Package 'nullrangesData'

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Title ExperimentHub datasets for the nullranges package

Version 1.18.0

Description Provides datasets for the nullranges package vignette, in particular example datasets for DNase hypersensitivity sites (DHS), CTCF binding sites, and CTCF genomic interactions. These are used to demonstrate generation of null hypothesis feature sets, either through block bootstrapping or matching, in the nullranges vignette. For more details, see the data object man pages, and the R scripts for object construction provided within the package.

Imports utils

Depends R (>= 4.1.0), ExperimentHub, GenomicRanges, InteractionSet

Suggests knitr, rmarkdown

biocViews ExperimentHub, Homo_sapiens_Data, SequencingData, ChIPSeqData, ENCODE

License GPL-3

Encoding UTF-8

VignetteBuilder knitr

Roxygen list(markdown = TRUE)

RoxygenNote 7.2.1

LazyData true

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`DHSA549Hg38` *DNase hypersensitivity (DHS) peaks in A549 cell example data, lifted to hg38*

Description

An example dataset containing narrowPeak file from ENCODE. Retrieve record with `object[["AH22505"]]` on Annotation Hub. Construction script is in 'inst/script/DHSA549Hg38.R'. Function returns a GRanges object with metadata score, signal value, p/q value and peak.

Examples

```
dhs <- DHSA549Hg38()
dhs
```

`hg19_10kb_bins` *10Kb bins from hg19 with GM12878 metadata annotation features*

Description

10Kb bins were tiled across hg19 and annotated with CTCF and DNase site features from GM12878. Feature annotations for each bin include 1) the number of CTCF sites, 2) the CTCF signal strength (from peak calls), 3) the number of DNase sites, 4) the DNase signal strength (from signal tracks), and finally 5) the presence/absence of a loop to any other bin. Function returns a GRanges object with covariate metadata

Examples

```
bins <- hg19_10kb_bins()
bins
```

hg19_10kb_ctcfBoundBinPairs *CTCF-bound 10Kb paired genomic interactions*

Description

10Kb bins were tiled across hg19 then subset by those which contained CTCF sites. All pairs of CTCF-bound 10Kb bins were generated and annotated with feature overlaps from GM12878. Feature annotations include 1) presence/absence of a loop between bin-pairs, 2) the total CTCF signal from both bin-pairs, 3) the number of CTCF sites from both bin-pairs, 4) the distance between bin-pairs, and finally 4) whether a convergent set of CTCF sites exists between bin-pairs. Function returns a GInteractions object with covariate metadata

Examples

```
binPairs <- hg19_10kb_ctcfBoundBinPairs()
binPairs
```

nullrangesData *ExperimentHub datasets for the nullranges package*

Description

DNase hypersensitivity sites (DHS), CTCF binding sites, and CTCF genomic interactions for demonstration of functions in the nullranges package.

Examples

```
suppressPackageStartupMessages(library(GenomicRanges))
dhs <- DHSA549Hg38()
dhs
```

sc_promoter *Chromium Single Cell Multiome ATAC + Gene Expression assay*

Description

An example dataset of Single cell Gene and ATAC-seq data for Construction script is in 'inst/script/make-multiome-data.R'. Function returns a promoter GRanges object with pseudo bulk counts stored in metadata column "counts2" as NumericList.

Examples

```
data("sc_promoter")
```

sc_rna *Chromium Single Cell Multiome ATAC + Gene Expression assay*

Description

An example dataset of Single cell Gene and ATAC-seq data for Construction script is in 'inst/script/make-multiome-data.R'. Function returns a gene expression GRanges object with pseudo bulk counts stored in metadata column "counts1" as NumericList.

Examples

```
data("sc_rna")
```

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