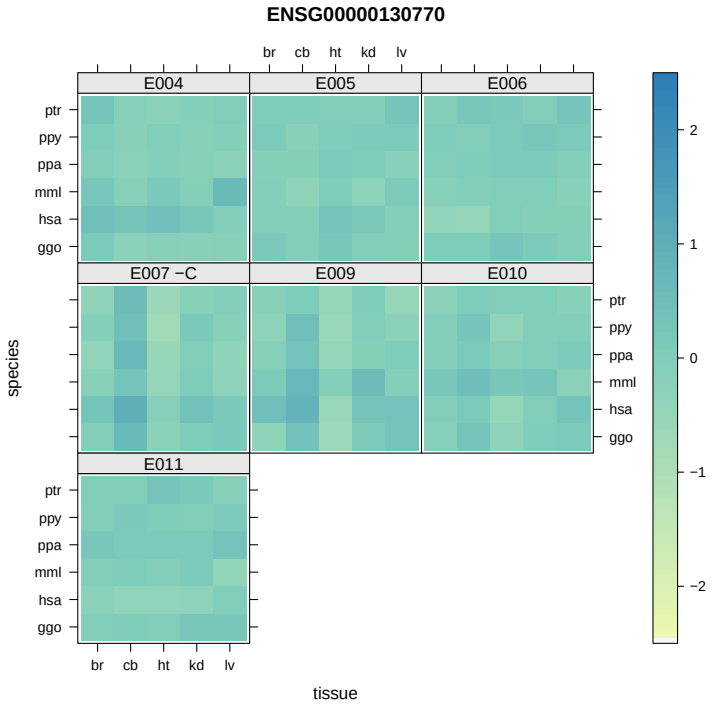

ENSG00000129636
E001 −C
E002
E003
E004
E005
E006
E007
E008
E009
E010
E011
E012
E016
E017
E019
E020
E022
E024
E025
E026
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

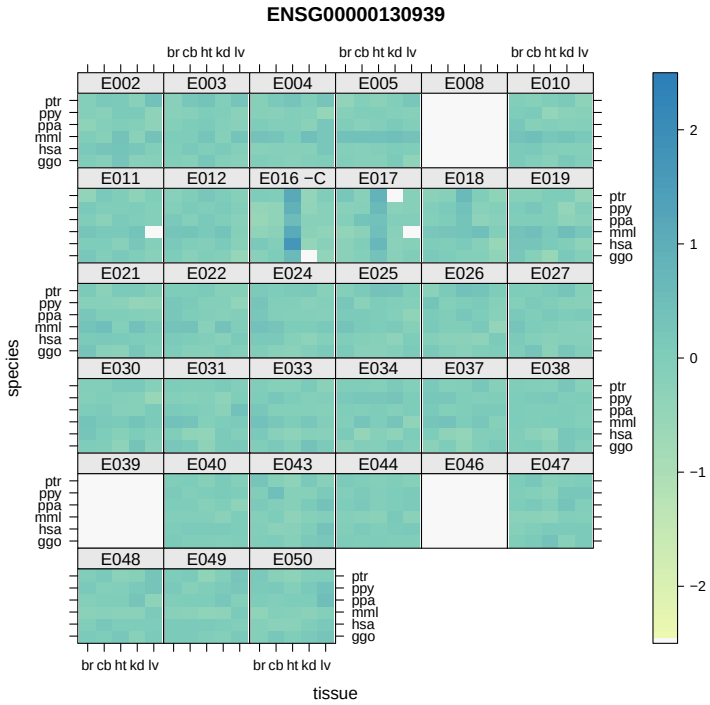

ENSG00000130226
E004
E005 −C
E006
E008
E010
E016
E017
E018
E023
E024
E027
E029
E030
E032
E033
E035
E038
E041
E042
E045
E046
E047
E048
E049
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

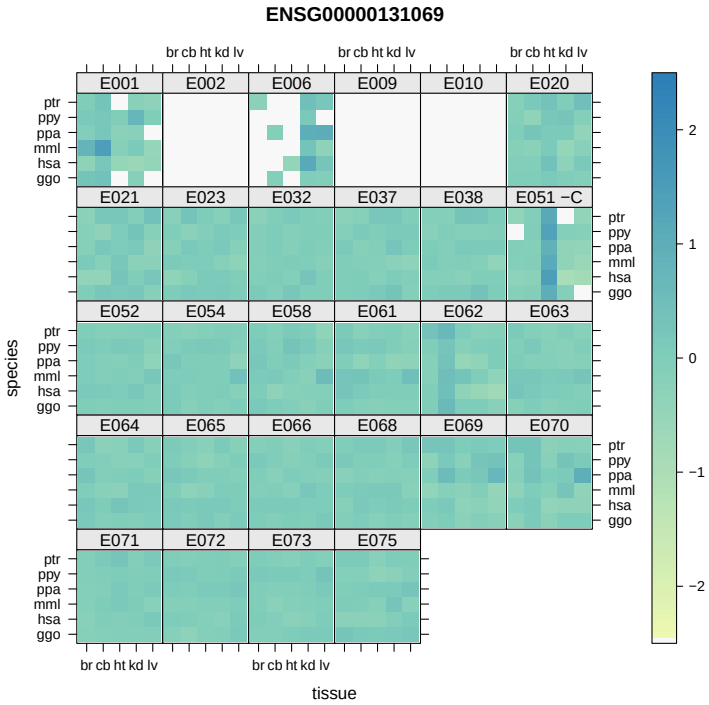

ENSG00000130382
br
cb
ht
kd
lv
E006
E008 −C
E009
E010
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

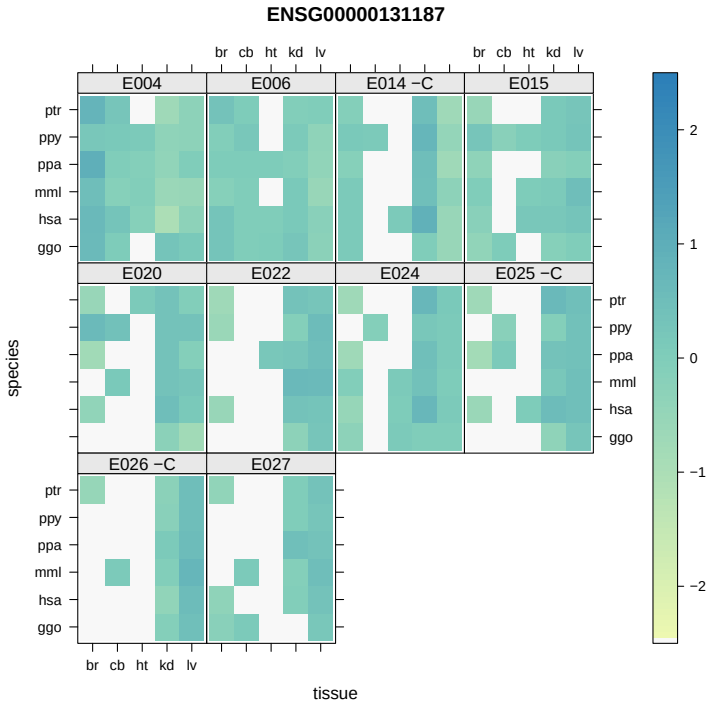

ENSG00000130396
brcbhtkdlv
E006
E008
E011
E013
E015
E016
E017
E018 −C
E019
E020
E022
E023
E025
E027
E028
E029
E031
E033
E040
E041
E042
E044
E045
E046
E047
E048
E049
E052
E054
E055
E057 −C
E059
E060 −C
E062 −C
E063 −C
E065
E066
E068
E072
E073 −C
E074
E075
E077
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

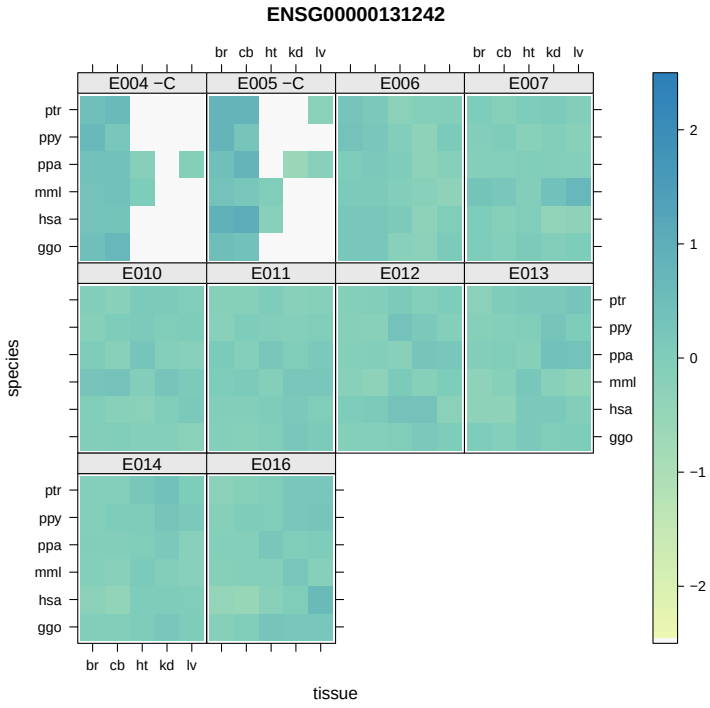

ENSG00000130402
br cb ht kd lv
E005
E007
E010
E012
E013 −C
E016
E022
E023
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

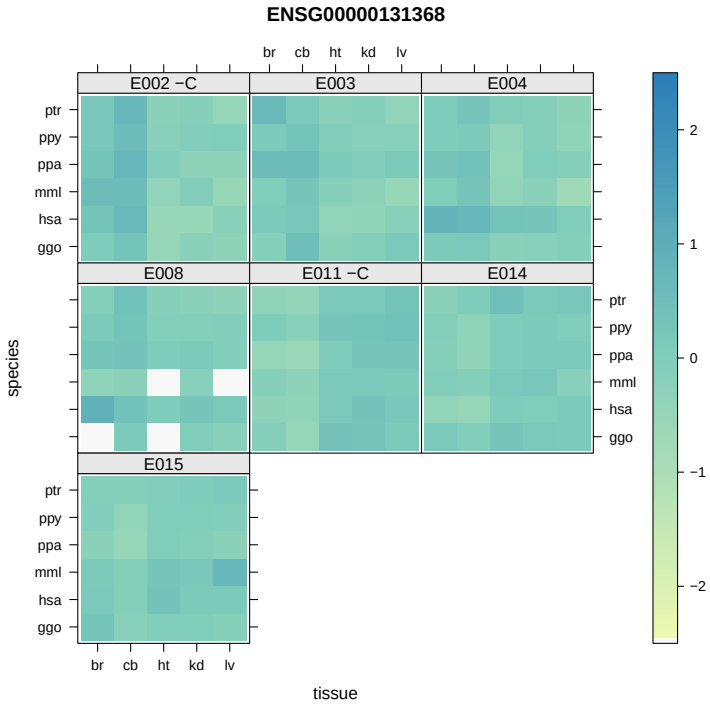

ENSG00000130770
br cb ht kd lv
E004
E005
E006
E007 −C
E009
E010
E011
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

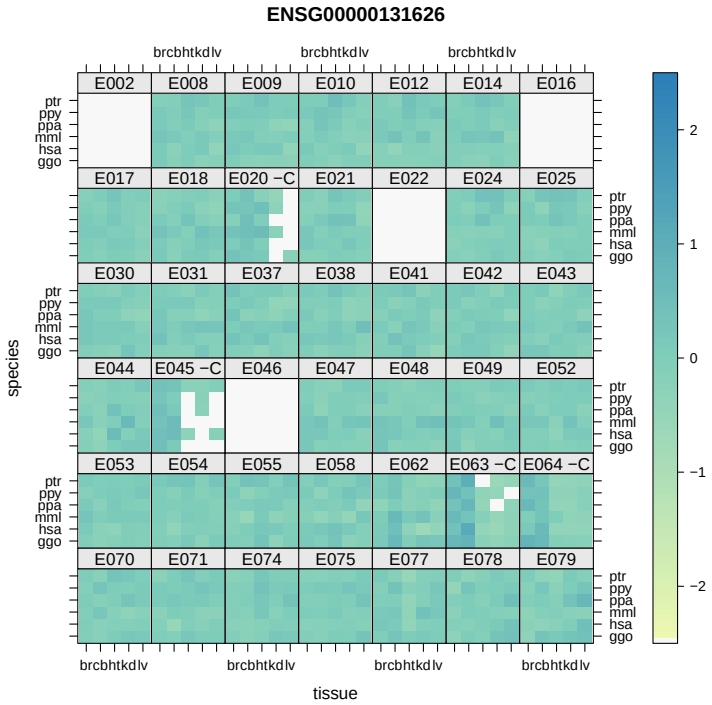

ENSG00000130939
br cb ht kd lv
E002
E003
E004
E005
E008
E010
E011
E012
E016 −C
E017
E018
E019
E021
E022
E024
E025
E026
E027
E030
E031
E033
E034
E037
E038
E039
E040
E043
E044
E046
E047
E048
E049
E050
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

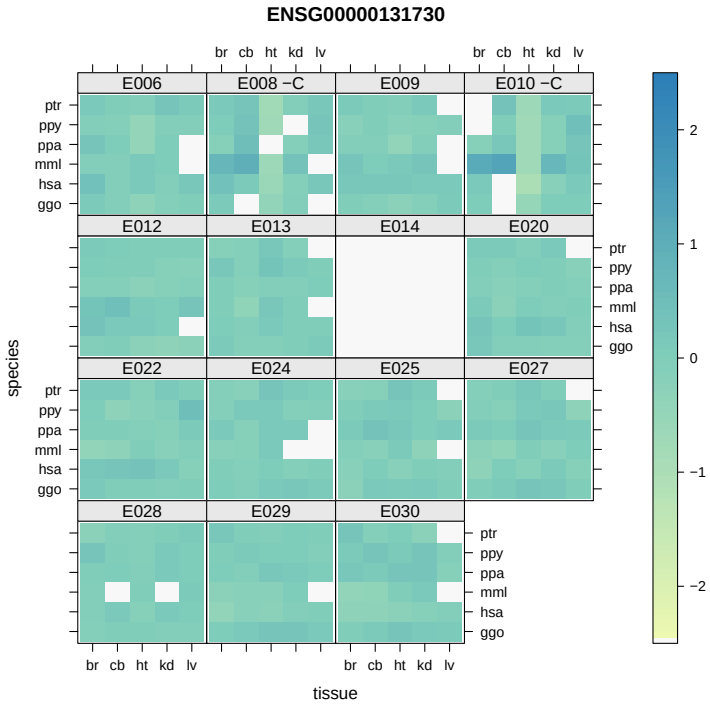

ENSG00000131069
br cb ht kd lv
E001
E002
E006
E009
E010
E020
E021
E023
E032
E037
E038
E051 −C
E052
E054
E058
E061
E062
E063
E064
E065
E066
E068
E069
E070
E071
E072
E073
E075
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

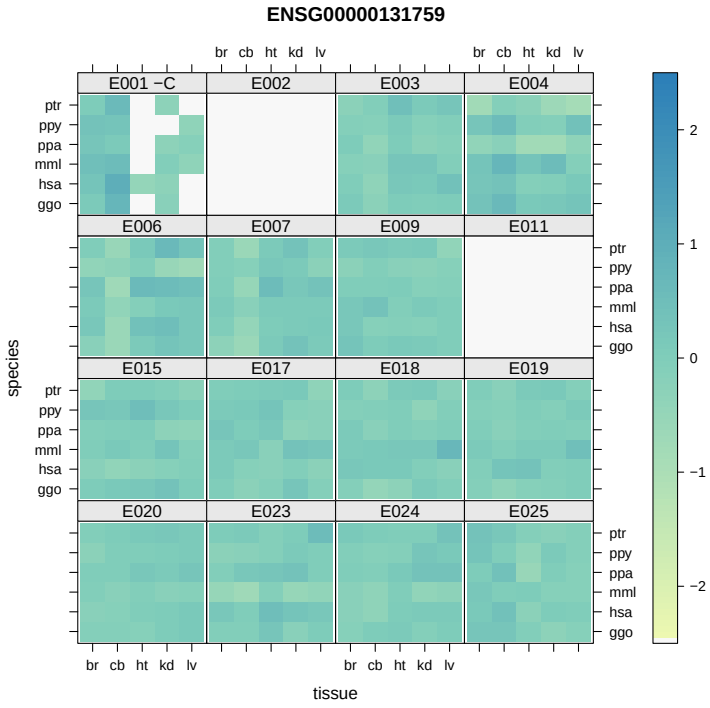

ENSG00000131187
br cb ht kd lv
E004
E006
E014 −C
E015
E020
E022
E024
E025 −C
E026 −C
E027
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

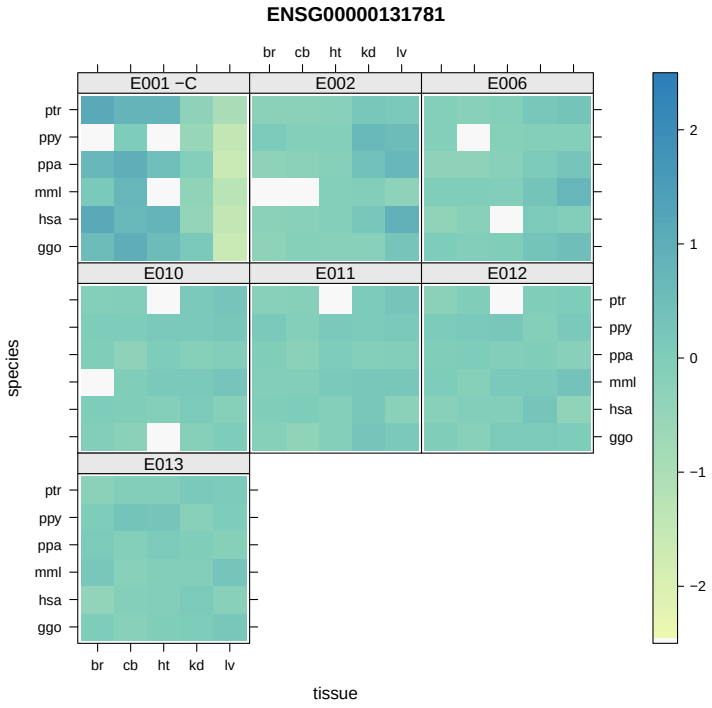

ENSG00000131242
E004 −C
E005 −C
E006
E007
E010
E011
E012
E013
E014
E016
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

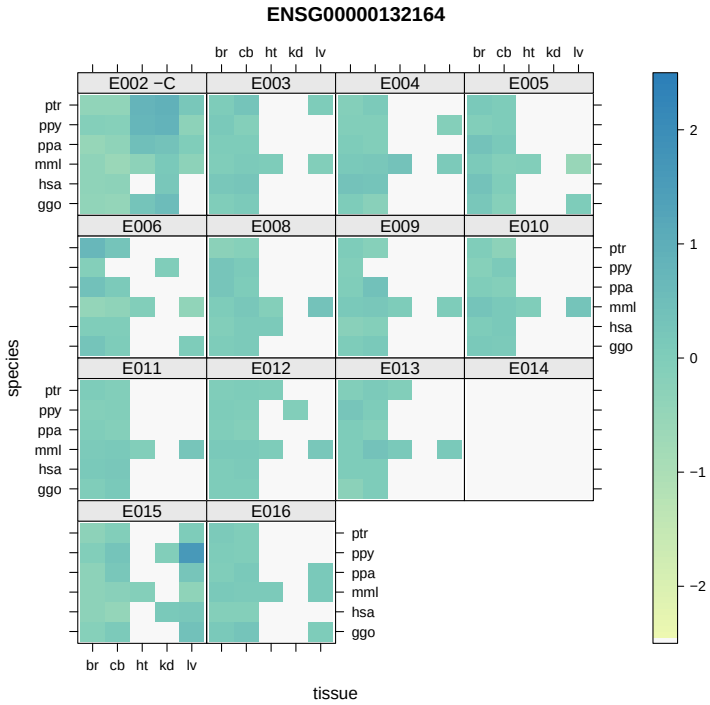

ENSG00000131368
br cb ht kd lv
E002 −C
E003
E004
E008
E011 −C
E014
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

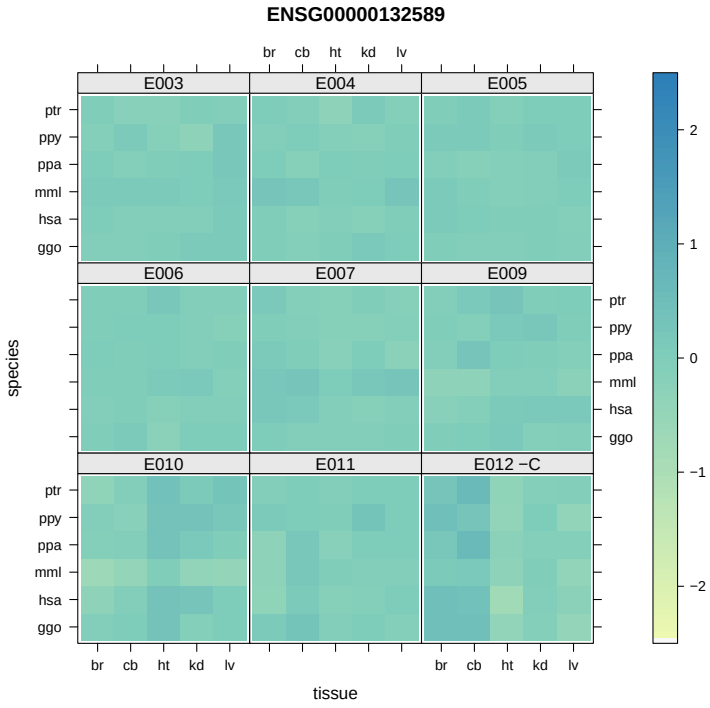

ENSG00000131626
brcbhtkdlv
E002
E008
E009
E010
E012
E014
E016
E017
E018
E020 −C
E021
E022
E024
E025
E030
E031
E037
E038
E041
E042
E043
E044
E045 −C
E046
E047
E048
E049
E052
E053
E054
E055
E058
E062
E063 −C
E064 −C
E070
E071
E074
E075
E077
E078
E079
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

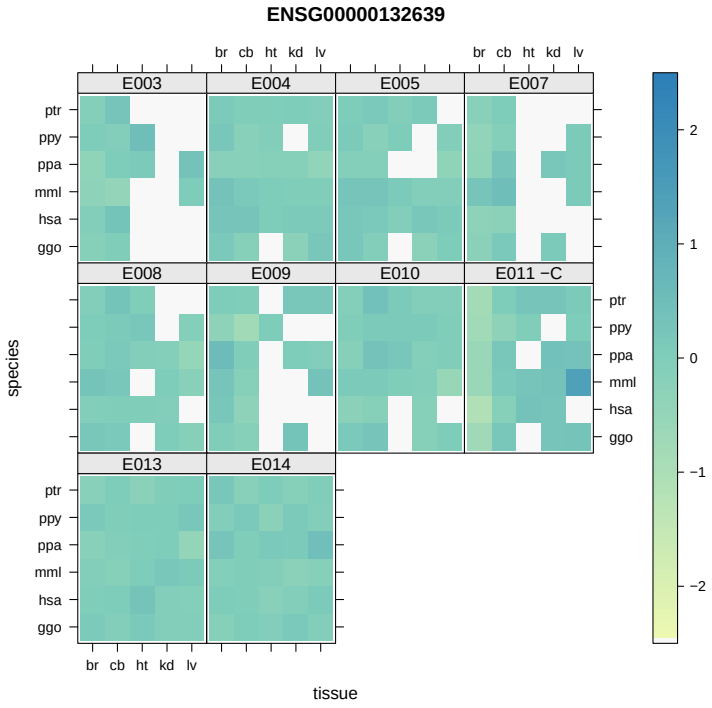

ENSG00000131730
E006
E008 −C
E009
E010 −C
E012
E013
E014
E020
E022
E024
E025
E027
E028
E029
E030
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

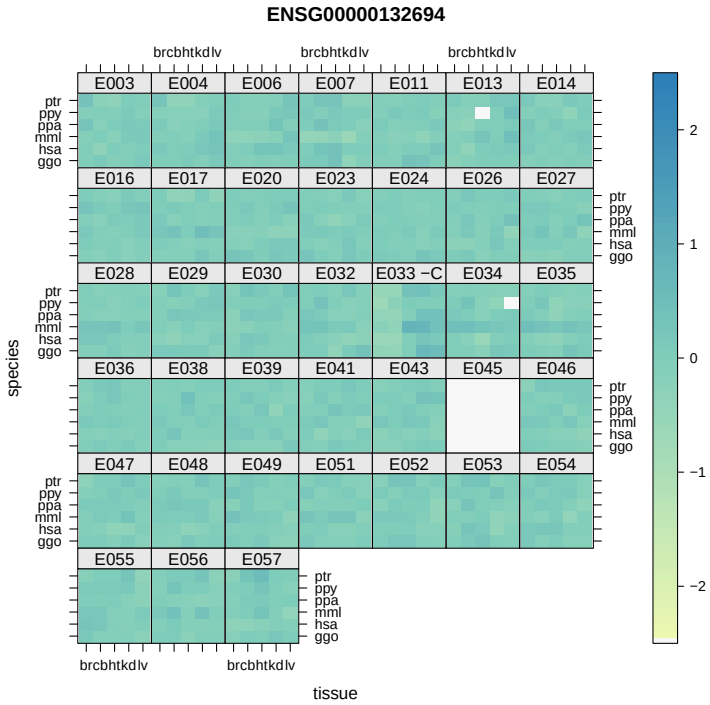

ENSG00000131759
E001 −C
E002
E003
E004
E006
E007
E009
E011
E015
E017
E018
E019
E020
E023
E024
E025
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

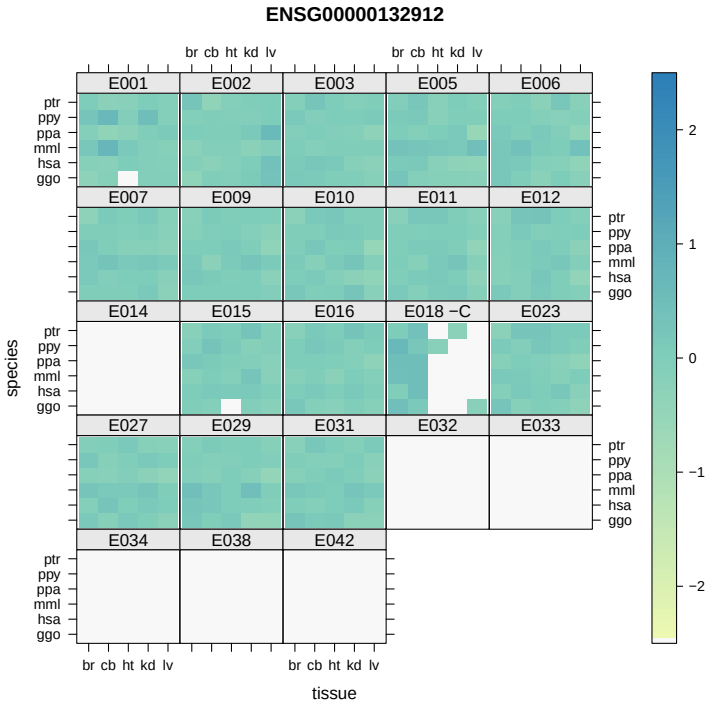

ENSG00000131781
br cb ht kd lv
E001 −C
E002
E006
E010
E011
E012
E013
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

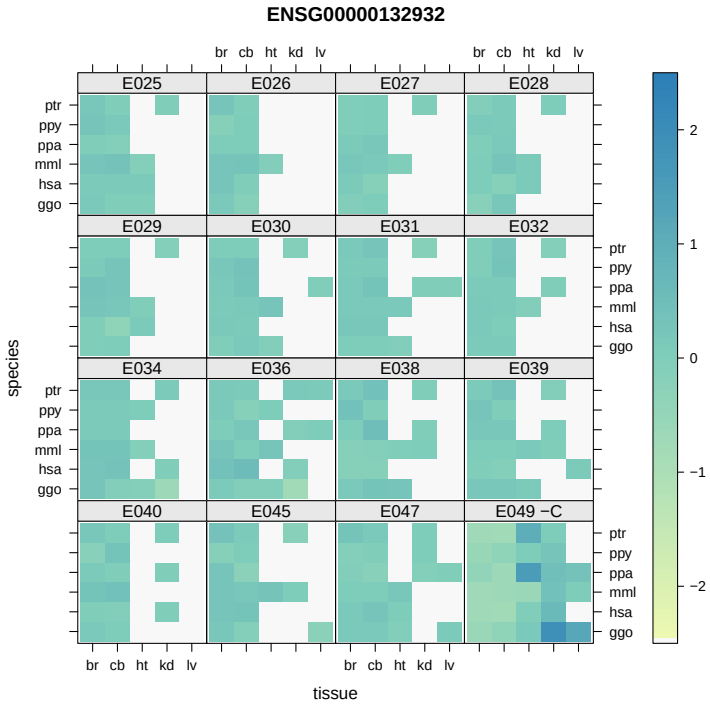

ENSG00000132164
E002 −C
E003
E004
E005
E006
E008
E009
E010
E011
E012
E013
E014
E015
E016
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

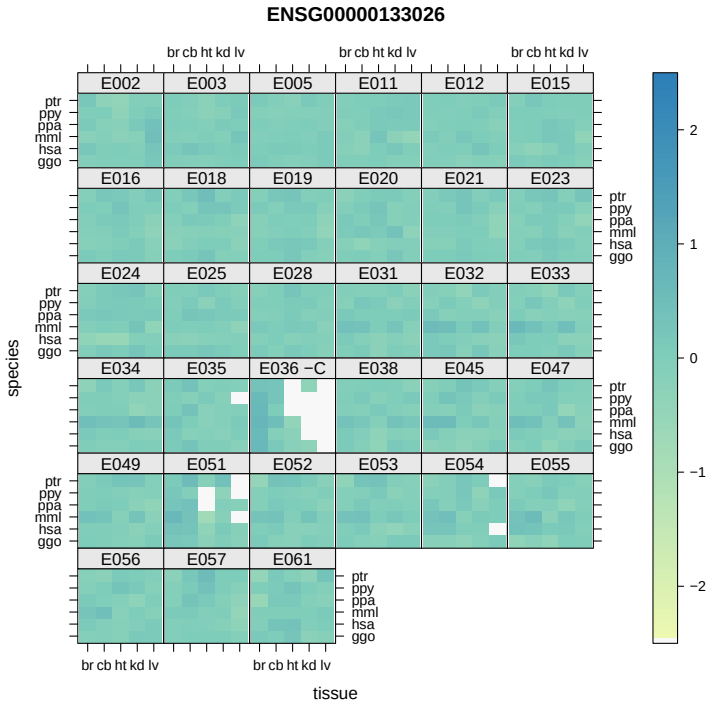

ENSG00000132589
br cb ht kd lv
E003
E004
E005
E006
E007
E009
E010
E011
E012 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

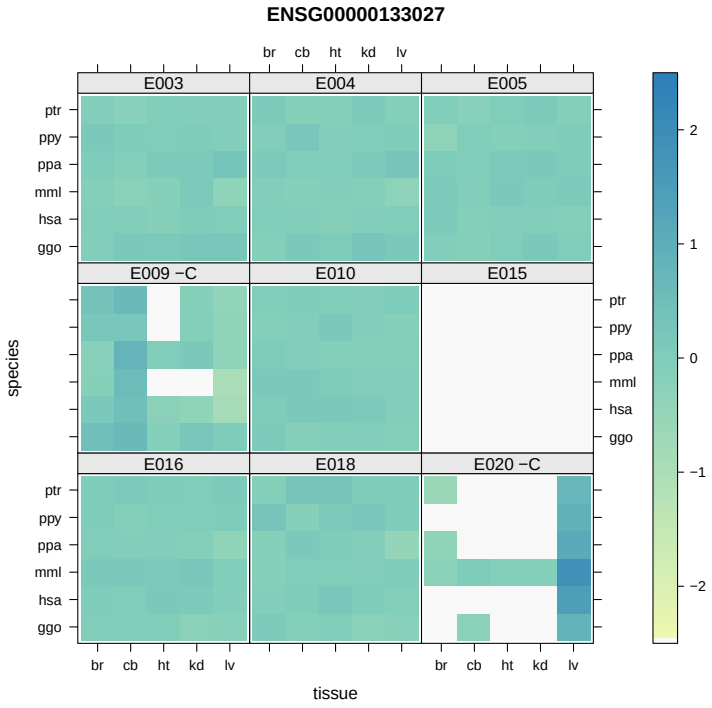

ENSG00000132639
E003
E004
E005
E007
E008
E009
E010
E011 −C
E013
E014
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

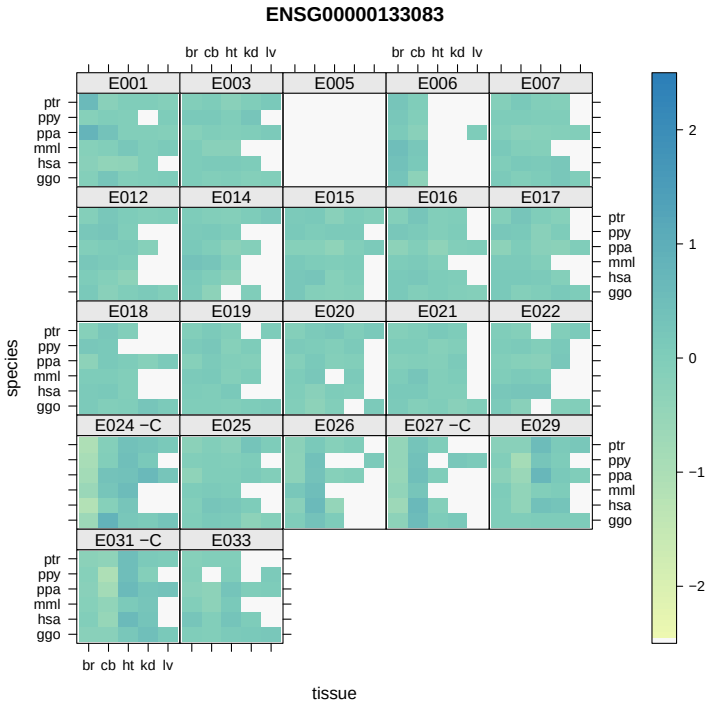

ENSG00000132694
brcbhtkdlv
E003
E004
E006
E007
E011
E013
E014
E016
E017
E020
E023
E024
E026
E027
E028
E029
E030
E032
E033 −C
E034
E035
E036
E038
E039
E041
E043
E045
E046
E047
E048
E049
E051
E052
E053
E054
E055
E056
E057
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

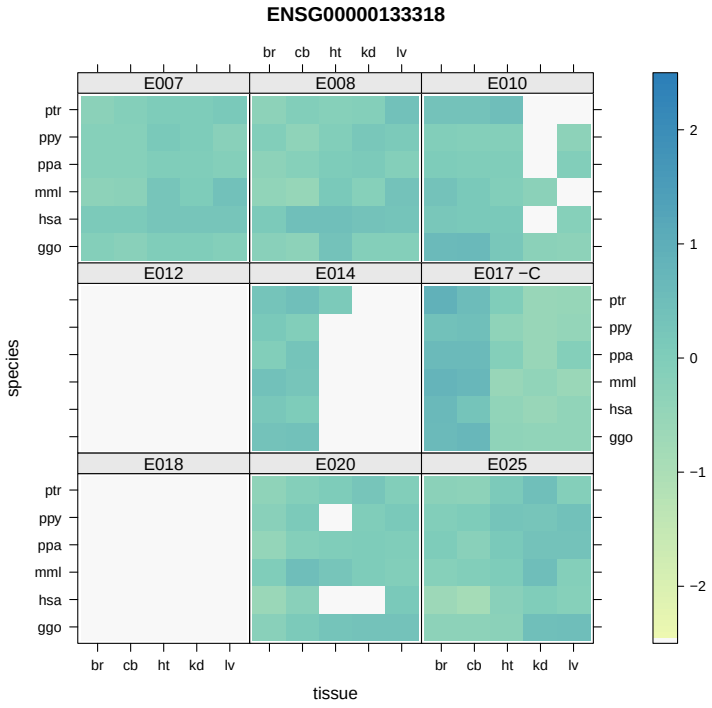

ENSG00000132912
br cb ht kd lv
E001
E002
E003
E005
E006
E007
E009
E010
E011
E012
E014
E015
E016
E018 −C
E023
E027
E029
E031
E032
E033
E034
E038
E042
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

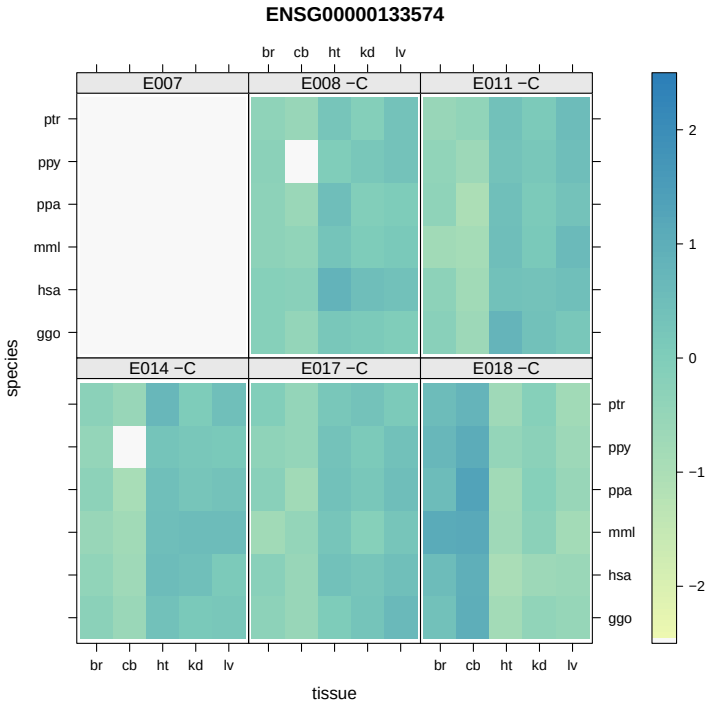

ENSG00000132932
E025
E026
E027
E028
E029
E030
E031
E032
E034
E036
E038
E039
E040
E045
E047
E049 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

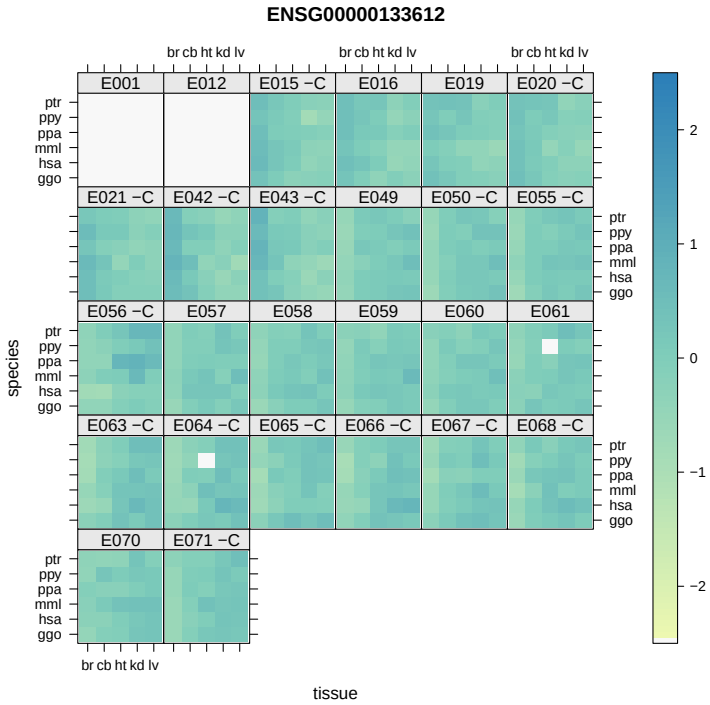

ENSG00000133026
br cb ht kd lv
E002
E003
E005
E011
E012
E015
E016
E018
E019
E020
E021
E023
E024
E025
E028
E031
E032
E033
E034
E035
E036 −C
E038
E045
E047
E049
E051
E052
E053
E054
E055
E056
E057
E061
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

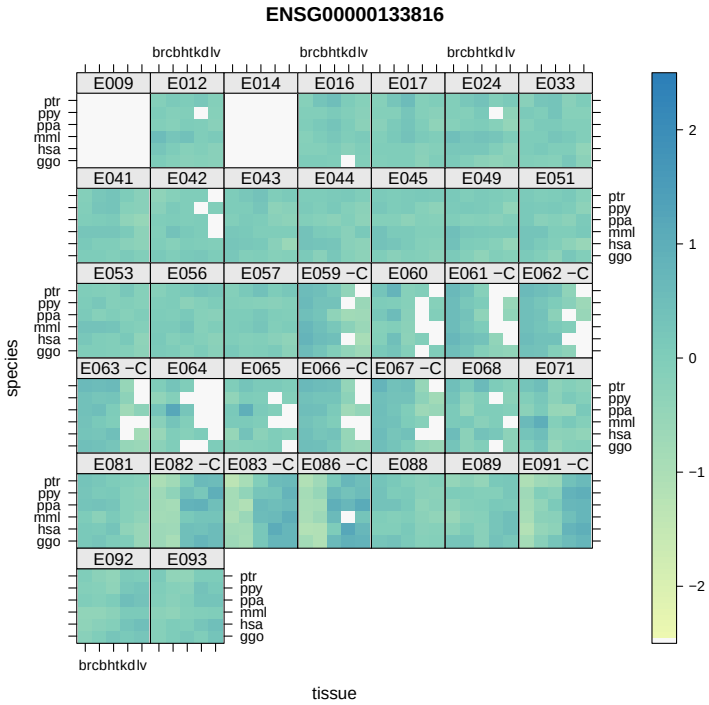

ENSG00000133027
E003
E004
E005
E009 −C
E010
E015
E016
E018
E020 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

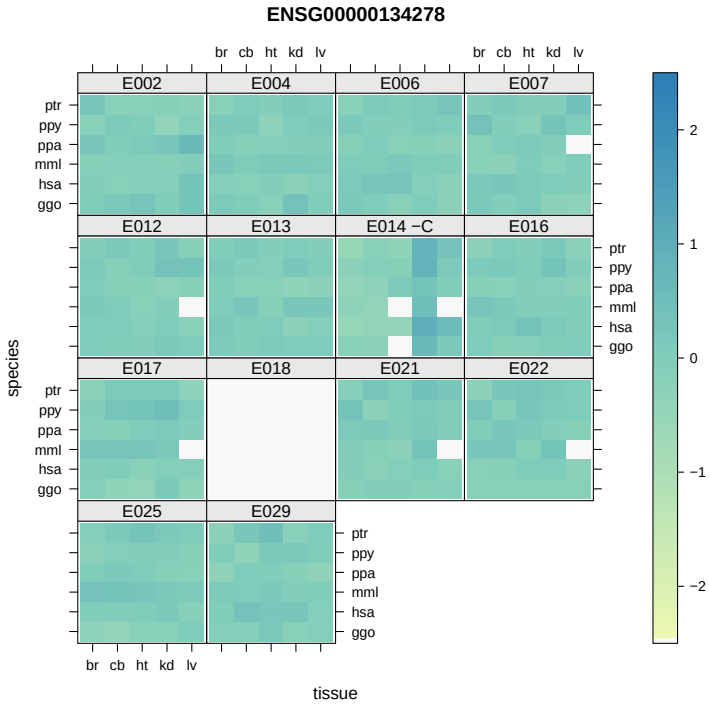

ENSG00000133083
br cb ht kd lv
E001
E003
E005
E006
E007
E012
E014
E015
E016
E017
E018
E019
E020
E021
E022
E024 −C
E025
E026
E027 −C
E029
E031 −C
E033
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

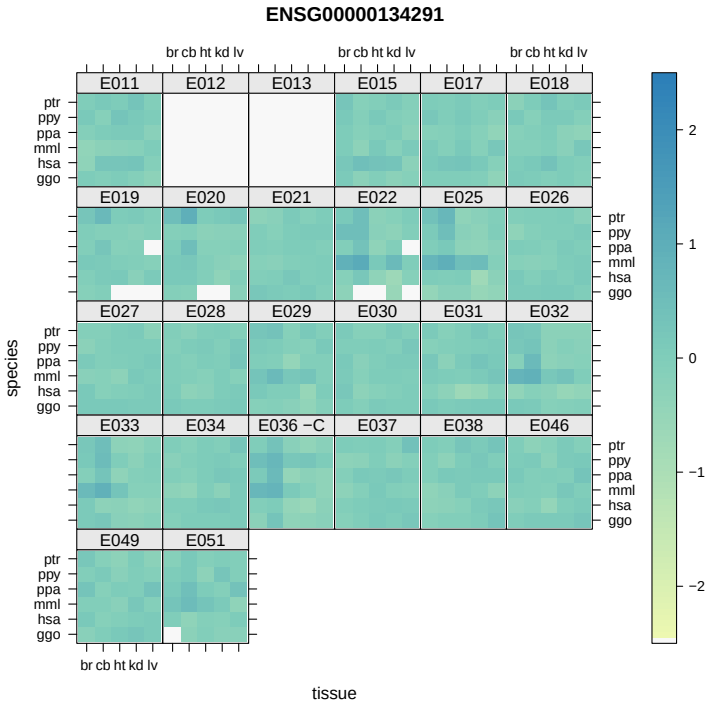

ENSG00000133318
br cb ht kd lv
E007
E008
E010
E012
E014
E017 −C
E018
E020
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

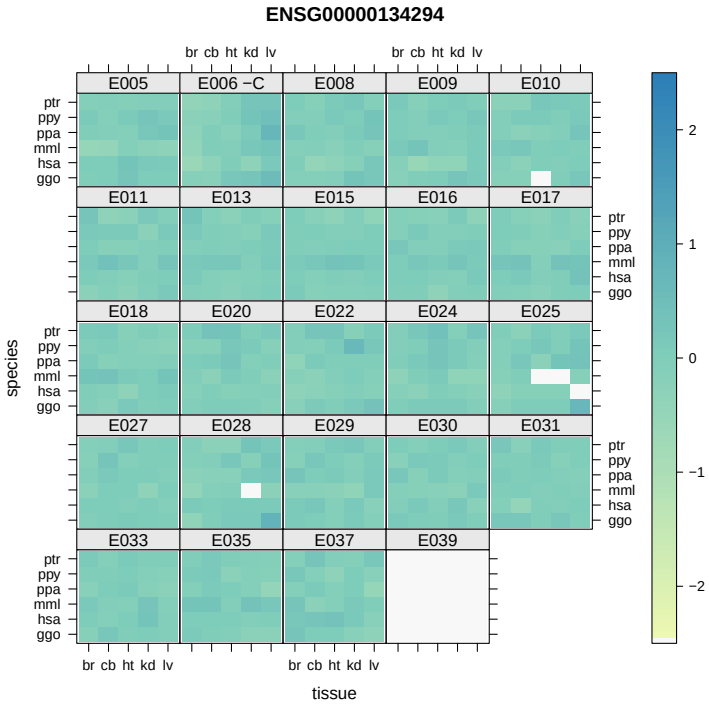

ENSG00000133574
br cb ht kd lv
E007
E008 −C
E011 −C
E014 −C
E017 −C
E018 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

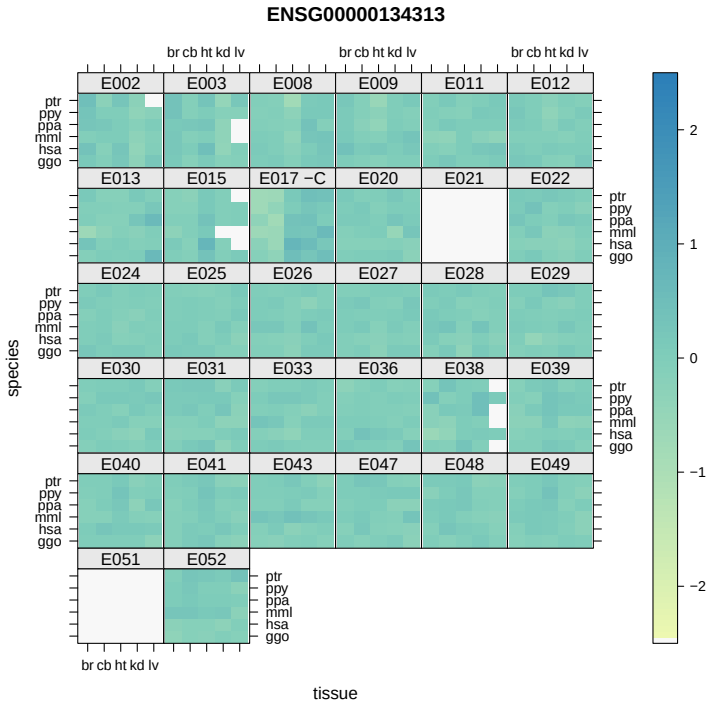

ENSG00000133612
br cb ht kd lv
E001
E012
E015 −C
E016
E019
E020 −C
E021 −C
E042 −C
E043 −C
E049
E050 −C
E055 −C
E056 −C
E057
E058
E059
E060
E061
E063 −C
E064 −C
E065 −C
E066 −C
E067 −C
E068 −C
E070
E071 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

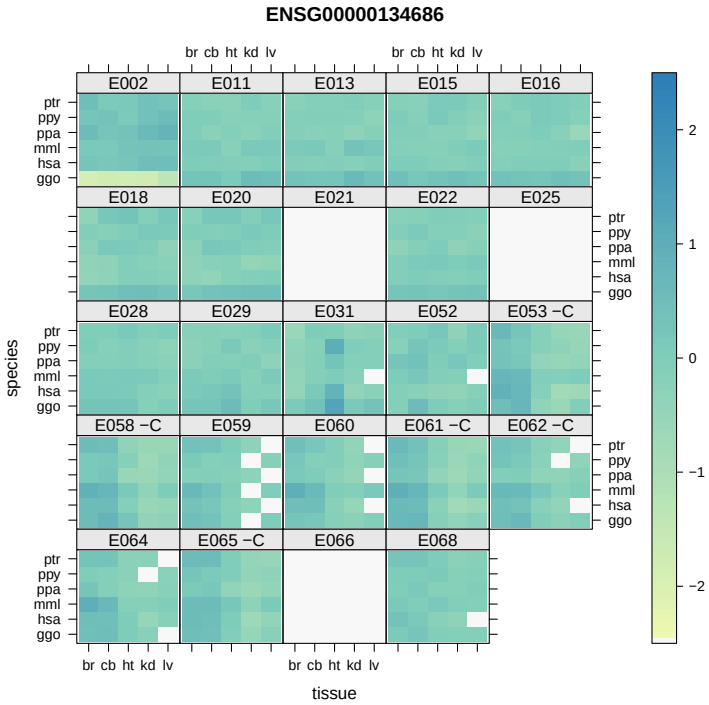

ENSG00000133816
brcbhtkdlv
E009
E012
E014
E016
E017
E024
E033
E041
E042
E043
E044
E045
E049
E051
E053
E056
E057
E059 −C
E060
E061 −C
E062 −C
E063 −C
E064
E065
E066 −C
E067 −C
E068
E071
E081
E082 −C
E083 −C
E086 −C
E088
E089
E091 −C
E092
E093
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

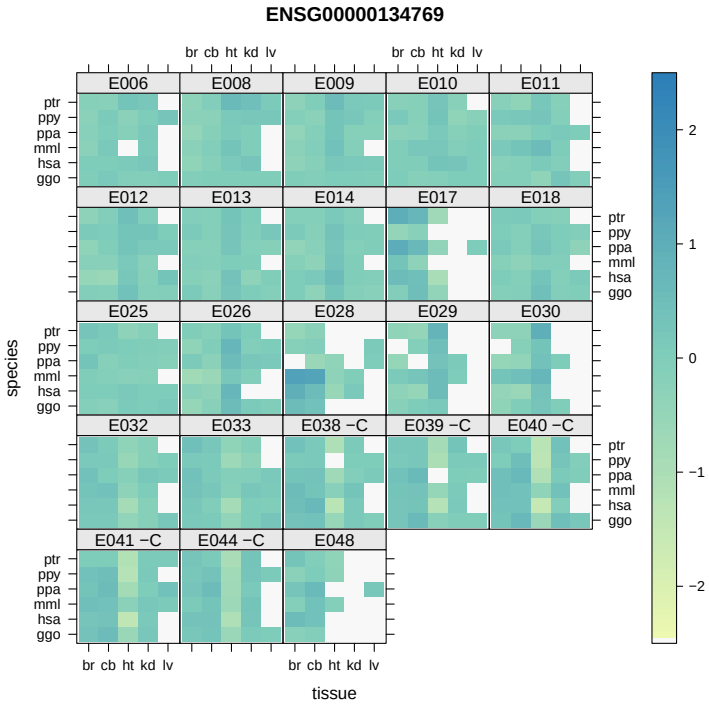

ENSG00000134278
E002
E004
E006
E007
E012
E013
E014 −C
E016
E017
E018
E021
E022
E025
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

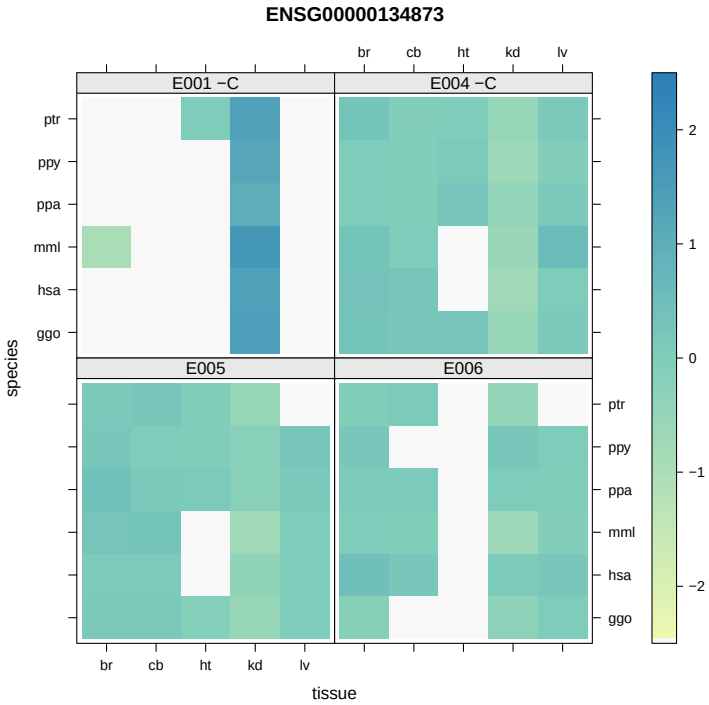

ENSG00000134291
br cb ht kd lv
E011
E012
E013
E015
E017
E018
E019
E020
E021
E022
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E036 −C
E037
E038
E046
E049
E051
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

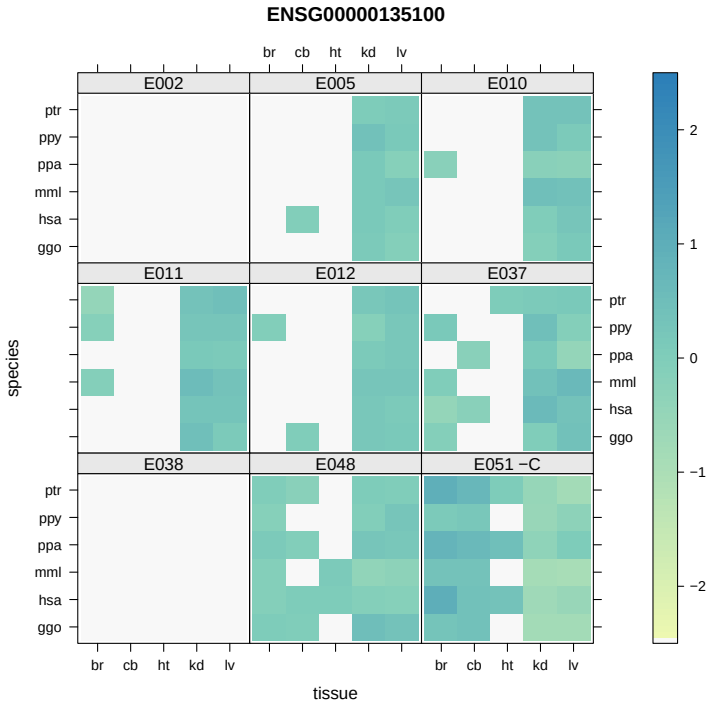

ENSG00000134294
E005
E006 −C
E008
E009
E010
E011
E013
E015
E016
E017
E018
E020
E022
E024
E025
E027
E028
E029
E030
E031
E033
E035
E037
E039
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

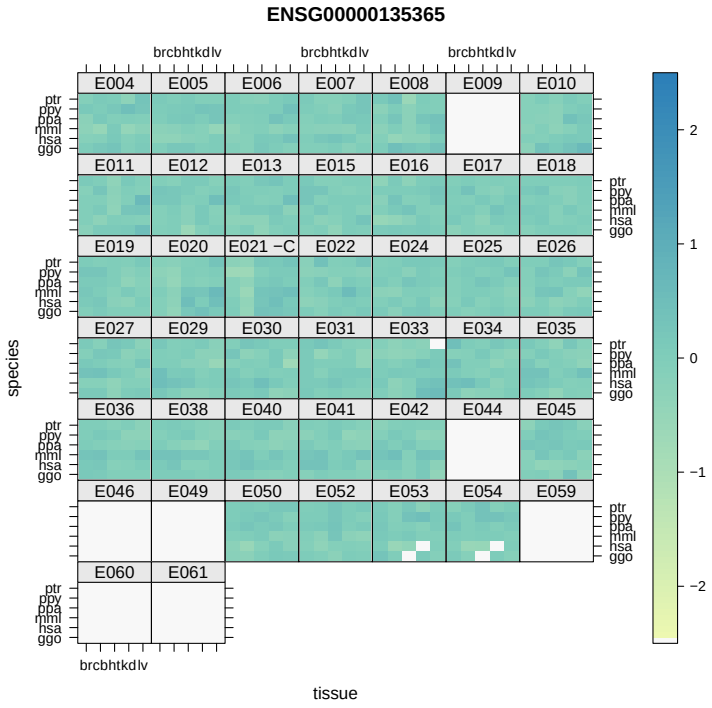

ENSG00000134313
br cb ht kd lv
E002
E003
E008
E009
E011
E012
E013
E015
E017 −C
E020
E021
E022
E024
E025
E026
E027
E028
E029
E030
E031
E033
E036
E038
E039
E040
E041
E043
E047
E048
E049
E051
E052
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

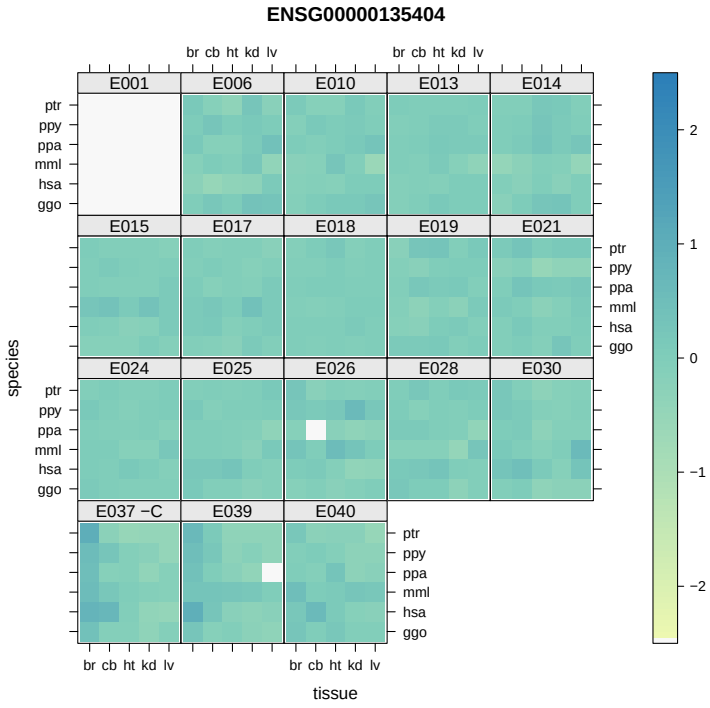

ENSG00000134686
E002
E011
E013
E015
E016
E018
E020
E021
E022
E025
E028
E029
E031
E052
E053 −C
E058 −C
E059
E060
E061 −C
E062 −C
E064
E065 −C
E066
E068
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

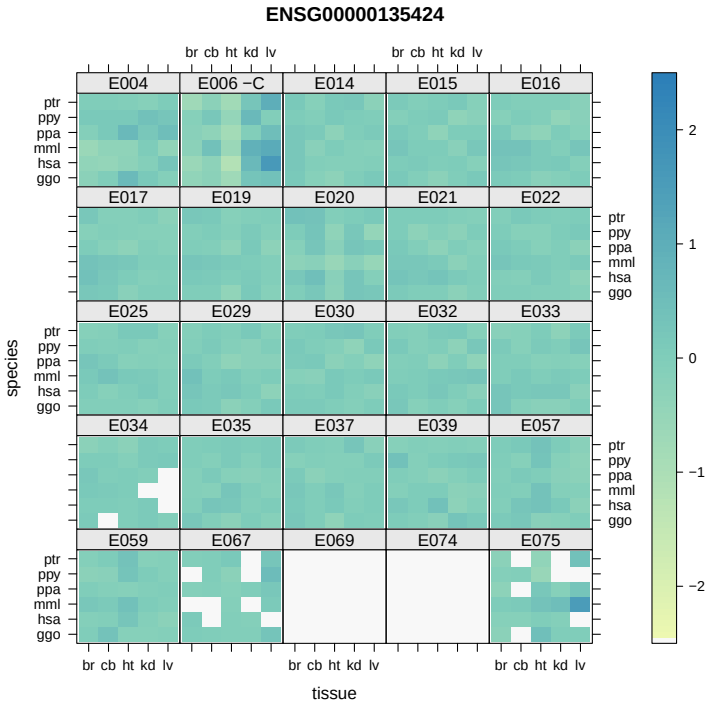

ENSG00000134769
E006
E008
E009
E010
E011
E012
E013
E014
E017
E018
E025
E026
E028
E029
E030
E032
E033
E038 −C
E039 −C
E040 −C
E041 −C
E044 −C
E048
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

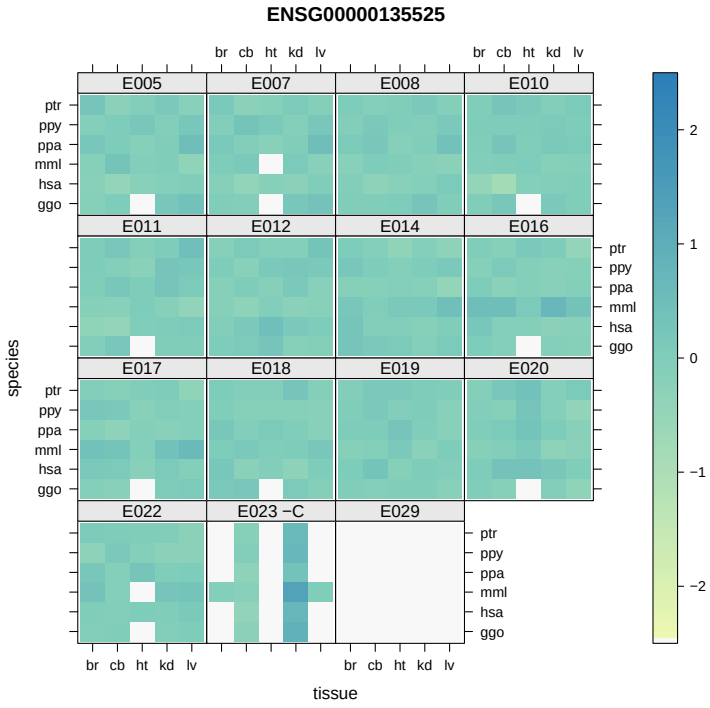

ENSG00000134873
E001 −C
E004 −C
E005
E006
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

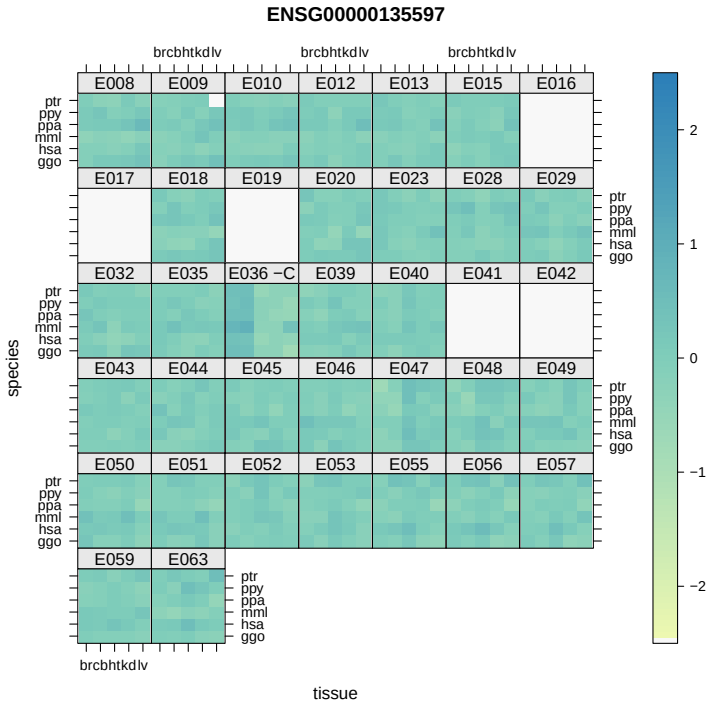

ENSG00000135100
E002
E005
E010
E011
E012
E037
E038
E048
E051 −C
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

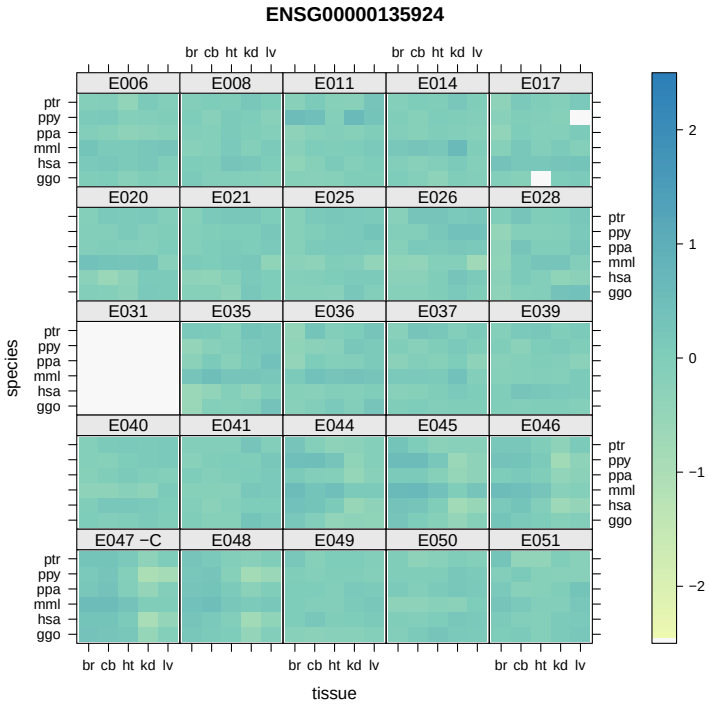

ENSG00000135365
brcbhtkdlv
E004
E005
E006
E007
E008
E009
E010
E011
E012
E013
E015
E016
E017
E018
E019
E020
E021 −C
E022
E024
E025
E026
E027
E029
E030
E031
E033
E034
E035
E036
E038
E040
E041
E042
E044
E045
E046
E049
E050
E052
E053
E054
E059
E060
E061
ptr
ppy
ppa
nml
hsa
ggo
species
tissue
2
1
0
−1
−2

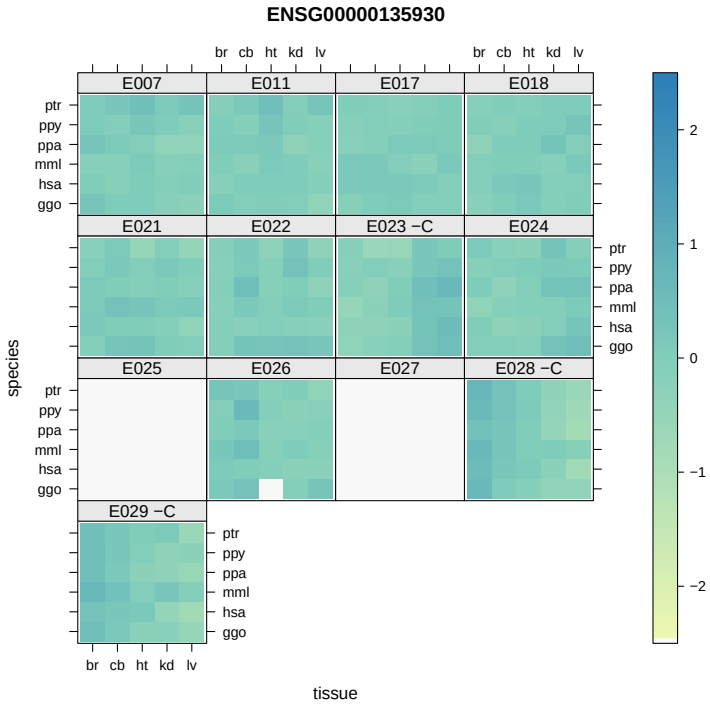

ENSG00000135404
E001
E006
E010
E013
E014
E015
E017
E018
E019
E021
E024
E025
E026
E028
E030
E037 −C
E039
E040
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

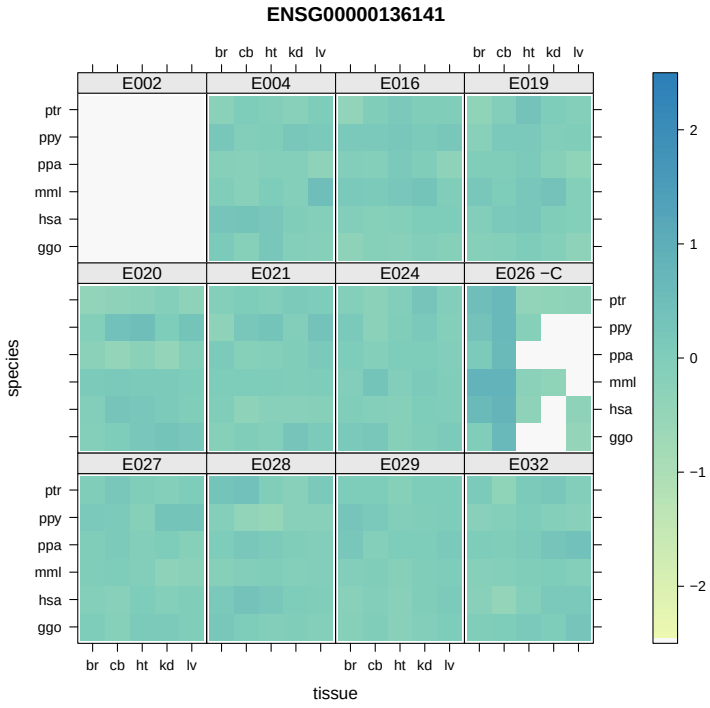

ENSG00000135424
E004
E006 −C
E014
E015
E016
E017
E019
E020
E021
E022
E025
E029
E030
E032
E033
E034
E035
E037
E039
E057
E059
E067
E069
E074
E075
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

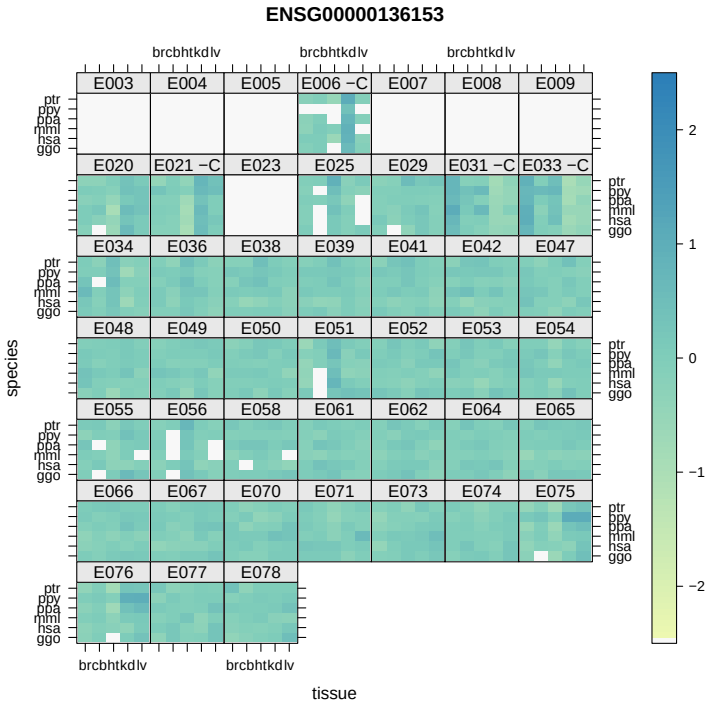

ENSG00000135525
E005
E007
E008
E010
E011
E012
E014
E016
E017
E018
E019
E020
E022
E023 −C
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

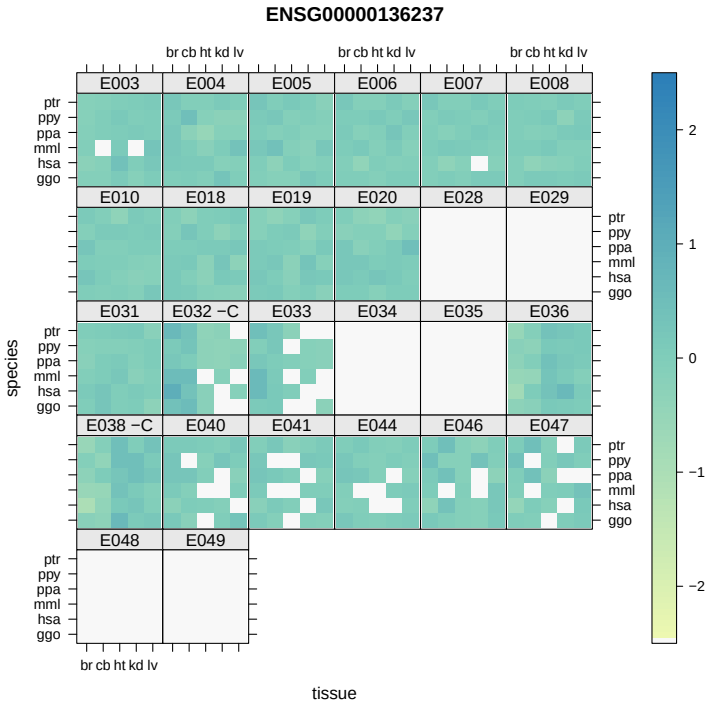

ENSG00000135597
brcbhtkdlv
E008
E009
E010
E012
E013
E015
E016
E017
E018
E019
E020
E023
E028
E029
E032
E035
E036 −C
E039
E040
E041
E042
E043
E044
E045
E046
E047
E048
E049
E050
E051
E052
E053
E055
E056
E057
E059
E063
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

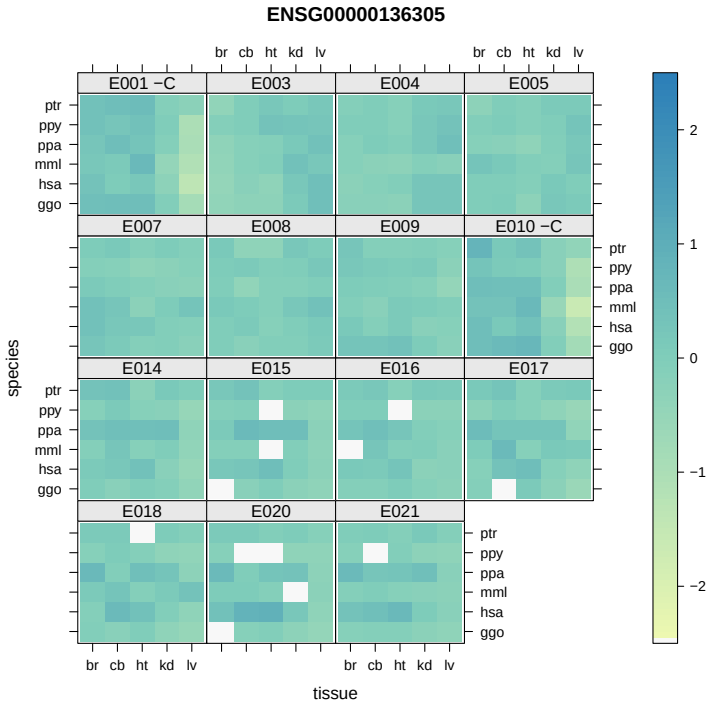

ENSG00000135924
br cb ht kd lv
E006
E008
E011
E014
E017
E020
E021
E025
E026
E028
E031
E035
E036
E037
E039
E040
E041
E044
E045
E046
E047 −C
E048
E049
E050
E051
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

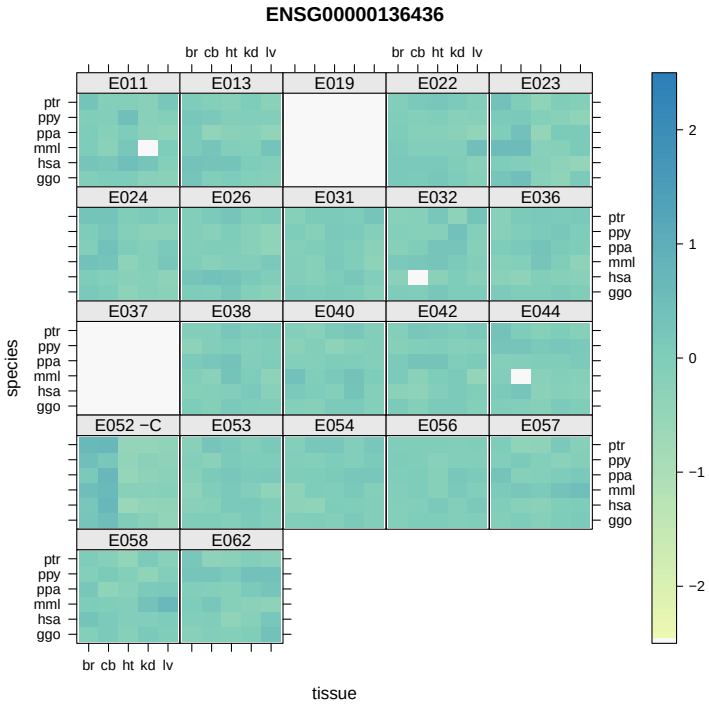

ENSG00000135930
E007
E011
E017
E018
E021
E022
E023 −C
E024
E025
E026
E027
E028 −C
E029 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

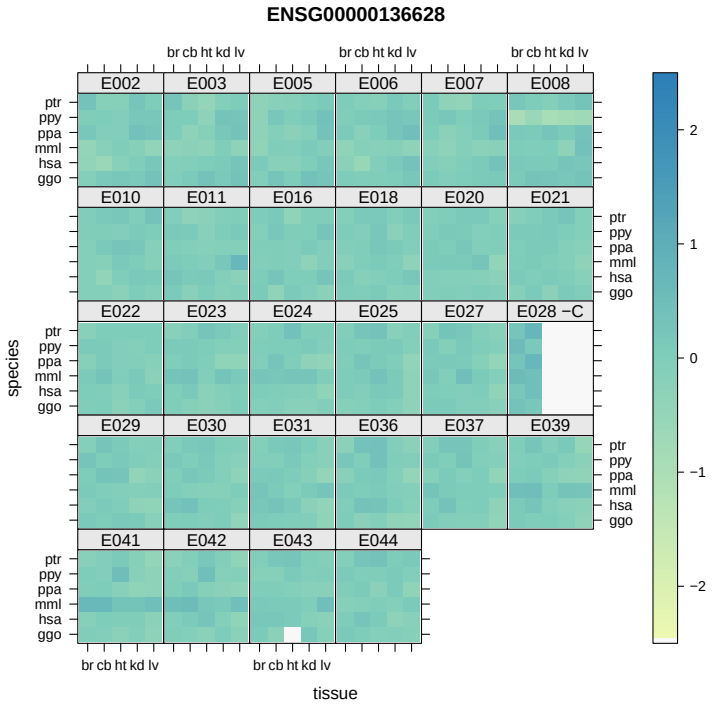

ENSG00000136141
br cb ht kd lv
E002
E004
E016
E019
E020
E021
E024
E026 −C
E027
E028
E029
E032
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

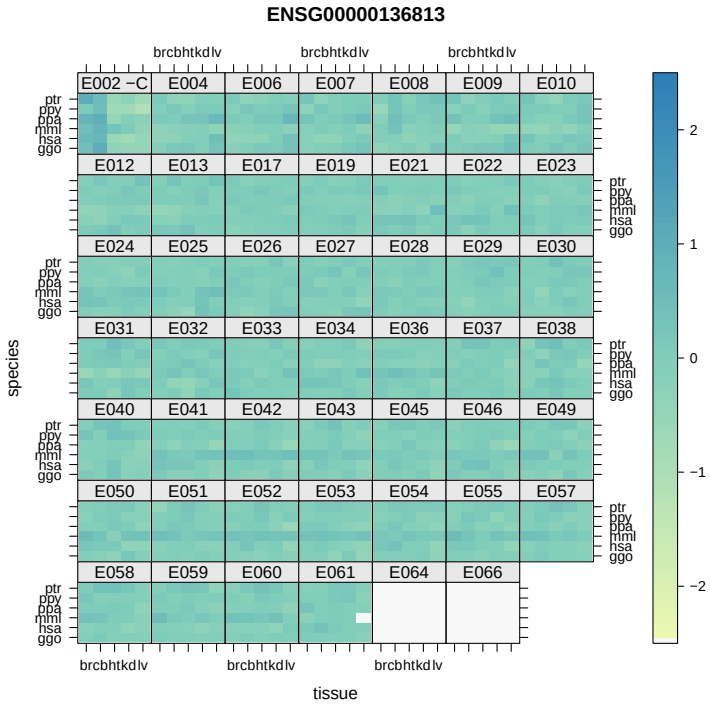

ENSG00000136153
brcbhtkdlv
E003
E004
E005
E006 −C
E007
E008
E009
E020
E021 −C
E023
E025
E029
E031 −C
E033 −C
E034
E036
E038
E039
E041
E042
E047
E048
E049
E050
E051
E052
E053
E054
E055
E056
E058
E061
E062
E064
E065
E066
E067
E070
E071
E073
E074
E075
E076
E077
E078
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

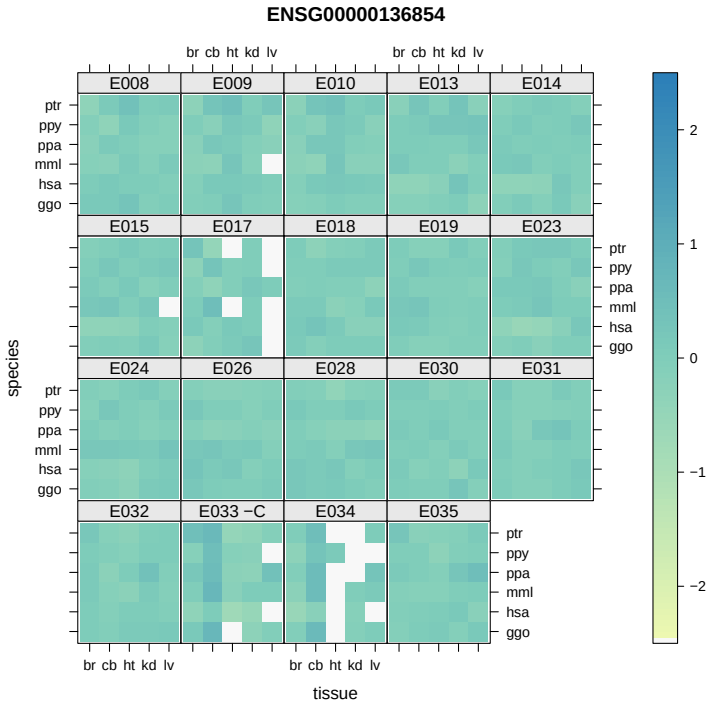

ENSG00000136237
br cb ht kd lv
E003
E004
E005
E006
E007
E008
E010
E018
E019
E020
E028
E029
E031
E032 −C
E033
E034
E035
E036
E038 −C
E040
E041
E044
E046
E047
E048
E049
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

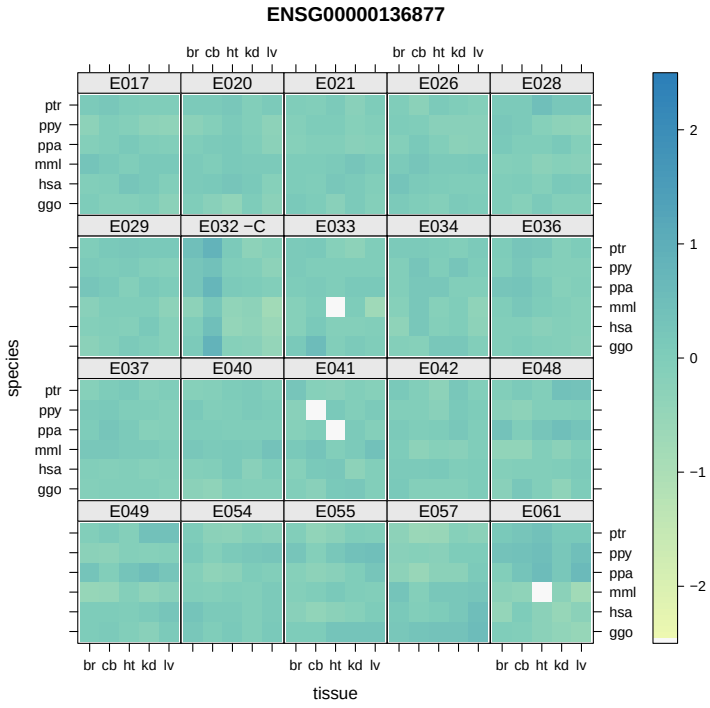

ENSG00000136305
E001 −C
E003
E004
E005
E007
E008
E009
E010 −C
E014
E015
E016
E017
E018
E020
E021
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

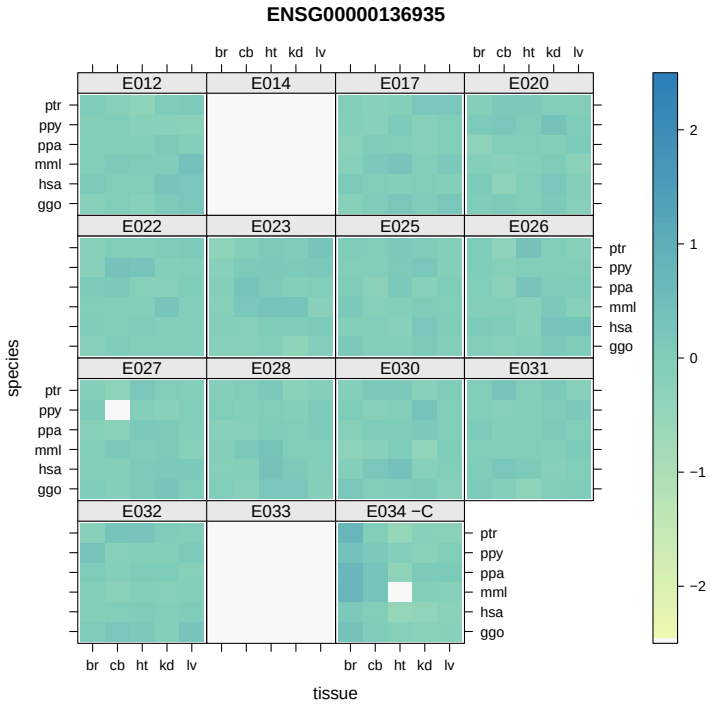

ENSG00000136436
br cb ht kd lv
E011
E013
E019
E022
E023
E024
E026
E031
E032
E036
E037
E038
E040
E042
E044
E052 −C
E053
E054
E056
E057
E058
E062
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

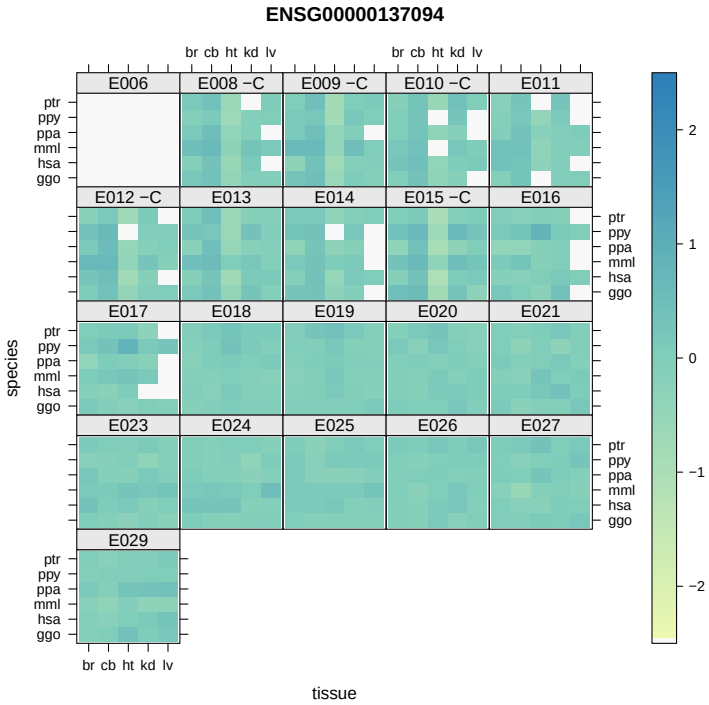

ENSG00000136628
br cb ht kd lv
E002
E003
E005
E006
E007
E008
E010
E011
E016
E018
E020
E021
E022
E023
E024
E025
E027
E028 −C
E029
E030
E031
E036
E037
E039
E041
E042
E043
E044
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

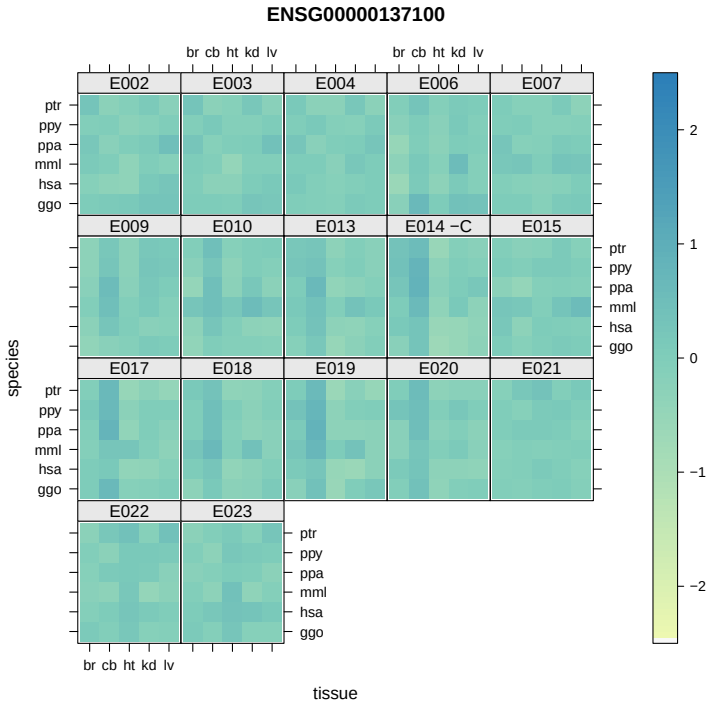

ENSG00000136813
brcbhtkdlv
E002 −C
E004
E006
E007
E008
E009
E010
E012
E013
E017
E019
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E036
E037
E038
E040
E041
E042
E043
E045
E046
E049
E050
E051
E052
E053
E054
E055
E057
E058
E059
E060
E061
E064
E066
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

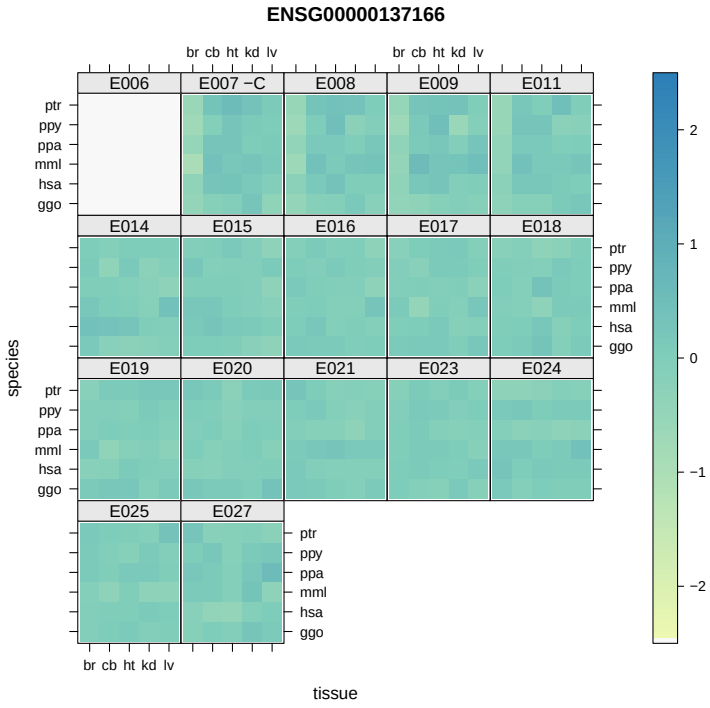

ENSG00000136854
E008
E009
E010
E013
E014
E015
E017
E018
E019
E023
E024
E026
E028
E030
E031
E032
E033 −C
E034
E035
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

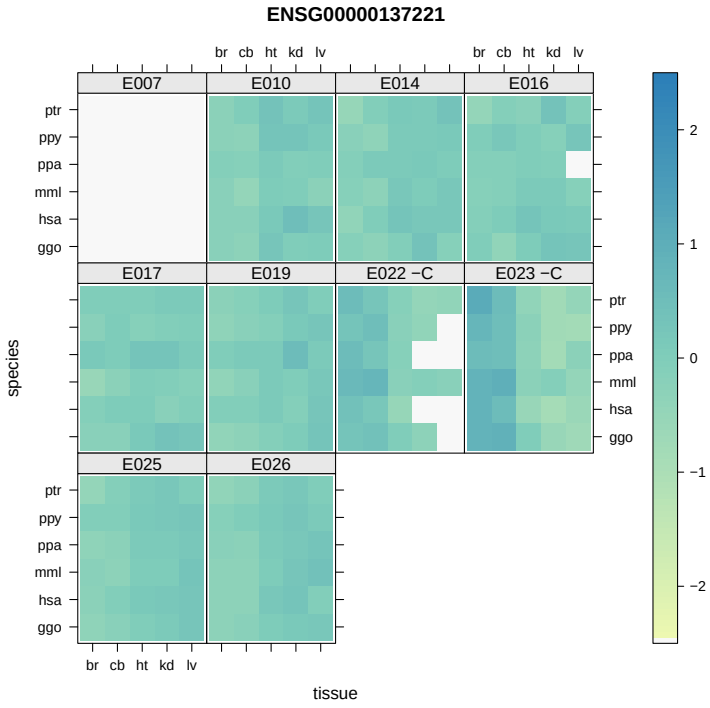

ENSG00000136877
E017
E020
E021
E026
E028
E029
E032 −C
E033
E034
E036
E037
E040
E041
E042
E048
E049
E054
E055
E057
E061
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

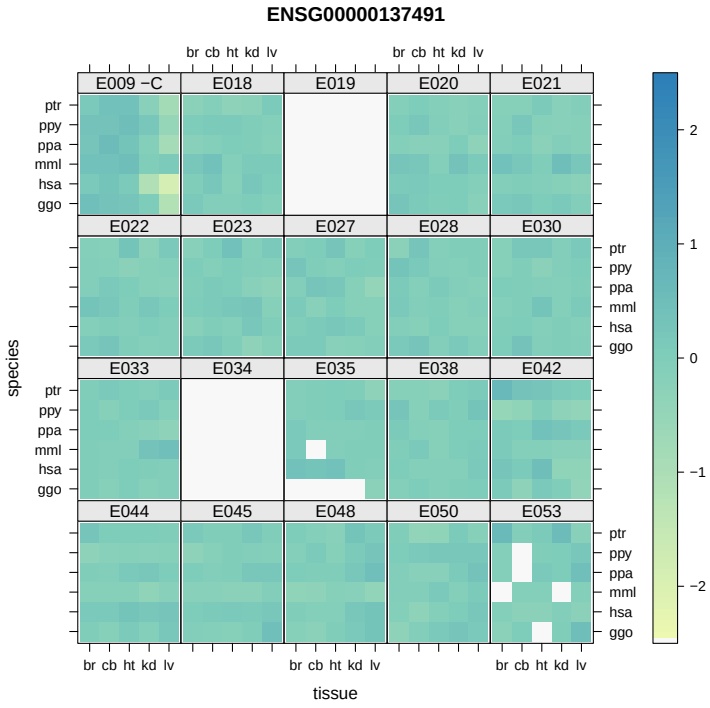

ENSG00000136935
E012
E014
E017
E020
E022
E023
E025
E026
E027
E028
E030
E031
E032
E033
E034 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

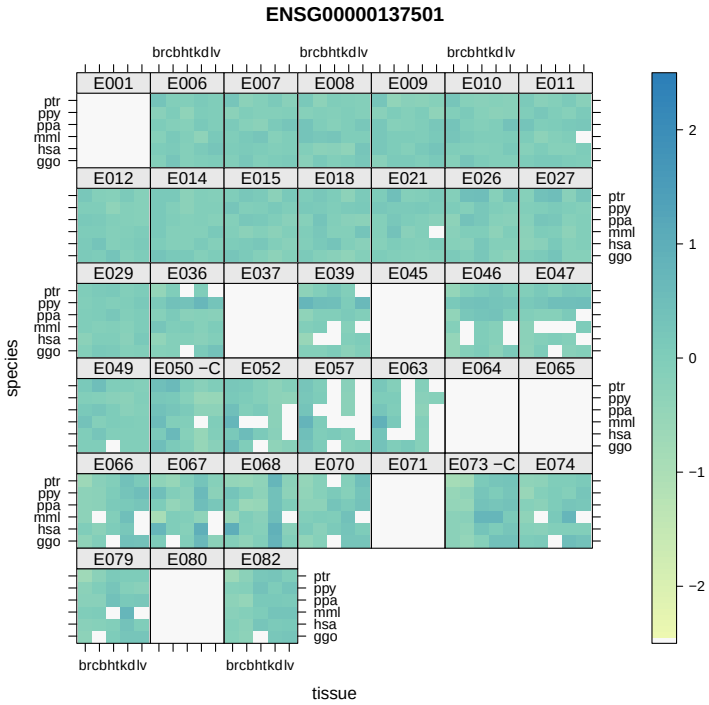

ENSG00000137094
br cb ht kd lv
E006
E008 −C
E009 −C
E010 −C
E011
E012 −C
E013
E014
E015 −C
E016
E017
E018
E019
E020
E021
E023
E024
E025
E026
E027
E029
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

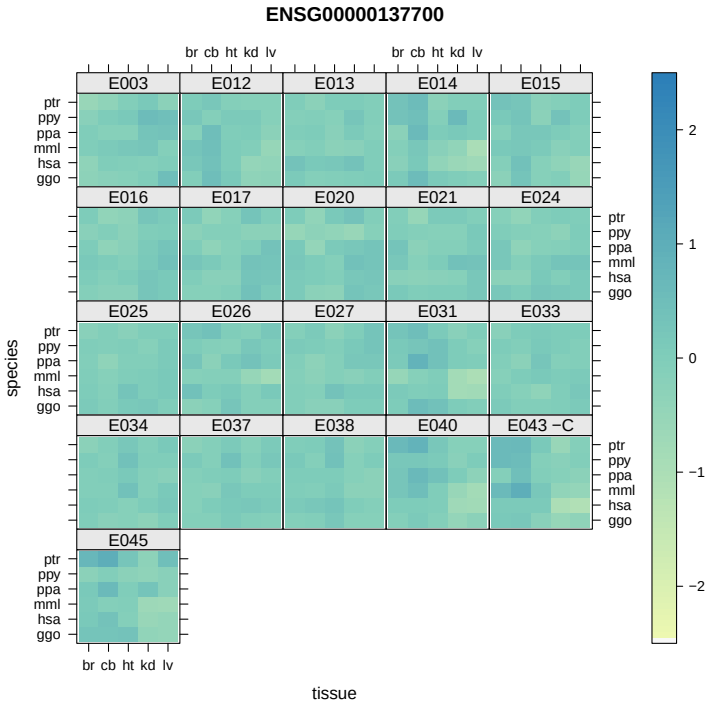

ENSG00000137100
br cb ht kd lv
E002
E003
E004
E006
E007
E009
E010
E013
E014 −C
E015
E017
E018
E019
E020
E021
E022
E023
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

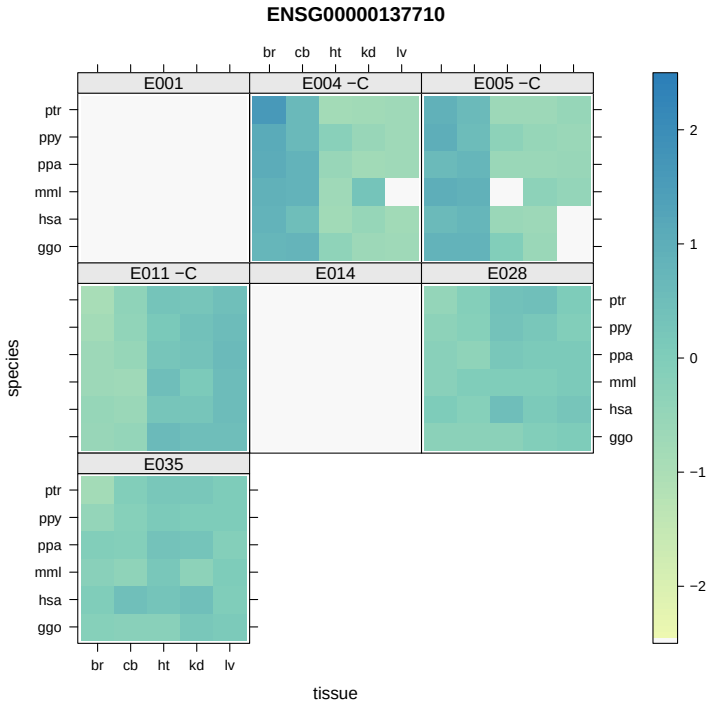

ENSG00000137166
E006
E007 −C
E008
E009
E011
E014
E015
E016
E017
E018
E019
E020
E021
E023
E024
E025
E027
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

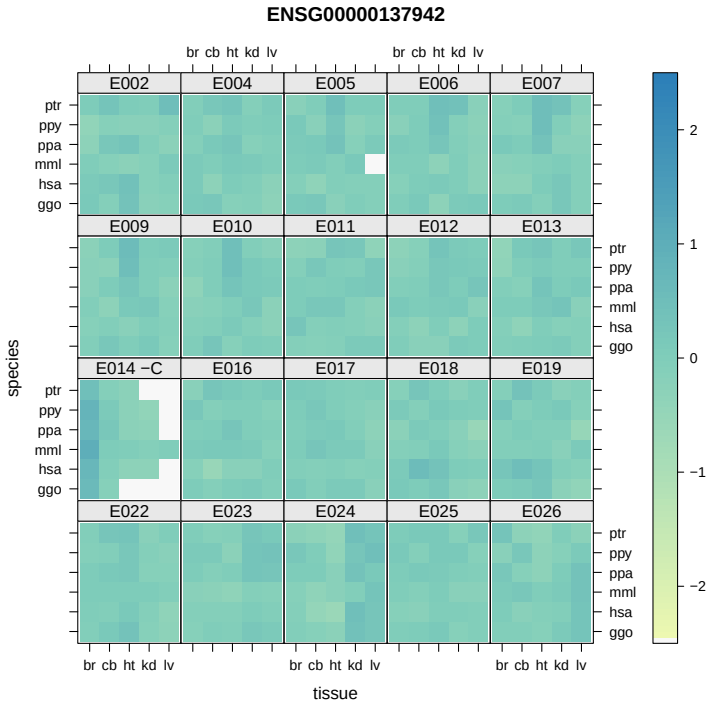

ENSG00000137221
E007
E010
E014
E016
E017
E019
E022 −C
E023 −C
E025
E026
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

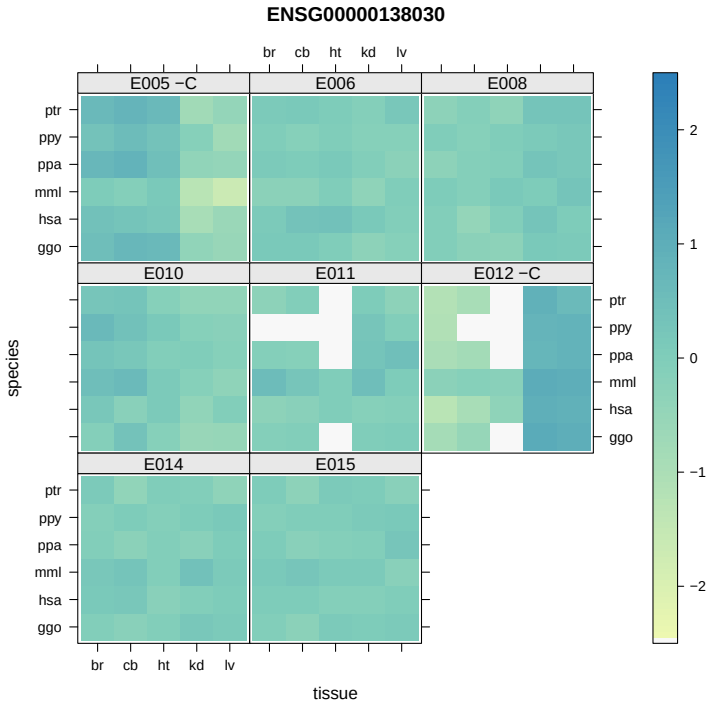

ENSG00000137491
E009 −C
E018
E019
E020
E021
E022
E023
E027
E028
E030
E033
E034
E035
E038
E042
E044
E045
E048
E050
E053
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

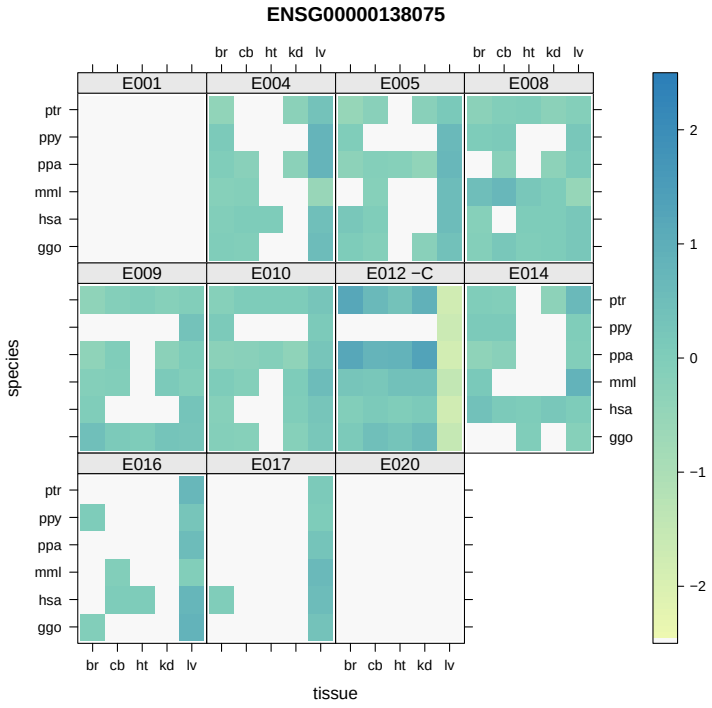

ENSG00000137501
brcbhtkdlv
E001
E006
E007
E008
E009
E010
E011
E012
E014
E015
E018
E021
E026
E027
E029
E036
E037
E039
E045
E046
E047
E049
E050 −C
E052
E057
E063
E064
E065
E066
E067
E068
E070
E071
E073 −C
E074
E079
E080
E082
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

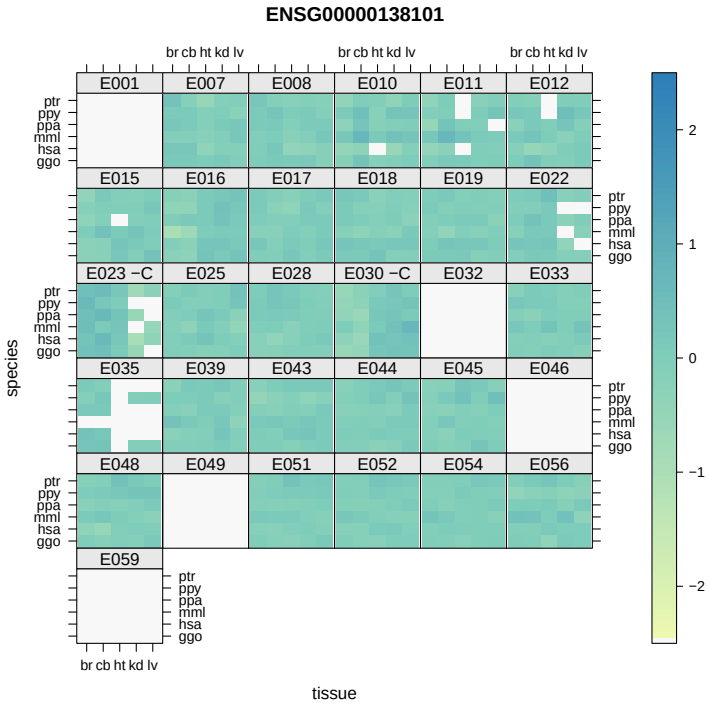

ENSG00000137700
br cb ht kd lv
E003
E012
E013
E014
E015
E016
E017
E020
E021
E024
E025
E026
E027
E031
E033
E034
E037
E038
E040
E043 −C
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

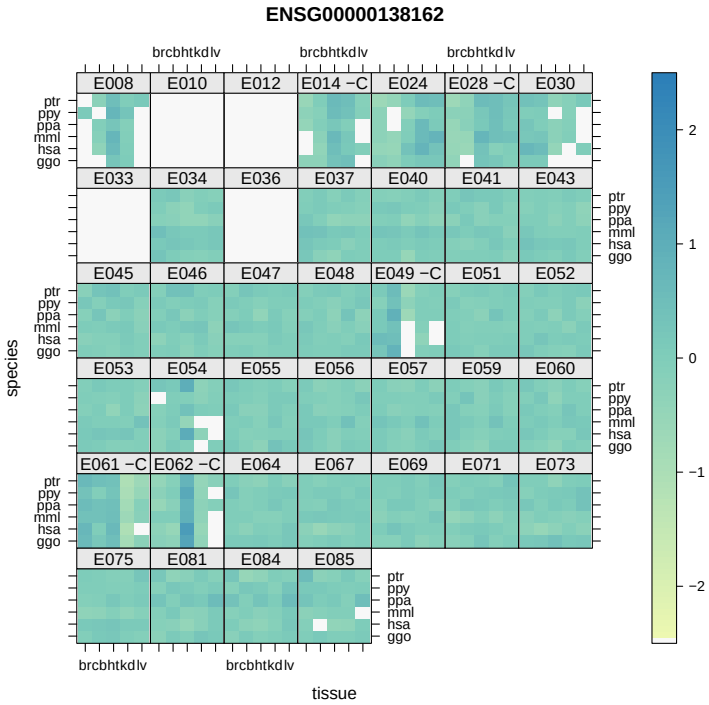

ENSG00000137710
br cb ht kd lv
E001
E004 −C
E005 −C
E011 −C
E014
E028
E035
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

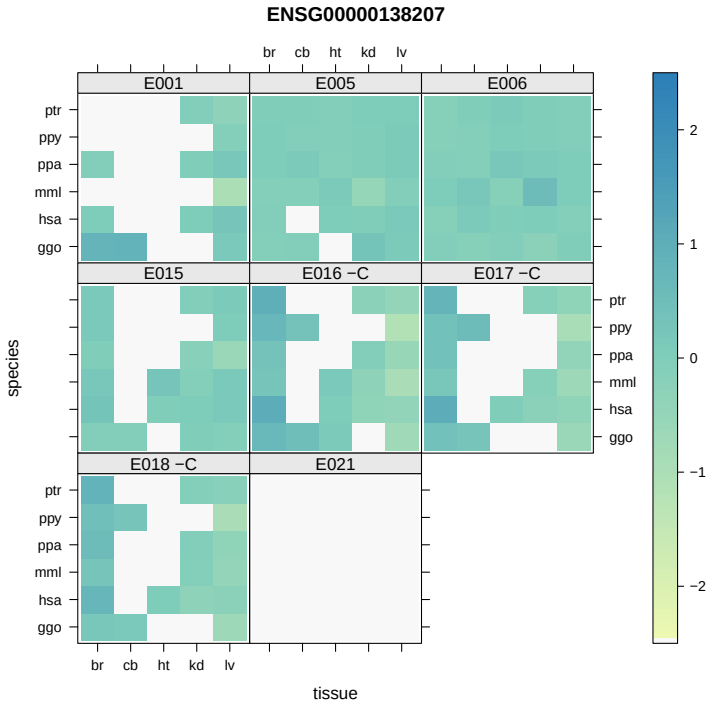

ENSG00000137942
E002
E004
E005
E006
E007
E009
E010
E011
E012
E013
E014 −C
E016
E017
E018
E019
E022
E023
E024
E025
E026
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

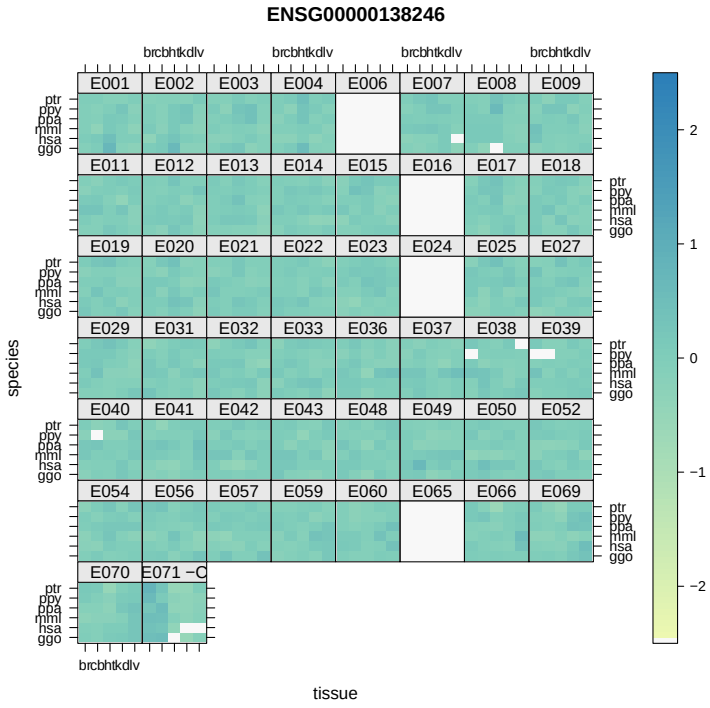

ENSG00000138030
br cb ht kd lv
E005 −C
E006
E008
E010
E011
E012 −C
E014
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

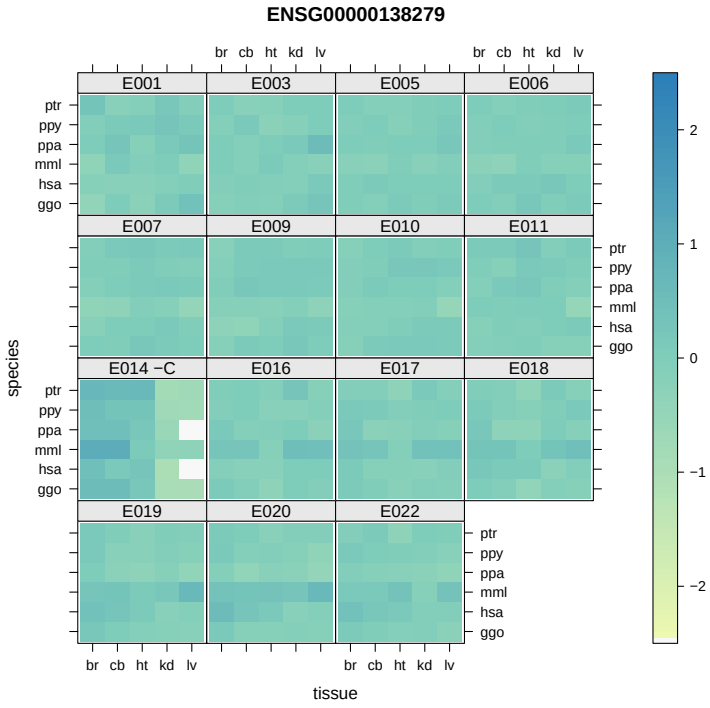

ENSG00000138075
E001
E004
E005
E008
E009
E010
E012 −C
E014
E016
E017
E020
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

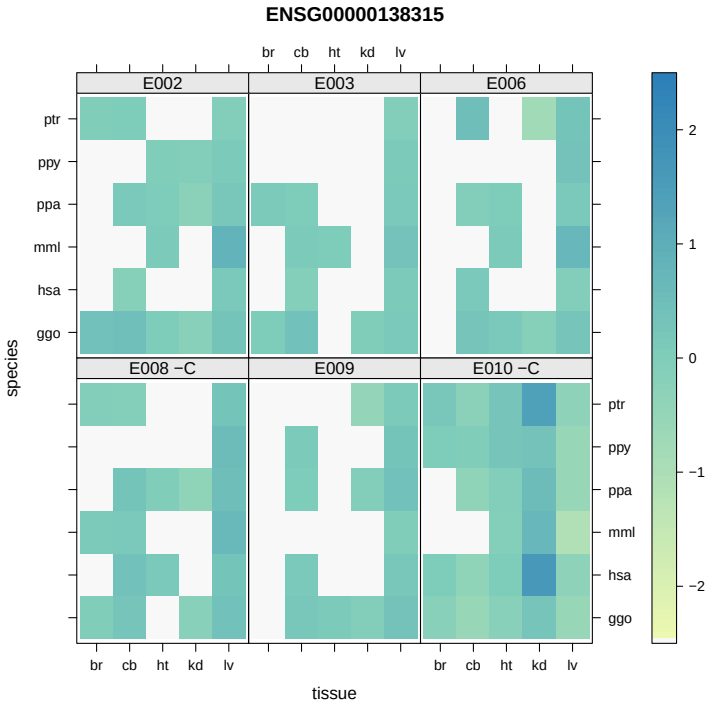

ENSG00000138101
br cb ht kd lv
E001
E007
E008
E010
E011
E012
E015
E016
E017
E018
E019
E022
E023 −C
E025
E028
E030 −C
E032
E033
E035
E039
E043
E044
E045
E046
E048
E049
E051
E052
E054
E056
E059
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

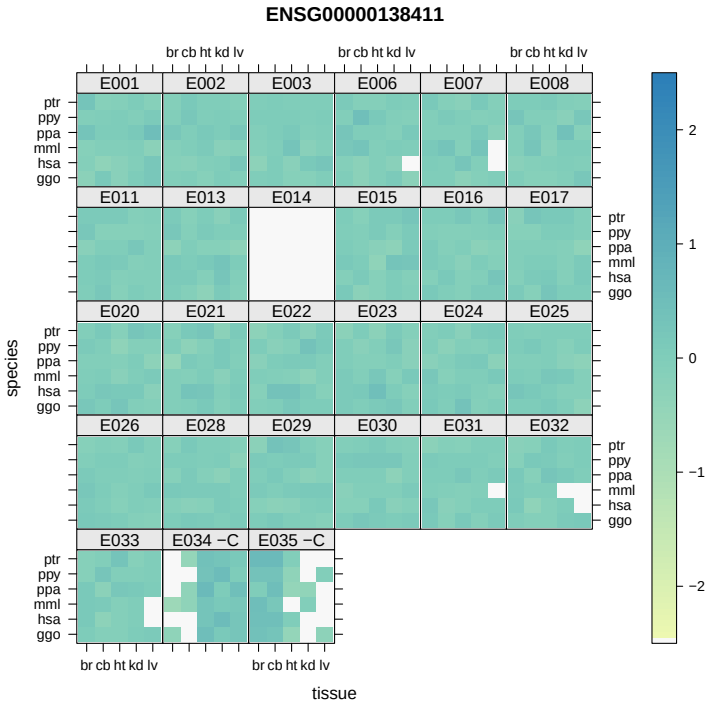

ENSG00000138162
brcbhtkdlv
E008
E010
E012
E014 −C
E024
E028 −C
E030
E033
E034
E036
E037
E040
E041
E043
E045
E046
E047
E048
E049 −C
E051
E052
E053
E054
E055
E056
E057
E059
E060
E061 −C
E062 −C
E064
E067
E069
E071
E073
E075
E081
E084
E085
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

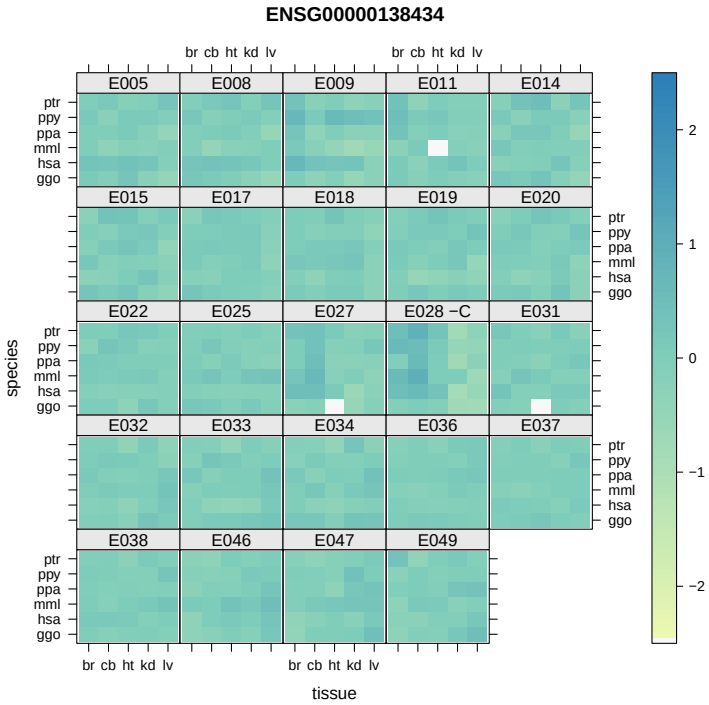

ENSG00000138207
br cb ht kd lv
E001
E005
E006
E015
E016 −C
E017 −C
E018 −C
E021
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

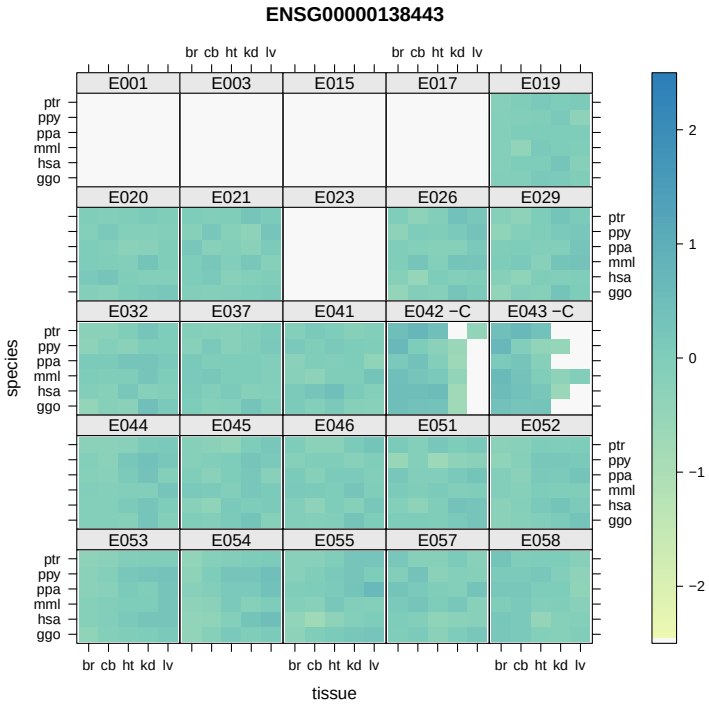

ENSG00000138246
brcbhtkdlv
E001
E002
E003
E004
E006
E007
E008
E009
E011
E012
E013
E014
E015
E016
E017
E018
E019
E020
E021
E022
E023
E024
E025
E027
E029
E031
E032
E033
E036
E037
E038
E039
E040
E041
E042
E043
E048
E049
E050
E052
E054
E056
E057
E059
E060
E065
E066
E069
E070
E071
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

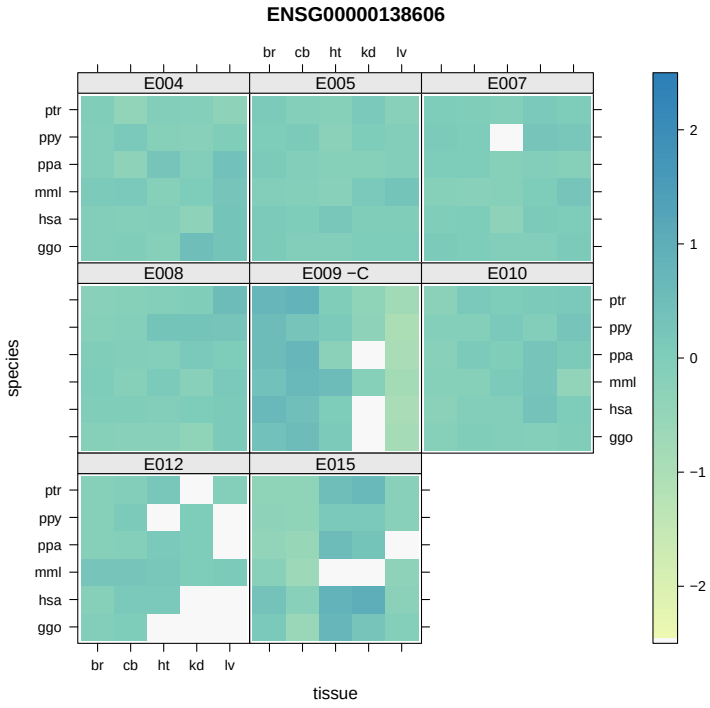

ENSG00000138279
E001
E003
E005
E006
E007
E009
E010
E011
E014 −C
E016
E017
E018
E019
E020
E022
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

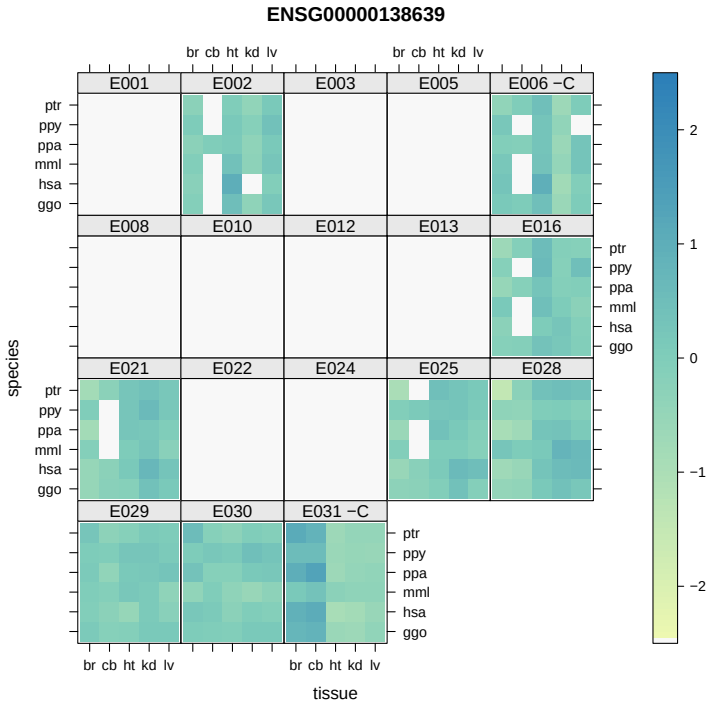

ENSG00000138315
E002
E003
E006
E008 −C
E009
E010 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

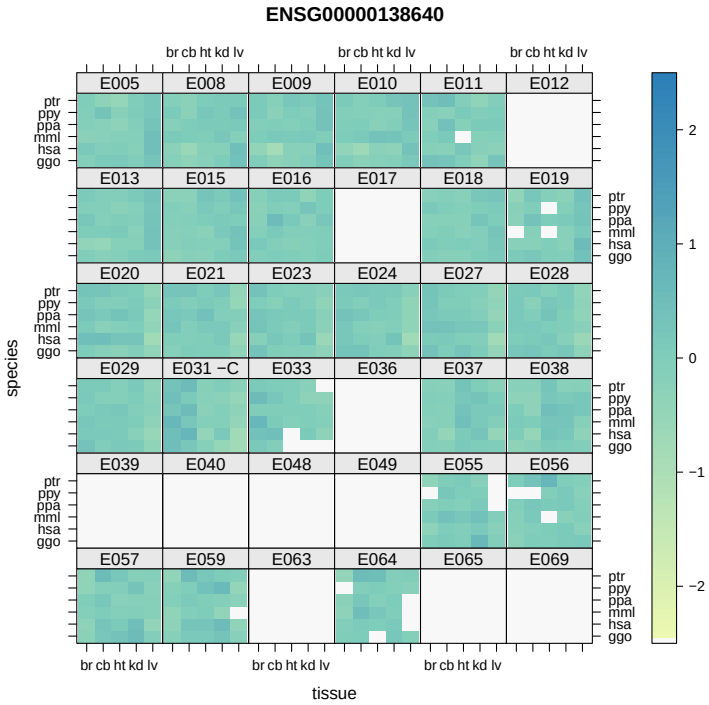

ENSG00000138411
br cb ht kd lv
E001
E002
E003
E006
E007
E008
E011
E013
E014
E015
E016
E017
E020
E021
E022
E023
E024
E025
E026
E028
E029
E030
E031
E032
E033
E034 −C
E035 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

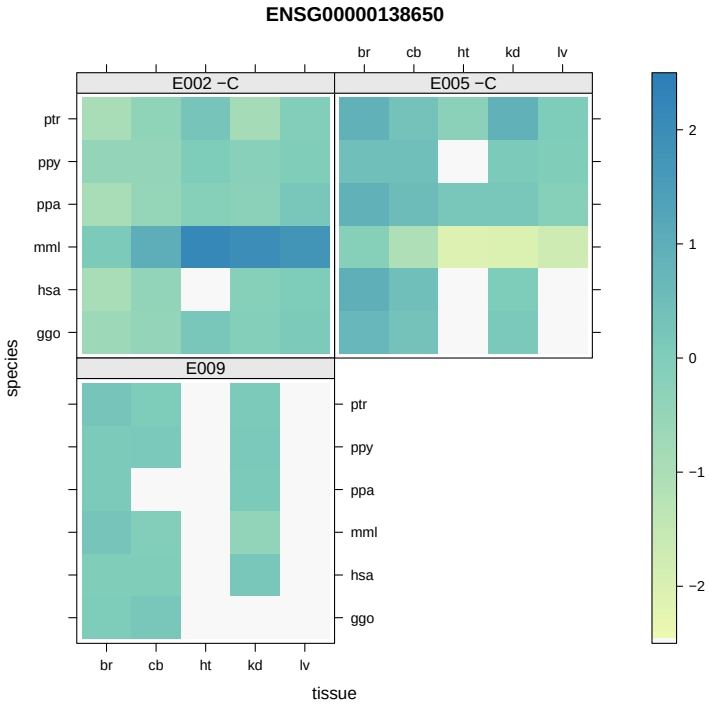

ENSG00000138434
br cb ht kd lv
E005
E008
E009
E011
E014
E015
E017
E018
E019
E020
E022
E025
E027
E028 −C
E031
E032
E033
E034
E036
E037
E038
E046
E047
E049
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

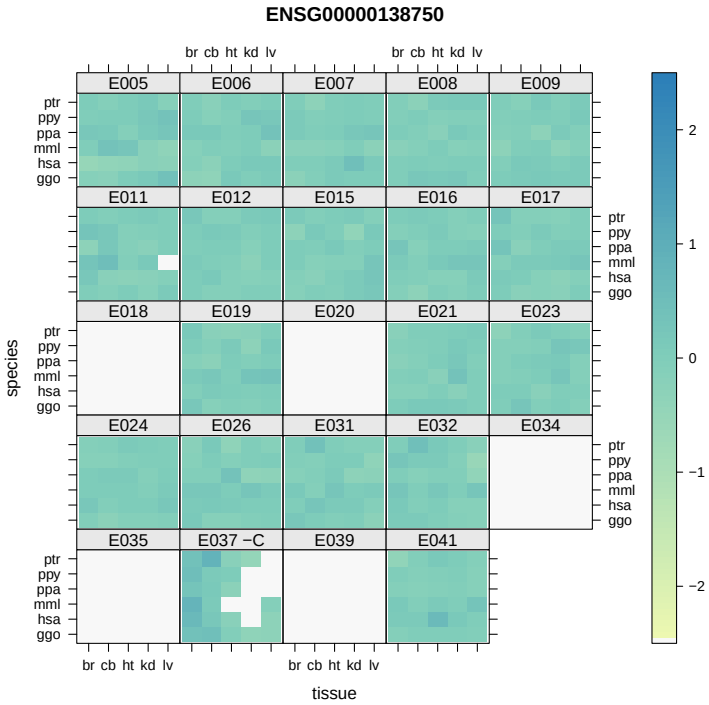

ENSG00000138443
E001
E003
E015
E017
E019
E020
E021
E023
E026
E029
E032
E037
E041
E042 −C
E043 −C
E044
E045
E046
E051
E052
E053
E054
E055
E057
E058
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

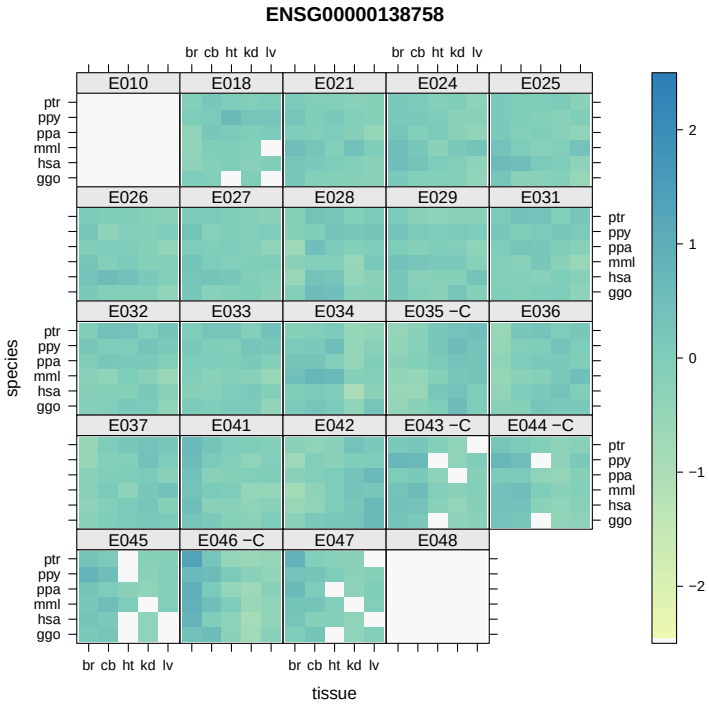

ENSG00000138606
br cb ht kd lv
E004
E005
E007
E008
E009 −C
E010
E012
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

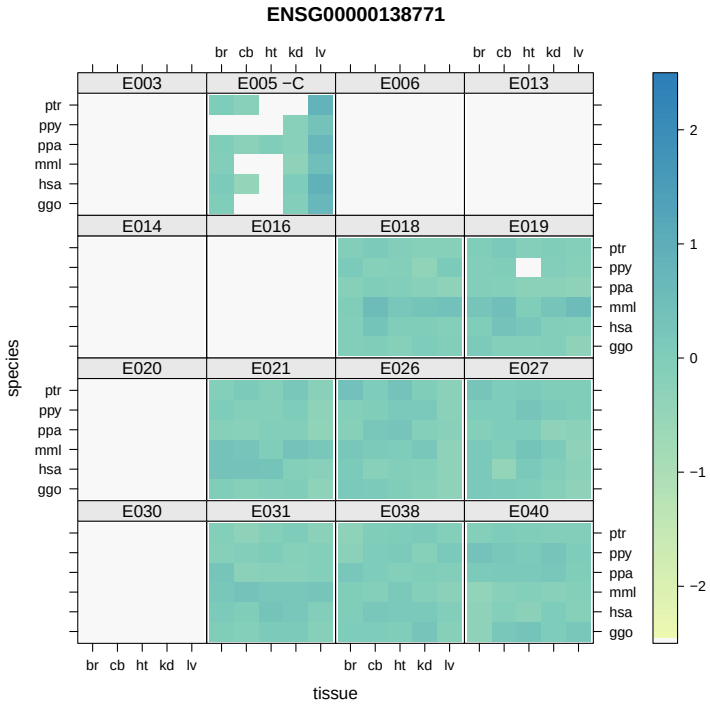

ENSG00000138639
E001
E002
E003
E005
E006 −C
E008
E010
E012
E013
E016
E021
E022
E024
E025
E028
E029
E030
E031 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

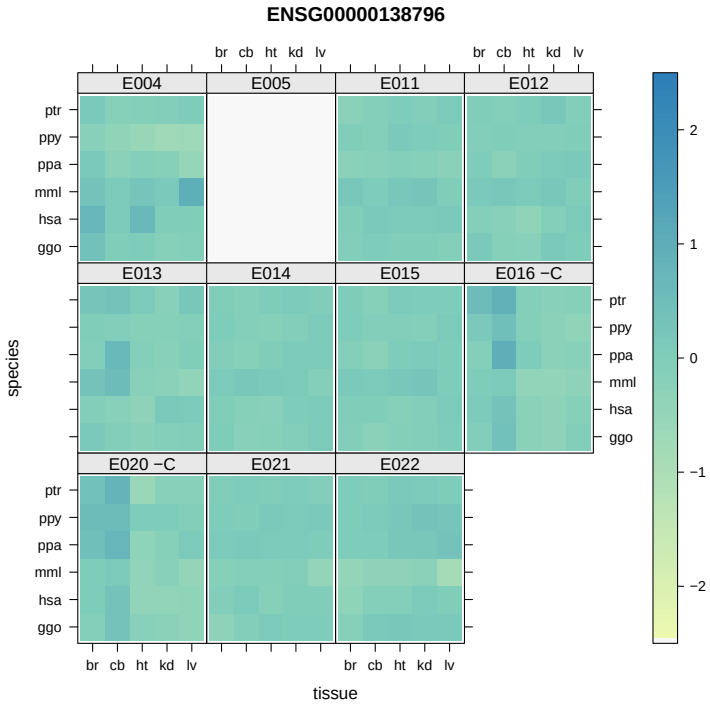

ENSG00000138640
br cb ht kd lv
E005
E008
E009
E010
E011
E012
E013
E015
E016
E017
E018
E019
E020
E021
E023
E024
E027
E028
E029
E031 −C
E033
E036
E037
E038
E039
E040
E048
E049
E055
E056
E057
E059
E063
E064
E065
E069
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

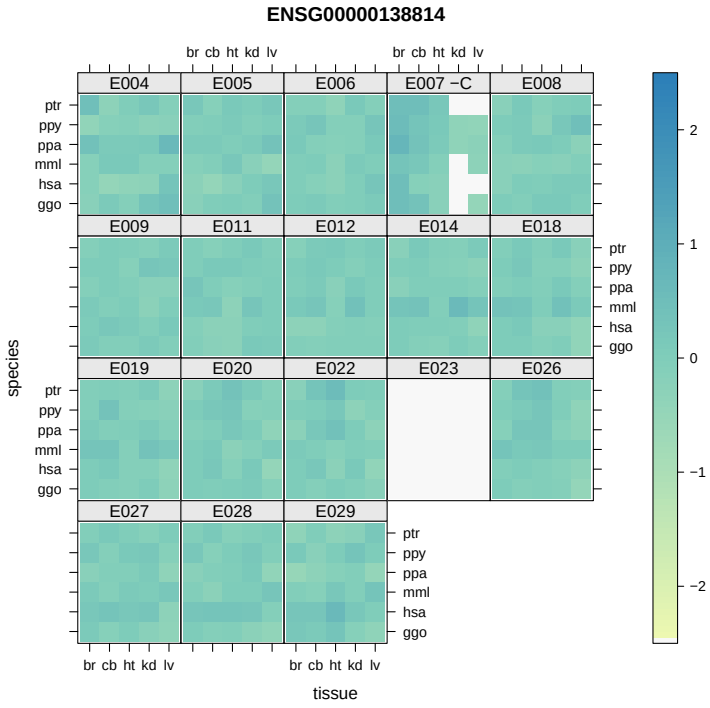

ENSG00000138650
E002 −C
E005 −C
E009
species
tissue
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
2
1
0
−1
−2

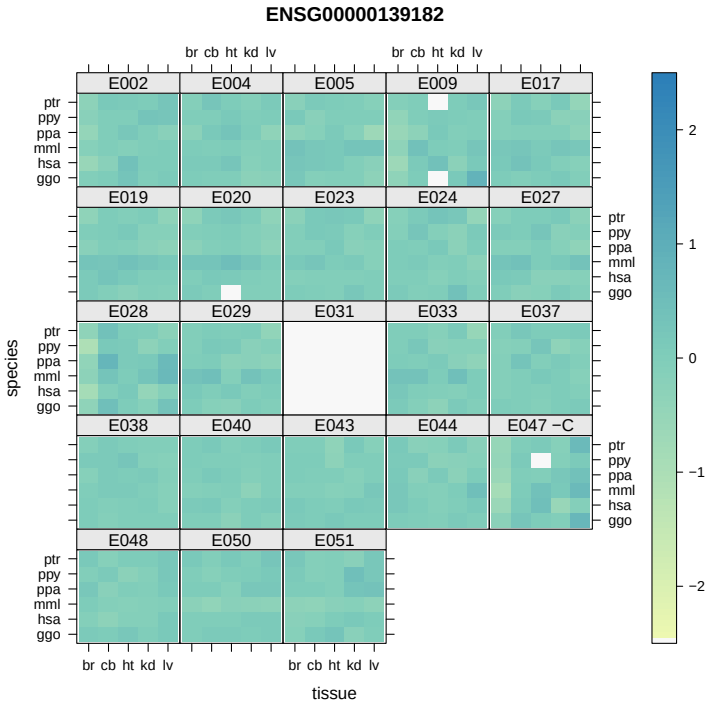

ENSG00000138750
E005
E006
E007
E008
E009
E011
E012
E015
E016
E017
E018
E019
E020
E021
E023
E024
E026
E031
E032
E034
E035
E037 −C
E039
E041
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

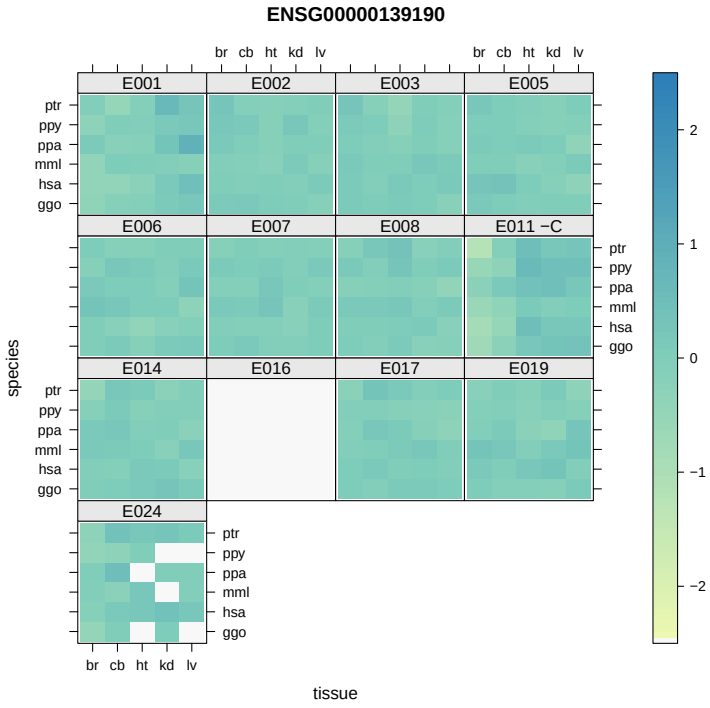

ENSG00000138758
E010
E018
E021
E024
E025
E026
E027
E028
E029
E031
E032
E033
E034
E035 −C
E036
E037
E041
E042
E043 −C
E044 −C
E045
E046 −C
E047
E048
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

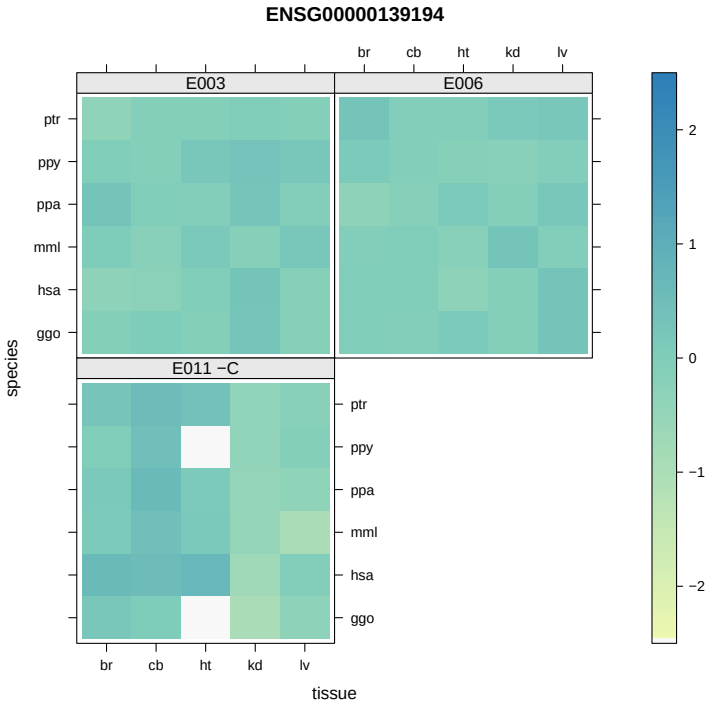

ENSG00000138771
E003
E005 −C
E006
E013
E014
E016
E018
E019
E020
E021
E026
E027
E030
E031
E038
E040
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

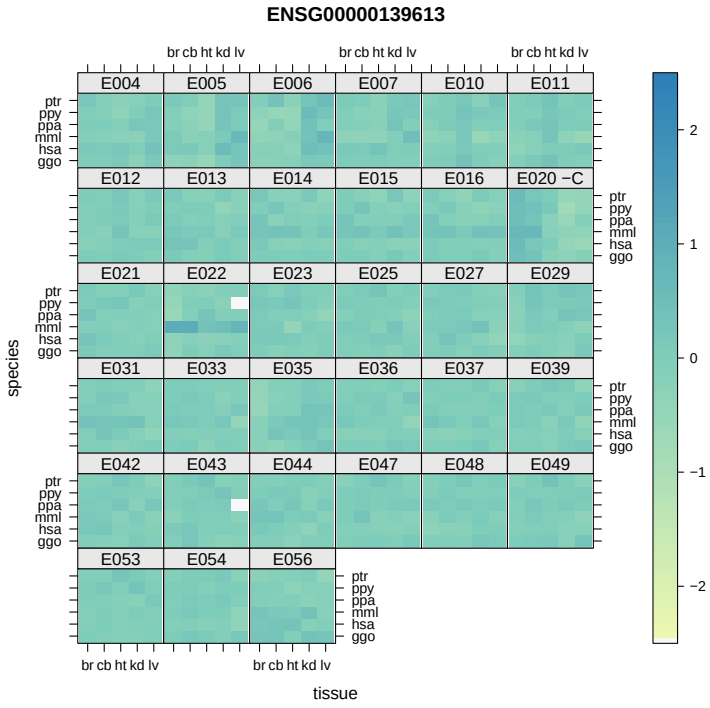

ENSG00000138796
E004
E005
E011
E012
E013
E014
E015
E016 −C
E020 −C
E021
E022
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

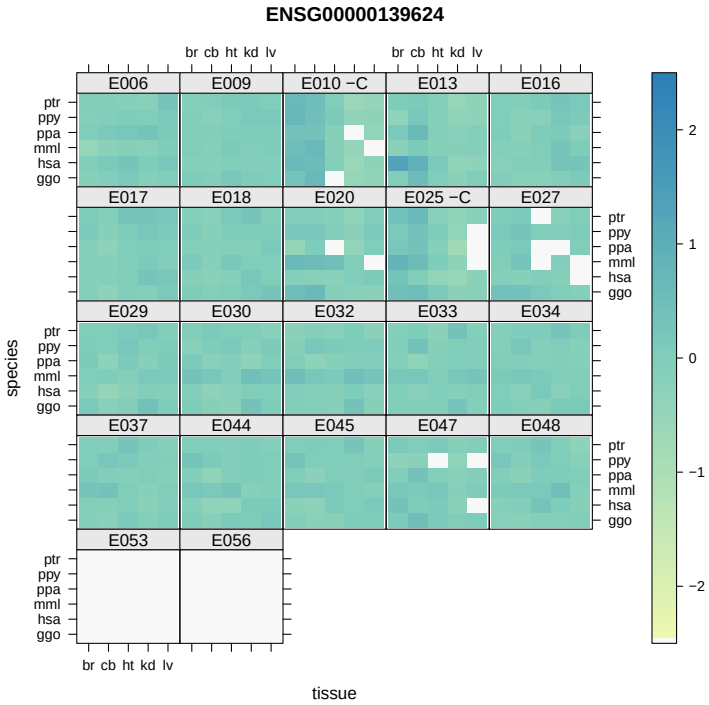

ENSG00000138814
E004
E005
E006
E007 −C
E008
E009
E011
E012
E014
E018
E019
E020
E022
E023
E026
E027
E028
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

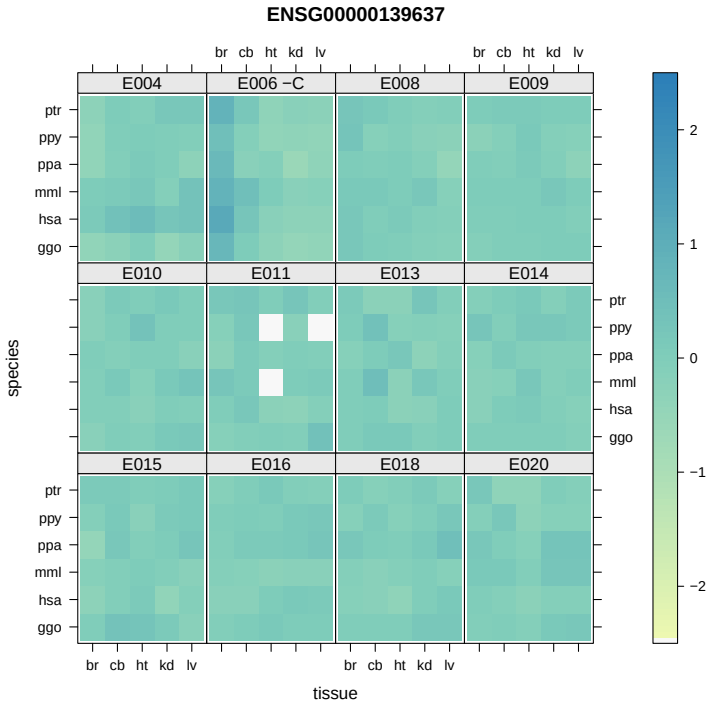

ENSG00000139182
E002
E004
E005
E009
E017
E019
E020
E023
E024
E027
E028
E029
E031
E033
E037
E038
E040
E043
E044
E047 −C
E048
E050
E051
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

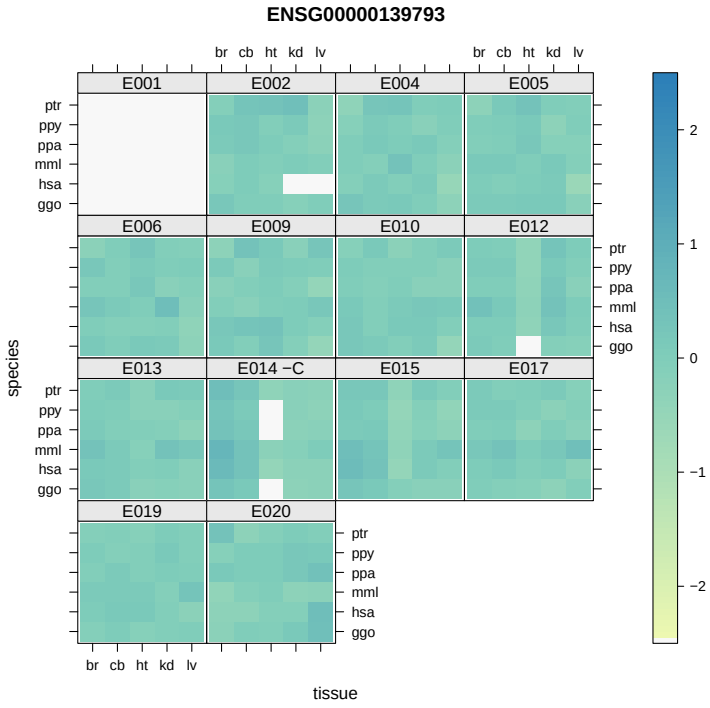

ENSG00000139190
E001
E002
E003
E005
E006
E007
E008
E011 −C
E014
E016
E017
E019
E024
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

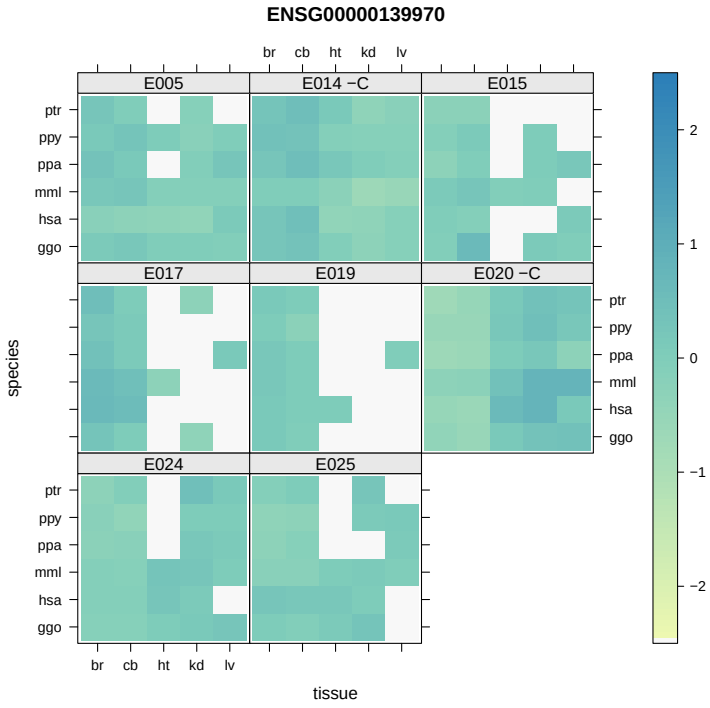

ENSG00000139194
br
cb
ht
kd
lv
E003
E006
E011 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

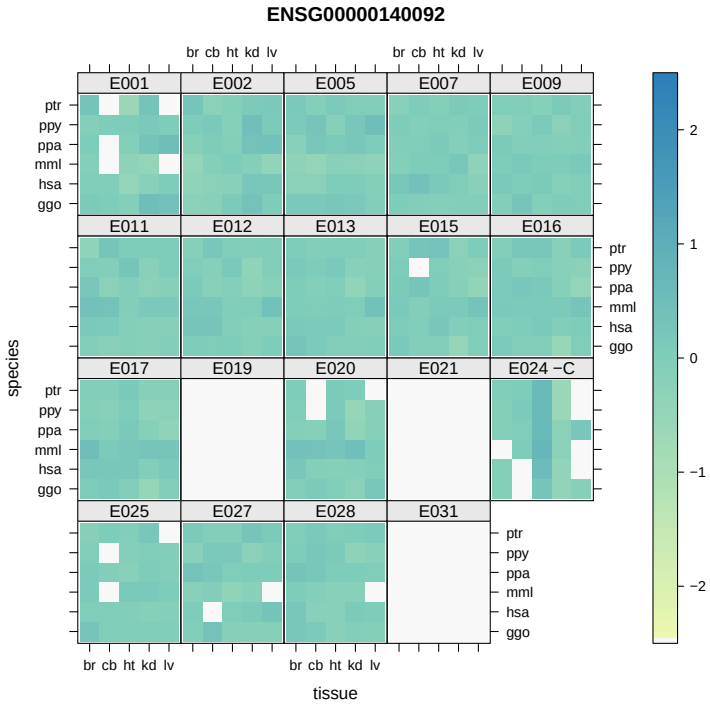

ENSG00000139613
br cb ht kd lv
E004
E005
E006
E007
E010
E011
E012
E013
E014
E015
E016
E020 −C
E021
E022
E023
E025
E027
E029
E031
E033
E035
E036
E037
E039
E042
E043
E044
E047
E048
E049
E053
E054
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

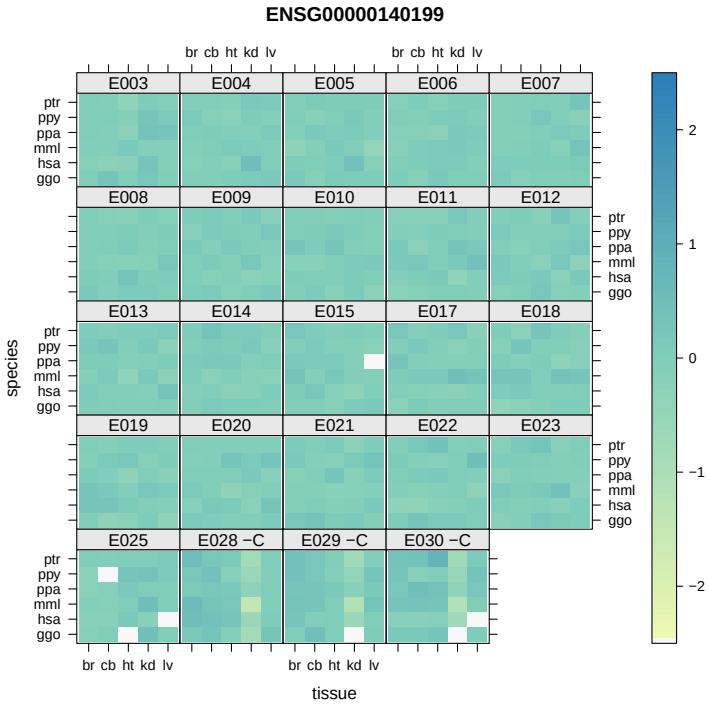

ENSG00000139624
br cb ht kd lv
E006
E009
E010 −C
E013
E016
E017
E018
E020
E025 −C
E027
E029
E030
E032
E033
E034
E037
E044
E045
E047
E048
E053
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

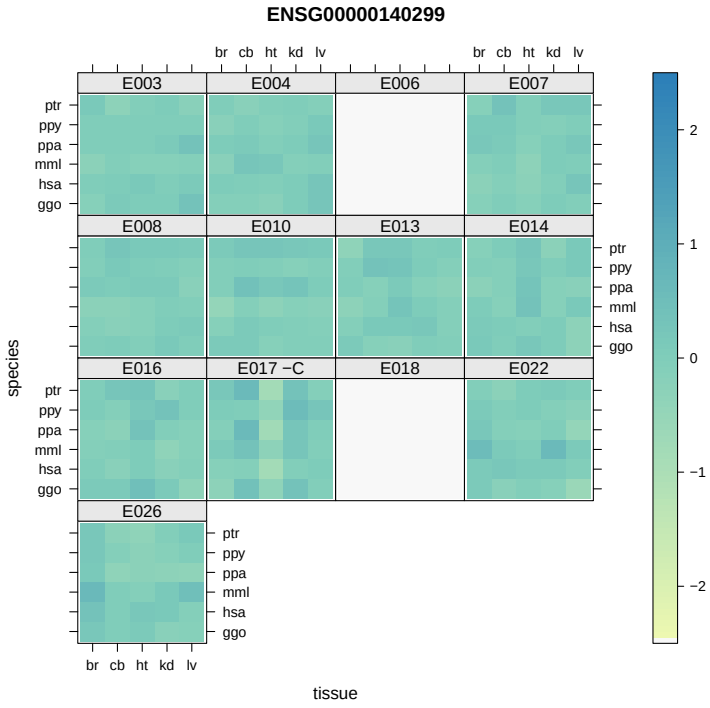

ENSG00000139637
E004
E006 −C
E008
E009
E010
E011
E013
E014
E015
E016
E018
E020
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

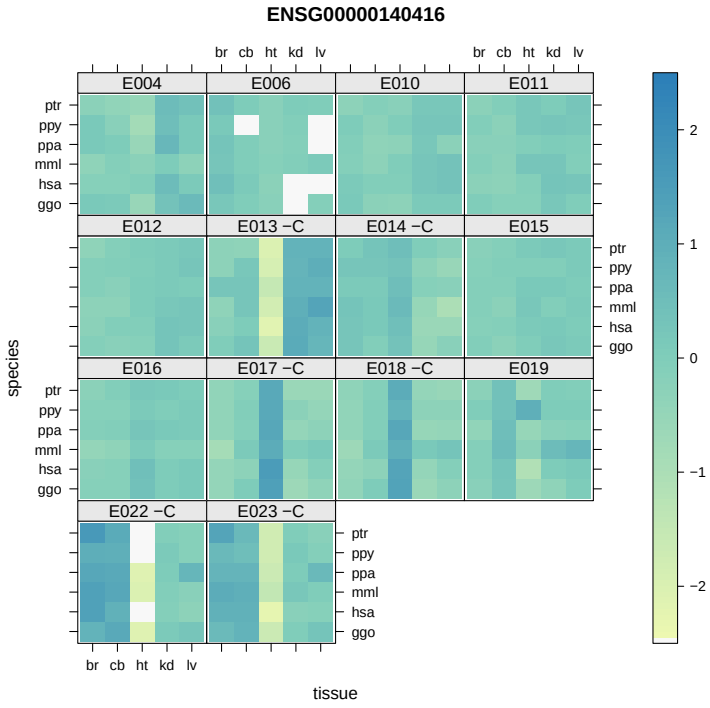

ENSG00000139793
E001
E002
E004
E005
E006
E009
E010
E012
E013
E014 −C
E015
E017
E019
E020
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

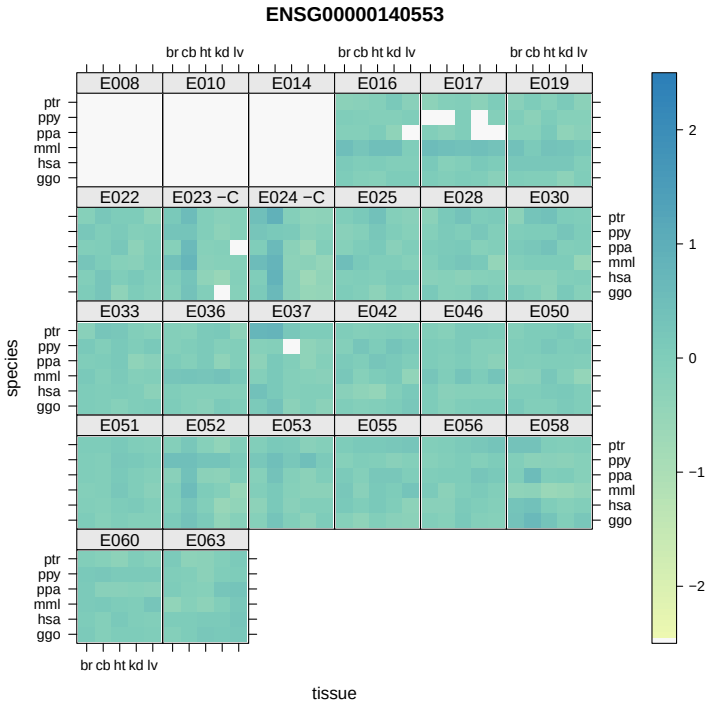

ENSG00000139970
br cb ht kd lv
E005
E014 −C
E015
E017
E019
E020 −C
E024
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

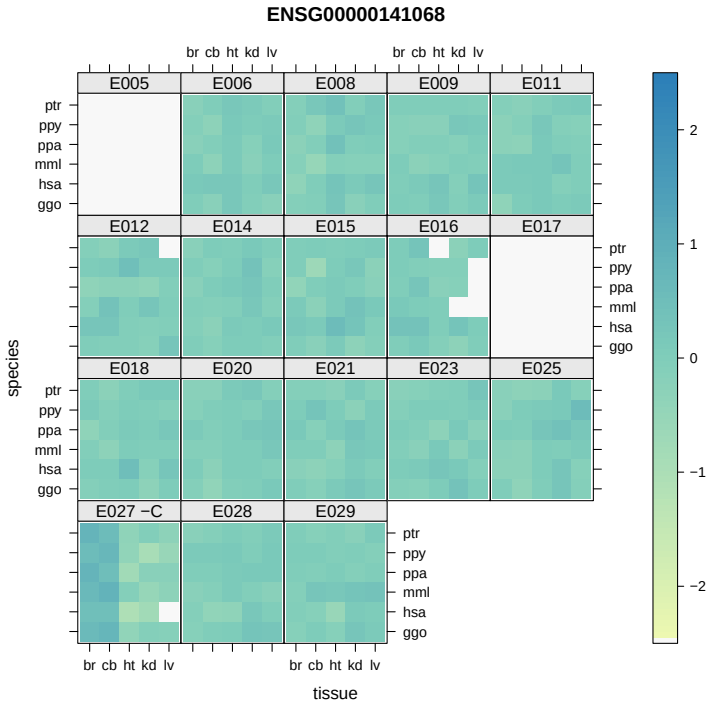

ENSG00000140092
E001
E002
E005
E007
E009
E011
E012
E013
E015
E016
E017
E019
E020
E021
E024 −C
E025
E027
E028
E031
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

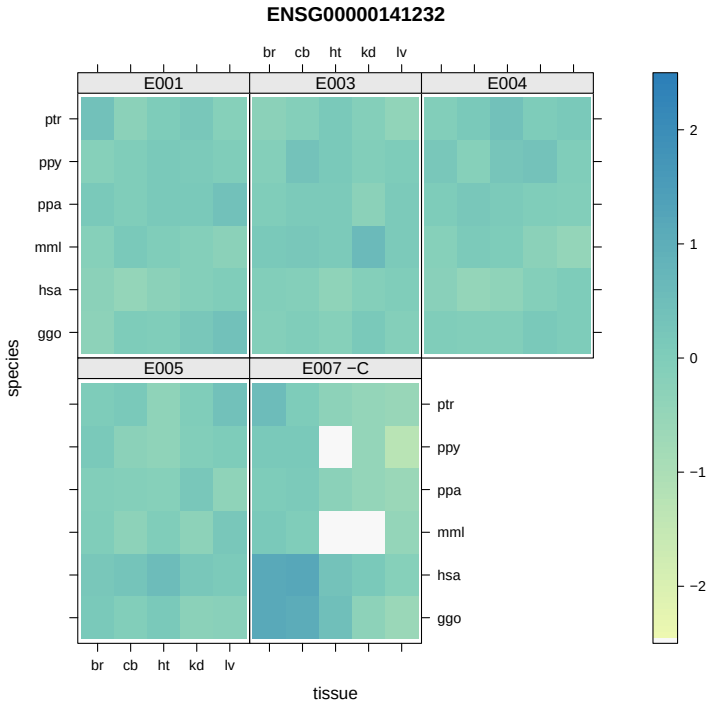

ENSG00000140199
E003
E004
E005
E006
E007
E008
E009
E010
E011
E012
E013
E014
E015
E017
E018
E019
E020
E021
E022
E023
E025
E028 −C
E029 −C
E030 −C
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

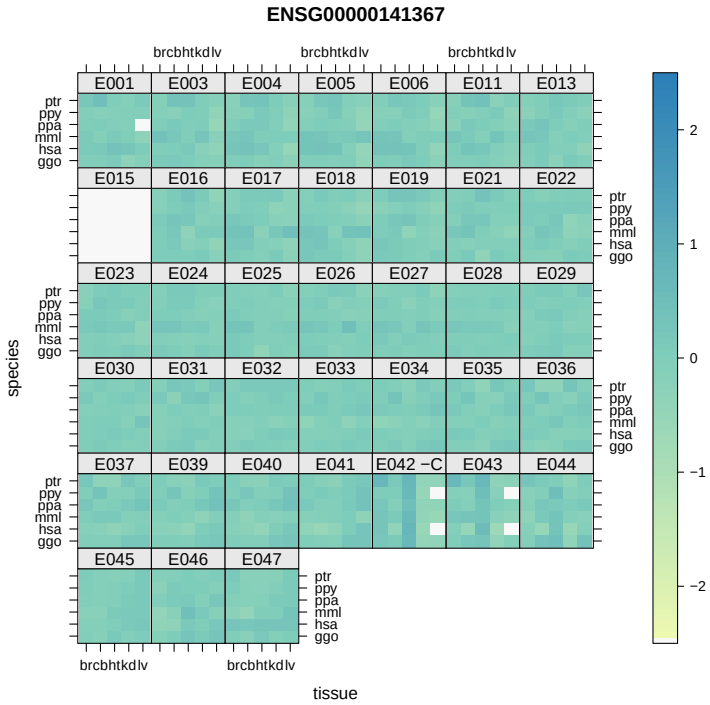

ENSG00000140299
E003
E004
E006
E007
E008
E010
E013
E014
E016
E017 −C
E018
E022
E026
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

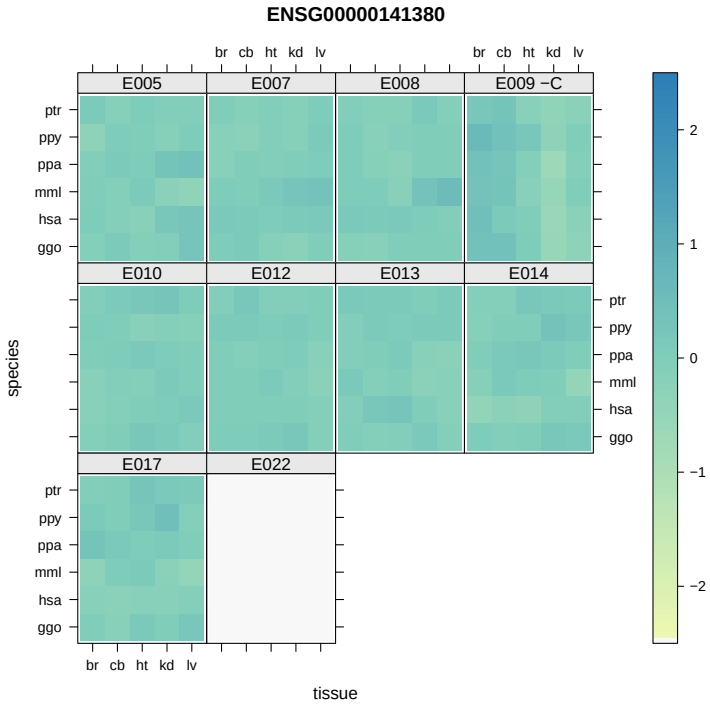

ENSG00000140416
E004
E006
E010
E011
E012
E013 −C
E014 −C
E015
E016
E017 −C
E018 −C
E019
E022 −C
E023 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

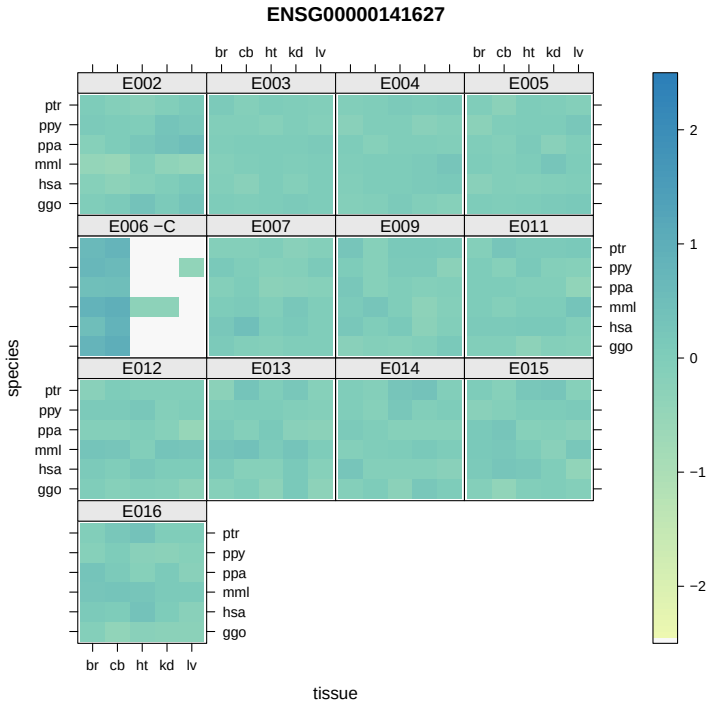

ENSG00000140553
br cb ht kd lv
E008
E010
E014
E016
E017
E019
E022
E023 −C
E024 −C
E025
E028
E030
E033
E036
E037
E042
E046
E050
E051
E052
E053
E055
E056
E058
E060
E063
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

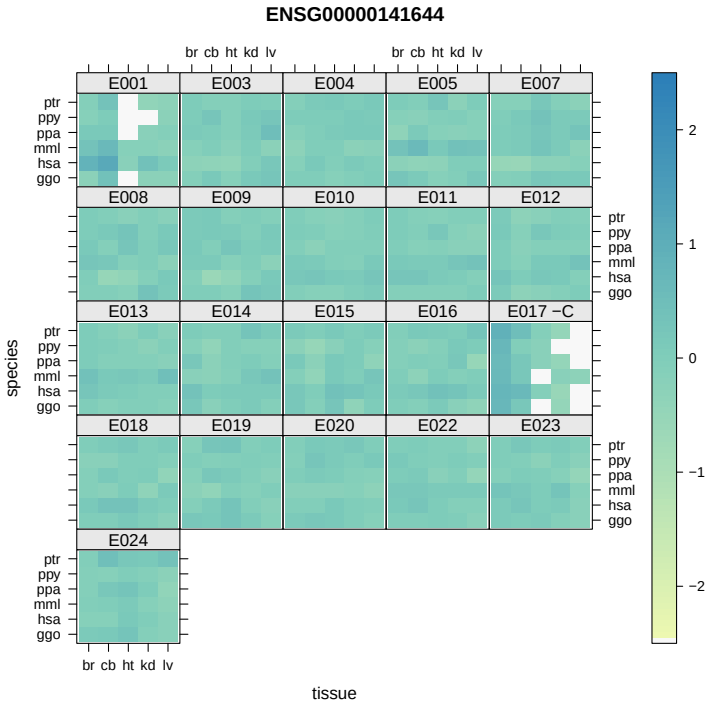

ENSG00000141068
E005
E006
E008
E009
E011
E012
E014
E015
E016
E017
E018
E020
E021
E023
E025
E027 −C
E028
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

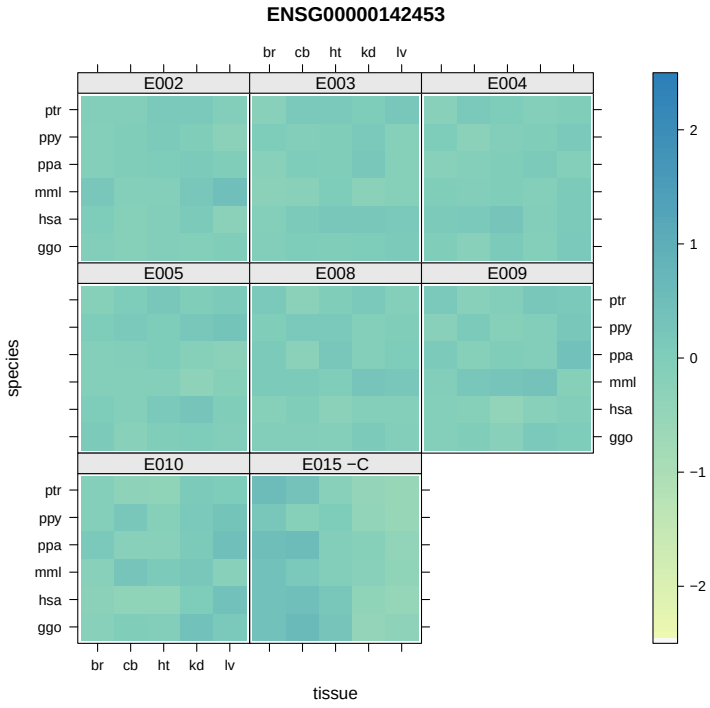

ENSG00000141232
br cb ht kd lv
E001
E003
E004
E005
E007 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

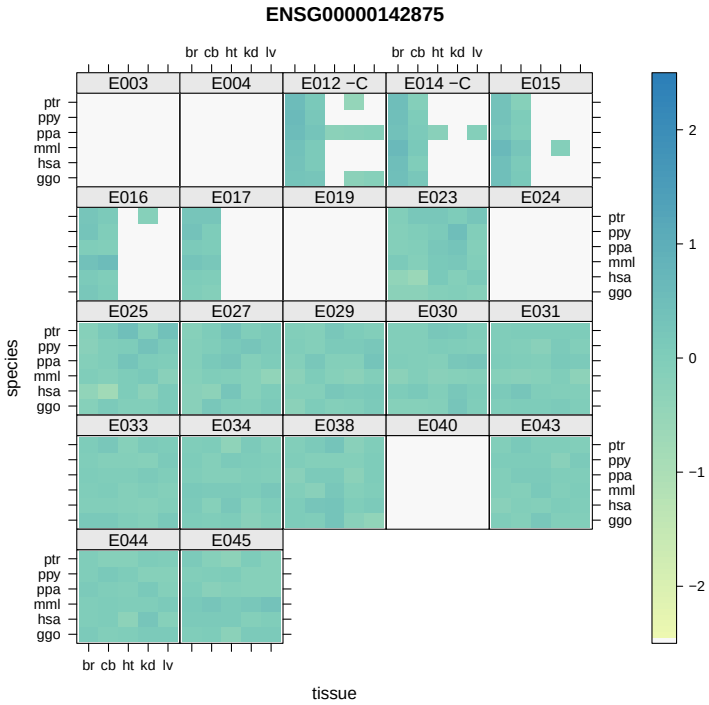

ENSG00000141367
brcbhtkdlv
E001
E003
E004
E005
E006
E011
E013
E015
E016
E017
E018
E019
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E035
E036
E037
E039
E040
E041
E042 −C
E043
E044
E045
E046
E047
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

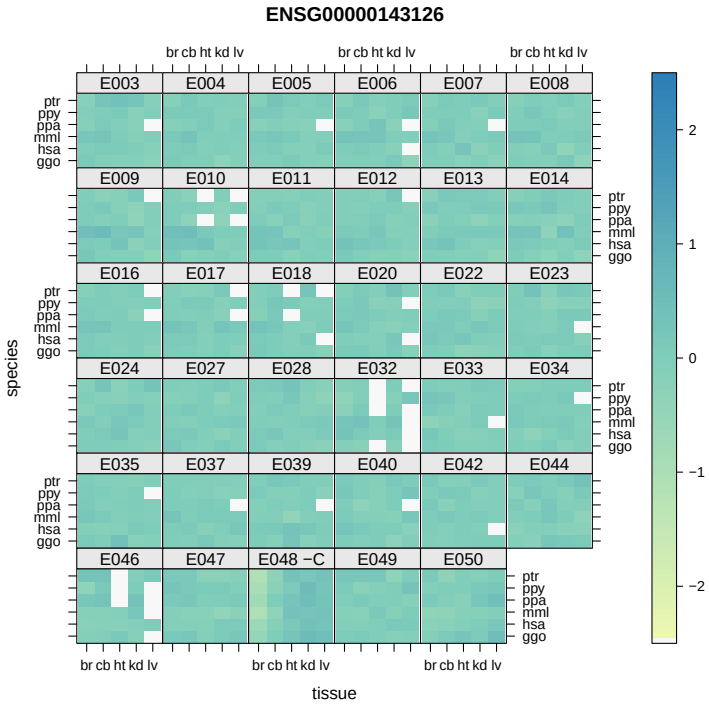

ENSG00000141380
br cb ht kd lv
E005
E007
E008
E009 −C
E010
E012
E013
E014
E017
E022
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

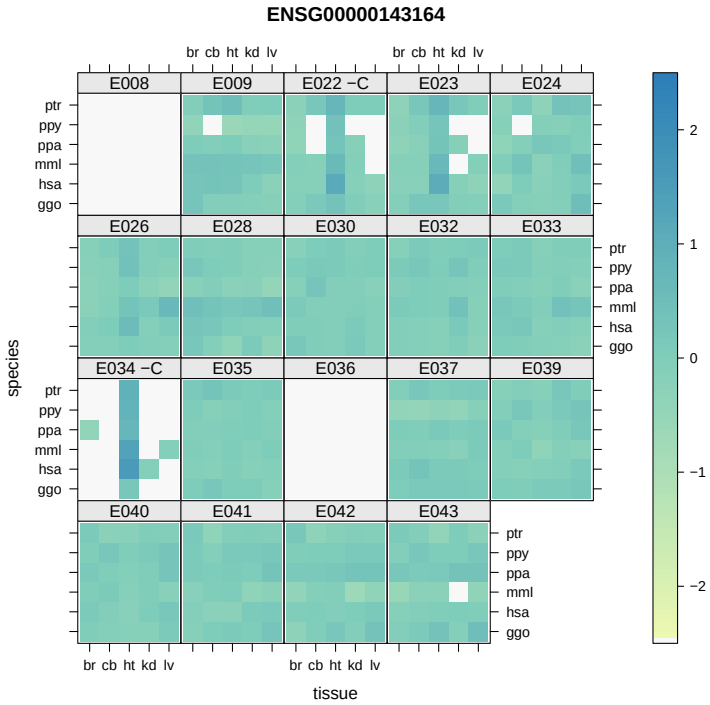

ENSG00000141627
E002
E003
E004
E005
E006 −C
E007
E009
E011
E012
E013
E014
E015
E016
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

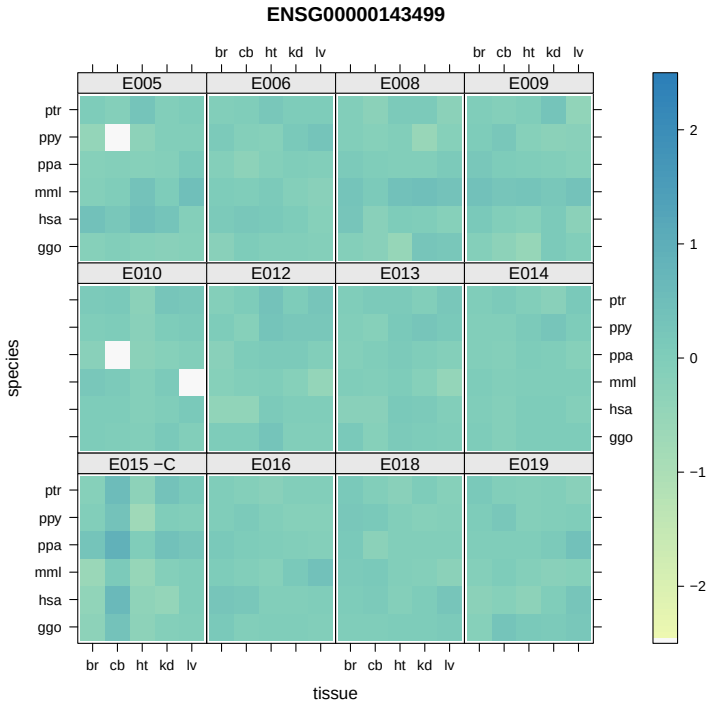

ENSG00000141644
br cb ht kd lv
E001
E003
E004
E005
E007
E008
E009
E010
E011
E012
E013
E014
E015
E016
E017 −C
E018
E019
E020
E022
E023
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

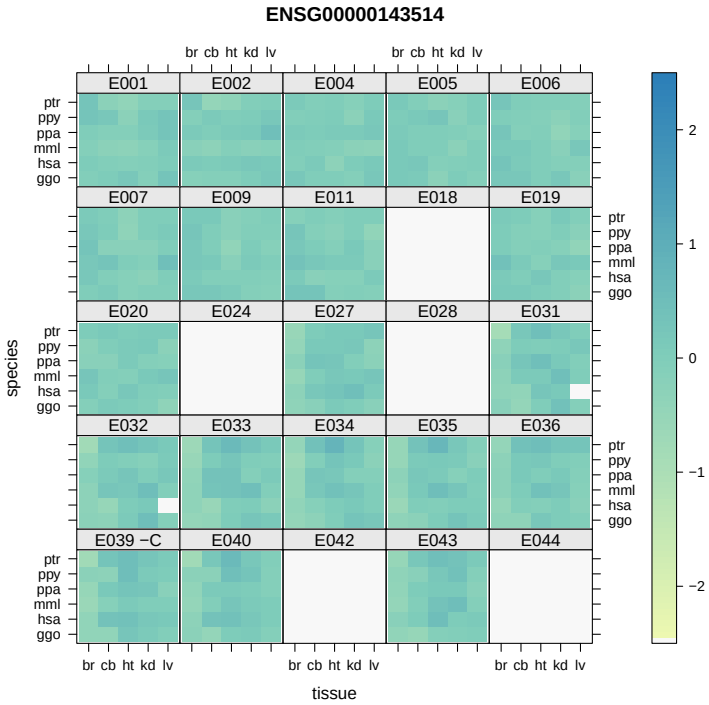

ENSG00000142453
br cb ht kd lv
E002
E003
E004
E005
E008
E009
E010
E015 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

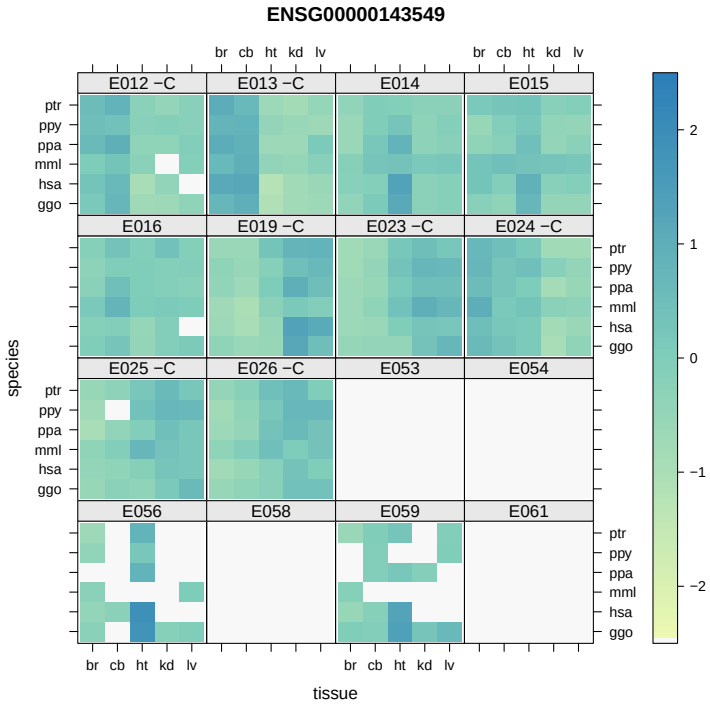

ENSG00000142875
br cb ht kd lv
E003
E004
E012 −C
E014 −C
E015
E016
E017
E019
E023
E024
E025
E027
E029
E030
E031
E033
E034
E038
E040
E043
E044
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

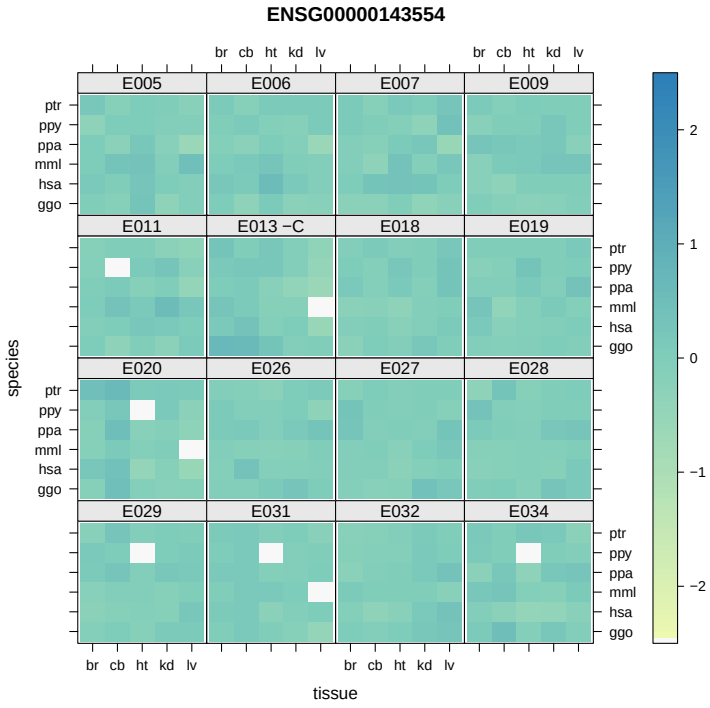

ENSG00000143126
br cb ht kd lv
E003
E004
E005
E006
E007
E008
E009
E010
E011
E012
E013
E014
E016
E017
E018
E020
E022
E023
E024
E027
E028
E032
E033
E034
E035
E037
E039
E040
E042
E044
E046
E047
E048 −C
E049
E050
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

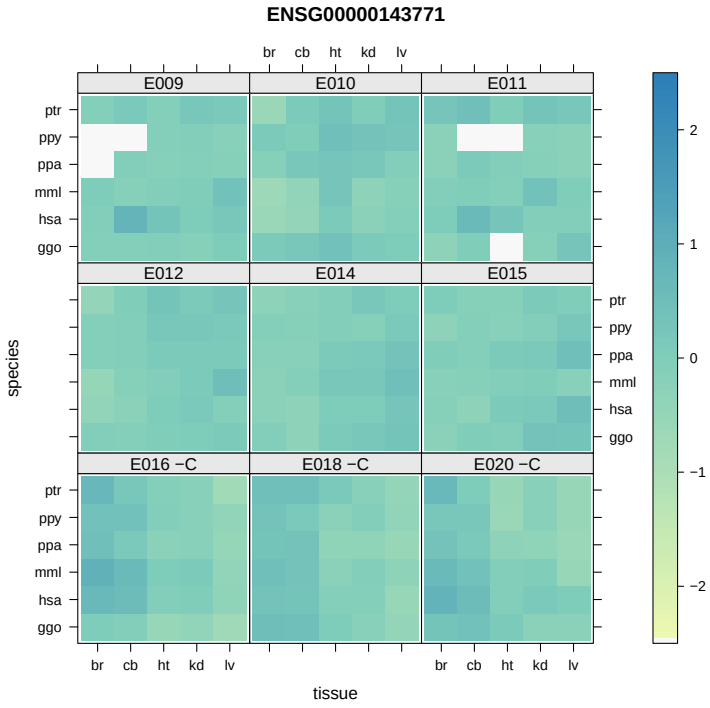

ENSG00000143164
E008
E009
E022 −C
E023
E024
E026
E028
E030
E032
E033
E034 −C
E035
E036
E037
E039
E040
E041
E042
E043
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

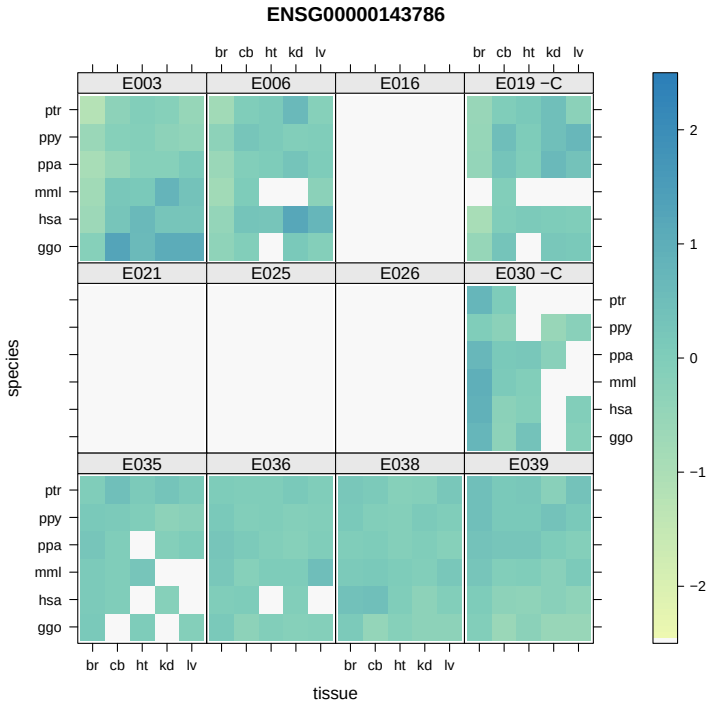

ENSG00000143499
E005
E006
E008
E009
E010
E012
E013
E014
E015 −C
E016
E018
E019
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

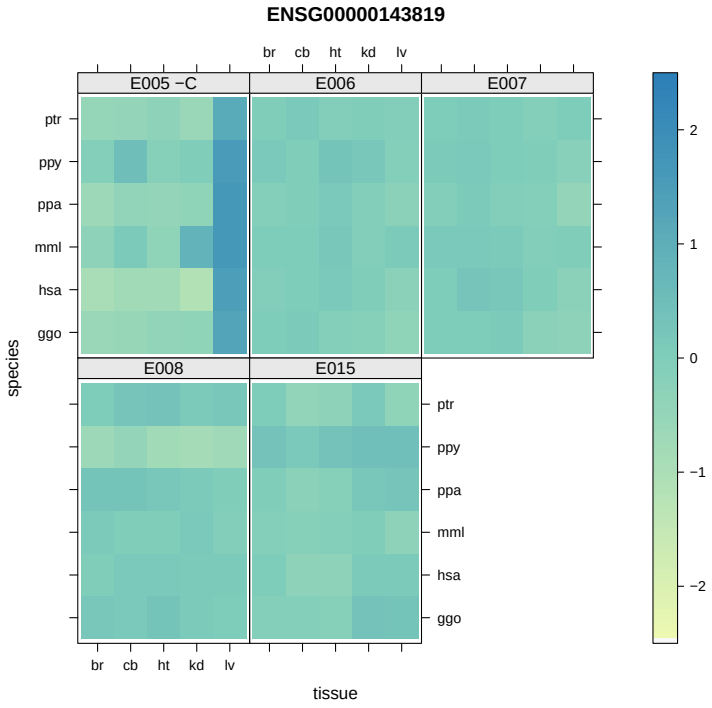

ENSG00000143514
br cb ht kd lv
E001
E002
E004
E005
E006
E007
E009
E011
E018
E019
E020
E024
E027
E028
E031
E032
E033
E034
E035
E036
E039 −C
E040
E042
E043
E044
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

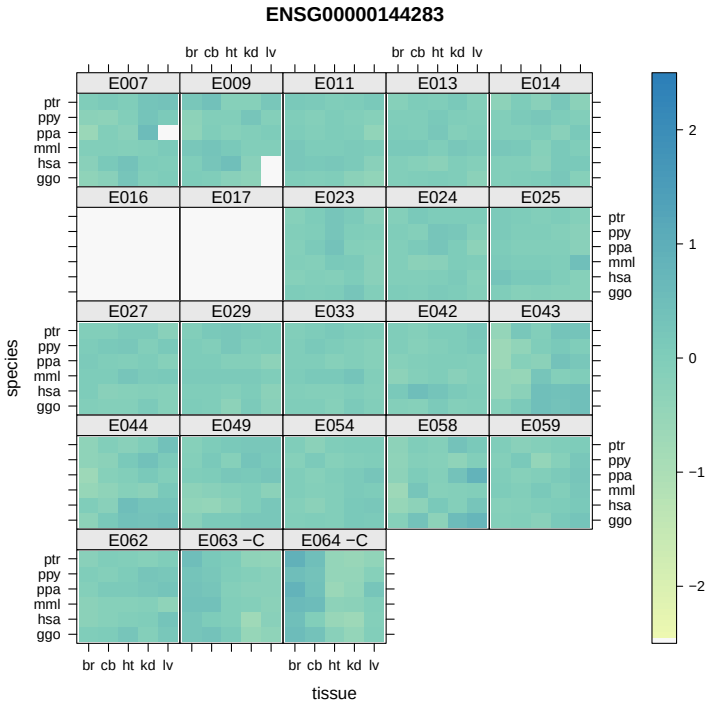

ENSG00000143549
E012 −C
E013 −C
E014
E015
E016
E019 −C
E023 −C
E024 −C
E025 −C
E026 −C
E053
E054
E056
E058
E059
E061
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

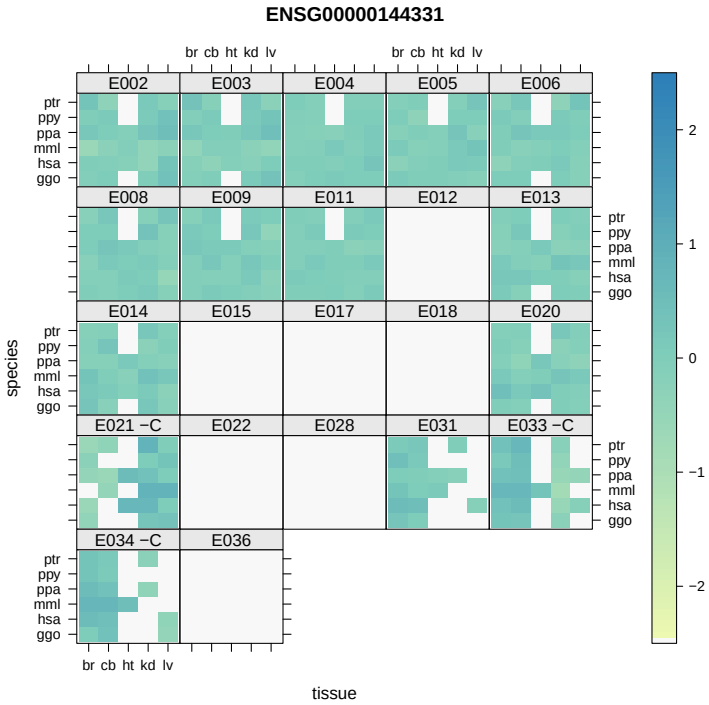

ENSG00000143554
E005
E006
E007
E009
E011
E013 −C
E018
E019
E020
E026
E027
E028
E029
E031
E032
E034
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

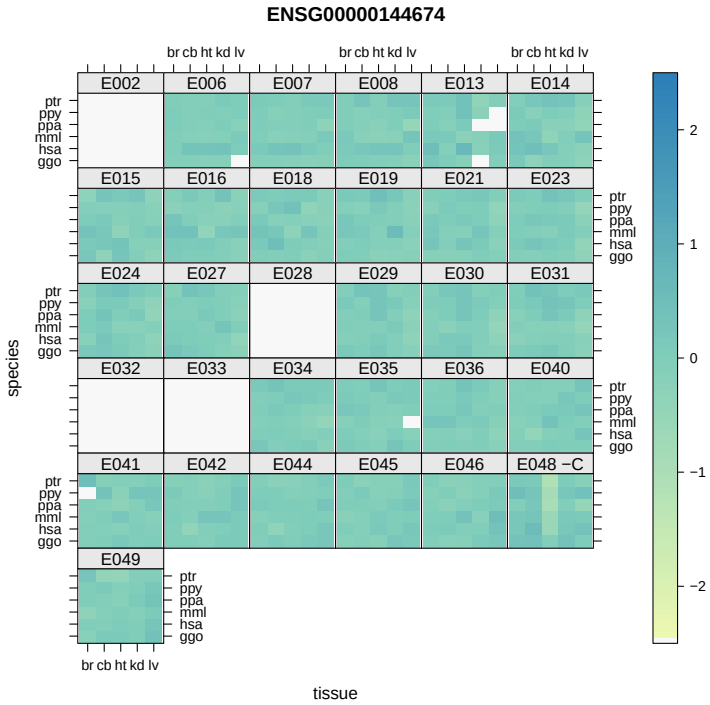

ENSG00000143771
E009
E010
E011
E012
E014
E015
E016 −C
E018 −C
E020 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

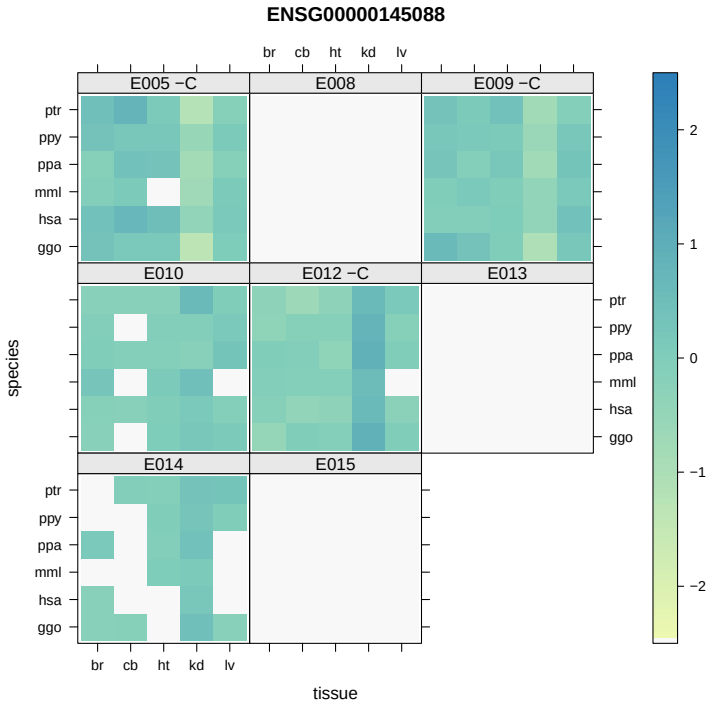

ENSG00000143786
E003
E006
E016
E019 −C
E021
E025
E026
E030 −C
E035
E036
E038
E039
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

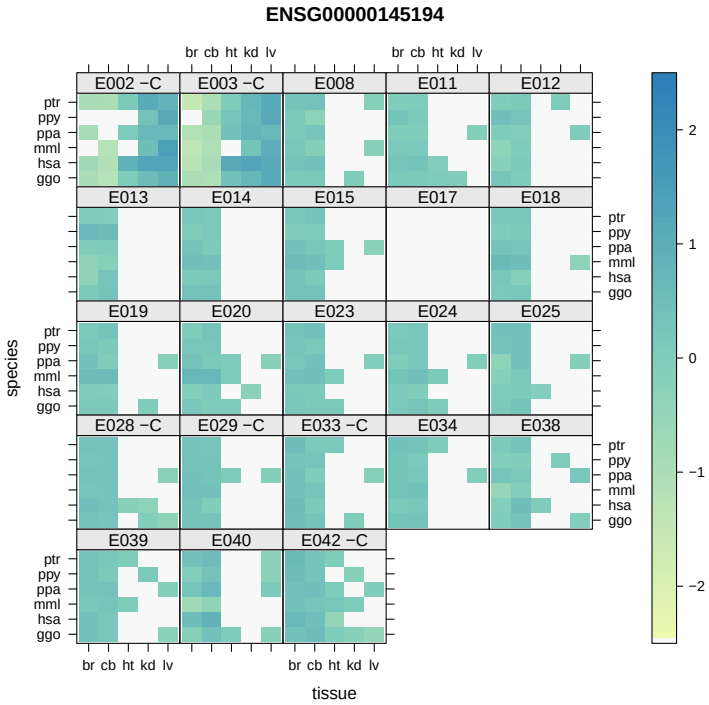

ENSG00000143819
br cb ht kd lv
E005 −C
E006
E007
E008
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

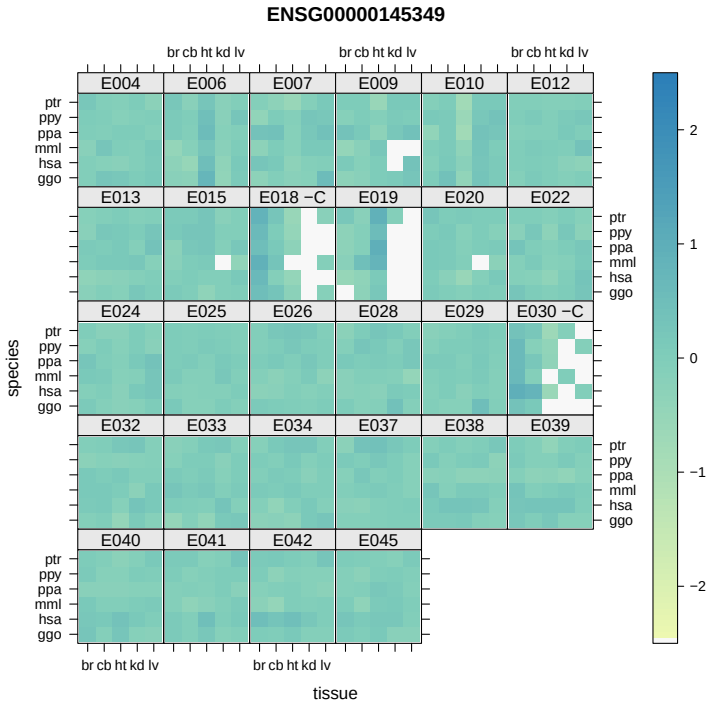

ENSG00000144283
E007
E009
E011
E013
E014
E016
E017
E023
E024
E025
E027
E029
E033
E042
E043
E044
E049
E054
E058
E059
E062
E063 −C
E064 −C
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

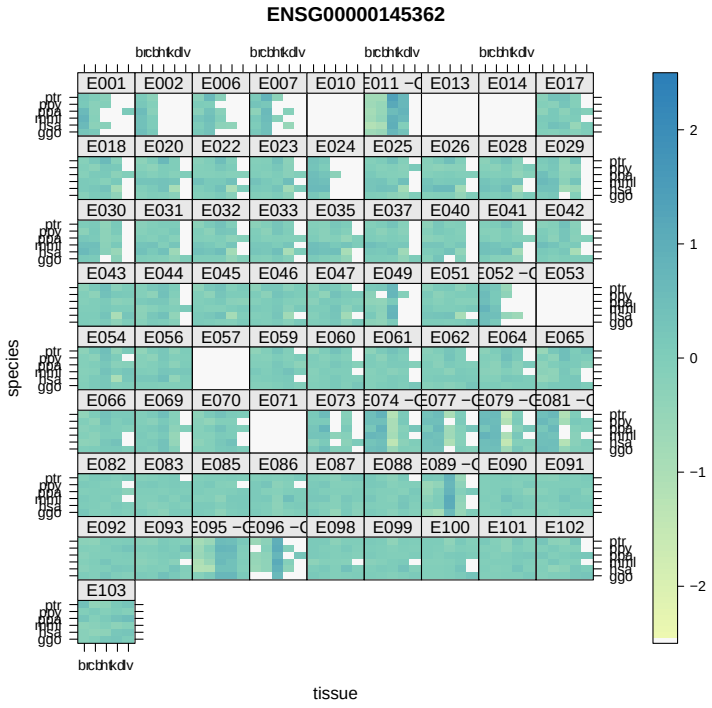

ENSG00000144331
br cb ht kd lv
E002
E003
E004
E005
E006
E008
E009
E011
E012
E013
E014
E015
E017
E018
E020
E021 −C
E022
E028
E031
E033 −C
E034 −C
E036
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

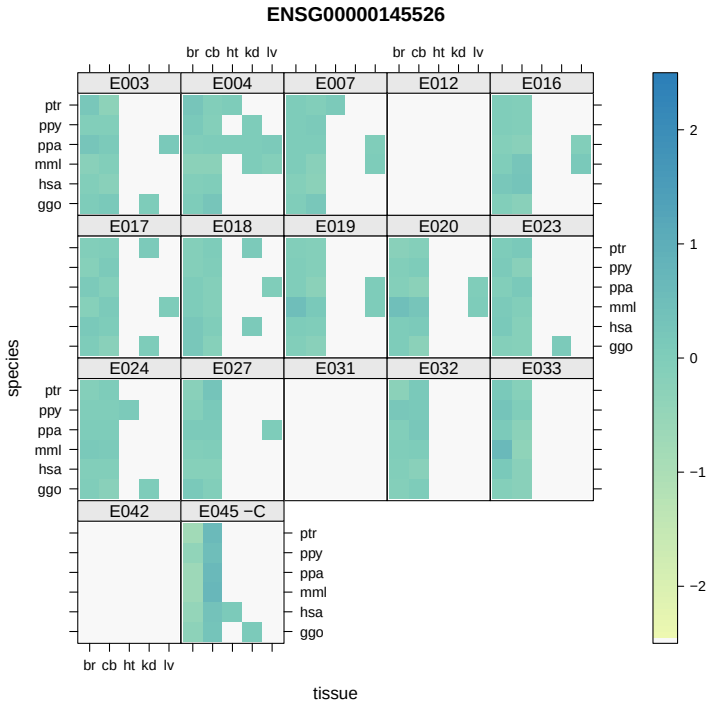

ENSG00000144674
br cb ht kd lv
E002
E006
E007
E008
E013
E014
E015
E016
E018
E019
E021
E023
E024
E027
E028
E029
E030
E031
E032
E033
E034
E035
E036
E040
E041
E042
E044
E045
E046
E048 −C
E049
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

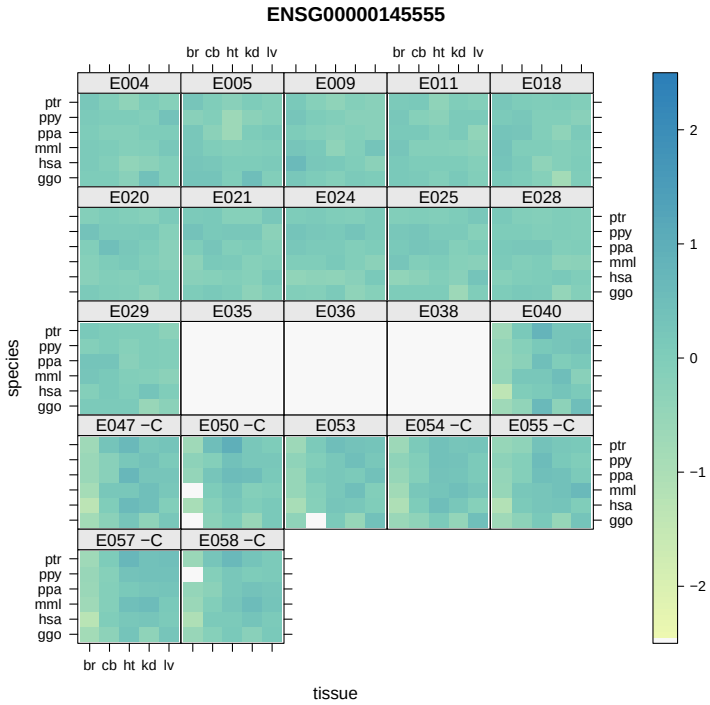

ENSG00000145088
br cb ht kd lv
E005 −C
E008
E009 −C
E010
E012 −C
E013
E014
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

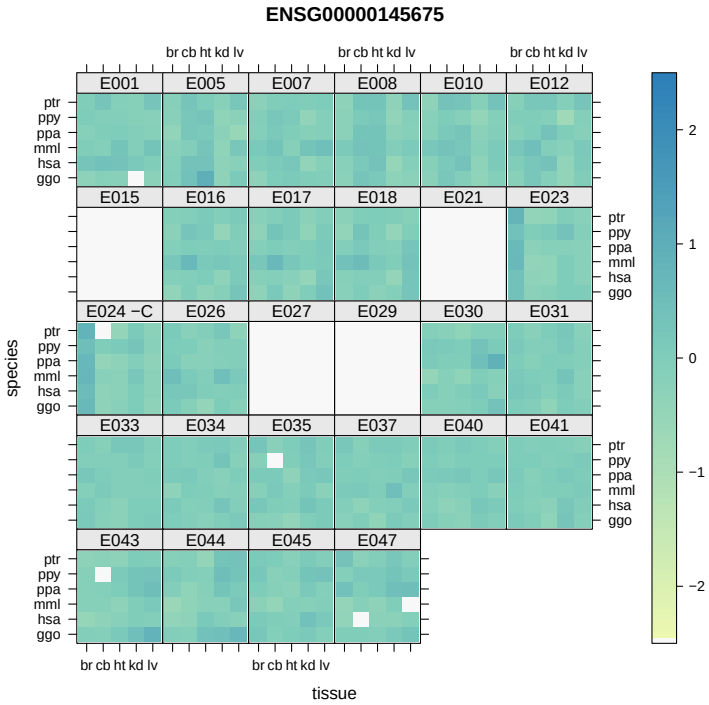

ENSG00000145194
E002 −C
E003 −C
E008
E011
E012
E013
E014
E015
E017
E018
E019
E020
E023
E024
E025
E028 −C
E029 −C
E033 −C
E034
E038
E039
E040
E042 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

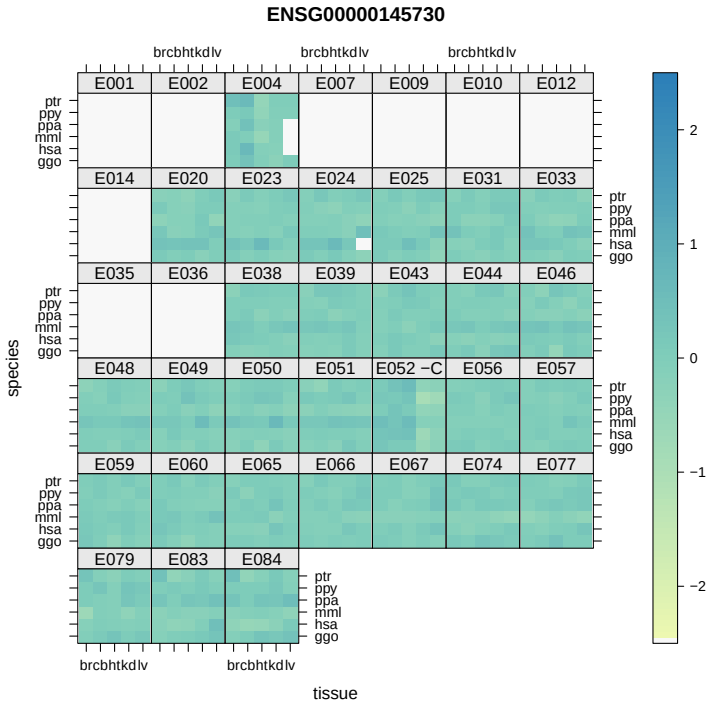

ENSG00000145349
br cb ht kd lv
E004
E006
E007
E009
E010
E012
E013
E015
E018 −C
E019
E020
E022
E024
E025
E026
E028
E029
E030 −C
E032
E033
E034
E037
E038
E039
E040
E041
E042
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

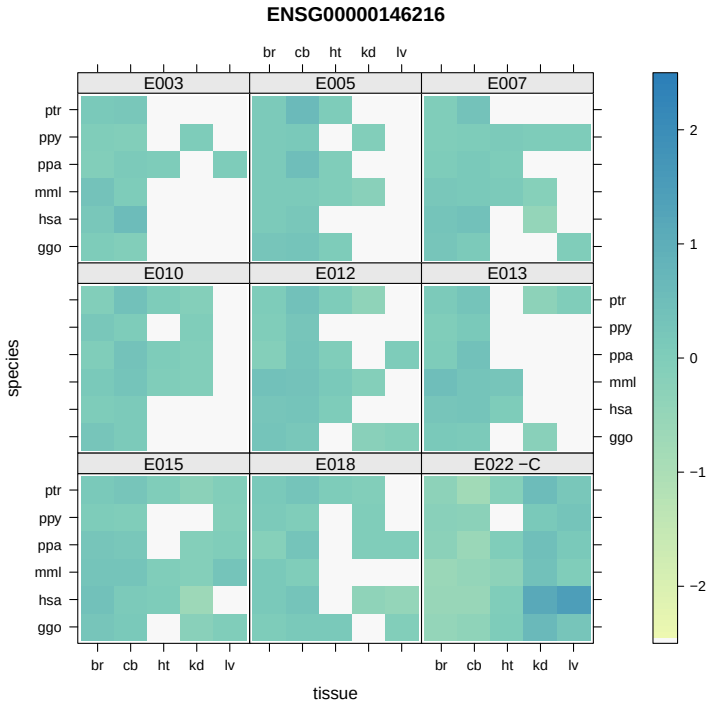

ENSG00000145362
species
tissue
E001
E002
E006
E007
E010
E011 −0
E013
E014
E017
E018
E020
E022
E023
E024
E025
E026
E028
E029
E030
E031
E032
E033
E035
E037
E040
E041
E042
E043
E044
E045
E046
E047
E049
E051
E052 −0
E053
E054
E056
E057
E059
E060
E061
E062
E064
E065
E066
E069
E070
E071
E073
E074 −0
E077 −0
E079 −0
E081 −0
E082
E083
E085
E086
E087
E088
E089 −0
E090
E091
E092
E093
E095 −0
E096 −0
E098
E099
E100
E101
E102
E103
brcbhkdlv
ptr
ppy
mmu
rno
mfa
ggo
2
1
0
−1
−2

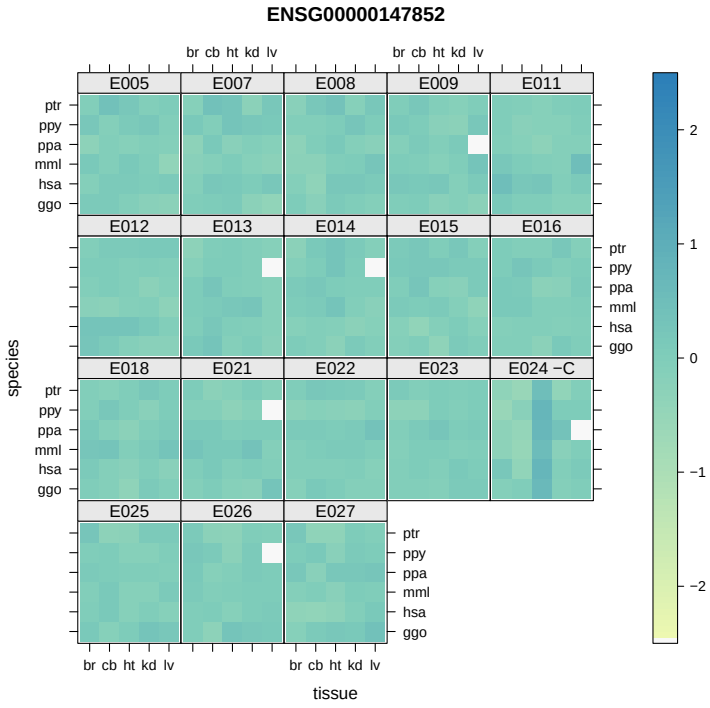

ENSG00000145526
E003
E004
E007
E012
E016
E017
E018
E019
E020
E023
E024
E027
E031
E032
E033
E042
E045 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

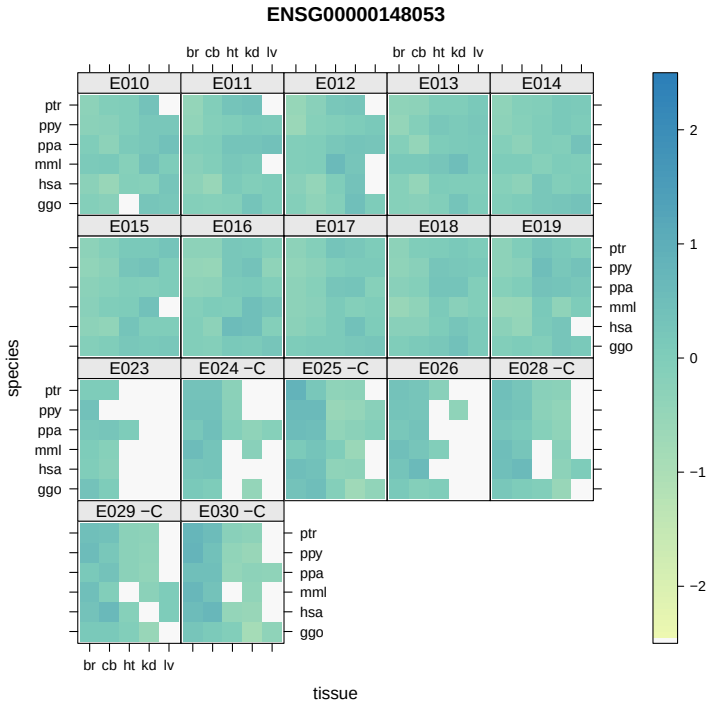

ENSG00000145555
br cb ht kd lv
E004
E005
E009
E011
E018
E020
E021
E024
E025
E028
E029
E035
E036
E038
E040
E047 −C
E050 −C
E053
E054 −C
E055 −C
E057 −C
E058 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

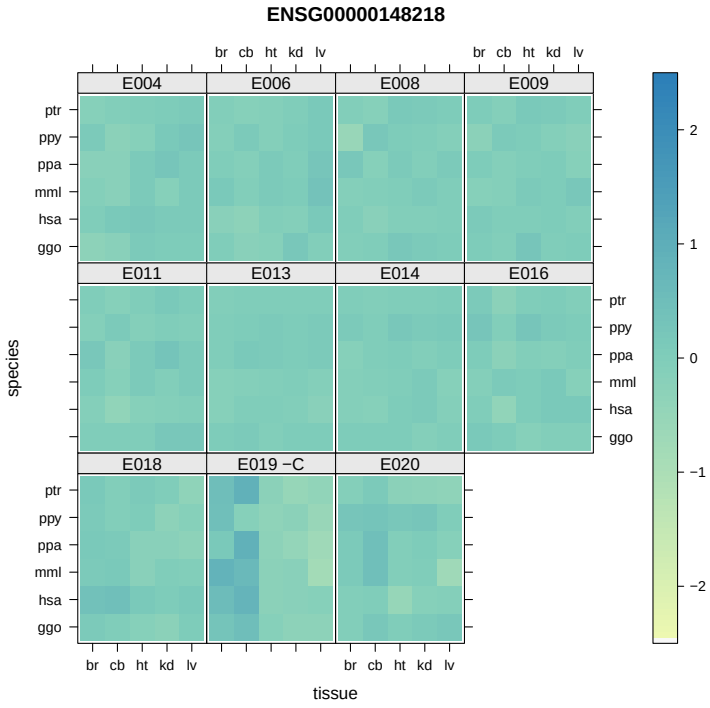

ENSG00000145675
br cb ht kd lv
E001
E005
E007
E008
E010
E012
E015
E016
E017
E018
E021
E023
E024 −C
E026
E027
E029
E030
E031
E033
E034
E035
E037
E040
E041
E043
E044
E045
E047
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

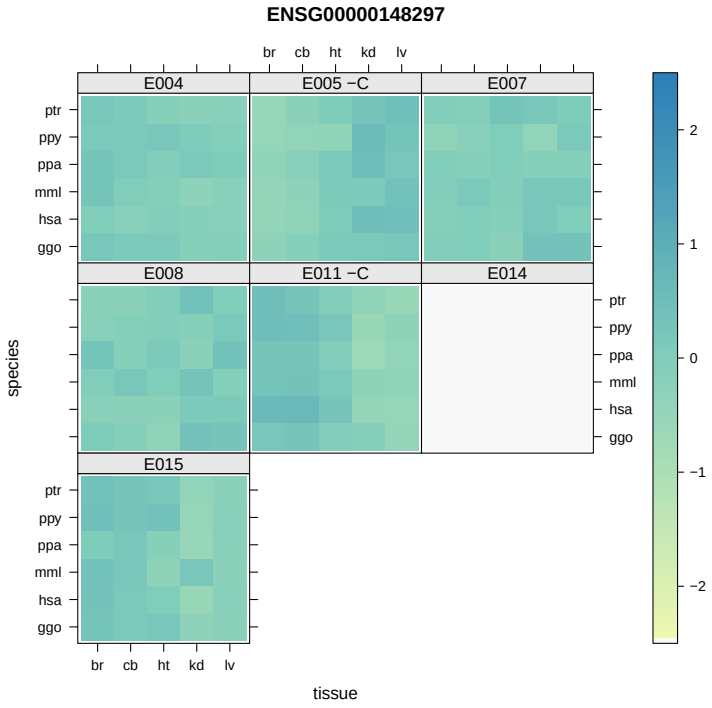

ENSG00000145730
brcbhtkdlv
E001
E002
E004
E007
E009
E010
E012
E014
E020
E023
E024
E025
E031
E033
E035
E036
E038
E039
E043
E044
E046
E048
E049
E050
E051
E052 −C
E056
E057
E059
E060
E065
E066
E067
E074
E077
E079
E083
E084
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

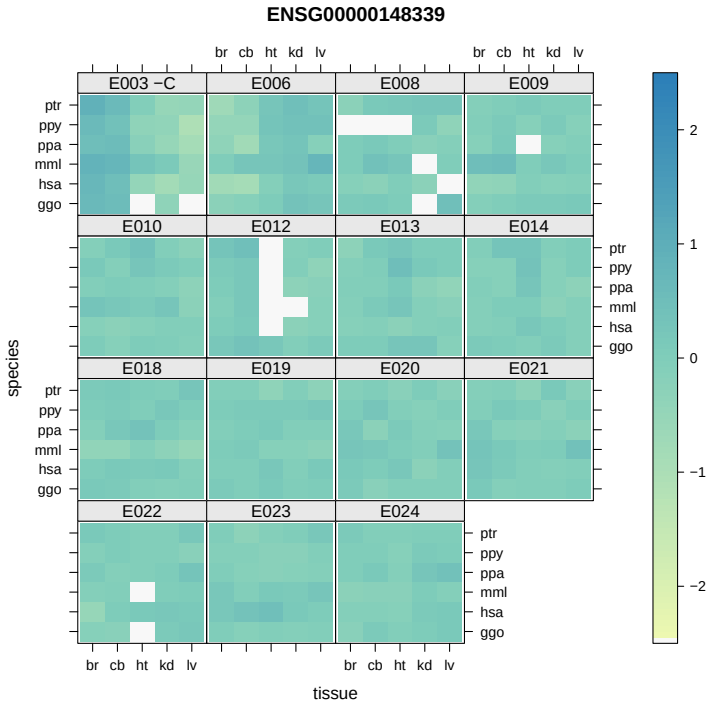

ENSG00000146216
br cb ht kd lv
E003
E005
E007
E010
E012
E013
E015
E018
E022 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

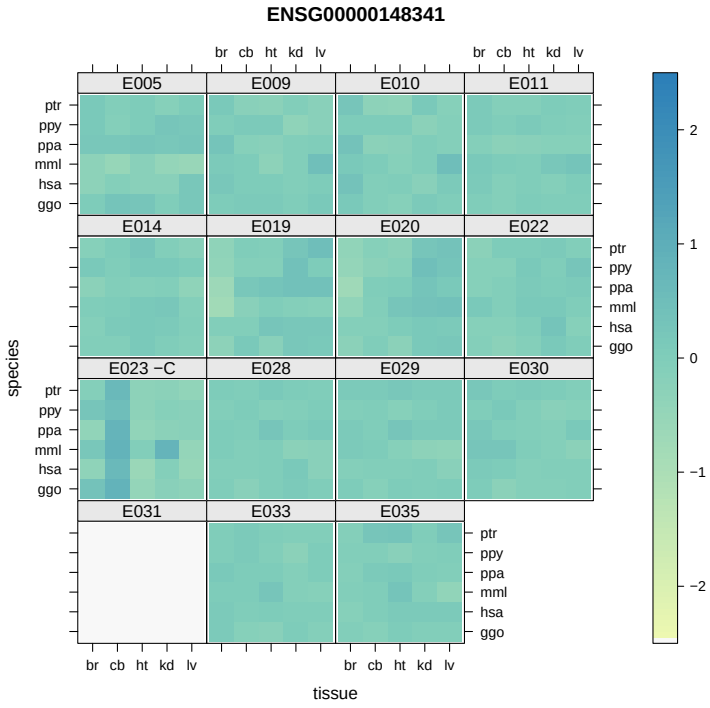

ENSG00000147852
E005
E007
E008
E009
E011
E012
E013
E014
E015
E016
E018
E021
E022
E023
E024 −C
E025
E026
E027
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

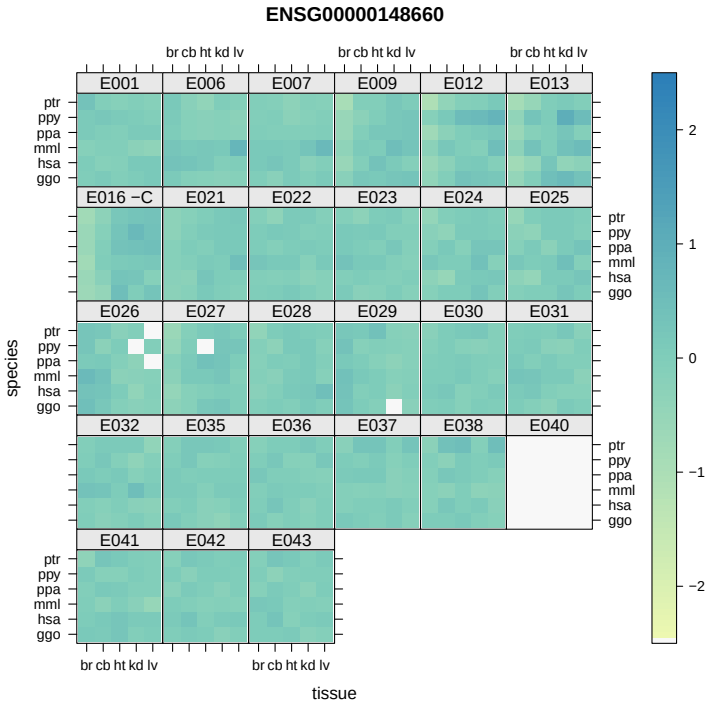

ENSG00000148053
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E023
E024 −C
E025 −C
E026
E028 −C
E029 −C
E030 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

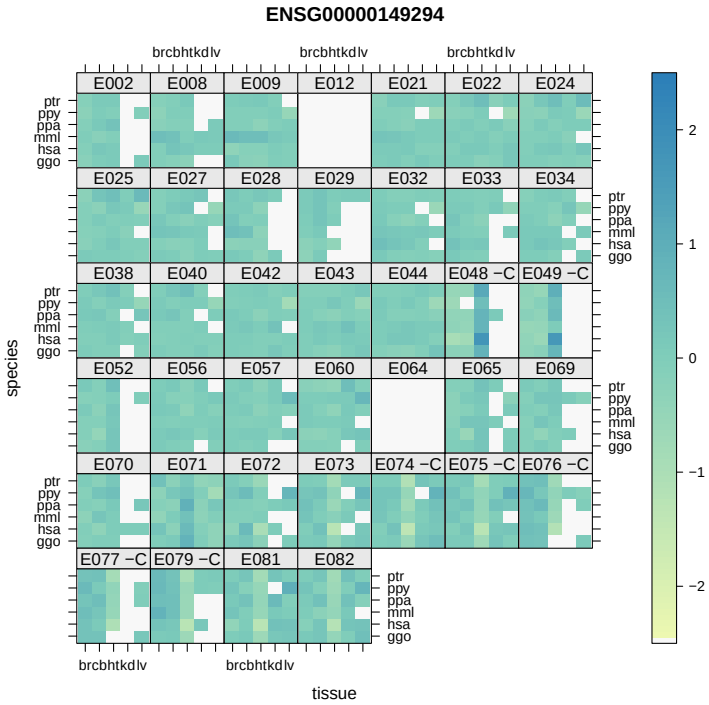

ENSG00000148218
E004
E006
E008
E009
E011
E013
E014
E016
E018
E019 −C
E020
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

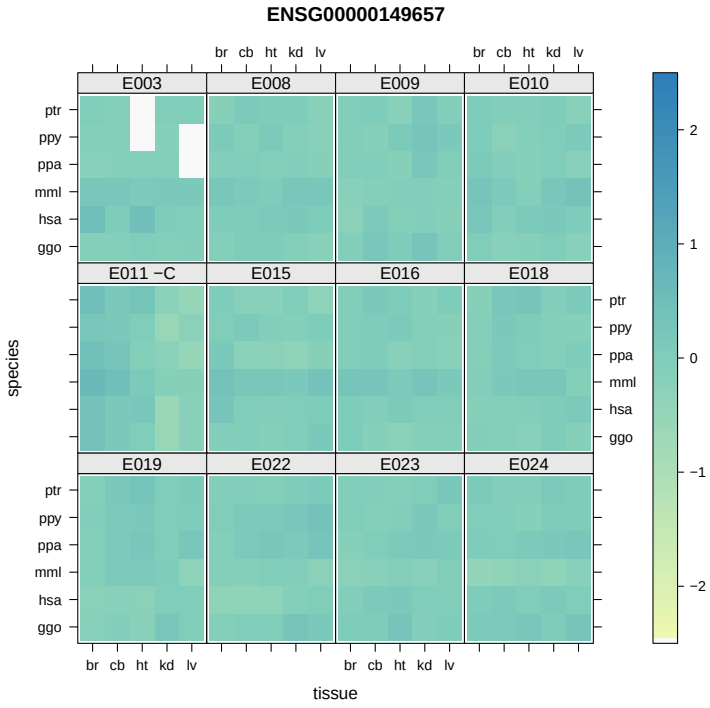

ENSG00000148297
br cb ht kd lv
E004
E005 −C
E007
E008
E011 −C
E014
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

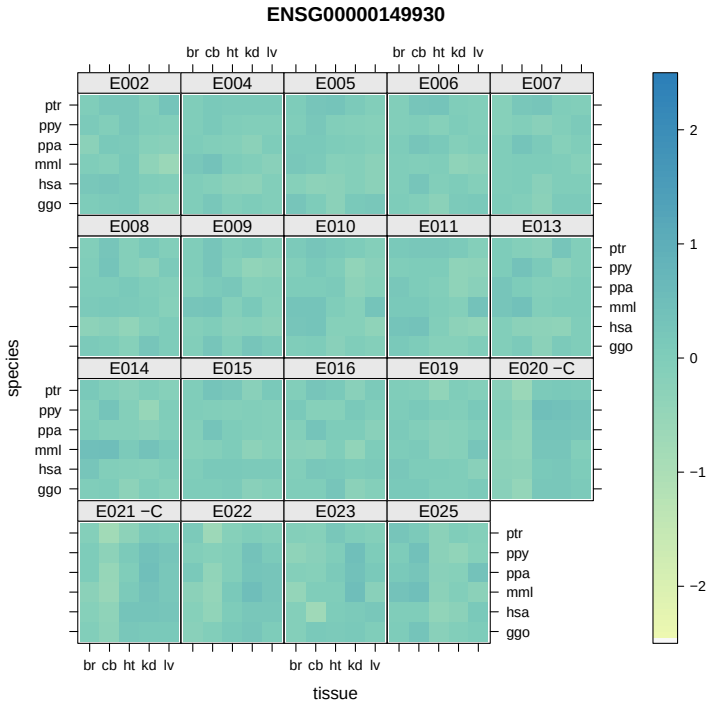

ENSG00000148339
E003 −C
E006
E008
E009
E010
E012
E013
E014
E018
E019
E020
E021
E022
E023
E024
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

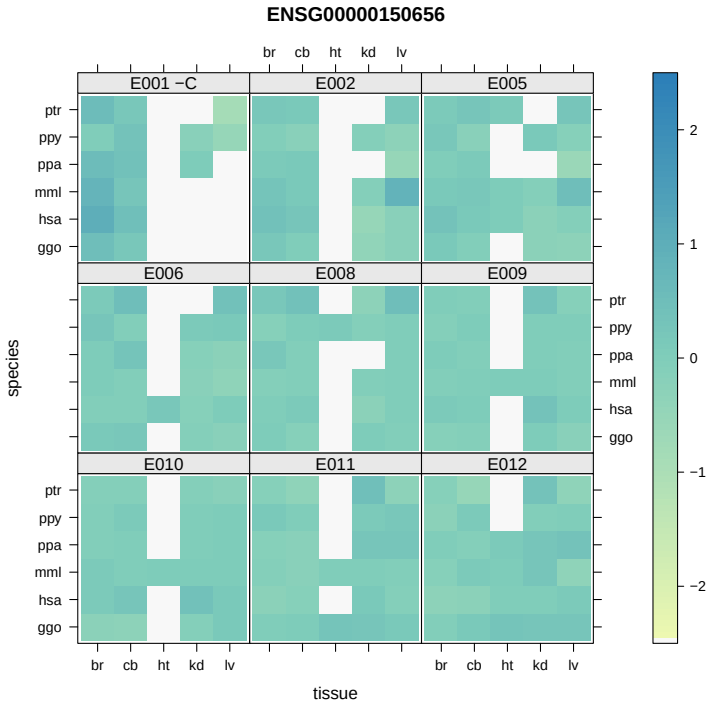

ENSG00000148341
E005
E009
E010
E011
E014
E019
E020
E022
E023 −C
E028
E029
E030
E031
E033
E035
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

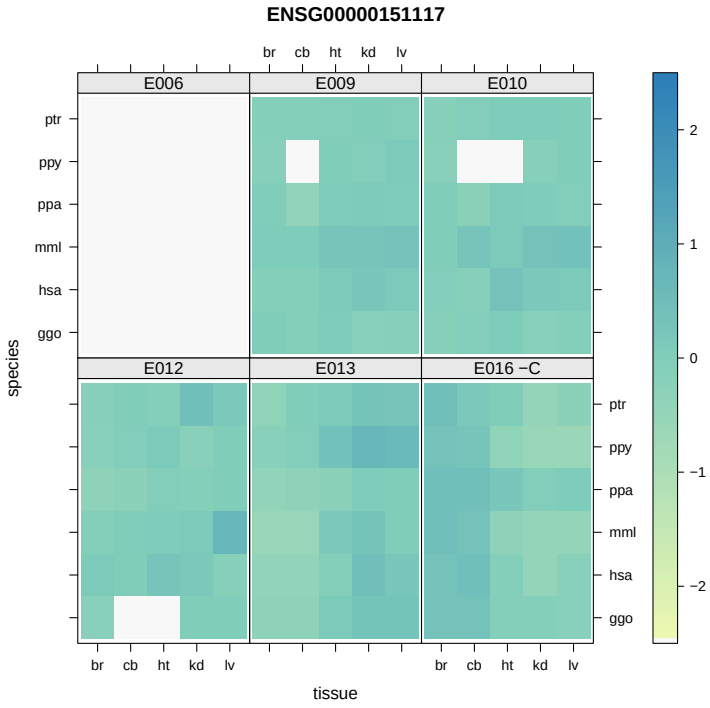

ENSG00000148660
E001
E006
E007
E009
E012
E013
E016 −C
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
E035
E036
E037
E038
E040
E041
E042
E043
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

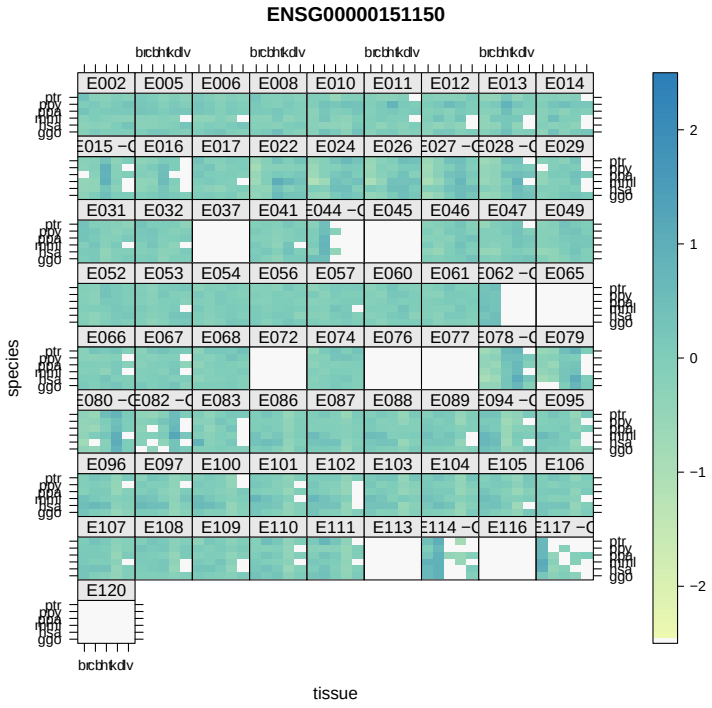

ENSG00000149294
brcbhtkdlv
E002
E008
E009
E012
E021
E022
E024
E025
E027
E028
E029
E032
E033
E034
E038
E040
E042
E043
E044
E048 −C
E049 −C
E052
E056
E057
E060
E064
E065
E069
E070
E071
E072
E073
E074 −C
E075 −C
E076 −C
E077 −C
E079 −C
E081
E082
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

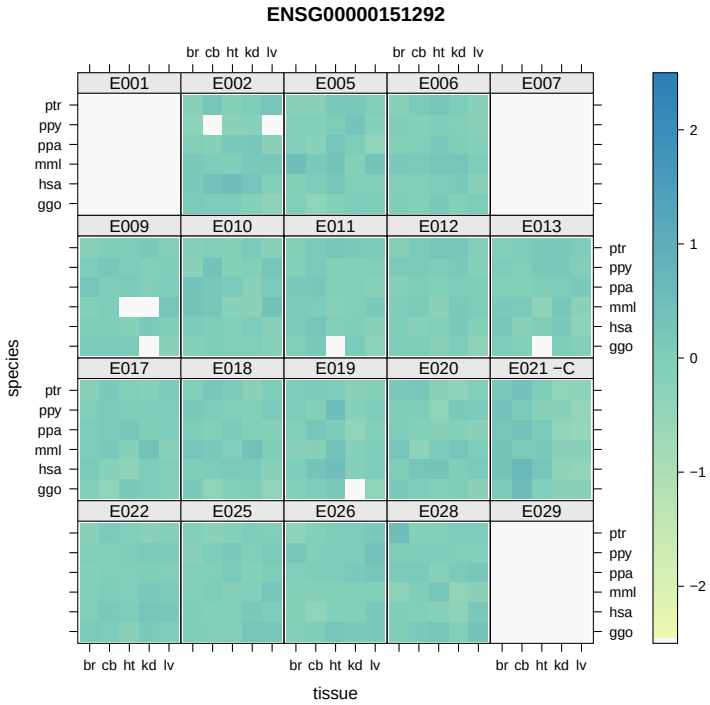

ENSG00000149657
E003
E008
E009
E010
E011 −C
E015
E016
E018
E019
E022
E023
E024
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

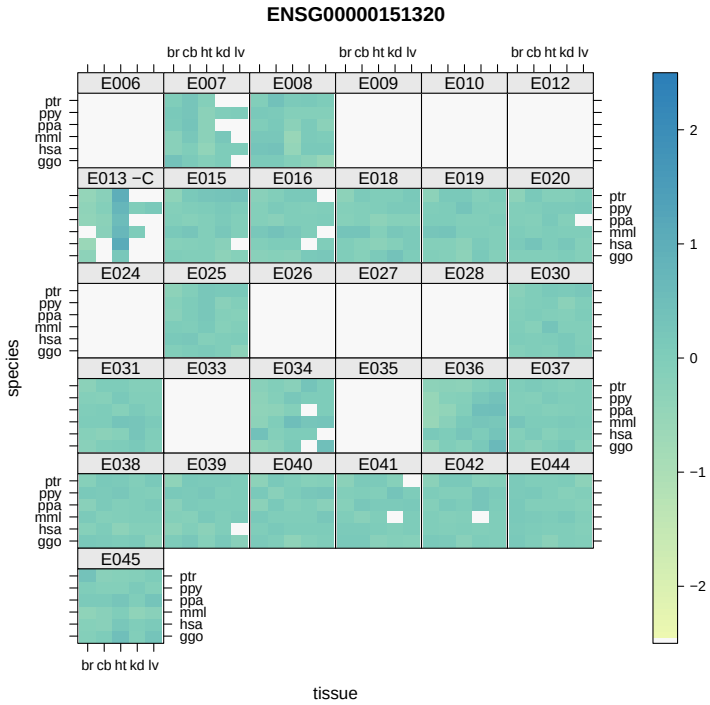

ENSG00000149930
br cb ht kd lv
E002
E004
E005
E006
E007
E008
E009
E010
E011
E013
E014
E015
E016
E019
E020 −C
E021 −C
E022
E023
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

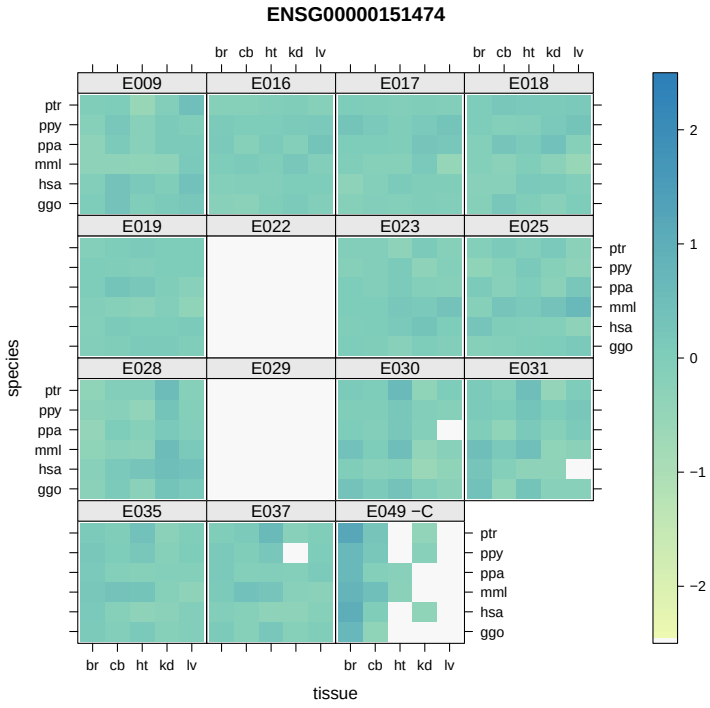

ENSG00000150656
br cb ht kd lv
E001 −C
E002
E005
E006
E008
E009
E010
E011
E012
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

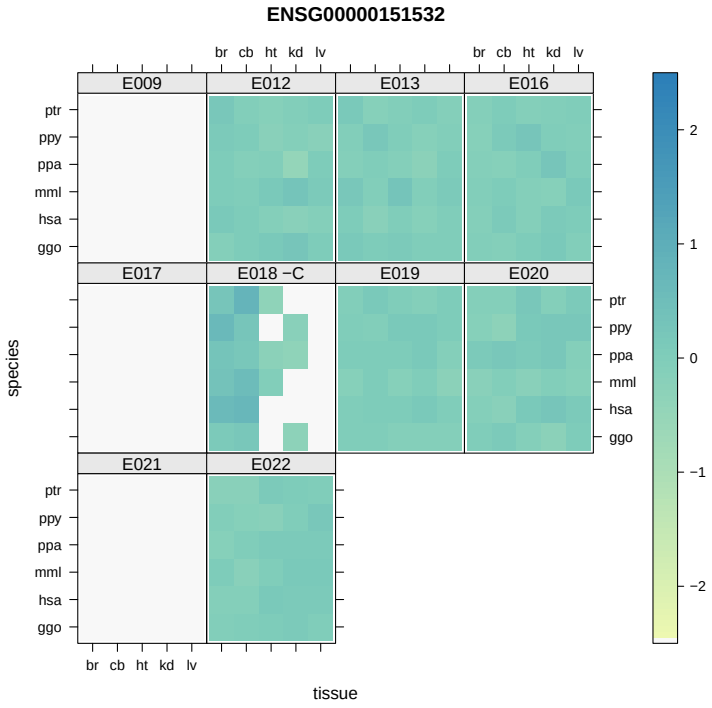

ENSG00000151117
E006
E009
E010
E012
E013
E016 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

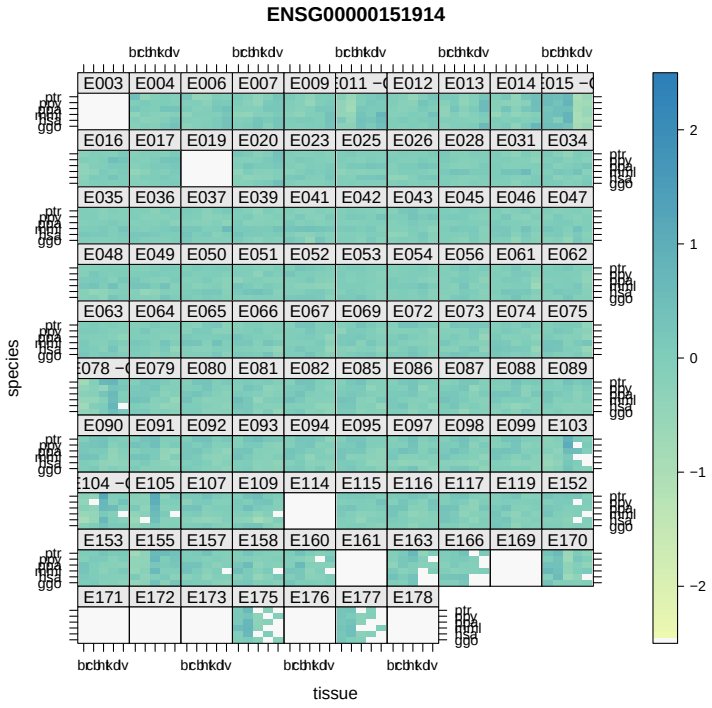

ENSG00000151150
brcbhlkdlv
E002
E005
E006
E008
E010
E011
E012
E013
E014
E015 −0
E016
E017
E022
E024
E026
E027 −0
E028 −0
E029
E031
E032
E037
E041
E044 −0
E045
E046
E047
E049
E052
E053
E054
E056
E057
E060
E061
E062 −0
E065
E066
E067
E068
E072
E074
E076
E077
E078 −0
E079
E080 −0
E082 −0
E083
E086
E087
E088
E089
E094 −0
E095
E096
E097
E100
E101
E102
E103
E104
E105
E106
E107
E108
E109
E110
E111
E113
E114 −0
E116
E117 −0
E120
ptr
ppy
nle
mmu
rno
ggo
species
tissue
2
1
0
−1
−2

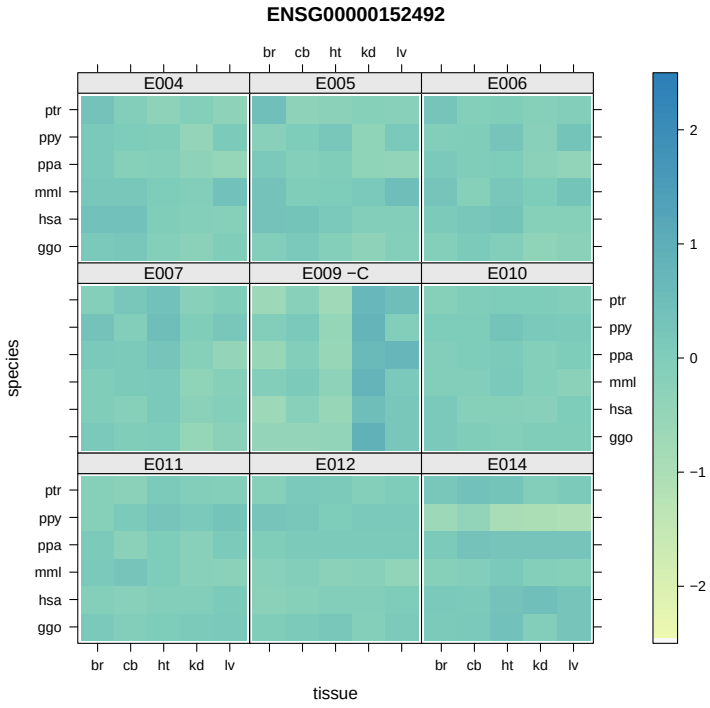

ENSG00000151292
E001
E002
E005
E006
E007
E009
E010
E011
E012
E013
E017
E018
E019
E020
E021 −C
E022
E025
E026
E028
E029
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

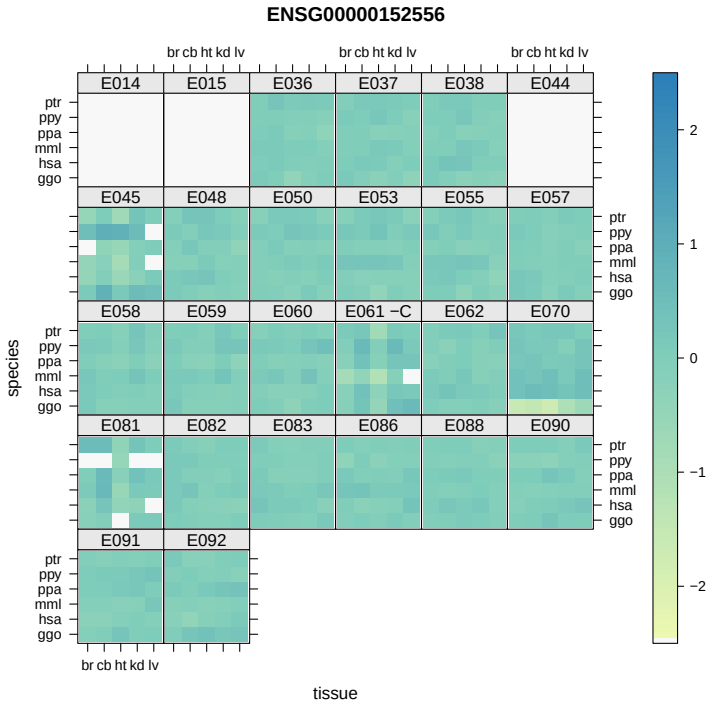

ENSG00000151320
br cb ht kd lv
E006
E007
E008
E009
E010
E012
E013 −C
E015
E016
E018
E019
E020
E024
E025
E026
E027
E028
E030
E031
E033
E034
E035
E036
E037
E038
E039
E040
E041
E042
E044
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

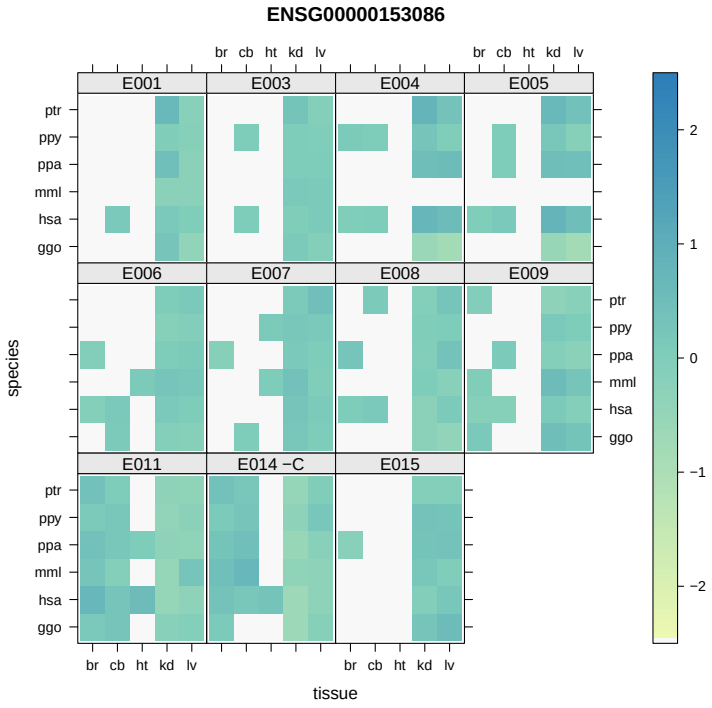

ENSG00000151474
E009
E016
E017
E018
E019
E022
E023
E025
E028
E029
E030
E031
E035
E037
E049 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

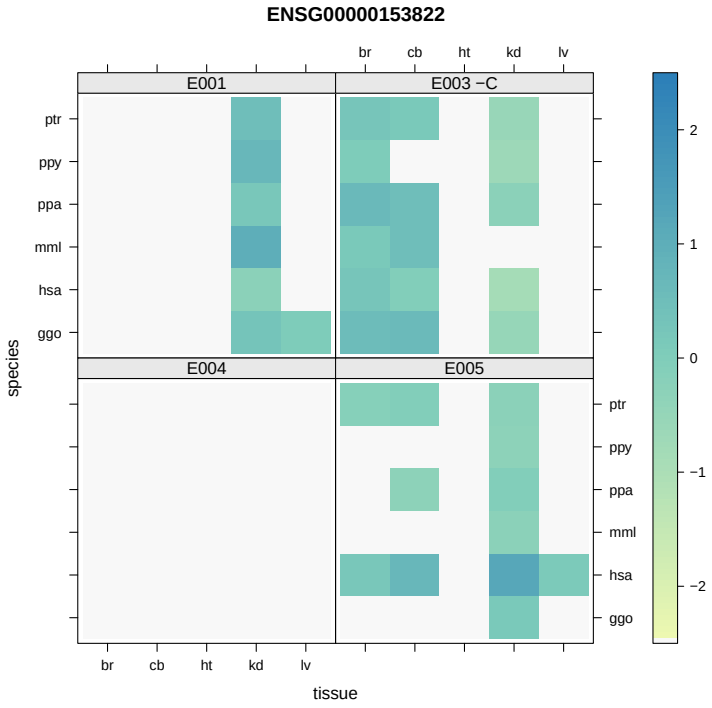

ENSG00000151532
E009
E012
E013
E016
E017
E018 −C
E019
E020
E021
E022
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

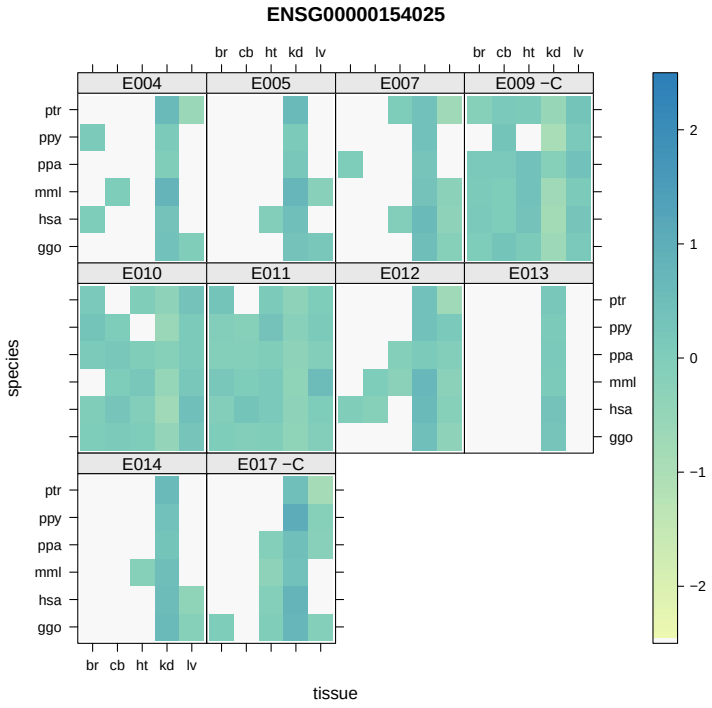

ENSG00000151914
E003
E004
E006
E007
E009
E011 −0
E012
E013
E014
E015 −0
E016
E017
E019
E020
E023
E025
E026
E028
E031
E034
E035
E036
E037
E039
E041
E042
E043
E045
E046
E047
E048
E049
E050
E051
E052
E053
E054
E056
E061
E062
E063
E064
E065
E066
E067
E069
E072
E073
E074
E075
E078 −0
E079
E080
E081
E082
E085
E086
E087
E088
E089
E090
E091
E092
E093
E094
E095
E097
E098
E099
E103
E104 −0
E105
E107
E109
E114
E115
E116
E117
E119
E152
E153
E155
E157
E158
E160
E161
E163
E166
E169
E170
E171
E172
E173
E175
E176
E177
E178
bcthkdv
ptr
ppy
hsa
numl
ggo
species
tissue
2
1
0
−1
−2

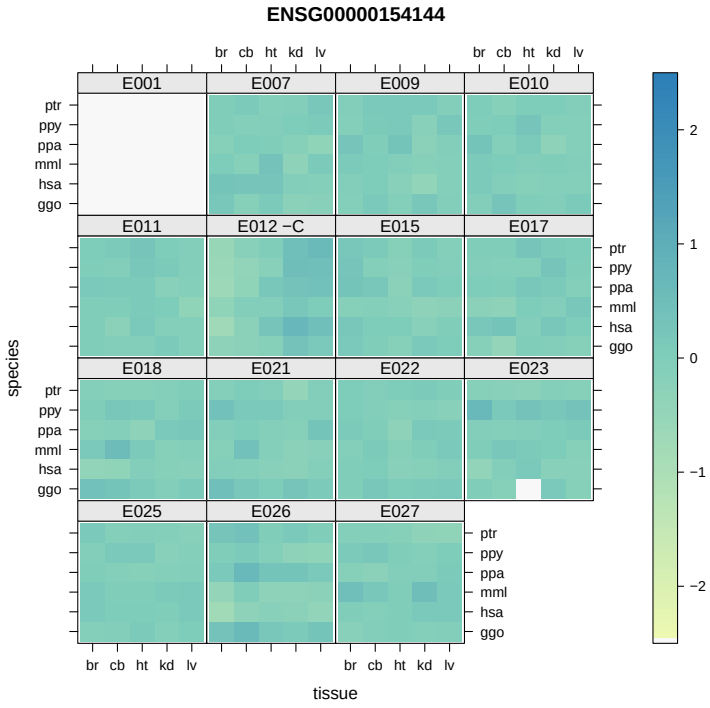

ENSG00000152492
br cb ht kd lv
E004
E005
E006
E007
E009 −C
E010
E011
E012
E014
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

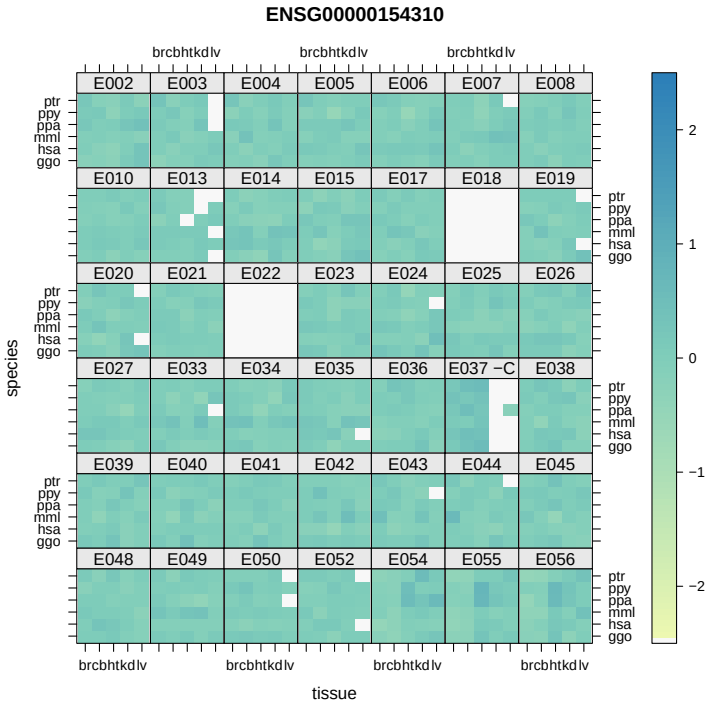

ENSG00000152556
br cb ht kd lv
E014
E015
E036
E037
E038
E044
E045
E048
E050
E053
E055
E057
E058
E059
E060
E061 −C
E062
E070
E081
E082
E083
E086
E088
E090
E091
E092
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

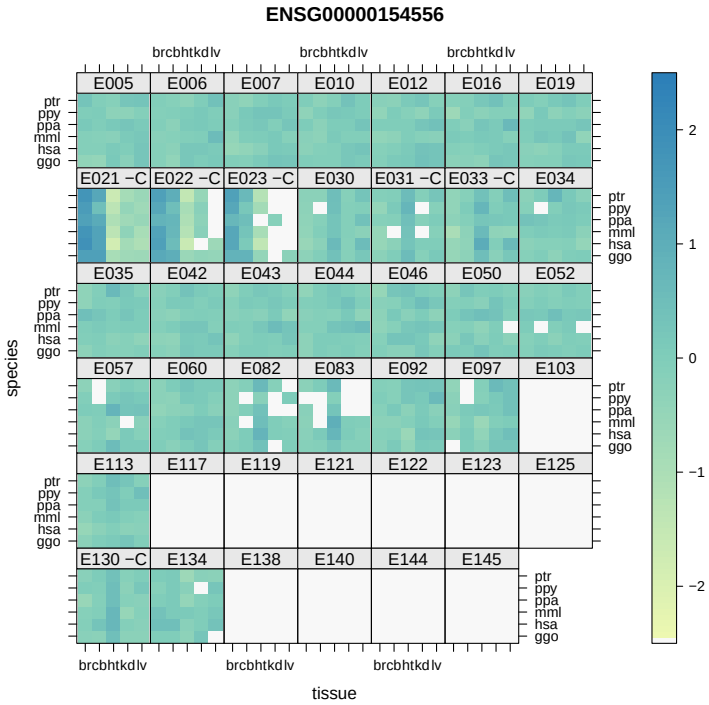

ENSG00000153086
E001
E003
E004
E005
E006
E007
E008
E009
E011
E014 −C
E015
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

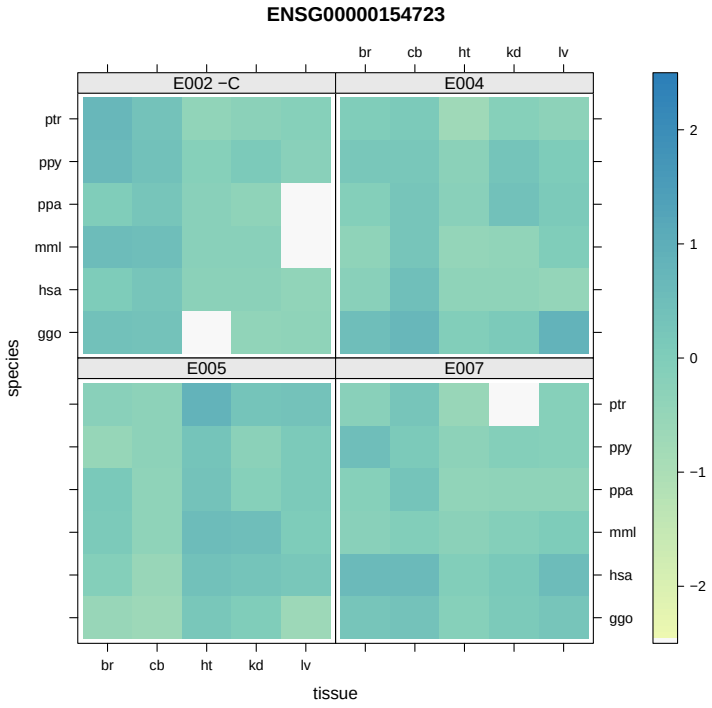

ENSG00000153822
E001
E003 −C
E004
E005
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

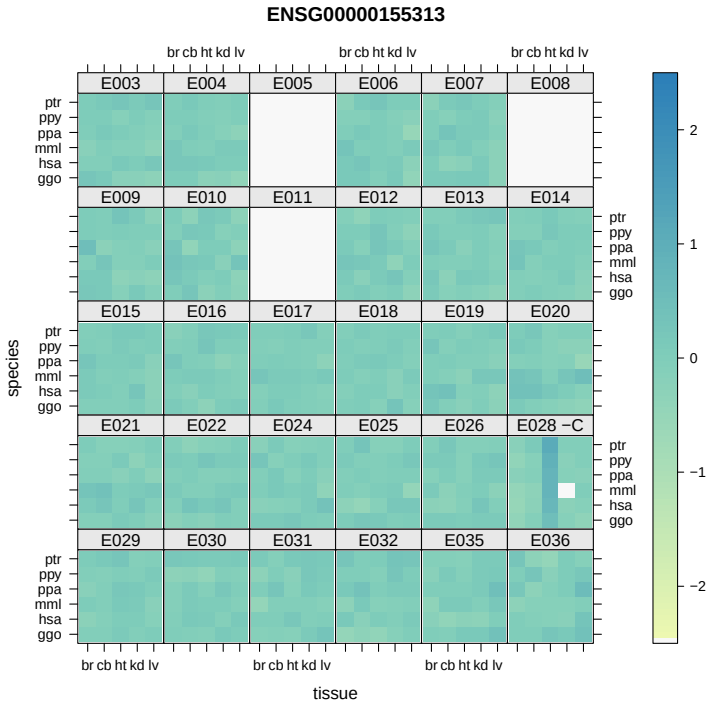

ENSG00000154025
E004
E005
E007
E009 −C
E010
E011
E012
E013
E014
E017 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

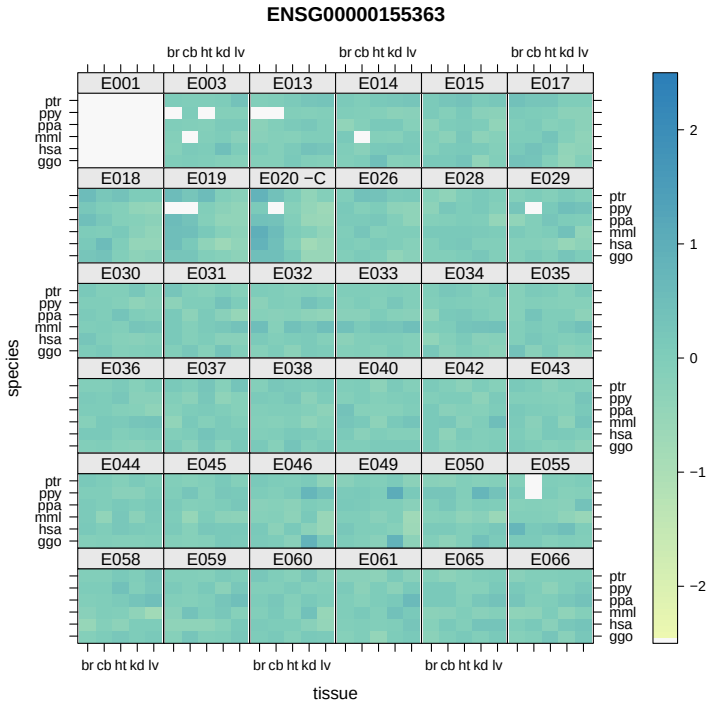

ENSG00000154144
E001
E007
E009
E010
E011
E012 −C
E015
E017
E018
E021
E022
E023
E025
E026
E027
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

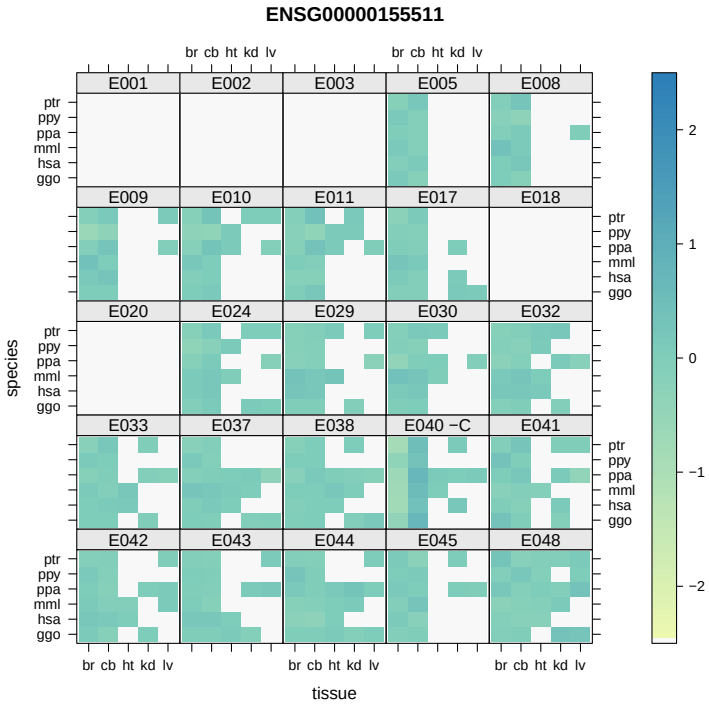

ENSG00000154310
brcbhtkdlv
E002
E003
E004
E005
E006
E007
E008
E010
E013
E014
E015
E017
E018
E019
E020
E021
E022
E023
E024
E025
E026
E027
E033
E034
E035
E036
E037 −C
E038
E039
E040
E041
E042
E043
E044
E045
E048
E049
E050
E052
E054
E055
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

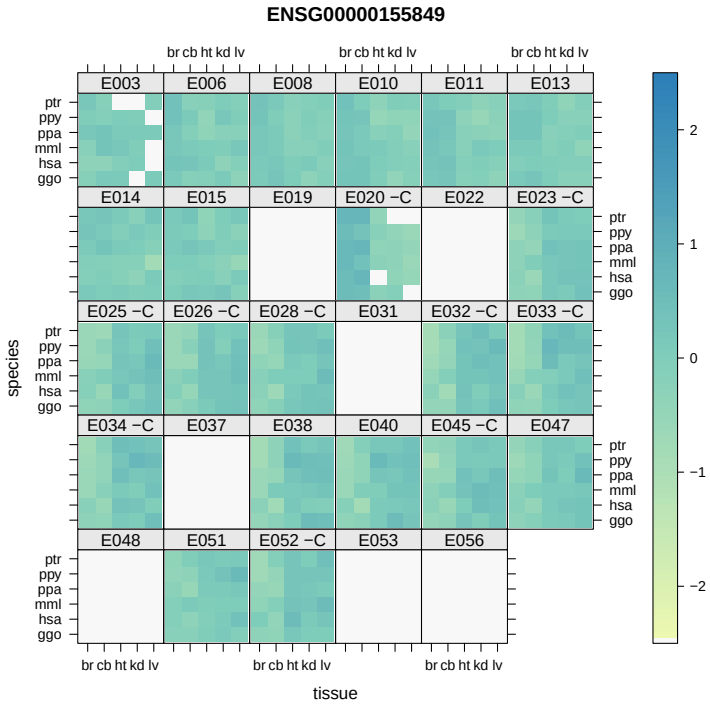

ENSG00000154556
brcbhtkdlv
E005
E006
E007
E010
E012
E016
E019
E021 −C
E022 −C
E023 −C
E030
E031 −C
E033 −C
E034
E035
E042
E043
E044
E046
E050
E052
E057
E060
E082
E083
E092
E097
E103
E113
E117
E119
E121
E122
E123
E125
E130 −C
E134
E138
E140
E144
E145
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

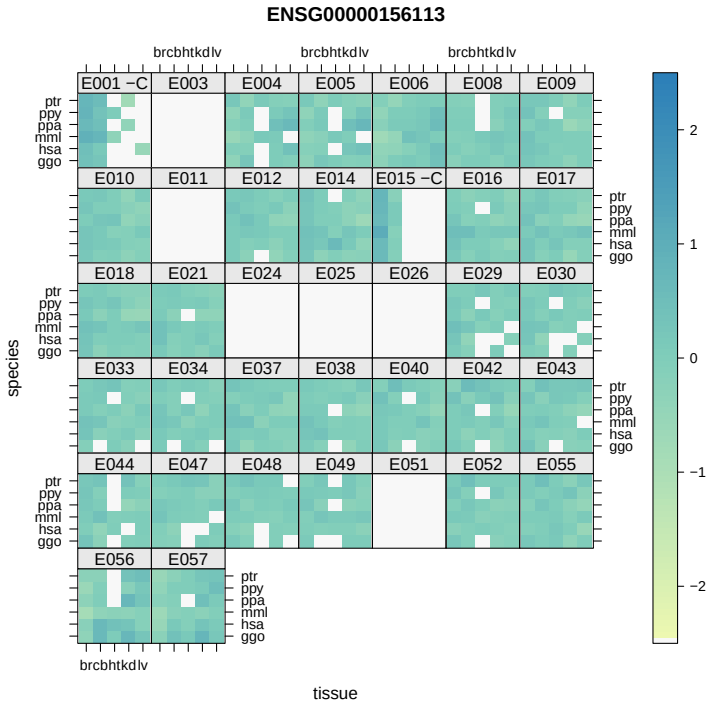

ENSG00000154723
E002 −C
E004
E005
E007
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

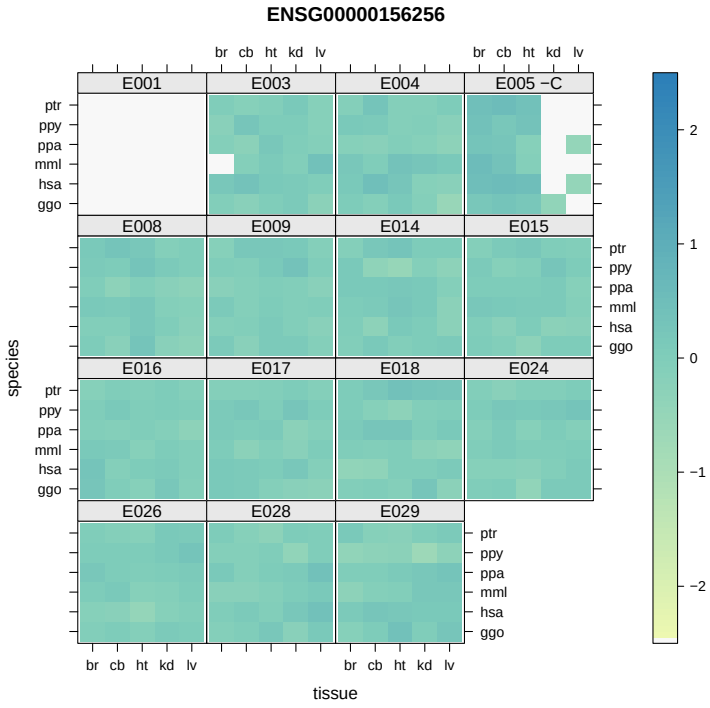

ENSG00000155313
br cb ht kd lv
E003
E004
E005
E006
E007
E008
E009
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E020
E021
E022
E024
E025
E026
E028 −C
E029
E030
E031
E032
E035
E036
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

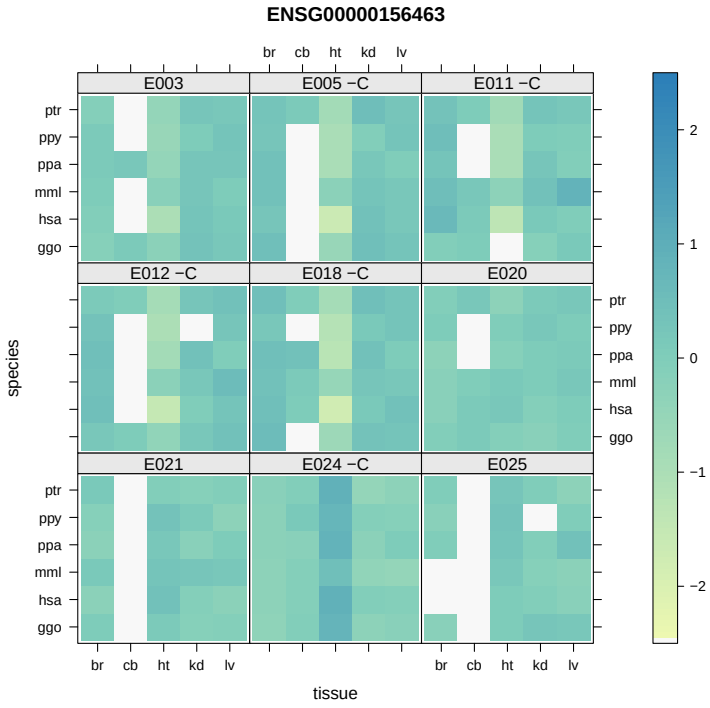

ENSG00000155363
E001
E003
E013
E014
E015
E017
E018
E019
E020 −C
E026
E028
E029
E030
E031
E032
E033
E034
E035
E036
E037
E038
E040
E042
E043
E044
E045
E046
E049
E050
E055
E058
E059
E060
E061
E065
E066
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

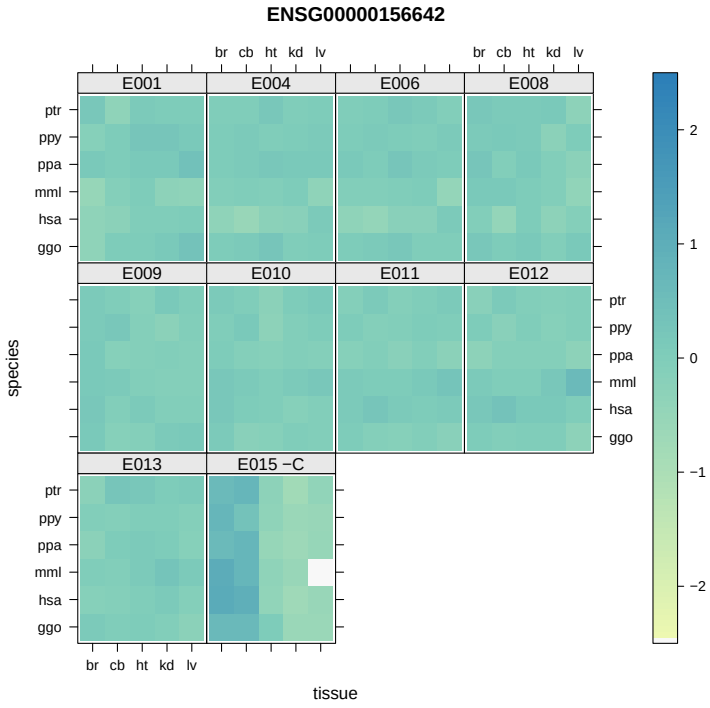

ENSG00000155511
E001
E002
E003
E005
E008
E009
E010
E011
E017
E018
E020
E024
E029
E030
E032
E033
E037
E038
E040 −C
E041
E042
E043
E044
E045
E048
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

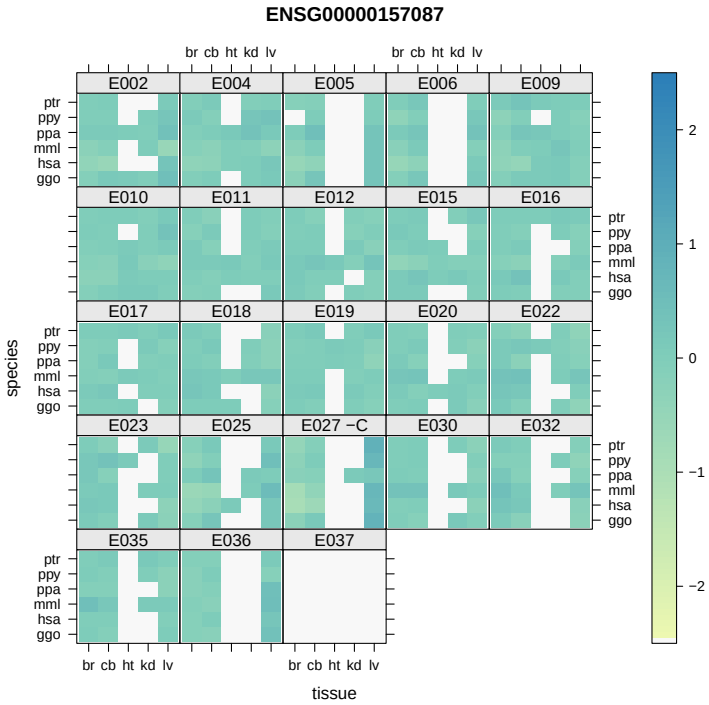

ENSG00000155849
br cb ht kd lv
E003
E006
E008
E010
E011
E013
E014
E015
E019
E020 −C
E022
E023 −C
E025 −C
E026 −C
E028 −C
E031
E032 −C
E033 −C
E034 −C
E037
E038
E040
E045 −C
E047
E048
E051
E052 −C
E053
E056
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

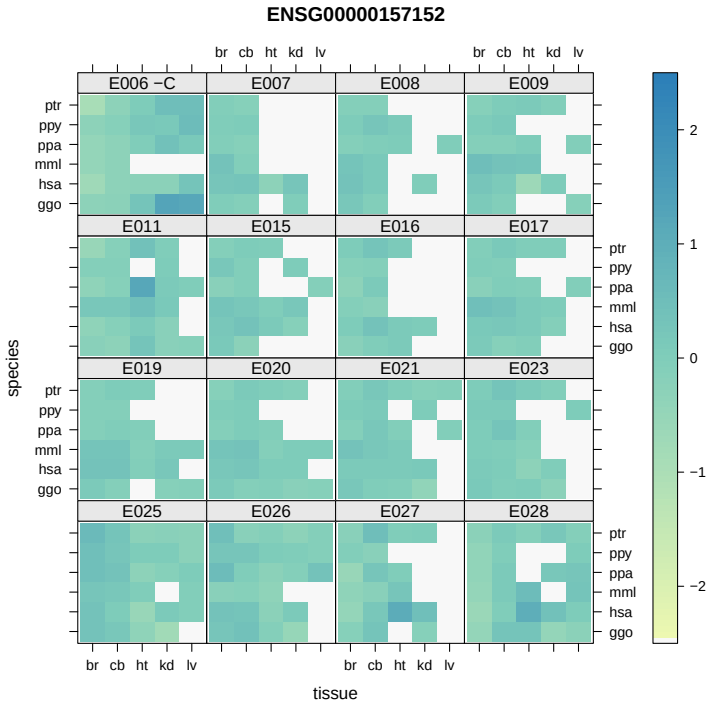

ENSG00000156113
brcbhtkdlv
E001 −C
E003
E004
E005
E006
E008
E009
E010
E011
E012
E014
E015 −C
E016
E017
E018
E021
E024
E025
E026
E029
E030
E033
E034
E037
E038
E040
E042
E043
E044
E047
E048
E049
E051
E052
E055
E056
E057
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

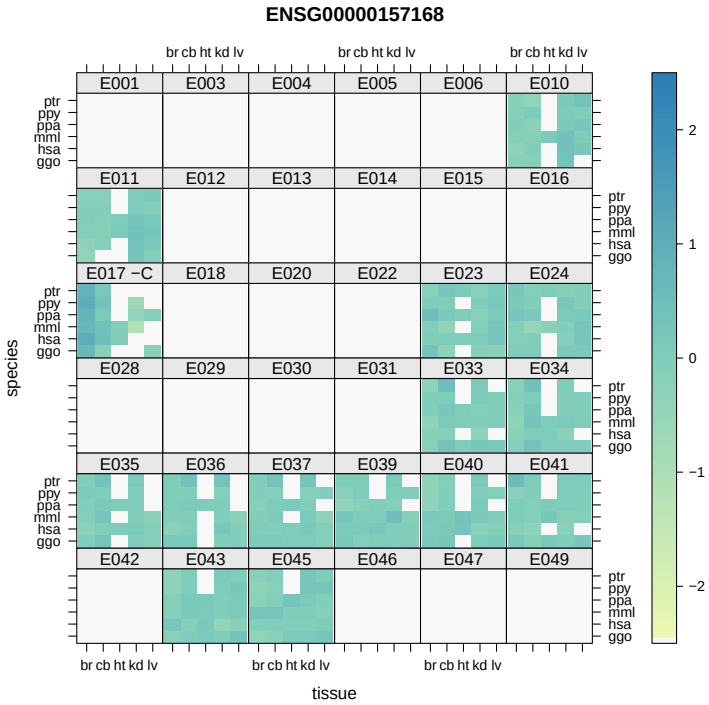

ENSG00000156256
E001
E003
E004
E005 −C
E008
E009
E014
E015
E016
E017
E018
E024
E026
E028
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

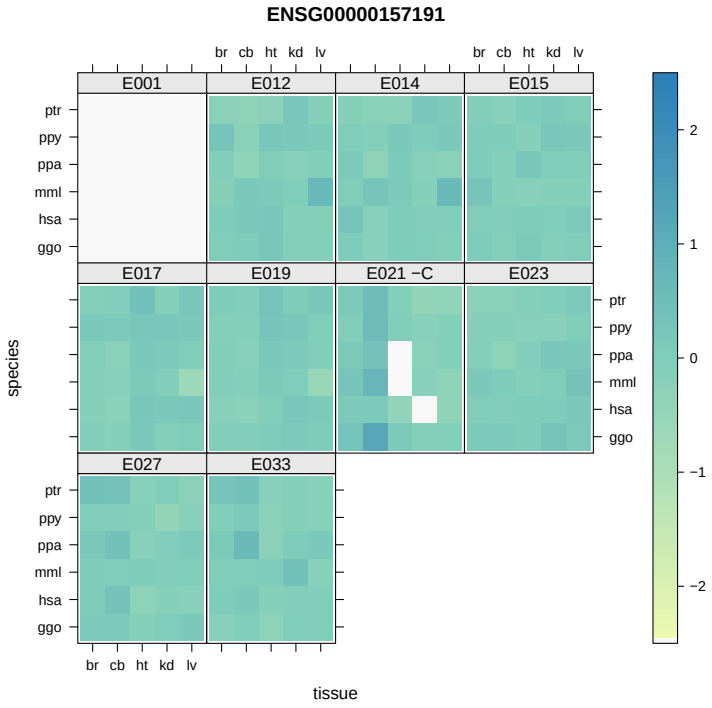

ENSG00000156463
br cb ht kd lv
E003
E005 −C
E011 −C
E012 −C
E018 −C
E020
E021
E024 −C
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

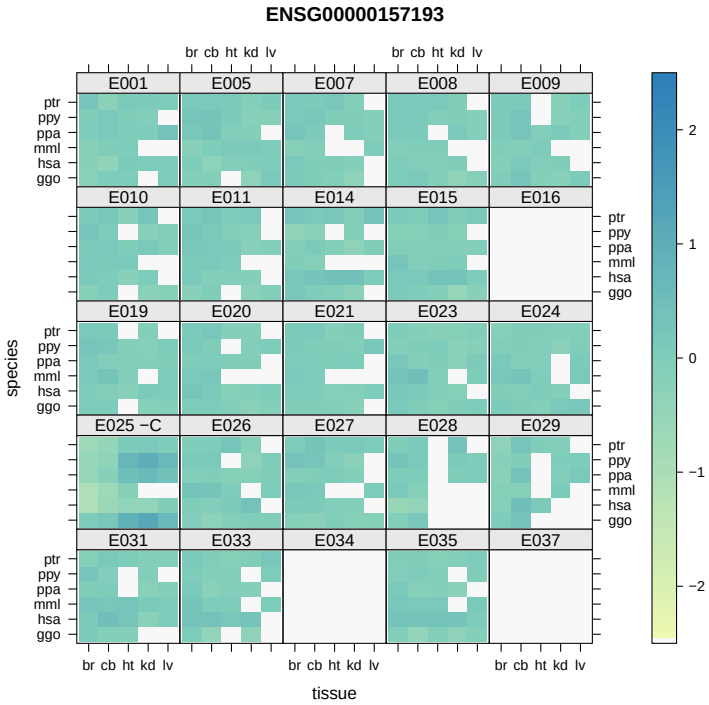

ENSG00000156642
E001
E004
E006
E008
E009
E010
E011
E012
E013
E015 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

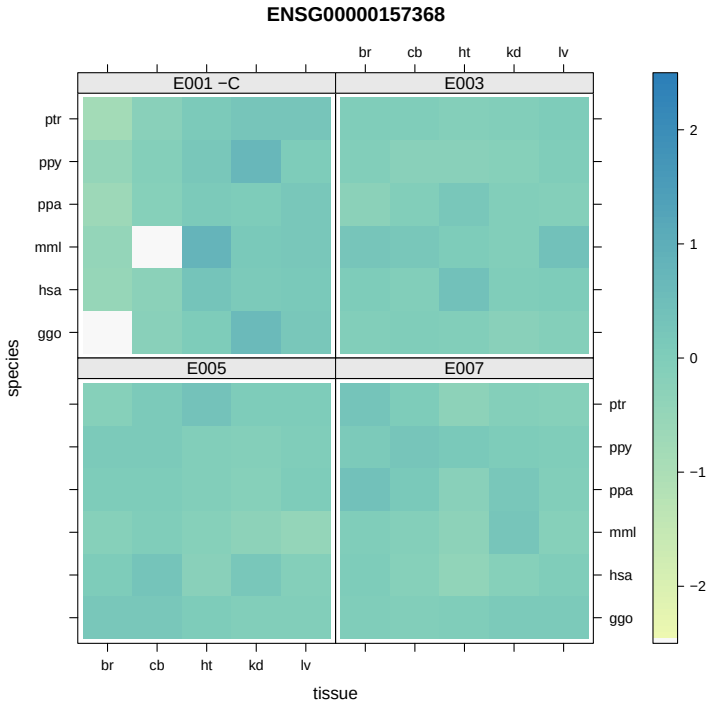

ENSG00000157087
E002
E004
E005
E006
E009
E010
E011
E012
E015
E016
E017
E018
E019
E020
E022
E023
E025
E027 −C
E030
E032
E035
E036
E037
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

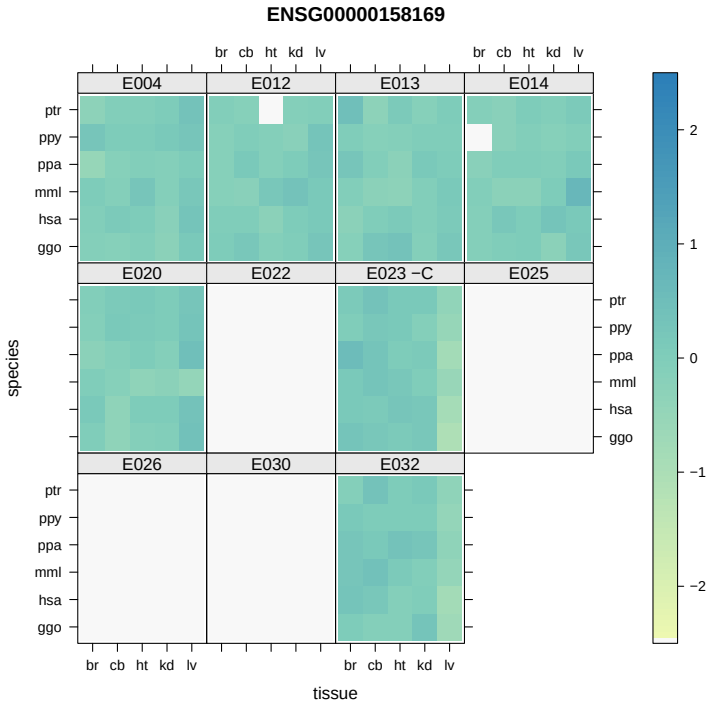

ENSG00000157152
E006 −C
E007
E008
E009
E011
E015
E016
E017
E019
E020
E021
E023
E025
E026
E027
E028
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

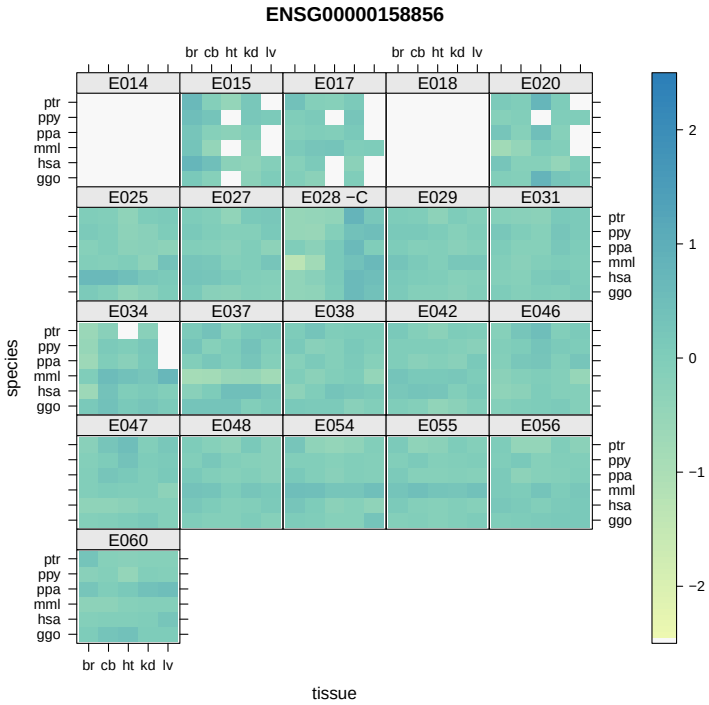

ENSG00000157168
br cb ht kd lv
E001
E003
E004
E005
E006
E010
E011
E012
E013
E014
E015
E016
E017 −C
E018
E020
E022
E023
E024
E028
E029
E030
E031
E033
E034
E035
E036
E037
E039
E040
E041
E042
E043
E045
E046
E047
E049
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

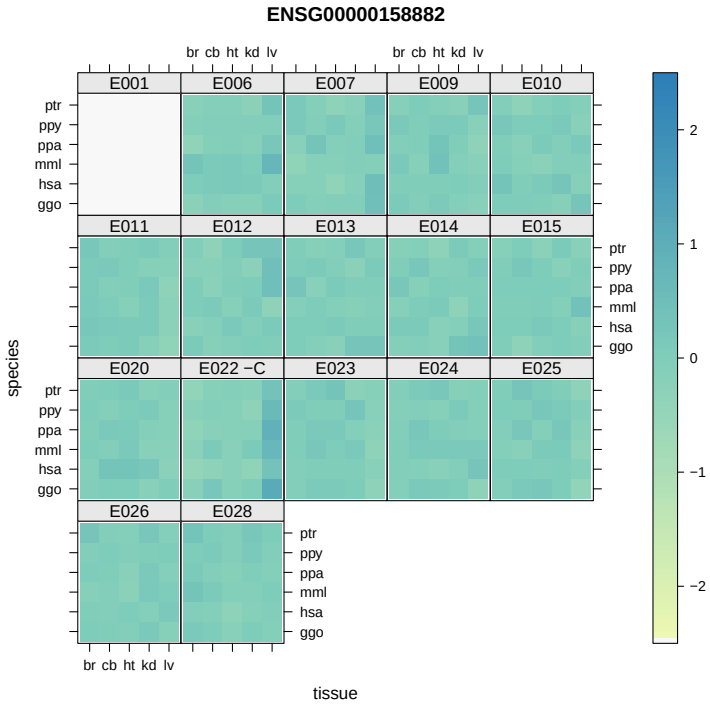

ENSG00000157191
E001
E012
E014
E015
E017
E019
E021 −C
E023
E027
E033
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

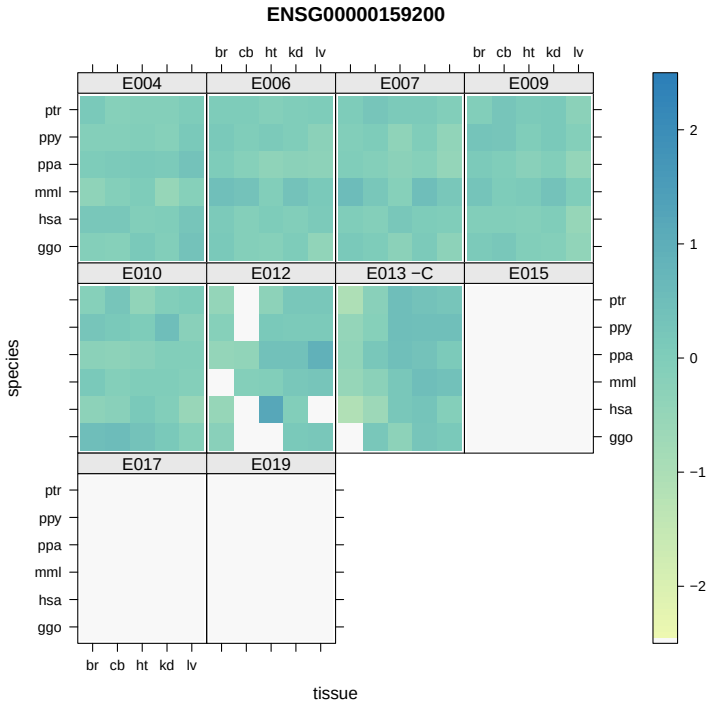

ENSG00000157193
E001
E005
E007
E008
E009
E010
E011
E014
E015
E016
E019
E020
E021
E023
E024
E025 −C
E026
E027
E028
E029
E031
E033
E034
E035
E037
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

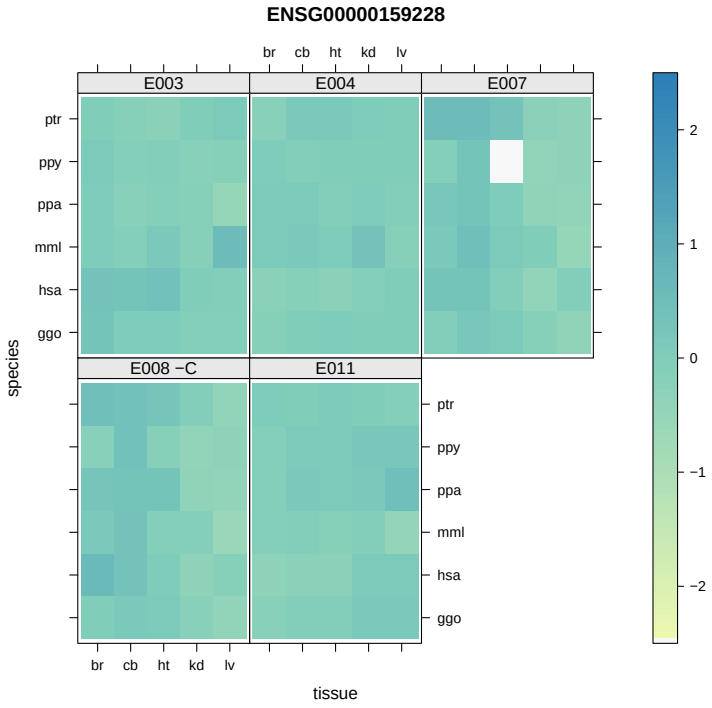

ENSG00000157368
E001 −C
E003
E005
E007
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

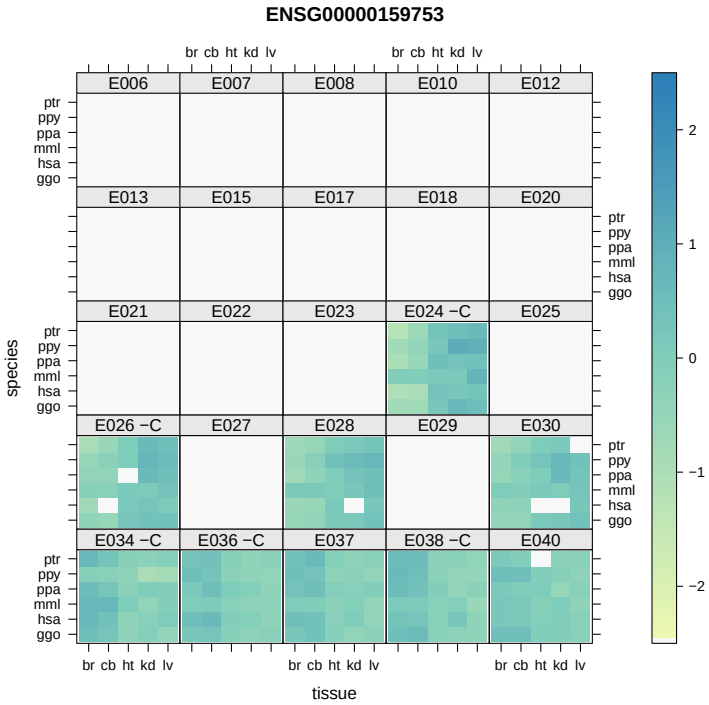

ENSG00000158169
E004
E012
E013
E014
E020
E022
E023 −C
E025
E026
E030
E032
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

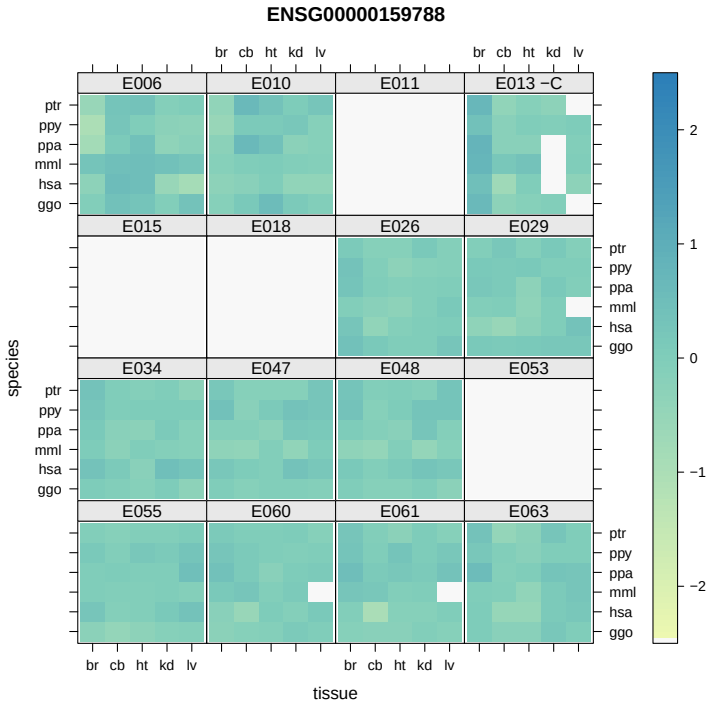

ENSG00000158856
br cb ht kd lv
E014
E015
E017
E018
E020
E025
E027
E028 −C
E029
E031
E034
E037
E038
E042
E046
E047
E048
E054
E055
E056
E060
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

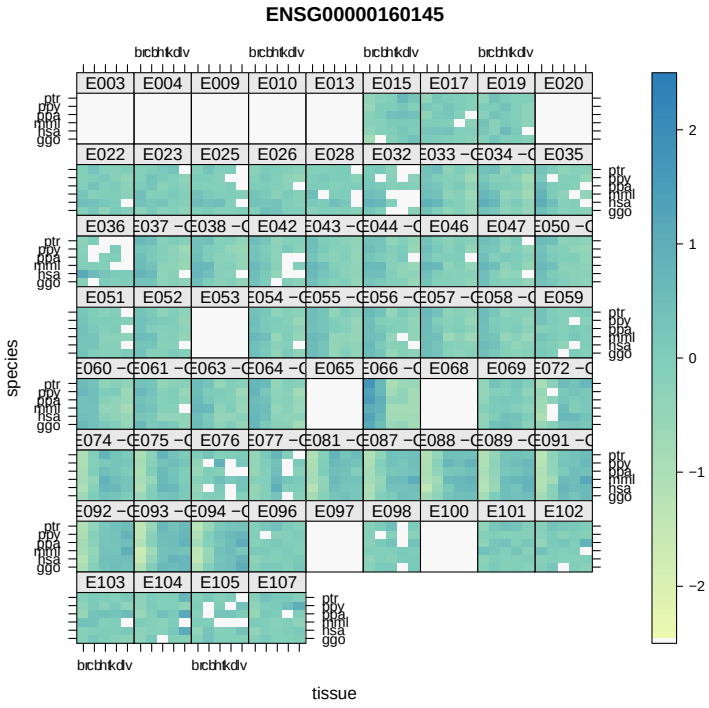

ENSG00000158882
E001
E006
E007
E009
E010
E011
E012
E013
E014
E015
E020
E022 −C
E023
E024
E025
E026
E028
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

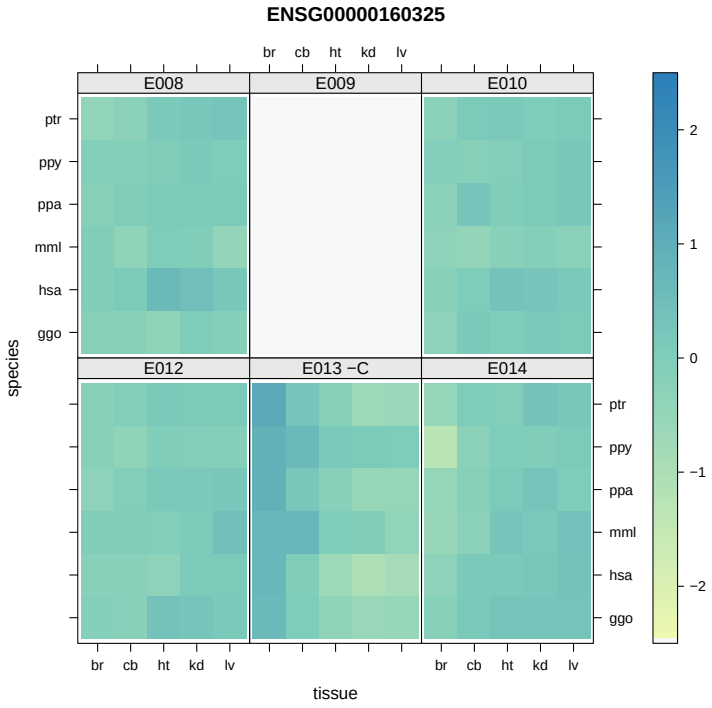

ENSG00000159200
E004
E006
E007
E009
E010
E012
E013 −C
E015
E017
E019
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

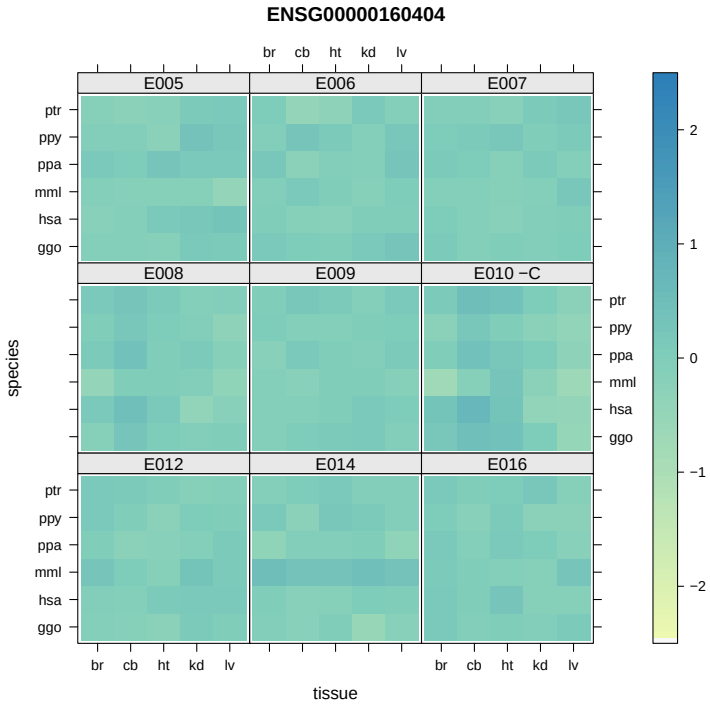

ENSG00000159228
br cb ht kd lv
E003
E004
E007
E008 −C
E011
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

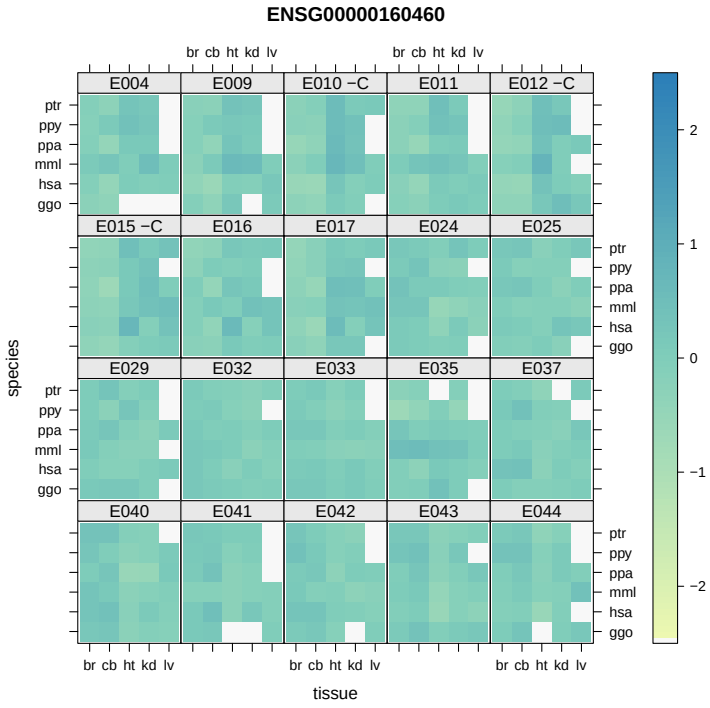

ENSG00000159753
E006
E007
E008
E010
E012
E013
E015
E017
E018
E020
E021
E022
E023
E024 −C
E025
E026 −C
E027
E028
E029
E030
E034 −C
E036 −C
E037
E038 −C
E040
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

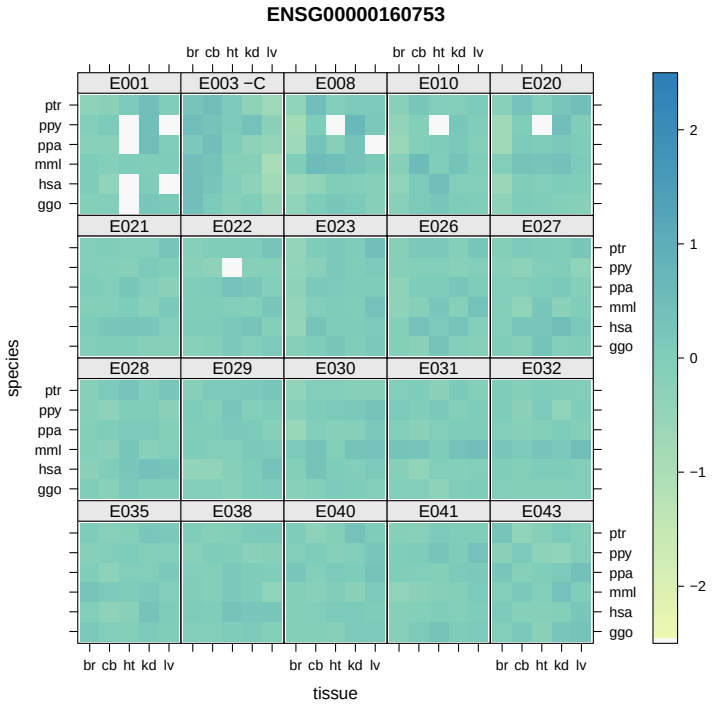

ENSG00000159788
E006
E010
E011
E013 −C
E015
E018
E026
E029
E034
E047
E048
E053
E055
E060
E061
E063
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

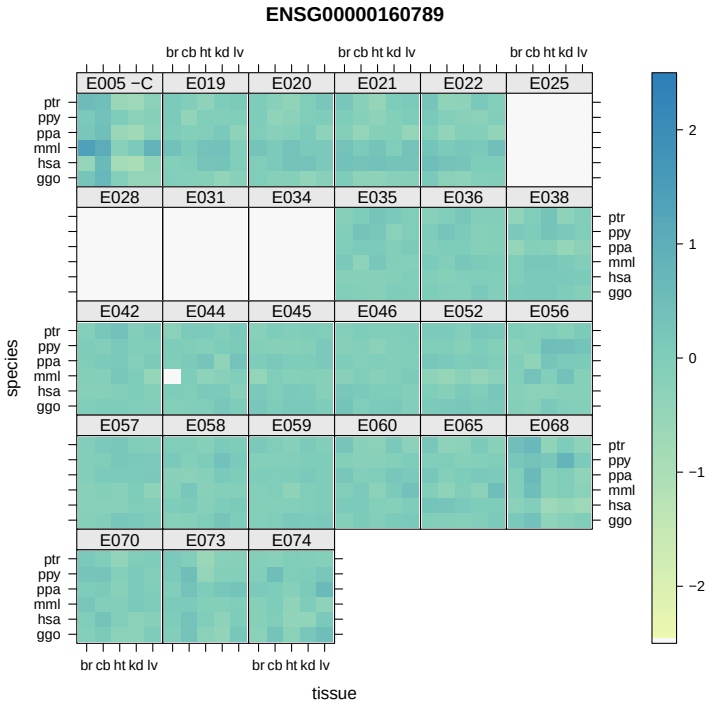

ENSG00000160145
brcbhkdlv
E003
E004
E009
E010
E013
E015
E017
E019
E020
E022
E023
E025
E026
E028
E032
E033 −C
E034 −C
E035
E036
E037 −C
E038 −C
E042
E043 −C
E044 −C
E046
E047
E050 −C
E051
E052
E053
E054 −C
E055 −C
E056 −C
E057 −C
E058 −C
E059
E060 −C
E061 −C
E063 −C
E064 −C
E065
E066 −C
E068
E069
E072 −C
E074 −C
E075 −C
E076
E077 −C
E081 −C
E087 −C
E088 −C
E089 −C
E091 −C
E092 −C
E093 −C
E094 −C
E096
E097
E098
E100
E101
E102
E103
E104
E105
E107
ptr
ppy
ppa
mml
nsa
ggo
species
tissue
2
1
0
−1
−2

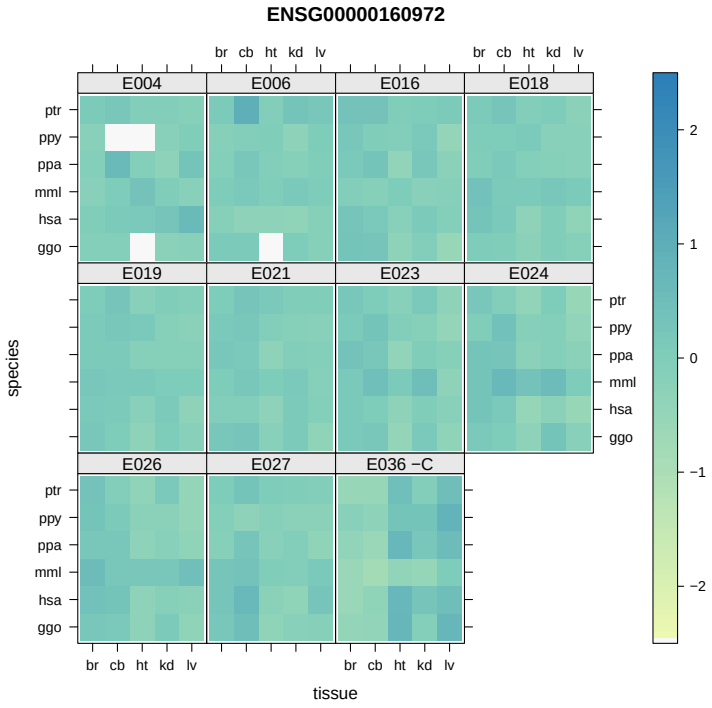

ENSG00000160325
br cb ht kd lv
E008
E009
E010
E012
E013 −C
E014
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

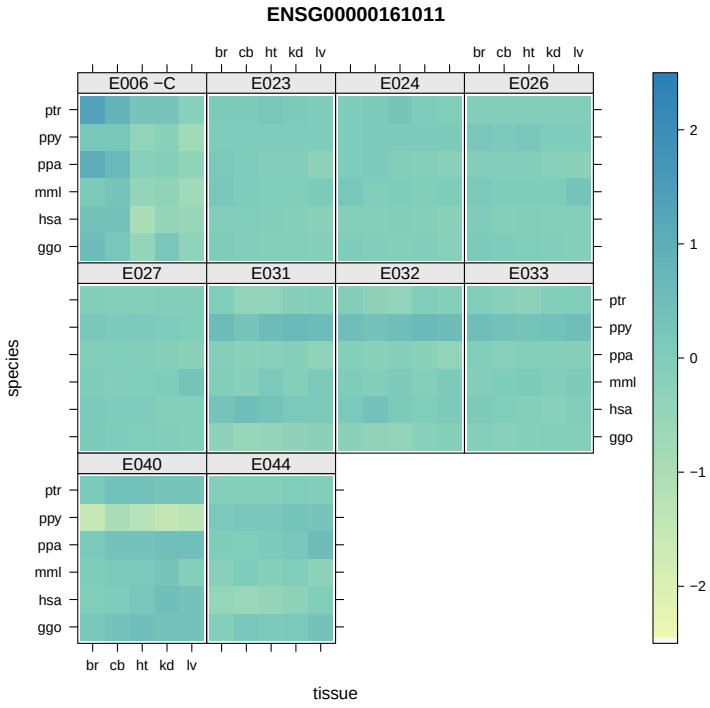

ENSG00000160404
br cb ht kd lv
E005
E006
E007
E008
E009
E010 −C
E012
E014
E016
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

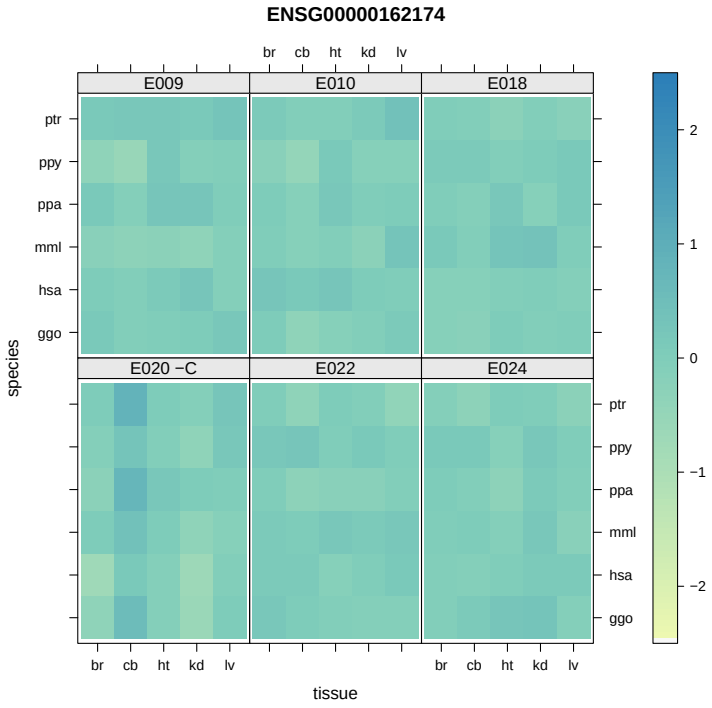

ENSG00000160460
E004
E009
E010 −C
E011
E012 −C
E015 −C
E016
E017
E024
E025
E029
E032
E033
E035
E037
E040
E041
E042
E043
E044
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

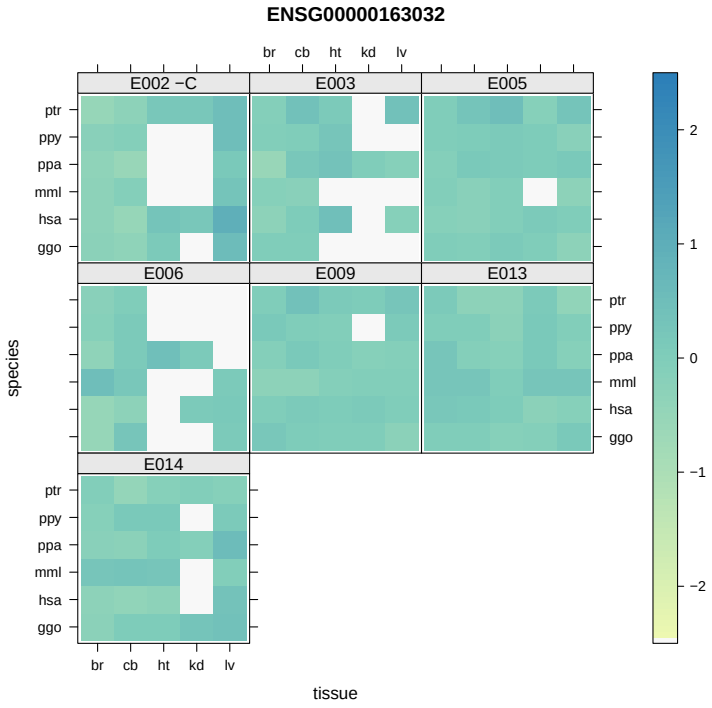

ENSG00000160753
br cb ht kd lv
E001
E003 −C
E008
E010
E020
E021
E022
E023
E026
E027
E028
E029
E030
E031
E032
E035
E038
E040
E041
E043
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

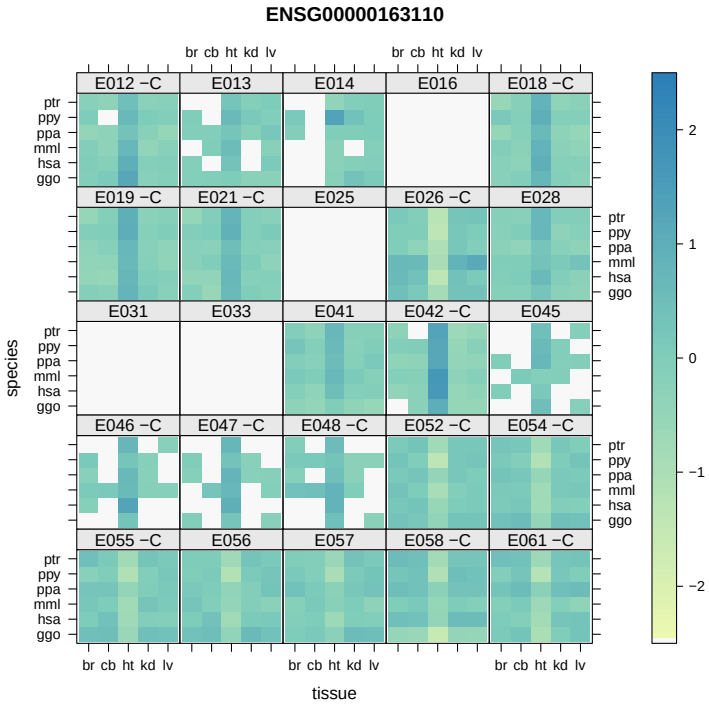

ENSG00000160789
br cb ht kd lv
E005 −C
E019
E020
E021
E022
E025
E028
E031
E034
E035
E036
E038
E042
E044
E045
E046
E052
E056
E057
E058
E059
E060
E065
E068
E070
E073
E074
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

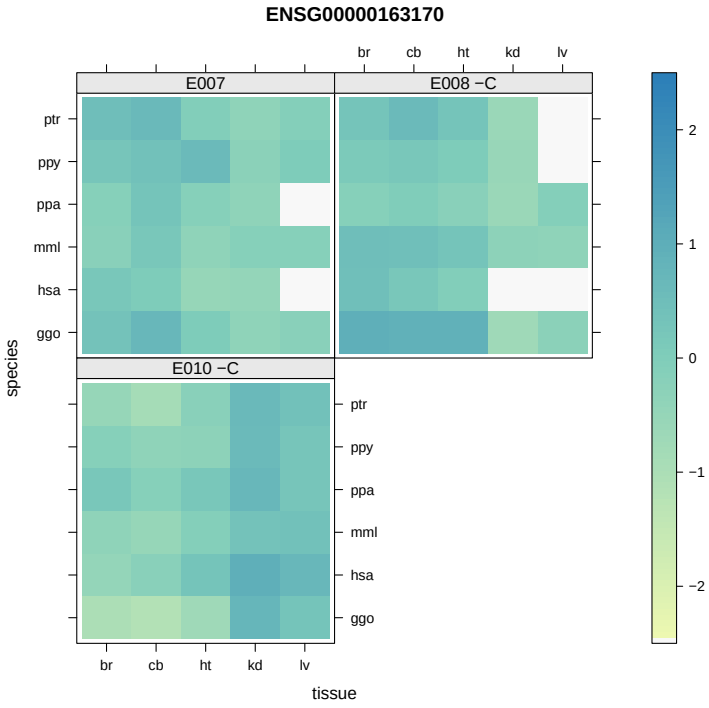

ENSG00000160972
E004
E006
E016
E018
E019
E021
E023
E024
E026
E027
E036 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

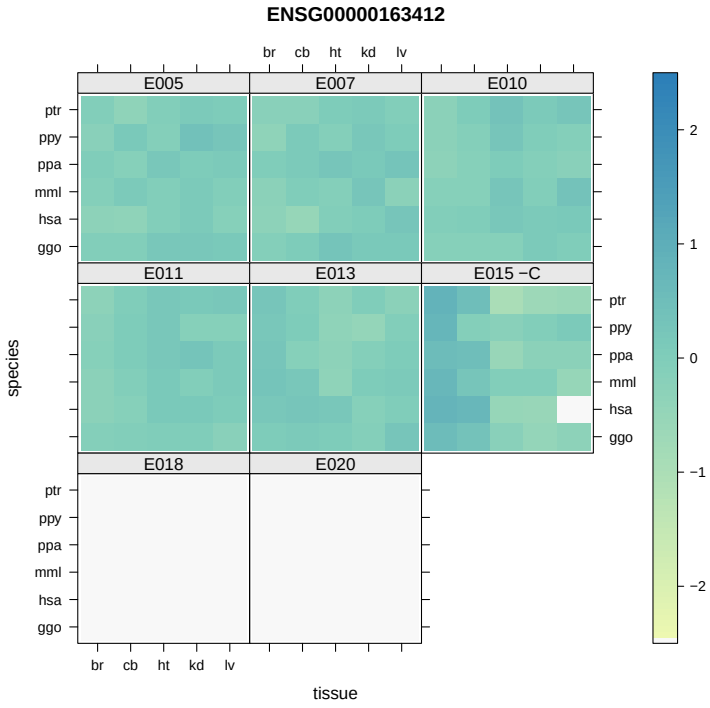

ENSG00000161011
E006 −C
E023
E024
E026
E027
E031
E032
E033
E040
E044
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

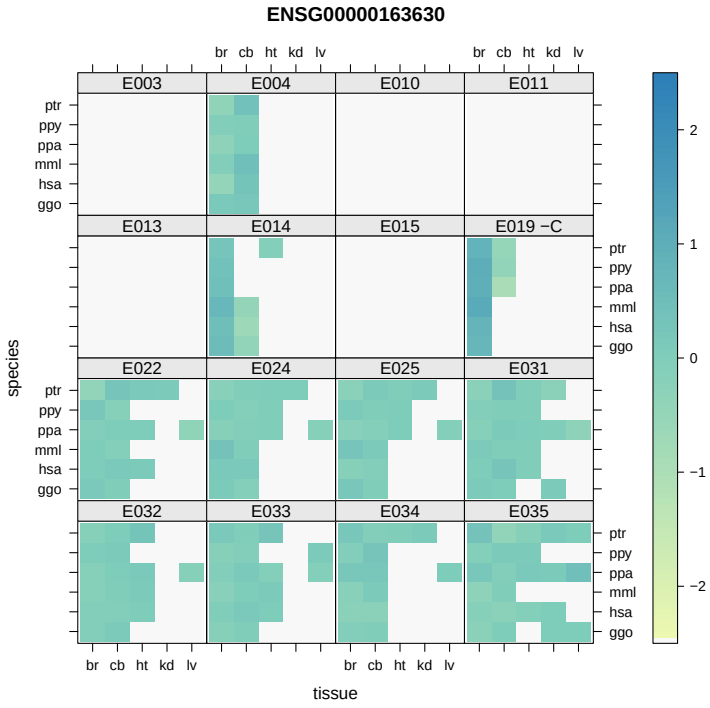

ENSG00000162174
br cb ht kd lv
E009
E010
E018
E020 −C
E022
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

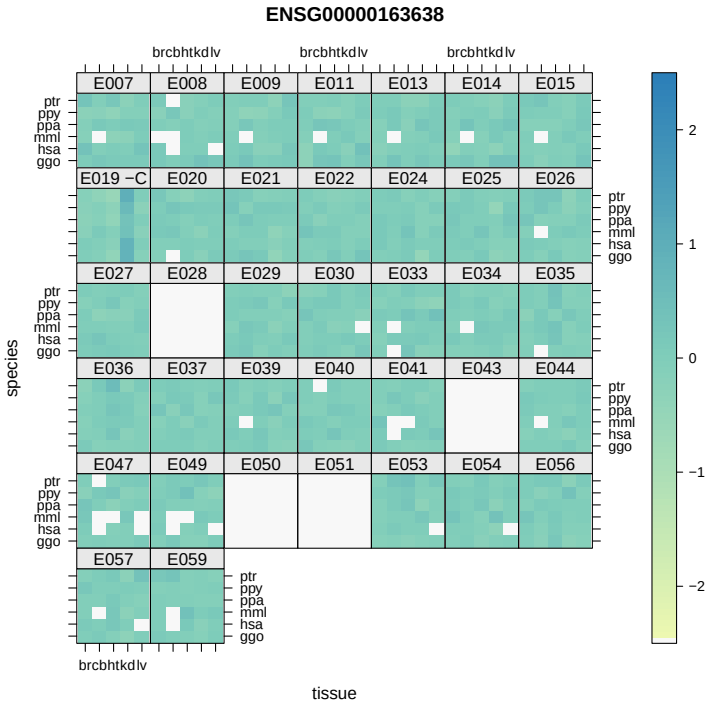

ENSG00000163032
br cb ht kd lv
E002 −C
E003
E005
E006
E009
E013
E014
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

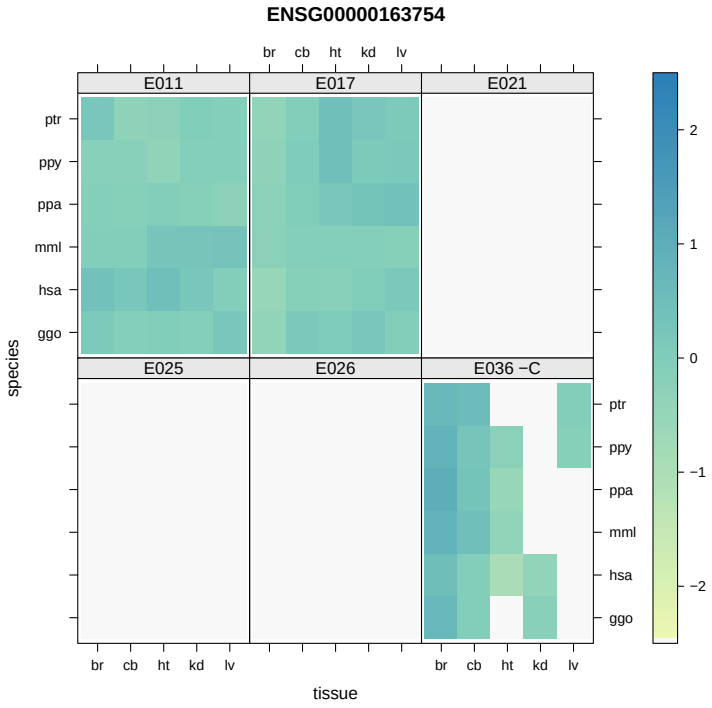

ENSG00000163110
br cb ht kd lv
E012 −C
E013
E014
E016
E018 −C
E019 −C
E021 −C
E025
E026 −C
E028
E031
E033
E041
E042 −C
E045
E046 −C
E047 −C
E048 −C
E052 −C
E054 −C
E055 −C
E056
E057
E058 −C
E061 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

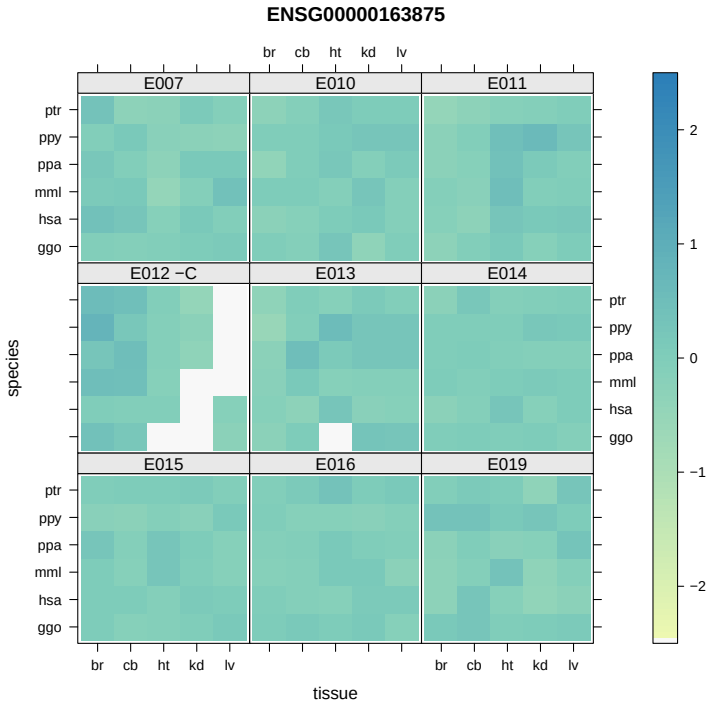

ENSG00000163170
br
cb
ht
kd
lv
E007
E008 −C
E010 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

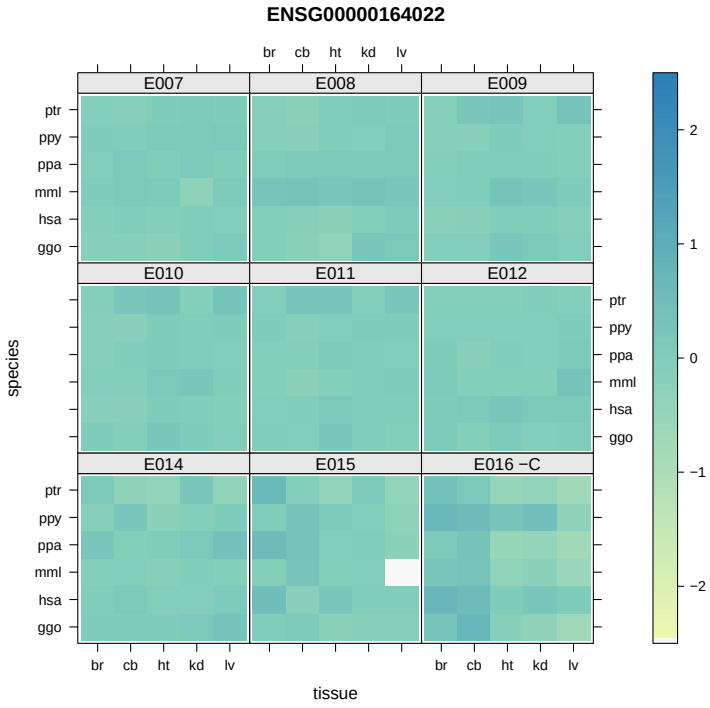

ENSG00000163412
br cb ht kd lv
E005
E007
E010
E011
E013
E015 −C
E018
E020
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

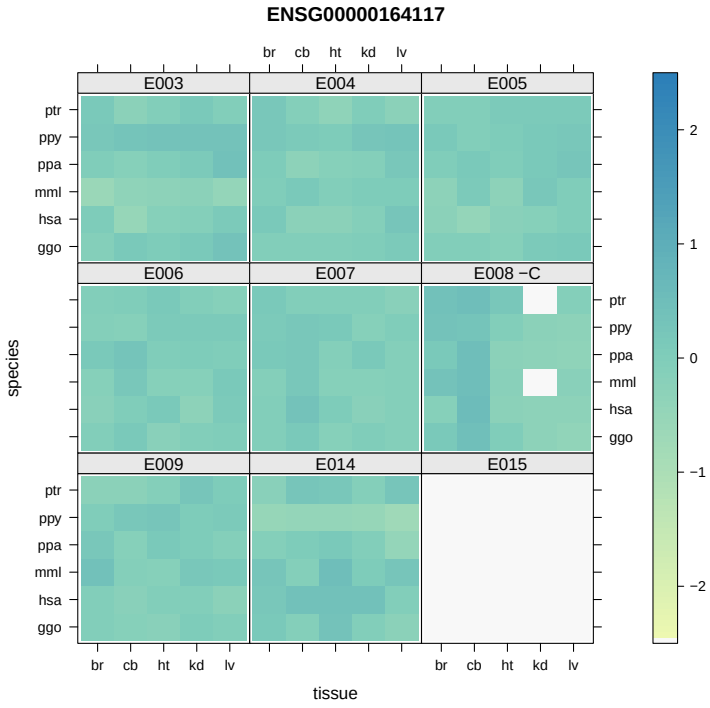

ENSG00000163630
E003
E004
E010
E011
E013
E014
E015
E019 −C
E022
E024
E025
E031
E032
E033
E034
E035
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

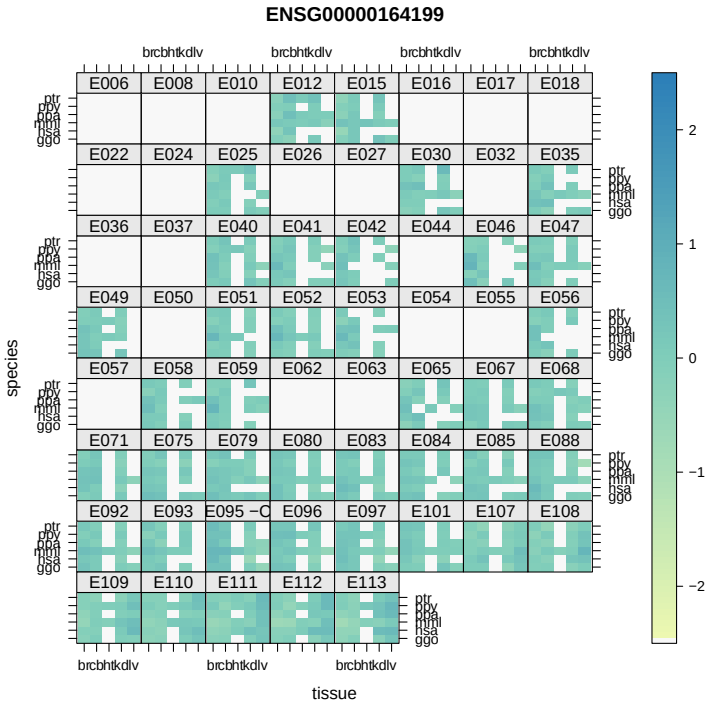

ENSG00000163638
brcbhtkdlv
brcbhtkdlv
brcbhtkdlv
E007
E008
E009
E011
E013
E014
E015
E019 −C
E020
E021
E022
E024
E025
E026
E027
E028
E029
E030
E033
E034
E035
E036
E037
E039
E040
E041
E043
E044
E047
E049
E050
E051
E053
E054
E056
E057
E059
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

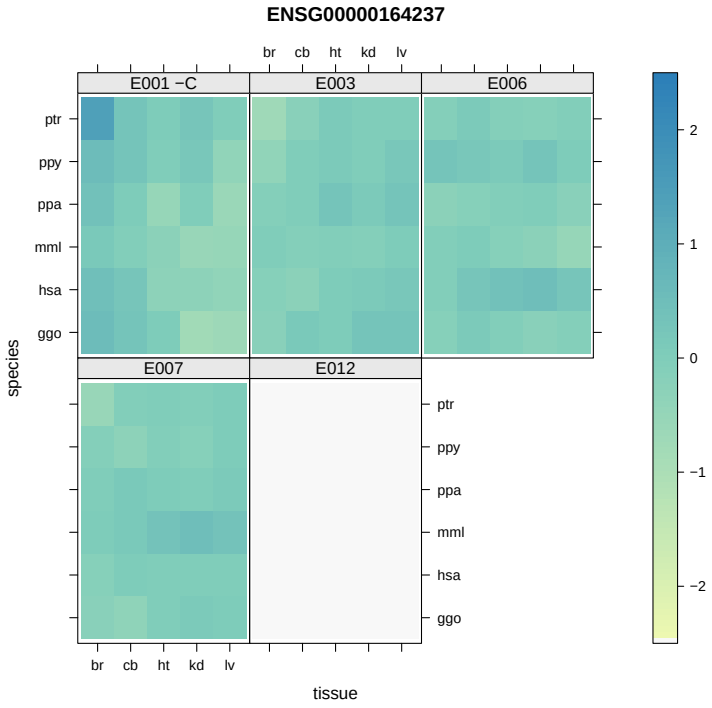

ENSG00000163754
br cb ht kd lv
E011
E017
E021
E025
E026
E036 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

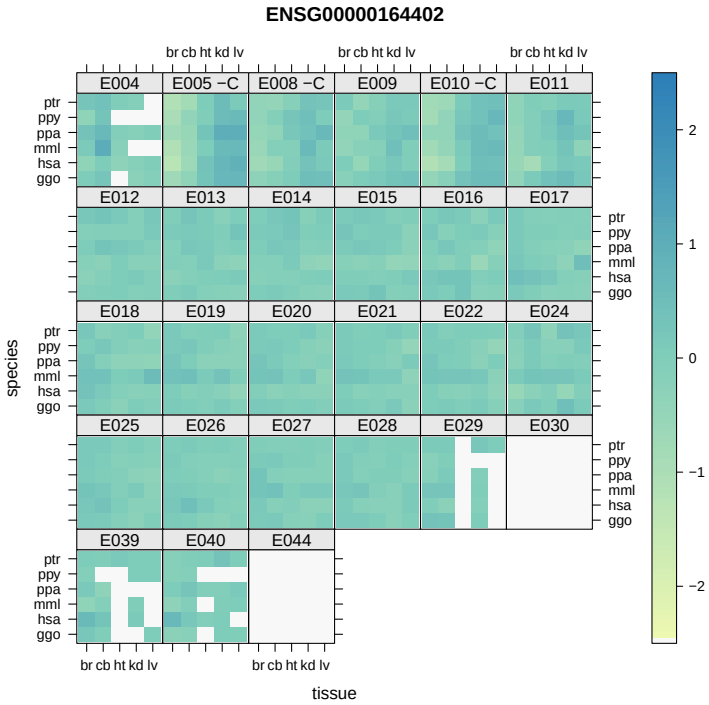

ENSG00000163875
br cb ht kd lv
E007
E010
E011
E012 −C
E013
E014
E015
E016
E019
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

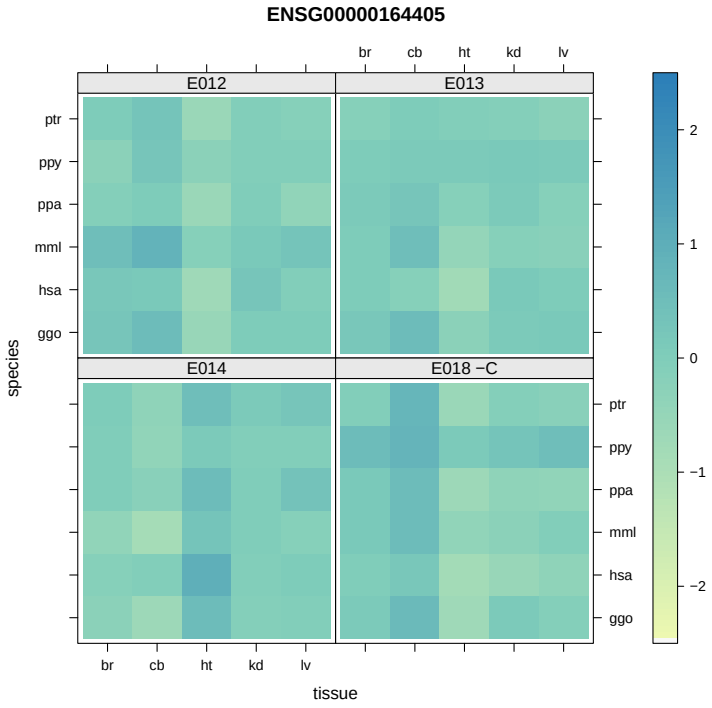

ENSG00000164022
br cb ht kd lv
E007
E008
E009
E010
E011
E012
E014
E015
E016 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

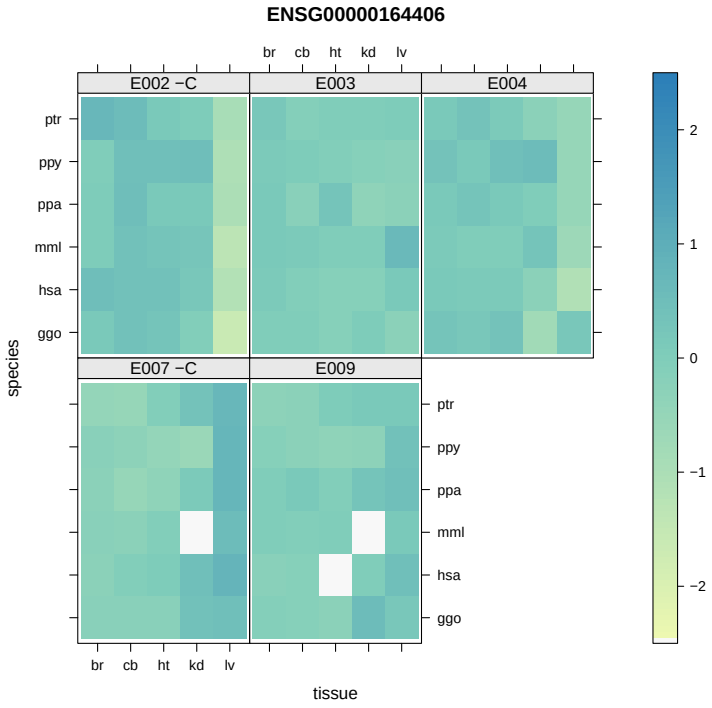

ENSG00000164117
br cb ht kd lv
E003
E004
E005
E006
E007
E008 −C
E009
E014
E015
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

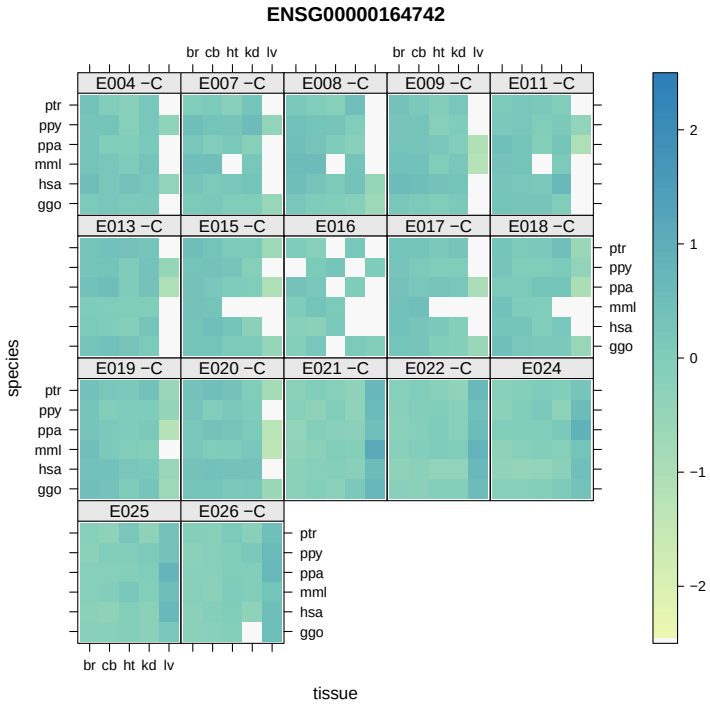

ENSG00000164199
brcbhtkdlv
E006
E008
E010
E012
E015
E016
E017
E018
E022
E024
E025
E026
E027
E030
E032
E035
E036
E037
E040
E041
E042
E044
E046
E047
E049
E050
E051
E052
E053
E054
E055
E056
E057
E058
E059
E062
E063
E065
E067
E068
E071
E075
E079
E080
E083
E084
E085
E088
E092
E093
E095 −C
E096
E097
E101
E107
E108
E109
E110
E111
E112
E113
ptr
ppy
ppa
mmul
nsa
ggo
species
tissue
2
1
0
−1
−2

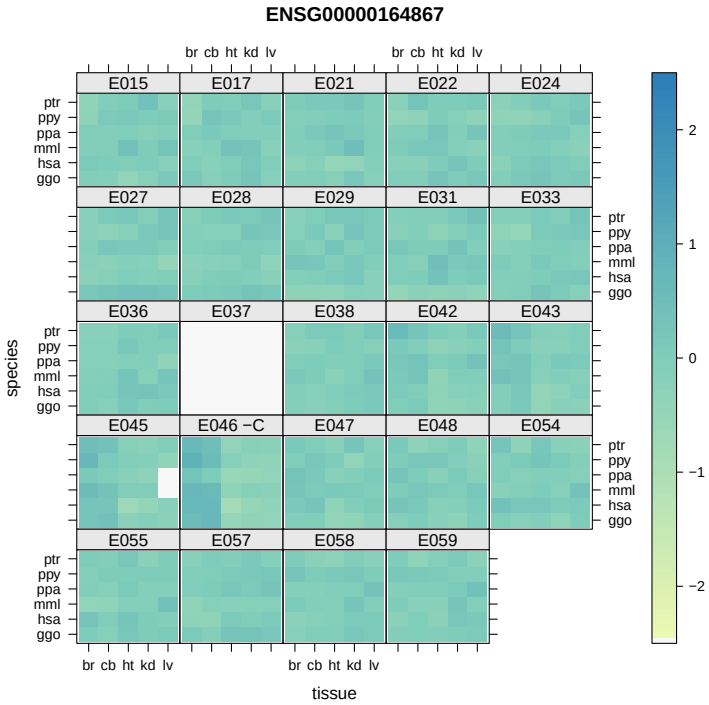

ENSG00000164237
br cb ht kd lv
E001 −C
E003
E006
E007
E012
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

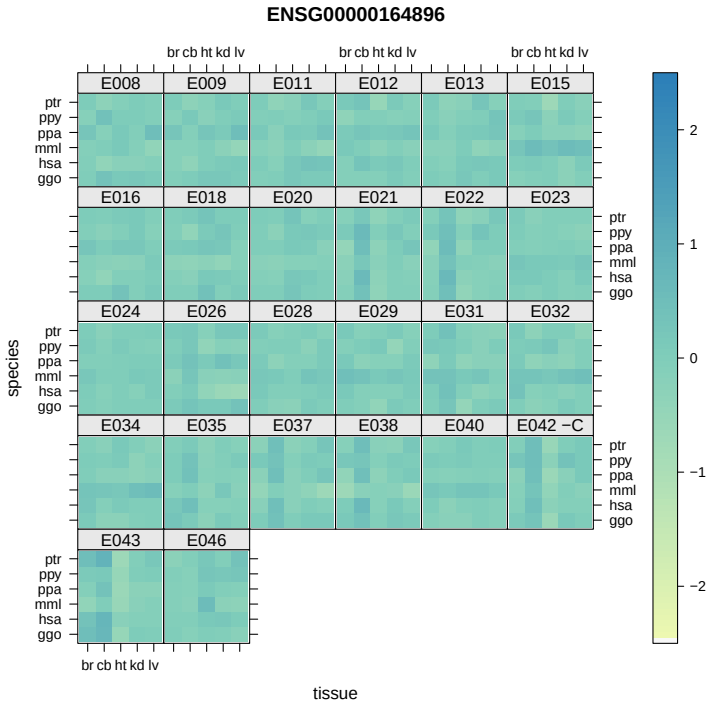

ENSG00000164402
br cb ht kd lv
E004
E005 −C
E008 −C
E009
E010 −C
E011
E012
E013
E014
E015
E016
E017
E018
E019
E020
E021
E022
E024
E025
E026
E027
E028
E029
E030
E039
E040
E044
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

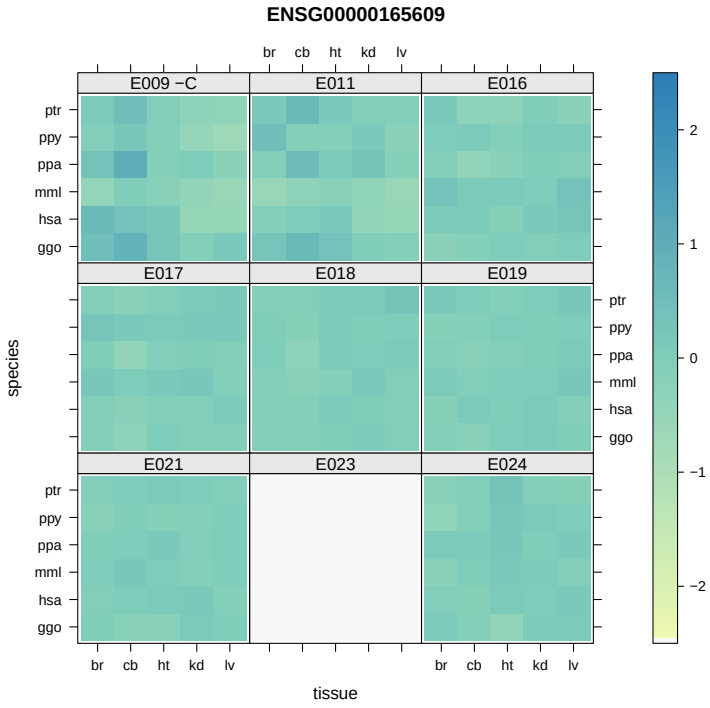

ENSG00000164405
br
cb
ht
kd
lv
E012
E013
E014
E018 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

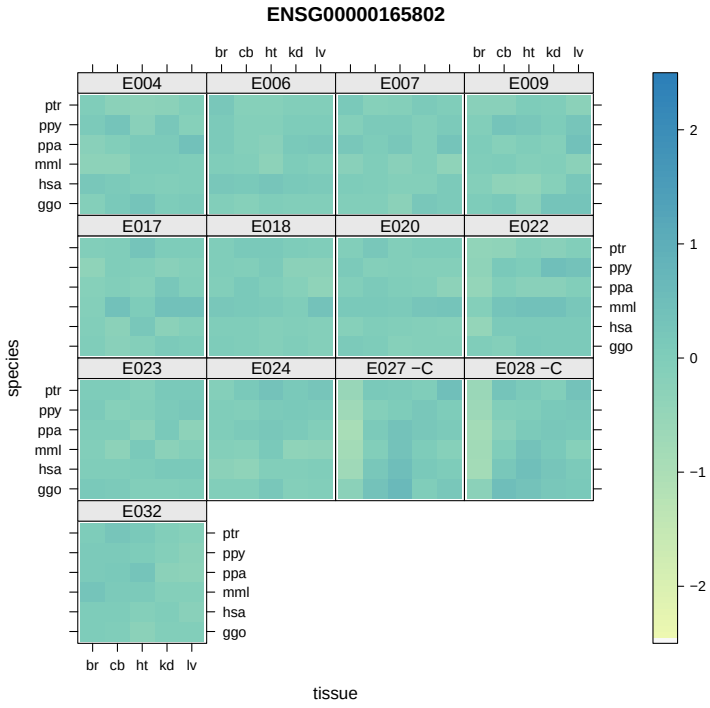

ENSG00000164406
br cb ht kd lv
E002 −C
E003
E004
E007 −C
E009
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

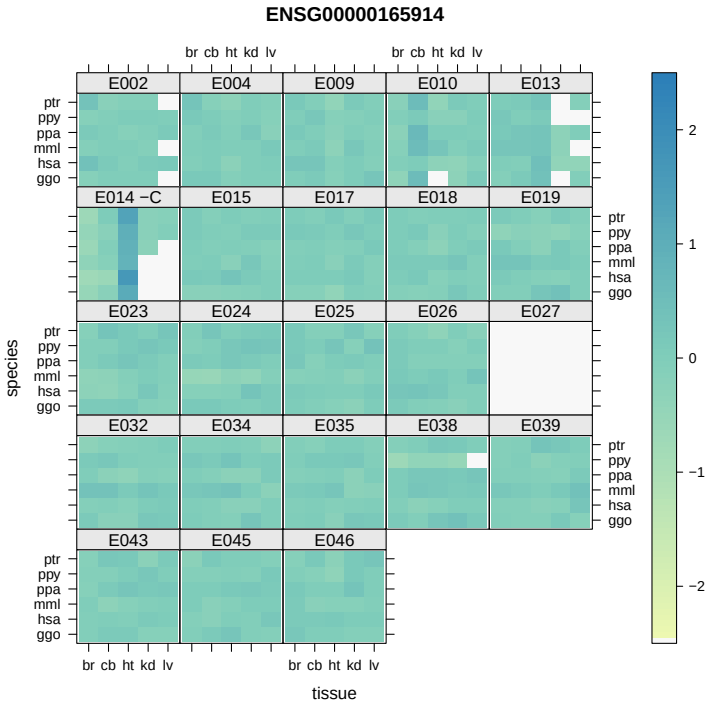

ENSG00000164742
br cb ht kd lv
E004 −C
E007 −C
E008 −C
E009 −C
E011 −C
E013 −C
E015 −C
E016
E017 −C
E018 −C
E019 −C
E020 −C
E021 −C
E022 −C
E024
E025
E026 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

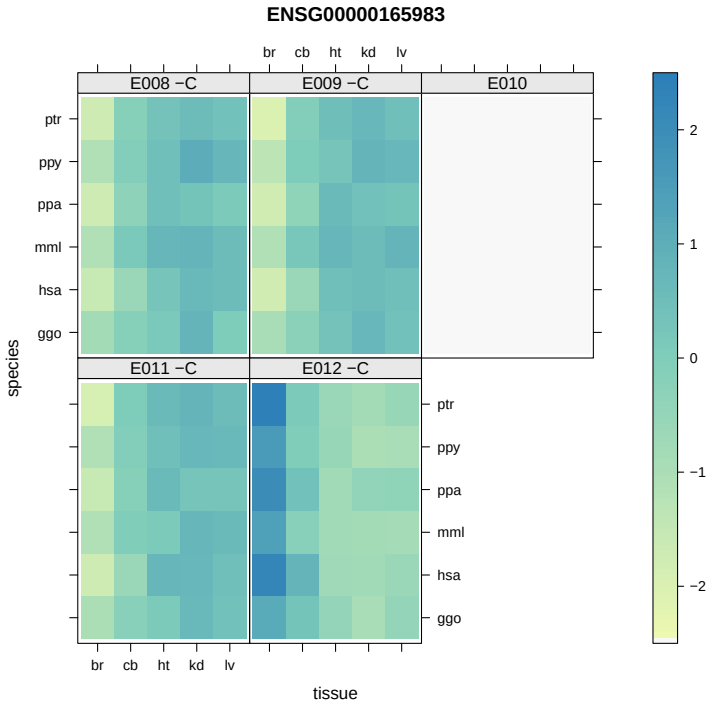

ENSG00000164867
E015
E017
E021
E022
E024
E027
E028
E029
E031
E033
E036
E037
E038
E042
E043
E045
E046 −C
E047
E048
E054
E055
E057
E058
E059
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

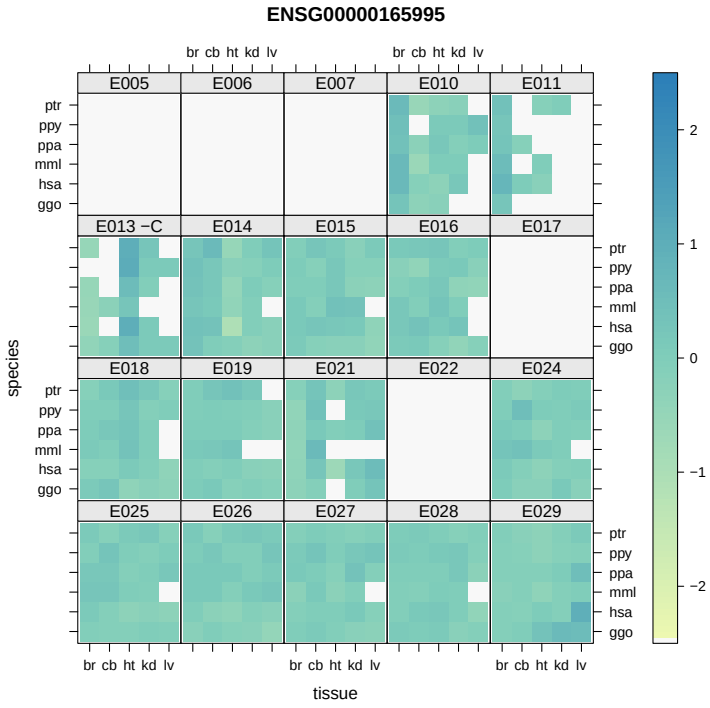

ENSG00000164896
br cb ht kd lv
E008
E009
E011
E012
E013
E015
E016
E018
E020
E021
E022
E023
E024
E026
E028
E029
E031
E032
E034
E035
E037
E038
E040
E042 −C
E043
E046
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

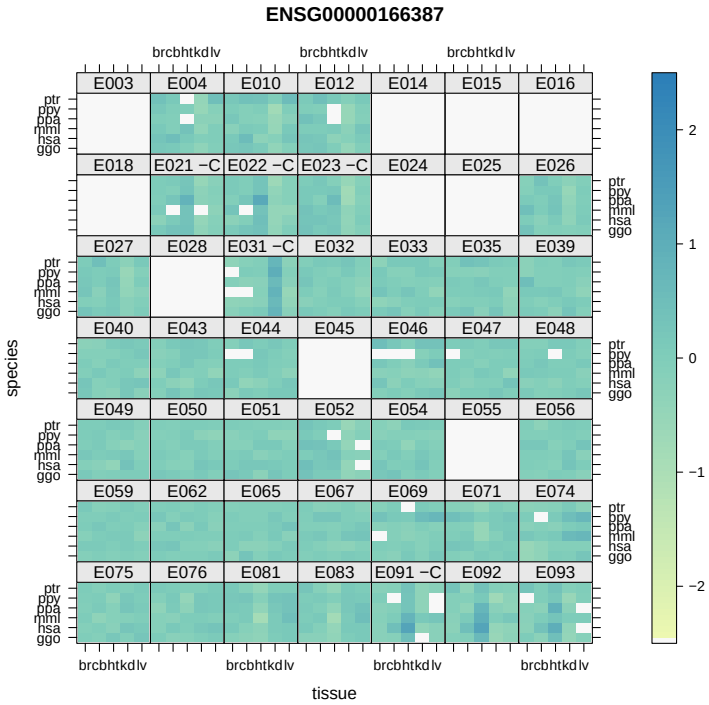

ENSG00000165609
br cb ht kd lv
E009 −C
E011
E016
E017
E018
E019
E021
E023
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

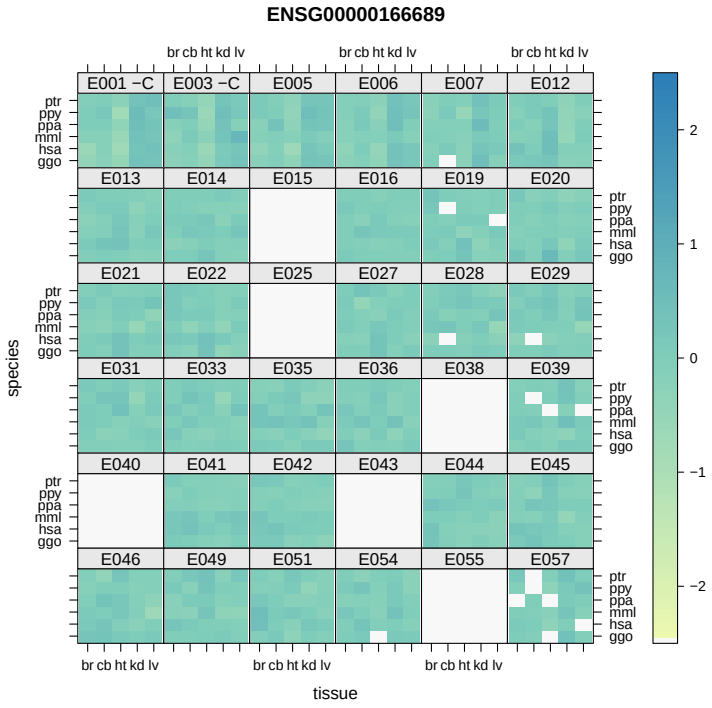

ENSG00000165802
E004
E006
E007
E009
E017
E018
E020
E022
E023
E024
E027 −C
E028 −C
E032
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

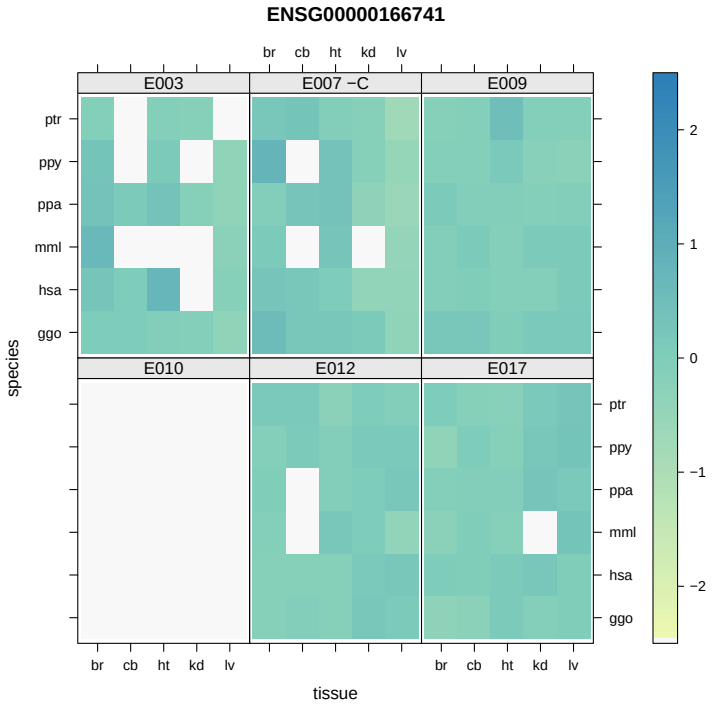

ENSG00000165914
br cb ht kd lv
E002
E004
E009
E010
E013
E014 −C
E015
E017
E018
E019
E023
E024
E025
E026
E027
E032
E034
E035
E038
E039
E043
E045
E046
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

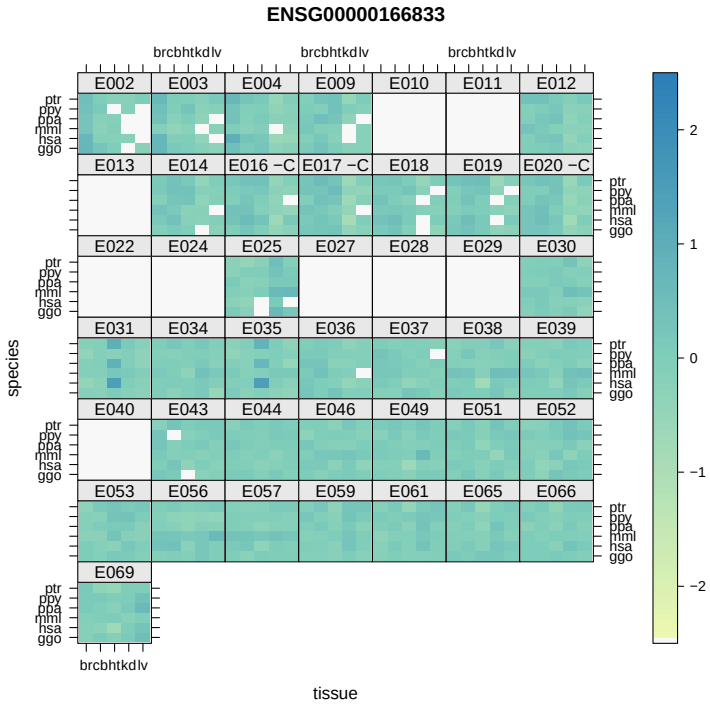

ENSG00000165983
br cb ht kd lv
E008 −C
E009 −C
E010
E011 −C
E012 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

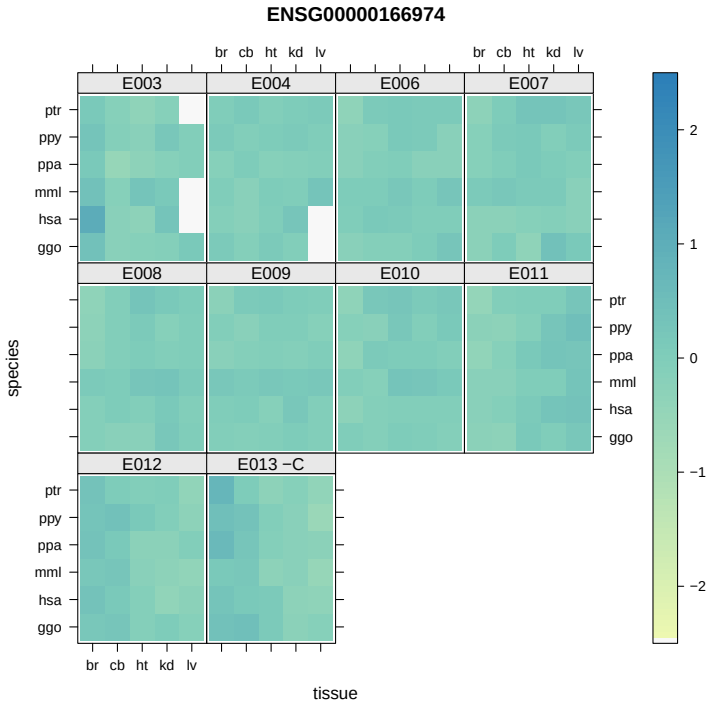

ENSG00000165995
E005
E006
E007
E010
E011
E013 −C
E014
E015
E016
E017
E018
E019
E021
E022
E024
E025
E026
E027
E028
E029
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

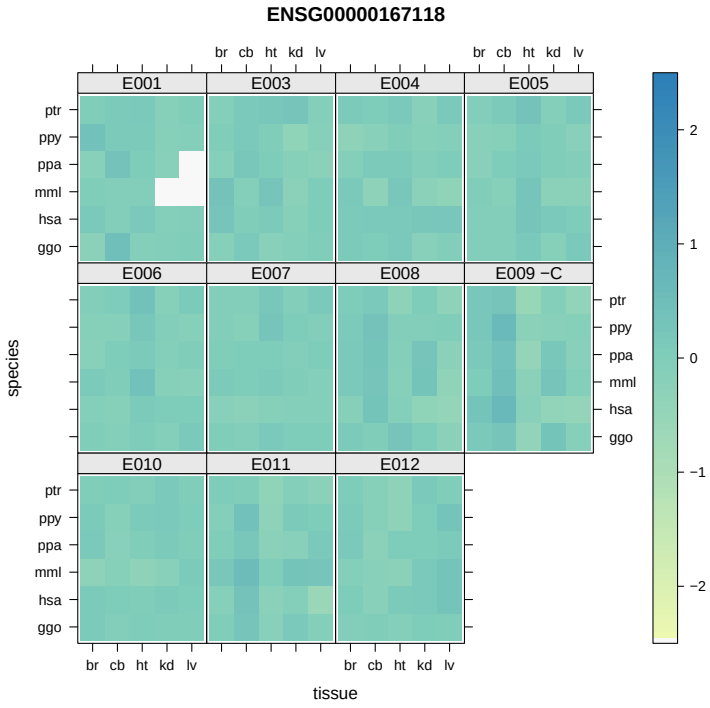

ENSG00000166387
brcbhtkdlv
E003
E004
E010
E012
E014
E015
E016
E018
E021 −C
E022 −C
E023 −C
E024
E025
E026
E027
E028
E031 −C
E032
E033
E035
E039
E040
E043
E044
E045
E046
E047
E048
E049
E050
E051
E052
E054
E055
E056
E059
E062
E065
E067
E069
E071
E074
E075
E076
E081
E083
E091 −C
E092
E093
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

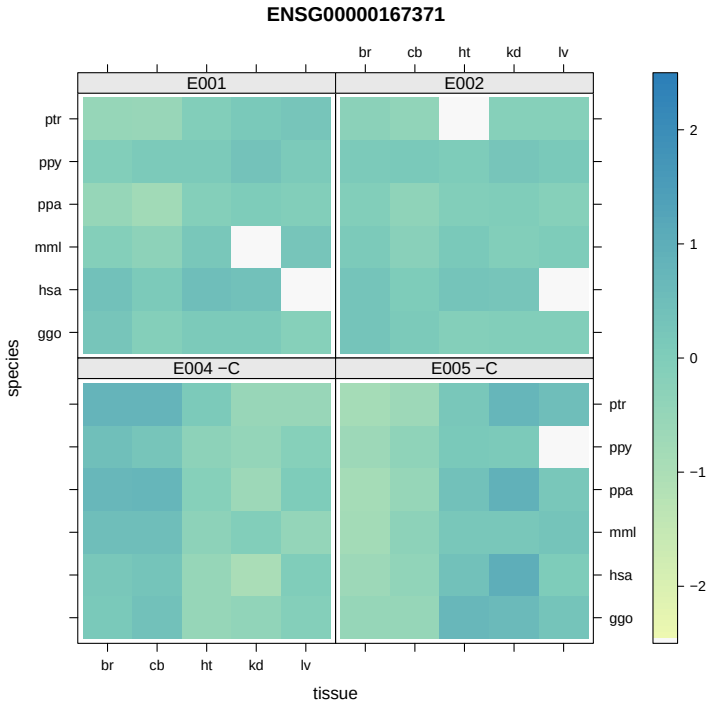

ENSG00000166689
E001 −C
E003 −C
E005
E006
E007
E012
E013
E014
E015
E016
E019
E020
E021
E022
E025
E027
E028
E029
E031
E033
E035
E036
E038
E039
E040
E041
E042
E043
E044
E045
E046
E049
E051
E054
E055
E057
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

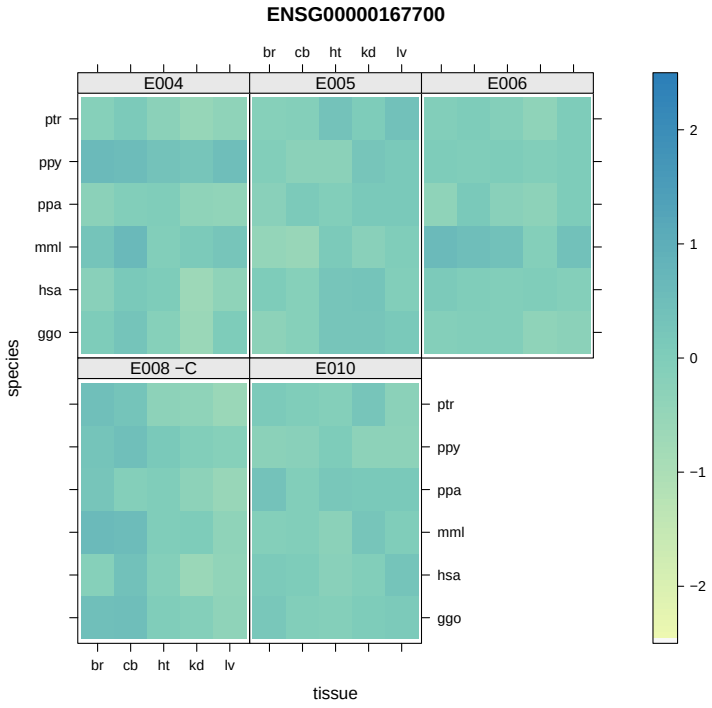

ENSG00000166741
br cb ht kd lv
E003
E007 −C
E009
E010
E012
E017
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

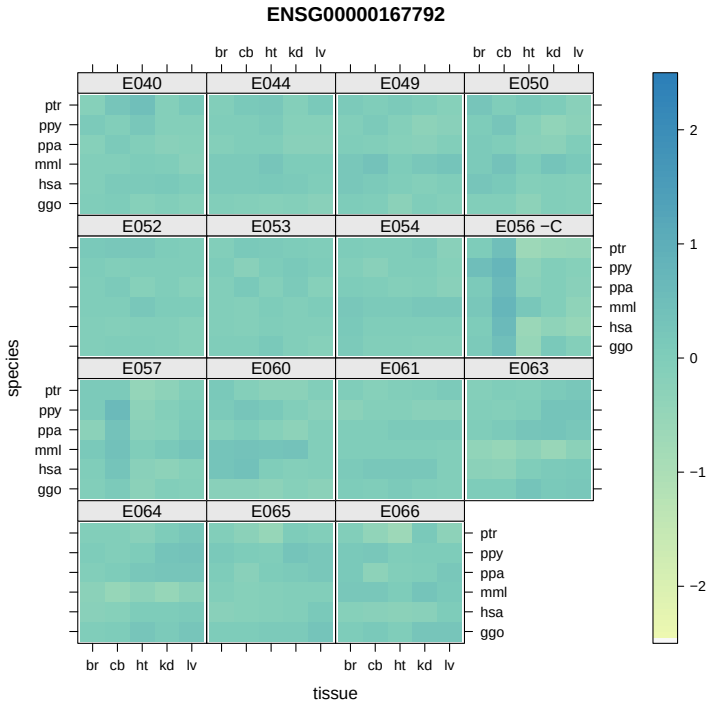

ENSG00000166833
brcbhtkdlv
E002
E003
E004
E009
E010
E011
E012
E013
E014
E016 −C
E017 −C
E018
E019
E020 −C
E022
E024
E025
E027
E028
E029
E030
E031
E034
E035
E036
E037
E038
E039
E040
E043
E044
E046
E049
E051
E052
E053
E056
E057
E059
E061
E065
E066
E069
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

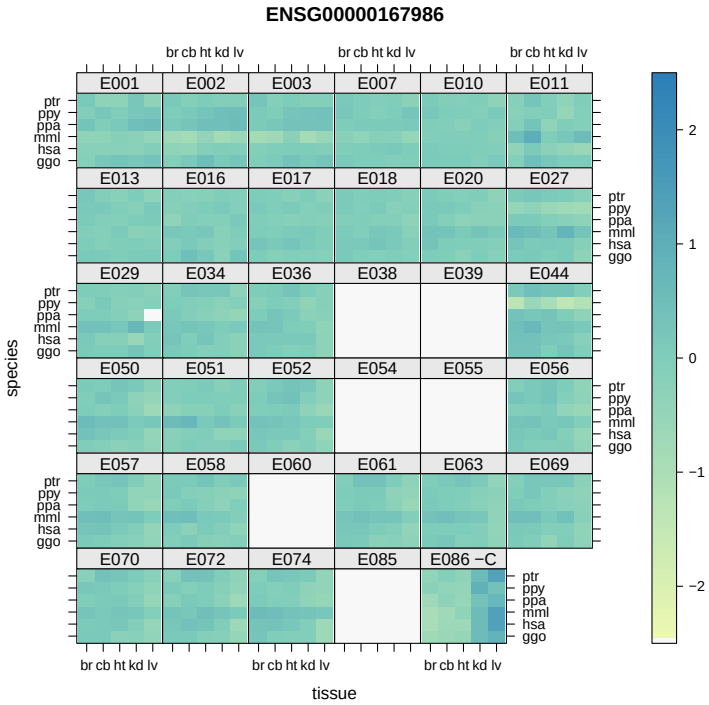

ENSG00000166974
E003
E004
E006
E007
E008
E009
E010
E011
E012
E013 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

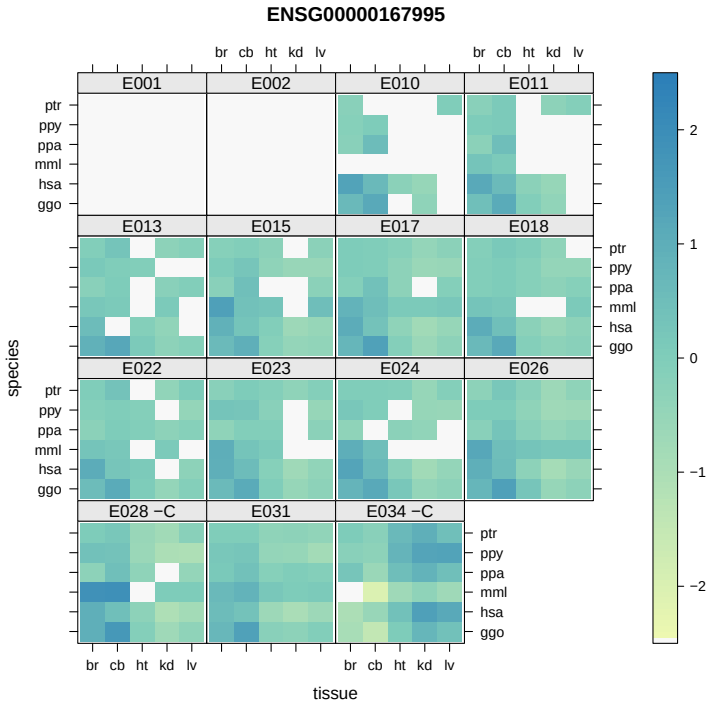

ENSG00000167118
E001
E003
E004
E005
E006
E007
E008
E009 −C
E010
E011
E012
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

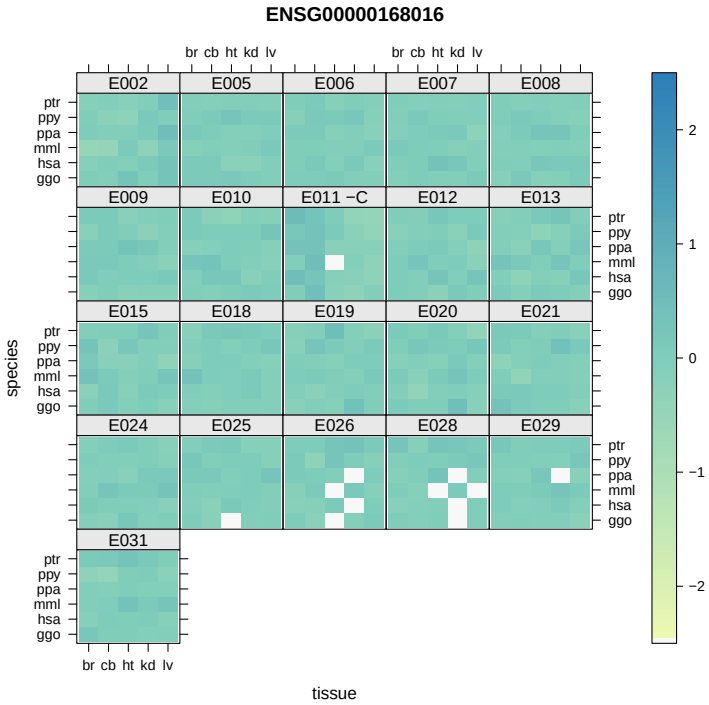

ENSG00000167371
br
cb
ht
kd
lv
E001
E002
E004 −C
E005 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

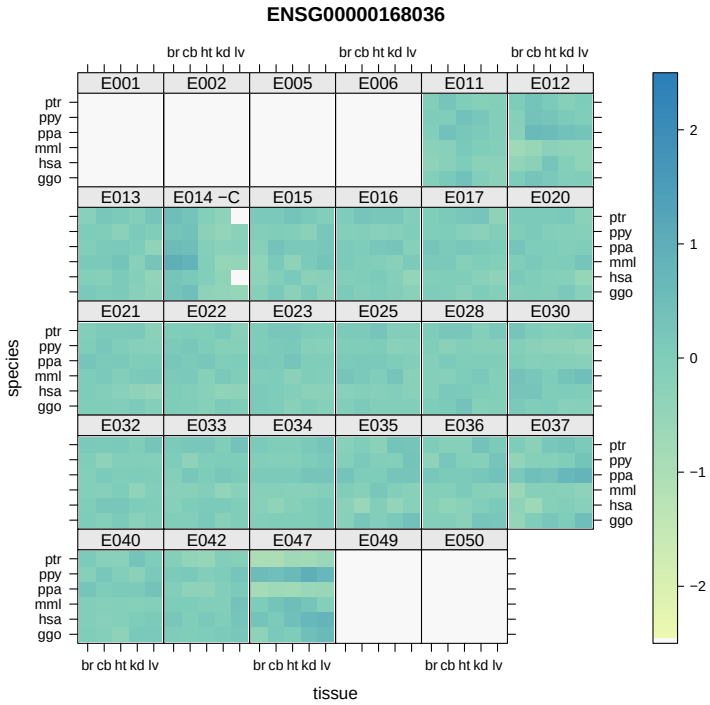

ENSG00000167700
br cb ht kd lv
E004
E005
E006
E008 −C
E010
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

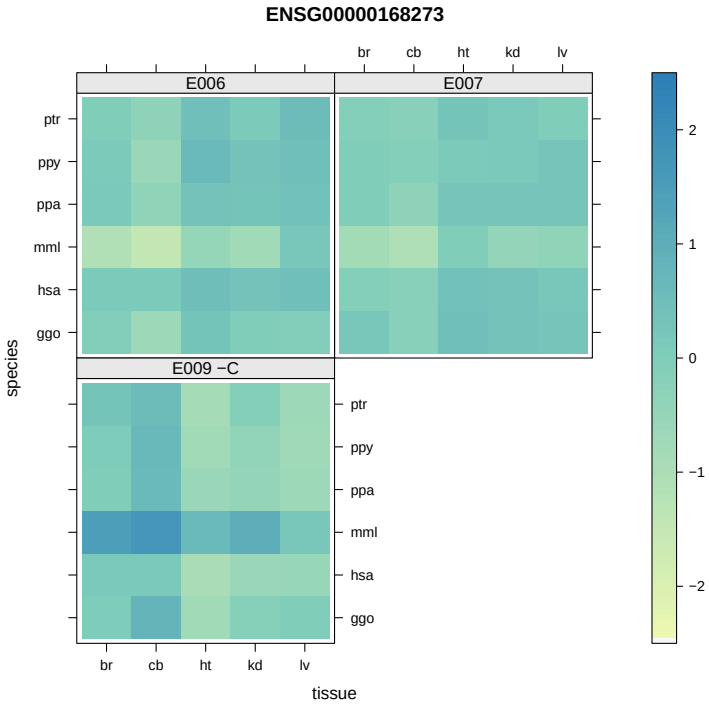

ENSG00000167792
E040
E044
E049
E050
E052
E053
E054
E056 −C
E057
E060
E061
E063
E064
E065
E066
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

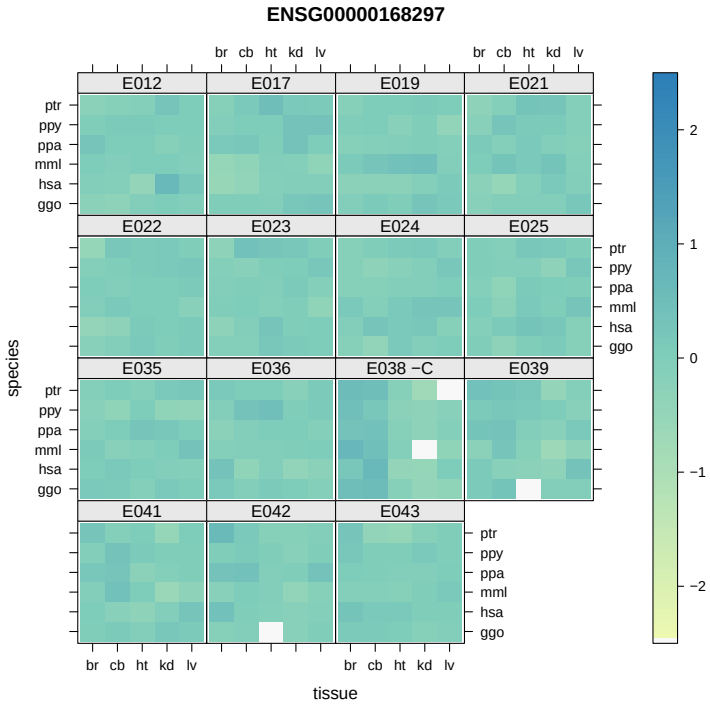

ENSG00000167986
br cb ht kd lv
E001
E002
E003
E007
E010
E011
E013
E016
E017
E018
E020
E027
E029
E034
E036
E038
E039
E044
E050
E051
E052
E054
E055
E056
E057
E058
E060
E061
E063
E069
E070
E072
E074
E085
E086 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

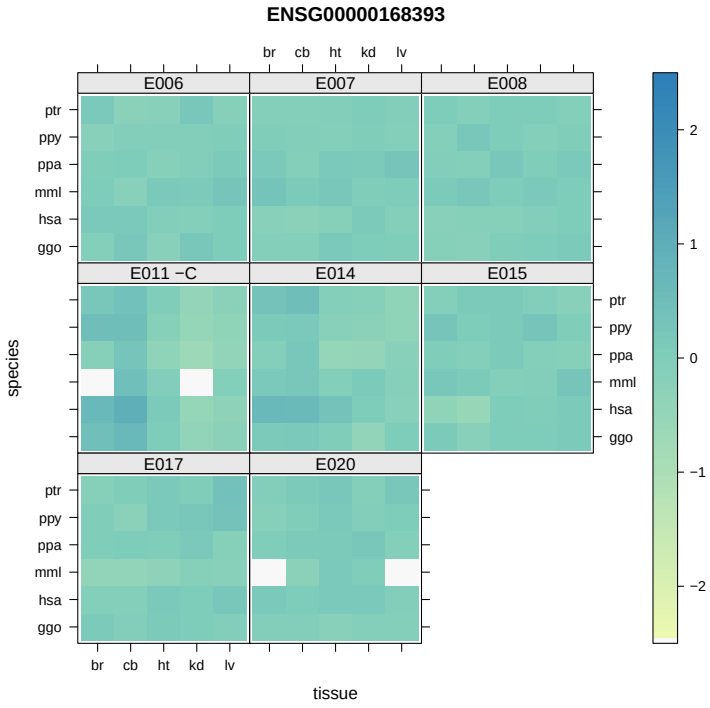

ENSG00000167995
E001
E002
E010
E011
E013
E015
E017
E018
E022
E023
E024
E026
E028 −C
E031
E034 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

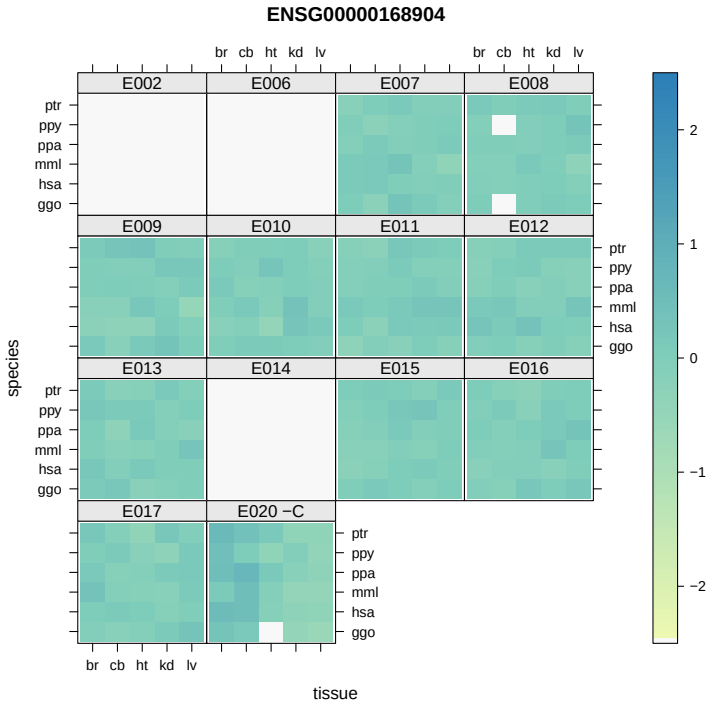

ENSG00000168016
br cb ht kd lv
E002
E005
E006
E007
E008
E009
E010
E011 −C
E012
E013
E015
E018
E019
E020
E021
E024
E025
E026
E028
E029
E031
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

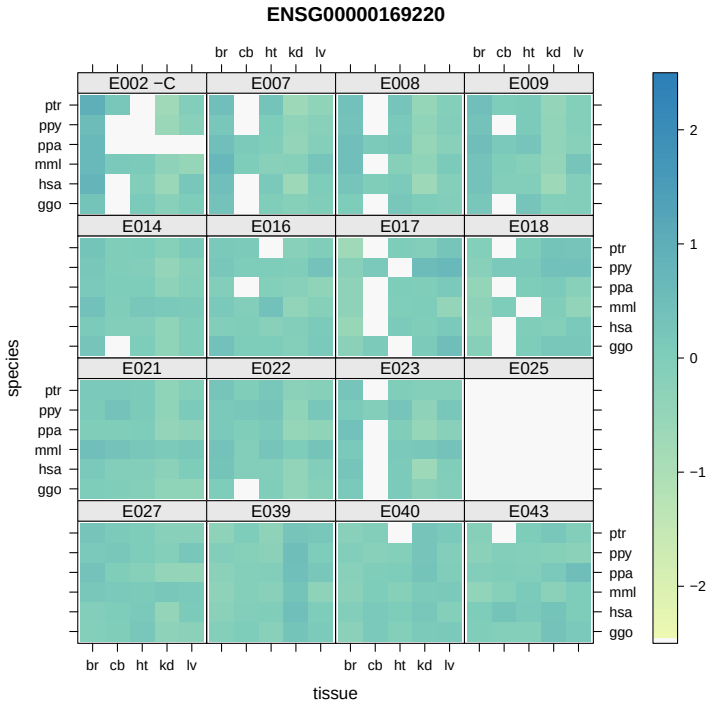

ENSG00000168036
E001
E002
E005
E006
E011
E012
E013
E014 −C
E015
E016
E017
E020
E021
E022
E023
E025
E028
E030
E032
E033
E034
E035
E036
E037
E040
E042
E047
E049
E050
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

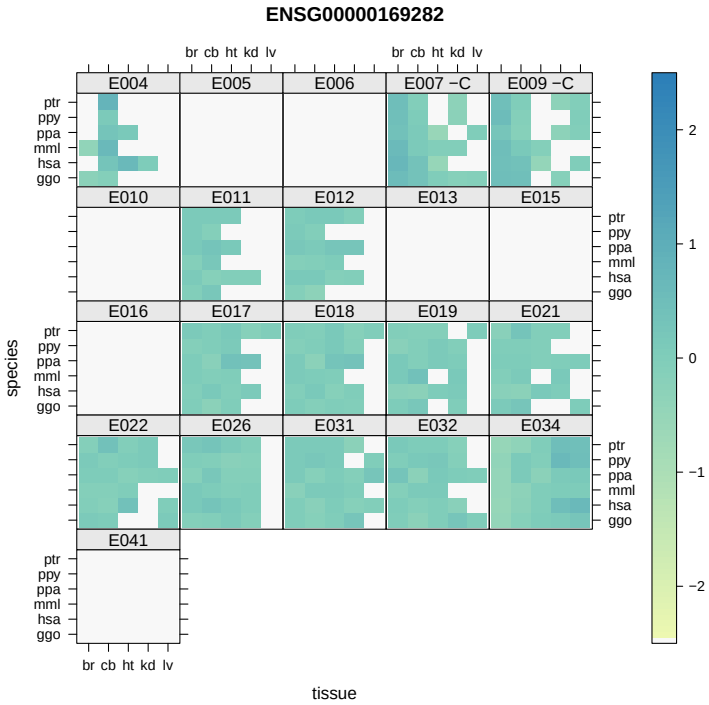

ENSG00000168273
br
cb
ht
kd
lv
E006
E007
E009 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

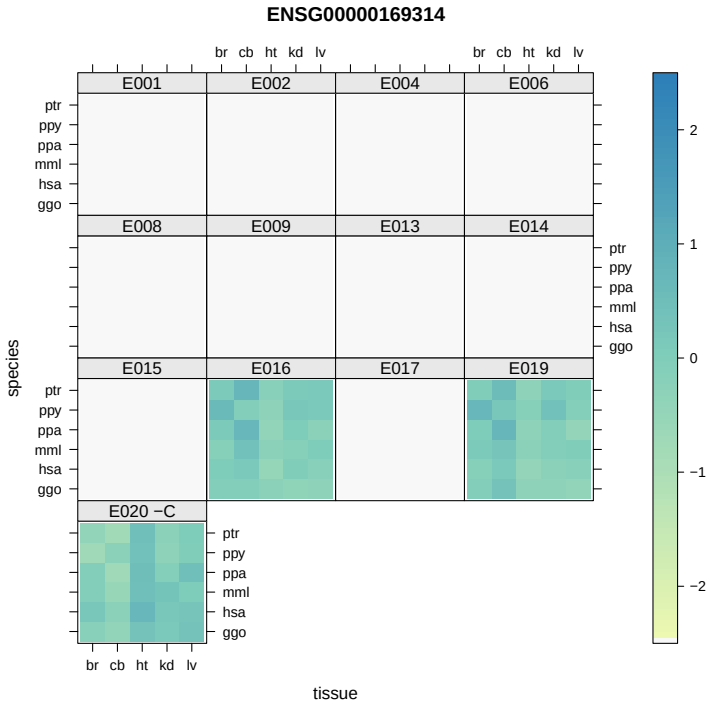

ENSG00000168297
E012
E017
E019
E021
E022
E023
E024
E025
E035
E036
E038 −C
E039
E041
E042
E043
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

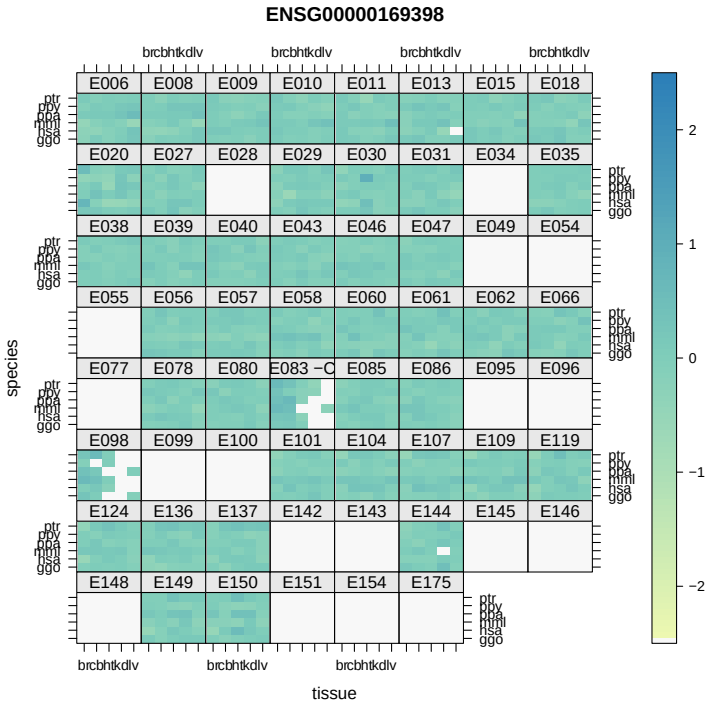

ENSG00000168393
br cb ht kd lv
E006
E007
E008
E011 −C
E014
E015
E017
E020
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

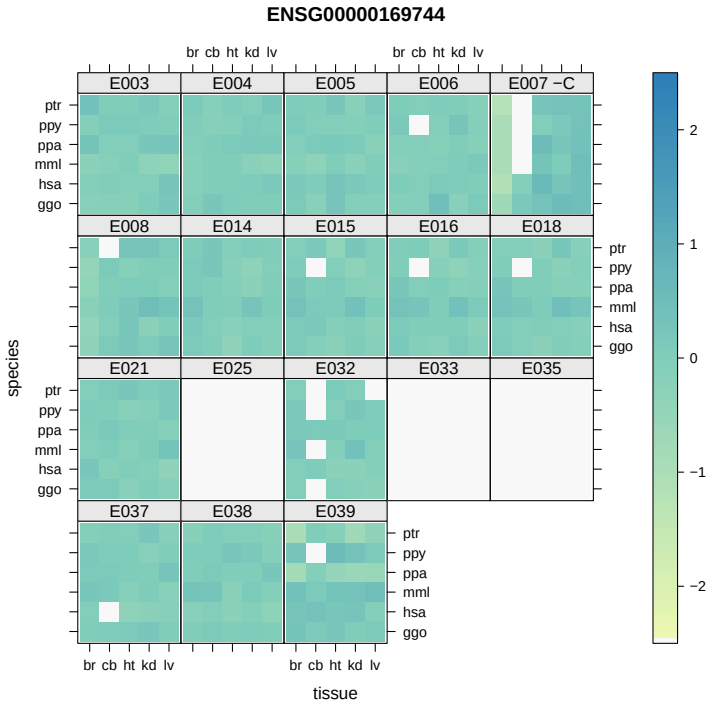

ENSG00000168904
E002
E006
E007
E008
E009
E010
E011
E012
E013
E014
E015
E016
E017
E020 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

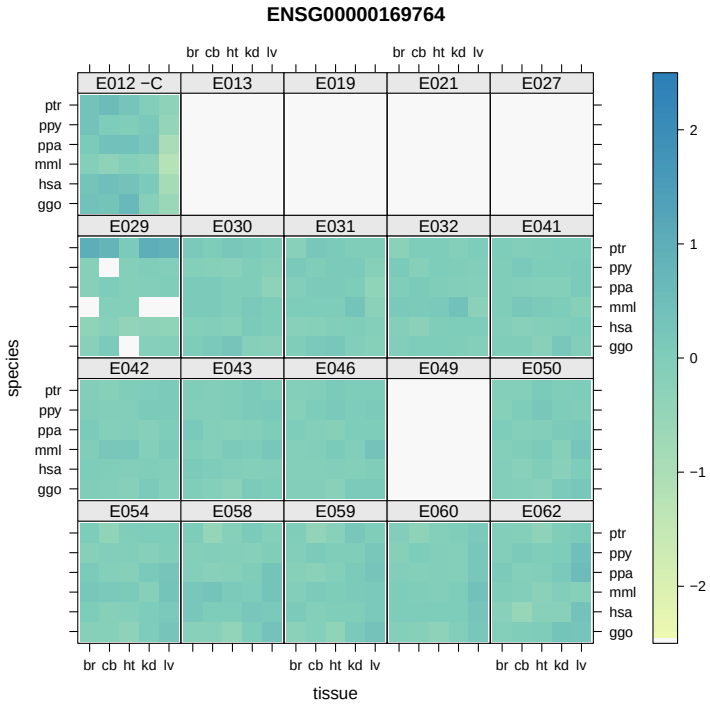

ENSG00000169220
E002 −C
E007
E008
E009
E014
E016
E017
E018
E021
E022
E023
E025
E027
E039
E040
E043
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

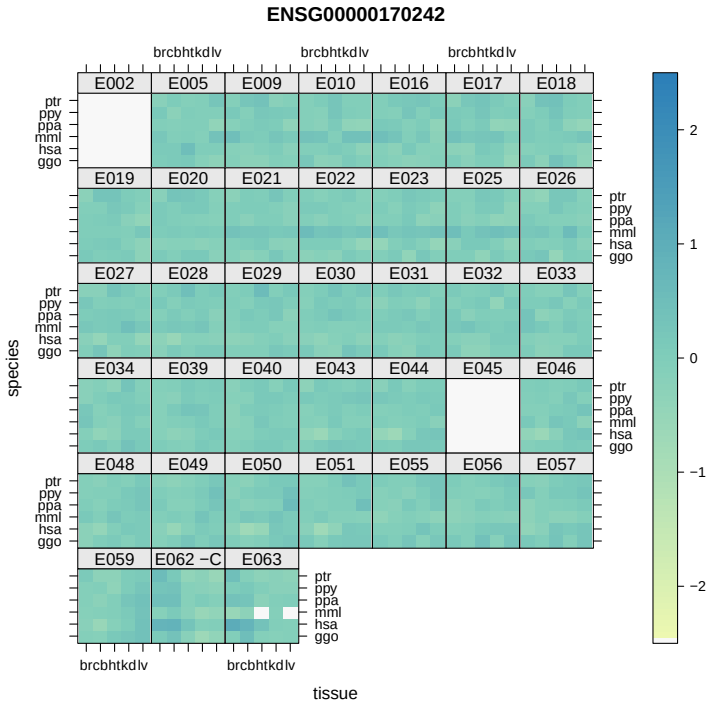

ENSG00000169282
br cb ht kd lv
E004
E005
E006
E007 −C
E009 −C
E010
E011
E012
E013
E015
E016
E017
E018
E019
E021
E022
E026
E031
E032
E034
E041
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

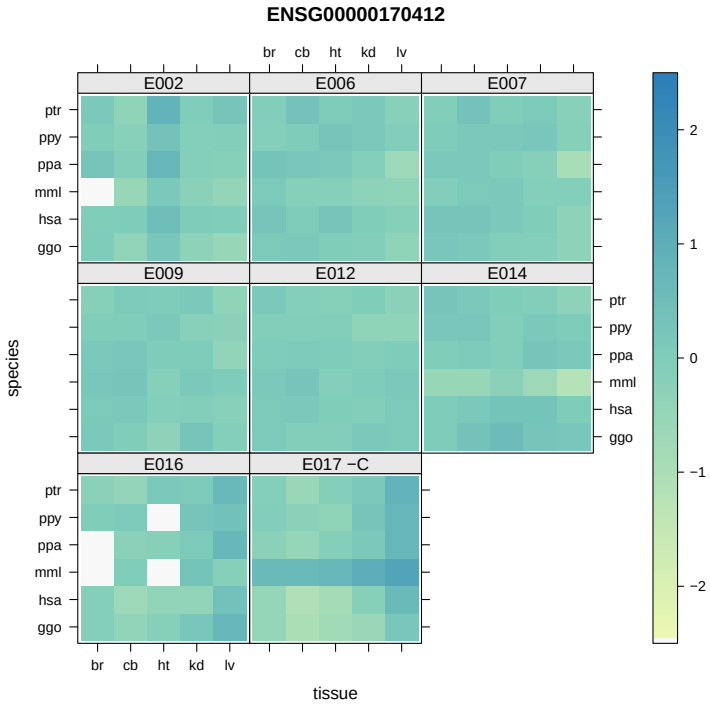

ENSG00000169314
E001
E002
E004
E006
E008
E009
E013
E014
E015
E016
E017
E019
E020 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

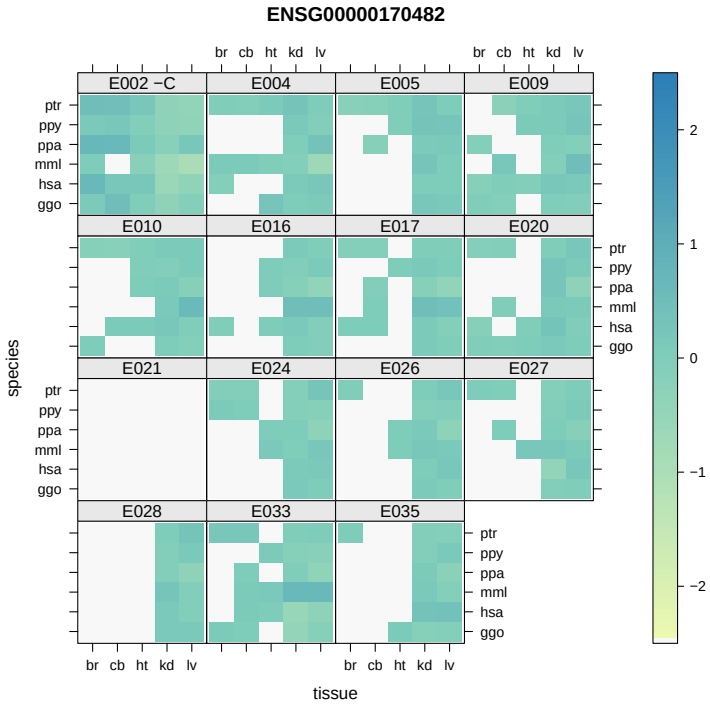

ENSG00000169398
brcbhtkdlv
E006
E008
E009
E010
E011
E013
E015
E018
E020
E027
E028
E029
E030
E031
E034
E035
E038
E039
E040
E043
E046
E047
E049
E054
E055
E056
E057
E058
E060
E061
E062
E066
E077
E078
E080
E083 −C
E085
E086
E095
E096
E098
E099
E100
E101
E104
E107
E109
E119
E124
E136
E137
E142
E143
E144
E145
E146
E148
E149
E150
E151
E154
E175
ptr
ppy
pba
nmm
nsa
ggo
species
tissue
2
1
0
−1
−2

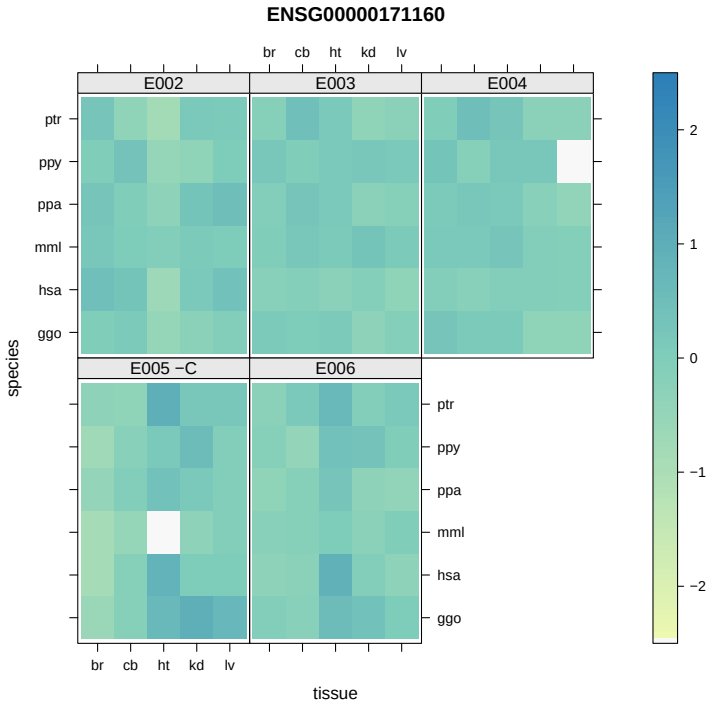

ENSG00000169744
E003
E004
E005
E006
E007 −C
E008
E014
E015
E016
E018
E021
E025
E032
E033
E035
E037
E038
E039
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

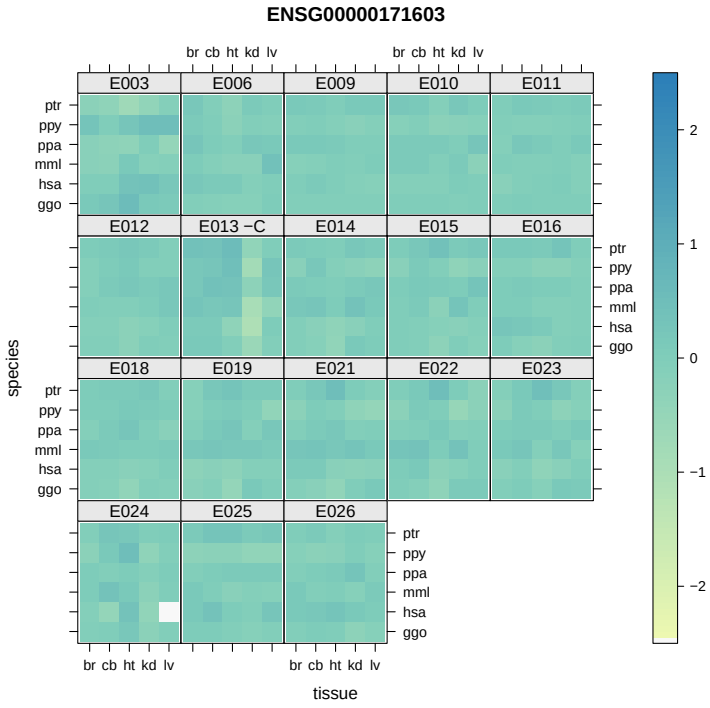

ENSG00000169764
E012 −C
E013
E019
E021
E027
E029
E030
E031
E032
E041
E042
E043
E046
E049
E050
E054
E058
E059
E060
E062
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

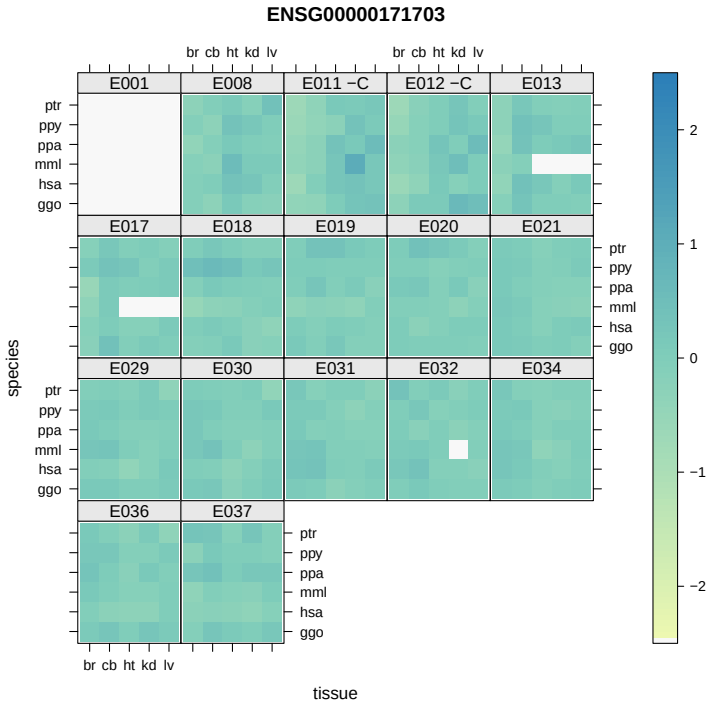

ENSG00000170242
brcbhtkdlv
brcbhtkdlv
brcbhtkdlv
E002
E005
E009
E010
E016
E017
E018
E019
E020
E021
E022
E023
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E039
E040
E043
E044
E045
E046
E048
E049
E050
E051
E055
E056
E057
E059
E062 −C
E063
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

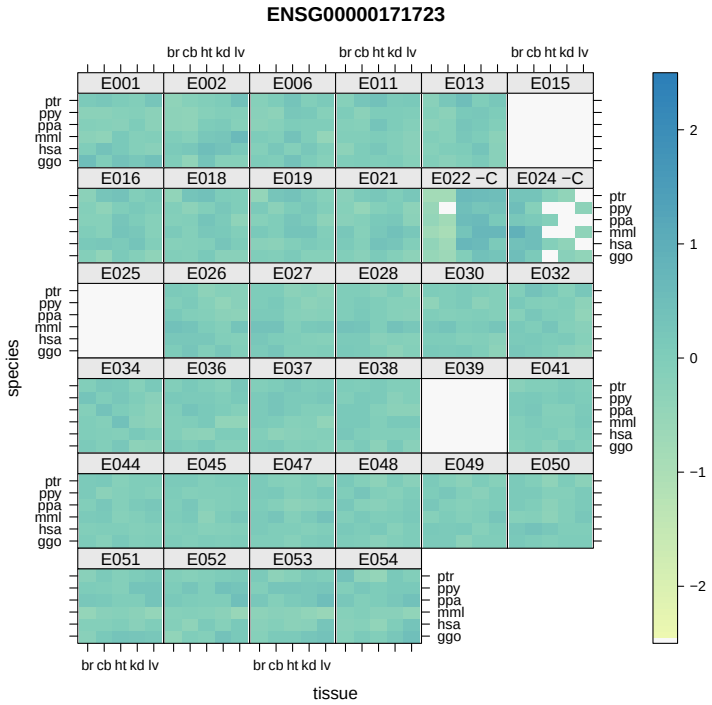

ENSG00000170412
br cb ht kd lv
E002
E006
E007
E009
E012
E014
E016
E017 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

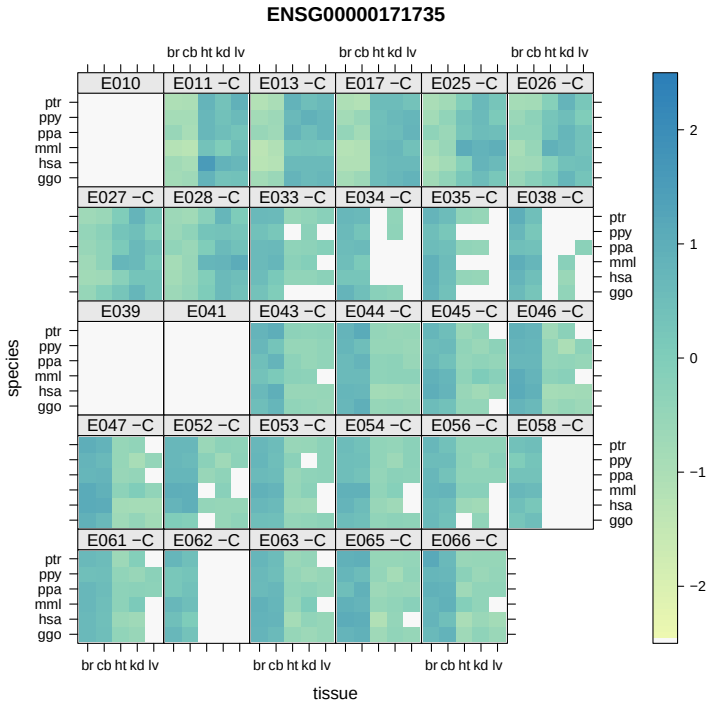

ENSG00000170482
E002 −C
E004
E005
E009
E010
E016
E017
E020
E021
E024
E026
E027
E028
E033
E035
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

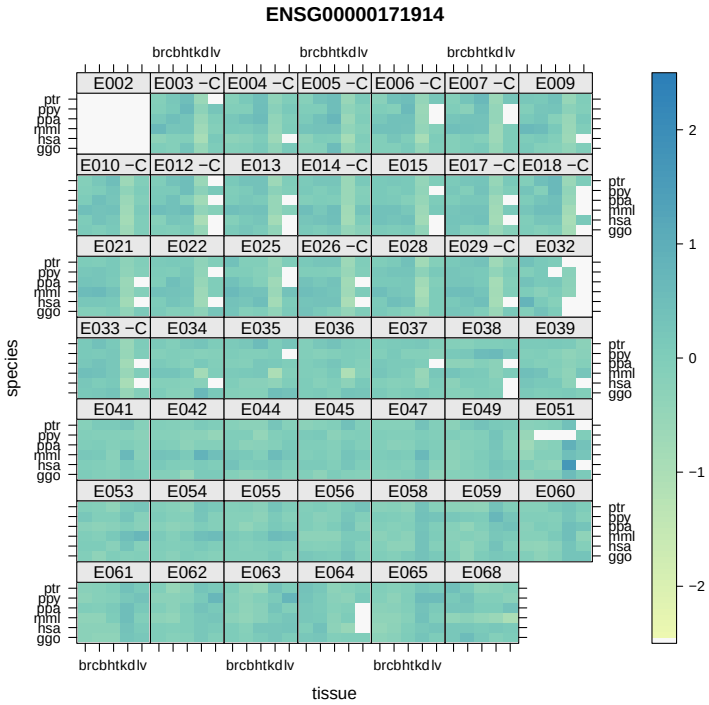

ENSG00000171160
br cb ht kd lv
E002
E003
E004
E005 −C
E006
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

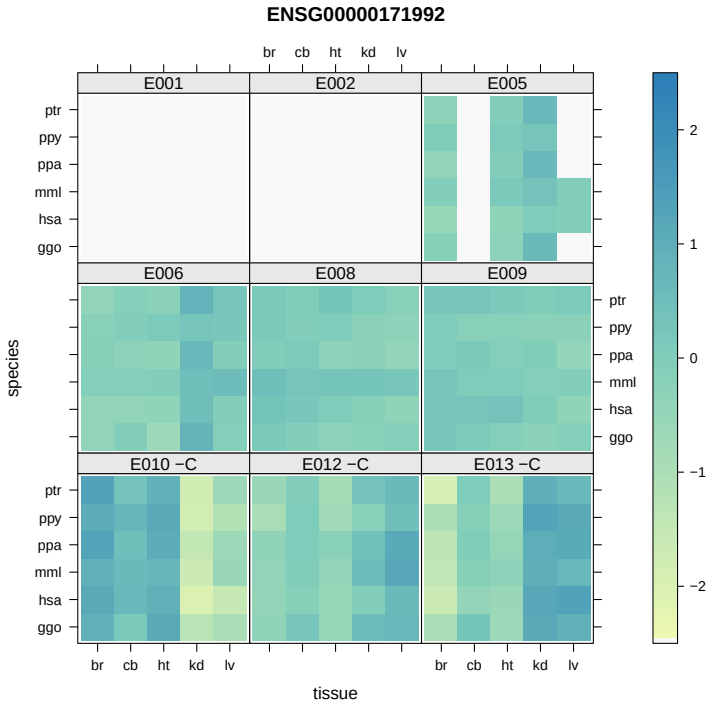

ENSG00000171603
E003
E006
E009
E010
E011
E012
E013 −C
E014
E015
E016
E018
E019
E021
E022
E023
E024
E025
E026
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

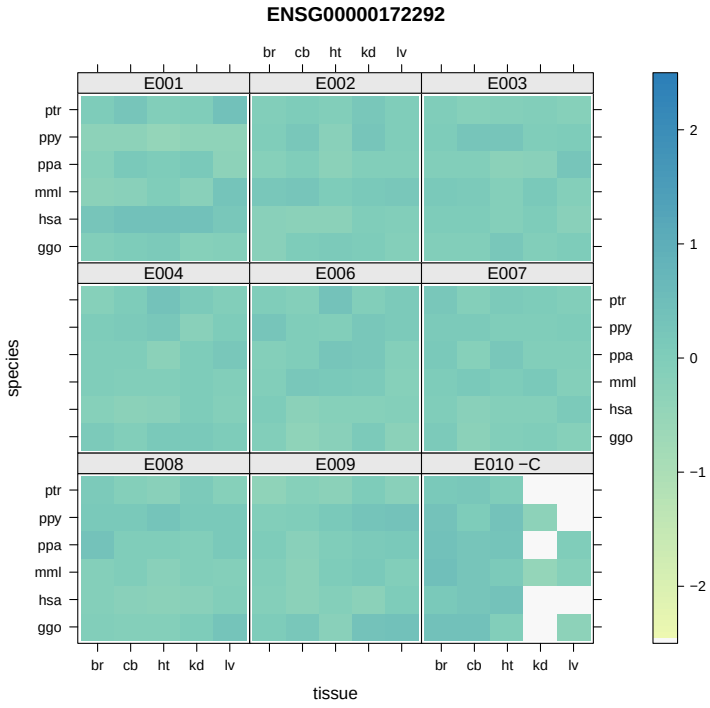

ENSG00000171703
br cb ht kd lv
E001
E008
E011 −C
E012 −C
E013
E017
E018
E019
E020
E021
E029
E030
E031
E032
E034
E036
E037
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

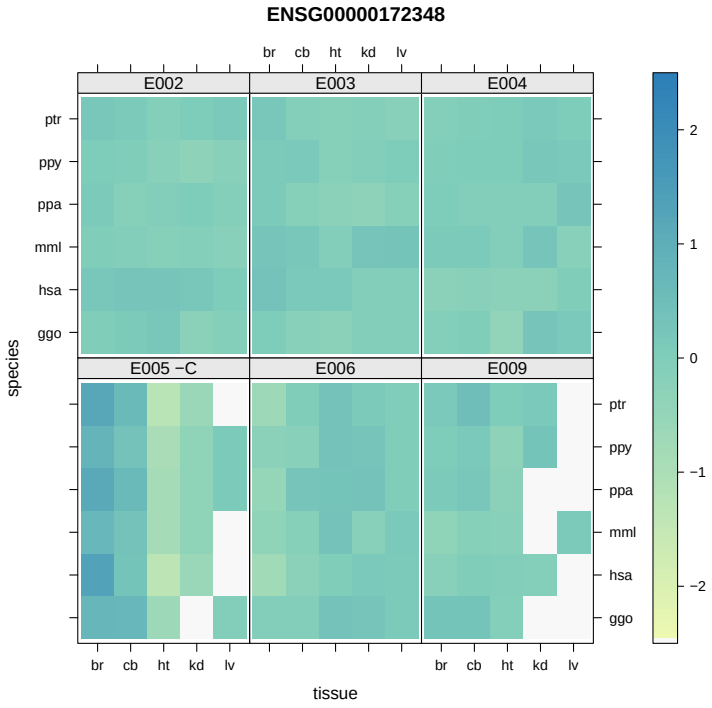

ENSG00000171723
br cb ht kd lv
E001
E002
E006
E011
E013
E015
E016
E018
E019
E021
E022 −C
E024 −C
E025
E026
E027
E028
E030
E032
E034
E036
E037
E038
E039
E041
E044
E045
E047
E048
E049
E050
E051
E052
E053
E054
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

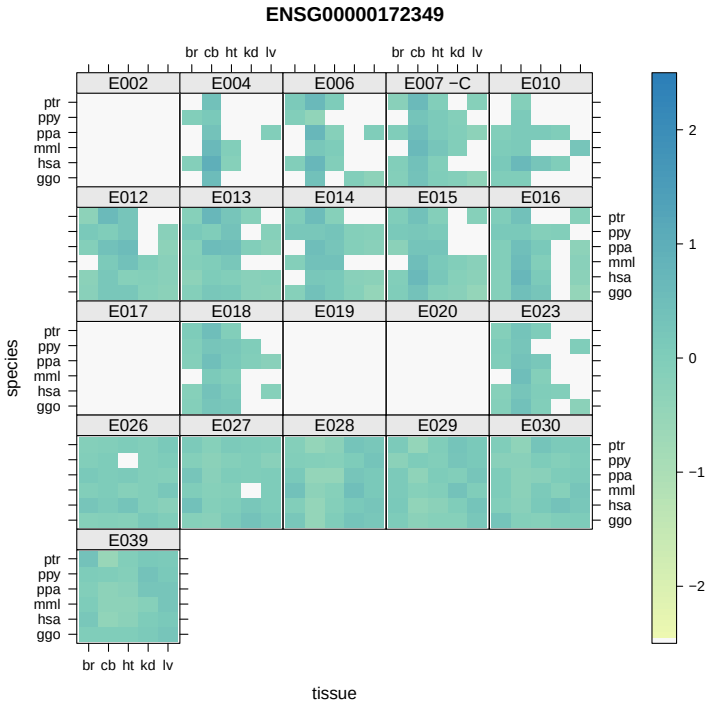

ENSG00000171735
E010
E011 −C
E013 −C
E017 −C
E025 −C
E026 −C
E027 −C
E028 −C
E033 −C
E034 −C
E035 −C
E038 −C
E039
E041
E043 −C
E044 −C
E045 −C
E046 −C
E047 −C
E052 −C
E053 −C
E054 −C
E056 −C
E058 −C
E061 −C
E062 −C
E063 −C
E065 −C
E066 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

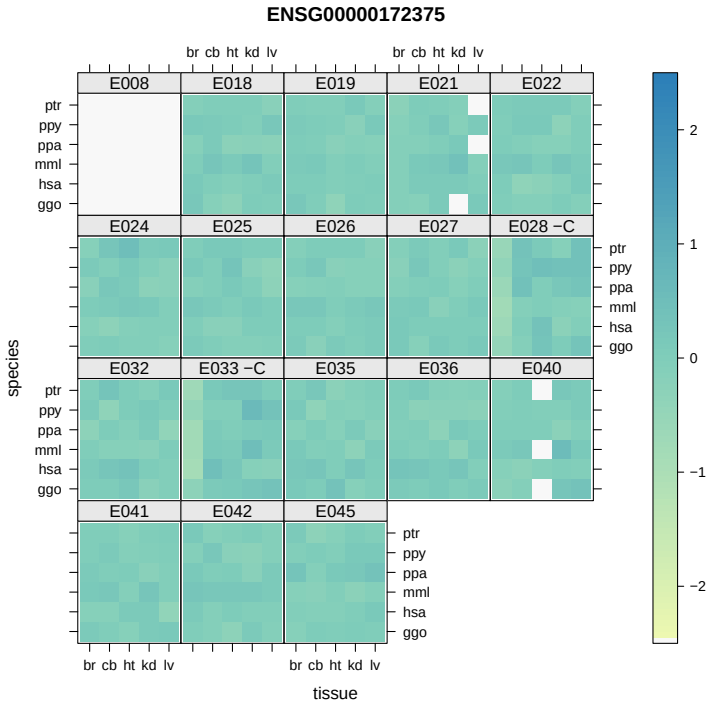

ENSG00000171914
brcbhtkdlv
E002
E003 −C
E004 −C
E005 −C
E006 −C
E007 −C
E009
E010 −C
E012 −C
E013
E014 −C
E015
E017 −C
E018 −C
E021
E022
E025
E026 −C
E028
E029 −C
E032
E033 −C
E034
E035
E036
E037
E038
E039
E041
E042
E044
E045
E047
E049
E051
E053
E054
E055
E056
E058
E059
E060
E061
E062
E063
E064
E065
E068
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

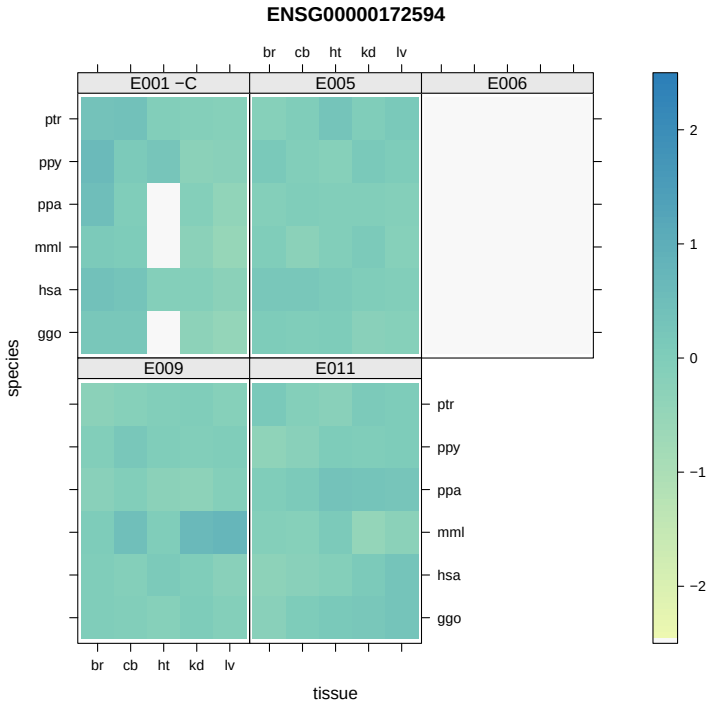

ENSG00000171992
E001
E002
E005
E006
E008
E009
E010 −C
E012 −C
E013 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

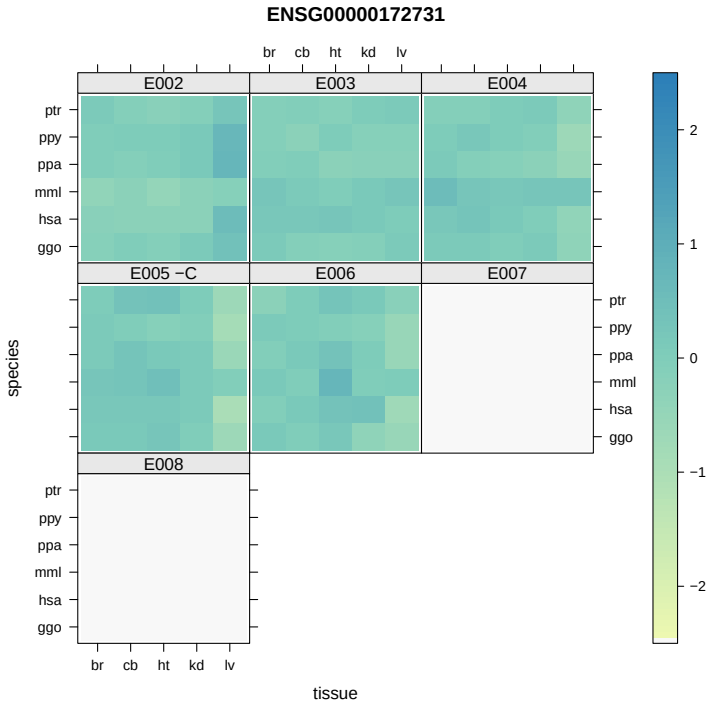

ENSG00000172292
br cb ht kd lv
E001
E002
E003
E004
E006
E007
E008
E009
E010 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

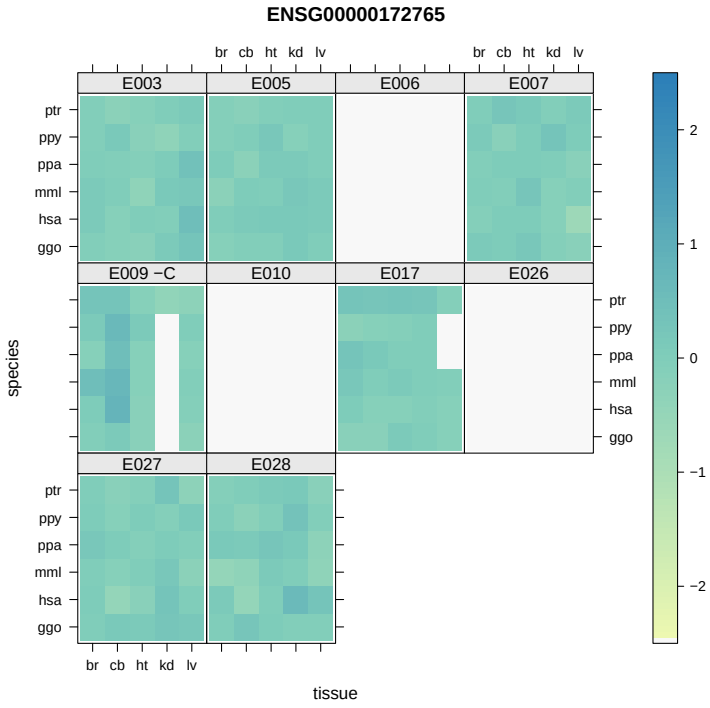

ENSG00000172348
br cb ht kd lv
E002
E003
E004
E005 −C
E006
E009
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

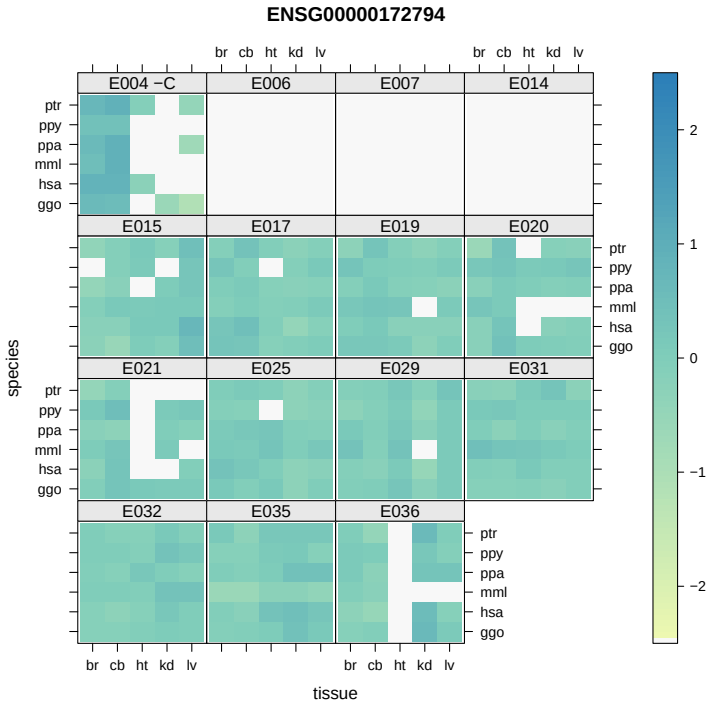

ENSG00000172349
E002
E004
E006
E007 −C
E010
E012
E013
E014
E015
E016
E017
E018
E019
E020
E023
E026
E027
E028
E029
E030
E039
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

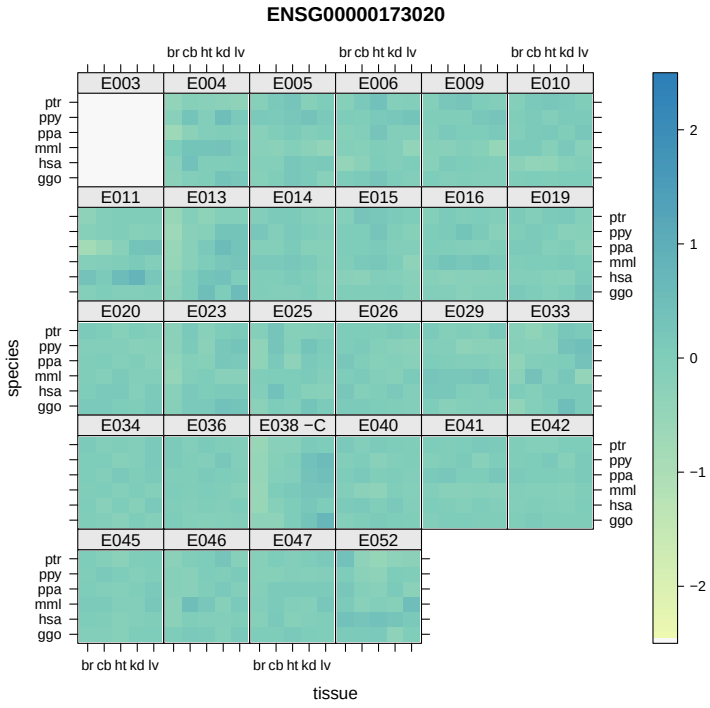

ENSG00000172375
E008
E018
E019
E021
E022
E024
E025
E026
E027
E028 −C
E032
E033 −C
E035
E036
E040
E041
E042
E045
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

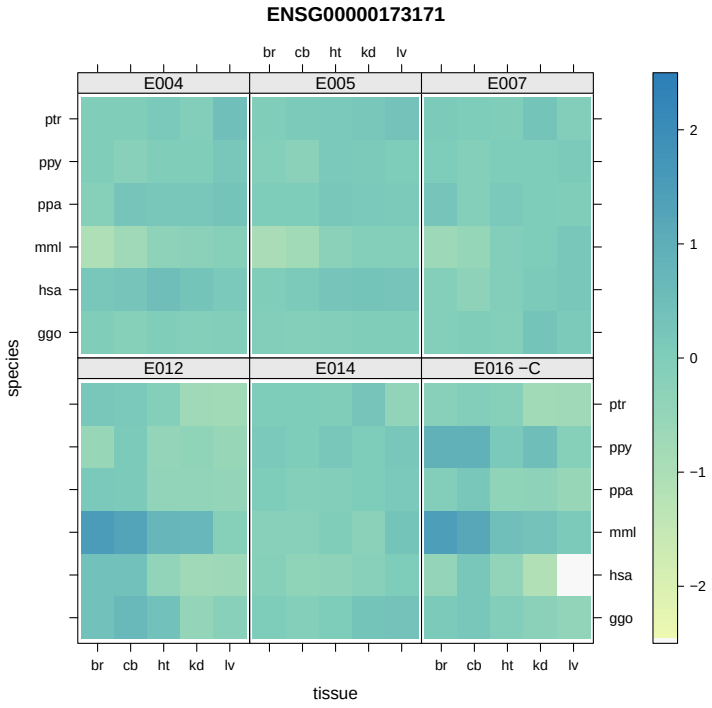

ENSG00000172594
br cb ht kd lv
E001 −C
E005
E006
E009
E011
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

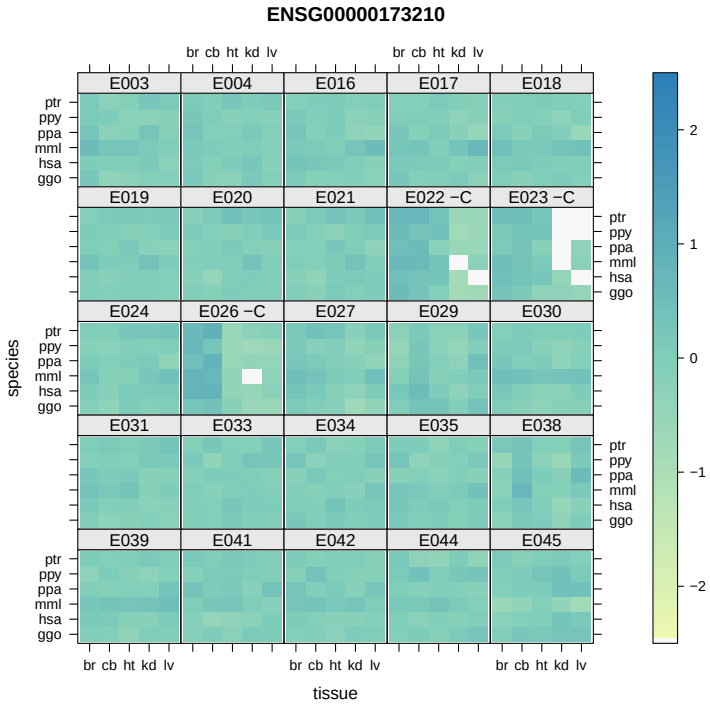

ENSG00000172731
br cb ht kd lv
E002
E003
E004
E005 −C
E006
E007
E008
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

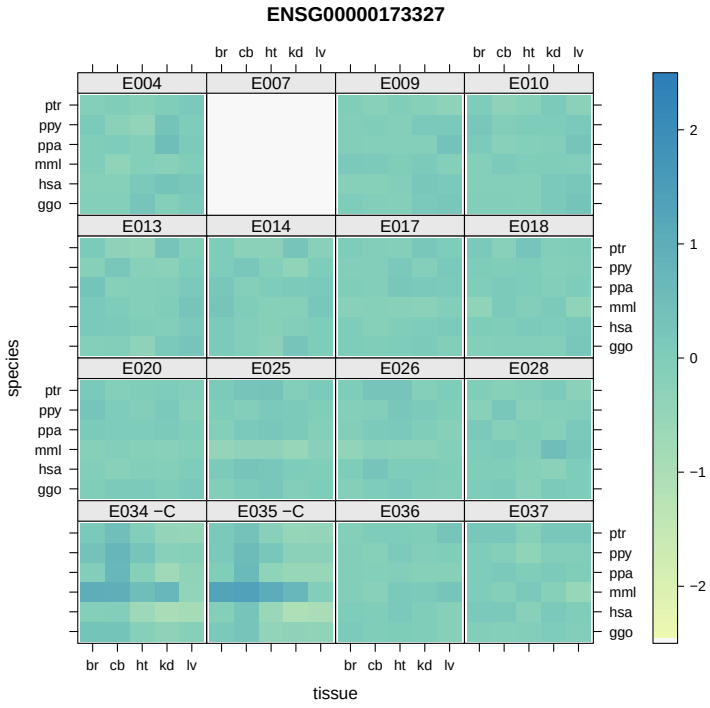

ENSG00000172765
E003
E005
E006
E007
E009 −C
E010
E017
E026
E027
E028
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

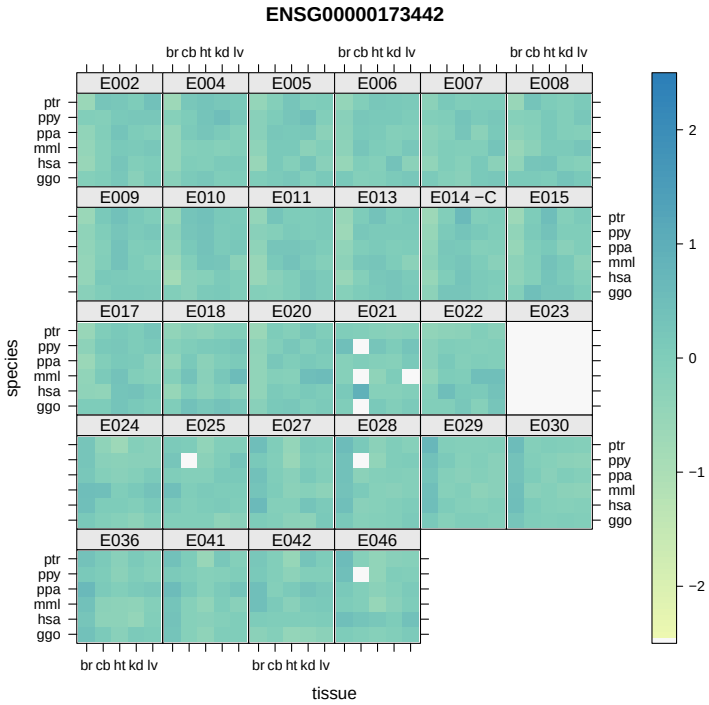

ENSG00000172794
E004 −C
E006
E007
E014
E015
E017
E019
E020
E021
E025
E029
E031
E032
E035
E036
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

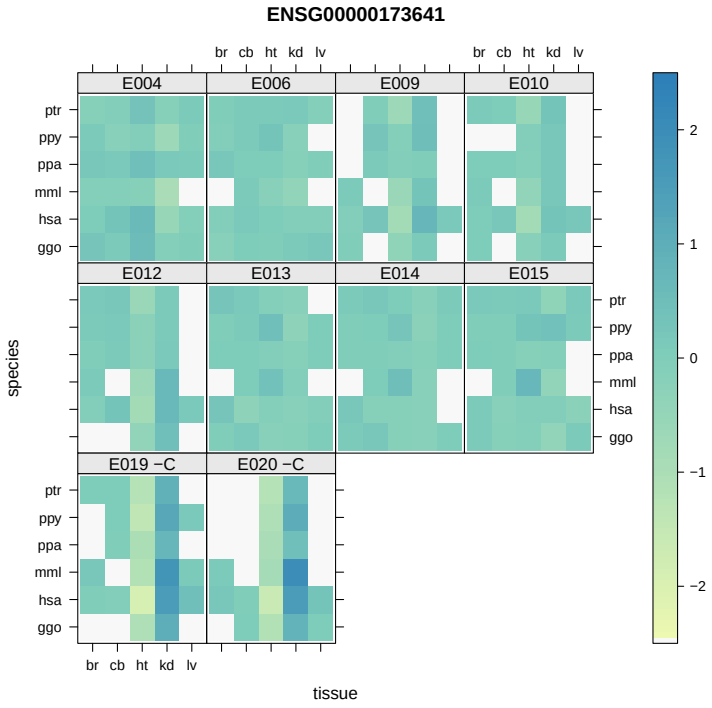

ENSG00000173020
br cb ht kd lv
E003
E004
E005
E006
E009
E010
E011
E013
E014
E015
E016
E019
E020
E023
E025
E026
E029
E033
E034
E036
E038 −C
E040
E041
E042
E045
E046
E047
E052
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

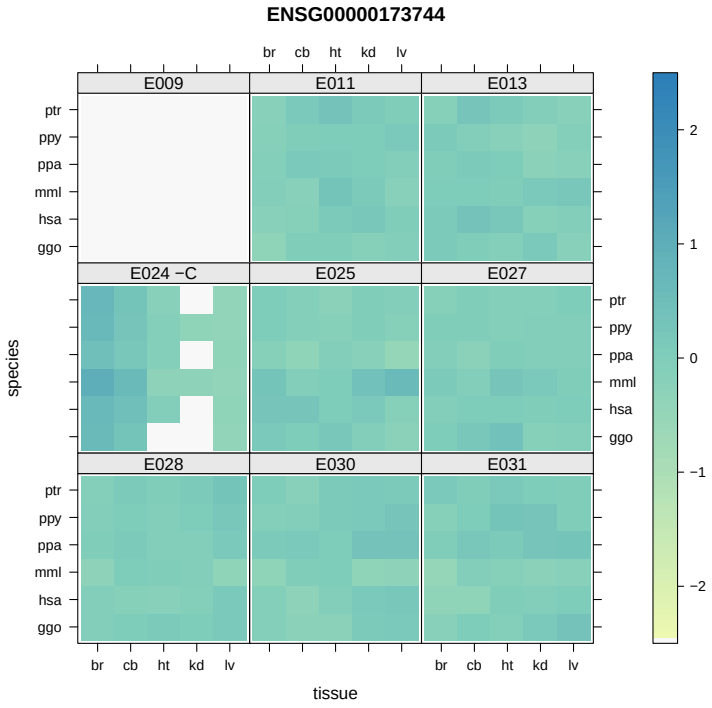

ENSG00000173171
br cb ht kd lv
E004
E005
E007
E012
E014
E016 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

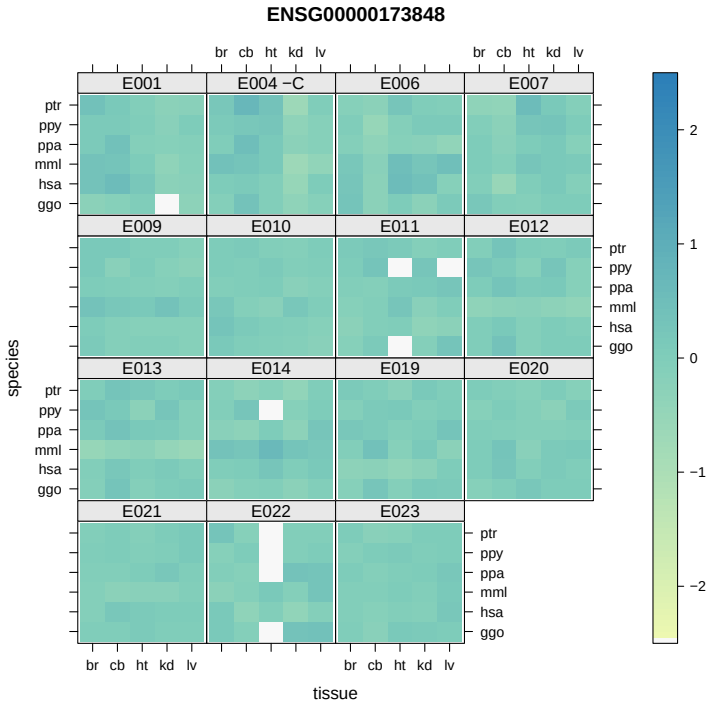

ENSG00000173210
br cb ht kd lv
E003
E004
E016
E017
E018
E019
E020
E021
E022 −C
E023 −C
E024
E026 −C
E027
E029
E030
E031
E033
E034
E035
E038
E039
E041
E042
E044
E045
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

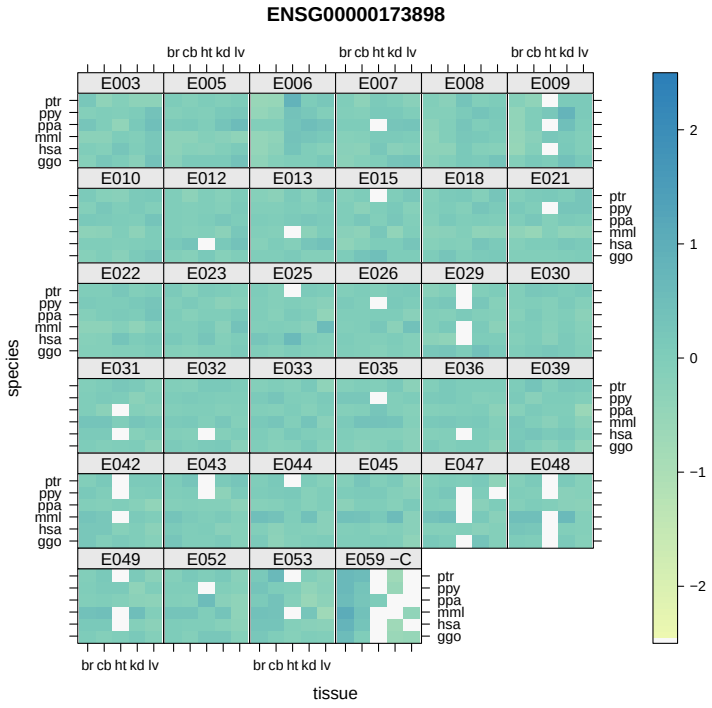

ENSG00000173327
E004
E007
E009
E010
E013
E014
E017
E018
E020
E025
E026
E028
E034 −C
E035 −C
E036
E037
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

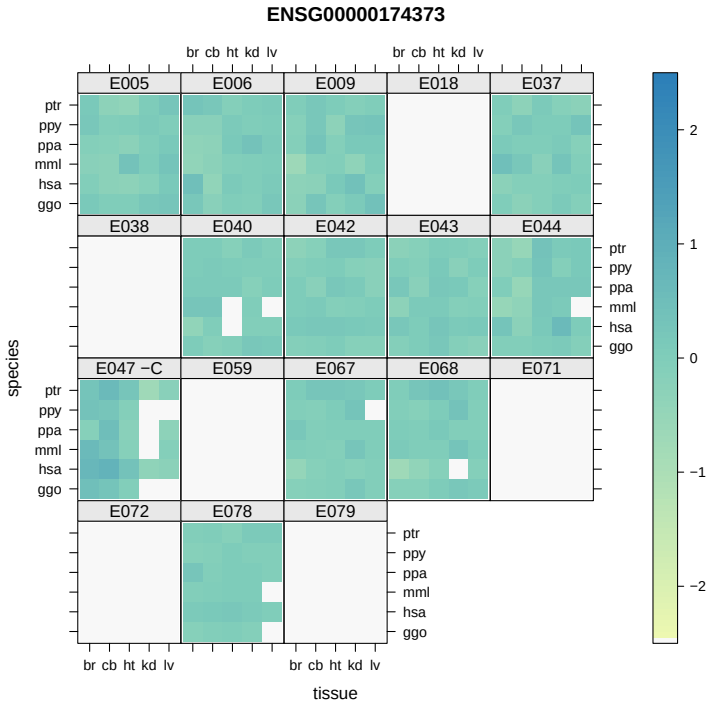

ENSG00000173442
br cb ht kd lv
E002
E004
E005
E006
E007
E008
E009
E010
E011
E013
E014 −C
E015
E017
E018
E020
E021
E022
E023
E024
E025
E027
E028
E029
E030
E036
E041
E042
E046
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

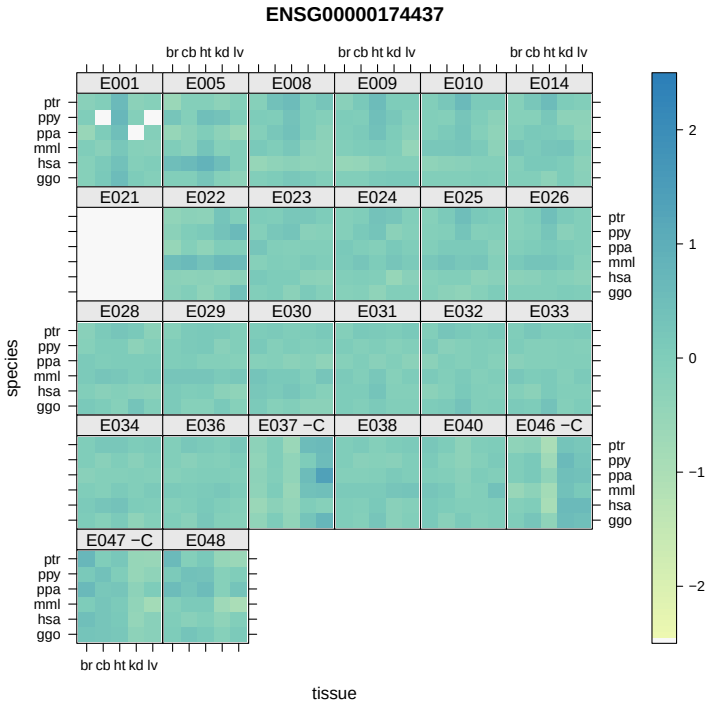

ENSG00000173641
E004
E006
E009
E010
E012
E013
E014
E015
E019 −C
E020 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

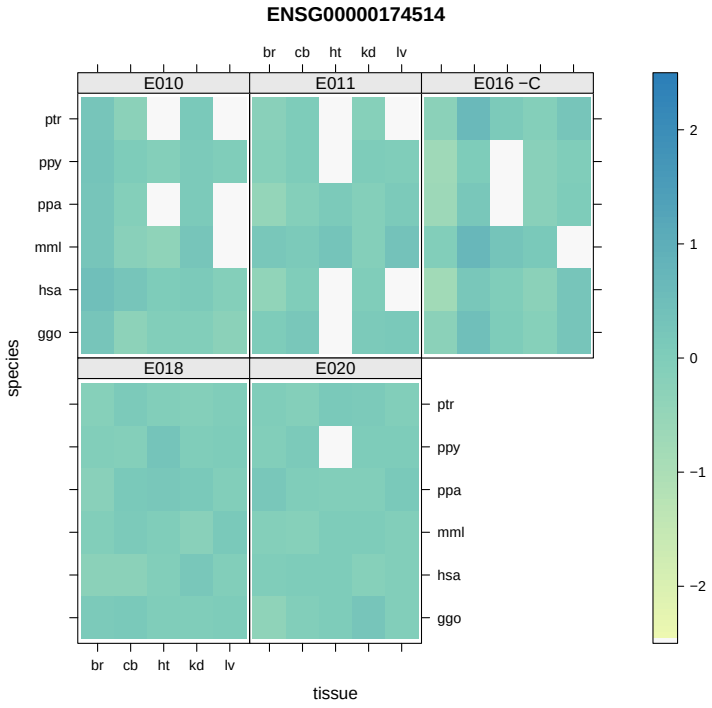

ENSG00000173744
br cb ht kd lv
E009
E011
E013
E024 −C
E025
E027
E028
E030
E031
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

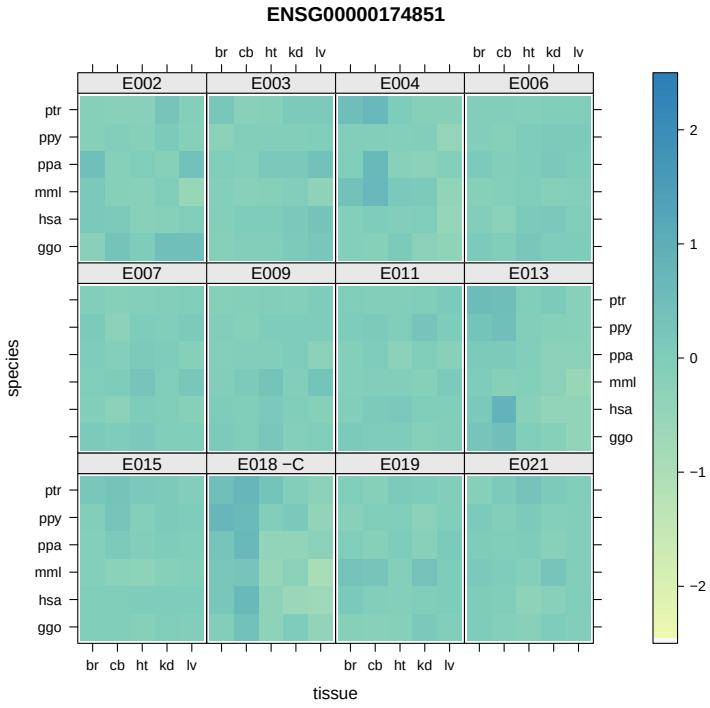

ENSG00000173848
E001
E004 −C
E006
E007
E009
E010
E011
E012
E013
E014
E019
E020
E021
E022
E023
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

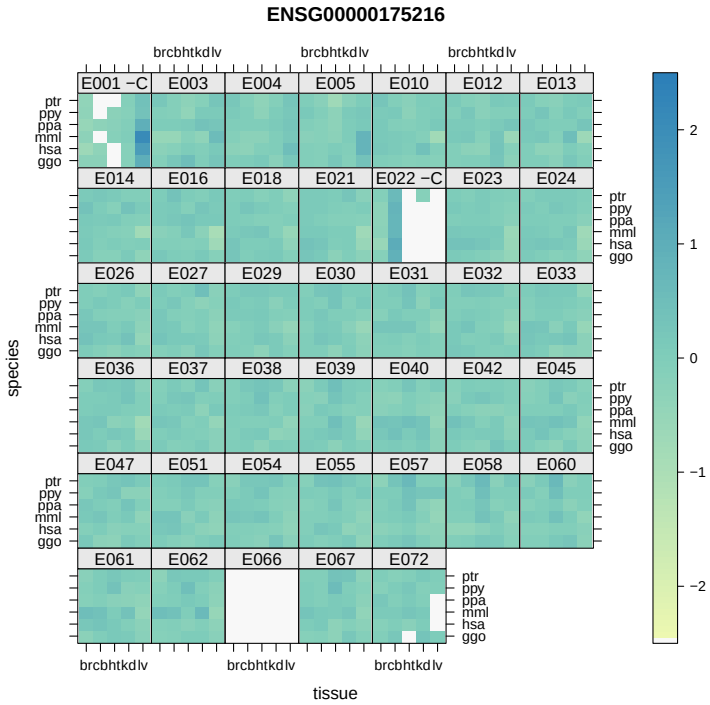

ENSG00000173898
br cb ht kd lv
E003
E005
E006
E007
E008
E009
E010
E012
E013
E015
E018
E021
E022
E023
E025
E026
E029
E030
E031
E032
E033
E035
E036
E039
E042
E043
E044
E045
E047
E048
E049
E052
E053
E059 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

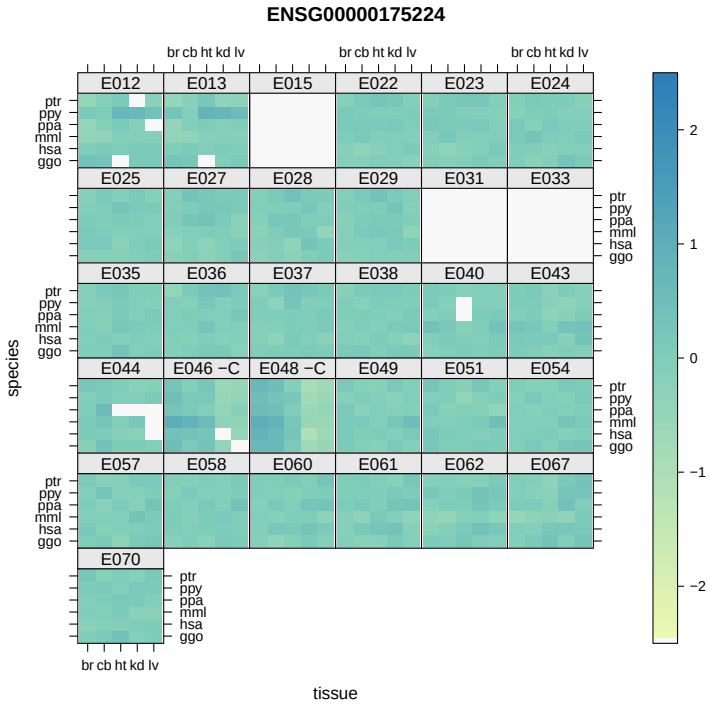

ENSG00000174373
E005
E006
E009
E018
E037
E038
E040
E042
E043
E044
E047 −C
E059
E067
E068
E071
E072
E078
E079
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

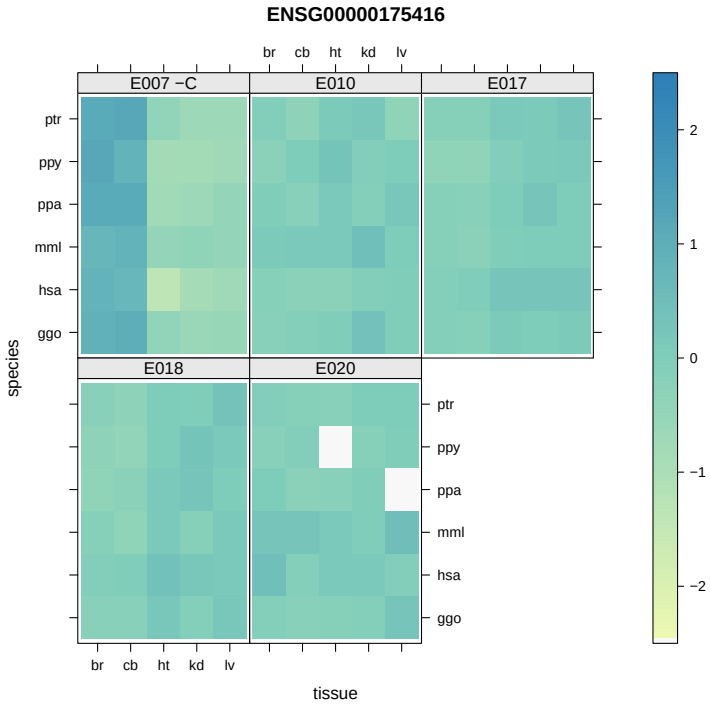

ENSG00000174437
br cb ht kd lv
E001
E005
E008
E009
E010
E014
E021
E022
E023
E024
E025
E026
E028
E029
E030
E031
E032
E033
E034
E036
E037 −C
E038
E040
E046 −C
E047 −C
E048
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

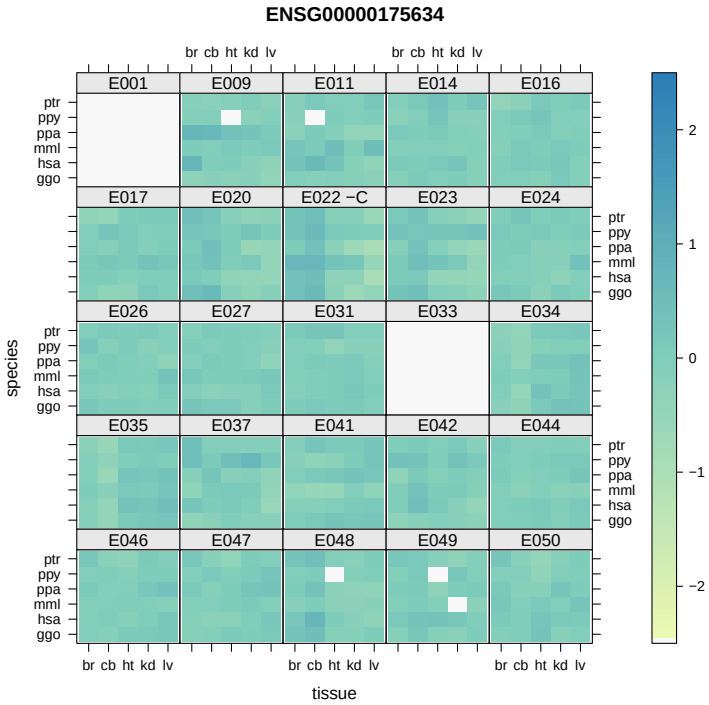

ENSG00000174514
br cb ht kd lv
E010
E011
E016 −C
E018
E020
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

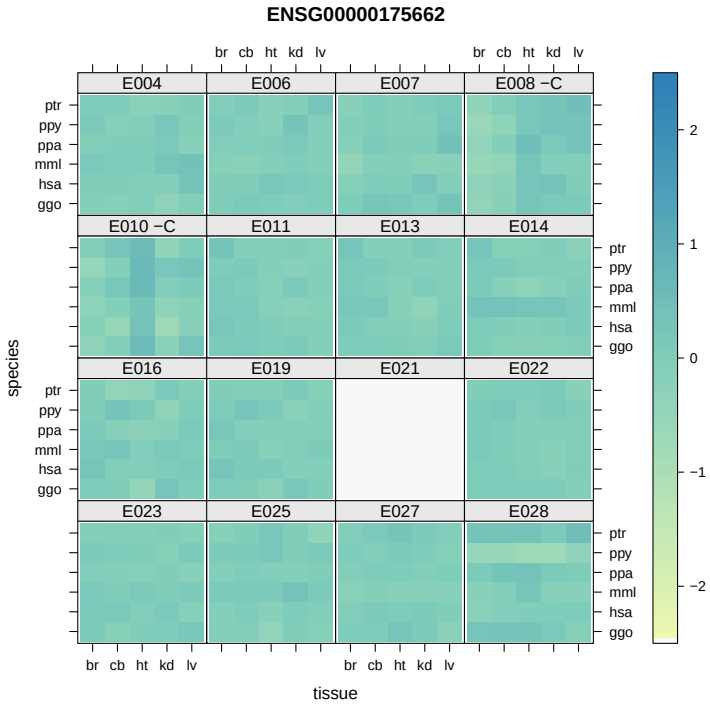

ENSG00000174851
E002
E003
E004
E006
E007
E009
E011
E013
E015
E018 −C
E019
E021
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

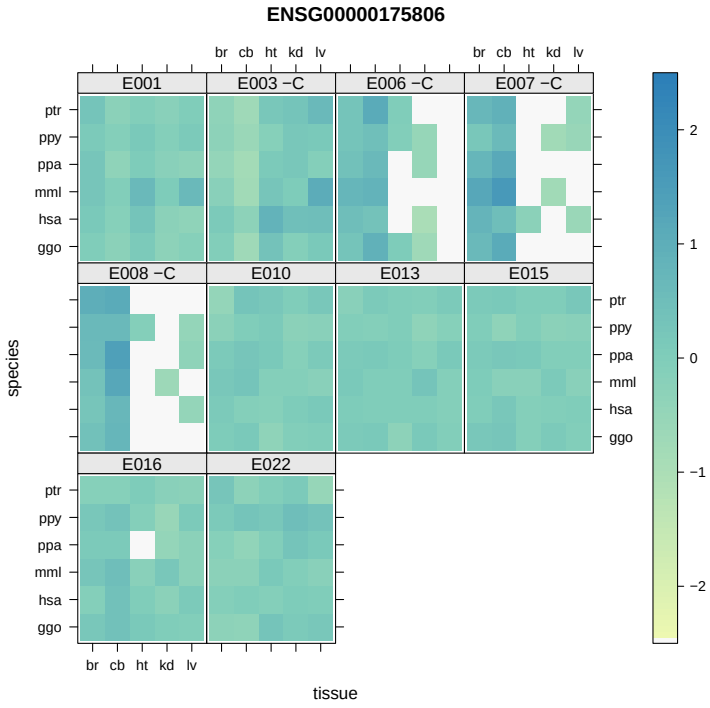

ENSG00000175216
brcbhtkdlv
E001 −C
E003
E004
E005
E010
E012
E013
E014
E016
E018
E021
E022 −C
E023
E024
E026
E027
E029
E030
E031
E032
E033
E036
E037
E038
E039
E040
E042
E045
E047
E051
E054
E055
E057
E058
E060
E061
E062
E066
E067
E072
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

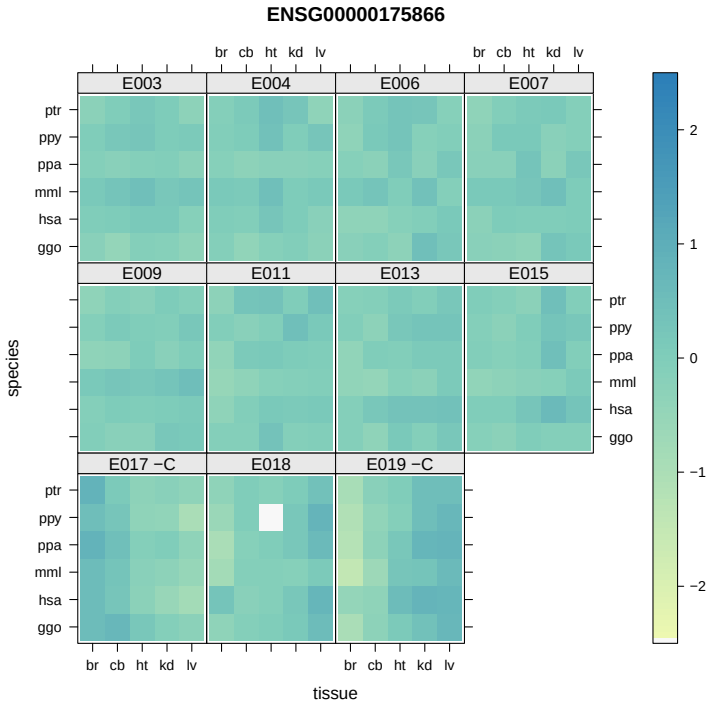

ENSG00000175224
br cb ht kd lv
E012
E013
E015
E022
E023
E024
E025
E027
E028
E029
E031
E033
E035
E036
E037
E038
E040
E043
E044
E046 −C
E048 −C
E049
E051
E054
E057
E058
E060
E061
E062
E067
E070
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

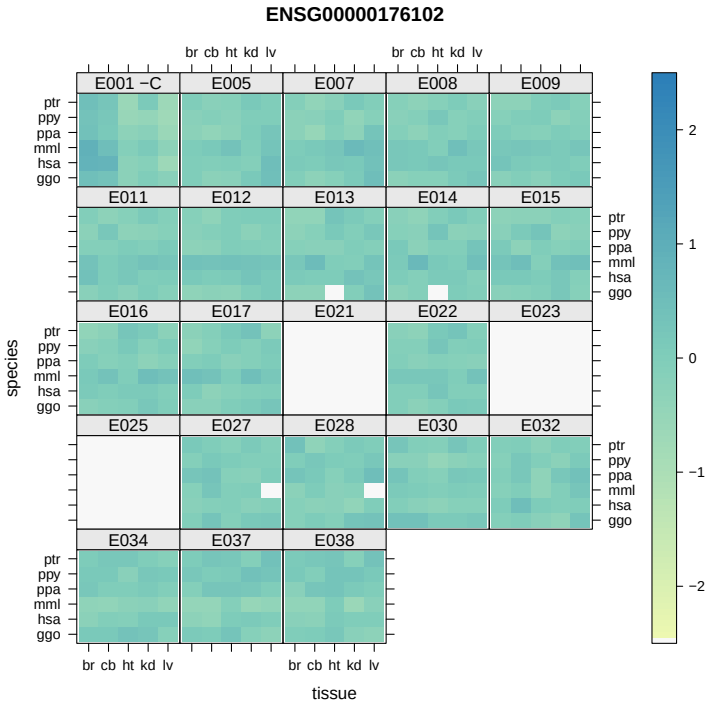

ENSG00000175416
br cb ht kd lv
E007 −C
E010
E017
E018
E020
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

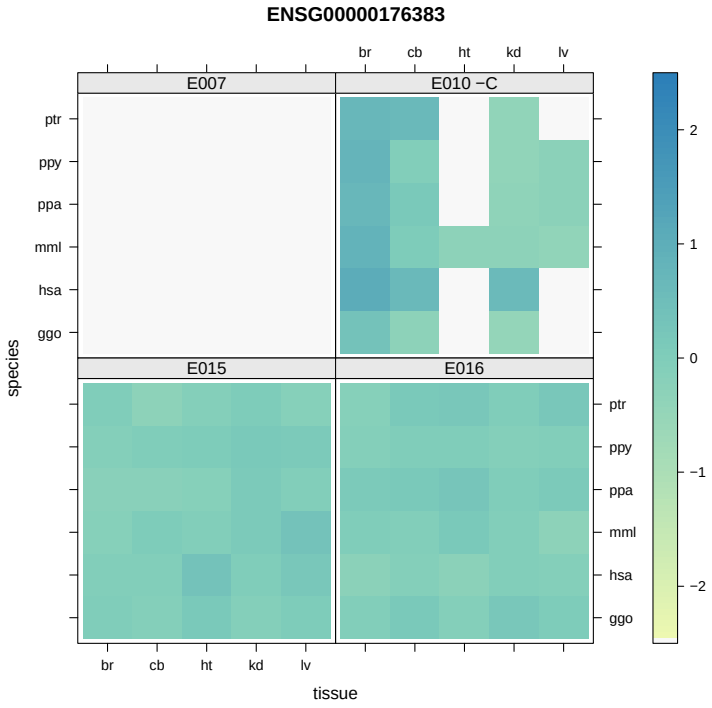

ENSG00000175634
E001
E009
E011
E014
E016
E017
E020
E022 −C
E023
E024
E026
E027
E031
E033
E034
E035
E037
E041
E042
E044
E046
E047
E048
E049
E050
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

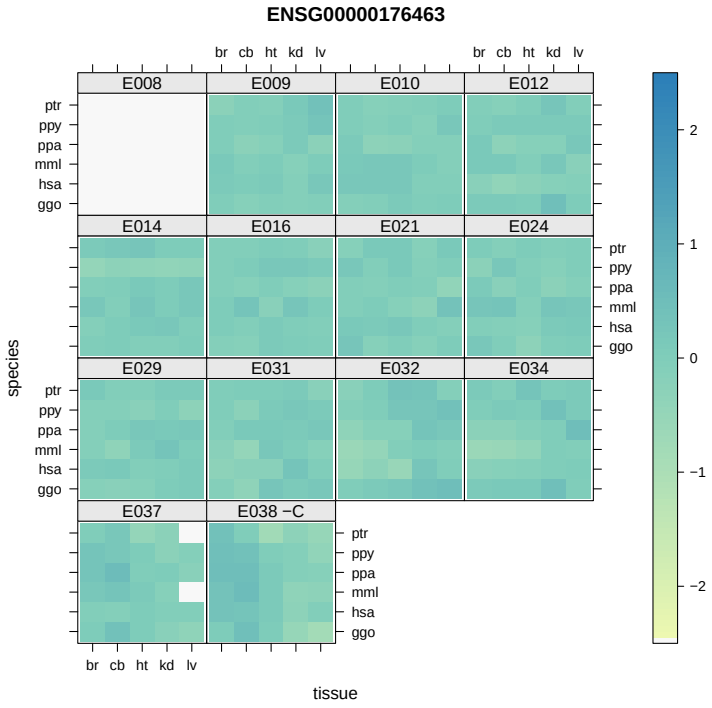

ENSG00000175662
E004
E006
E007
E008 −C
E010 −C
E011
E013
E014
E016
E019
E021
E022
E023
E025
E027
E028
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

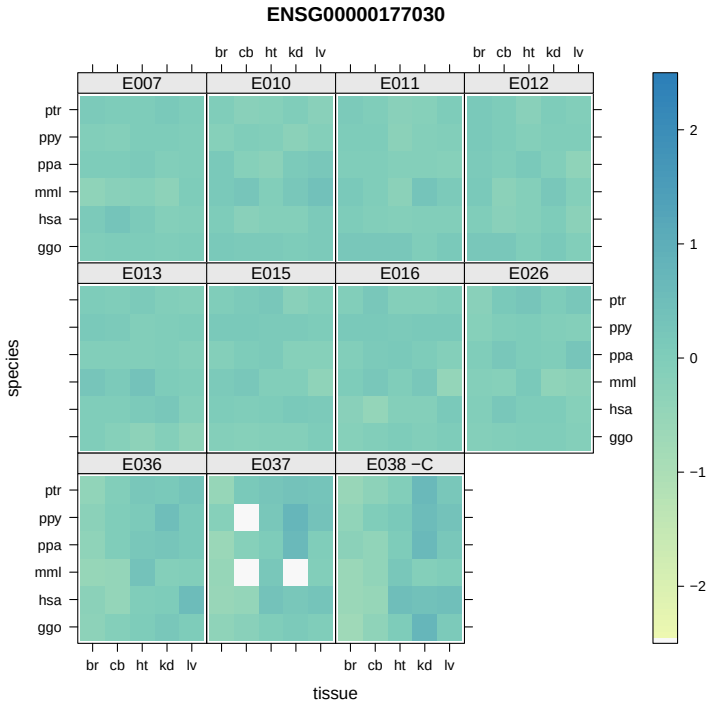

ENSG00000175806
E001
E003 −C
E006 −C
E007 −C
E008 −C
E010
E013
E015
E016
E022
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

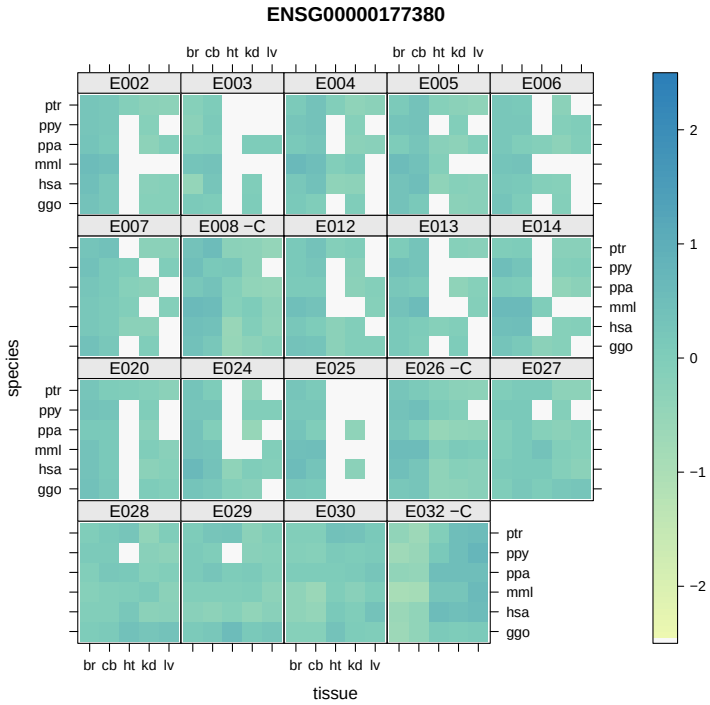

ENSG00000175866
E003
E004
E006
E007
E009
E011
E013
E015
E017 −C
E018
E019 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

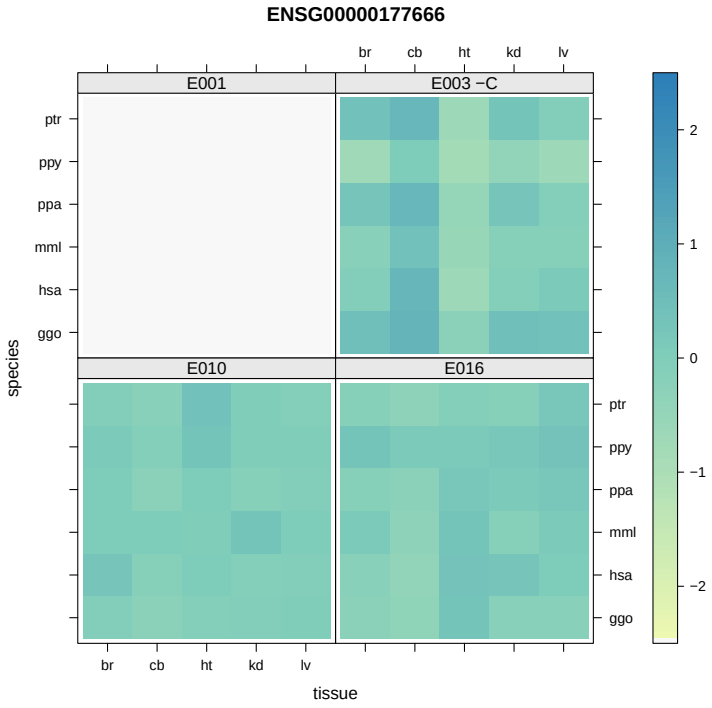

ENSG00000176102
E001 −C
E005
E007
E008
E009
E011
E012
E013
E014
E015
E016
E017
E021
E022
E023
E025
E027
E028
E030
E032
E034
E037
E038
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

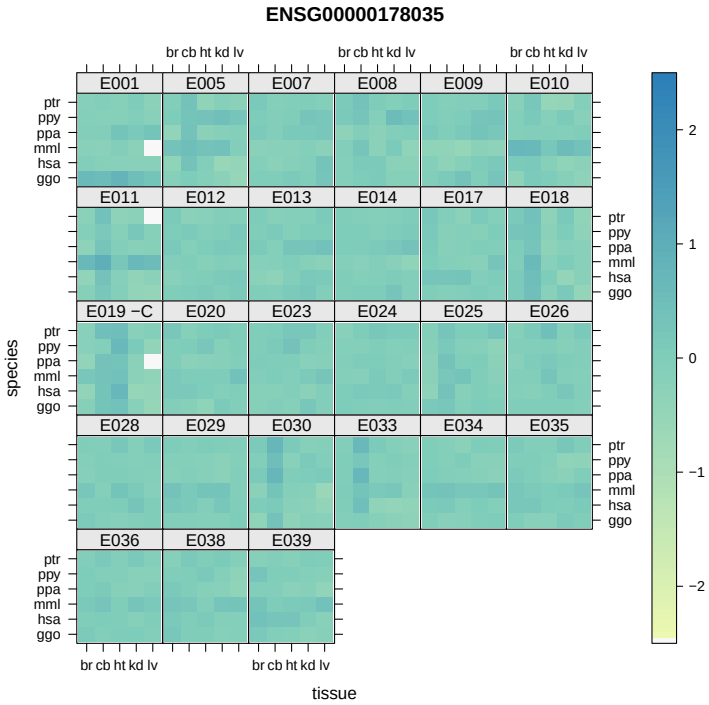

ENSG00000176383
E007
E010 −C
E015
E016
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

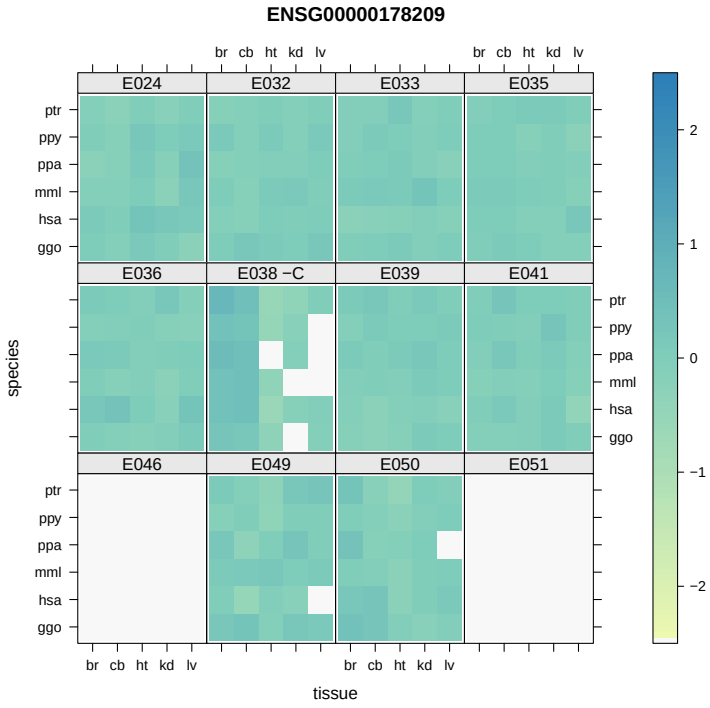

ENSG00000176463
E008
E009
E010
E012
E014
E016
E021
E024
E029
E031
E032
E034
E037
E038 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

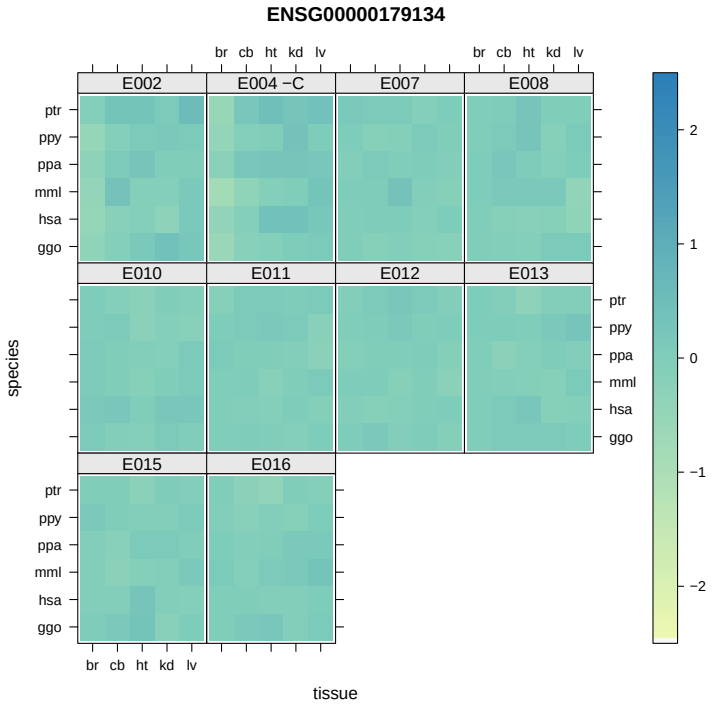

ENSG00000177030
E007
E010
E011
E012
E013
E015
E016
E026
E036
E037
E038 −C
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

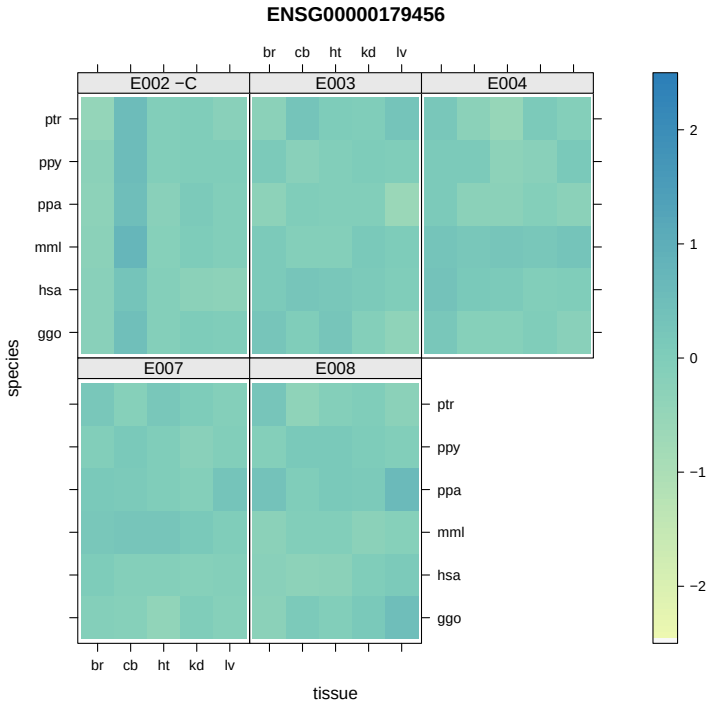

ENSG00000177380
br cb ht kd lv
E002
E003
E004
E005
E006
E007
E008 −C
E012
E013
E014
E020
E024
E025
E026 −C
E027
E028
E029
E030
E032 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

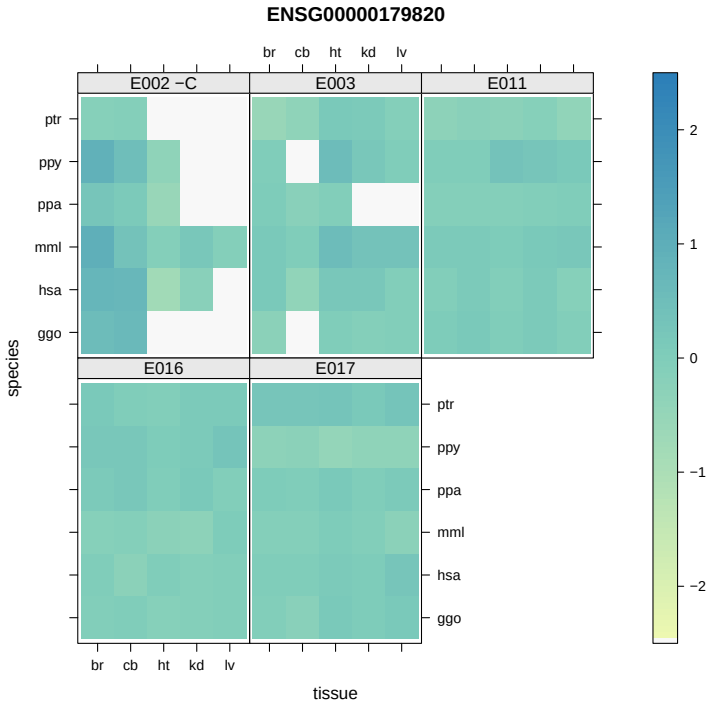

ENSG00000177666
br
cb
ht
kd
lv
E001
E003 −C
E010
E016
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

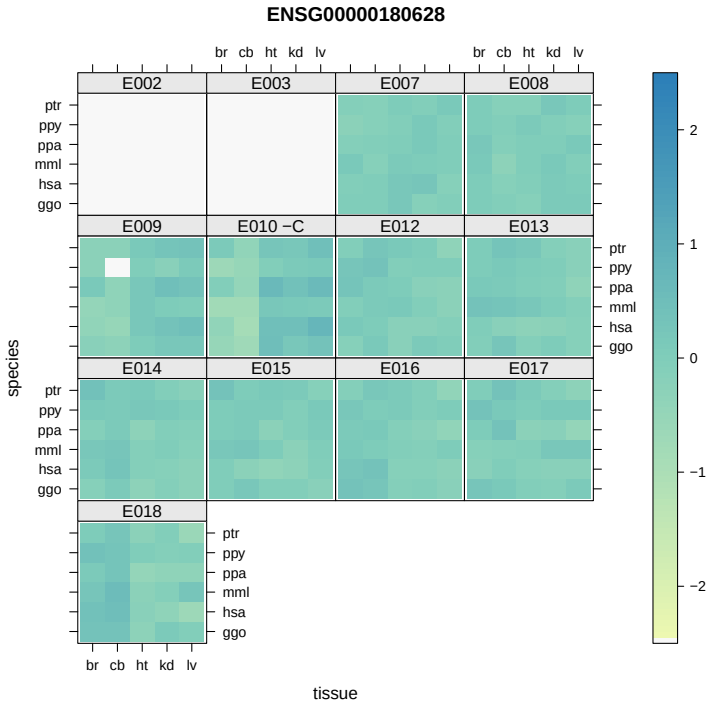

ENSG00000178035
br cb ht kd lv
E001
E005
E007
E008
E009
E010
E011
E012
E013
E014
E017
E018
E019 −C
E020
E023
E024
E025
E026
E028
E029
E030
E033
E034
E035
E036
E038
E039
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

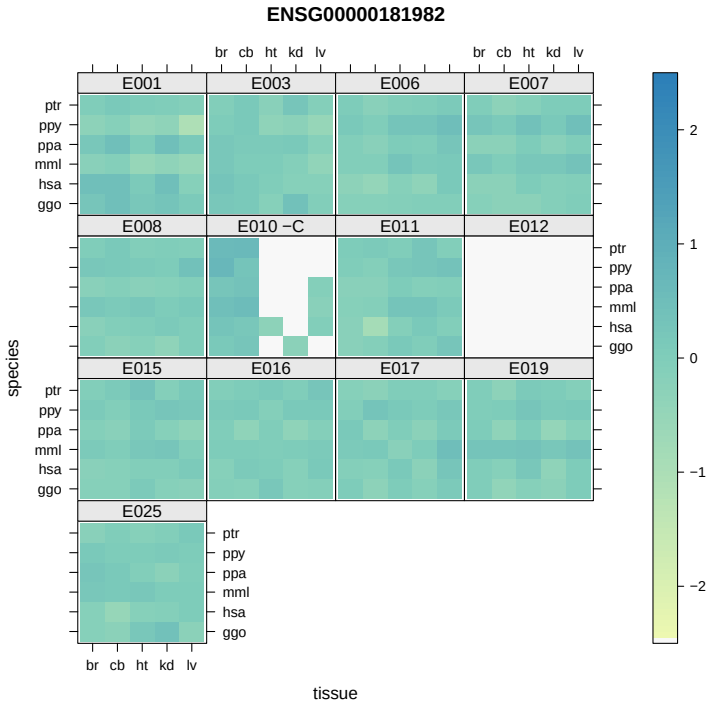

ENSG00000178209
E024
E032
E033
E035
E036
E038 −C
E039
E041
E046
E049
E050
E051
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

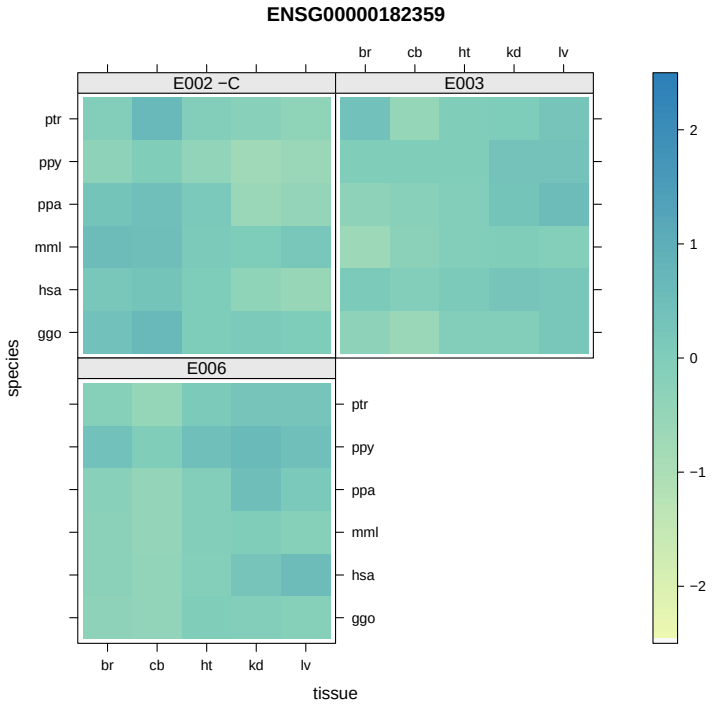

ENSG00000179134
E002
E004 −C
E007
E008
E010
E011
E012
E013
E015
E016
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

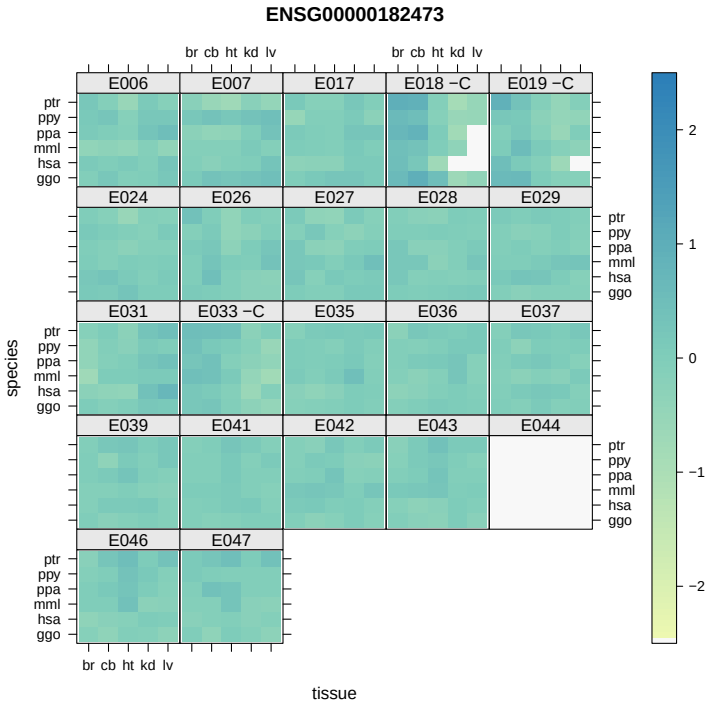

ENSG00000179456
br cb ht kd lv
E002 −C
E003
E004
E007
E008
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

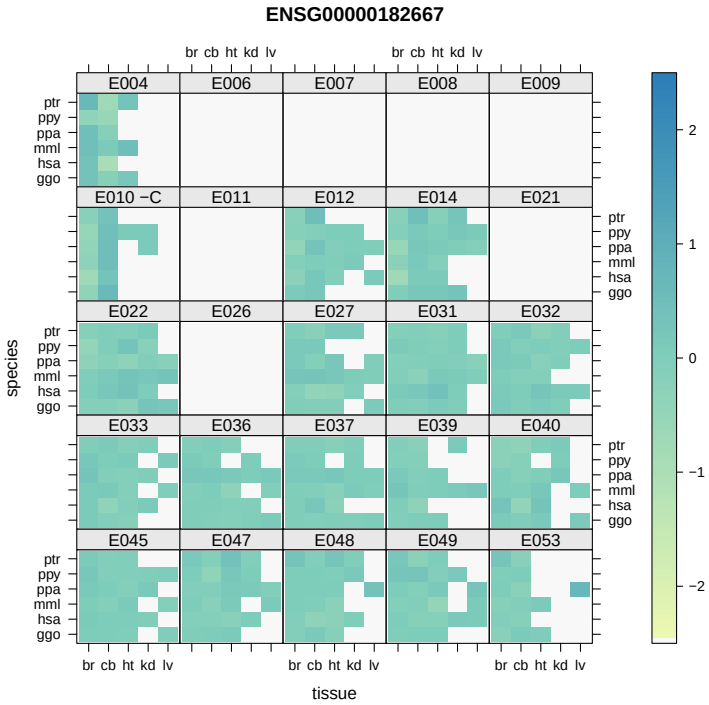

ENSG00000179820
br cb ht kd lv
E002 −C
E003
E011
E016
E017
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

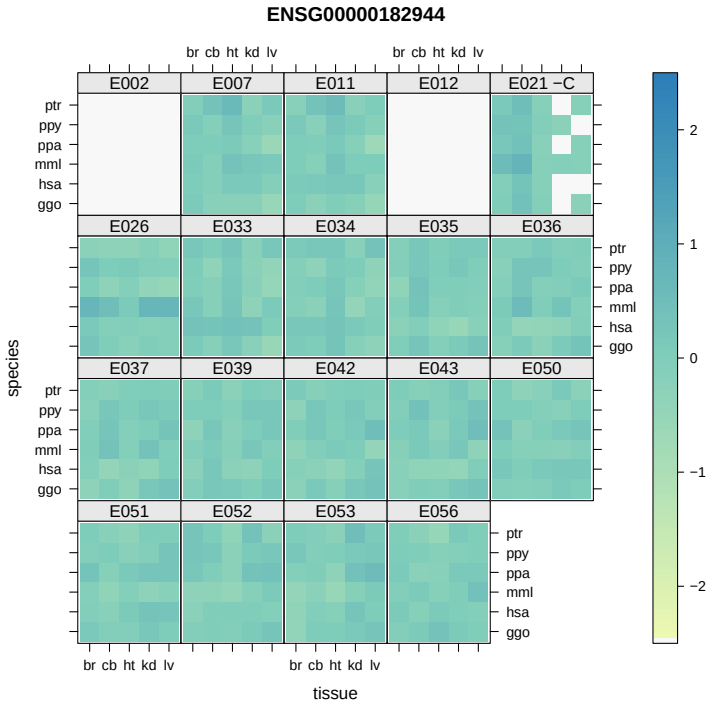

ENSG00000180628
E002
E003
E007
E008
E009
E010 −C
E012
E013
E014
E015
E016
E017
E018
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

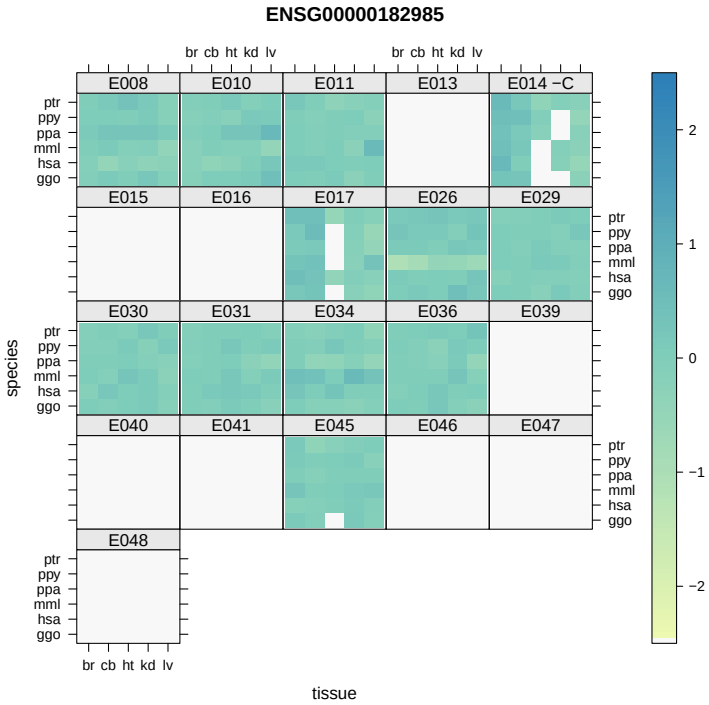

ENSG00000181982
E001
E003
E006
E007
E008
E010 −C
E011
E012
E015
E016
E017
E019
E025
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

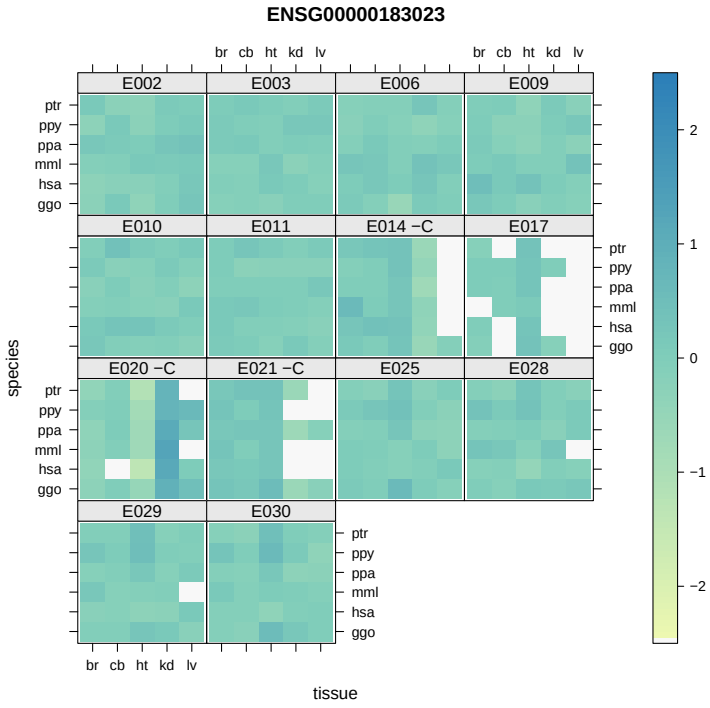

ENSG00000182359
E002 −C
E003
E006
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

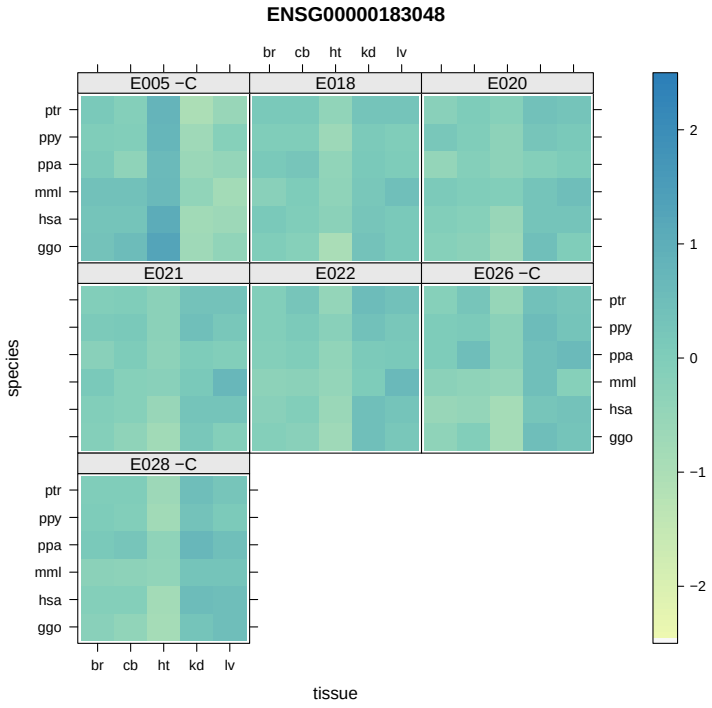

ENSG00000182473
br cb ht kd lv
E006
E007
E017
E018 −C
E019 −C
E024
E026
E027
E028
E029
E031
E033 −C
E035
E036
E037
E039
E041
E042
E043
E044
E046
E047
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

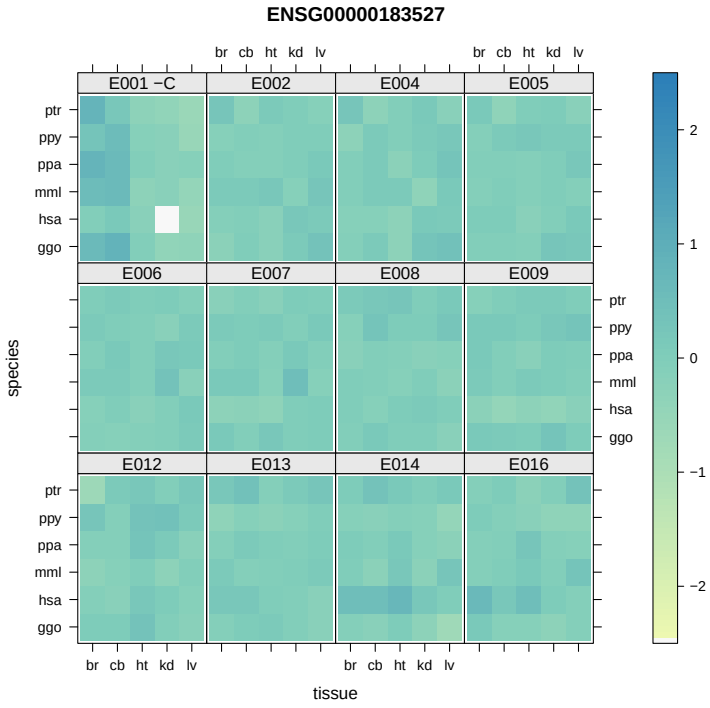

ENSG00000182667
E004
E006
E007
E008
E009
E010 −C
E011
E012
E014
E021
E022
E026
E027
E031
E032
E033
E036
E037
E039
E040
E045
E047
E048
E049
E053
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

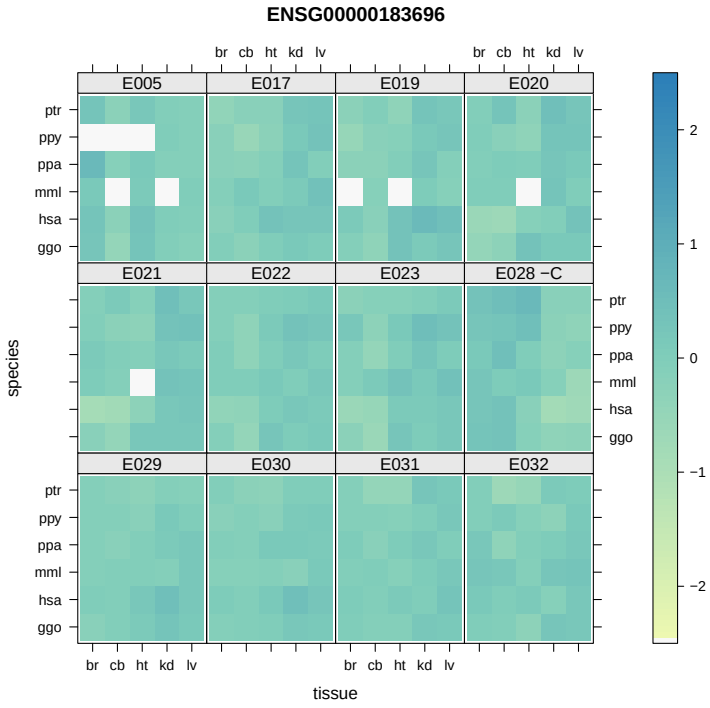

ENSG00000182944
E002
E007
E011
E012
E021 −C
E026
E033
E034
E035
E036
E037
E039
E042
E043
E050
E051
E052
E053
E056
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

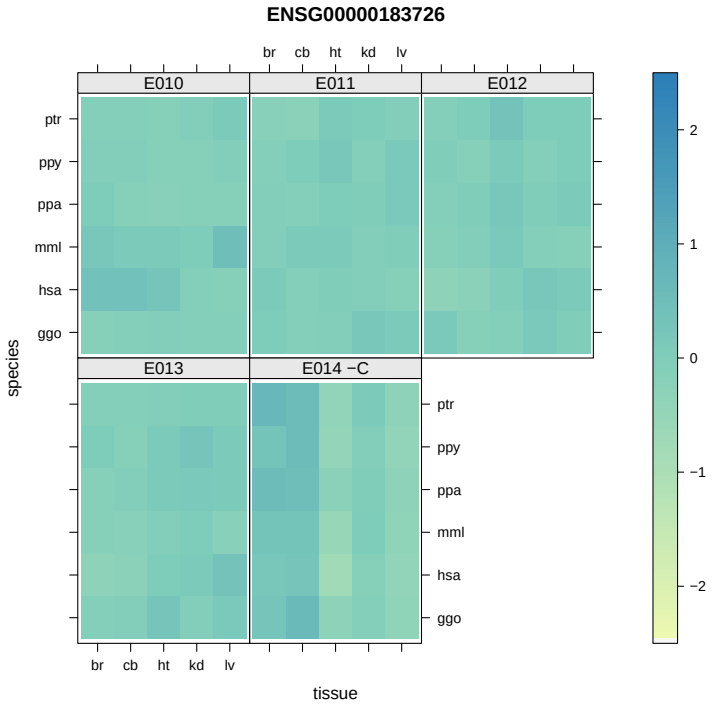

ENSG00000182985
br cb ht kd lv
E008
E010
E011
E013
E014 −C
E015
E016
E017
E026
E029
E030
E031
E034
E036
E039
E040
E041
E045
E046
E047
E048
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

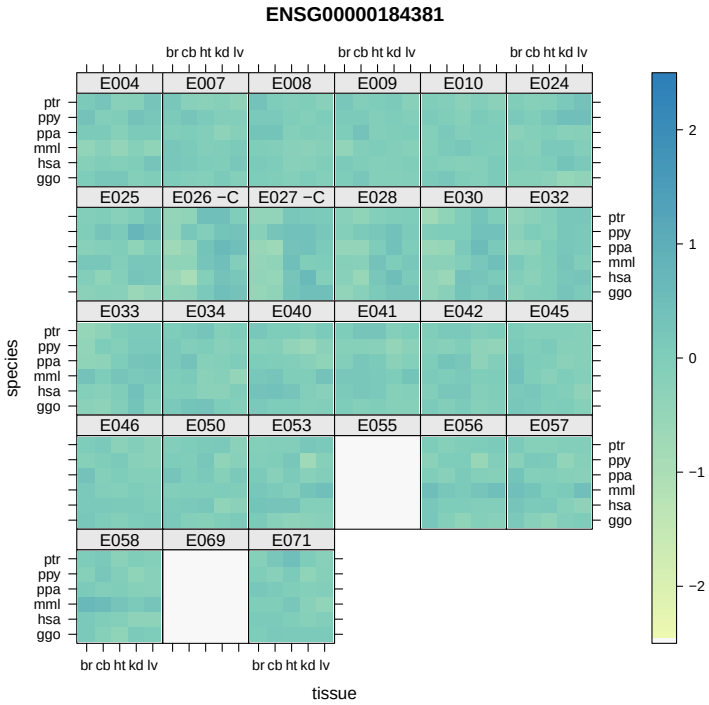

ENSG00000183023
E002
E003
E006
E009
E010
E011
E014 −C
E017
E020 −C
E021 −C
E025
E028
E029
E030
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

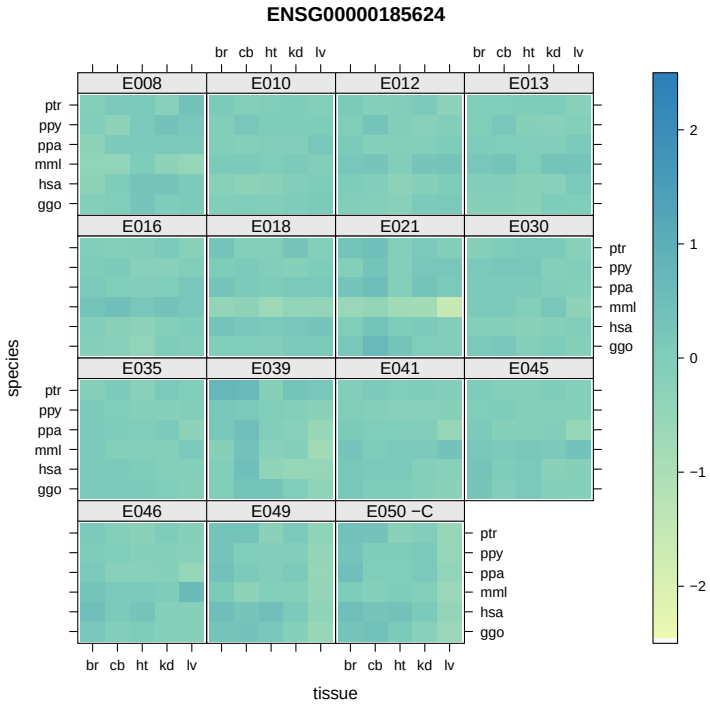

ENSG00000183048
br cb ht kd lv
E005 −C
E018
E020
E021
E022
E026 −C
E028 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

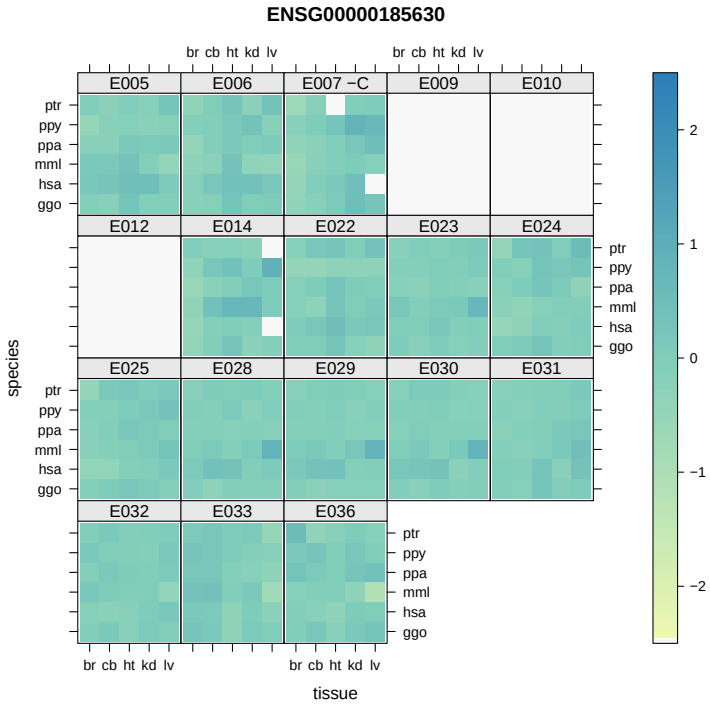

ENSG00000183527
E001 −C
E002
E004
E005
E006
E007
E008
E009
E012
E013
E014
E016
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

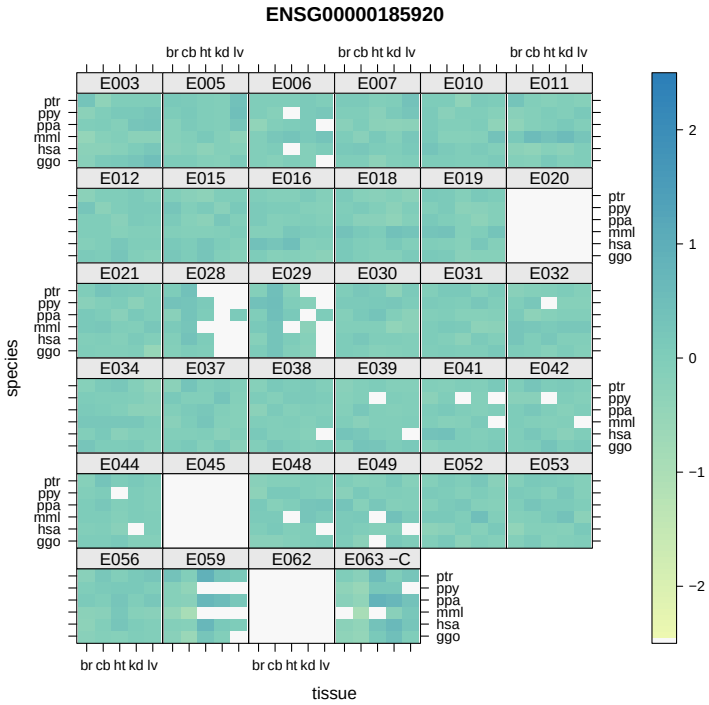

ENSG00000183696
E005
E017
E019
E020
E021
E022
E023
E028 −C
E029
E030
E031
E032
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

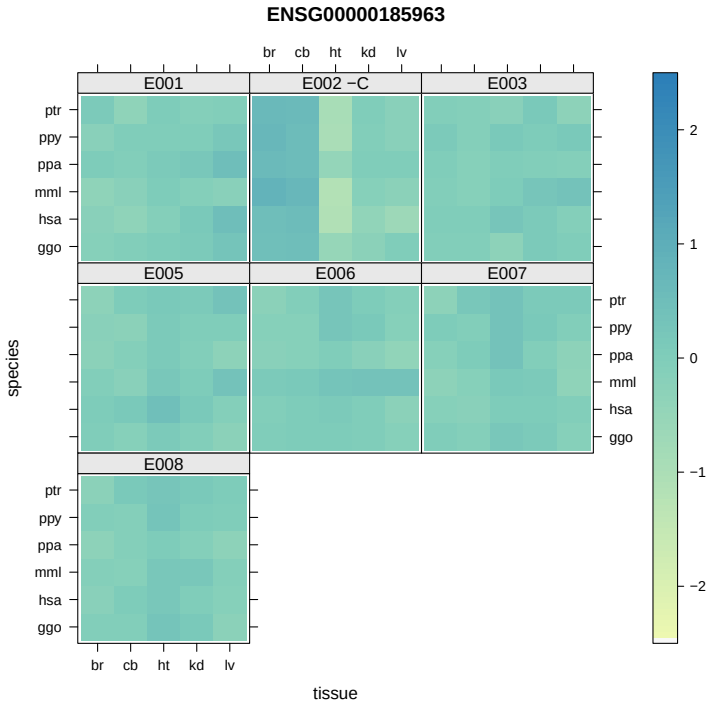

ENSG00000183726
br cb ht kd lv
E010
E011
E012
E013
E014 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

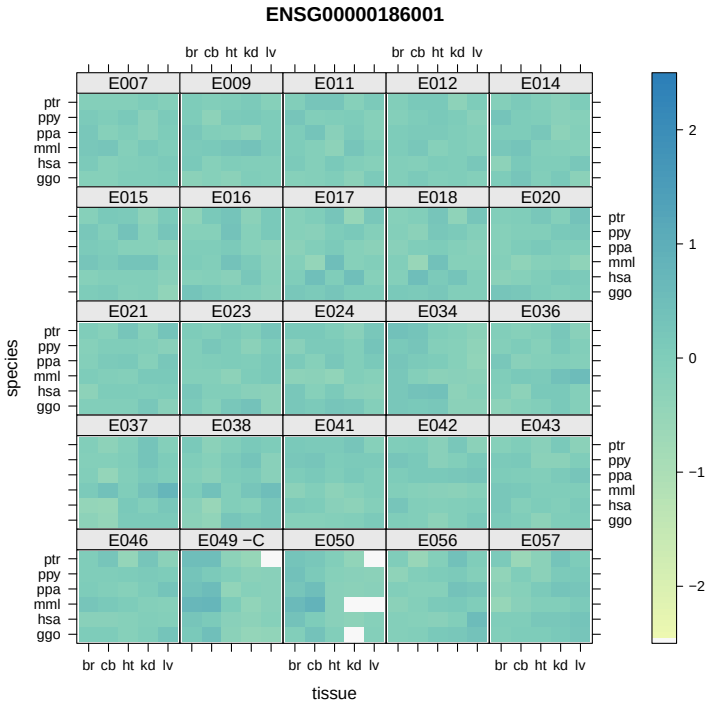

ENSG00000184381
br cb ht kd lv
E004
E007
E008
E009
E010
E024
E025
E026 −C
E027 −C
E028
E030
E032
E033
E034
E040
E041
E042
E045
E046
E050
E053
E055
E056
E057
E058
E069
E071
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

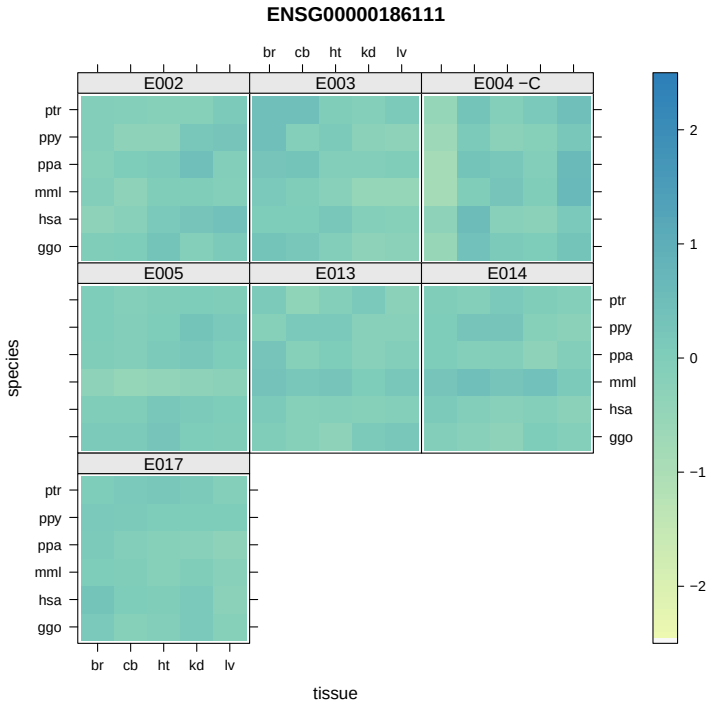

ENSG00000185624
E008
E010
E012
E013
E016
E018
E021
E030
E035
E039
E041
E045
E046
E049
E050 −C
br cb ht kd lv
ptr ppy ppa mml hsa ggo
species
tissue
2
1
0
−1
−2

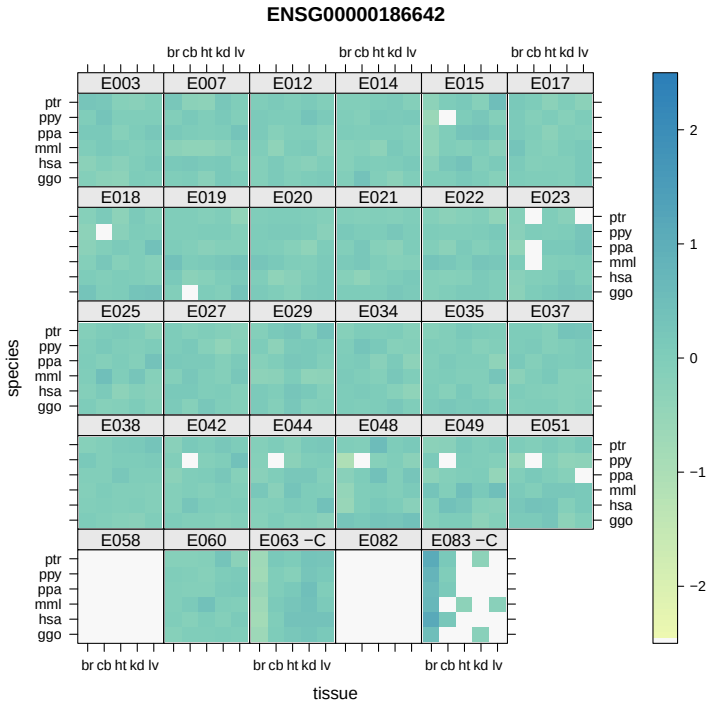

ENSG00000185630
E005
E006
E007 −C
E009
E010
E012
E014
E022
E023
E024
E025
E028
E029
E030
E031
E032
E033
E036
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

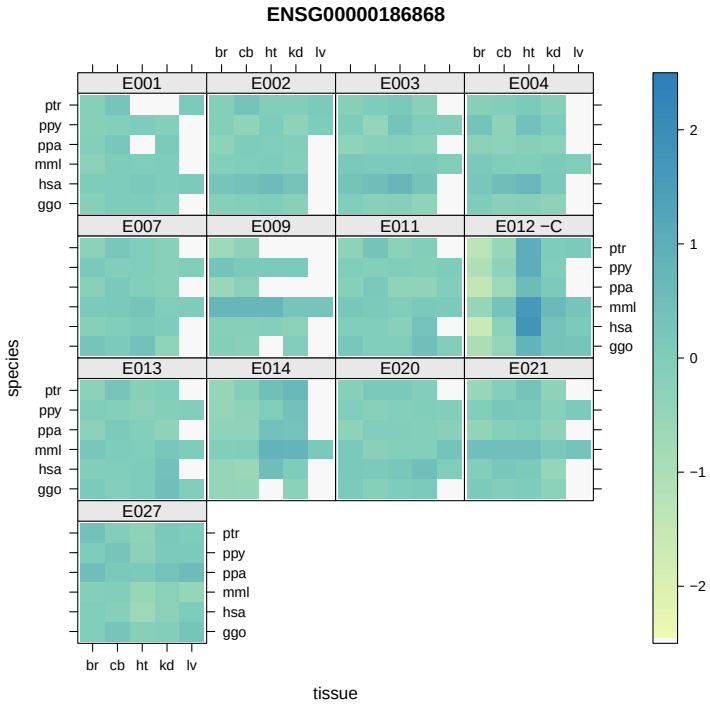

ENSG00000185920
br cb ht kd lv
E003
E005
E006
E007
E010
E011
E012
E015
E016
E018
E019
E020
E021
E028
E029
E030
E031
E032
E034
E037
E038
E039
E041
E042
E044
E045
E048
E049
E052
E053
E056
E059
E062
E063 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

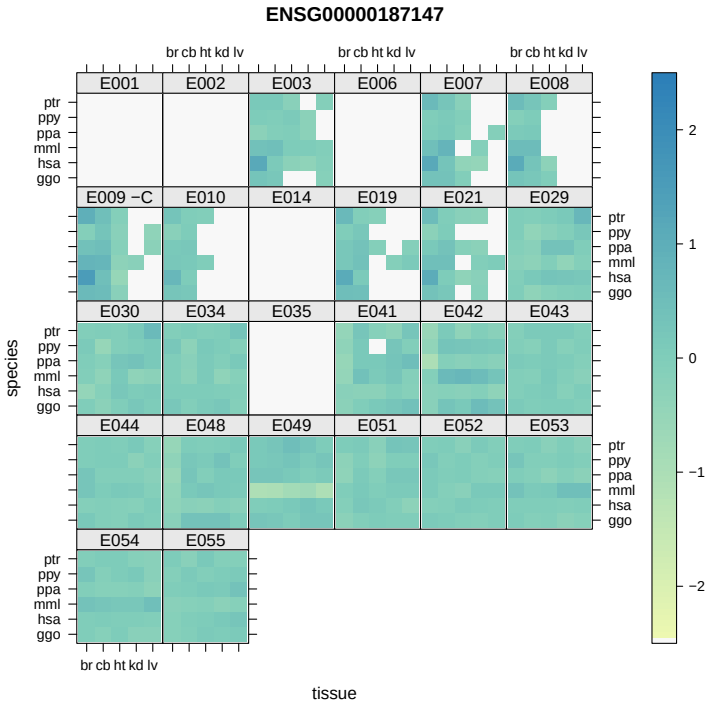

ENSG00000185963
br cb ht kd lv
E001
E002 −C
E003
E005
E006
E007
E008
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

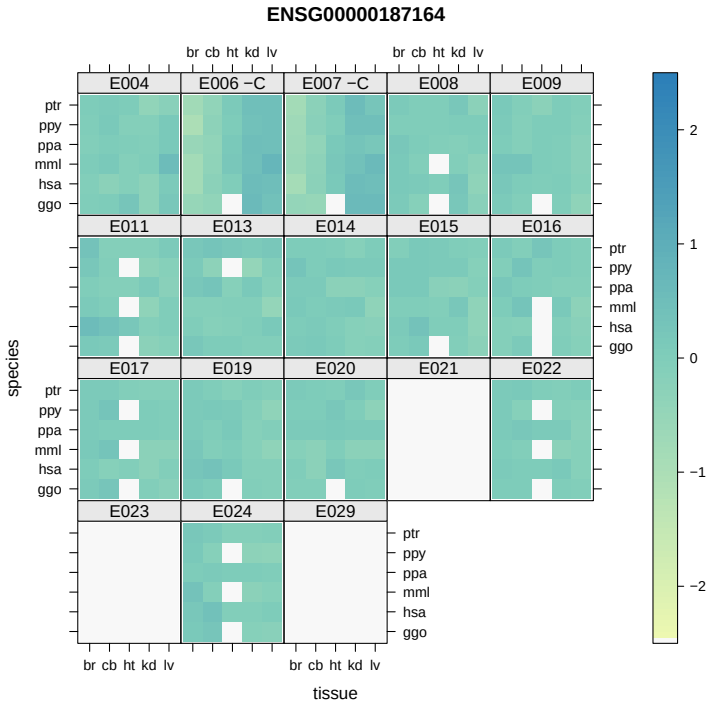

ENSG00000186001
E007
E009
E011
E012
E014
E015
E016
E017
E018
E020
E021
E023
E024
E034
E036
E037
E038
E041
E042
E043
E046
E049 −C
E050
E056
E057
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

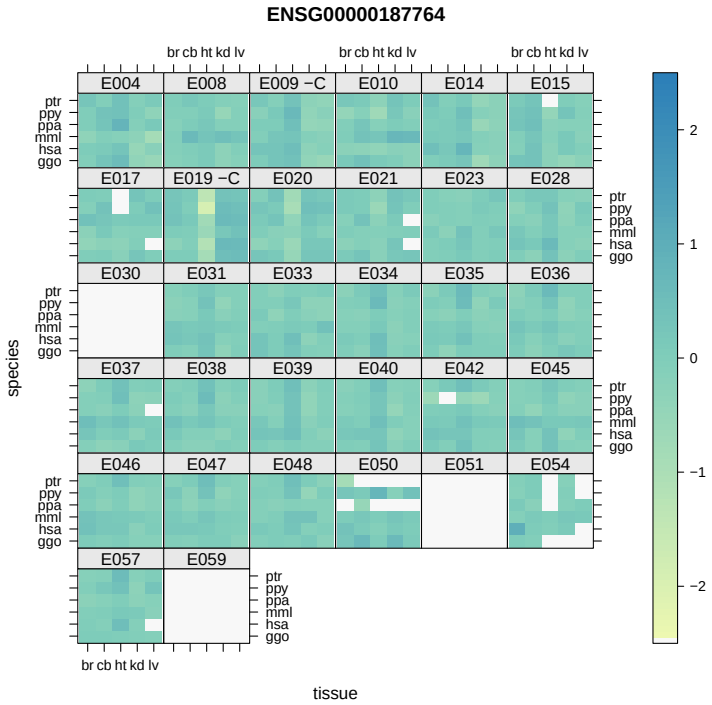

ENSG00000186111
br cb ht kd lv
E002
E003
E004 −C
E005
E013
E014
E017
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

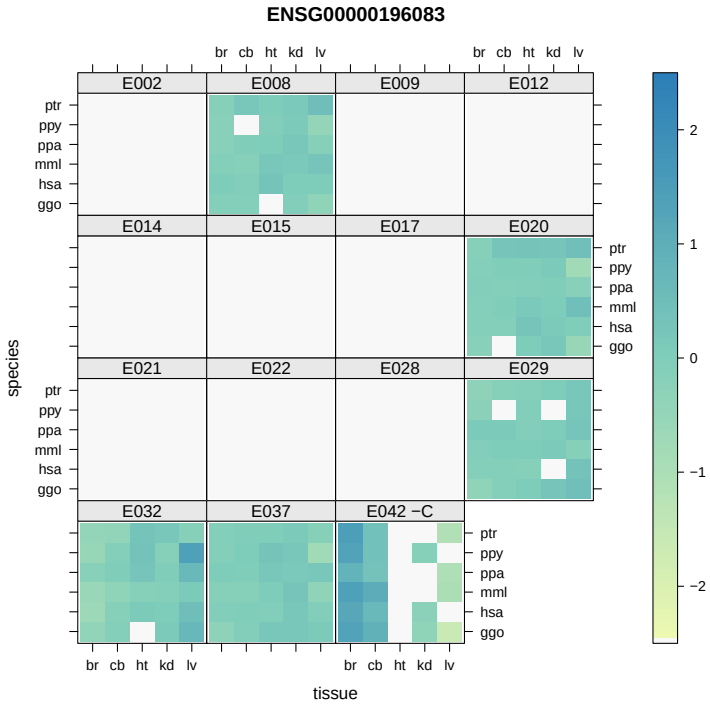

ENSG00000186642
br cb ht kd lv
E003
E007
E012
E014
E015
E017
E018
E019
E020
E021
E022
E023
E025
E027
E029
E034
E035
E037
E038
E042
E044
E048
E049
E051
E058
E060
E063 −C
E082
E083 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

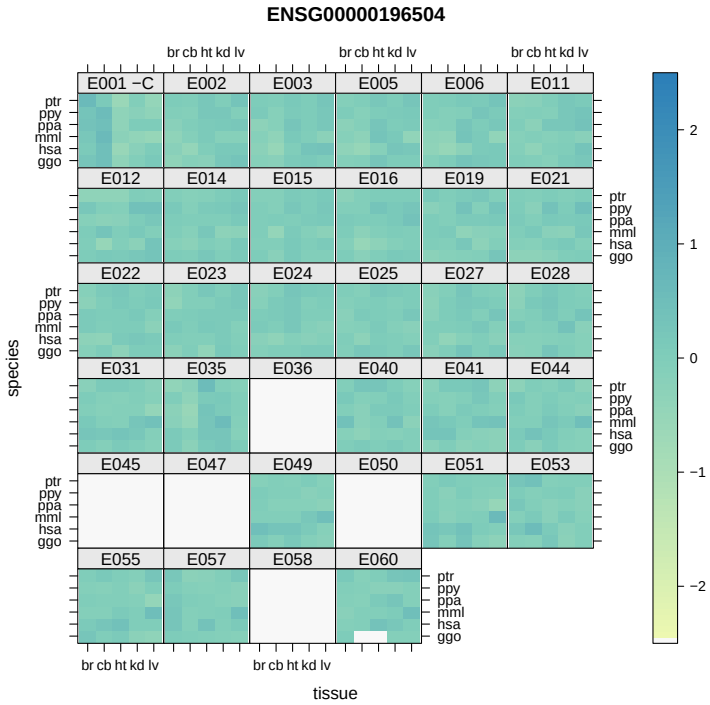

ENSG00000186868
E001
E002
E003
E004
E007
E009
E011
E012 −C
E013
E014
E020
E021
E027
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

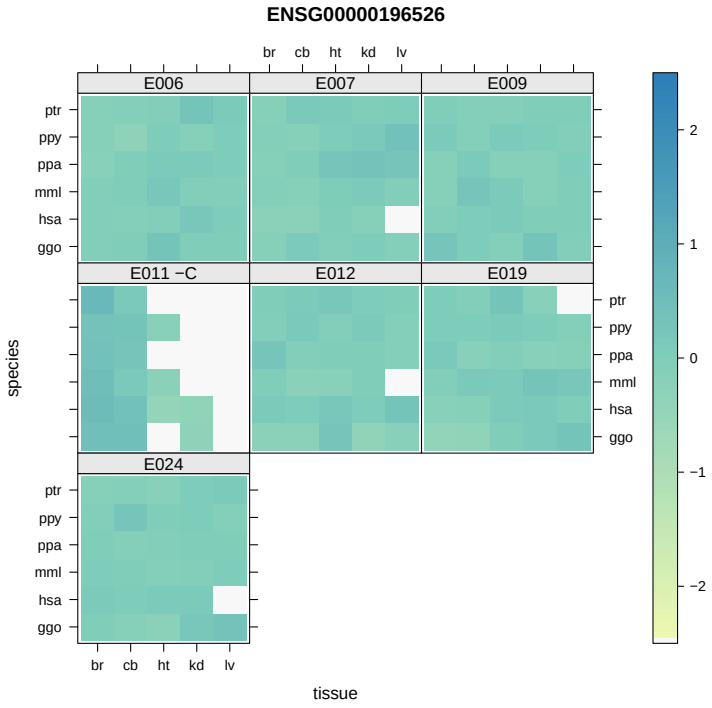

ENSG00000187147
br cb ht kd lv
E001
E002
E003
E006
E007
E008
E009 −C
E010
E014
E019
E021
E029
E030
E034
E035
E041
E042
E043
E044
E048
E049
E051
E052
E053
E054
E055
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

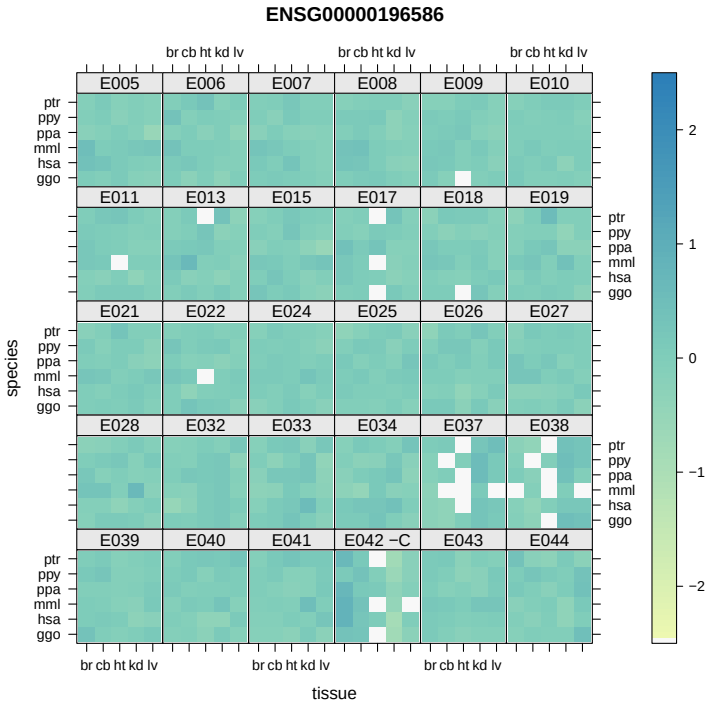

ENSG00000187164
E004
E006 −C
E007 −C
E008
E009
E011
E013
E014
E015
E016
E017
E019
E020
E021
E022
E023
E024
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

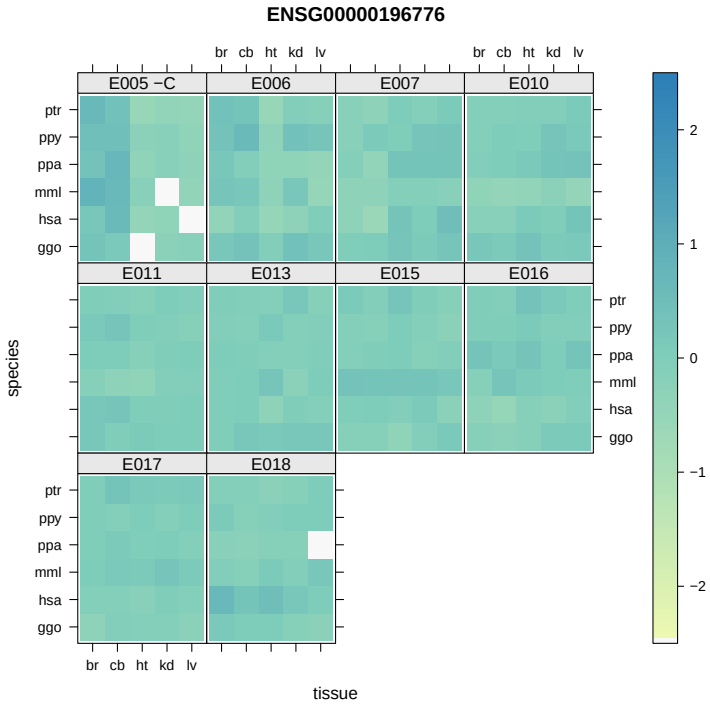

ENSG00000187764
br cb ht kd lv
E004
E008
E009 −C
E010
E014
E015
E017
E019 −C
E020
E021
E023
E028
E030
E031
E033
E034
E035
E036
E037
E038
E039
E040
E042
E045
E046
E047
E048
E050
E051
E054
E057
E059
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

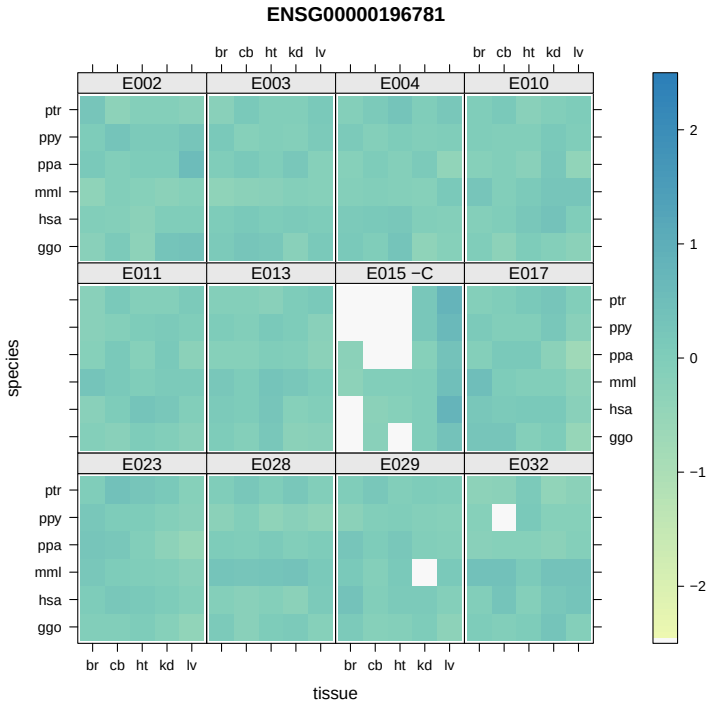

ENSG00000196083
E002
E008
E009
E012
E014
E015
E017
E020
E021
E022
E028
E029
E032
E037
E042 −C
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

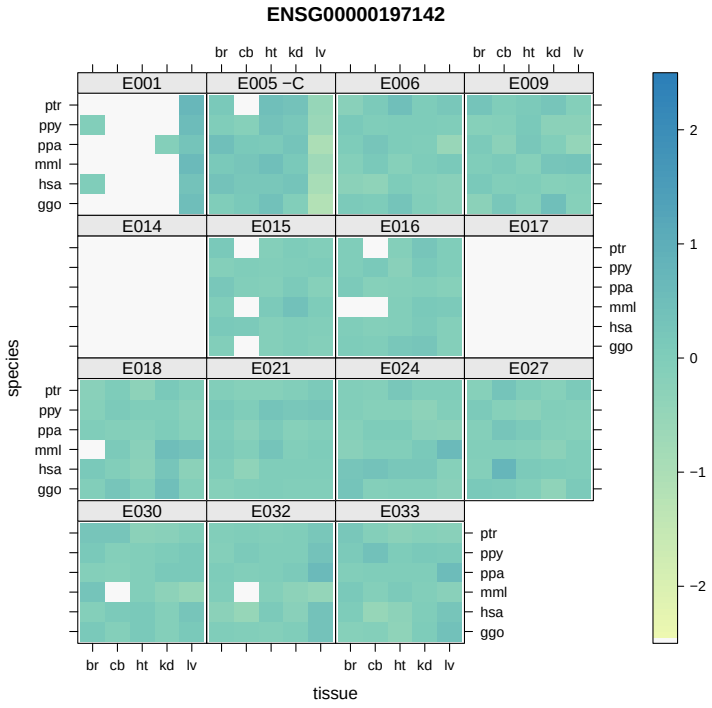

ENSG00000196504
br cb ht kd lv
E001 −C
E002
E003
E005
E006
E011
E012
E014
E015
E016
E019
E021
E022
E023
E024
E025
E027
E028
E031
E035
E036
E040
E041
E044
E045
E047
E049
E050
E051
E053
E055
E057
E058
E060
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

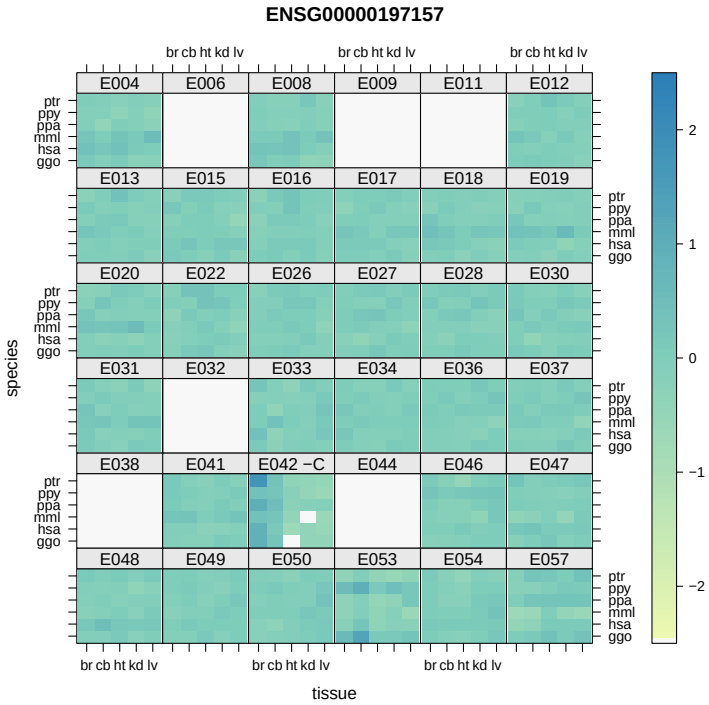

ENSG00000196526
br cb ht kd lv
E006
E007
E009
E011 −C
E012
E019
E024
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

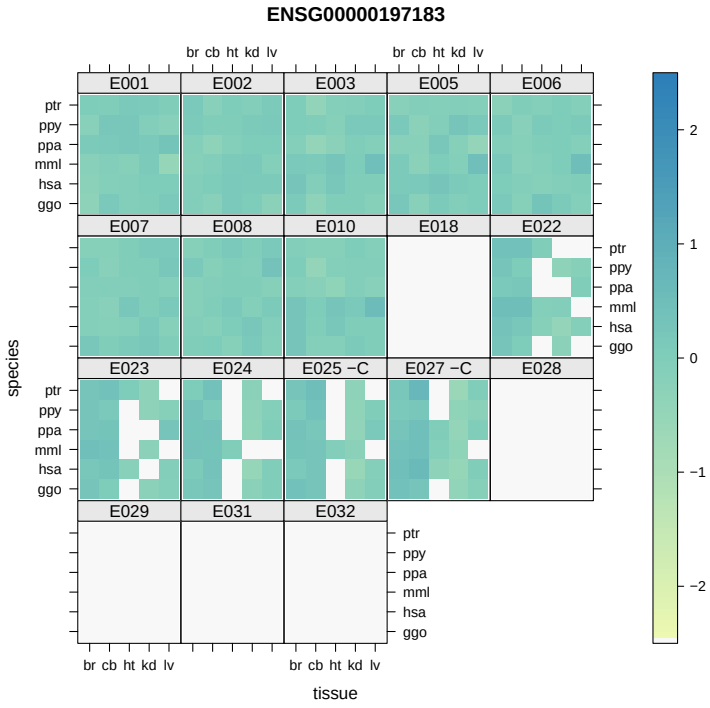

ENSG00000196586
br cb ht kd lv
E005
E006
E007
E008
E009
E010
E011
E013
E015
E017
E018
E019
E021
E022
E024
E025
E026
E027
E028
E032
E033
E034
E037
E038
E039
E040
E041
E042 −C
E043
E044
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

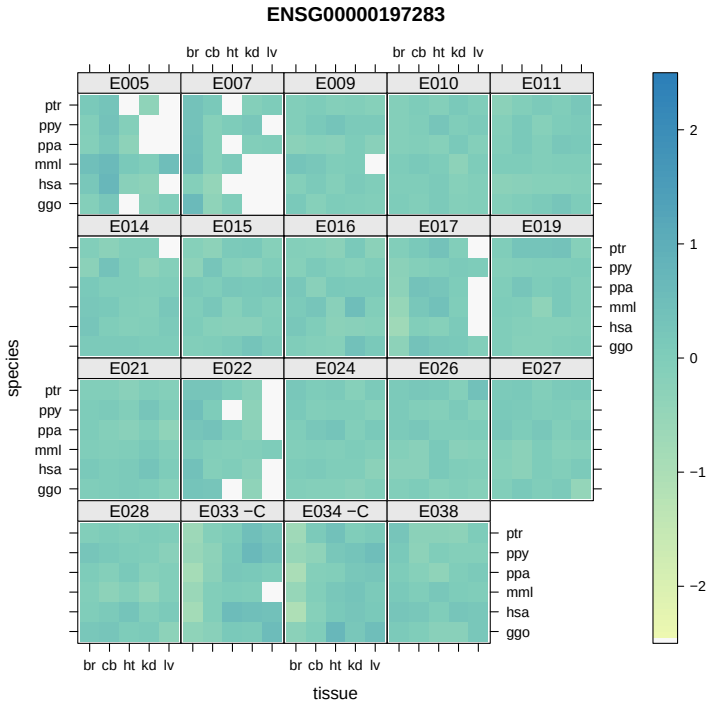

ENSG00000196776
E005 −C
E006
E007
E010
E011
E013
E015
E016
E017
E018
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2

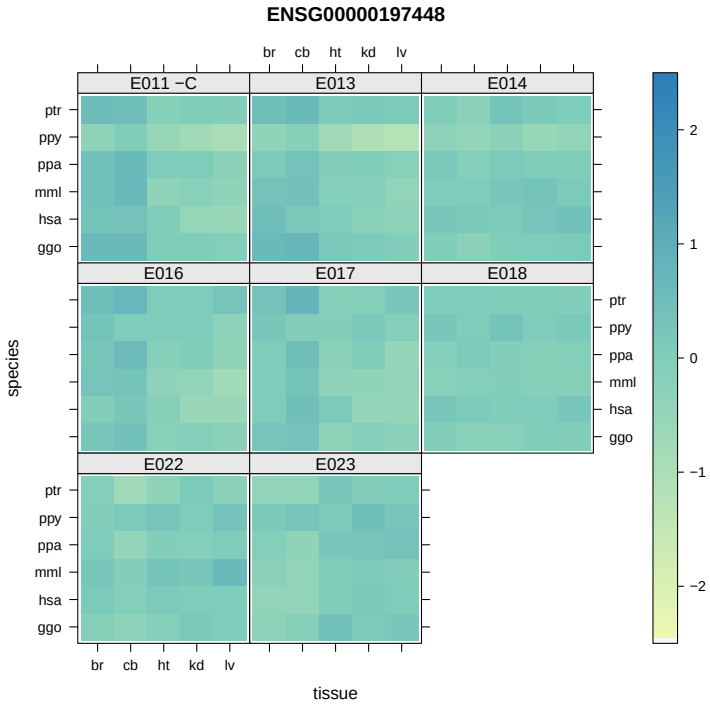

ENSG00000196781
E002
E003
E004
E010
E011
E013
E015 −C
E017
E023
E028
E029
E032
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

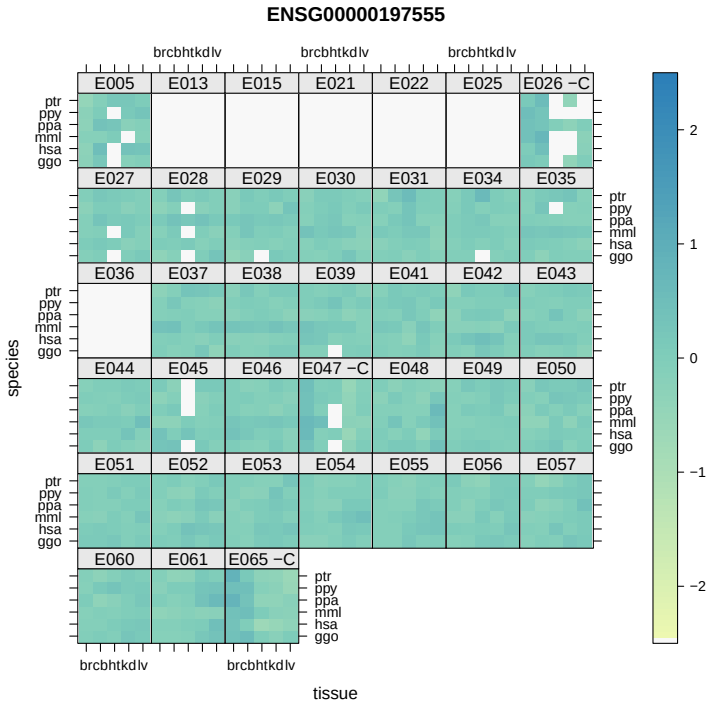

ENSG00000197142
E001
E005 −C
E006
E009
E014
E015
E016
E017
E018
E021
E024
E027
E030
E032
E033
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

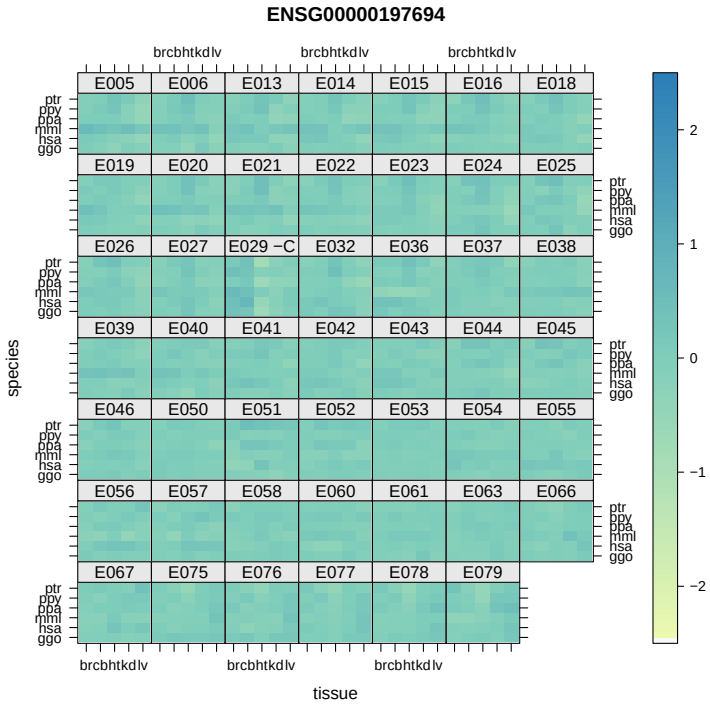

ENSG00000197157
br cb ht kd lv
E004
E006
E008
E009
E011
E012
E013
E015
E016
E017
E018
E019
E020
E022
E026
E027
E028
E030
E031
E032
E033
E034
E036
E037
E038
E041
E042 −C
E044
E046
E047
E048
E049
E050
E053
E054
E057
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

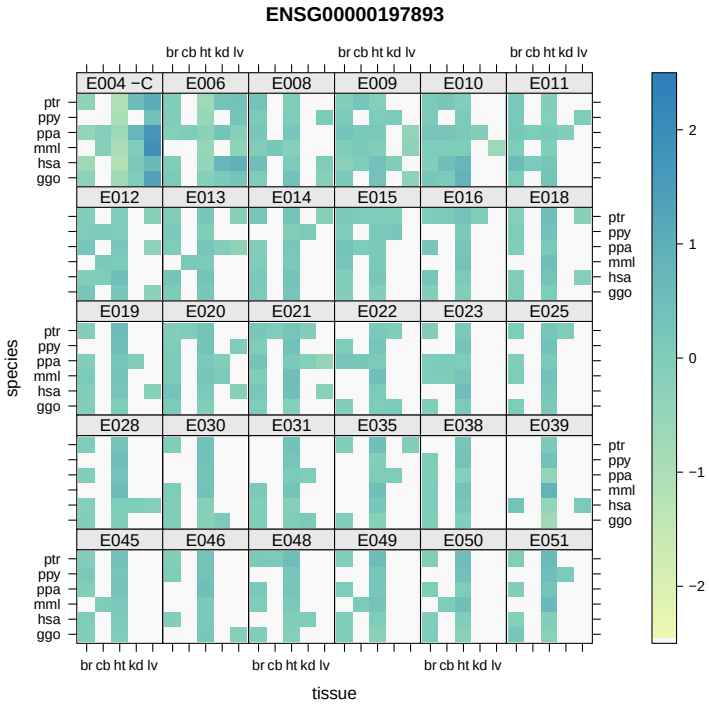

ENSG00000197183
E001
E002
E003
E005
E006
E007
E008
E010
E018
E022
E023
E024
E025 −C
E027 −C
E028
E029
E031
E032
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

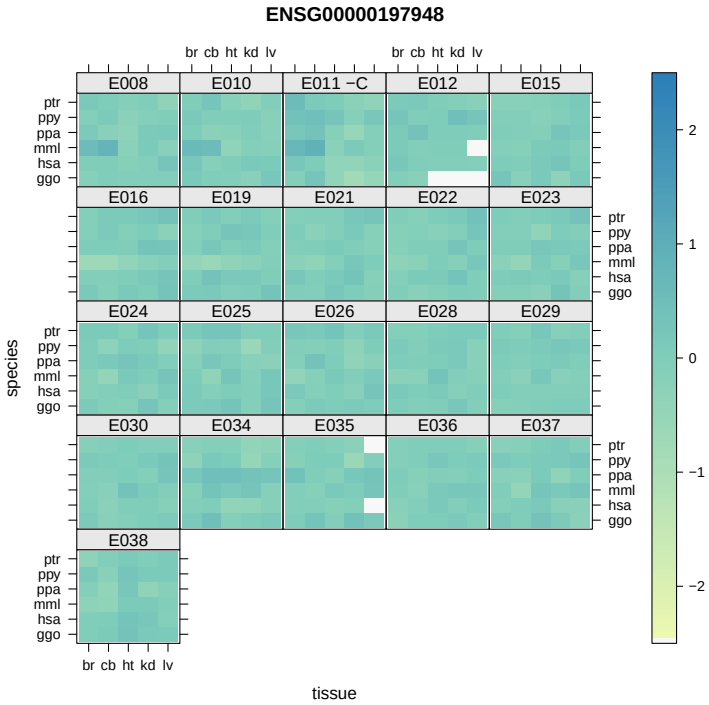

ENSG00000197283
E005
E007
E009
E010
E011
E014
E015
E016
E017
E019
E021
E022
E024
E026
E027
E028
E033 −C
E034 −C
E038
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

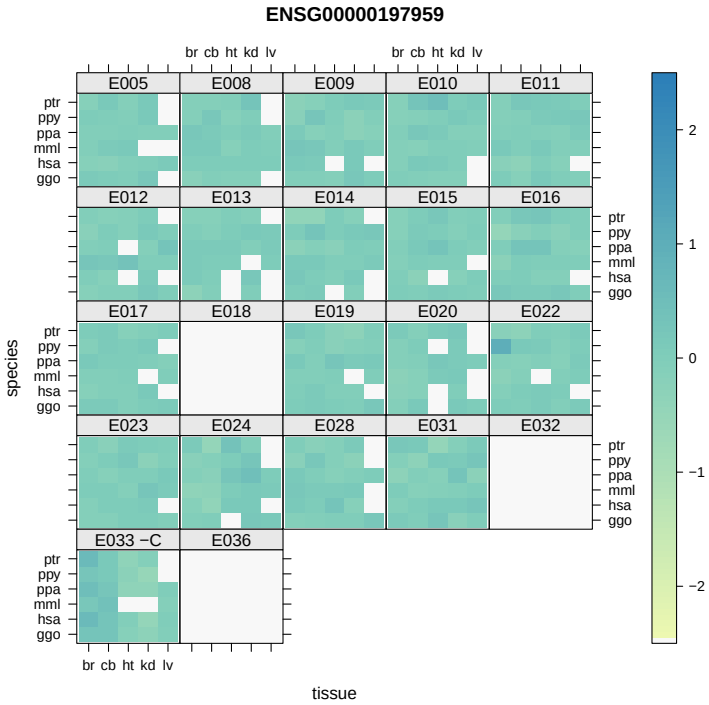

ENSG00000197448
br cb ht kd lv
E011 −C
E013
E014
E016
E017
E018
E022
E023
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

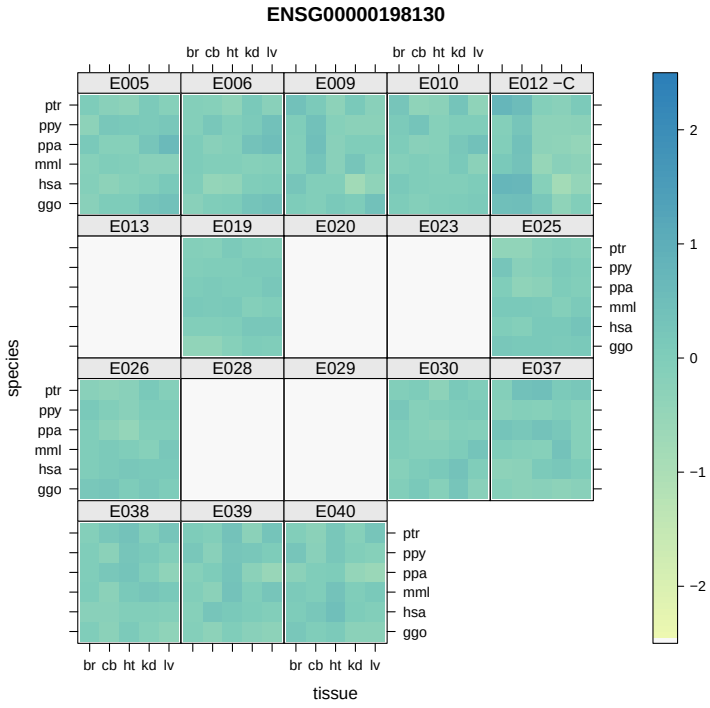

ENSG00000197555
brcbhtkdlv
E005
E013
E015
E021
E022
E025
E026 −C
E027
E028
E029
E030
E031
E034
E035
E036
E037
E038
E039
E041
E042
E043
E044
E045
E046
E047 −C
E048
E049
E050
E051
E052
E053
E054
E055
E056
E057
E060
E061
E065 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

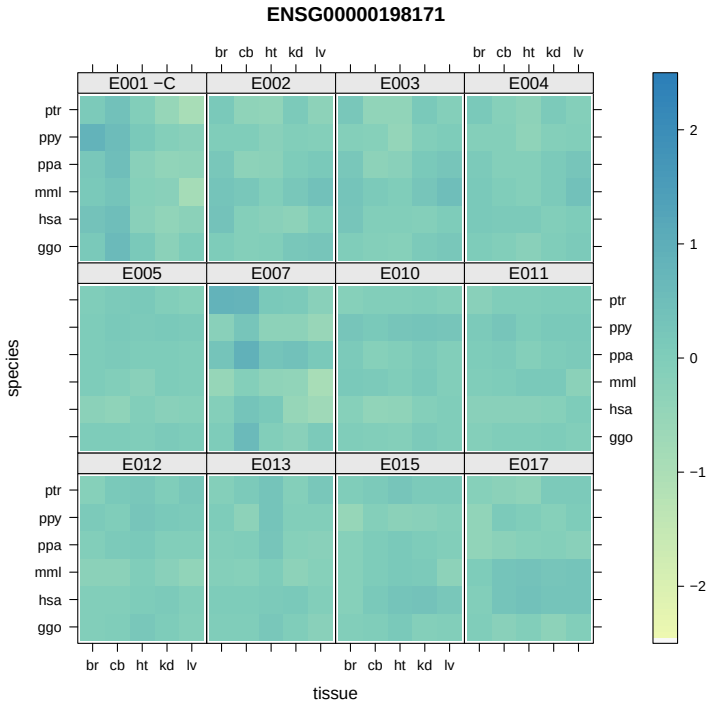

ENSG00000197694
brcbhtkdlv
E005
E006
E013
E014
E015
E016
E018
E019
E020
E021
E022
E023
E024
E025
E026
E027
E029 −C
E032
E036
E037
E038
E039
E040
E041
E042
E043
E044
E045
E046
E050
E051
E052
E053
E054
E055
E056
E057
E058
E060
E061
E063
E066
E067
E075
E076
E077
E078
E079
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

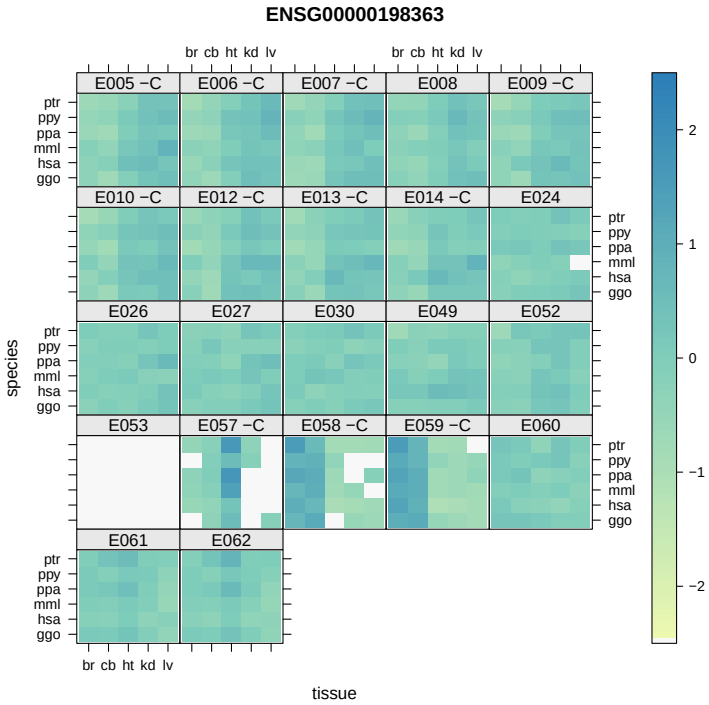

ENSG00000197893
br cb ht kd lv
E004 −C
E006
E008
E009
E010
E011
E012
E013
E014
E015
E016
E018
E019
E020
E021
E022
E023
E025
E028
E030
E031
E035
E038
E039
E045
E046
E048
E049
E050
E051
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

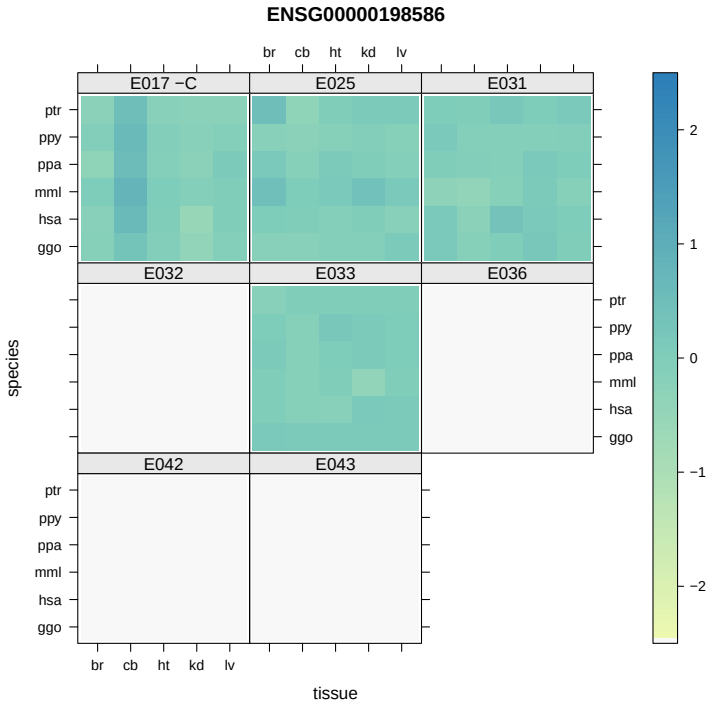

ENSG00000197948
br cb ht kd lv
E008
E010
E011 −C
E012
E015
E016
E019
E021
E022
E023
E024
E025
E026
E028
E029
E030
E034
E035
E036
E037
E038
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

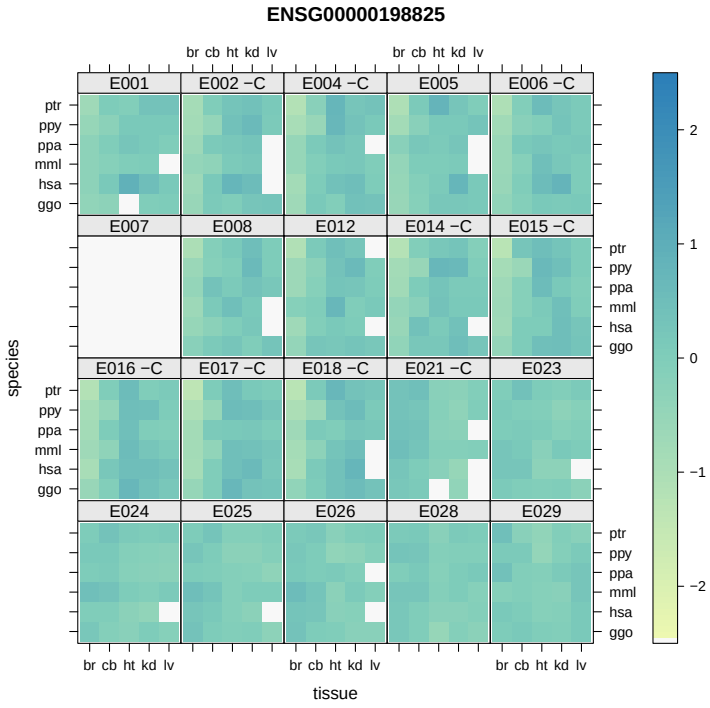

ENSG00000197959
br cb ht kd lv
E005
E008
E009
E010
E011
E012
E013
E014
E015
E016
E017
E018
E019
E020
E022
E023
E024
E028
E031
E032
E033 −C
E036
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

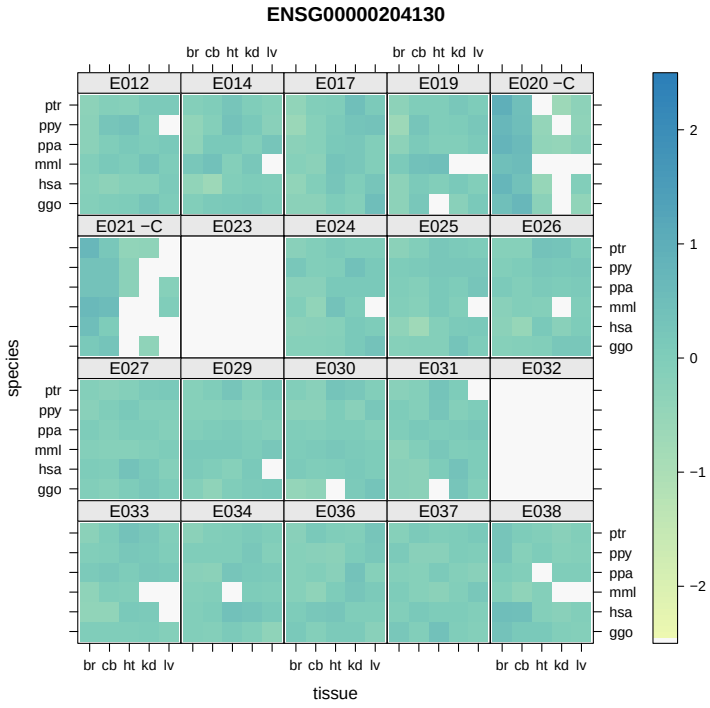

ENSG00000198130
E005
E006
E009
E010
E012 −C
E013
E019
E020
E023
E025
E026
E028
E029
E030
E037
E038
E039
E040
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

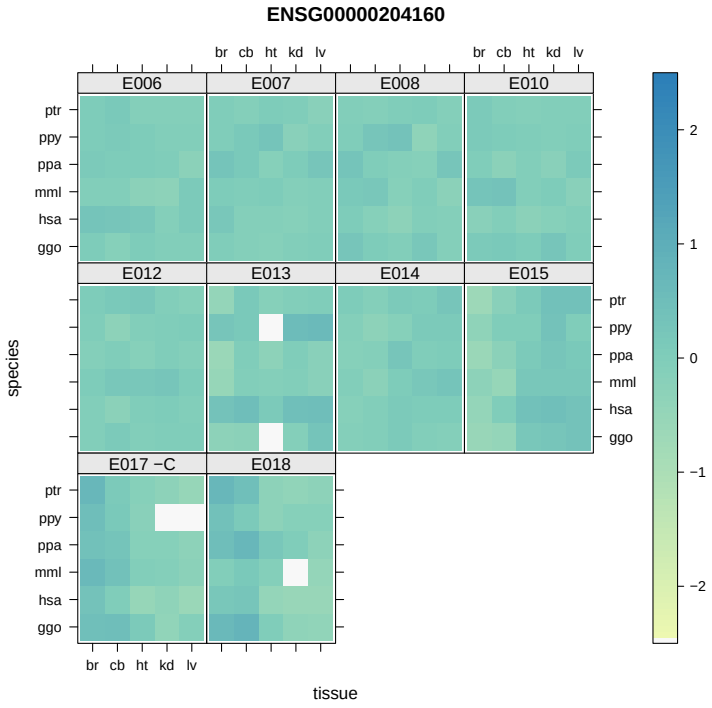

ENSG00000198171
E001 −C
E002
E003
E004
E005
E007
E010
E011
E012
E013
E015
E017
ptr
ppy
ppa
mml
hsa
ggo
br cb ht kd lv
species
tissue
2
1
0
−1
−2

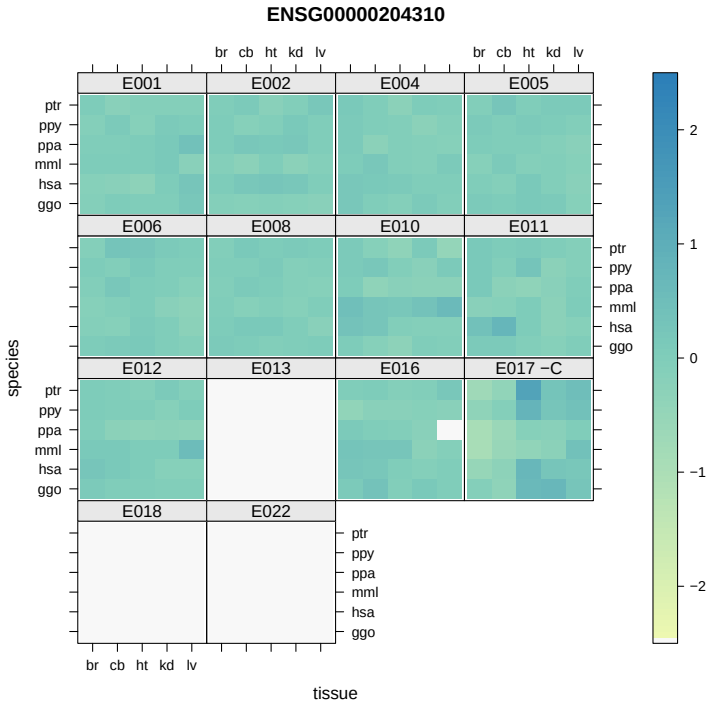

ENSG00000198363
br cb ht kd lv
E005 −C
E006 −C
E007 −C
E008
E009 −C
E010 −C
E012 −C
E013 −C
E014 −C
E024
E026
E027
E030
E049
E052
E053
E057 −C
E058 −C
E059 −C
E060
E061
E062
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

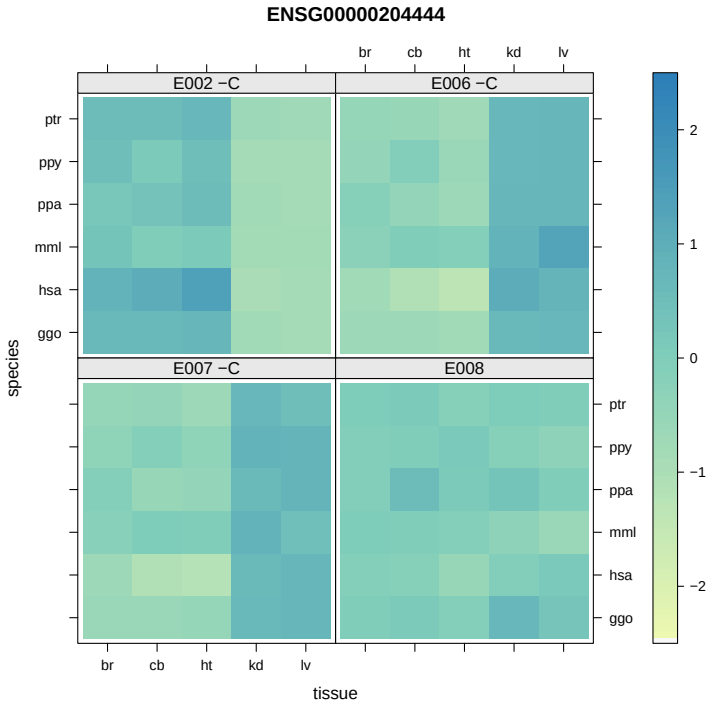

ENSG00000198586
br cb ht kd lv
E017 −C
E025
E031
E032
E033
E036
E042
E043
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

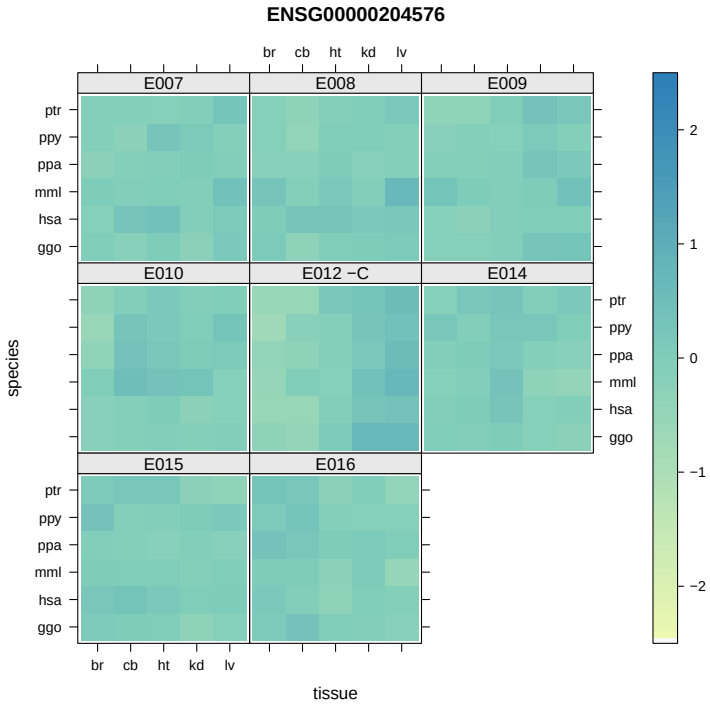

ENSG00000198825
E001
E002 −C
E004 −C
E005
E006 −C
E007
E008
E012
E014 −C
E015 −C
E016 −C
E017 −C
E018 −C
E021 −C
E023
E024
E025
E026
E028
E029
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

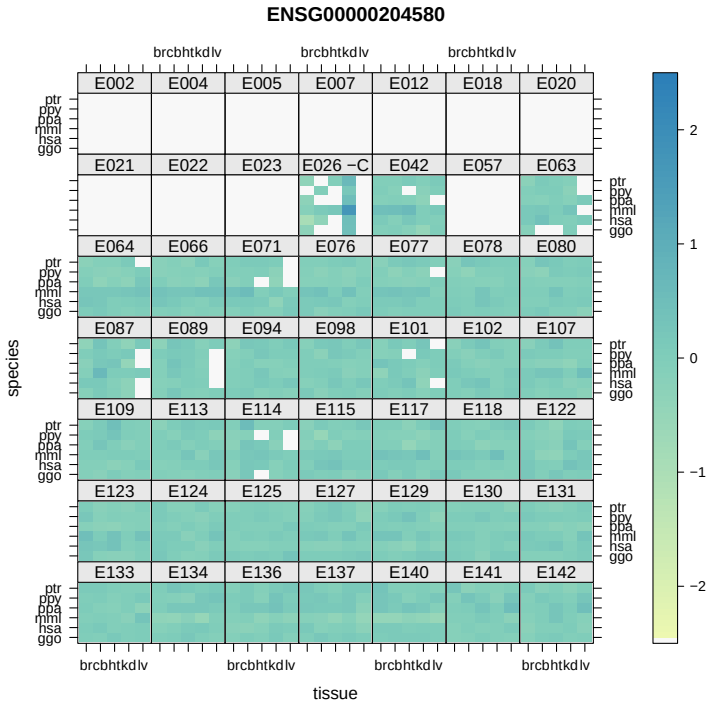

ENSG00000204130
E012
E014
E017
E019
E020 −C
E021 −C
E023
E024
E025
E026
E027
E029
E030
E031
E032
E033
E034
E036
E037
E038
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

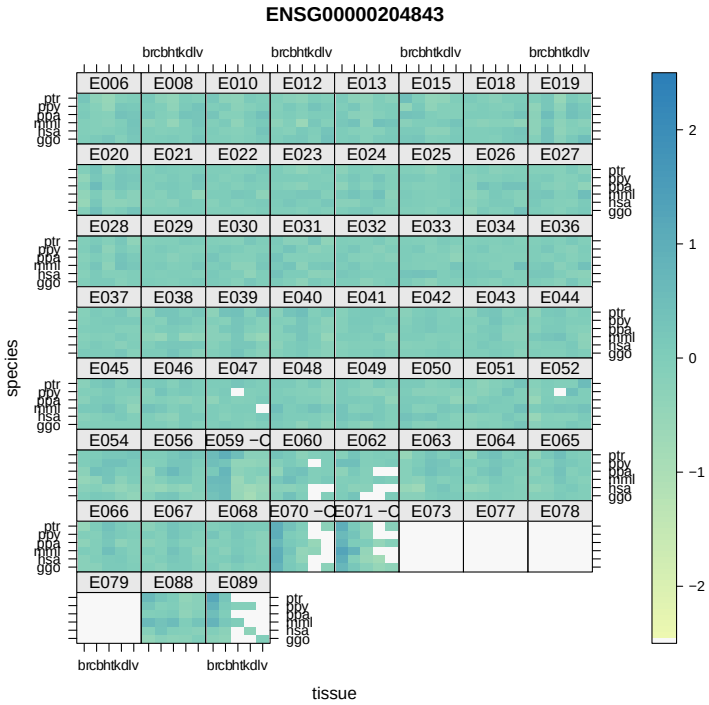

ENSG00000204160
br cb ht kd lv
E006
E007
E008
E010
E012
E013
E014
E015
E017 −C
E018
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

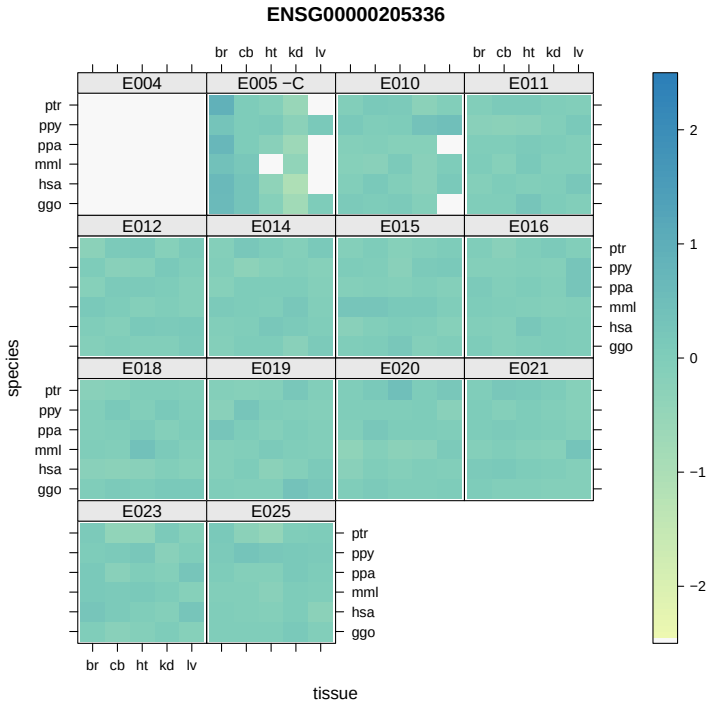

ENSG00000204310
E001
E002
E004
E005
E006
E008
E010
E011
E012
E013
E016
E017 −C
E018
E022
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

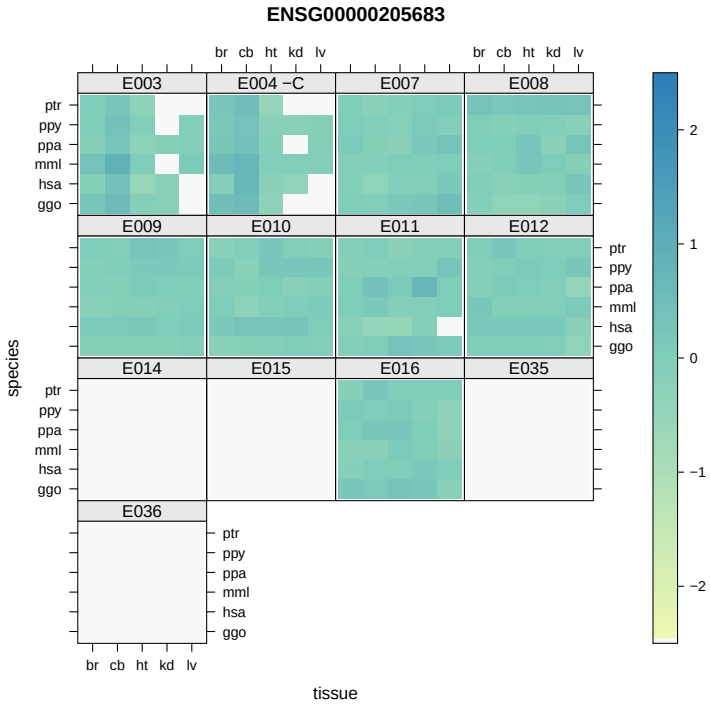

ENSG00000204444
E002 −C
E006 −C
E007 −C
E008
br
cb
ht
kd
lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

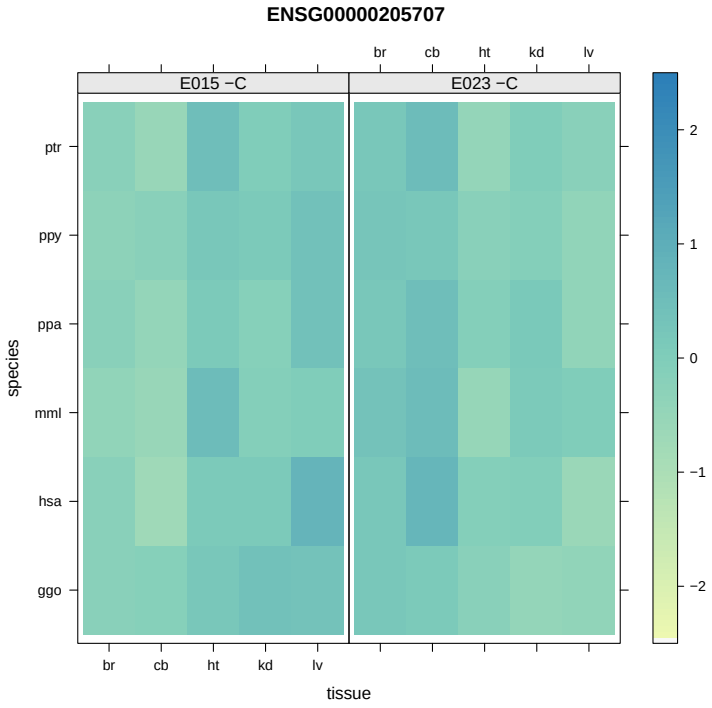

ENSG00000204576
br cb ht kd lv
E007
E008
E009
E010
E012 −C
E014
E015
E016
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

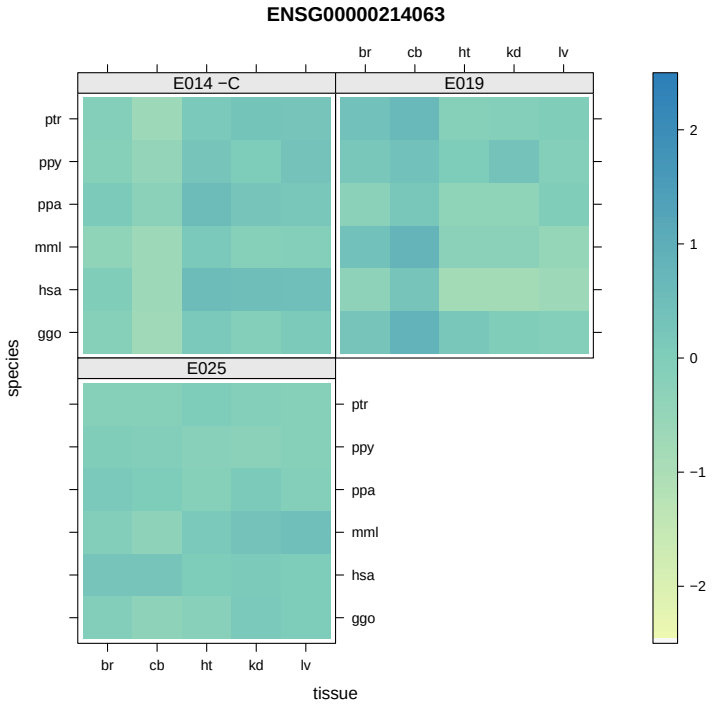

ENSG00000204580
brcbhtkdlv
E002
E004
E005
E007
E012
E018
E020
E021
E022
E023
E026 −C
E042
E057
E063
E064
E066
E071
E076
E077
E078
E080
E087
E089
E094
E098
E101
E102
E107
E109
E113
E114
E115
E117
E118
E122
E123
E124
E125
E127
E129
E130
E131
E133
E134
E136
E137
E140
E141
E142
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2

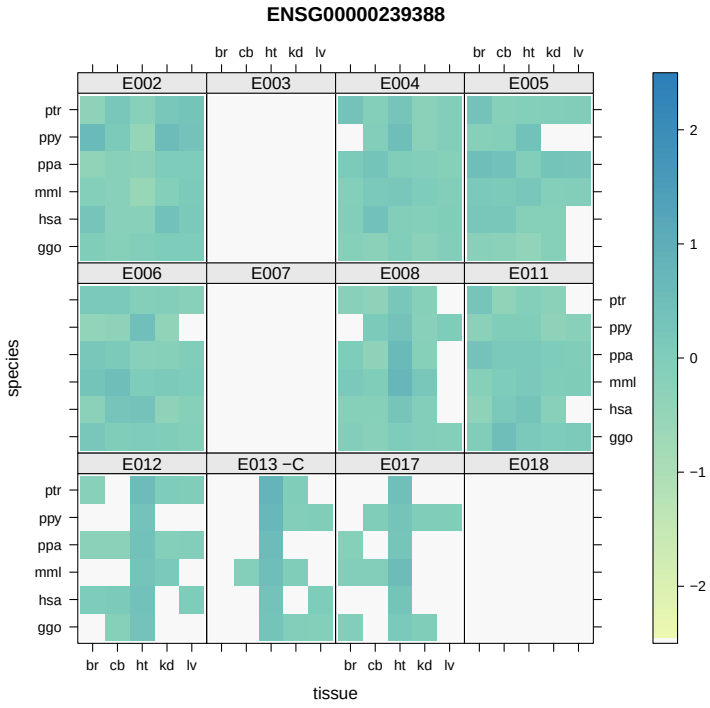

ENSG00000204843
brcbhtkdlv
E006
E008
E010
E012
E013
E015
E018
E019
E020
E021
E022
E023
E024
E025
E026
E027
E028
E029
E030
E031
E032
E033
E034
E036
E037
E038
E039
E040
E041
E042
E043
E044
E045
E046
E047
E048
E049
E050
E051
E052
E054
E056
E059 −C
E060
E062
E063
E064
E065
E066
E067
E068
E070 −C
E071 −C
E073
E077
E078
E079
E088
E089
ptr
pby
pba
mmul
nsa
ggo
species
tissue
2
1
0
−1
−2

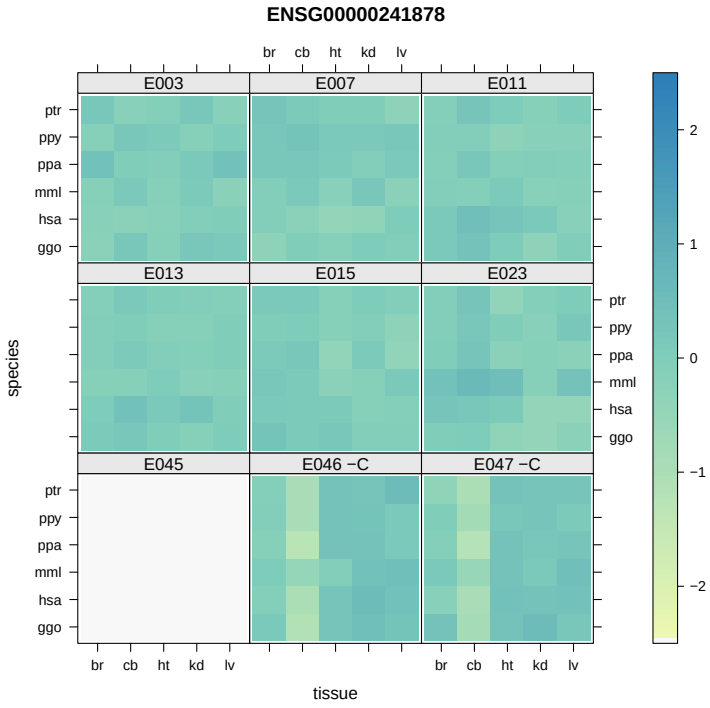

ENSG00000205336
E004
E005 −C
E010
E011
E012
E014
E015
E016
E018
E019
E020
E021
E023
E025
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2


ENSG00000205683
E003
E004 −C
E007
E008
E009
E010
E011
E012
E014
E015
E016
E035
E036
br cb ht kd lv
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2


ENSG00000205707
E015 −C
E023 −C
br
cb
ht
kd
lv
species
ptr
ppy
ppa
mml
hsa
ggo
tissue
2
1
0
−1
−2


ENSG00000214063
br
cb
ht
kd
lv
E014 −C
E019
E025
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2


ENSG00000239388
E002
E003
E004
E005
E006
E007
E008
E011
E012
E013 −C
E017
E018
ptr
ppy
ppa
mml
hsa
ggo
br
cb
ht
kd
lv
species
tissue
2
1
0
−1
−2


ENSG00000241878
br cb ht kd lv
E003
E007
E011
E013
E015
E023
E045
E046 −C
E047 −C
ptr
ppy
ppa
mml
hsa
ggo
species
tissue
2
1
0
−1
−2