Package ‘fourDNData’

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Title 4DN data package

Version 1.13.0

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Description fourDNData is a data package giving programmatic access to Hi-C contact matrices uniformly processed by the [4DN consortium](https://www.4dnucleome.org/). The matrices are available in the multi-resolution `.mcool` format.

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URL `https://github.com/js2264/fourDNData`

BugReports `https://github.com/js2264/fourDNData/issues`

Depends R (>= 4.2)

Imports BiocFileCache, HiCExperiment, GenomicRanges, IRanges, S4Vectors, utils, tools

Suggests rtracklayer, dplyr, testthat, methods, BiocStyle, knitr, rmarkdown

biocViews ExperimentData, SequencingData

Encoding UTF-8

VignetteBuilder knitr

LazyData false

Roxygen list(markdown = TRUE)

RoxygenNote 7.2.3

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`fourDNData` *fourDNData*

Description

Fetches files from the 4DN data portal and caches them using the BiocFileCache system.

Arguments

`experimentSetAccession`	Any 4DN-provided experimentSet Accession number (check https://data.4dnucleome.org/browse/) for a browser-based explorer.
`type`	any of c('pairs', 'hic', 'mcool', 'boundaries', 'insulation', 'compartments')
`.fetch_pairs`	Whether to also download the associated pairs file

Value

`fourDNData()` returns the local path of the queried file cached with BiocFileCache. `fourDNHiCExperiment()` returns a `HiCExperiment` object with populated metadata and topologicalFeatures (if available).

Examples

```
####################################
## Importing individual 4DN files ##
####################################

head(fourDNData())
mcf <- fourDNData(experimentSetAccession = '4DNESDP9ECMN', type = 'mcool')
mcf

####################################
## Importing full 4DN experiments ##
####################################

id <- fourDNData() |>
  dplyr::filter(
     experimentType == 'in situ Hi-C',
     biosource == 'GM12878',
     publication == 'Sanborn AL et al. (2015)'
  ) |>
  dplyr::arrange(size) |>
  dplyr::pull(experimentSetAccession) |>
  unique()
id[1]
x <- fourDNHiCExperiment(id[1])
x
HiCExperiment::topologicalFeatures(x)
S4Vectors::metadata(x)$`4DN_info`
```

`fourDNDataCache` *Manage cache / download files from the 4DN data portal*

Description

Managing 4DN data downloads via the integrated `BiocFileCache` system.

Usage

```
fourDNDataCache(...)
```

Arguments

`...`	Arguments passed to internal `.setFourDNDataCache` function

Value

BiocFileCache object

Examples

```
bfc <- fourDNDataCache()
bfc
BiocFileCache::bfcinfo(bfc)
```

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