

Re: Haldane's Lemma

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"kramer" <kodream@xxxxxxxxxx> wrote in message [news:e89dl6\\$2de\\$1@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:e89dl6$2de$1@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx)

Does Haldane's lemma take into account that chimps and ape's are both evolving, and that at some point and time they became reproductively incompatible?

It is Haldane's dilemma, not Haldane's lemma. A dilemma is a kind of problem, a lemma is a kind of theorem. Probably 'dilemma' was a poor choice as the name of this problem, since a dilemma is a "Damned if you do, damned if you don't" kind of problem, and I don't see that the issue that Haldane raised is that kind of problem.

Would not having multiple species evolving increase the rate at which the genomes diverge, counting changes in nucleotides from both species.

Yes, and most people already take this into account in talking about this. 4 million years on the human side of the divergence, plus 4 million years on the chimp side yields 8 million years of evolution total for explaining why chimps and humans are so different.

But Walter ReMine confuses this issue since he insists on talking about 8 million years of evolution of humans from whatever ape-like ancestor we had 8 million years ago. Apparently he got the 8 million figure from an obsolete estimate of when humans and chimps diverged. It is pure coincidence that the two 8 million numbers match, but the match has caused some confusion.

Furthermore, would the smaller membership of the diverged populations then also cause divergence to be faster.

It is not clear from evolutionary theory that small populations will evolve faster than large ones. To a first approximation, both drift and natural selection proceed at the same rate independently of

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population size. But when you look deeper, things get more complicated.

Perhaps there were at one time squirrels in South America, but the opposable thumb so efficient in larger primates made that DNA "evolve "degeneratively"" to something that surpassed the squirrel in its climbing ability very quickly. Developing social skills may take a very long time in an evolutionary context, since everyone in the group has to adapt, but climbing skills are an individual trait which may develop at a different and faster rate. Compounded by the fact that, as the lemurs became smaller, could have more generations in the same periods of time that larger primates could.

So while there was a common ancestor in the primates, not all of its descendents developed at the same rate.

It is definitely true that Haldane's speculative limit on the rate of evolution is a limit per generation. So, for example, if both chimp and human evolved from the common ancestor at the maximum rate allowed by Haldane's limit, the chimp would have evolved faster and farther. The chimp has a slightly shorter generation time.