



Resurrecting genotypes and phenotypes from long-extinct species: Promises and perspectives

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Anatomical changes in extinct mammalian lineages, such as the loss of fingers and teeth by Steller's sea cows during the dispersal of ancestors of this tropical lineage into sub-Arctic waters in the Miocene, is a prime example of adaptive evolution underlying the exploitation of a new habitat. However, it is likely that biochemical specializations adopted during this evolutionary transition may have been of even greater importance. Unfortunately, as biochemical processes do not fossilize, information regarding the physiological attributes of extinct species has largely remained beyond the range of scientific inquiry. The advent of techniques to retrieve genomic sequence from ancient DNA samples, combined with ectopic expression systems, however, have illustrated that the 'resurrection' and functional characterization of authentic proteins from recently extinct species is feasible. Emerging technical advances in ancient DNA capture and sequencing now permit targeted enrichment of complete genomes from specimens (and even populations) across the last one million years at relatively low cost, heralding an exciting new trajectory of evolutionary research at the interface of biochemistry, paleontology, and genomics that promises to add an important new dimension to the study of natural selection.



Friday June 27th at 13.15
Seminar room (Room 127 building 1131)