biocDatasets

November 11, 2009

R topics documented:

`createProbeCoords` *Create probe coordinates*

Description

Create probe coordinates

Usage

```
createProbeCoords(nrows, ncols,
                  meta_nrows = 1, meta_ncols = 1,
                  meta_padding = 5)
```

Arguments

`nrows`	Number of rows per sub-array
`ncols`	Number of columns per sub-array
`meta_nrows`	Number of sub-arrays per row
`meta_ncols`	Number of sub-arrays per column
`meta_padding`	Padding between sub-arrays

Value

A `data.frame` of columns:

`row`	row position within the sub-array
`col`	column position within the sub-array
`metarow`	sub-array index in the row
`metacol`	sub-array index in the column
`x`	fictitious x coordinate
`y`	fictitious y coordinate

Examples

```
# array with 10,000 probes
one_plex <- createProbeCoords(100, 100)
plot(y ~ x, data=one_plex, pch=".",
     main = "array 1x10k")

# 4x2.5k array
four_plex <- createProbeCoords(50, 50, 2, 2)
plot(y ~ x, data=four_plex, pch=".",
     main = "array 4x2.5k")
```

`expression_arraywide` *Generate expression for a whole array*

Description

Generate expression values for a whole array

Usage

```
expression_arraywide(n,
                     noise_mean = 50, noise_sd = 5,
                     signal_mean = 500, signal_sd = 0.9,
                     highbump_percent = 5,
                     highbump_mean = 6000, highbump_sd = 500)

replicate_arraywide(x)
```

Arguments

`n`	Number of probes
`x`	A vector of expression values
`noise_mean`	Mean for the noise
`noise_sd`	Standard deviation for the noise
`signal_mean`	Mean for the signal
`signal_sd`	Standard deviation for the signal

`highbump_percent`
: Percentage of probes from the 'high bump'

`highbump_mean`
: Mean

`highbump_sd`
: Standad deviation

Details

XXX

Value

A vector of numerical values (and of length `n`, or `length(x)`))

Examples

```
y <- expression_arraywide(1000)
y2 <- replicate_arraywide(y)

library(lattice)

densityplot(~ c(y, y2), groups = rep(c(1,2), rep(length(y), 2)))
```

---

msubseq *Take multiple subsequences*

Description

Take multiple subsequences from one sequence

Usage

```
msubseq(x, ir)
```

Arguments

`x`
: `Sequence` object

`ir`
: `IRanges` object

Details

Take the subsequences defined by an `IRanges` `ir` from a `Sequence` `x`.

Value

A `DNAStringSet`.

See Also

`subseq`

Examples

```
dna_length <- 100
dna <- randomDNASequences(1, dna_length)[[1]]

ir <- randomIRanges(100, 25, 10, dna_length)

dna_chunks <- msubseq(dna, ir)
```

`randomDNASequences` *create random DNA sequences*

Description

Create random DNA sequences

Usage

```
randomDNASequences(n, w)
```

Arguments

`n`	n number of DNA sequences
`w`	width of DNA sequences (recycled as necessary)

Value

A `DNAStringSet` of length `n`

Note

Currently, all amino acids are equally probable in the sequence. A parameter to control that is planned.

Examples

```
# two random Affymetrix-like probes
oligos <- randomDNASequences(2, 25)
```

randomIRanges *Random IRanges*

Description

Create random IRanges

Usage

```
randomIRanges(n, width, from, to, replace = TRUE)
```

Arguments

n	number of IRanges
width	width for the IRanges
from	starting index value for the sequence to be covered by IRanges
to	ending index value for the sequence to be covered by IRanges
replace	sampling with replacement if TRUE (see Details)

Details

The from and to parameters describe the underlying sequence to be covered by the ranges. To prevent having ranges outside the sequence, the end of the IRanges returned cannot be greater than end - width.

If replace is TRUE, several IRanges can have the same starting value.

Value

An IRanges object of length n.

See Also

IRanges

Examples

```
n <- 10
rir <- randomIRanges(n, 5, 1, 33)

# ASCII-art view
reference <- paste("|",
                   paste(rep("-", 33-2), collapse=""),
                   "|",
                   sep = "")
regions <- vector("character", length=n)
for (i in 1:n) {
  regions[i] <- paste(
                   paste(rep(" ", start(rir)[i]), collapse=""),
                   paste(rep("-", width(rir)[i]), collapse=""),
                   sep = ""
                   )
```

```
}

cat(reference, regions, sep="\n")
```

`tilingProbes` *Create tiling probes or ranges*

Description

Create tiling probes or ranges

Usage

```
tilingProbes(width, step, template_seq)

tilingIRanges(width, step, from, to)
```

Arguments

`from`	start position for the tiling
`step`	increment in the starting index between one probe and the next.
`template_seq`	template sequence from which tiling probes are to be extracted
`to`	end position for the tiling
`width`	width for the probes

Value

`tilingProbes` and `tilingIRanges` return a `DNAStringSet` and a `IRanges` respectively.

Examples

```
dna <- randomDNASequences(1, 30)[[1]]

tip <- tilingProbes(10, 2, dna)

# ASCII-art
cat(as.character(dna), "\n")
for (i in 1:length(tip)) {
  cat(paste(rep("|", (i-1)*2), collapse=""),
      as.character(tip[[i]]), "\n",
      sep="")
}
cat(as.character(dna), "\n")
```

Index