

Package ‘pfamAnalyzeR’

October 15, 2023

Type Package

Title Identification of domain isotypes in pfam data

Version 1.0.1

Description Protein domains is one of the most important annotation of proteins we have with the Pfam database/tool being (by far) the most used tool. This R package enables the user to read the pfam prediction from both webserver and stand-alone runs into R. We have recently shown most human protein domains exist as multiple distinct variants termed domain isotypes. Different domain isotypes are used in a cell, tissue, and disease-specific manner. Accordingly, we find that domain isotypes, compared to each other, modulate, or abolish the functionality of a protein domain. This R package enables the identification and classification of such domain isotypes from Pfam data.

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Depends R (>= 4.3.0), readr, stringr, dplyr

Imports utils, tibble, magrittr

Encoding UTF-8

LazyData false

RoxygenNote 7.2.1

Suggests BiocStyle, knitr, rmarkdown

VignetteBuilder knitr

biocViews AlternativeSplicing, TranscriptomeVariant,
BiomedicalInformatics, FunctionalGenomics, SystemsBiology,
Annotation, FunctionalPrediction, GenePrediction, DataImport

BugReports <https://github.com/kvittingseerup/pfamAnalyzeR/issues>

git_url <https://git.bioconductor.org/packages/pfamAnalyzeR>

git_branch RELEASE_3_17

git_last_commit c70e8b0

git_last_commit_date 2023-06-27

Date/Publication 2023-10-15

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R topics documented:

analyse_pfam_isotypes	2
augment_pfam	3
pfamAnalyzeR	3
read_pfam	4
Index	5

analyse_pfam_isotypes *Determine domain isotype*

Description

Determine domain isotype

Usage

```
analyse_pfam_isotypes(pfamRes, fracCutoff = 0.1)
```

Arguments

pfamRes	A data frame with pfam augmented with indel and truncation info (as produced by augment_pfam).
fracCutoff	The fraction of a protein domain that must be affected before classifying it a truncation or indel.

Value

The data.frame with the Pfam results now augmented with info about domain domain isotype

Examples

```
### Load pfam data
pfamResultFile <- system.file("extdata/pfam_results.txt", package = "pfamAnalyzeR")
pfamRes <- read_pfam(pfamResultFile)

### Augment the pfam data
pfamRes <- augment_pfam(pfamRes)

### Predict domain isotype
pfamRes <- analyse_pfam_isotypes(pfamRes)
```

augment_pfam	<i>Augment pfam domains with truncation/indel calculations</i>
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Description

Augment pfam domains with truncation/indel calculations

Usage

```
augment_pfam(pfamRes)
```

Arguments

pfamRes A data frame with pfam results as produced by read_pfam.

Value

The data.frame with the Pfam results now augmented with info on trunkation and indel sizes

Examples

```
### Load pfam data
pfamResultFile <- system.file("extdata/pfam_results.txt", package = "pfamAnalyzeR")
pfamRes <- read_pfam(pfamResultFile)

### Augment the pfam data
pfamRes <- augment_pfam(pfamRes)
```

pfamAnalyzeR	<i>Read in and analyze pfam domains isotypes</i>
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Description

Read in and analyze pfam domains isotypes

Usage

```
pfamAnalyzeR(path, fracCutoff = 0.1)
```

Arguments

path A string indicating the full path to the Pfam result file

fracCutoff The fraction of a protein domain that must be affected before classifying it a truncation or indel.

Value

The data.frame with the Pfam results now augmented with info about domain structural variation

Examples

```
### Predict domain isotypes in pfam results
pfamResultFile <- system.file("extdata/pfam_results.txt", package = "pfamAnalyzeR")
pfamRes <- pfamAnalyzeR(pfamResultFile)
```

read_pfam	<i>Read Pfam file into R</i>
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Description

Read Pfam result file file into R. Supports both result files from local and web-server

Usage

```
read_pfam(path)
```

Arguments

path A string indicating the full path to the Pfam result file

Details

The pfam webserver can be found at <https://www.ebi.ac.uk/Tools/hmmer/search/hmmscan>.

Value

A data.frame with the Pfam results

Examples

```
pfamResultFile <- system.file("extdata/pfam_results.txt", package = "pfamAnalyzeR")
pfamRes <- read_pfam(pfamResultFile)
```

Index

`analyse_pfam_isotypes`, [2](#)

`augment_pfam`, [3](#)

`pfamAnalyzeR`, [3](#)

`read_pfam`, [4](#)