Paleogenomics

Genome-Scale Analysis of Ancient DNA

- Paleogenomics is the first comprehensive book on paleogenomics, a rapidly evolving and fascinating field that investigates the genomes of ancient organisms and extinct species.
- Chapters in this book are contributed by some of the leaders in the field, covering a wide array of topics.
- This book provides insight into recent developments of concepts, technical advances and challenges, and promise of paleogenomics.
- This book reviews and synthesizes studies applying paleogenomics to a variety of organisms, from pathogens and plants to primates.
- This book analyzes current insights from paleogenomics into past environments, the evolution and adaptation of organisms to changing environments.

Advances in genome-scale DNA sequencing technologies have revolutionized genetic research on ancient organisms, extinct species, and past environments. When it is recoverable after hundreds or thousands of years of unintended preservation, “ancient DNA” (or aDNA) is often highly degraded, necessitating specialized handling and analytical approaches. Paleogenomics defines the field of reconstructing and analyzing the genomes of historic or long-dead organisms, most often through comparison with modern representatives of the same or similar species. The opportunity to isolate and study paleogenomes has radically transformed many fields, spanning biology, anthropology, agriculture, and medicine. Examples include understanding evolutionary relationships of extinct species known only from fossils, the domestication of plants and animals, and the evolution and geographical spread of certain pathogens. This pioneering book presents a snapshot view of the history, current status, and future prospects of paleogenomics, taking a broad viewpoint that covers a range of topics and organisms to provide an up-to-date status of the applications, challenges, and promise of the field. This book is intended for a variety of readerships, including upper-level undergraduate and graduate students, professionals and experts in the field, as well as anyone excited by the extraordinary insights that paleogenomics offers.