

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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loadSpatialImage *Load a spatial image*

Description

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

Usage

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

Arguments

<code>img.info</code>	Named list containing the metadata for this assay.
<code>project</code>	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 saveObject 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

See Also

["saveObject, SpatialExperiment-method"](#), to save a [SpatialExperiment](#) to disk.

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, SpatialExperiment.reuse.images = "link", ...)
```

Arguments

x A [SpatialExperiment](#) object.
path String containing the path to a directory in which to save x.
SpatialExperiment.reuse.images Whether to re-use existing files on disk (e.g., by copying or linking to them in path) when an image in [imgData](#)(x) contains a reference to its original file location (e.g., via [imgSource](#)). This can be any of the values described for action= in [cloneFile](#).
... Further arguments to pass to internal [saveObject](#) calls.

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

See Also

[readSpatialExperiment](#), to read the *SpatialExperiment* back into the R session.

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

<code>x</code>	A SpatialImage object.
<code>dir</code>	String containing a path to a directory.
<code>path</code>	String containing a relative path inside a directory.
<code>child</code>	Logical scalar indicating whether <code>x</code> is a child of another object.
<code>...</code>	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)
(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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