

Package ‘HighlyReplicatedRNASeq’

March 6, 2025

Type Package

Title Collection of Bulk RNA-Seq Experiments With Many Replicates

Version 1.19.0

Description Gene-level count matrix data for bulk RNA-seq dataset with many replicates. The data are provided as easy to use SummarizedExperiment objects. The source data that is made accessible through this package comes from <https://github.com/bartongroup/profDGE48>.

URL <https://github.com/const-ae/HighlyReplicatedRNASeq>

BugReports <https://github.com/const-ae/HighlyReplicatedRNASeq/issues>

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Encoding UTF-8

Depends SummarizedExperiment, ExperimentHub

Imports S4Vectors

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biocViews ExperimentHub, ExperimentData, ExpressionData, SequencingData, RNASeqData

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Roxygen list(markdown = TRUE)

VignetteBuilder knitr

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HighlyReplicatedRNASeq

*HighlyReplicatedRNASeq: Collection of Bulk RNA-Seq Experiments
With Many Replicates*

Description

The HighlyReplicatedRNASeq package provides access to the count matrix results from studies with many replicates. These datasets can be valuable for benchmarking tools designed to handle RNA-seq data.

Details

Available datasets:

- Schurch et al. (2016): 86 samples of *S. cerevisiae* in two conditions
 - [Schurch16\(\)](#) / [Schurch16_metadata\(\)](#)

At the moment, this package contains only one dataset, but more datasets can be added in the future.

Schurch16

Get the RNA-seq counts from Schurch et al. (2016)

Description

The data contains bulk RNA-seq count on 86 samples in two conditions. The first condition is wild type *S. cerevisiae* (taxonomic id: 1247190). The second condition is the same strain with a *snf2* knockout.

Usage

```
Schurch16(hub = ExperimentHub())
```

```
Schurch16_metadata(hub = ExperimentHub())
```

Arguments

hub an [ExperimentHub](#) object that is used to load the resource "EH3315" and "EH3316".
Default: [ExperimentHub\(\)](#)

Details

Schurch et al. originally generated this dataset to benchmark RNA-seq differential expression tools and find out how many replicates are necessary to detect most differentially expressed genes. The data that is returned by this package comes from the GitHub [repository](#) that accompanied the study.

Value

Schurch16() returns a [SummarizedExperiment](#) with 7126 genes and 86 samples.

Schurch16_metadata() returns a [ExperimentHub](#) object with the metadata on the Schurch16 dataset.

Author(s)

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References

Schurch, N. J., Schofield, P., Gierliński, M., Cole, C., Sherstnev, A., Singh, V., ... Barton, G. J. (2016). How many biological replicates are needed in an RNA-seq experiment and which differential expression tool should you use? *RNA*, 22(6), 839–851. <https://doi.org/10.1261/rna.053959.115>

Examples

```
Schurch16_metadata()

se <- Schurch16()

dim(se)
colData(se)
summary(c(assay(se, "counts")))
```

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