Package ‘digitalPCR’

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Type Package
Title Estimate Copy Number for Digital PCR
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Description The assay sensitivity is the minimum number of copies that the digital PCR assay can detect. Users provide serial dilution results in the format of counts of positive and total reaction wells. The output is the estimated assay sensitivity and the copy number per well in the initial dilute.
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R topics documented:

  digitalPCR ................................................................. 1
digitalPCR-internal .................................................. 3

Index

  digitalPCR

Estimate copy number and assay sensitivity from dPCR serial dilution

Description

The assay sensitivity is the minimum number of copies that the digital PCR assay can detect. Users provide serial dilution results in the format of counts of positive and total reaction wells. The output is the estimated assay sensitivity and the copy number per well in the initial dilute.
Usage

digitalPCR(pos, neg, dilution, Nboot, single.copy = c("FALSE", "TRUE"), upper.copy=100)

Arguments

pos a numeric vector of number of positive reactions in the order of dilutions
neg a numeric vector of number of negative reactions in the order of dilutions
dilution a numeric vector of folds of dilutions relative to the initial dilution
Nboot number of bootstrapping
single.copy character tells whether the assay is assumed single-copy sensitive. default "FALSE"
upper.copy the upper bound of copy number in highest concentration

Details

the pos, neg and dilution vector must be in the same order from high to low concentrations.

Value

The returned value is a list of four components:

mean copy number

SD copy number standard deviation of copy number
copy numbers bootstrapped copy number estimates
thresholds bootstrapped assay sensitivity estimates

Author(s)

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Examples

# dilution at 1,2,4,8 fold
pos=c(221,97,39,14)
dilution=c(1,2,4,8)
neg=384-pos
#Note in practice, set this 100 or larger
Nboot=10

result1=digitalPCR(pos, neg, dilution, Nboot)
print(paste(result1$"mean copy number", result1$"sd copy number"))
hist(result1$"thresholds",xlim=c(-2,10))

# the following example contains only 1 dilution
result2=digitalPCR(230, 355, 1, Nboot, "TRUE")
<table>
<thead>
<tr>
<th>digitalPCR-internal</th>
<th>Internal functions</th>
</tr>
</thead>
</table>

**Description**

Internal functions

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Index

bootstrapping (digitalPCR-internal), 3

digitalPCR, 1
digitalPCR-internal, 3

likelihood (digitalPCR-internal), 3

maximum.likelihood (digitalPCR-internal), 3

poisson.param (digitalPCR-internal), 3

TL (digitalPCR-internal), 3