

Package ‘aracne.networks’

January 2, 2025

Type Package

Title ARACNe-inferred gene networks from TCGA tumor datasets

Version 1.33.0

Author Federico M. Giorgi

Maintainer

Federico M. Giorgi <federico.giorgi@gmail.com>, Mariano Alvarez <reef103@gmail.com>

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

git_url <https://git.bioconductor.org/packages/aracne.networks>

git_branch devel

git_last_commit 4fe2d27

git_last_commit_date 2024-10-29

Repository Bioconductor 3.21

Date/Publication 2025-01-02

Contents

aracne.networks-package	2
regulonblca	3
regulonbrca	4
reguloncesc	5
reguloncoad	5
regulonesca	6
regulongbm	7

regulonhnsk	7
regulonkirc	8
regulonkirp	9
regulonlaml	9
regulonlihc	10
regulonluad	11
regulonlusc	11
regulonnet	12
regulonov	13
regulonpaad	13
regulonpcpg	14
regulonprad	15
regulonread	15
regulonsarc	16
regulonstad	17
regulontgct	17
regulonthca	18
regulonthym	19
regulonucec	19
write.regulon	20

Index 22

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)

Federico M. Giorgi

Maintainer: Federico M. Giorgi <federico.giorgi@gmail.com>

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	<i>Human Cervical Squamous Carcinoma context-specific ARACNe interactome</i>
-------------	--

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(reguloncesc)
write.regulon(reguloncesc, n=10)
```

reguloncoad	<i>Human Colon Adenocarcinoma context-specific ARACNe interactome</i>
-------------	---

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)
```

regulonhnc

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(regulonhnc)
```

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(regulohnsc)
write.regulon(regulohnsc,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	<i>Human Kidney Papillary Carcinoma context-specific ARACNe interactome</i>
-------------	---

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	<i>Human Acute Myeloid Leukemia context-specific ARACNe interactome</i>
-------------	---

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	<i>Human Stomach Adenocarcinoma context-specific ARACNe interactome</i>
-------------	---

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	<i>Human Testicular Cancer context-specific ARACNe interactome</i>
-------------	--

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)
```

regulonhca

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(regulonhca)
```

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(regulonhca)
write.regulon(regulonhca,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)
```

<code>write.regulon</code>	<i>Print a regulon object into a text file</i>
----------------------------	--

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

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

Index

* datasets

- regulonblca, 3
- regulonbrca, 4
- reguloncesc, 5
- reguloncoad, 5
- regulonesca, 6
- regulongbm, 7
- regulohnsc, 7
- regulonkirc, 8
- regulonkirp, 9
- regulonlaml, 9
- regulonlihc, 10
- regulonluad, 11
- regulonlusc, 11
- regulonnet, 12
- regulonov, 13
- regulonpaad, 13
- regulonpcpg, 14
- regulonprad, 15
- regulonread, 15
- regulonsarc, 16
- regulonstad, 17
- regulontgct, 17
- regulonthca, 18
- regulonthym, 19
- regulonucec, 19

aracne.networks

(aracne.networks-package), 2

aracne.networks-package, 2

regulon-class, 3–20

- regulonblca, 3
- regulonbrca, 4
- reguloncesc, 5
- reguloncoad, 5
- regulonesca, 6
- regulongbm, 7
- regulohnsc, 7
- regulonkirc, 8

- regulonkirp, 9
- regulonlaml, 9
- regulonlihc, 10
- regulonluad, 11
- regulonlusc, 11
- regulonnet, 12
- regulonov, 13
- regulonpaad, 13
- regulonpcpg, 14
- regulonprad, 15
- regulonread, 15
- regulonsarc, 16
- regulonstad, 17
- regulontgct, 17
- regulonthca, 18
- regulonthym, 19
- regulonucec, 19

write.regulon, 20