Package 'ggplate'

Title Create Layout Plots of Biological Culture Plates and Microplates

Version 0.2.0

Description Enables users to create simple plots of biological culture plates as well as microplates. Both continuous and discrete values can be plotted onto the plate layout.

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Encoding UTF-8

LazyData true

RoxygenNote 7.3.3

Imports dplyr, ggplot2, scales, purrr, rlang, stringr, tidyr, utils, forcats, farver

Suggests covr, testthat (>= 3.0.0)

Depends R (>= 4.1.0)

URL https://github.com/jpquast/ggplate, https://jpquast.github.io/ggplate/

BugReports https://github.com/jpquast/ggplate/issues

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

Date/Publication 2026-01-09 16:30:02 UTC

Contents

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data_continuous_12   *Continuous 12-well plate dataset*

Description

A dataset containing 12 positive numeric values randomly generated using a normal distribution
(rnorm()). Each value is assigned to a position in a 12-well plate.

Usage

```
data_continuous_12
```

Format

A data frame with a Value and a well column.

Source

Randomly generated.

---

data_continuous_1536   *Continuous 1536-well plate dataset*

Description

A dataset containing 1536 positive numeric values randomly generated using a normal distribution
(rnorm()). Each value is assigned to a position in a 1536-well plate.

Usage

```
data_continuous_1536
```

Format

A data frame with a Value and a well column.

Source

Randomly generated.

---

data_continuous_24 *Continuous 24-well plate dataset*

Description

A dataset containing 24 positive numeric values randomly generated using a normal distribution (rnorm()). Each value is assigned to a position in a 24-well plate.

Usage

```
data_continuous_24
```

Format

A data frame with a Value and a well column.

Source

Randomly generated.

---

data_continuous_384 *Continuous 384-well plate dataset*

Description

A dataset containing 384 positive numeric values randomly generated using a normal distribution (rnorm()). Each value is assigned to a position in a 384-well plate.

Usage

```
data_continuous_384
```

Format

A data frame with a Value and a well column.

Source

Randomly generated.

---

data_continuous_48   *Continuous 48-well plate dataset*

Description

A dataset containing 48 positive numeric values randomly generated using a normal distribution (rnorm()). Each value is assigned to a position in a 48-well plate.

Usage

```
data_continuous_48
```

Format

A data frame with a Value and a well column.

Source

Randomly generated.

---

data_continuous_48_incomplete

Continuous incomplete 48-well plate dataset

Description

A dataset containing 23 positive numeric values randomly generated using a normal distribution (rnorm()). Each value is assigned to a position in a 48-well plate. Therefore, not every well in the plate contains a value. The position 1D and the second half of the plate are NA.

Usage

```
data_continuous_48_incomplete
```

Format

A data frame with a Value and a well column.

Source

Randomly generated.

---

data_continuous_6 *Continuous 6-well plate dataset*

Description

A dataset containing 6 positive numeric values randomly generated using a normal distribution (`rnorm()`). Each value is assigned to a position in a 6-well plate.

Usage

```
data_continuous_6
```

Format

A data frame with a `Value` and a `well` column.

Source

Randomly generated.

---

data_continuous_96 *Continuous 96-well plate dataset*

Description

A dataset containing 96 positive numeric values randomly generated using a normal distribution (`rnorm()`). Each value is assigned to a position in a 96-well plate.

Usage

```
data_continuous_96
```

Format

A data frame with a `Value` and a `well` column.

Source

Randomly generated.

---

data_discrete_24 *Discrete 24-well plate dataset*

Description

A dataset containing 12 conditions for an siRNA treatment in a 24-well plate. The siRNA treatment consists of a control (siControl) and 11 siRNAs targeting mRNAs of proteins in the mTORC1 pathway. Each treatment is assigned to a position in a 24-well plate.

Usage

```
data_discrete_24
```

Format

A data frame with a `Value` and a `well` column.

Source

Theoretically possible siRNA treatment for cells.

---

data_discrete_6 *Discrete 6-well plate dataset*

Description

A dataset containing 3 conditions for a drug treatment in a 6-well plate. The treatment consists of a DMSO negative control, Rapamycin and Taxol. Each treatment is assigned to a position in a 6-well plate.

Usage

```
data_discrete_6
```

Format

A data frame with a `Value` and a `well` column.

Source

Theoretically possible treatment for cells.

---

data_discrete_96 *Discrete 96-well plate dataset*

Description

A dataset containing 22 conditions for a hypothetical drug treatment in a 96-well plate. The first column contains the negative control while the last column contains the positive control. Each treatment is assigned to four wells in a 96-well plate.

Usage

```
data_discrete_96
```

Format

A data frame with a `Value` and a `well` column.

Source

Drugs were chosen from a standard FDA approved drug library.

---

plate_plot *Plate Layout Plot*

Description

Plots a culture plate or microplate in the desired format. Both continuous as well as discrete values can be displayed with colours and labels.

Usage

```
plate_plot(
  data,
  position,
  value,
  label,
  plate_size = 96,
  plate_type = "square",
  colour,
  remove_na = TRUE,
  na_fill = "grey50",
  limits,
  title,
  title_size,
  show_legend = TRUE,
  legend_n_row,
```

```
    label_size,
    silent = TRUE,
    scale
)
```

Arguments

data	a data frame that contains at least a column with plate position information and a column with values or labels.
position	a character column in the `data` data frame that contains plate positions. These should be in the format: row = letter, column = number. So for example A1, D12 etc.
value	a character or numeric column in the `data` data frame that contains values that should be plotted as colours on the plate layout. Can be the same column as `label`.
label	a character or numeric column in the `data` data frame that contains values that should be plotted as labels on the plate layout. Can be the same column as `value`.
plate_size	a numeric value that specifies the plate size (number of wells) used for the plot. Possible values are: 6, 12, 24, 48, 96, 384 and 1536.
plate_type	a character value that specifies the well type. Possible values are "round" and "square". The default is "square".
colour	optional, a character vector that contains colours used for the plot. If the `value` argument is discrete the colours are used as provided. If it is continuous a gradient is created using the colours.
remove_na	a logical value specifying whether rows with missing values (NA) in the `value` column are removed from the input data. This will not remove any NA values created due to values outside of the `limits`. Default is TRUE.
na_fill	optional, a character value specifying the fill colour used for wells with missing values (NA) and, for continuous data, for values outside the range defined by `limits`. The default is `"grey50"`.
limits	optional, a numeric vector of length two providing new limits for a colour gradient. Use NA to refer to the existing minimum or maximum. If this argument is not supplied the existing minimum and maximum of the values provided to the `value` argument are used for the start and end point of the colour gradient.
title	optional, a character value that contains the plot title.
title_size	optional, a numeric value that determines the text size of the title. The size is also affected by the `scale` argument.
show_legend	a logical value that specifies if the plot legend is shown. Default is TRUE.
legend_n_row	optional, a numeric value that specifies the number of rows of legends. If no value is provided, the automatic ggplot default is used.
label_size	optional, a numeric value that determines the text size of the well labels. The size is also affected by the `scale` argument.

silent   a logical value that specifies if the function should report the size of the plot-
                  ting area and the adjusted scale parameter. Default is TRUE meaning it will
                  not return any message. The plot was optimized for a device size of: width
                  = 5.572917 in and height = 3.177083 in, which was determined using the func-
                  tion par("fin"). This means if the device has these dimensions the scaling
                  factor is 1.

scale   a numeric value that scales point sizes and labels of the plot. If not provided,
                  the plot uses the device size to find the optimal scaling factor for the output,
                  however, this might be slightly off (e.g. due to number of labels) and can be
                  manually adjusted with this argument.

Value

A plate layout plot.

Examples

```
library(dplyr)
library(tidyr)
library(stringr)

# Load example data
data("data_continuous_96")
data("data_continuous_384")
data("data_discrete_6")
data("data_discrete_24")

# Create a 96-well plot with round wells
plate_plot(
  data = data_continuous_96,
  position = well,
  value = Value,
  label = Value,
  plate_size = 96,
  plate_type = "round"
)

# Create a 384-well plot with square wells
# Define a custom lower limit
# Define a custom colour scheme
# Define a custom title with a custom size
plate_plot(
  data = data_continuous_384,
  position = well,
  value = Value,
  label = Value,
  plate_size = 384,
  colour = c("#000004FF", "#51127CFF", "#B63679FF", "#FB8861FF", "#FCFDBFFF"),
  limits = c(0, NA),
  title = "Custom Title",
  title_size = 20
)
```

```
# Create a 24-well plot
# Show a 6 row legend
# Scale the plot to 1.2
plate_plot(
  data = data_discrete_24,
  position = well,
  value = Condition,
  plate_size = 24,
  plate_type = "round",
  scale = 1.2,
  legend_n_row = 6
)

# Create a 6-well plot
# Define a custom colour scheme
# Adjust label_size to fit text
# Let the plot return width, height and scale
plate_plot(
  data = data_discrete_6,
  position = well,
  value = Condition,
  label = Condition,
  plate_size = 6,
  plate_type = "round",
  colour = c("#3a1c71", "#d76d77", "#ffaf7b"),
  label_size = 4,
  show_legend = FALSE,
  silent = FALSE
)
```

---

protti_colours   *Colour scheme for protti*

Description

A colour scheme from the protti package that contains 100 colours.

Usage

```
protti_colours
```

Format

A vector containing 100 colours

Source

protti R package.

---

viridis_colours   *Viridis colour scheme*

Description

A colour scheme by the viridis colour scheme from the `viridis` R package.

Usage

```
viridis_colours
```

Format

A vector containing 256 colours

Source

viridis R package

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