Package 'fluctuateR'

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Type Package

Title Simulate the Luria-Delbruck fluctuation experiments

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NeedsCompilation no

R topics documented:

sim_plate_count *Simulate plating*

Description

Simulate plating cell culture from a tube containing phage-resistant and wild type (phage-sensitive) cells to plates with phages

Usage

```
sim_plate_count(n_re, n_wt, n_plates, n_sample)
```

Arguments

n_re	Number of resistant cells in the tube
n_wt	Number of wild type cells in the tube
n_plates	Number of replicate plates per experiment
n_sample	Number of cells to plate from a tube

Value

A vector of integers for numbers of colonies on plates with phages

sim_tube_count *Simulate growth*

Description

Simulate cell growth in a tube

Usage

```
sim_tube_count(n_gens, mut_rate, ncells_init, ncells_res_init = 0)
```

Arguments

n_gens	Number of generations in tube
mut_rate	Mutation rate
ncells_init	Initial number of cells in a tube transferred from a flask before growth
ncells_res_init	Number of mutant cells in a tube before growth representing standing variation

Value

A vector of integers for numbers of colonies on plates with phages

simLD_ind *Simulate induced mutation model*

Description

Simulate a Luria-Delbruck experiment assuming induced mutation by exposure to phages

Usage

```
simLD_ind(n_plates, n_sample, mut_rate)
```

Arguments

n_plates	Number of replicate plates per experiment.
n_sample	Number of cells to plate from a tube after growth
mut_rate	Mutation rate

Value

A named vector of four: mean number of resistant colonies in experiment A (plating on n_plates plates from one tube), mean number of resistant colonies in experiment B (plating on n_plates plates from n_plates tubes), variance in experiment A, and variance in experiment B.

simLD_spo *Simulate spontaneous mutation model*

Description

Simulate a Luria-Delbruck experiment assuming spontaneous mutation of resistance to phages

Usage

```
simLD_spo(
  n_gens,
  mut_rate,
  ncells_init,
  n_sample,
  n_plates,
  ncells_res_init = 0
)
```

Arguments

n_gens	Number of generations in tube
mut_rate	Mutation rate
ncells_init	Initial number of cells in a tube transferred from a flask before growth
n_sample	Number of cells to plate from a tube after growth
n_plates	Number of replicate plates per experiment.
ncells_res_init	Number of mutant cells in a tube before growth representing standing variation

Value

A named vector of four: mean number of resistant colonies in experiment A (plating on n_plates plates from one tube), mean number of resistant colonies in experiment B (plating on n_plates plates from n_plates tubes), variance in experiment A, and variance in experiment B.

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