

# Package ‘iSEEhex’

May 15, 2025

**Title** iSEE extension for summarising data points in hexagonal bins

**Version** 1.11.0

**Date** 2024-20-01

**Description** This package provides panels summarising data points in hexagonal bins for `iSEE`. It is part of `iSEEu`, the iSEE universe of panels that extend the `iSEE` package.

**License** Artistic-2.0

**URL** <https://github.com/iSEE/iSEEhex>

**BugReports** <https://support.bioconductor.org/t/iSEEhex>

**biocViews** Software, Infrastructure

**Encoding** UTF-8

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.3.2

**Depends** SummarizedExperiment, iSEE

**Imports** ggplot2, hexbin, methods, shiny

**Suggests** BiocStyle, covr, knitr, RefManageR, rmarkdown, sessioninfo, testthat (>= 3.0.0), scRNAseq, scater

**Config/testthat/edition** 3

**VignetteBuilder** knitr

**git\_url** <https://git.bioconductor.org/packages/iSEEhex>

**git\_branch** devel

**git\_last\_commit** d4d3f32

**git\_last\_commit\_date** 2025-04-15

**Repository** Bioconductor 3.22

**Date/Publication** 2025-05-15

**Author** Kevin Rue-Albrecht [aut, cre] (ORCID: <https://orcid.org/0000-0003-3899-3872>),  
Charlotte Soneson [aut] (ORCID: <https://orcid.org/0000-0003-3833-2169>),  
Federico Marini [aut] (ORCID: <https://orcid.org/0000-0003-3252-7758>),  
Aaron Lun [aut] (ORCID: <https://orcid.org/0000-0002-3564-4813>)

**Maintainer** Kevin Rue-Albrecht <kevinrue67@gmail.com>

## Contents

|                                         |   |
|-----------------------------------------|---|
| iSEEhex-pkg . . . . .                   | 2 |
| ReducedDimensionHexPlot-class . . . . . | 2 |

|              |          |
|--------------|----------|
| <b>Index</b> | <b>5</b> |
|--------------|----------|

---

|             |                                                                              |
|-------------|------------------------------------------------------------------------------|
| iSEEhex-pkg | <i>iSEEhex: iSEE extension for summarising data points in hexagonal bins</i> |
|-------------|------------------------------------------------------------------------------|

---

## Description

iSEEhex is a package that provides panels summarising data points in hexagonal bins for iSEE.

## Author(s)

Kevin Rue-Albrecht <kevin.rue-albrecht@kennedy.ox.ac.uk>

Charlotte Soneson <charlottesoneson@gmail.com>

Federico Marini <marinif@uni-mainz.de>

Aaron Lun <infinite.monkeys.with.keyboards@gmail.com>

## See Also

Useful links:

- <https://github.com/iSEE/iSEEhex>
- Report bugs at <https://support.bioconductor.org/t/iSEEhex>

---

|                               |                                          |
|-------------------------------|------------------------------------------|
| ReducedDimensionHexPlot-class | <i>The ReducedDimensionHexPlot class</i> |
|-------------------------------|------------------------------------------|

---

## Description

The ReducedDimensionHexPlot is a [ReducedDimensionPlot](#) subclass that is dedicated to creating a reduced dimension plot summarising data points in hexagonal bins.

## Slot overview

The following slots control the parameters used in the visualization:

- BinResolution, a numeric positive scalar specifying the number of hexagonal bins in both vertical and horizontal directions. Defaults to 100.

In addition, this class inherits all slots from its parent [ReducedDimensionPlot](#), [ColumnDotPlot](#), [DotPlot](#) and [Panel](#) classes.

## Constructor

ReducedDimensionHexPlot(...) creates an instance of a ReducedDimensionHexPlot class, where any slot and its value can be passed to ... as a named argument.

## Supported methods

In the following code snippets, `x` is an instance of a [ReducedDimensionHexPlot](#) class. Refer to the documentation for each method for more details on the remaining arguments.

For defining the interface:

- `.panelColor(x)` will return the specified default color for this panel class.
- `.fullName(x)` will return "Hexagonal reduced dimension plot".
- `.hideInterface(x, field)` will return TRUE for `field="Downsample"` as downsampling is not applicable to this panel that summarizes all data points in each hexagonal bin; otherwise this function will call the [ReducedDimensionPlot](#) method.
- `.defineVisualShapeInterface(x)` will return NULL for this panel, as the shape aesthetic is not applicable to this panel that does not display individual data points.
- `.defineVisualSizeInterface(x)` overrides the equivalent method inherited from all parents classes and will return instead an HTML tag definition that contains a user input controlling the number of hexagonal bins in both vertical and horizontal directions.
- `.defineVisualOtherInterface(x)` will return NULL, as there are no additional visual parameters for this panel.
- `.allowableColorByDataChoices(x, se)` will return a character vector with the names of all continuous fields in `colData(se)`, where `se` is the input [SummarizedExperiment](#) object.

For monitoring reactive expressions:

- `.createObservers(x, se, input, session, pObjects, rObjects)` sets up observers for all new slots described above, as well as in the parent classes via the [ReducedDimensionPlot](#) method.

For creating the plot:

- `.generateDotPlot(x, envir)` will return a list with `plot`, a `ggplot2::ggplot()` object; and `cmds`, a character vector of commands to produce that object when evaluated inside `envir`.

For documentation:

- `.definePanelTour(x)` returns an `data.frame` containing the steps of a panel-specific tour.
- `.getDotPlotColorHelp(x, color_choices)` returns a function that generates an **rintrojs** tour for the color choice UI.

## Author(s)

Kevin Rue-Albrecht

## See Also

[ReducedDimensionPlot](#), for the base class.

## Examples

```
library(scRNAseq)

# Example data ----
sce <- ReprocessedAllenData(assays="tophat_counts")
class(sce)
```

```
library(scater)
sce <- logNormCounts(sce, exprs_values="tophat_counts")

sce <- runPCA(sce, ncomponents=4)
sce <- runTSNE(sce)
rowData(sce)$ave_count <- rowMeans(assay(sce, "tophat_counts"))
rowData(sce)$n_cells <- rowSums(assay(sce, "tophat_counts") > 0)

# launch the app itself ----

if (interactive()) {
  iSEE(sce, initial=list(
    ReducedDimensionHexPlot(BinResolution=50),
    ReducedDimensionPlot()
  ))
}
```

# Index

**\* internal**  
 iSEHex-pkg, 2  
 .allowableColorByDataChoices, 3  
 .allowableColorByDataChoices, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .createObservers, 3  
 .createObservers, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .definePanelTour, 3  
 .definePanelTour, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .defineVisualOtherInterface, 3  
 .defineVisualOtherInterface, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .defineVisualShapeInterface, 3  
 .defineVisualShapeInterface, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .defineVisualSizeInterface, 3  
 .defineVisualSizeInterface, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .fullName, 3  
 .fullName, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .generateDotPlot, 3  
 .generateDotPlot, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .getDotPlotColorHelp, 3  
 .getDotPlotColorHelp, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .hideInterface, 3  
 .hideInterface, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 .panelColor, 3  
 .panelColor, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 colData(se), 3  
 ColumnDotPlot, 2  
 DotPlot, 2  
 ggplot2::ggplot(), 3  
 initialize, ReducedDimensionHexPlot-method  
 (ReducedDimensionHexPlot-class), 2  
 iSEHex (iSEHex-pkg), 2  
 iSEHex-package (iSEHex-pkg), 2  
 iSEHex-pkg, 2  
 Panel, 2  
 ReducedDimensionHexPlot, 3  
 HexPlot-method  
 ReducedDimensionHexPlot  
 (ReducedDimensionHexPlot-class), 2  
 ReducedDimensionHexPlot-class, 2  
 ReducedDimensionPlot, 2, 3  
 SummarizedExperiment, 3