Package ‘ELMER.data’

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Title  Data for the ELMER package

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Description  Supporting data for the ELMER package.
              It includes:
              - elmer.data.example.promoter: mae.promoter
              - elmer.data.example: data
              - EPIC.hg38.manifest
              - EPIC.hg19.manifest
              - hm450.hg38.manifest
              - hm450.hg19.manifest
              - hocomoco.table
              - human.TF
              - LUSC_meth_refined: Meth
              - LUSC_RNA_refined: GeneExp
              - Probes.motif.hg19.450K
              - Probes.motif.hg19.EPIC
              - Probes.motif.hg38.450K
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              - TF.family
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              - Human_genes__GRCh37_p13
              - Human_genes__GRCh38_p13__tss
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              - Human_genes__GRCh38_p12__tss

License  GPL-3

LazyData  false

Depends  R (>= 3.5.0)

Imports  GenomicRanges

Suggests  BiocStyle, knitr, dplyr, devtools, DT, rmarkdown
biocViews  AssayDomainData, TechnologyData, OrganismData
VignetteBuilder  knitr
RoxygenNote  6.1.1
git_url  https://git.bioconductor.org/packages/ELMER.data
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data

A MultiAssayExperiment containing DNA methylation data: 101 probes from platform 450K Gene Expression data: 1026 genes for 234 samples from TCGA-LUSC. This data is used in the examples of ELMER package.
Description

ELMER.data is package using DNA methylation to identify enhancers, and correlates enhancer state with expression of nearby genes to identify one or more transcriptional targets. Transcription factor (TF) binding site analysis of enhancers is coupled with expression analysis of all TFs to infer upstream regulators. ELMER.data provide the necessary data for ELMER analysis:

- Probes.motif: motif occurrences within -/+250bp of probe sites on HM450K/EPIC array aligned against hg19/hg38.
- DNA methylation platform manifest: from http://zwdzwd.github.io/InfiniumAnnotation
- TF.family TFs family from TFClass
- TF.subfamily TFs subfamily from TFClass

For more information how to create these objects please read the vignette of this package with the following command: browseVignettes("ELMER.data")

See Also


Examples

# Please see the datasets
EPIC.hg19.manifest

A GRanges containing hg19 annotation with suggested overall masking for EPIC platform

Description
A GRanges containing hg19 annotation with suggested overall masking for EPIC platform

Usage
EPIC.hg19.manifest

Format
A GRanges with 866895 elements

Examples
## Not run:
data("EPIC.hg19.manifest")
## End(Not run)

EPIC.hg38.manifest

A GRanges containing hg38 annotation with suggested overall masking for EPIC platform

Description
A GRanges containing hg38 annotation with suggested overall masking for EPIC platform

Usage
EPIC.hg38.manifest

Format
A GRanges with 866895 elements

Examples
## Not run:
data("EPIC.hg38.manifest")
## End(Not run)
**GeneExp**

A matrix containing gene expression data from TCGA Gene Expression data: 3842 genes. This data is used in the examples of ELMER package.

**Description**

A matrix containing gene expression data from TCGA Gene Expression data: 3842 genes. This data is used in the examples of ELMER package.

**Usage**

GeneExp

**Format**

A gene expression matrix for 234 Samples and 3842 genes.

**Examples**

```r
## Not run:
data("hm450.hg19.manifest")

## End(Not run)
```

**hm450.hg19.manifest**

A GRanges containing hg19 annotation with suggested overall masking for hm450 platform.

**Description**

A GRanges containing hg19 annotation with suggested overall masking for hm450 platform.

**Usage**

hm450.hg19.manifest

**Format**

A GRanges with 485577 elements.

**Examples**

```r
## Not run:
data("hm450.hg19.manifest")

## End(Not run)
```
hm450.hg38.manifest  
A GRanges containing hg38 annotation with suggested overall masking for hm450 platform

Description
A GRanges containing hg38 annotation with suggested overall masking for hm450 platform

Usage
hm450.hg38.manifest

Format
A GRanges with 485577 elements

Examples
## Not run:
data("hm450.hg38.manifest")
## End(Not run)

hocomoco.table  
Table parsed from hocomoco v11

Description
Table parsed from hocomoco v11

Usage
hocomoco.table

Format
A dataframe with 771 rows (motifs) and 20 columns

Description


Usage

human.TF

Format

A dataframe with 1639 rows (motifs) and 27 columns

Human_genes__GRCh37_p13

A matrix containing ENSEMBL hg19 gene metadata accessed using biomart This data is used if ensembl cannot be reached

Description

A matrix containing ENSEMBL hg19 gene metadata accessed using biomart This data is used if ensembl cannot be reached

Usage

Human_genes__GRCh37_p13

Format

A matrix with metadata for 60482 genes
Human_genes__GRCh37_p13__tss

A matrix containing ENSEMBL hg19 transcripts metadata accessed using biomart. This data is used if ensembl cannot be reached.

Description

A matrix containing ENSEMBL hg19 transcripts metadata accessed using biomart. This data is used if ensembl cannot be reached.

Usage

Human_genes__GRCh37_p13__tss

Format

A matrix with metadata for 196317 transcripts.

Human_genes__GRCh38_p12

A matrix containing ENSEMBL hg38 gene metadata accessed using biomart. This data is used if ensembl cannot be reached.

Description

A matrix containing ENSEMBL hg38 gene metadata accessed using biomart. This data is used if ensembl cannot be reached.

Usage

Human_genes__GRCh38_p12

Format

A matrix with metadata for 58639 genes.
**Human_genes__GRCh38_p12__tss**

A matrix containing ENSEMBL hg38 transcripts metadata accessed using biomart. This data is used if ensembl cannot be reached.

**Description**

A matrix containing ENSEMBL hg38 transcripts metadata accessed using biomart. This data is used if ensembl cannot be reached.

**Usage**

Human_genes__GRCh38_p12__tss

**Format**

A matrix with metadata for 208423 transcripts.

**mae.promoter**

A MultiAssayExperiment containing DNA methylation data: 16 promoter probes from platform 450K Gene Expression data: 3808 genes for 234 samples from TCGA-LUSC. This data is used in the examples of ELMER package.

**Description**

A MultiAssayExperiment containing DNA methylation data: 16 promoter probes from platform 450K Gene Expression data: 3808 genes for 234 samples from TCGA-LUSC. This data is used in the examples of ELMER package.

**Usage**

mae.promoter

**Format**

A MultiAssayExperiment for 234 Samples (8 normal samples, 226 Primary solid tumor).

**Examples**

```r
## Not run:
data("elmer.data.example.promoter")
## End(Not run)
```
Probes.motif.hg19.450K

---

**Meth**

*A matrix containing DNA methylation beta-values from TCGA DNA methylation data: 1728 probes This data is used in the examples of ELMER package*

---

**Description**

A matrix containing DNA methylation beta-values from TCGA DNA methylation data: 1728 probes This data is used in the examples of ELMER package

**Usage**

Meth

**Format**

A MultiAssayExperiment for 268 Samples and 1728 probes

---

**Probes.motif.hg19.450K**

*A matrix with 1 if the probe (row) has a motif (column)*

---

**Description**

It was generated using HOMER with a p-value < 1e-4 to scan a +/- 250bp region around each probe using HOmo sapiens COmprehensive MOdel COllection [http://hocomoco.autosome.ru/](http://hocomoco.autosome.ru/)(HOCOMOCO) v10 position weight matrices (PWMs). HOCOMOCO offers 640 PMWs each has a quality rating from A to D where A represents motifs with the highest confidence, and D motifs only weakly describe the pattern with a limited applications for quantitative analyses. By default only quality A and B will be used for the Motif enrichment analysis, but the minimun quality score can be selected by the user. (Additional information [http://hocomoco.autosome.ru/help](http://hocomoco.autosome.ru/help)(Source) [http://nar.oxfordjournals.org/content/44/D1/D116.full](http://nar.oxfordjournals.org/content/44/D1/D116.full)(More information)). The DNA methylation information was retrieved from: http://zwdzwd.github.io/InfiniumAnnotation For more information check the vignette.

**Usage**

Probes.motif.hg19.450K

**Format**

A matrix with 466007 rows and 640 columns

**Examples**

```r
## Not run:
data("Probes.motif.hg19.450K")

## End(Not run)
```
Probes.motif.hg19.EPIC

A matrix with 1 if the probe (row) has a motif (column)

Description

It was generated using HOMER with a p-value < 1e-4 to scan a +/- 250bp region around each probe using HOmo sapiens COmprehensive MOdel COllection [http://hocomoco.autosome.ru/](HOCOMOCO) v10 position weight matrices (PWMs). HOCOMOCO offers 640 PMWs each has a quality rating from A to D where A represents motifs with the highest confidence, and D motifs only weakly describe the pattern with a limited applications for quantitative analyses. By default only quality A and B will be used for the Motif enrichment analysis, but the minimum quality score can be selected by the user. (Additional information [http://hocomoco.autosome.ru/help](Source) [http://nar.oxfordjournals.org/content/44/D1/D116.full](More information)). The DNA methylation information was retrieved from: http://zwdzwd.github.io/InfiniumAnnotation For more information check the vignette.

Usage

Probes.motif.hg19.EPIC

Format

A matrix with 838881 rows and 640 columns

Examples

```r
## Not run:
data("Probes.motif.hg19.EPIC")
## End(Not run)
```

Probes.motif.hg38.450K

A matrix with 1 if the probe (row) has a motif (column)

Description

It was generated using HOMER with a p-value < 1e-4 to scan a +/- 250bp region around each probe using HOmo sapiens COmprehensive MOdel COllection [http://hocomoco.autosome.ru/](HOCOMOCO) v10 position weight matrices (PWMs). HOCOMOCO offers 640 PMWs each has a quality rating from A to D where A represents motifs with the highest confidence, and D motifs only weakly describe the pattern with a limited applications for quantitative analyses. By default only quality A and B will be used for the Motif enrichment analysis, but the minimum quality score can be selected by the user. (Additional information [http://hocomoco.autosome.ru/help](Source) [http://nar.oxfordjournals.org/content/44/D1/D116.full](More information)). The DNA methylation information was retrieved from: http://zwdzwd.github.io/InfiniumAnnotation For more information check the vignette.
Usage
Probes.motif.hg38.450K

Format
A matrix with 466007 rows and 640 columns

Examples
## Not run:
data("Probes.motif.hg38.450K")
## End(Not run)

Probes.motif.hg38.EPIC

A matrix with 1 if the probe (row) has a motif (column)

Description
It was generated using HOMER with a p-value < 1e-4 to scan a +/- 250bp region around each probe using HOmo sapiens COMprehensive MOdel COllection [http://hocomoco.autosome.ru/](http://hocomoco.autosome.ru/)(HOCOMOCO) v10 position weight matrices (PWMs). HOCOMOCO offers 640 PMWs each has a quality rating from A to D where A represents motifs with the highest confidence, and D motifs only weakly describe the pattern with a limited applications for quantitative analyses. By default only quality A and B will be used for the Motif enrichment analysis, but the minimum quality score can be selected by the user. (Additional information [http://hocomoco.autosome.ru/help](http://hocomoco.autosome.ru/help)(Source) [http://nar.oxfordjournals.org/content/44/D1/D116.full](http://nar.oxfordjournals.org/content/44/D1/D116.full)(More information)). The DNA methylation information was retrieved from: http://zwdzwd.github.io/InfiniumAnnotation

For more information check the vignette.

Usage
Probes.motif.hg38.EPIC

Format
A matrix with 838881 rows and 640 columns

Examples
## Not run:
data("Probes.motif.hg38.EPIC")
## End(Not run)
TF.family

A list of 641 motifs with TF families (with similar bindings) from TFClass Created with the following function from ELMER package
TF.family <- createMotifRelevantTfs()

Description
A list of 641 motifs with TF families (with similar bindings) from TFClass Created with the following function from ELMER package TF.family <- createMotifRelevantTfs()

Usage
TF.family

Format
A list of 641 motifs with TF families (with similar bindings)

TF.subfamily

A list of 641 motifs with TF subfamilies (with similar bindings) from TFClass Created with the following function from ELMER package
TF.family <- createMotifRelevantTfs("subfamily")

Description
A list of 641 motifs with TF subfamilies (with similar bindings) from TFClass Created with the following function from ELMER package TF.family <- createMotifRelevantTfs("subfamily")

Usage
TF.subfamily

Format
A list of 641 motifs with TF subfamilies (with similar bindings)
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