

# Package ‘MuData’

August 29, 2025

**Title** Serialization for MultiAssayExperiment Objects

**Version** 1.13.0

**Description** Save MultiAssayExperiments to h5mu files supported by muon and mudata.  
Muon is a Python framework for multimodal omics data analysis. It uses an HDF5-based format for data storage.

**URL** <https://github.com/ilia-kats/MuData>

**BugReports** <https://github.com/ilia-kats/MuData/issues>

**Imports** methods, stats, MultiAssayExperiment, SingleCellExperiment,  
SummarizedExperiment, DelayedArray, S4Vectors

**Depends** Matrix, S4Vectors, rhdf5 (>= 2.45)

**Suggests** HDF5Array, rmarkdown, knitr, fs, testthat, BiocStyle, covr,  
SingleCellMultiModal, CiteFuse, scater

**VignetteBuilder** knitr

**License** GPL-3

**Encoding** UTF-8

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.2.3

**Config/testthat/edition** 3

**biocViews** DataImport

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|          |                                                                              |
|----------|------------------------------------------------------------------------------|
| readH5AD | <i>Read an .h5ad file and create a <a href="#">SingleCellExperiment</a>.</i> |
|----------|------------------------------------------------------------------------------|

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### Description

In file-backed mode, the main X matrix is not read into memory, but references the HDF5 file and its required parts are read on demand. This requires the HDF5Array package to be installed.

### Usage

```
readH5AD(file, backed = FALSE)
```

### Arguments

|        |                                  |
|--------|----------------------------------|
| file   | Path to the .h5ad file.          |
| backed | Whether to use file-backed mode. |

### Value

A [SingleCellExperiment](#).

### Examples

```
data(miniACC, package="MultiAssayExperiment")
writeH5AD(miniACC[[1]], "miniacc.h5ad")
sce <- readH5AD("miniacc.h5ad")
```

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|          |                                                                              |
|----------|------------------------------------------------------------------------------|
| readH5MU | <i>Read an .h5mu file and create a <a href="#">MultiAssayExperiment</a>.</i> |
|----------|------------------------------------------------------------------------------|

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### Description

In file-backed mode, the main X matrices are not read into memory, but reference the HDF5 file and their required parts are read on demand. This requires the HDF5Array package to be installed.

### Usage

```
readH5MU(file, backed = FALSE)
```

**Arguments**

|        |                                  |
|--------|----------------------------------|
| file   | Path to the .h5mu file.          |
| backed | Whether to use file-backed mode. |

**Value**

A `MultiAssayExperiment`

**Examples**

```
data(miniACC, package="MultiAssayExperiment")
writeH5MU(miniACC, "miniacc.h5mu")
mae <- readH5MU("miniacc.h5mu")
```

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|           |                                             |
|-----------|---------------------------------------------|
| writeH5AD | <i>Save an experiment to an .h5ad file.</i> |
|-----------|---------------------------------------------|

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**Description**

Note that NA values are not supported by HDF5, and therefore by h5ad. The behavior of this function if NAs are present is undefined.

**Usage**

```
writeH5AD(object, file, overwrite)
```

**Arguments**

|           |                              |
|-----------|------------------------------|
| object    | The object to save.          |
| file      | Name of the file to save to. |
| overwrite | Currently unused.            |

**Value**

NULL, invisibly

**Examples**

```
data(miniACC, package="MultiAssayExperiment")
writeH5AD(miniACC[[1]], "miniacc.h5ad")
```

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|           |                                                                      |
|-----------|----------------------------------------------------------------------|
| writeH5MU | Save a <a href="#">MultiAssayExperiment</a> to an <i>.h5mu</i> file. |
|-----------|----------------------------------------------------------------------|

---

### Description

Note that NA values are not supported by HDF5, and therefore by h5mu. The behavior of this function if NAs are present is undefined.

### Usage

```
writeH5MU(object, file, overwrite)
```

### Arguments

|           |                                          |
|-----------|------------------------------------------|
| object    | A <a href="#">MultiAssayExperiment</a> . |
| file      | Name of the file to save to.             |
| overwrite | Currently unused.                        |

### Value

NULL, invisibly

### Examples

```
data(miniACC, package="MultiAssayExperiment")
writeH5MU(miniACC, "miniacc.h5mu")
```

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