

# Package ‘a4Core’

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**Type** Package

**Title** Automated Affymetrix Array Analysis Core Package

**Version** 1.57.0

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**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>

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**Author** Willem Talloen [aut],

Tobias Verbeke [aut],

Laure Cougnaud [cre]

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

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

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**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

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

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|----------|---------------------------------------------|
| topTable | <i>S4 Generic for obtaining a top table</i> |
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**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

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|                  |                             |
|------------------|-----------------------------|
| topTable-methods | <i>Methods for topTable</i> |
|------------------|-----------------------------|

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**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)

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