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The early origin of feathers

Michael Benton
University of Bristol, Bristol, UK (mike.benton@bristol.ac.uk)

Feathers are a diagnostic character of birds, and yet new fossils show they likely originated more than 100 million years before the first birds. In fact, feathers probably occurred in all dinosaur groups, and in their cousins, the pterosaurs, as we showed in 2019. This finding confirms current knowledge of the genomic regulation of feather development. Our work stems from ten years of collaboration with Chinese colleagues, during which we set ourselves the taks of understanding fossil feathers. Our first discovery was to answer the question, 'Will we ever know the colour of dinosaurs?'. In 2010, we were able to announce the first objective evidence for colour in a dinosaur. Using ultrastructural studies of fossil feathers, we identified melanosomes for the first time in dinosaur feathers, and these demonstrated that Sinosauropteryx had ginger and white rings down its tail. Studies of other dinosaurs identified patterns of black, white, grey, brown, and ginger. This is part of a new wave in palaeobiology where we apply objective approaches to provide testable hypotheses, once thought impossible in the historical sciences.