

Re: Fixation rates for mutations by genetic drift

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in article cipq84\$1gtb\$1@darwin.ediacara.org, phillip smith at deletethis-phills@ihug.co.nz wrote on 22/9/04 6:00 AM:

> *I wonder if any one can help me? I need to check a calculation for a paper.*
>
>> *From Kimura the time for a neutral mutation to be fixed is the mutation
> rate.*
> *If I have ten genes each of which can have a neutral mutation. What is the
> mean time taken for there to be no individuals which are free of mutation.*
> *That is the whole population carries at least one of the ten mutations*
>
> *I think its is $t = (1-u)^n$*
>
> *Where n is the number of genes that can have a mutation in this case 10 and
> u is the mutation rate $t = \text{replications}$*
>
> *I think I have made a mistake some where so any one who can put me right
> would be appreciated*
>
>
> *Cheers*

This is wrong I think its simply $t = un$

We have evidence for this if you take the genome as 10^9 and mutation rate as $10 \exp -9$ then then we would expect it to take one replication on average for every cell to have at least 1 mutation.

So if we have 10 genes then the rate of fixation is 10^{-8}

But each gene has approx 1000 nucleotides so we are at 10^{-5}

Does this seem ok

Cheers