

# arrayQualityMetrics

April 19, 2010

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`aqm.boxplot` *Performs boxplots on `aqmobj.prepdata` objects.*

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## Description

`aqm.boxplot` performs boxplots, outlier detection from it and formats the output for `aqm.plot` usage.

## Usage

```
aqm.boxplot(expressionset, dataprep, intgroup = "Covariate",
             grouprep = FALSE, ...)
```

## Arguments

|                            |  |
|----------------------------|--|
| <code>expressionset</code> | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| <code>dataprep</code>      | An object of class <a href="#">aqmobj.prepdata</a>                 |
| <code>intgroup</code>      | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| <code>grouprep</code>      | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| <code>...</code>           | Any arguments to <a href="#">bwplot</a>                            |

## Details

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

## Value

An object of class [aqmobj.box](#).

## Author(s)

Audrey Kauffmann <[audrey@ebi.ac.uk](mailto:audrey@ebi.ac.uk)>

## See Also

[aqm.prepdata](#), [aqmobj.prepdata](#), [aqmobj.box](#)

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|                          |  |
|--------------------------|--|
| <code>aqm.density</code> | <i>Performs density plots on <code>aqmobj.prepdata</code> objects.</i> |
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### Description

`aqm.density` performs density curves, outlier detection from it and formats the output for `aqm.plot` usage.

### Usage

```
aqm.density(expressionset, dataprep, intgroup = "Covariate", grouprep = FALSE,
```

### Arguments

|                            |   |
|----------------------------|---|
| <code>expressionset</code> | Same input as for the function <code>arrayQualityMetrics</code> |
| <code>dataprep</code>      | An object of class <code>aqmobj.prepdata</code>                 |
| <code>intgroup</code>      | Same input as for the function <code>arrayQualityMetrics</code> |
| <code>grouprep</code>      | Same input as for the function <code>arrayQualityMetrics</code> |
| <code>...</code>           | Any arguments to <code>xyplot</code>                            |

### Details

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

### Value

An object of class `aqmobj.dens`.

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

[aqm.prepdata](#), [aqmobj.prepdata](#), [aqmobj.dens](#)

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|                          |   |
|--------------------------|---|
| <code>aqm.heatmap</code> | <i>Performs dendrogram on <code>aqmobj.prepdata</code> objects.</i> |
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### Description

`aqm.heatmap` performs a dendrogram of the distances between arrays, outlier detection from it and formats the output for `aqm.plot` usage.

### Usage

```
aqm.heatmap(expressionset, dataprep, intgroup = "Covariate", ...)
```

**Arguments**

|               |  |
|---------------|--|
| expressionset | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| dataprep      | An object of class <a href="#">aqmobj.prepdata</a>                 |
| intgroup      | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| ...           | Any arguments to <a href="#">levelplot</a>                         |

**Details**

See the [aqm.prepdata](#) help or the [aqm](#) Vignette for example of this object.

**Value**

An object of class [aqmobj.heat](#).

**Author(s)**

Audrey Kauffmann <[audrey@ebi.ac.uk](mailto:audrey@ebi.ac.uk)>

**See Also**

[aqm.prepdata](#), [aqmobj.prepdata](#), [aqmobj.heat](#)

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aqm.maplot

*Performs MA-plots on aqmobj.prepdata objects.*

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**Description**

`aqm.maplot` performs MA-plots, outlier detection from it and formats the output for `aqm.plot` usage.

**Usage**

```
aqm.maplot(dataprep, ...)
```

**Arguments**

|          |  |
|----------|--|
| dataprep | An object of class <a href="#">aqmobj.prepdata</a>   |
| ...      | Any arguments to <a href="#">panel.smoothScatter</a> |

**Details**

See the [aqm.prepdata](#) help or the [aqm](#) Vignette for example of this object.

**Value**

An object of class [aqmobj.ma](#).

**Author(s)**

Audrey Kauffmann <[audrey@ebi.ac.uk](mailto:audrey@ebi.ac.uk)>

**See Also**

[aqm.prepdata](#), [aqmobj.prepdata](#), [aqmobj.ma](#)

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|                         |   |
|-------------------------|---|
| <code>aqm.meansd</code> | <i>Performs Mean/SD plot on <code>aqmobj.prepdata</code> objects.</i> |
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**Description**

`aqm.meansd` performs Mean/SD plot, and formats the output for `aqm.plot` usage.

**Usage**

```
aqm.meansd(dataprep, ...)
```

**Arguments**

|                       |  |
|-----------------------|--|
| <code>dataprep</code> | An object of class <a href="#">aqmobj.prepdata</a> |
| <code>...</code>      | Any arguments to <code>meanSdPlot</code>           |

**Details**

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

**Value**

An object of class [aqmobj.msdc](#).

**Author(s)**

Audrey Kauffmann <[audrey@ebi.ac.uk](mailto:audrey@ebi.ac.uk)>

**See Also**

[aqm.prepdata](#), [aqmobj.prepdata](#), [aqmobj.msdc](#)

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|                       |  |
|-----------------------|--|
| <code>aqm.nuse</code> | <i>Performs NUSE plot on <code>aqmobj.prepaffy</code> objects.</i> |
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**Description**

`aqm.nuse` performs NUSE boxplots and outlier detection from it and formats the output for `aqm.plot` usage.

**Usage**

```
aqm.nuse(affyproc, ...)
```

**Arguments**

affyproc      An object of class [aqmobj.prepaffy](#)  
...            Any arguments to boxplot

**Details**

See the [aqm.prepaffy](#) help or the [aqm](#) Vignette for example of this object.

**Value**

An object of class [aqmobj.nuse](#)

**Author(s)**

Audrey Kauffmann <[audrey@ebi.ac.uk](mailto:audrey@ebi.ac.uk)>

**See Also**

[aqm.prepaffy](#), [aqmobj.prepaffy](#), [aqmobj.nuse](#)

---

`aqmobj.box-class`      *Class to contain data generated from `aqm.boxplot`.*

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**Description**

Class to contain data generated from `aqm.boxplot`.

**Details**

See the [aqm.prepdata](#) help or the [aqm](#) Vignette for example of this object.

**Slots**

**plot:** An object of class [trellis.object](#) if one channel arrays and a list of [trellis.object](#) if several channels arrays.  
**section:** A character string with a name for the section the plot belongs to in the report.  
**title:** A character string with the title of the plot to be written in the report.  
**legend:** A character string with the legend of the plot to be written in the report.  
**scores:** A numeric for each array corresponding to the scores assessed from the plot.  
**outliers:** List or integer of the arrays that are outliers using `boxplot.stats` on the scores.  
**shape:** A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <[audrey@ebi.ac.uk](mailto:audrey@ebi.ac.uk)>

**See Also**

[aqm.boxplot](#), [aqm.plot](#)

---

aqmobj.dens-class *Class to contain data generated from aqm.density.*

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### Description

Class to contain data generated from aqm.density.

### Details

See the aqm.prepdata help or the aqm Vignette for example of this object.

### Slots

**plot:** An object of class `trellis.object` if one channel arrays and a list of `trellis.object` if several channels arrays.

**section:** A character string with a name for the section the plot belongs to in the report.

**title:** A character string with the title of the plot to be written in the report.

**legend:** A character string with the legend of the plot to be written in the report.

**shape:** A character "square" or "rect" depending on the aspect ratio desired in the report.

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

aqm.density, aqm.plot

---

aqmobj.heat-class *Class to contain data generated from aqm.heatmap.*

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### Description

Class to contain data generated from aqm.heatmap.

### Details

See the aqm.prepdata help or the aqm Vignette for example of this object.

### Slots

**plot:** An object of class `trellis.object`.

**section:** A character string with a name for the section the plot belongs to in the report.

**title:** A character string with the title of the plot to be written in the report.

**legend:** A character string with the legend of the plot to be written in the report.

**scores:** A numeric for each array corresponding to the scores assessed from the plot.

**outliers:** List or integer of the arrays that are outliers using `boxplot.stats` on the scores.

**shape:** A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

aqm.heatmap, aqm.plot.

---

aqmobj.ma-class      *Class to contain data generated from aqm.maplot.*

---

**Description**

Class to contain data generated from aqm.maplot.

**Details**

See the aqm.prepdata help or the aqm Vignette for example of this object.

**Slots**

**plot:** An object of class `trellis.object`.

**section:** A character string with a name for the section the plot belongs to in the report.

**title:** A character string with the title of the plot to be written in the report.

**legend:** A character string with the legend of the plot to be written in the report.

**scores:** A numeric for each array corresponding to the scores assessed from the plot.

**outliers:** List or integer of the arrays that are outliers using `boxplot.stats` on the scores.

**shape:** A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

aqm.maplot, aqm.plot

---

`aqmobj.msdc-class` *Class to contain data generated from `aqm.meansd`.*

---

### Description

Class to contain data generated from `aqm.meansd`.

### Details

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

### Slots

`plot`: A matrix to be represented calling the `meanSdPlot` function.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

`aqm.meansd`, `aqm.plot`

---

`aqmobj.nuse-class` *Class to contain data generated from `aqm.nuse`.*

---

### Description

Class to contain data generated from `aqm.nuse`.

### Details

See the `aqm.prepaffy` help or the `aqm` Vignette for example of this object.

### Slots

`plot`: A matrix to be represented calling the `aqm.plot` function.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`scores`: A numeric for each array corresponding to the scores assessed from the plot.

`outliers`: List or integer of the arrays that are outliers using `boxplot.stats` on the scores.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.



**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

aqm.nuse, aqm.plot

---

aqmobj.pca-class    *Class to contain data generated from aqm.pca.*

---

**Description**

Class to contain data generated from aqm.pca.

**Details**

See the aqm.prepdata help or the aqm Vignette for example of this object.

**Slots**

plot: An object of class `trellis.object`.

section: A character string with a name for the section the plot belongs to in the report.

title: A character string with the title of the plot to be written in the report.

legend: A character string with the legend of the plot to be written in the report.

shape: A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

aqm.pca, aqm.plot.

---

aqmobj.pmmm-class    *Class to contain data generated from aqm.pmmm.*

---

**Description**

Class to contain data generated from aqm.pmmm.

**Details**

See the aqm.pmmm help or the aqm Vignette for example of this object.

**Slots**

**plot:** A list to be represented calling the `aqm.plot` function.

**section:** A character string with a name for the section the plot belongs to in the report.

**title:** A character string with the title of the plot to be written in the report.

**legend:** A character string with the legend of the plot to be written in the report.

**shape:** A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqm.pmmm`, `aqm.plot`

---

`aqmobj.prepaffy-class`

*Class to contain data generated from `aqm.prepaffy`.*

---

**Description**

Container for the output of `aqm.prepaffy` and for the input of the `aqm.rle` and `aqm.nuse` functions.

**Details**

See the `aqm.prepaffy` help or the `aqm` Vignette for example of this object.

**Slots**

**dataPLM:** A `PLMset`.

**sN:** Integers numbering the arrays to be used to label the plots.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

---

`aqmobj.prepdata-class`*Class to contain data generated from `aqm.prepdata`.*

---

**Description**

Container for the output of `aqm.prepdata` and for the input of the `aqm` functions.

**Details**

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

**Slots**

**M:** A matrix of the M values (log-ratio). The log-ratio is computed with the second channel being the median of the intensities across arrays in the case of one channel arrays.

**A:** A matrix of the A values. The A value is the mean of the two intensities. The second channel is computed as for the M values in the case of one channel arrays.

**dat:** A matrix with the log-ratio if two channels or the intensities if one channel.

**rc:** A matrix with the red channel intensities in the case of two channels arrays. NULL if one colour arrays.

**gc:** A matrix with the green channel intensities in the case of two channels arrays. NULL if one colour arrays.

**rcb:** A matrix with the red channel background intensities if two channels arrays and if available. NULL if one colour arrays.

**gcb:** A matrix with the green channel background intensities if two channels arrays and if available. NULL if one colour arrays.

**outM:** The distance between each pairs of arrays, computed using `dist2` from the `genefilter` package.

**sN:** Integers numbering the arrays to be used to label the plots.

**numArrays:** An integer giving the number of arrays.

**nchannels:** A numeric giving the number of channels.

**logtransformed:** A logical telling if the data have been log transformed by the function `aqm.prepdata`.

**classori:** A character string of the class of the object that was given as an input of the `aqm.prepdata` function.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqm.prepdata`, `aqm.boxplot`, `aqm.density`, `aqm.heatmap`, `aqm.maplot`, `aqm.meansd`, `aqm.probesmap`, `aqm.spatial`, `aqm.spatialbg`

---

`aqmobj.probesmap-class`*Class to contain data generated from aqm.probesmap.*

---

**Description**

Class to contain data generated from aqm.probesmap.

**Details**

See the aqm.prepdata help or the aqm Vignette for example of this object.

**Slots**

`plot`: An object of class `trellis.object`.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqm.probesmap`, `aqm.plot`

---

`aqmobj.qcs-class`*Class to contain data generated from aqm.qcs.*

---

**Description**

Class to contain data generated from aqm.qcs.

**Details**

See the aqm.qcstats help or the aqm Vignette for example of this object.

**Slots**

`plot`: An object of class `trellis.object`.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

aqm.qcstats, aqm.plot

---

aqmobj.rle-class    *Class to contain data generated from aqm.rle.*

---

**Description**

Class to contain data generated from aqm.rle.

**Details**

See the aqm.prepaffy help or the aqm Vignette for example of this object.

**Slots**

**plot:** An object of class `trellis.object`.

**section:** A character string with a name for the section the plot belongs to in the report.

**title:** A character string with the title of the plot to be written in the report.

**legend:** A character string with the legend of the plot to be written in the report.

**scores:** A numeric for each array corresponding to the scores assessed from the plot.

**outliers:** List or integer of the arrays that are outliers using `boxplot.stats` on the scores.

**shape:** A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

aqm.rle, aqm.plot

---

`aqmobj.rnadeg-class`

*Class to contain data generated from `aqm.rnadegplot`.*

---

### Description

Class to contain data generated from `aqm.rnadegplot`.

### Details

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

### Slots

`plot`: A list to be represented calling the `plotAffyRNAdeg` function.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

`aqm.rnadeg`, `aqm.plot`

---

`aqmobj.spatialbg-class`

*Class to contain data generated from `aqm.spatialbg`.*

---

### Description

Class to contain data generated from `aqm.spatialbg`.

### Details

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

### Slots

`plot`: An object of class `trellis.object` if one channel arrays and a list of `trellis.object` if several channels arrays.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqm.spatialbg`, `aqm.plot`

---

`aqmobj.spatial-class`

*Class to contain data generated from `aqm.spatial`.*

---

**Description**

Class to contain data generated from `aqm.spatial`.

**Details**

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

**Slots**

`plot`: An object of class `trellis.object` if one channel arrays and a list of `trellis.object` if several channels arrays.

`section`: A character string with a name for the section the plot belongs to in the report.

`title`: A character string with the title of the plot to be written in the report.

`legend`: A character string with the legend of the plot to be written in the report.

`scores`: A numeric for each array corresponding to the scores assessed from the plot.

`outliers`: List or integer of the arrays that are outliers using `boxplot.stats` on the scores.

`shape`: A character "square" or "rect" depending on the aspect ratio desired in the report.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqm.spatial`, `aqm.plot`

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|         |  |
|---------|--|
| aqm.pca | <i>Performs Principal Component Analysis on aqmobj.prepdata objects.</i> |
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---

**Description**

aqm.pca performs a PCA of the arrays and formats the output for aqm.plot usage.

**Usage**

```
aqm.pca(expressionset, dataprep, intgroup = "Covariate", ...)
```

**Arguments**

|               |  |
|---------------|--|
| expressionset | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| dataprep      | An object of class <a href="#">aqmobj.prepdata</a>                 |
| intgroup      | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| ...           | Any arguments to <a href="#">levelplot</a>                         |

**Details**

See the aqm.prepdata help or the aqm Vignette for example of this object.

**Value**

An object of class [aqmobj.pca](#).

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

[aqm.prepdata](#), [aqmobj.prepdata](#), [aqmobj.pca](#)

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|          |   |
|----------|---|
| aqm.plot | <i>Performs plots from aqm objects.</i> |
|----------|---|

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**Description**

aqm.plot performs plots.

**Usage**

```
aqm.plot(obj)
```

**Arguments**

|     |   |
|-----|---|
| obj | an object of class <a href="#">aqmobj</a> |
|-----|---|



**Details**

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

**Value**

A plot in the `x11` device.

**Author(s)**

Audrey Kauffmann. Maintainer: <audrey@ebi.ac.uk>

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`aqm.pmmm`*Performs perfect match versus mismatch density plots.*

---

**Description**

`aqm.pmmm` performs PM MM density curves on objects of class `AffyBatch` and formats the output for `aqm.plot` usage.

**Usage**

```
aqm.pmmm(expressionset, ...)
```

**Arguments**

`expressionset`  
is an object of class `AffyBatch`  
`...` Any arguments to `density`

**Value**

An object of class `aqmobj.pmmm`.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

[aqmobj.pmmm](#)

**Examples**

```
library(ALLMLL)
data(MLL.A)
pm = aqm.pmmm(MLL.A)
class(pm)
aqm.plot(pm)
```

---

aqm.prepaffy                      *Preparation of Affymetrix experiments for RLE and NUSE.*

---

### Description

aqm.prepaffy performs data preprocessing on [AffyBatch](#) and formats the output for aqm.rle and aqm.nuse usage.

### Usage

```
aqm.prepaffy(expressionset, sN)
```

### Arguments

expressionset  
   is an object of class [AffyBatch](#)  
sN                                        are the sample names to be written on the plots

### Value

A preprocessed affy object of class [aqmobj.prepaffy](#).

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

[aqm.rle](#), [aqm.nuse](#)

### Examples

```
library(ALLMLL)
data(MLL.A)
MLLaffyprep = aqm.prepaffy(MLL.A, sampleNames(MLL.A))
nuse = aqm.nuse(MLLaffyprep)
class(nuse)
aqm.plot(nuse)
```

---

aqm.prepdata                      *Generate an object aqmobj.prepdata to be called by the aqm functions.*

---

### Description

aqm.prepdata formats an [ExpressionSet](#), an [AffyBatch](#), a [NChannelSet](#), or a [BeadLevelList](#) into a [aqmobj.prepdata](#) object which can be used as an input of the aqm functions.

### Usage

```
aqm.prepdata(expressionset, do.logtransform = TRUE)
```

**Arguments**

expressionset

An object of class [ExpressionSet](#) for one colour non Affymetrix data, [AffyBatch](#) for Affymetrix data, [NChannelSet](#) for two colour arrays, or [BeadLevelList](#) for Illumina bead arrays.

do.logtransform

TRUE or FALSE whether or not you want to log transform the data.

**Value**

An object of class [aqmobj.prepdata](#).

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

[aqmobj.prepdata](#), [aqm.boxplot](#), [aqm.density](#), [aqm.heatmap](#), [aqm.maplot](#), [aqm.meansd](#), [aqm.probesmap](#), [aqm.spatial](#), [aqm.spatialbg](#)

**Examples**

```
## Load an example of a NChannelSet
library(CC14)
data(CC14)

## Normalization of CC14 using vsn
library(vsn)
CC14norm = justvsn(CC14, subsample=2000)

## Add a column in the phenoData to annotate samples
cond = paste(pData(CC14norm)$RIN.Cy3, pData(CC14norm)$RIN.Cy5, sep="/")
poor = grep(cond, pattern="2.5")
medium = grep(cond, pattern="^5/|/5")
good = grep(cond, pattern="9.7")
cov = rep(0, length = nrow(pData(CC14norm)))
cov[good] = "Good"
cov[medium] = "Medium"
cov[poor] = "Poor"
phenoData(CC14norm)$RNAintegrity = cov

## Add X and Y columns in the featureData to allow spatial representations
featureData(CC14norm)$X = featureData(CC14norm)$Row
featureData(CC14norm)$Y = featureData(CC14norm)$Column

## Add a hasTarget column in the featureData to call aqm.probesmap
featureData(CC14norm)$hasTarget = (regexpr("^NM",
                                         featureData(CC14norm)$Name) > 0)

## Prepare the data for aqm.xxx calls
CC14prep = aqm.prepdata(CC14norm, do.logtransform = FALSE)

## Draw MA plots
```

```

ma = aqm.maplot(dataprep = CC14prep)
class(ma)
aqm.plot(ma)

## Draw heatmap making use of the RNAintegrity
## column of the phenoData
hm = aqm.heatmap(expressionset = CC14norm,
                  dataprep = CC14prep,
                  intgroup = "RNAintegrity")

class(hm)
aqm.plot(hm)

## Draw probes mapping density curves making use of the hasTarget
## column of the featureData
sp = aqm.spatial(expressionset = CC14norm,
                  dataprep = CC14prep,
                  scale = "Rank")

class(sp)
aqm.plot(sp)

## Draw probes mapping density curves making use of the hasTarget
## column of the featureData
pm = aqm.probesmap(expressionset = CC14norm, dataprep = CC14prep)
class(pm)
aqm.plot(pm)

```

---

|               |  |
|---------------|--|
| aqm.probesmap | <i>Performs probes mapping on aqmobj.prepdata objects.</i> |
|---------------|--|

---

## Description

aqm.probesmap performs probes mapping, and formats the output for aqm.plot usage.

## Usage

```
aqm.probesmap(expressionset, dataprep, ...)
```

## Arguments

|               |  |
|---------------|--|
| expressionset | Same input as for the function <a href="#">arrayQualityMetrics</a> |
| dataprep      | An object of class <a href="#">aqmobj.prepdata</a>                 |
| ...           | Any arguments to <a href="#">densityplot</a>                       |

## Details

See the aqm.prepdata help or the aqm Vignette for example of this object.

## Value

An object of class [aqmobj.probesmap](#)

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

---

aqm.qcstats                      *Performs QCstats plot on AffyBatch.*

---

**Description**

aqm.qcstats performs QCstats on objects of class [AffyBatch](#) and formats the output for aqm.plot usage.

**Usage**

```
aqm.qcstats(expressionset, ...)
```

**Arguments**

expressionset  
                    is an object of class [AffyBatch](#)  
...                      Any arguments to [qc](#)

**Value**

An object of class [aqmobj.qcs](#).

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

[aqmobj.qcs](#)

**Examples**

```
library(ALLMLL)
data(MLL.A)
qm = aqm.qcstats(MLL.A)
class(qm)
aqm.plot(qm)
```

---

|         |  |
|---------|--|
| aqm.rle | <i>Performs RLE plot on aqmobj.prepaffy objects.</i> |
|---------|--|

---

### Description

aqm.rle performs RLE boxplots and outlier detection from it and formats the output for aqm.plot usage.

### Usage

```
aqm.rle(affyproc, ...)
```

### Arguments

|          |  |
|----------|--|
| affyproc | An object of class <a href="#">aqmobj.prepaffy</a> |
| ...      | Any arguments to <a href="#">Mbox</a>              |

### Details

See the aqm.prepaffy help or the aqm Vignette for example of this object.

### Value

An object of class [aqmobj.rle](#)

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

[aqm.prepaffy](#), [aqmobj.prepaffy](#), [aqmobj.rle](#)

---

|            |  |
|------------|--|
| aqm.rnadeg | <i>Performs RNA degradation plot on AffyBatch.</i> |
|------------|--|

---

### Description

aqm.rnadeg performs RNA degradation on objects of class [AffyBatch](#) and formats the output for aqm.plot usage.

### Usage

```
aqm.rnadeg(expressionset, ...)
```

### Arguments

|               |  |
|---------------|--|
| expressionset | An object of class <a href="#">AffyBatch</a> |
| ...           | Any arguments to <a href="#">AffyRNAdeg</a>  |

**Details**

See the aqm.prepdata help or the aqm Vignette for example of this object.

**Value**

An object of class `aqmobj.rnadeg`.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqmobj.rnadeg`

---

|                            |   |
|----------------------------|---|
| <code>aqm.spatialbg</code> | <i>Performs spatial distribution representation of background intensities of the arrays from aqmobj.prepdata objects.</i> |
|----------------------------|---|

---

**Description**

`aqm.spatialbg` performs representation of the spatial distribution of the background intensities on the arrays, outlier detection and formats the output for `aqm.plot` usage.

**Usage**

```
aqm.spatialbg(expressionset, dataprep, scale)
```

**Arguments**

|                            |   |
|----------------------------|---|
| <code>expressionset</code> | Same input as for the function <code>arrayQualityMetrics</code>   |
| <code>dataprep</code>      | An object of class <code>aqmobj.prepdata</code>   |
| <code>scale</code>         | The spatial distribution can be represented on the rank of the intensities or on the logarithm scale. Possible options are thus 'Rank' and 'Log'. |

**Details**

See the aqm.prepdata help or the aqm Vignette for example of this object.

**Value**

An object of class `aqmobj.spatialbg`.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**See Also**

`aqm.prepdata`, `aqmobj.prepdata`, `aqmobj.spatialbg`

---

|                          |  |
|--------------------------|--|
| <code>aqm.spatial</code> | <i>Performs spatial distribution representation of the arrays from <code>aqmobj.prepdata</code> objects.</i> |
|--------------------------|--|

---

### Description

`aqm.spatial` performs representation of the spatial distribution of the intensities on the arrays, outlier detection and formats the output for `aqm.plot` usage.

### Usage

```
aqm.spatial(expressionset, dataprep, scale)
```

### Arguments

|                            |   |
|----------------------------|---|
| <code>expressionset</code> | Same input as for the function <code>arrayQualityMetrics</code>   |
| <code>dataprep</code>      | An object of class <code>aqmobj.prepdata</code>   |
| <code>scale</code>         | The spatial distribution can be represented on the rank of the intensities or on the logarithm scale. Possible options are thus 'Rank' and 'Log'. |

### Details

See the `aqm.prepdata` help or the `aqm` Vignette for example of this object.

### Value

An object of class `aqmobj.spatial`.

### Author(s)

Audrey Kauffmann <audrey@ebi.ac.uk>

### See Also

`aqm.prepdata`, `aqmobj.prepdata`, `aqmobj.spatial`

---

|                              |   |
|------------------------------|---|
| <code>aqm.writereport</code> | <i>Writes a report from objects produced with <code>aqm.xxx</code> functions.</i> |
|------------------------------|---|

---

### Description

`aqm.writereport` performs an html report from a list of `aqmobj` objects. It includes a summary with the outliers detected, titles, plots and legends.

### Usage

```
aqm.writereport(name, expressionset, obj)
```



**Arguments**

|               |  |
|---------------|--|
| name          | A name to customize the title of the report that will be "name quality metrics report" |
| expressionset | The expressionset on which the metrics have been run                                   |
| obj           | A list of aqmobj.xxx objects   |

**Value**

An html report named 'QMreport.html' in the working directory.

**Author(s)**

Audrey Kauffmann <audrey@ebi.ac.uk>

**Examples**

```
library("ALLMLL")
data(MLL.A)
MLLprep = aqm.prepdata(MLL.A, TRUE)
bo = aqm.boxplot(MLL.A, MLLprep)
de = aqm.density(MLL.A, MLLprep)
obj = list("Boxplot" = bo, "Density" = de)
aqm.writereport("Test", MLL.A, obj)
```

---

arrayQualityMetrics

*Quality metrics on microarray experiments*

---

**Description**

arrayQualityMetrics performs quality metrics on [ExpressionSet](#), [AffyBatch](#), [NChannelSet](#), [BeadLevelList](#), [RGList](#), [MAList](#), [aqmInputObj](#), [marrayRaw](#) or [marrayNorm](#) containing microarray data from any platforms, one or two channels. The results, presented in a HTML report, are designated to allow the user to rapidly assess the quality of a set of arrays.

**Usage**

```
arrayQualityMetrics(expressionset,
                    outdir = getwd(),
                    force = FALSE,
                    do.logtransform = FALSE,
                    intgroup = "Covariate",
                    groupprep = FALSE,
                    spatial = TRUE)
```

**Arguments**

|                              |  |
|------------------------------|--|
| <code>expressionset</code>   | is an object of class <code>ExpressionSet</code> , <code>AffyBatch</code> , <code>NChannelSet</code> , <code>BeadLevelList</code> , <code>RGList</code> , <code>MAList</code> , <code>aqmInputObj</code> , <code>marrayRaw</code> or <code>marrayNorm</code> . |
| <code>outdir</code>          | is the name of the directory in which the results are created.   |
| <code>force</code>           | if TRUE, <code>outdir</code> will be overwritten if it already exists.   |
| <code>do.logtransform</code> | If TRUE, the data are log transformed before the analysis.   |
| <code>intgroup</code>        | Name of the column of the <code>phenoData</code> to be used to draw a colour side bar next to the heatmap.   |
| <code>grouprep</code>        | Decide if you want the boxplots and density plots to be coloured function of the groups set by 'intgroup'. The default is FALSE meaning that the boxplot and density plots will not be represented function of the groups of 'intgroup'.                       |
| <code>spatial</code>         | If FALSE, the spatial representations are not performed. This is useful for large arrays (like Affymetrix hgu133Plus2) when these figures are slow to be drawn and can cause machines with low memory to fail to perform the report.                           |

**Details**

See the `arrayQualityMetrics` Vignette for examples of this function.

**Value**

A directory `outdir` containing a HTML report named `QMreport.html` and all the PNG and PDF plots is created.

**Author(s)**

Audrey Kauffmann, Wolfgang Huber. Maintainer: <audrey@ebi.ac.uk>

---

addXYfromGAL

*Computing the coordinates of the spots on a slide*

---

**Description**

From the coordinates of the blocks of a microarray slide and the Row and Column locations of the spots within the blocks, `addXYfromGAL` computes the X and Y coordinates of the spots of a slide.

**Usage**

```
addXYfromGAL(x, gal.file, nBlocks, skip, ...)
```

**Arguments**

|                       |   |
|-----------------------|---|
| <code>x</code>        | is an <code>AnnotatedDataFrame</code> representing the <code>featureData</code> of an object. |
| <code>gal.file</code> | name of the file <code>.gal</code> that contains the coordinates of the blocks.               |
| <code>nBlocks</code>  | number of blocks on the slide.  |
| <code>skip</code>     | number of header lines to skip when reading the <code>gal.file</code> .                       |
| <code>...</code>      | Arguments that get passed on to <code>read.table</code> .                                     |

**Value**

The object `x` of class `AnnotatedDataFrame` will be returned with two added columns: `X` and `Y` corresponding to the absolute position of the probes on the array.

**Author(s)**

Audrey Kauffmann, Wolfgang Huber. Maintainer: <audrey@ebi.ac.uk>

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