Genetic Material from T-Rex Decoded

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Until recently, it was thought that the preservation of protein did not extend beyond a million years or so. However, protein sequences have now been recovered from the fossilized bones of a 68-million year old Tyrannosaurus Rex. Mary H. Schweitzer, of North Carolina State University, was able to recover soft tissue from a T-Rex bone found in Montana in 2003. That tissue was then analyzed by a team of researchers led by John M. Asara of Beth Israel Deaconess Medical Center in Boston. What they found was collagen, a type of fibrous connective tissue that is a major component of bone. The closest match in creatures alive today is collagen from chicken bones, which lends support to the idea that birds evolved from dinosaurs, effectively transforming it from a hypothesis to a theory.

Of course, the first thing I thought of was “Hey! Soon we’ll be cloning dinosaurs, ala Jurassic Park!” Well, don’t get too excited. This is precise quantitative chemistry, not biology. The authors are using mass spectrometry of very tiny samples of greatly fragmented proteins to get sequences of short peptides. The proteins are in very low concentration, they are degraded and modified by chemical processes, and they are contaminated with minerals and material from the decay and fossilization processes. The peptides they do get are in extremely low concentration, requiring very precise techniques for analysis. Nevertheless, this is a very exciting step into a realm that seemed impossible only a short time ago.

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