

Package ‘alabaster.spatial’

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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

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

VignetteBuilder knitr

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| | |
|------------------|-----------------------------|
| loadSpatialImage | <i>Load a spatial image</i> |
|------------------|-----------------------------|

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 stageObject method for SpatialExperiment objects. |
| metadata | Named list of metadata for this object, see readObjectFile for details. |
| ... | Further arguments passed to readSingleCellExperiment and internal altReadObject 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 SpatialExperiment 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 | <i>Stage images for upload</i> |
|-------------------|--------------------------------|

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:

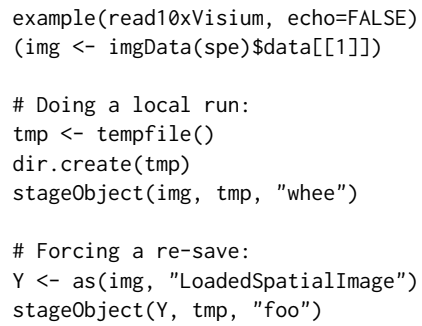
- `$schema`, a string specifying the schema to use to validate the metadata. This may have a `package` attribute to specify the package where the schema lives (in its `inst/schemas` directory).
- `path`, a string containing the path to the file containing the assay contents. This should start with the 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 image contains R code for the stageSpatialImage package. It starts with an example function call: example(read10xVisium, echo=FALSE) followed by (img <- imgData(spe)$data[[1]]). Then, it shows a local run: # Doing a local run: tmp <- tempfile(), dir.create(tmp), stageObject(img, tmp, "whee"). Finally, it shows forcing a re-save: # Forcing a re-save: Y <- as(img, "LoadedSpatialImage"), stageObject(Y, tmp, "foo").  
(img <- imgData(spe)$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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