

Package ‘BiocIO’

March 29, 2021

Title Standard Input and Output for Bioconductor Packages

Version 1.0.1

Description Implements ``import()`` and ``export()`` standard generics for importing and exporting biological data formats. ``import()`` supports whole-file as well as chunk-wise iterative import. The ``import()`` interface optionally provides a standard mechanism for 'lazy' access via ``filter()`` (on row or element-like components of the file resource), ``select()`` (on column-like components of the file resource) and ``collect()``. The ``import()`` interface optionally provides transparent access to remote (e.g. via https) as well as local access. Developers can register a file extension, e.g., ``loom`` for dispatch from character-based URIs to specific ``import()`` / ``export()`` methods based on classes representing file types, e.g., ``LoomFile()``.

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Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.1.0

Depends R (>= 4.0)

Imports BiocGenerics, GenomicRanges, RCurl, S4Vectors, methods, tools

Suggests testthat, knitr, rmarkdown, BiocStyle

Collate export.R import.R yield.R BiocFile.R compression.R

VignetteBuilder knitr

biocViews Annotation,DataImport

BugReports <https://github.com/Bioconductor/BiocIO/issues>

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

git_branch RELEASE_3_12

git_last_commit 724abe7

git_last_commit_date 2020-11-09

Date/Publication 2021-03-29

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BiocFile-class	<i>BiocFile objects</i>
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Description

A BiocFile object is the base class for classes representing files accessible with rtracklayer. It wraps a resource (either a path, URL or connection). We can represent a list of BiocFile objects with a BiocFileList.

Accessor Methods

In the code snippets below, x represents a BiocFile object.

path(x): Gets the path, as a character vector, to the resource represented by the BiocFile object, if possible.

resource(x): Gets the low-level resource, either a character vector (a path or URL) or a connection.

fileFormat(x): Gets a string identifying the file format. Can also be called directly on a character file path, in which case it uses a heuristic based on the file extension.

Coercion

as.character(x): Returns the path of the file as a character vector.

Related functions

fileForFormat(path, format = file_ext(path)): Determines the file type of path and returns a high-level file object such as BamFile, BEDFile, BigWigFile etc..

bestFileFormat(x): Returns the best possible file format for a given file. This function searches through loaded packages for "File" classes that contain S4 methods for 'export' and 'import' for that class.

decompress(x): Returns a decompressed representation of a CompressedFile or character object.

Author(s)

Michael Lawrence

See Also

Implementing classes include: [BigWigFile](#), [TwoBitFile](#), [BEDFile](#), [GFFFile](#), and [WIGFile](#).

Examples

```
## For our examples, we create a class called CSVFILE that extends BiocFile
.CSVFile <- setClass("CSVFile", contains = "BiocFile")

## Constructor
CSVFile <-
  function(resource)
  {
    .CSVFile(resource = resource)
  }

setMethod("import", "CSVFile",
  function(con, format, text, ...)
  {
    read.csv(resource(con), ...)
  })

## Define export
setMethod("export", c("data.frame", "CSVFile"),
  function(object, con, format, ...)
  {
    write.csv(object, resource(con), ...)
  })

## Recommend CSVFile class for .csv files
temp <- tempfile(fileext = ".csv")
FileForFormat(temp)

## Create CSVFile
csv <- CSVFile(temp)

## Display path of file
path(csv)

## Display resource of file
resource(csv)
```

Description

The functions `import` and `export` load and save objects from and to particular file formats. The `rtracklayer` package implements support for a number of annotation and sequence formats.

Usage

```
export(object, con, format, ...)
import(con, format, text, ...)
```

Arguments

`object` The object to export.

con	The connection from which data is loaded or to which data is saved. If this is a character vector, it is assumed to be a filename and a corresponding file connection is created and then closed after exporting the object. If a BiocFile derivative, the data is loaded from or saved to the underlying resource. If missing, the function will return the output as a character vector, rather than writing to a connection.
format	The format of the output. If missing and con is a filename, the format is derived from the file extension. This argument is unnecessary when con is a derivative of BiocFile .
text	If con is missing, this can be a character vector directly providing the string data to import.
...	Parameters to pass to the format-specific method.

Value

If con is missing, a character vector containing the string output. Otherwise, nothing is returned.

Author(s)

Michael Lawrence

See Also

Format-specific options for the popular formats: [GFF](#), [BED](#), [BED15](#), [BEDGRAPH](#), [WIG](#), [BIGWIG](#)

Examples

```
## To illustrate export(), import(), and yeild(), we create a class, CSVFILE
.CSVFile <- setClass("CSVFile", contains = "BiocFile")

## Constructor
CSVFile <-
  function(resource)
  {
    .CSVFile(resource = resource)
  }

## Define import
setMethod("import", "CSVFile",
  function(con, format, text, ...)
  {
    read.csv(resource(con), ...)
  })

## Define export
setMethod("export", c("data.frame", "CSVFile"),
  function(object, con, format, ...)
  {
    write.csv(object, resource(con), ...)
  })

## Usage
temp <- tempfile(fileext = ".csv")
csv <- CSVFile(temp)
```

```
export(mtcars, csv)
df <- import(csv)
```

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