Package 'SALMON'

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Title Signature Activity and Expectancy

Version 0.0.1

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Description To estimate signature activities and calculate signature expectancy.

Imports stats

Depends R (>= 4.1.0)

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NeedsCompilation no

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R topics documented:

`SALMON-package` *Signature Activity and Expectancy*

Description

To estimate signature activities and calculate signature expectancy.

Details

The two main functions in this package are `EstimateSigActivity` and `CalculateSigExpectancy`.

Author(s)

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References

Lee, D., Wang, D., Yang, X., Shi, J., Landi, M., Zhu, B. (2021) SUITOR: selecting the number of mutational signatures through cross-validation. bioRxiv, doi: https://doi.org/10.1101/2021.07.28.454269.

`CalculateSigExpectancy` *CalculateSigExpectancy*

Description

Estimate signature expectancy

Usage

```
CalculateSigExpectancy(L, W, H)
```

Arguments

`L`	Panel size matrix or data frame with samples in columns
`W`	Catalog signature profiles matrix or data frame with signatures in columns
`H`	Activity matrix or data frame with samples in columns

Details

If `K` is the number of signatures and `N` is the number of samples, then `H` must be of dimension `K X N`, `ncol(L) = N`, and `ncol(W) = K`.

Value

A matrix of dimension `K X N`, where `K` is the number of signatures and `N` is the number of samples.

Author(s)

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See Also

`EstimateSigActivity`

Examples

```
data(data, package="SALMON")

CalculateSigExpectancy(L, W, H)
```

data *Data for examples*

Description

Example input data objects

Details

Contains example `L`, `V`, `W`, and `H` matrices for examples.

EstimateSigActivity *EstimateSigActivity*

Description

Estimate signature activities

Usage

```
EstimateSigActivity(V, L, W, n.start=50, iter.max=5000, eps=1e-5)
```

Arguments

`V`	Mutation type matrix or data frame with samples in columns
`L`	Panel size matrix or data frame with samples in columns
`W`	Catalog signature profiles matrix or data frame with signatures in columns
`n.start`	Number of initializations. The default is 50.
`iter.max`	Maximum number iterations in the EM algorithm. The default is 5000.
`eps`	Stopping tolerance in the EM algorithm. The default is 1e-5.

Details

For the objects codeV, `L`, and `W`, we must have that `dim(V)` = `dim(L)` and `ncol(W)` = `K`, where `K` is the number of signatures.

Value

A list containing the estimated activity matrix `H`, the log-likelihood `loglike`, and the logical value `converged`.

Author(s)

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See Also

`CalculateSigExpectancy`

Examples

```
data(data, package="SALMON")

EstimateSigActivity(V, L, W)
```

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