

# Package ‘seqLogo’

November 19, 2025

**Title** Sequence logos for DNA sequence alignments

**Version** 1.77.0

**Description** seqLogo takes the position weight matrix of a DNA sequence motif and plots the corresponding sequence logo as introduced by Schneider and Stephens (1990).

**LazyLoad** yes

**Encoding** UTF-8

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.1.2

**Imports** stats4, grDevices

**Depends** R (>= 4.2), methods, grid

**Suggests** knitr, BiocStyle, rmarkdown, testthat

**BugReports** <https://github.com/ivanek/seqLogo/issues>

**VignetteBuilder** knitr

**Collate** AllClasses.R AllGenerics.R pwm.R seqLogo.R

**License** LGPL (>= 2)

**biocViews** SequenceMatching

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

**git\_branch** devel

**git\_last\_commit** f1113d7

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

**Repository** Bioconductor 3.23

**Date/Publication** 2025-11-18

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|         |                                  |
|---------|----------------------------------|
| makePWM | <i>Constructing a pwm object</i> |
|---------|----------------------------------|

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Description

This function constructs an object of class pwm from a matrix. It checks that the matrix has correct dimensions and that columns add up to 1.0.

Usage

```
makePWM(pwm, alphabet = "DNA")
```

Arguments

- pwm                   matrix. Numerical matrix representing the position weight matrix.
- alphabet             character. The alphabet making up the sequence. Currently, only 'DNA' and 'RNA' is supported.

Value

An object of class pwm.

Author(s)

Oliver Bembom

Examples

```
mFile <- system.file("extdata/pwm1", package = "seqLogo")
m <- read.table(mFile)
pwm <- makePWM(m)
```

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|           |                                               |
|-----------|-----------------------------------------------|
| pwm-class | <i>An S4 class to represent a PWM matrix.</i> |
|-----------|-----------------------------------------------|

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## Description

An object of class 'pwm' represents the alphabet\*width position weight matrix of a sequence motif. In case of DNA sequence motif, the entry in row i, column j gives the probability of observing nucleotide c('A', 'C', 'G', 'T')[i] in position j of the motif.

## Usage

```
## S4 method for signature 'pwm'
show(object)

## S4 method for signature 'pwm'
summary(object, ...)

## S4 method for signature 'pwm,ANY'
plot(x, y = "missing", ...)

## S4 method for signature 'pwm'
pwm(pwm)

## S4 method for signature 'pwm'
ic(pwm)

## S4 method for signature 'pwm'
consensus(pwm)
```

## Arguments

|        |                                         |
|--------|-----------------------------------------|
| object | object of pwm-class                     |
| ...    | additional parameters for plot function |
| x      | object of pwm-class                     |
| y      | default (missing) for plot function     |
| pwm    | object of pwm-class                     |

## Value

pwm-class object with slots: pwm, width, ic and alphabet.

## Functions

- show,pwm-method: Shows the position weight matrix.
- summary,pwm-method: Prints the summary information about position weight matrix.
- plot,pwm,ANY-method: Plots the sequence logo of the position weight matrix.

- `pwm, pwm-method`: Access to 'pwm' slot
- `ic, pwm-method`: Access to 'ic' slot
- `consensus, pwm-method`: Access to 'consensus' slot

## Slots

`pwm` matrix. The position weight matrix.

`width` numeric. The width of the motif.

`ic` numeric. The information content (IC).

`alphabet` character. The sequence alphabet. Currently, only 'DNA' and 'RNA' is supported.

`consensus` character. The consensus sequence.

## Author(s)

Oliver Bembom

## Examples

```
mFile <- system.file("extdata/pwm1", package = "seqLogo")
m <- read.table(mFile)
p <- makePWM(m)
#
# slot access
pwm(p)
ic(p)
consensus(p)
```

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seqLogo

*Plot a sequence logo for a given position weight matrix*

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## Description

This function takes the `alphabet*width` position weight matrix of a sequence motif and plots the corresponding sequence logo.

## Usage

```
seqLogo(pwm, ic.scale=TRUE, xaxis=TRUE, yaxis=TRUE, xfontsize=15, yfontsize=15,
        fill=c(A='#61D04F', C='#2297E6', G='#F5C710', T='#DF536B'))
```

**Arguments**

|                        |                                                                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>pwm</code>       | numeric. The alphabet*width position weight matrix.                                                                                                                                 |
| <code>ic.scale</code>  | logical. If TRUE, the height of each column is proportional to its information content. Otherwise, all columns have the same height.                                                |
| <code>xaxis</code>     | logical. If TRUE, an X-axis will be plotted.                                                                                                                                        |
| <code>yaxis</code>     | logical. If TRUE, a Y-axis will be plotted.                                                                                                                                         |
| <code>xfontsize</code> | numeric. Font size to be used for the X-axis.                                                                                                                                       |
| <code>yfontsize</code> | numeric. Font size to be used for the Y-axis.                                                                                                                                       |
| <code>fill</code>      | character. Fill color to be used for the letters. Must be a named character vector of length equal to number of rows in <code>pwm</code> slot and names identical to its row-names. |

**Value**

NULL.

**Author(s)**

Oliver Bembom

**Examples**

```
mFile <- system.file("extdata/pwm1", package = "seqLogo")
m <- read.table(mFile)
p <- makePWM(m)
seqLogo(p)
```

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