

Package ‘affyQCReport’

October 9, 2013

Version 1.38.0

Title QC Report Generation for affyBatch objects

Author Craig Parman <craig.parman@bifx.org>, Conrad Halling <conrad.halling@bifx.org>, Robert Gentleman

Maintainer Craig Parman <craig.parman@bifx.org>

Depends Biobase (>= 1.13.16), affy, lattice

Imports affy, affyPLM, Biobase, genefilter, graphics, grDevices,lattice, RColorBrewer, simpleaffy, stats, utils, xtable

Suggests tkWidgets (>= 1.5.23), affydata (>= 1.4.1)

Description This package creates a QC report for an AffyBatch object.
The report is intended to allow the user to quickly assess the quality of a set of arrays in an AffyBatch object.

License LGPL (>= 2)

biocViews Microarray,OneChannel,QualityControl

Collate arrayReport.R correlation.R border1.R border2.R titlepage.R signalDist.R affyQAReport.R

R topics documented:

affyQAReport	2
borderQC1	3
borderQC2	4
correlationPlot	5
QCReport	5
signalDist	6
titlePage	7

Index	9
--------------	----------

 affyQAReport

Generate a QA Report for Affymetrix arrays

Description

These functions provide a method for creating, viewing and removing QA reports on an experiment run on Affymetrix CEL files.

Usage

```
affyQAReport(affyB, output = "pdf", outdir = file.path(getwd(), "affyQA"),
             overwrite = FALSE, repName)
rmQAReport(x)
openQAReport(x)
```

Arguments

affyB	An instance of the AffyBatch class.
output	Type of output wanted, currently only pdf is supported.
outdir	The directory (or folder) where output will be directed.
overwrite	Whether an existing report, with the same name, should be overwritten.
repName	A character string indicating the name of the report.
x	A character string containing the location of the directory holding the report.

Details

A wide variety of tools from different packages are used, in conjunction with Sweave tools to produce an integrated document with various statistics that should help determine whether there are data quality problems with the data.

This package only works for Affymetrix data. It requires a working LaTeX implementation and so is not likely to work on Windows platforms, and in some cases on OS X unless the user has installed these tools.

Sample names that have an underscore in them have it replaced by a dot. Underscore causes a number of problems with Latex, if it is not escaped.

Value

A list with the following components is returned.

qcStats	The QC statistics computed by the simpleaffy package.
affyPLM	The QC statistics computed by the affyPLM package.
MADS	The computed MAD statistic on the 'M' values from an M-A decomposition.
loc	The location (directory/folder) containing the report.
name	The name of the report.

Author(s)

R. Gentleman

Examples

```
## Not run:  
library("affydata")  
data("Dilution")  
affyQAReport(Dilution)  
  
## End(Not run)
```

borderQC1*Distribution of intensities of the border elements*

Description

Creates the forth page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page contains a boxplots showing the intensities from the border element of arrays in an [AffyBatch](#) object.

Usage

```
borderQC1(object)
```

Arguments

object An object of class [AffyBatch](#) .

Details

This creates the forth page of a [QCReport](#) report. Boxplots of the positive and negative border elements of arrays in a [AffyBatch](#) object are shown.

More details are available in the vignette.

Value

TRUE

Examples

```
library(affydata)  
data(Dilution)  
  
borderQC1(Dilution)
```

`borderQC2`*Center of intensity QC plots*

Description

Creates the fifth page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page contains plots showing the center of intensity of the border element of arrays in an [AffyBatch](#) object.

Usage

```
borderQC2(object)
```

Arguments

`object` An object of class [AffyBatch](#).

Details

This creates the fifth page of a [QCReport](#) report. Plots of the center of intensity of the positive and negative border elements of arrays in a [AffyBatch](#) object are shown. This plot is useful for detecting spatial biases in intensities on an array.

More details are available in the vignette.

Value

TRUE

Examples

```
library(affydata)
data(Dilution)

borderQC2(Dilution)
```

correlationPlot	<i>Array-array intensity correlation plot</i>
-----------------	---

Description

Creates the sixth page of the QC report created by [QCReport](#) for an object of class [AffyBatch](#). The page displays array-array intensity correlation coefficients.

Usage

```
correlationPlot(object)
```

Arguments

object An object of class [AffyBatch](#).

Details

This creates the sixth page of a [QCReport](#) report. The page displays array-array intensity correlation coefficients for all pairs of arrays in an [AffyBatch](#) object. Arrays are ordered according to phenotypic data if available. This plot is useful for detecting outlier arrays.

More details are available in the vignette.

Value

TRUE

Examples

```
library(affydata)
data(Dilution)
correlationPlot(Dilution)
```

QCReport	<i>QC Report for AffyBatch objects</i>
----------	--

Description

Creates a QC report for an object of class [AffyBatch](#).

Usage

```
QCReport(object, file="AffyQCReport.pdf", ...)
```

Arguments

object	An object of class AffyBatch .
file	A valid filename for the output PDF file.
...	further arguments for plot function.

Details

This creates a 6 page QC report in PDF file format.

- The default output file is AffyQCReport.pdf created in the working directory.
- The [AffyBatch](#) object is not required to contain phenotypic data but that data is used if available.
- The CDF environment must be available for the method to work fully.

More details are available in the vignette.

Value

TRUE

Examples

```
## Not run:

library(affydata)
data(Dilution)

QCReport(Dilution,file="ExampleQC.pdf") ##A QC report for the Example data will be generated

## End(Not run)
```

signalDist

Intensity distribution plots for a AffyBatch object

Description

Creates the secondpage of the QC report created by [QCReport](#) for an object of class [AffyBatch](#) The page contains a boxplot and intensity distribution plots.

Usage

```
signalDist(object)
```

Arguments

object An object of class [AffyBatch](#).

Details

This creates the second page of a [QCReport](#) report. The first graph is created with the [AffyBatch](#) method `boxplot`. The second graph is created with the [AffyBatch](#) method `hist`.

More details are available in the vignette.

Value

TRUE

Examples

```
library(affydata)
data(Dilution)

signalDist(Dilution)
```

titlePage	<i>QC report title page with array names</i>
-----------	--

Description

Creates the titlepage of the QC report created by [QCReport](#) for an object of class [AffyBatch](#).

Usage

```
titlePage(object)
```

Arguments

object An object of class [AffyBatch](#).

Details

This creates the title page of a [QCReport](#) report.

More details are available in the vignette.

Value

TRUE

Examples

```
library(affydata)
data(Dilution)

titlePage(Dilution)
```


Index

*Topic **hplot**

- borderQC1, 3
- borderQC2, 4
- correlationPlot, 5
- QCReport, 5
- signalDist, 6
- titlePage, 7

*Topic **manip**

- affyQAReport, 2

AffyBatch, 3–7

affyQAReport, 2

borderQC1, 3

borderQC2, 4

correlationPlot, 5

openQAReport (affyQAReport), 2

plot, 6

QCReport, 3, 4, 5, 5–7

QCReport-correlationPlot
(correlationPlot), 5

QCReport-signalDist (signalDist), 6

QCReport-titlePage (titlePage), 7

rmQAReport (affyQAReport), 2

signalDist, 6

titlePage, 7