

# Package ‘alabaster.spatial’

November 16, 2025

**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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png, digest

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

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## 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)
```

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readSpatialExperiment *Read a SpatialExperiment from disk*

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## 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 <a href="#">saveObject</a> method for <a href="#">SpatialExperiment</a> objects. |
| metadata | Named list of metadata for this object, see <a href="#">readObjectFile</a> for details.                                                            |
| ...      | Further arguments passed to <a href="#">readSingleCellExperiment</a> and internal <a href="#">altReadObject</a> 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, ...)
```

## Arguments

|      |                                                               |
|------|---------------------------------------------------------------|
| x    | A <a href="#">SpatialExperiment</a> object.                   |
| path | String containing the path to a directory in which to save x. |
| ...  | Additional named 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

## 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 | <i>Stage images for upload</i> |
|-------------------|--------------------------------|

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## 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 <a href="#">SpatialImage</a> 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:

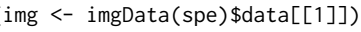
- `$schema`, a string specifying the schema to use to validate the metadata. This may have a `package` attribute to specify the package where the schema lives (in its `inst/schemas` directory).
- `path`, a string containing the path to the file containing the assay contents. This should start with the 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)



# 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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