'Evolutionary leaps' questioned

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New evidence from fossil fish, hundreds of millions of years old, casts doubt on the latest ideas about evolutionary theory.
The research, by Dr Philip Donoghue of the University of Bristol and Dr Mark Purnell of the University of Leicester, claims to have solved a scientific riddle by using the fossil record to explain evolutionary 'leaps' between species.

The findings will set them on a collision course with geneticists who argue that the evolution of humans and other vertebrates – animals with backbones – was driven by sudden changes in their genes.

This new work challenges the scientific theory that jumps in evolution occurred at times when gene numbers increased in animals with backbones. The larger number of genes is believed to occur through gene ‘duplication’ and is thought to be the reason why humans and other vertebrates are more complex.

When geneticists look at which branches of the vertebrate family tree have duplicated genes and which don't, it certainly seems that each duplication led to a sudden jump in evolution.

For example, one duplication event occurred sometime after the evolution of lampreys but before the evolution of sharks. Sure enough, lampreys are simple vertebrates lacking jaws, teeth and a bony skeleton, whereas sharks are much more complex animals.

Thus the evidence from living vertebrates suggests a neat pattern, with a close correspondence between gene doubling events and evolution. Indeed, the evidence seems so strong that hundreds of scientific research papers have been written about the genetics of this important evolutionary pattern.

But, as Dr Donoghue explained: "We consider this picture – a view of living animals only – is seriously distorted. What appear to be evolutionary jumps are really just gaps in the evolutionary tree – dead branches that have fallen by the wayside. These branches are not 'missing links', more like 'missed' links, and when we use the fossil record to put them back in place, the vertebrate evolutionary tree looks very different."

Dr Purnell said: "The new evidence from research into ancient fossil fish reveals that the 'jump' between lampreys and sharks turns out to be nothing of the sort. The major changes in anatomy didn't occur suddenly, as a result of a gene doubling; they took place over 70 million years or more, through a series of intermediate, but now extinct fossil fish."

Donoghue and Purnell have thrown down the gauntlet to geneticists, saying: "Fossils may be long extinct, their genes having rotted away millions of years ago, but if geneticists want to say anything meaningful

about evolution they must include fossils in the vertebrate family tree – they cannot simply ignore them".

Source: University of Bristol