Package 'DSS'

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Type Package

Title Drug Sensitivity Score (DSS) calculation

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Description DSS is a function for the calculation of drug sensitivity score.

Depends stringr

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R topics documented:

`DSS` *Drug Sensitivity Score calculation*

Description

This function calculates Drug Sensitivity Score (DSS). There are three different types of DSS calculation. These are DSS1, DSS2 and DSS3. See the supplementary methods of the paper for details.

Usage

```
DSS(rdata, y, DSS.type, concn.scale, log)
```

Arguments

rdata	a matrix containing 5 columns: IC50 (c), SLOPE (b), MAX response (a), Minimum concentration tested (Cmin), and Maximum concentration tested (Cmax) in this order. By default, MIN response (d) is set to 0. If this is not the case, one need to input a matrix containing 6 columns IC50, SLOPE, MIN response, MAX response, Minimum concentration tested, and Maximum concentration tested in this order.
y	activity threshold (t) for percent inhibition. This must be greater than 0. Default is 10.
DSS.type	type of DSS: 1, 2 or 3. This value corresponds to DSS1, DSS2, DSS3. Default is 3.
concn.scale	concentration scale of drugs tested. Set the scale such a way that IC50, Minimum concentration tested and Maximum concentration tested converts to molar (M) unit. Default is NULL, but, must set if concentration is not in log10 scale. For example, if the drug concentration is in nano molar (nM), then concn.scale = 1e-9.
log	TRUE or FALSE. If drug concentration is not in log10 scale, set log to TRUE. Otherwise, set log to FALSE. Default is TRUE.

Details

The activity threshold for percent inhibition is the lower limit in dose response curve (t), the area above which is used for DSS calculation.

If the concentration is already in log10 scale, then set log to FALSE and concn.scale to NULL. If the concentration is not in log10 scale, then set log to TRUE and set the concn.scale as explained in arguments section.

For DSS1 and DSS3, the output value is between 0 (insensitive) and 100 (highly sensitive), where as for DSS2, the value is between 0 (insensitive) and 50 (highly sensitve).

Value

Returns a dataframe with DSS in the same order as in the input data.

Author(s)

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References

Bhagwan Yadav, Tea Pemovska, Agnieszka Szwajda, Evgeny Kulesskiy, Mika Kontro, Riikka Karjalainen, Muntasir Mamun Majumder, Disha Malani, Astrid Murumägi, Jonathan Knowles, Kimmo Porkka, Caroline Heckman, Olli Kallioniemi, Krister Wennerberg, Tero Aittokallio. Quantitative scoring of differential drug sensitivity for individually optimized anticancer therapies. Scientific Reports (2014) 4, 5193; DOI:10.1038/srep05193

Examples

```
data("rdata")
DSS(as.matrix(rdata[,3:ncol(rdata)]),10,2,1e-9)
```

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