Package ‘aracne.networks’

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Type Package

Title ARACNe-inferred gene networks from TCGA tumor datasets

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Description This package contains ARACNe-inferred networks from TCGA
tumor datasets. It also contains a function to export them into
plain-text format.

License file LICENSE

LazyData TRUE

biocViews ExperimentData, Genome, Homo_sapiens_Data, CancerData

NeedsCompilation no

Depends R (>= 3.3), viper

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Contents

`aracne.networks-package`

ARACNe-inferred gene networks from TCGA tumor datasets

Description

This package contains ARACNe-inferred networks from TCGA tumor datasets and functions to import new ones and export them into text form.

Details

Package:	aracne.networks
Type:	Package
License:	LGPL-3
LazyLoad:	yes

Author(s)

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References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics 2016 Alvarez, M.J. et al. (2016) Functional characterization of somatic mutations in cancer using network-based inference of protein activity. Nature Genetics 2016

Examples

```
### Create a random regulon with two hubs
# The first hub will have 100 targets
# The second hub will have 67 targets
regulon<-list()
regulon[["hub1"]]<-list(
    tfmode=setNames(runif(100,-1,1),paste0("target",sample(1:1000,100))),
    likelihood=runif(100,0,1)
)
regulon[["hub2"]]<-list(
    tfmode=setNames(runif(67,-1,1),paste0("target",sample(1:1000,67))),
    likelihood=runif(67,0,1)
)
class(regulon)<-"regulon"
write.regulon(regulon,file="network.txt")


### Print a the Prostate Adenocarcinoma (prad) network to standard output
# The gene ids are in Entrez format
data(regulonprad)
write.regulon(regulonblca,file="",n=10)
```

`regulonblca` *Human Bladder Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Bladder Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonblca)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
            data(regulonblca)
            write.regulon(regulonblca,n=10)
```

`regulonbrca` *Human Breast Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Breast Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonbrca)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonbrca)
write.regulon(regulonbrca,n=10)
```

`reguloncesc` *Human Cervical Squamous Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Cervical Squamous Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(reguloncesc)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonсesc)
write.regulon(regulonсesc,n=10)
```

`reguloncoad` *Human Colon Adenocarcinoma context-specific ARACNe interactome*

Description

The interactome is a human Colon Adenocarcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(reguloncoad)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(reguloncoad)
write.regulon(reguloncoad,n=10)
```

`regulonesca` *Human Esophageal Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Esophageal Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonesca)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonesca)
write.regulon(regulonesca,n=10)
```

`regulongbm` *Human Glioblastoma context-specific ARACNe interactome*

Description

The interactome is a human Glioblastoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulongbm)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulongbm)
write.regulon(regulongbm,n=10)
```

`regulonhnsc` *Human Head and Neck Squamous Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Head and Neck Squamous Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonhnsc)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonhnsc)
write.regulon(regulonhnsc,n=10)
```

`regulonkirc` *Human Kidney Renal Clear Cell Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Kidney Renal Clear Cell Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonkirc)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonkirc)
write.regulon(regulonkirc,n=10)
```

`regulonkirp` *Human Kidney Papillary Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Kidney Papillary Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonkirp)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonkirp)
write.regulon(regulonkirp,n=10)
```

`regulonlaml` *Human Acute Myeloid Leukemia context-specific ARACNe interactome*

Description

The interactome is a human Acute Myeloid Leukemia context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonlaml)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonlaml)
write.regulon(regulonlaml,n=10)
```

`regulonlihc` *Human Liver Hepatocellular Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Liver Hepatocellular Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonlihc)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonlihc)
write.regulon(regulonlihc,n=10)
```

`regulonluad` *Human Lung Adenocarcinoma context-specific ARACNe interactome*

Description

The interactome is a human Lung Adenocarcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonluad)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonluad)
write.regulon(regulonluad,n=10)
```

`regulonlusc` *Human Lung Squamous Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Lung Squamous Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonlusc)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonlusc)
write.regulon(regulonlusc,n=10)
```

`regulonnet` *Human Neuroendocrine tumor context-specific ARACNe interactome*

Description

The interactome is a human Neuroendocrine tumor context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonnet)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonnet)
write.regulon(regulonnet, n=10)
```

`regulonov` *Human Ovarian Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Ovarian Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonov)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonov)
write.regulon(regulonov,n=10)
```

`regulonpaad` *Human Pancreas Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Pancreas Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonpaad)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonpaad)
write.regulon(regulonpaad,n=10)
```

`regulonpcpg` *Human Pheochromocytoma and Paraganglioma context-specific ARACNe interactome*

Description

The interactome is a human Pheochromocytoma and Paraganglioma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonpcpg)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonpcpg)
write.regulon(regulonpcpg,n=10)
```

`regulonprad` *Human Prostate Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Prostate Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonprad)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonprad)
write.regulon(regulonprad,n=10)
```

`regulonread` *Human Rectal Adenocarcinoma context-specific ARACNe interactome*

Description

The interactome is a human Rectal Adenocarcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonread)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonread)
write.regulon(regulonread,n=10)
```

`regulonsarc` *Human Sarcoma context-specific ARACNe interactome*

Description

The interactome is a human Sarcoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonsarc)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonsarc)
write.regulon(regulonsarc,n=10)
```

`regulonstad` *Human Stomach Adenocarcinoma context-specific ARACNe interactome*

Description

The interactome is a human Stomach Adenocarcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonstad)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonstad)
write.regulon(regulonstad,n=10)
```

`regulontgct` *Human Testicular Cancer context-specific ARACNe interactome*

Description

The interactome is a human Testicular Cancer context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class ‘regulon’ where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulontgct)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulontgct)
write.regulon(regulontgct,n=10)
```

`regulonthca` *Human Thyroid Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Thyroid Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonthca)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonthca)
write.regulon(regulonthca,n=10)
```

`regulonthym` *Human Thymoma context-specific ARACNe interactome*

Description

The interactome is a human Thymoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonthym)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonthym)
write.regulon(regulonthym,n=10)
```

`regulonucec` *Human Utherine Corpus Endometroid Carcinoma context-specific ARACNe interactome*

Description

The interactome is a human Utherine Corpus Endometroid Carcinoma context-specific regulatory network reverse engineered by the ARACNE-AP algorithm. The interactome is contained in a list object of S3 class 'regulon' where each element represent a transcriptional regulator (transcription factor) and contains two vectors: (1) a named numeric vector indicating the mode of regulation (MoR) for each target gene, whose ID is indicated by the names attribute of the vector. (2) a numeric vector indicating the confidence score for the TF-target interaction.

Usage

```
data(regulonucec)
```

Value

Object of class regulon (regulon-class) containing network data generated by ARACNe-AP.

References

Giorgi,F.M. et al. (2016) ARACNe-AP: Gene Network Reverse Engineering through Adaptive Partitioning inference of Mutual Information. Bioinformatics doi: 10.1093/bioinformatics/btw216.

Examples

```
data(regulonucec)
write.regulon(regulonucec,n=10)
```

`write.regulon` *Print a regulon object into a text file*

Description

This function will print the network into an output stream. Four columns will be printed: the Regulator id, the Target id, the Mode of Action (MoA, based on Spearman correlation that indicates the sign of the connection and ranges between -1 and +1), the Likelihood (essentially an edge weight that indicates how strong the mutual information for an edge is when compared to the maximum observed MI in the network, it ranges between 0 and 1).

Usage

```
write.regulon(
    regulon,
    file="",
    sep="\t",
    header=TRUE,
    n=Inf,
    regulator=NULL
)
```

Arguments

`regulon`	An object of class regulon
`file`	File name where the network will be printed
`sep`	String, a separator for the fields (default = "\t")
`header`	Logical. If a header should be printed. Default is TRUE
`n`	Numeric. How many interactions to print. Default is Inf
`regulator`	String. A particular regulator. Default is NULL

Value

Text output containing the network in tabular format.

Examples

```
### Create a random regulon with two hubs
# The first hub will have 100 targets
# The second hub will have 67 targets
regulon<-list()
regulon[["hub1"]]<-list(
    tfmode=setNames(runif(100,-1,1),paste0("target",sample(1:1000,100))),
    likelihood=runif(100,0,1)
)
regulon[["hub2"]]<-list(
    tfmode=setNames(runif(67,-1,1),paste0("target",sample(1:1000,67))),
    likelihood=runif(67,0,1)
)
class(regulon)<-"regulon"
write.regulon(regulon,file="network.txt")
```

```
### Print a the Prostate Adenocarcinoma (prad) network to standard output
# The gene ids are in Entrez format
data(regulonprad)
write.regulon(regulonprad,file="",n=10)
```

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