Package ‘yeastCC’

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Version 1.42.0
Title Spellman et al. (1998) and Pramila/Breeden (2006) yeast cell cycle microarray data
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Description ExpressionSet for Spellman et al. (1998) yeast cell cycle microarray experiment
License Artistic-2.0
LazyData yes
Depends Biobase (>= 2.5.5)
biocViews ExperimentData, CellCulture, Saccharomyces_cerevisiae_Data,
CancerData, MicroarrayData, OneChannelData, GEO
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Description

ExpressionSet instance; 50 samples from a 25-sample dye-swap of alpha-synchronized yeast cultures

Usage

data(breeden)

Format

The format is:

Formal class 'ExpressionSet' [package "Biobase"] with 7 slots
  ..@ assayData :<environment: 0x10221ebc8>
  ..@ phenoData :Formal class 'AnnotatedDataFrame' [package "Biobase"] with 4 slots
  .. ..@ varMetadata :data.frame": 37 obs. of 1 variable:
  .. .. ..$ labelDescription: chr [1:37] NA NA NA NA ...
  .. ..@ data :data.frame": 50 obs. of 37 variables:
  .. .. ..$ title : Factor w/ 50 levels "Yeast cell cycle-time point 0 min 2001-08-17_0000.rfm Yeast W303 cells"...: 1 2 3 15 17 19 21 23 25 27 ...
  .. .. ..$ geo_accession : Factor w/ 50 levels "GSM112133","GSM112134"...: 1 2 3 4 5 6 7 8 9 10 ...
  .. .. ..$ status : Factor w/ 1 level "Public on Aug 05 2006": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ submission_date : Factor w/ 1 level "Jun 01 2006": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ last_update_date : Factor w/ 1 level "Jun 23 2006": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ type : Factor w/ 1 level "RNA": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ channel_count : Factor w/ 1 level "2": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ source_name_ch1 : Factor w/ 25 levels "Yeast cell cycle-time point 0 min",...
  .. .. ..$ organism_ch1 : Factor w/ 1 level "Saccharomyces cerevisiae": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ characteristics_ch1 : Factor w/ 25 levels "Yeast cell cycle-time point 0 min",...
  .. .. ..$ treatment_protocol_ch1 : Factor w/ 1 level "Cells were arrested with alpha factor,and released into YEPD to get a synchronized population. Cells were sampled every 5 min a"...
  .. .. ..$ molecule_ch1 : Factor w/ 1 level "total RNA": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ label_ch1 : Factor w/ 2 levels "Cy3","Cy5": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ source_name_ch2 : Factor w/ 1 level "Yeast asynchronous culture": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ organism_ch2 : Factor w/ 1 level "Saccharomyces cerevisiae": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ characteristics_ch2 : Factor w/ 1 level "Yeast asynchronous culture": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ treatment_protocol_ch2 : Factor w/ 1 level "Cells were grown overnight to an OD of 0.6 in YEPD": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ molecule_ch2 : Factor w/ 1 level "total RNA": 1 1 1 1 1 1 1 1 1 1 ...
  .. .. ..$ label_ch2 : Factor w/ 2 levels "Cy3","Cy5": 2 2 2 2 2 2 2 2 2 2 ...
The Forkhead transcription factor Hcm1 regulates chromosome segregation genes and fills the S-phase gap in the transcriptional

Transcription patterns shift dramatically as cells transit from one phase of the cell cycle to another. To better define this transition, the authors of this study investigated the expression patterns of genes involved in chromosome segregation during the cell cycle. The study was conducted using a combination of gene expression analysis and immunofluorescence microscopy. The results showed that the expression of Hcm1, a Forkhead transcription factor, is upregulated during S-phase and is crucial for proper chromosome segregation.

Details

Retrieved from GEO using getGEO in package GEOquery, August 27 2009. Variables mins and sign added to pData manually.

Source

PMID 16912276; see url slot of experimentData slot.

Examples

data(breeden)
orf800

# show how to use the dye-swap 'sign' variable
#
plot(exprs(breeden)["YBL002W",]-breeden$mins)
plot(I(exprs(breeden)["YBL002W",]*breeden$sign)-breeden$mins)

orf800

Cell cycle regulated genes from Spellman et al. (1998)

Description

Vector of ORF names for the 800 cell cycle regulated genes identified by the analysis of Spellman et al. (1998). The expression measures and sample descriptions are stored in the ExpressionSet instance yeastCC.

Usage

data(orf800)

Format

The format is: chr [1:800] "YAL022C" "YAL040C" "YAL053W" "YAL067C" "YAR003W" "YAR007C"
...

Source

The 800 ORF names were obtained from the file "CellCycle98.xls" on the Yeast Cell Cycle Analysis Project website (http://genome-www.stanford.edu/cellcycle/). The raw data (images, TIFF) and processed data "combine.txt" used to create the ExpressionSet instance yeastCC are also available on the website. Gene annotation information is available from the Saccharomyces Genome Database (SGD, http://genome-www.stanford.edu/Saccharomyces/gene_list.shtml). The script "createYeastCC.R" for generating the yeastCC package is available in ../doc.

References


Examples

data(orf800)
Description

data.frame instance with metadata on 800 genes

Usage

data(spYCCmeta)

Format

A data frame with 800 observations on the following 75 variables.

Process a factor with levels 4-nitroquinoline-N-oxide resistance ATP synthesis ...
Function a factor with levels (1->6)-beta-glucan synthase subunit (putative) Glc7p regulatory subunit ...
X a logical vector
Peak a factor with levels G1 G2/M M/G1 S S/G2
Phase.Order a numeric vector
Cluster.Order a numeric vector
ORF a factor with levels YAL022C YAL040C YAL053W YAL067C YAR003W YAR007C ...
YPD a factor with levels AAD10 ACE2 ADA2 ADK2 AFR1 AGA1 AGA2 AGP1 ...
SGD a factor with levels AAD10 ACE2 ADA2 ADK2 AFR1 AGA1 AGA2 ...
YPD.1 a factor with levels YPD
SGD.1 a factor with levels SGD
MIPS a factor with levels MIPS
n1 a numeric vector
n2 a numeric vector
Geomean a numeric vector
Absolute a numeric vector
g1 a numeric vector
g2 a numeric vector
Geomean.1 a numeric vector
Absolute.1 a numeric vector
Deletion a factor with levels irrelevant lethal undocumented viable
Known. a factor with levels Known New New
Description a factor with levels Inhibitor of Cdc28p/Cln1p and Cdc28p/Cln2p complexes involved in cell cycle arrest for mating 1,3-beta-D-glucan synthase 3'-'-Phosphoadenylylsulfate reductase; part of the sulfate assimilation pathway ...
<table>
<thead>
<tr>
<th>Aggregate.Score</th>
<th>a numeric vector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td>a numeric vector</td>
</tr>
<tr>
<td>No..Elements</td>
<td>a numeric vector</td>
</tr>
<tr>
<td>Most.Relevant.Promoter.Elements</td>
<td>a factor with levels AAAATAGACCGAGAGGGCGCAAAAGGTAAACACAATG ATTTGGATGCGCGAAAGGGCGCAAAAC GTAAATAGTTGT C 156 TCTGCCACGCAC A 253 AAAGCCAGCCCAT C 256 TATGCCACGCCA C 276 AAGGCCGAGGCTC C 293 TTGCCAGCTAA ...</td>
</tr>
<tr>
<td>X.1</td>
<td>a factor with levels ATATAGCGGAGATCGGAAATGAGGTAAACACATG ATTTGATTGGAGCGCAAAAGGTAAACACAATG C 156 TCTGCCACGCAC A 253 AAAGCCAGCCCAT C 256 TATGCCACGCCA C 276 AAGGCCGAGGCTC C 293 TTGCCAGCTAA ...</td>
</tr>
<tr>
<td>X.2</td>
<td>a factor with levels C 125 GCAAACCAAGCCTC C 146 CAAGCGCAGCCAT C 195 CGCACCCAGCAAC A 212 TATACCAGGTTC C 245 TAAACACGCCGCA C 402 TATGCCACGCAC A 112 aaaaACGCGaaagc c 127 agtACGCGaatc c 138 acaACGCGgaacac c 148 attACGCGGaaaaa ...</td>
</tr>
<tr>
<td>X.3</td>
<td>a factor with levels C 307 AAGGCCAGCATT C 163 CAACGCGGaaaac C 190 attACGCGGaaaaa c 220 tagACGCGGccattc c 241 cgaACGCGgaacac c 275 aaaaACGCGaatttc c 282 aagACGCGaatc c 289 attACGCGGccattc c 290 agtACGCGGaaaaa ...</td>
</tr>
<tr>
<td>X.4</td>
<td>a factor with levels C 200 CAAACACGCACTC C 117 gtcACGCGGaaaaa c 314 cctACGCGGaaaaa c 338 ccaACGCGGaaaaa c 359 acgACGCGGccattc c 382 ttcACGCGGaatc c 384 tcACGCGGaatc c 397 aaaaACGCGGaaaaa c 440 gttACGCGGccattc ...</td>
</tr>
<tr>
<td>X.5</td>
<td>a factor with levels C 306 GGAGCCACCGGCG C 467 acgACGCGaaaaa c 588 gaaACGCGGaaaaa w 266 ATAACCCGCAAAC C 383 cagACGCGGaaaaa w 347 GGAACGGGCAAC w 401 tatCAGCGGaaaatt C 478 GGAGCCAGCGCG C 550 GCGGCCAGCGGG C 639 gttACGCGGaaaaa ...</td>
</tr>
<tr>
<td>X.6</td>
<td>a factor with levels C 337 AGAGCGCAGCAAC C 417 TCAGCCAGCAAC C 501 aacaACGCGGaaaaa w 370 gctACGCGGaaaaa w 447 AGAGCGCAGCAAC ...</td>
</tr>
<tr>
<td>X.7</td>
<td>a factor with levels C 388 GAAACCACGAGA C 396 GAAACCACGAGA ...</td>
</tr>
<tr>
<td>Number</td>
<td>a numeric vector</td>
</tr>
<tr>
<td>SCB</td>
<td>a factor with levels c 103 gacCAGCGAAAtttt c 105 atgCAGCGAAAtttt c 106 ctaCAGCGAAAcac c 120 ctaCAGCGAAAtttt c 110 ccaCAGCGAAAgta c 123 agaCAGCGAAAagtc c 127 acaCAGCGAAAatgc c 181 cagCAGCGAAAagtc ...</td>
</tr>
<tr>
<td>SCB.1</td>
<td>a factor with levels c 178 tgaCAGCGAAAac c 232 gaaCAGCGAAAttg c 359 gtaCAGCGAAAttac c 269 agcCAGCGAAAttg c 347 tgaCAGCGAAAttgc 541 gatCAGCGGAAacac c 601 tgtCAGCGGAAattac ...</td>
</tr>
<tr>
<td>SCB.2</td>
<td>a factor with levels c 360 GAGCCAGCAGA C 396 GAGCCAGCAGA ...</td>
</tr>
<tr>
<td>SCB.3</td>
<td>a factor with levels w 435 atcCAGCGAAatc ...</td>
</tr>
<tr>
<td>X.8</td>
<td>a factor with levels w 252 aacCAGCGAAagt ...</td>
</tr>
<tr>
<td>Number.1</td>
<td>a numeric vector</td>
</tr>
<tr>
<td>SCB.d</td>
<td>a factor with levels c 156 gatCGCGAAAtttt c 184 cgaCGCGAAAtgc c 218 cagCGCGAAAtgc c 222 tatCGCGAAAtgacc c 227 tatCGCGAAAtgacc c 237 tatCGCGAAAtgc c 238 ttcCGCGAAAtgc c 239 cgaCGCGAAAtgacc c 283 aacCGCGAAAtgacc c 285 gtcCGCGAAAtgacc ...</td>
</tr>
<tr>
<td>SCB_d.1</td>
<td>a factor with levels c 126 tttCGCGAAAtc c 415 tttCGCGAAAtc c 566 tttCGCGAAAtc c 592 aggCGCGAAAttc c 633 aaaCGCGAAAttc c 242 gaaCGCGAAAttgc 297 ctcCGCGAAAttc c 306 ttcCGCGAAAttc ...</td>
</tr>
<tr>
<td>SCB_d.2</td>
<td>a factor with levels c 468 ccaCGCGAAAttc c 508 tttCGCGAAAttc ...</td>
</tr>
<tr>
<td>SCB_d.3</td>
<td>a factor with levels c 502 ccaCGCGAAAttc ...</td>
</tr>
<tr>
<td>Number.2</td>
<td>a numeric vector</td>
</tr>
</tbody>
</table>
MCB a factor with levels w 126 gcaACGCGTcgc w 187 caaACGCGTaca w 207 acaACGCGTgct w 267 cccACGCGTagg ...
MCB.1 a factor with levels w111 gaaACGCGTcct w124 ttgACGCGTttc w128 gtgACGCGTatat w130 agaACGCGTtac w138 aagACGCGTgaa w139 attACGCGTtta w153 ctaACGCGTttt ...
MCB.2 a factor with levels w374 taaACGCGTcat
MCB.3 a factor with levels w309 aggACGCGTaaa
Number.3 a numeric vector
MCB_d a factor with levels c 106 attACGCGaaaat c 109 acaACGCGaactgg c 112 aaaaACGCGGaaaaa c 115 agtACGCGGaaaag c 117 gtcACGCGGaaaaa c 121 ggaACGCGGacgc c 127 gtgACGCGGaaaaa c 129 acaACGCGGcgcga ...
MCB_d.1 a factor with levels c 123 acaACGCGaacaac c 136 aatACGCGGatgag c 147 gcaACGCGGAaga ca 158 tctACGCGGgagaa c 163 ctgACGCGGgaaac c 176 gcgACGCGGgttgt c 187agtACGCGGatttg c 189 gaaACGCGGGcagc ...
MCB_d.2 a factor with levels c 112 ttaACGCGGactga c 220 tagACGCGGcctta c 294 ttcACGCGGcctta c 382 gttACGCGGcaagt c 477 gcaACGCGGcctgtt c 501 acaACGCGGaaaac c 549 attACGCGGacag c 557 tgtACGCGGcagac ...
MCB_d.3 a factor with levels c 617 gaaACGCGGagata w 50 gtaACGCGGcattt ...
X.9 a factor with levels c 359 acgACGCGGccttc
Number.4 a numeric vector
SFF a factor with levels AATAGATGACCCGATTTGGAAAAAGGTAAACAACAATG ATTTGATTGCCGAAAGAGGCAAAAC GTAAATAGGTTGT CAAAACAAACCCAATAAAGAAAATCCAAAATATAGAAC GTACTTTAACCTGTTTAGGAAAAAG GTAAACAATAACA TCGAACAATTCTAAAAAGGTAAAT AAAAACAATGGTA ...
Number.5 a factor with levels 1 2 3 4 ATATAGCGACCGAATCAGGAAAAGGTCAACAACGAAG ...
Swi5 a factor with levels C 102 CGAGCCAGCATT C 156 TCTGCCAGCCAA C 200 CAAACCAGCATC C 252 AAGACCAGCATG C 253 AAAGCCACCAGC C 256 TATGCCACCCA C 276 AAGGCGCACTTC C 293 TTGACCAGCTAA ...
Swi5.1 a factor with levels C 125 GCAACCAGCTCT C 146 CAAGCCAGCCAT C 195 CGACCAGCAGC C 245 TAAACCAGGCCA C 301 AGTGCCAGCAGC C 306 GGAGCCAGCGGC C 307 AAGACCAGCATT C 402 TATGCCAGCAGA ...
Swi5.2 a factor with levels C 212 TATACCACCGGG T 337 AGAGCCAGCAGA C 19 AGAACCAGCTGA c 320 ACCACCAGTTA c 545 ACCACCAGGTA c 569 TTTACCACCGGG C 642 GAGACCAGCGGA c 651 ATCCACCAGCA ...
Swi5.3 a factor with levels C 388 GGAACCAGCAGA C 417 TCGGCCAGCAT C 336 TTTACCACCTCA c 363 TGGACCAGCAT C 494 CTGACCACCAAG w 396 GGAACCAGCAGA ...
Number.6 a numeric vector
Swi5e a factor with levels C 102 CGAGCCAGCATT C 137 TAGGCCAGCAGA C 155 ACAACCAGCAGC C 156 CTACCACCGAG c 16 AGAGCCAGCAGA C 174 TAAACCACCTT C 184 ATGGCCACCAT C 200 CAAACCAGCAT ...
Swi5e.1 a factor with levels C 222 TTGACCAGCGGC C 256 TAAACCACCAA C 306 GGAGCCAGCGGC C 307 AGAGCCAGCATT C 637 GGAGCCAGCGGC C 651 ATGGCCAGCAT C 793 GGAACCAGCAGA C 804 ATGGCCAGCAGA ...
y whole yeastCC

Swi5e.2 a factor with levels  c 337 AGAGCCAGCAAG c 417 TCGGCCAGCAAT c 642 GAAGACCACCGGA w
447 AGAGCCAGCAAG
Swi5e.3 a factor with levels  c 388 GAAGACCACCGGA w 396 GAAGACCACCGGA
Number.7 a numeric vector
ECB a factor with levels  c 185 TTACCCATTTAGGAAA c 221 TTACCAATTTAGGAAA c 251 TTCCCTTTTAGGAAA
 c 258 TTACCCAAAAAGGAAA c 387 TTACCACTTTTAGGAAA c 394 TTACCCACTTTAGGAAA w 154 TTCCCTTTTAGGAAA
 w 177 TTACCCACTTTAGGAAA w 229 TTACCCAGAAGGAAA w 378 TTCCCTATTTAGGAAA w 453 TTCCCTTTTAGGAAA
 w 595 TTCCCACTTTAGGAAA
Number.8 a numeric vector
STE12 a factor with levels  c 243 CTTTTTCTAGTTTTTCTATTTTTCACTGAAACT w 112 CCTATTTGTGCTTCAATTCCGTAACC
 w 119 CCAATGTAGAAAAAGTACATCATATGAAACA w 218 CTTAATTTGTAAGTTACATATGAAACA w 224
CCCAAGGAAATTTACATGTTAAATAGGAAA ...
MIG1.sites a factor with levels  c 114 AATAGACTGGGG c 137 TCTATCCTGGGG c 147 TGAATGCTGGGG
 c 165 AATAAAGTGGGG c 215 TATAATGCGGGG c 304 AAATCGCCGGGG c 332 AAATACCGGGG c 368
AATTGCGCGGGG ...
X.10 a factor with levels  c 161 AGTTTGGTGGGG c 262 AAGATGGTGGGG c 491 AAAAAACCGGGG c 498
 AAAAAATCGGGG w 296 TATTCGCGGGG w 578 CTTTTGCCGGGG
X.11 a logical vector

Details
taken from the Spellman support web site.

Source

cellcycle-www.stanford.edu

References

PMID 9843569

Examples

data(spYCCmeta)
spYCCmeta[1:5,1:6]

yeastCC  Data from the Spellman et al. (1998) yeast cell cycle microarray experiment

Description

This data package contains an ExpressionSet instance for the yeast cell cycle microarray experiment. The dataset contains gene expression measures (log-ratios, with Cy3-labeled common reference) for 6,178 yeast genes in 77 conditions.
Usage

data(yeastCC)

Details

There are four main timecourses: alpha (alpha factor arrest), cdc15, cdc28, and elu (elutriation), corresponding to different synchronization methods. For details on experimental procedures and analysis, refer to Spellman et al. (1998) (in ../doc) and the Yeast Cell Cycle Analysis Project website (http://genome-www.stanford.edu/cellcycle/). The ExpressionSet instance yeastCC was derived from the file "combined.txt" on the website. The ORF names for the 800 cell cycle regulated genes are stored in orf800.

Source

The raw data (images, TIFF) and processed data "combine.txt" used to create the ExpressionSet instance yeastCC are available from the Yeast Cell Cycle Analysis Project website (http://genome-www.stanford.edu/cellcycle/). Gene annotation information is available from the Saccharomyces Genome Database (SGD, http://genome-www.stanford.edu/Saccharomyces/gene_list.shtml). The script "createYeastCC.R" for generating the yeastCC package is available in ../doc.

Note that spYCCES is an ExpressionSet instance with the same data and slightly different pheno-data annotation.

References


Examples

data(yeastCC)
yeastCC
varLabels(yeastCC)
pData(yeastCC)
description(yeastCC)
abstract(yeastCC)
featureNames(yeastCC)[1:10]
dim(exprs(yeastCC))
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