

# Package ‘seqLogo’

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**Title** Sequence logos for DNA sequence alignments

**Version** 1.79.0

**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

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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**

<code>pwm</code>	matrix. Numerical matrix representing the position weight matrix.
<code>alphabet</code>	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)
```

seqLogo

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

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