

Package ‘MicrobiomeBenchmarkData’

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Title Datasets for benchmarking in microbiome research

Version 1.10.0

Description The MicrobiomeBenchmarkData package provides functionality to access microbiome datasets suitable for benchmarking. These datasets have some biological truth, which allows to have expected results for comparison. The datasets come from various published sources and are provided as TreeSummarizedExperiment objects. Currently, only datasets suitable for benchmarking differential abundance methods are available.

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LazyData false

Depends R (>= 4.2), SummarizedExperiment, TreeSummarizedExperiment

Imports BiocFileCache, tools, S4Vectors, ape, utils

Suggests rmarkdown, knitr, BiocStyle, testthat (>= 3.0.0), mia, ggplot2, tidyr, dplyr, magrittr, tibble, purrr

biocViews ExperimentData, MicrobiomeData, ReproducibleResearch, SequencingData

BugReports <https://github.com/waldronlab/MicrobiomeBenchmarkData/issues>

URL <https://github.com/waldronlab/MicrobiomeBenchmarkData>,
<http://waldronlab.io/MicrobiomeBenchmarkData/>

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.assembleTreeSummarizedExperiment
<i>Assemble TreeSummarizedExperiment</i>

Description

.assembleTreeSummarizedExperiment assembles a TreeSummarizedDataset taking as input the name of the dataset and the URL. This is a helper function for the [getBenchmarkData](#) function.

Usage

.assembleTreeSummarizedExperiment(x)

Arguments

- dat_name A character string with the name of the dataset.
- dat_url A character string with the URL from Zenodo.

Value

A TreeSummarizedExperiment

`.getCache`*Get cache*

Description

`.getCache` creates or loads a cache to store files downloaded through the `MicrobiomeBenchmarkData` package.

Usage

```
.getCache()
```

Value

A `BiocFileCache` object.

`.getResourcePath`*Get resource path*

Description

`.getResource` downloads the count matrix and store it in the cache.

Usage

```
.getResourcePath(resource, suffix)
```

Arguments

`resource_name` A character string with the name of the dataset.

`resource_url` A character string with the URL from Zenodo.

Value

A character string containing the path to the count matrix in the cache.

<code>.getSampleMetadata</code>	<i>Get sample metadata</i>
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Description

`.getSampleMetadata` returns `sampleMetadata`.

Usage

```
.getSampleMetadata()
```

Value

A data frame with sample metadata.

<code>getBenchmarkData</code>	<i>Get dataset</i>
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Description

`getBenchmarkData` imports datasets as `TreeSummarizedExperiment` objects.

Usage

```
getBenchmarkData(x, dryrun = TRUE)
```

Arguments

<code>x</code>	A character vector with the name(s) of the dataset(s). If empty and <code>dryrun = TRUE</code> , it returns a message with the names of the available datasets. If empty and <code>dryrun = FALSE</code> , it returns a list of <code>TreeSummarizedExperiments</code> with all of the datasets.
<code>dryrun</code>	If <code>TRUE</code> , only returns a message and invisibly returns the names of the datasets as a character vector. If <code>FALSE</code> , it returns the <code>TreeSummarizedExperiment</code> datasets indicated in the argument ' <code>x</code> '.

Value

A list of `TreeSummarizedExperiments` when `dryrun = FALSE`. A data frame with the datasets characteristics when `dryrun = TRUE`.

Examples

```
## Example 1
datasets_names <- getBenchmarkData()
datasets_names

## Example 2
dataset <- getBenchmarkData(
  "HMP_2012_16S_gingival_V35_subset", dryrun = FALSE
)
dataset[[1]]
```

MicrobiomeBenchmarkData

MicrobiomeBenchmarkData

Description

The MicrobiomeBenchmarkData provide functions for accessing various microbiome datasets with biological ground truth.

Author(s)

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See Also

Useful links:

- <https://github.com/waldronlab/MicrobiomeBenchmarkData>
- <http://waldronlab.io/MicrobiomeBenchmarkData/>
- Report bugs at <https://github.com/waldronlab/MicrobiomeBenchmarkData/issues>

`removeCache`*Remove cache*

Description

`removeCache` removes all files saved in the cache.

Usage

```
removeCache(ask = interactive())
```

Arguments

<code>ask</code>	If TRUE, a prompt will appear asking the user to confirm removal of cache. Default value is given by the <code>interactive</code> function.
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Value

NULL The cache and all of its contents are removed.

Examples

```
## Remove cache  
removeCache()
```

`sampleMetadata`*sampleMetadata*

Description

A data frame with the combined metadata of all of the samples in the datasets provided through the `MicrobiomeBenchmarkData` package.

Usage

```
data("sampleMetadata", package = "MicrobiomeBenchMarkData")
```

Format

A data.frame.

scml

SCML: spike-in-based calibration to total microbial load

Description

The `scml` function applies the spike-in-based calibration to total microbial load (SCML) method to

Usage

```
scml(tse, bac = c("s", "r", "a"))
```

Arguments

<code>tse</code>	A <code>treeSummarizedExperiment</code> from the <code>getBenchmarkData</code> function.
<code>bac</code>	A character. One of the following options: <code>s</code> = <i>Salinibacter ruber</i> (AF323500), <code>r</code> = <i>Rhizobium radiobacter</i> (AB247615), <code>a</code> , = <i>Alicyclobacillus acidiphilus</i> (AB076660)

Value

A `TreeSummarizedExperiment` with SCML data instead of counts.

Examples

```
tse <- getBenchmarkData("Stammler_2016_16S_spikein", dryrun = FALSE)[[1]]
tseSCML <- scml(tse, bac = "s")
```

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