

SAMPLE ESSAY – PHY250, Journal Club Workshop – Spring 2006

This essay is intended to give you an idea of the style and length of essays that are to be written each week for PHY250. It is slightly more formal than I expect in general. This essay is about 260 words.

Reading summary

A. Alan Middleton, PHY250, January 17, 2006

I assigned myself the reading “The Late Miocene Radiation of Modern Felidae: A Genetic Assessment”, p. 73 of Vol. 311 of *Science*. This article is concerned with the evolutionary tree of modern cats, which branch started 11 million years ago. Helpful in reading this article was a brief summary on p. 12 of the same issue. The summary specifically noted the incomplete fossil record for modern cats and the similarity of fossil skeletons. This means that molecular methods, namely DNA studies, are needed.

There are 37 cat species existing with 8 major branches. The DNA sequences resolve the 8 major branches. The first “felidlike” carnivores appeared about 35 million years ago. Modern cats arose in Asia 10 million years ago, but have migrated many times (10 intercontinental invasions that track changes in sea level).

One word that appears a lot is autosomal – I looked it up and it means a gene that appears on non-X, non-Y chromosomes.

This article was quite technical with an overwhelming amount of statistical information on the genetic analysis and I could not follow much of it. I wonder how reliable the tree reconstruction is – they don't compare the reliability of their analysis with that for other families of animals. I don't know enough statistics to understand all of the confidence levels and “credibility level”. Do other animals show branching consistent with climate change? I would like to learn more about the evolutionary rates for nDNA, mDNA, aDNA, xDNA, and yDNA.