

# Package ‘a4Core’

March 31, 2025

**Type** Package

**Title** Automated Affymetrix Array Analysis Core Package

**Version** 1.54.0

**Date** 2020-10-14

**Description** Utility functions for the Automated Affymetrix Array Analysis set of packages.

**Imports** Biobase, glmnet, methods, stats

**Suggests** knitr, rmarkdown

**License** GPL-3

**biocViews** Microarray, Classification

**RoxygenNote** 7.1.1

**VignetteBuilder** knitr

**git\_url** <https://git.bioconductor.org/packages/a4Core>

**git\_branch** RELEASE\_3\_20

**git\_last\_commit** 247927f

**git\_last\_commit\_date** 2024-10-29

**Repository** Bioconductor 3.20

**Date/Publication** 2025-03-31

**Author** Willem Talloen [aut],

Tobias Verbeke [aut],

Laure Cougnaud [cre]

**Maintainer** Laure Cougnaud <[laure.cougnaud@openanalytics.eu](mailto:laure.cougnaud@openanalytics.eu)>

## Contents

confusionMatrix . . . . .	2
simulateData . . . . .	2
topTable . . . . .	3
topTable-methods . . . . .	4

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

---

confusionMatrix	<i>Generic function to produce a confusion matrix (related to a classification problem)</i>
-----------------	---

---

**Description**

Generic function to produce a confusion matrix (related to a classification problem)

**Usage**

```
confusionMatrix(x, ...)
```

**Arguments**

x	object (usually a model fit object) that contains all information needed to produce the confusion matrix.
...	further arguments for a specific method

**Value**

A confusion matrix

**Author(s)**

Tobias Verbeke

---

simulateData	<i>Simulate Data for Package Testing and Demonstration Purposes</i>
--------------	---

---

**Description**

Simulate Data for Package Testing and Demonstration Purposes

**Usage**

```
simulateData(nCols = 40, nRows = 1000, nEffectRows = 5, nNoEffectCols = 5,
  betweenClassDifference = 1, withinClassSd = 0.5)
```

**Arguments**

nCols	number of samples; currently this should be an even number
nRows	number of features (genes)
nEffectRows	number of differentially expressed features
nNoEffectCols	number of samples for which the profile of a differentially expressed feature will be set similar to the other class
betweenClassDifference	Average mean difference between the two classes to simulate a certain signal in the features for which an effect was introduced; the default is set to 1
withinClassSd	Within class standard deviation used to add a certain noise level to the features for which an effect was introduced; the default standard deviation is set to 0.5

**Value**

object of class ExpressionSet with the characteristics specified

**Note**

The simulation assumes the variances are equal between the two classes. Heterogeneity could easily be introduced in the simulation if this would be requested by the users.

**Author(s)**

W. Talloen and T. Verbeke

**Examples**

```
someEset <- simulateData(nCols = 40, nRows = 1000, nEffectRows = 5, nNoEffectCols = 5)
someEset
```

---

topTable

*S4 Generic for obtaining a top table*

---

**Description**

a top table is a rectangular object (e.g. data frame) which lists the top n most relevant variables

**Usage**

```
topTable(fit, n, ...)
```

**Arguments**

fit	object for which to obtain a top table, generally a fit object for a given model class
n	number of features (variables) to list in the top table, ranked by importance
...	further arguments for specific methods

**Value**

Top table with top n relevant variable.

**Author(s)**

Tobias Verbeke

---

topTable-methods      *Methods for topTable*

---

### Description

Methods for topTable. topTable extracts the top n most important features for a given classification or regression procedure

### Arguments

fit                      object resulting from a classification or regression procedure

n                         number of features that one wants to extract from a table that ranks all features according to their importance in the classification or regression model; defaults to 10 for limma objects

### Methods

glmnet and lognet

fit = "glmnet", n = "numeric" glmnet objects are produced by lassoClass (a4Classif) or lassoReg (a4Base)

- fit = "lognet", n = "numeric" lognet objects are produced by lassoClass (a4Classif) or lassoReg (a4Base)
- fit = "elnet", n = "numeric" elnet objects are produced by lassoClass (a4Classif) or lassoReg (a4Base)

# Index

- \* **manip**
  - simulateData, [2](#)
  - topTable-methods, [4](#)
- \* **methods**
  - topTable-methods, [4](#)
- \* **models**
  - confusionMatrix, [2](#)
  
- confusionMatrix, [2](#)
  
- simulateData, [2](#)
  
- topTable, [3](#)
- topTable,elnet-method
  - (topTable-methods), [4](#)
- topTable,glmnet-method
  - (topTable-methods), [4](#)
- topTable,lognet-method
  - (topTable-methods), [4](#)
- topTable-methods, [4](#)