

Package ‘zFPKM’

April 10, 2022

Title A suite of functions to facilitate zFPKM transformations

Version 1.16.0

Description Perform the zFPKM transform on RNA-seq FPKM data. This algorithm is based on the publication by Hart et al., 2013 (Pubmed ID 24215113). Reference recommends using $\text{zFPKM} > -3$ to select expressed genes. Validated with encode open/closed chromosome data. Works well for gene level data using FPKM or TPM. Does not appear to calibrate well for transcript level data.

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URL <https://github.com/ronammar/zFPKM/>

BugReports <https://github.com/ronammar/zFPKM/issues>

Imports checkmate, dplyr, ggplot2, tidyr, SummarizedExperiment

Suggests knitr, limma, edgeR, GEOquery, stringr, printr, rmarkdown

VignetteBuilder knitr

biocViews ImmunoOncology, RNASeq, FeatureExtraction, Software, GeneExpression

Depends R ($\geq 3.4.0$)

LazyData true

RoxygenNote 6.0.1

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zFPKM	<i>zFPKM Transformation</i>
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Description

Perform the zFPKM transform on RNA-seq FPKM data. This algorithm is based on the publication by Hart et al., 2013 (Pubmed ID 24215113). Reference recommends using `zFPKM > -3` to select expressed genes. Validated with encode open/closed promoter chromatin structure epigenetic data on six of the ENCODE cell lines. Works well for gene level data using FPKM or TPM. Does not appear to calibrate well for transcript level data.

Usage

```
zFPKM(fpkmdf, assayName = "fpkm")
```

Arguments

fpkmDF	A SummarizedExperiment or data frame containing raw FPKM (or TPM) values. Each row corresponds to a gene/transcript and each column corresponds to a sample. NOTE: these are NOT log ₂ transformed. Also, the rownames are gene/transcript names and NOT included as a separate column
assayName	When input is a SummarizedExperiment, names the specific assay. Typically one of "fpkm" or "tpm" [default = "fpkm"]

Value

zFPKM data frame

Author(s)

Ron Ammar, <ron.ammar@bms.com>

References

<http://www.ncbi.nlm.nih.gov/pubmed/24215113>

Examples

```
library(dplyr)
gse94802 <- "ftp://ftp.ncbi.nlm.nih.gov/geo/series/GSE94nnn/GSE94802/suppl/GSE94802_Minkina_et_al_normalized_FPKM.csv"
temp <- tempfile()
download.file(gse94802, temp)
fpkm <- read.csv(gzfile(temp), row.names=1)
MyFPKMdf <- select(fpkm, -MGI_Symbol)

zfpkm <- zFPKM(MyFPKMdf)
```

zFPKMPlot

*zFPKM Transformation***Description**

Perform the zFPKM transform on RNA-seq FPKM data. This algorithm is based on the publication by Hart et al., 2013 (Pubmed ID 24215113). Reference recommends using $zFPKM > -3$ to select expressed genes. Validated with encode open/closed promoter chromatin structure epigenetic data on six of the ENCODE cell lines. Works well for gene level data using FPKM or TPM. Does not appear to calibrate well for transcript level data.

Usage

```
zFPKMPlot(fpkmDF, assayName = "fpkm", FacetTitles = FALSE,
  PlotXfloor = -20)
```

Arguments

fpkmDF	A SummarizedExperiment or data frame containing raw FPKM (or TPM) values. Each row corresponds to a gene/transcript and each column corresponds to a sample. NOTE: these are NOT $\log_2$ transformed. Also, the rownames are gene/transcript names and NOT included as a separate column
assayName	When input is a SummarizedExperiment, names the specific assay. Typically one of "fpkm" or "tpm" [default = "fpkm"]
FacetTitles	use to label each facet with the sample name [default = FALSE]
PlotXfloor	Lower limit for X axis ($\log_2$ FPKM units) [default = -20] set to NULL to disable

Value

Displays plots of zFPKM distributions

Author(s)

Ron Ammar, <ron.ammar@bms.com>

References

<http://www.ncbi.nlm.nih.gov/pubmed/24215113>

Examples

```
library(dplyr)
gse94802 <- "ftp://ftp.ncbi.nlm.nih.gov/geo/series/GSE94nnn/GSE94802/suppl/GSE94802_Minkina_et al_normalized_FPKM.txt.gz"
temp <- tempfile()
download.file(gse94802, temp)
fpkm <- read.csv(gzfile(temp), row.names=1)
MyFPKMdf <- select(fpkm, -MGI_Symbol)

zFPKMPlot(MyFPKMdf)
```

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