

# Package ‘safari’

December 12, 2025

**Type** Package

**Title** Analysis of scDNA-seq data

**Version** 1.0.0

**Description** Safari is a Shiny application designed for the analysis of single-cell DNA sequencing (scDNA-seq) data provided in .h5 file format. The analysis process is structured into the four key steps ``Sequencing'', ``Panel'', ``Variants'', and ``Explore Variants''. It supports various analyses and visualizations.

**Depends** R (>= 4.5.0)

**License** LGPL-3

**Encoding** UTF-8

**Imports** magrittr, shiny, shinycssloaders, DT, dplyr, waiter, ggplot2, tibble, stringr, reshape2, shinyjs, shinyBS, shinycustomloader, factoextra, markdown, plotly, ggbio, GenomicRanges, rhdf5, ComplexHeatmap, biomaRt, org.Hs.eg.db, SummarizedExperiment, SingleCellExperiment, S4Vectors, parallel, httr, jsonlite, scales, tidyr, txdbmaker, circlize, R.utils, dbscan, igraph, RANN

**VignetteBuilder** knitr

**Suggests** knitr, rmarkdown, BiocStyle, testthat (>= 3.0.0)

**biocViews** Software, ShinyApps, SingleCell, Sequencing

**BugReports** <https://github.com/sophiewind/safari/issues>

**URL** <https://github.com/sophiewind/safari>

**RoxygenNote** 7.3.2

**Config/testthat/edition** 3

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

**git\_branch** RELEASE\_3\_22

**git\_last\_commit** 31af230

**git\_last\_commit\_date** 2025-10-29

**Repository** Bioconductor 3.22

**Date/Publication** 2025-12-11

**Author** Sophie Wind [aut, cre] (ORCID: <<https://orcid.org/0009-0002-1174-8201>>)

**Maintainer** Sophie Wind <sophie.wind@uni-muenster.de>

## Contents

|                                          |           |
|------------------------------------------|-----------|
| annotateAmplicons . . . . .              | 2         |
| annotateVariants . . . . .               | 3         |
| checkH5 . . . . .                        | 4         |
| check_MBAPI . . . . .                    | 4         |
| clusterVariantSelection . . . . .        | 4         |
| filterVariants . . . . .                 | 6         |
| gg_color_hue . . . . .                   | 8         |
| h5ToSce . . . . .                        | 8         |
| launchSafariShiny . . . . .              | 9         |
| logLogPlot . . . . .                     | 9         |
| normalizeReadCounts . . . . .            | 10        |
| plotAmpliconDistribution . . . . .       | 11        |
| plotClusterGenotype . . . . .            | 11        |
| plotClusterVAF . . . . .                 | 12        |
| plotClusterVAFMap . . . . .              | 13        |
| plotElbow . . . . .                      | 14        |
| plotGenotypequalityPerGenotype . . . . . | 15        |
| plotNormalizedReadCounts . . . . .       | 15        |
| plotPanelUniformity . . . . .            | 16        |
| plotVariantHeatmap . . . . .             | 17        |
| safari . . . . .                         | 17        |
| theme_default . . . . .                  | 18        |
| theme_shiny . . . . .                    | 18        |
| <b>Index</b>                             | <b>19</b> |

---

|                   |                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| annotateAmplicons | <i>Function: annotateAmplicons This function takes a SingleCellExperiment object as input and annotates the stored amplicons.</i> |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------|

---

## Description

Function: annotateAmplicons This function takes a SingleCellExperiment object as input and annotates the stored amplicons.

## Usage

```
annotateAmplicons(sce, known.canon, shiny = FALSE)
```

## Arguments

|             |                                                              |
|-------------|--------------------------------------------------------------|
| sce         | SingleCellExperiment object containing the single-cell data. |
| known.canon | Path to jknown canonicals (see vignette)                     |
| shiny       | If TRUE messages are shown                                   |

## Value

A dataframe containing annotated amplicons.

## Examples

```
# Assume `sce` is a SingleCellExperiment object with a 'counts' assay
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))

annotated <- annotateAmplicons(
  sce_filtered,
  system.file("extdata", "UCSC_hg19_knownCanonical_mock.txt",
    package = "scafari"
  )
)
```

---

|                  |                                                                                                                               |
|------------------|-------------------------------------------------------------------------------------------------------------------------------|
| annotateVariants | <i>Function: annotateVariants This function takes a SingleCellExperiment object as input and performs variant annotation.</i> |
|------------------|-------------------------------------------------------------------------------------------------------------------------------|

---

## Description

Function: annotateVariants This function takes a SingleCellExperiment object as input and performs variant annotation.

## Usage

```
annotateVariants(sce, shiny = FALSE, max.var = 50)
```

## Arguments

|         |                                                                                                               |
|---------|---------------------------------------------------------------------------------------------------------------|
| sce     | SingleCellExperiment object containing the single-cell data to be annotated.                                  |
| shiny   | A logical flag indicating whether the function is being run in a Shiny application context. Default is FALSE. |
| max.var | Maximum number of variants to annotate. By default this is 50 to avoid long runtime.                          |

## Value

The function returns an annotated SingleCellExperiment object.

## References

<https://missionbio.github.io/mosaic/>, <https://github.com/rachelgriffard/optima>

## Examples

```
# Assume `sce` is a SingleCellExperiment object with variants in altExp()
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
sce <- annotateVariants(sce_filtered, shiny = FALSE)
```

---

|         |                 |
|---------|-----------------|
| checkH5 | <i>Check h5</i> |
|---------|-----------------|

---

**Description**

Check h5

**Usage**

```
checkH5(h5_file)
```

**Arguments**

h5\_file                      and path to the h5 file

**Value**

boolean if h5 is valid

---

|             |                                          |
|-------------|------------------------------------------|
| check_MBAPI | <i>Check if MissionBio is accessible</i> |
|-------------|------------------------------------------|

---

**Description**

Check if MissionBio is accessible

**Usage**

```
check_MBAPI()
```

**Value**

boolean if MissionBio API is currently available

---

|                         |                                                                                                                 |
|-------------------------|-----------------------------------------------------------------------------------------------------------------|
| clusterVariantSelection | <i>Function: clusterVariantSelection This function takes selected variants and performs clustering on them.</i> |
|-------------------------|-----------------------------------------------------------------------------------------------------------------|

---

**Description**

Function: clusterVariantSelection This function takes selected variants and performs clustering on them.

**Usage**

```
clusterVariantSelection(
  sce,
  variants.of.interest,
  n.clust,
  method = "k-means",
  eps.value = 0.2,
  resolution = NULL,
  min.pts = NULL
)
```

**Arguments**

|                                   |                                                                                                                                                  |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>sce</code>                  | A <code>SingleCellExperiment</code> object containing the single-cell data on which clustering will be performed.                                |
| <code>variants.of.interest</code> | A vector or list specifying the variants of interest to be selected for clustering.                                                              |
| <code>n.clust</code>              | An integer specifying the number of clusters.                                                                                                    |
| <code>method</code>               | Clustering method. Either k-means, dbscan or leiden.                                                                                             |
| <code>eps.value</code>            | Size (radius) of the epsilon neighborhood. Can be omitted if <code>x</code> is a <code>frNN</code> object.                                       |
| <code>resolution</code>           | The resolution parameter to use. Higher resolutions lead to more smaller communities, while lower resolutions lead to fewer larger communities.  |
| <code>min.pts</code>              | Number of minimum points required in the <code>eps</code> neighborhood for core points (including the point itself). By default cell number/100. |

**Value**

A list with clustering results and a `ggplot`-object.

**References**

[https://cran.r-project.org/web/packages/dbscan/readme/ README.html#ref-hahsler2019dbscan](https://cran.r-project.org/web/packages/dbscan/readme/README.html#ref-hahsler2019dbscan)

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with variants in altExp()
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
clusterplot <- clusterVariantSelection(
  sce = sce_filtered,
  variants.of.interest = c(
    "FLT3:chr13:28610183:A/G",
    "KIT:chr4:55599436:T/C",
    "TP53:chr17:7577427:G/A",
    "TET2:chr4:106158216:G/A"
  ),
  n.clust = 4
)
```

---

|                |                                                                                                                                        |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| filterVariants | <i>Function: filterVariants</i> ————— <i>This function takes a SingleCellExperiment object as input and performs variant filtering</i> |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|

---

## Description

Function: filterVariants ————— This function takes a SingleCellExperiment object as input and performs variant filtering

## Usage

```
filterVariants(
  depth.threshold = numeric(),
  genotype.quality.threshold = numeric(),
  vaf.ref = numeric(),
  vaf.het = numeric(),
  vaf.hom = numeric(),
  min.cell = numeric(),
  min.mut.cell = numeric(),
  se.var,
  sce,
  shiny = FALSE
)
```

## Arguments

|                            |                                                                                                                  |
|----------------------------|------------------------------------------------------------------------------------------------------------------|
| depth.threshold            | A numeric value specifying the minimum read depth required.                                                      |
| genotype.quality.threshold | A numeric value specifying the minimum genotype quality score.                                                   |
| vaf.ref                    | A numeric value specifying the variant allele frequency threshold for wild-type alleles.                         |
| vaf.het                    | A numeric value specifying the variant allele frequency threshold for heterozygous variants.                     |
| vaf.hom                    | A numeric value specifying the variant allele frequency threshold for homozygous variants.                       |
| min.cell                   | A numeric value indicating the minimum number of cells with a genotype other than "missing".                     |
| min.mut.cell               | A numeric value indicating the minimum number of mutated (genotype either "homozygous" or "heterozygous") cells. |
| se.var                     | The SummarizedExperiment object containing variant data which will be filtered.                                  |
| sce                        | SingleCellExperiment object containing the single-cell data TODO.                                                |
| shiny                      | A logical flag indicating whether the function is being run in a Shiny application context. Default is FALSE.    |

**Value**

A list containing the following elements:

**vaf.matrix.filtered** Variant allele frequencies after filtering.

**genotype.matrix.filtered** Genotype information after filtering.

**read.counts.df.norm.filtered** Normalized read counts for variants retained after filtering.

**variant.ids.filtered** A vector of the variant IDs that were retained after filtering.

**genoqual.matrix.filtered** Genotype qualities for variants retained after filtering.

**cells.keep** A vector of cell identifiers for those cells retained after filtering.

**References**

<https://missionbio.github.io/mosaic/>, <https://github.com/rachelgriffard/optima>

**Examples**

```
library(SummarizedExperiment)
h5_file_path <- system.file("extdata", "demo.h5", package = "scafari")
h5 <- h5ToSce(h5_file_path)
sce <- h5$sce_amp
se.var <- h5$se_var
sce <- normalizeReadCounts(sce = sce)
filteres <- filterVariants(
  depth.threshold = 10,
  genotype.quality.threshold = 30,
  vaf.ref = 5,
  vaf.het = 35,
  vaf.hom = 95,
  min.cell = 50,
  min.mut.cell = 1,
  se.var = se.var,
  sce = sce,
  shiny = FALSE
)
se.f <- SummarizedExperiment(
  assays = list(
    VAF = t(filteres$vaf.matrix.filtered),
    Genotype = t(filteres$genotype.matrix.filtered),
    Genoqual = t(filteres$genoqual.matrix.filtered)
  ),
  rowData = filteres$variant.ids.filtered,
  colData = filteres$cells.keep
)

# Filter out cells in sce object
# Find the indices of the columns to keep
indices_to_keep <- match(filteres$cells.keep,
  SummarizedExperiment::colData(sce)[[1]],
  nomatch = 0
)

# Subset the SCE using these indices
sce_filtered <- sce[, indices_to_keep]
```

---

|              |                              |
|--------------|------------------------------|
| gg_color_hue | <i>Default ggplot colors</i> |
|--------------|------------------------------|

---

### Description

Default ggplot colors

### Usage

```
gg_color_hue(n)
```

### Value

gg colors for plotting

---

|         |                                                                                                                                      |
|---------|--------------------------------------------------------------------------------------------------------------------------------------|
| h5ToSce | <i>Function: h5ToSce This function takes the path of an h5 file and reads this into an object of the SingleCellExperiment class.</i> |
|---------|--------------------------------------------------------------------------------------------------------------------------------------|

---

### Description

Function: h5ToSce This function takes the path of an h5 file and reads this into an object of the SingleCellExperiment class.

### Usage

```
h5ToSce(h5_file)
```

### Arguments

|         |                    |
|---------|--------------------|
| h5_file | path of an h5 file |
|---------|--------------------|

### Value

A list containing the following elements:

**sce\_amp** SingleCellExperiment class object containing read count information.

**se\_var** SummarizedExperiment class object containing variant information..

A list with the SingleCellExperiment and the SummarizedExperiment object representing the amplicon and the variant analysis.

**sce\_amp** SingleCellExperiment with amplicon experiment.

**se\_var** SummarizedExperiment with variants experiment

**Examples**

```
h5_file_path <- system.file("extdata", "demo.h5", package = "safari")

# Read the h5ToSce using readH5File
result <- h5ToSce(h5_file_path)

# Display the result
result
```

---

|                   |                                        |
|-------------------|----------------------------------------|
| launchSafariShiny | <i>Launch Safari Shiny Application</i> |
|-------------------|----------------------------------------|

---

**Description**

Launches the Safari Shiny application for data visualization.

**Usage**

```
launchSafariShiny()
```

**Value**

shiny app

**Examples**

```
if (interactive()) {
  launchSafariShiny()
}
```

---

|            |                                            |
|------------|--------------------------------------------|
| logLogPlot | <i>Plot a log-log plot for read counts</i> |
|------------|--------------------------------------------|

---

**Description**

This function generates a log-log plot of read counts using the data from a ‘SingleCellExperiment’ object.

**Usage**

```
logLogPlot(sce)
```

**Arguments**

|     |                                                                                                                                                                                  |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sce | A SingleCellExperiment object that contains read count data to be plotted. The read counts are extracted from an associated h5 file or similar data structure within the object. |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Value**

A ggplot object representing the log-log plot of read counts.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with a 'counts' assay
h5_file_path <- system.file("extdata", "demo.h5", package = "scafari")
h5 <- h5ToSce(h5_file_path)
sce <- h5$sce_amp
plot <- logLogPlot(sce)
print(plot)
```

---

|                     |                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------|
| normalizeReadCounts | <i>This function normalizes the read counts contained within a ‘SingleCellExperiment’ object.</i> |
|---------------------|---------------------------------------------------------------------------------------------------|

---

**Description**

This function normalizes the read counts contained within a ‘SingleCellExperiment’ object.

**Usage**

```
normalizeReadCounts(sce)
```

**Arguments**

|     |                                                                                                                                                                               |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sce | A SingleCellExperiment object that includes the assay data with read counts to be normalized. The metadata within the object may also be utilized for normalization purposes. |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Value**

SingleCellExperiment object with normalized read counts.

**References**

<https://missionbio.github.io/mosaic/>, <https://github.com/rachelgriffard/optima>

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with 'counts' assay.
h5_file_path <- system.file("extdata", "demo.h5", package = "scafari")
h5 <- h5ToSce(h5_file_path)
sce <- h5$sce_amp
sce <- normalizeReadCounts(sce)
```

---

plotAmpliconDistribution

*Plot Distribution of Amplicons*


---

### Description

This function generates a plot to visualize the distribution of amplicons within a 'SingleCellExperiment' object.

### Usage

```
plotAmpliconDistribution(sce)
```

### Arguments

|     |                                                                                                           |
|-----|-----------------------------------------------------------------------------------------------------------|
| sce | A SingleCellExperiment object that contains the assay data, including amplicon information to be plotted. |
|-----|-----------------------------------------------------------------------------------------------------------|

### Value

A ggplot object representing the distribution of amplicons.

### Examples

```
# Assume `sce` is a SingleCellExperiment object with 'counts' assay.
h5_file_path <- system.file("extdata", "demo.h5", package = "scafari")
h5 <- h5ToSce(h5_file_path)
sce <- h5$sce_amp
plotAmpliconDistribution(sce)
```

---

plotClusterGenotype      *Plot Genotype Clusters*


---

### Description

This function generates a plot to visualize genotype in clusters based on selected variants of interest.

### Usage

```
plotClusterGenotype(sce, variants.of.interest, gg.clust)
```

### Arguments

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| sce                  | A SingleCellExperiment object containing the relevant data. |
| variants.of.interest | A vector specifying the variants of interest.               |
| gg.clust             | An object containing clustering information.                |

**Value**

A ggplot object that visually represents the clustering of genotypes based on the specified variants and clustering information.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with variants in altExp()
# and clusterplot is the output of clusterVariantSlection().
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
clusterplot <- readRDS(system.file("extdata", "clusterplot.rds",
  package = "scafari"
))
plotClusterGenotype(
  sce = sce_filtered,
  variants.of.interest = c(
    "FLT3:chr13:28610183:A/G",
    "KIT:chr4:55599436:T/C",
    "TP53:chr17:7577427:G/A",
    "TET2:chr4:106158216:G/A"
  ),
  gg.clust = clusterplot$clusterplot
)
```

---

plotClusterVAF

*plot Cluster VAF This function generates a plot to visualize variant allele frequency (VAF) in clusters based on selected variants of interest.*

---

**Description**

plot Cluster VAF This function generates a plot to visualize variant allele frequency (VAF) in clusters based on selected variants of interest.

**Usage**

```
plotClusterVAF(sce, variants.of.interest, gg.clust)
```

**Arguments**

**sce** A SingleCellExperiment object containing the relevant data.

**variants.of.interest** A vector specifying the variants of interest.

**gg.clust** An object containing clustering information.

**Value**

A ggplot object that visually represents the VAF in the clusters.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with variants in altExp() and
# clusterplot is the output of clusterVariantSlection().
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
clusterplot <- readRDS(system.file("extdata", "clusterplot.rds",
  package = "scafari"
))
plotClusterVAF(
  sce = sce_filtered,
  variants.of.interest = c(
    "FLT3:chr13:28610183:A/G",
    "KIT:chr4:55599436:T/C",
    "TP53:chr17:7577427:G/A",
    "TET2:chr4:106158216:G/A"
  ),
  gg.clust = clusterplot$clusterplot
)
```

---

|                   |                                                                                                                                                                                            |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| plotClusterVAFMap | <i>plot Cluster VAF Map This function generates a plot to visualize variant allele frequency (VAF) in clusters based on selected variants of interest with clusters in the background.</i> |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

**Description**

plot Cluster VAF Map This function generates a plot to visualize variant allele frequency (VAF) in clusters based on selected variants of interest with clusters in the background.

**Usage**

```
plotClusterVAFMap(sce, variants.of.interest, gg.clust)
```

**Arguments**

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| sce                  | A SingleCellExperiment object containing the relevant data. |
| variants.of.interest | A vector specifying the variants of interest.               |
| gg.clust             | An object containing clustering information.                |

**Value**

A ggplot object that visually represents the VAF in the clusters with clusters in the background.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with variants in altExp() and
# clusterplot is the output of clusterVariantSlection().
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
```

```

))
clusterplot <- readRDS(system.file("extdata", "clusterplot.rds",
  package = "scafari")
))
plotClusterVAFMap(
  sce = sce_filtered,
  variants.of.interest = c(
    "FLT3:chr13:28610183:A/G",
    "KIT:chr4:55599436:T/C",
    "TP53:chr17:7577427:G/A",
    "TET2:chr4:106158216:G/A"
  ),
  gg.clust = clusterplot$clusterplot
)

```

---

|           |                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| plotElbow | <i>This function takes a SingleCellExperiment object and variants of interest as input and plots an elbow plot to perform k-means later.</i> |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|

---

## Description

This function takes a SingleCellExperiment object and variants of interest as input and plots an elbow plot to perform k-means later.

## Usage

```
plotElbow(sce, variants.of.interest)
```

## Arguments

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| sce                  | A SingleCellExperiment object containing the relevant data. |
| variants.of.interest | A vector specifying the variants of interest.               |

## Value

ggplot object with elbow plot.

## Examples

```

# Assume `sce` is a SingleCellExperiment object with variants in altExp().
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"))
plotElbow(
  sce = sce_filtered,
  variants.of.interest = c(
    "FLT3:chr13:28610183:A/G",
    "KIT:chr4:55599436:T/C",
    "TP53:chr17:7577427:G/A",
    "TET2:chr4:106158216:G/A"
  )
)

```

---

`plotGenotypequalityPerGenotype`*Plot Genotype Quality per Genotype*

---

**Description**

This function generates a plot to assess the quality of genotypes within a ‘SingleCellExperiment’ object. It uses the ‘genotype\_quality’ assay or any relevant assay to visualize the distribution of genotype quality metrics across different genotypes.

**Usage**

```
plotGenotypequalityPerGenotype(sce)
```

**Arguments**

|     |                                                                                                                                                                                          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sce | A ‘SingleCellExperiment’ object containing the single-cell data. This object should include a ‘genotype_quality’ assay or similar data which provides quality metrics for each genotype. |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Value**

A ‘ggplot’ object visualizing the distribution of genotype quality across different genotypes.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with 'genotype_quality'
# assay.
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
genotype_quality_plot <- plotGenotypequalityPerGenotype(sce_filtered)
print(genotype_quality_plot)
```

---

`plotNormalizedReadCounts`*Plot normalized read counts*

---

**Description**

This function plots the normalized read counts in a bar chart.

**Usage**

```
plotNormalizedReadCounts(sce)
```

**Arguments**

|     |                                                             |
|-----|-------------------------------------------------------------|
| sce | A SingleCellExperiment object containing the relevant data. |
|-----|-------------------------------------------------------------|

**Value**

ggplot object visualizing the normalized read counts in a bar chart.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with 'counts' assay.
h5_file_path <- system.file("extdata", "demo.h5", package = "scafari")
h5 <- h5ToSce(h5_file_path)
sce <- h5$sce_amp
sce <- normalizeReadCounts(sce = sce)
plotNormalizedReadCounts(sce)
```

---

plotPanelUniformity      *Plot Panel Uniformity*

---

**Description**

This function generates a plot to assess the uniformity of panel reads in a ‘SingleCellExperiment’ object. It uses read counts stored in the ‘counts’ assay to visualize the distribution and variability of reads.

**Usage**

```
plotPanelUniformity(sce, interactive = FALSE)
```

**Arguments**

|             |                                                                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sce         | A ‘SingleCellExperiment’ object that contains single-cell data with a ‘counts’ assay. This object should be pre-processed to ensure the data is appropriate for uniformity analysis. |
| interactive | in interactive mode an plotly is returned.                                                                                                                                           |

**Value**

A ‘ggplot’ object visualizing the uniformity of panel reads.

**Examples**

```
# Assume `sce` is a SingleCellExperiment object with 'counts' assay.
h5_file_path <- system.file("extdata", "demo.h5", package = "scafari")
h5 <- h5ToSce(h5_file_path)
sce <- h5$sce_amp
sce <- normalizeReadCounts(sce = sce)
uniformity_plot <- plotPanelUniformity(sce)
print(uniformity_plot)
```

---

|                    |                             |
|--------------------|-----------------------------|
| plotVariantHeatmap | <i>Plot Variant Heatmap</i> |
|--------------------|-----------------------------|

---

### Description

This function generates a heatmap to visualize variant data within a ‘SingleCellExperiment’ object. The heatmap provides insights into the distribution and frequency of variants across different samples or cells.

### Usage

```
plotVariantHeatmap(sce)
```

### Arguments

|     |                                                                                                                                                                                 |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sce | A ‘SingleCellExperiment’ object containing single-cell variant data. The object should include an assay that holds variant information suitable for visualization in a heatmap. |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Value

A ‘ggplot’ object representing the heatmap of variant frequencies or presence across cells or groups.

### Examples

```
# Assume `sce` is a SingleCellExperiment object with an appropriate variant
# assay.
sce_filtered <- readRDS(system.file("extdata", "sce_filtered_demo.rds",
  package = "scafari"
))
variant_heatmap <- plotVariantHeatmap(sce_filtered)
print(variant_heatmap)
```

---

|         |                                          |
|---------|------------------------------------------|
| scafari | <i>scafari: analyzing scDNA-seq data</i> |
|---------|------------------------------------------|

---

### Description

scafari is an R Bioconductor package for single-cell DNA-seq (scDNA-seq) analysis.

### Details

scafari works on .h5 files, the standard output of the Tapestry pipeline. It offers easy-to-use data quality control as well as explorative variant analyses and visualization for scDNA-seq data.

## Main Functions

- `h5ToSce()`: Reads in .h5 files and writes them into a `SingleCellExperiment` object.
- `normalizeReadCounts()`: Normalizes the read counts.
- `annotateAmplicons()`: Annotates the amplicons present in the .h5 file.
- `filterVariants()`: Filters the variants present in the .h5 file.
- `annotateVariants()`: Annotates the filtered variants.
- `clusterVariantSelection()`: Clusters variants of special interest.

## Installation

To install this package, use: `BiocManager::install("safari")`

## Author(s)

**Maintainer:** Sophie Wind <sophie.wind@uni-muenster.de> ([ORCID](#))

## See Also

Useful links:

- <https://github.com/sophiewind/safari>
- Report bugs at <https://github.com/sophiewind/safari/issues>

---

|               |                              |
|---------------|------------------------------|
| theme_default | <i>Default ggplot scheme</i> |
|---------------|------------------------------|

---

## Description

Default ggplot scheme

## Usage

```
theme_default()
```

## Value

gg color scheme

---

|             |                            |
|-------------|----------------------------|
| theme_shiny | <i>Default shiny theme</i> |
|-------------|----------------------------|

---

## Description

Default shiny theme

## Usage

```
theme_shiny()
```

## Value

gg color scheme

# Index

## \* internal

- check\_MBAPI, [4](#)
- checkH5, [4](#)
- gg\_color\_hue, [8](#)
- theme\_default, [18](#)
- theme\_shiny, [18](#)

- annotateAmplicons, [2](#)
- annotateVariants, [3](#)

- check\_MBAPI, [4](#)
- checkH5, [4](#)
- clusterVariantSelection, [4](#)

- filterVariants, [6](#)

- gg\_color\_hue, [8](#)

- h5ToSce, [8](#)

- launchSafariShiny, [9](#)
- logLogPlot, [9](#)

- normalizeReadCounts, [10](#)

- plotAmpliconDistribution, [11](#)
- plotClusterGenotype, [11](#)
- plotClusterVAF, [12](#)
- plotClusterVAFMap, [13](#)
- plotElbow, [14](#)
- plotGenotypequalityPerGenotype, [15](#)
- plotNormalizedReadCounts, [15](#)
- plotPanelUniformity, [16](#)
- plotVariantHeatmap, [17](#)

- safari, [17](#)
- safari-package (safari), [17](#)

- theme\_default, [18](#)
- theme\_shiny, [18](#)