

Package: alabaster.spatial (via r-universe)

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Title Save and Load Spatial 'Omics Data to/from File

Description Save SpatialExperiment objects and their images into file artifacts, and load them back into memory. This is a more portable alternative to serialization of such objects into RDS files. Each artifact is associated with metadata for further interpretation; downstream applications can enrich this metadata with context-specific properties.

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Depends SpatialExperiment, alabaster.base

Imports methods, utils, grDevices, S4Vectors, alabaster.sce, rhdf5

Suggests testthat, knitr, rmarkdown, BiocStyle, DropletUtils, magick, png, digest

VignetteBuilder knitr

RoxygenNote 7.2.3

biocViews DataImport, DataRepresentation

Repository <https://bioc.r-universe.dev>

RemoteUrl <https://github.com/bioc/alabaster.spatial>

RemoteRef HEAD

RemoteSha 07a1ee86acecbb54857d0fa336e4a1713c7acf0e

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loadSpatialImage *Load a spatial image*

Description

Load an image as a [SpatialImage](#) or subclass thereof.

Usage

```
loadSpatialImage(img.info, project)
```

Arguments

img.info Named list containing the metadata for this assay.
project Object specifying the project of interest.

Value

A [SpatialImage](#) containing the image data (or a reference to it).

Author(s)

Aaron Lun

Examples

```
example(read10xVisium, echo=FALSE)
img <- imgData(spe)$data[[1]]

tmp <- tempfile()
dir.create(tmp)
meta <- stageObject(img, tmp, "whee")

out <- loadSpatialImage(meta, tmp)
```

readSpatialExperiment *Read a SpatialExperiment from disk*

Description

Read a [SpatialExperiment](#) object from its on-disk representation.

Usage

```
readSpatialExperiment(path, metadata, ...)
```

Arguments

| | |
|----------|---|
| path | String containing a path to a directory, itself created using the <code>stageObject</code> method for <code>SpatialExperiment</code> objects. |
| metadata | Named list of metadata for this object, see <code>readObjectFile</code> for details. |
| ... | Further arguments passed to <code>readSingleCellExperiment</code> and internal <code>altReadObject</code> calls. |

Value

A `SpatialExperiment` object.

Author(s)

Aaron Lun

Examples

```
library(SpatialExperiment)
example(read10xVisium, echo=FALSE)

tmp <- tempfile()
saveObject(spe, tmp)
readObject(tmp)
```

saveObject,SpatialExperiment-method
Save a spatial experiment

Description

Save a `SpatialExperiment` object to its on-disk representation.

Usage

```
## S4 method for signature 'SpatialExperiment'
saveObject(x, path, ...)
```

Arguments

| | |
|------|---|
| x | A <code>SpatialExperiment</code> object. |
| path | String containing the path to a directory in which to save x. |
| ... | Further arguments to pass to specific methods. |

Details

Currently, only PNG and TIFF image formats are supported in the `imgData`. All other images will be re-saved as PNG.

Value

x is saved to path and NULL is invisibly returned.

Author(s)

Aaron Lun

Examples

```
library(SpatialExperiment)
example(read10xVisium, echo=FALSE)

tmp <- tempfile()
saveObject(spe, tmp)
list.files(tmp, recursive=TRUE)
```

stageSpatialImage *Stage images for upload*

Description

These methods are deprecated and are only documented here for back-compatibility purposes.

Usage

```
## S4 method for signature 'VirtualSpatialImage'
stageObject(x, dir, path, child = FALSE, ...)

## S4 method for signature 'StoredSpatialImage'
stageObject(x, dir, path, child = FALSE, ...)

## S4 method for signature 'RemoteSpatialImage'
stageObject(x, dir, path, child = FALSE, ...)
```

Arguments

| | |
|-------|---|
| x | A SpatialImage object. |
| dir | String containing a path to a directory. |
| path | String containing a relative path inside a directory. |
| child | Logical scalar indicating whether x is a child of another object. |
| ... | Further arguments, ignored. |

Details

Each of the different methods will take advantage of any existing files to avoid an actual save. For example, the [RemoteSpatialImage](#) method will download the file directly to path, while the [StoredSpatialImage](#) method will create a link or copy the file. The [SpatialImage](#) method will fall back to saving the raster directly as a PNG.

Value

An image file is created at `file.path(dir, path)`, possibly after appending an appropriate file extension.

The return value should be a named list containing at least:

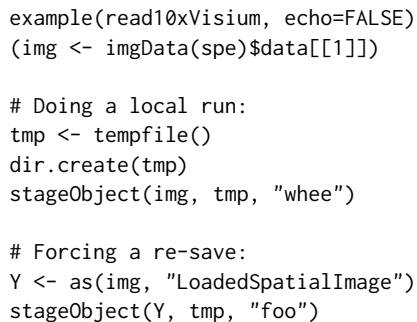
- `$schema`, a string specifying the schema to use to validate the metadata. This may have a package attribute to specify the package where the schema lives (in its `inst/schemas` directory).
- `path`, a string containing the path to the file containing the assay contents. This should start with the input path but can be followed by any necessary file extensions.
- `child`, whether this is a child resource of a larger object.

Other fields can be provided and will be included in the metadata, provided that they are recognized by the specified schema.

Author(s)

Aaron Lun

Examples

```
example(read10xVisium, echo=FALSE)
The code block contains two examples of using the stageSpatialImage function. The first example shows a local run where a temporary directory is created and the image is staged there. The second example shows forcing a re-save of the image to a specific location.

```
(img <- imgData(spe)$data[[1]])

Doing a local run:
tmp <- tempfile()
dir.create(tmp)
stageObject(img, tmp, "whee")

Forcing a re-save:
Y <- as(img, "LoadedSpatialImage")
stageObject(Y, tmp, "foo")
```


```

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