

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

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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

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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(reguloncsc)
write.regulon(reguloncsc,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)
```

regulohnsc	<i>Human Head and Neck Squamous Carcinoma context-specific ARACNe interactome</i>
------------	---

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(regulohnsc)
```

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	<i>Human Kidney Renal Clear Cell Carcinoma context-specific ARACNe interactome</i>
-------------	--

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)
```

regulonkirc	<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(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(regulonkirp)
write.regulon(regulonkirp,n=10)
```

regulonlaml	<i>Human Acute Myeloid Leukemia context-specific ARACNe interactome</i>
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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	<i>Human Liver Hepatocellular Carcinoma context-specific ARACNe interactome</i>
-------------	---

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

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	<i>Human Pheochromocytoma and Paraganglioma context-specific ARACNe interactome</i>
-------------	---

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	<i>Human Prostate Carcinoma context-specific ARACNe interactome</i>
-------------	---

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

regulonucec	<i>Human Uterine Corpus Endometroid Carcinoma context-specific ARACNe interactome</i>
-------------	---

Description

The interactome is a human Uterine 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	<i>Print a regulon object into a text file</i>
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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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