Bringing Dinosaurs Back from the Dead

Beth Shapiro
Associate Professor, Ecology and Evolutionary Biology

CURRENT RESEARCH

Reviving characteristics of dinosaurs by making sense of their genomic code

DNA provides a means to watch evolutionary processes as they occur. By extracting DNA from the preserved remains of extinct species, scientists can answer questions about the past while making predictions about our future. Dr. Beth Shapiro, Associate Professor of Ecology and Evolutionary Biology and co-director of the UCSC Paleogenomics Lab at the University of California, Santa Cruz, extracts fragments of DNA from up to 700,000 year old bones and uses these to piece together the genomes of recently extinct organisms. The DNA preserved in these remains contains the history of that organism's evolution, and can reveal how climate change and human population growth -- in particular over the last 150,000 years -- affected the distribution and diversity of organisms that are alive today. Her research contributes to evidence-based conservation by providing insights from the past that reveal strategies to protect and preserve species in the present. Additionally, her research can reveal why domestic species look and act the way they do, address how the distribution of species has changed over time, and appeal to our basic curiosities about ancient animals...even dinosaurs!

One extraordinary application of paleogenomics research is that DNA data extracted from both ancient and living species can be used predict what the genome sequence of very ancient, extinct species might have looked like -- species that, like dinosaurs, went extinct far too long ago for any DNA to be preserved. By comparing genomes of birds and reptiles, for example, it is possible to reconstruct computationally the genome sequence of the ancestor of all living birds -- a dinosaur -- and use that data to understand what made a dinosaur distinct...

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AFFILIATION

University of California, Santa Cruz

EDUCATION

- D.Phil., Zoology, 2003 , Oxford
- M.S. & B.S., 1999 , University of Georgia

AWARDS

- Packard Fellow, 2010
- PopTech Science and Public Leadership Fellow, 2010
- National Geographic Emerging Explorer, 2010
- MacArthur Fellow, 2009
- Rhodes Scholar, 1999

RESEARCH AREAS

Genomics / Congenital, Technology

FUNDING REQUEST

Your contributions will support the continued research of Dr. Beth Shapiro, of the University of California, Santa Cruz, as she learns how species transitioned from global climate change in order to make better predictions to protect existing biodiversity. Donations will fund the necessary $260K/year for personnel and $100K/year for consumables for ancient DNA and radiocarbon dating. Help uncover the evolutionary history dating back to dinosaurs in order to have an impact on our future; fund Dr. Shapiro's research.