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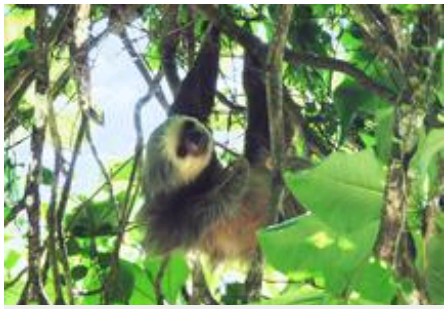
18 SEP HIV's ancestors 'plagued first mammals'

18 Sep 09

Science



The remains of an ancient HIV-like virus have been discovered in the genome of the two-toed sloth.

The retroviruses which gave rise to HIV have been battling it out with mammal immune systems since mammals first evolved around 100 million years ago – about 85 million years earlier than previously thought, scientists now believe.

The remains of an ancient HIV-like virus have been discovered in the genome of the two-toed sloth [*Choloepus hoffmanni*] by a team led by Oxford University scientists who publish a report of their research in this week's *Science*.

'Finding the fossilised remains of such a virus in this sloth is an amazing stroke of luck,' said Dr Aris Katzourakis from Oxford's Department of Zoology and the Institute for Emergent Infections, James Martin 21st Century School. 'Because this sloth is so geographically and genetically isolated its genome gives us a window into the ancient past of mammals, their immune systems, and the types of viruses they had to contend with.'

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>
> Dr Aris Katzourakis

The researchers found evidence of 'foamy viruses', a particular kind of retrovirus that resembles the complex lentiviruses, such as HIV and simian retroviruses (SIVs) – as opposed to simple retroviruses that are found throughout the genomic fossil record.

Further information

- Science
- Department of Zoology
- Institute for Emergent Infections

‘ In previous work we had found evidence for similar viruses in the genomes of rabbits and lemurs but this new research suggests that the ancestors of complex retroviruses, such as HIV, may have been with us from the very beginnings of mammal evolution,’ said Dr Aris Katzourakis.

Understanding the historical conflict between complex viruses and mammal immune systems could lead to new approaches to combating existing retroviruses, such as HIV. It can also help scientists to decide which viruses that cross species are likely to cause dangerous pandemics – such as swine flu (H1N1) – and which, like bird flu (H5N1) and foamy viruses, cross this species barrier but then never cause pandemics in new mammal populations.
