Package 'CENTREprecomputed'

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Title Hub package for the precomputed data of CENTRE and example data

Version 1.2.0

Description Interface and documentation for the Experiment Hub records needed by the CENTRE Bioconductor software package. The Experiment Hub records contains the precomputed fisher combined p-values, CRUP correlations. Additionally, the records hold ChIP-seq and RNA-seq data used for the example of the software package.

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Imports ExperimentHub, RSQLite, DBI, BiocGenerics, methods

Suggests knitr, rmarkdown, testthat, BiocStyle

VignetteBuilder knitr

URL https://github.com/slrvv/CENTREprecomputed

BugReports https://github.com/slrvv/CENTREprecomputed/issues

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Author Sara Lopez Ruiz de Vargas [aut, cre] (ORCID: <https://orcid.org/0000-0002-1290-4774>)

Maintainer Sara Lopez Ruiz de Vargas <lopez_s@molgen.mpg.de>

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`CENTREprecomputed-package`
CENTREprecomputed: Experiment Data package interface for the precomputed data of CENTRE and example data

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Description

This is an Experiment Data package for the CENTRE Bioconductor software package. It serves as an interface for the CENTRE PrecomputedData database which contains the precomputed fisher combined p-values, CRUP correlations and the ChIP-seq and RNA-seq data used for the example. The PrecomputedDataLight.db contains the fisher combined p-value and the correlation between CRUP-PP and -EP scores for every enhancer-target (ET) pair at 500kb. The example ChIP-seq and RNA-seq can be downloaded from the ExperimentHub.

Format

Database with tables:

combinedTestData -log transformed p-values of the Wilcoxon rank sum tests for each ET pair.

crup_cor correlation between CRUP-PP and -EP scores for each ET pair.

Details

The combined p-value is computed from the p-values of four wilcoxon-rank sum tests for each ET. The four tests are on the CAGE-seq dataset, the DNAse-hypersensitive region dataset, the DNAse-seq-gene expression dataset and the CRUP-EP-gene expression dataset. For more information check the CENTRE article in references

Author(s)

Maintainer: Sara Lopez Ruiz de Vargas <lopez_s@molgen.mpg.de> (ORCID)

Source

http://owww.molgen.mpg.de/~CENTRE_data/CENTREexperimentData/PrecomputedDataLight.db

References

Trisevgeni Rapakoulia, Sara Lopez Ruiz De Vargas, Persia Akbari Omgba, Verena Laupert, Igor Ulitsky, Martin Vingron, CENTRE: a gradient boosting algorithm for Cell-type-specific ENhancer-Target pREdiction, Bioinformatics, Volume 39, Issue 11, November 2023, btad687, https://doi.org/10.1093/bioinformatics/btad687

See Also

Useful links:

- https://github.com/slrvv/CENTREprecomputed
- Report bugs at https://github.com/slrvv/CENTREprecomputed/issues

Examples

```
library(ExperimentHub)
hub <- ExperimentHub()
eh <- query(hub, "CENTREprecomputed")
eh[["EH9540"]] ## PrecomputedData database
```

CENTREprecompDb *Database for the CENTRE precomputed data*

Description

The CENTREprecompDb object provides access to CENTRE's Precomputed SQLite Database PrecomputedDataLight.db. Inside the database is combinedTestData, crup_cor and metadata. For more information check the computeGenericFeatures() function from the CENTRE package.

Usage

```
CENTREprecompDb(x)

tables(x)
```

Arguments

x	sqlite file path

Details

CENTREprecompDb is the object that provides access to CENTRE's database. tables(CENTREprecompDb) shows the tables inside the database and their columns.

Value

Object of class CENTREprecompDb

References

Based on CompoundDb::CompDb class.

Examples

```
#The object is accessed through the ExperimentHub record
eh <- ExperimentHub::ExperimentHub()
centreprecompdb <- eh[["EH9540"]]
tables(centreprecompdb)
```

`fetch_data_precomp` *Fetch data from the CENTREprecompDb database*

Description

Function to fetch data from the CENTREprecomputed package database through the `CENTREprecompDb` object.

Usage

```
fetch_data_precomp(x, table, columns, entries, column_filter)
```

Arguments

`x`	`CENTREprecompDb` object.
`table`	Table of the database on which to search. Can be combinedTestData or cor_CRUP.
`columns`	Columns to select. Equivalent to X in SELECT X.
`entries`	Element ID to select. Equivalen to ID in SELECT X FROM TABLE WHERE ID in Z. If entries or column_filter is missing the program assumes the query is SELECT X FROM TABLE.
`column_filter`	Column on which to apply filter. Equivalent to Z in SELECT X FROM TABLE WHERE ID in Z. If entries or column_filter is missing the program assumes the query is SELECT X FROM TABLE.

Value

data.frame with the data queried.

References

Based on the package CompoundDb query engine internal functions.

See Also

`vignette("CENTREprecomputed")`

Examples

```
eh <- ExperimentHub::ExperimentHub()
centreprecompdb <- eh[["EH9540"]]

res <- fetch_data_precomp(centreprecompdb,
    table = "crup_cor",
    columns = c("pair", "cor_CRUP"),
    entries = "EH38E3440167",
    column_filter = "symbol38"
)
```

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