

biocDatasets

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`createProbeCoords` *Create probe coordinates*

Description

Create probe coordinates

Usage

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

Arguments

<code>nrows</code>	Number of rows per sub-array
<code>ncols</code>	Number of columns per sub-array
<code>meta_nrows</code>	Number of sub-arrays per row
<code>meta_ncols</code>	Number of sub-arrays per column
<code>meta_padding</code>	Padding between sub-arrays

Value

A `data.frame` of columns:

<code>row</code>	row position within the sub-array
<code>col</code>	column position within the sub-array
<code>metarow</code>	sub-array index in the row
<code>metacol</code>	sub-array index in the column
<code>x</code>	fictitious x coordinate
<code>y</code>	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 `DNAStrngSet` 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")
```

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