

DNA found in fossil bone crystal clusters

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Israeli researchers report discovering crystal clusters in both modern and fossil bones can contain well-preserved DNA.

Ancient DNA preserved in bones is valuable in studying the genetics and evolution of animals, including humans. However, DNA degradation and the potential of contamination make obtaining reliable samples difficult, especially in humans.

But Michal Salamon and colleagues at the Weizmann Institute of Science, in Rehovot, Israel; found crystal aggregates -- small mineral pockets formed when neighboring bone crystals fuse -- can preserve organic matter in a better state than the rest of the bone.

The scientists said the phenomenon occurs partly because such aggregates are resistant to degradation by oxidizing agents. They compared DNA extracted from either isolated crystal aggregates or from untreated whole bone powder, prepared from eight different modern and fossil bones.

Longer and better preserved DNA molecules, with fewer contaminants, were recovered from the aggregates compared with whole powder. The authors note while all the modern bones contained well-preserved DNA in their aggregates, amplifiable DNA could not be extracted from all the fossilized samples.

The research appears in this week's early, online edition of the Proceedings of the National Academy of Sciences.

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