

A new perspective on the evolution of melanin in vertebrates

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Online webinar on zoom
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Short abstract: Over the last fifteen years, new evidence of the pigment melanin in fossils has transformed the research landscape in palaeontology. Dramatic discoveries of chemical and morphological traces of melanin in fossil skin, hair and feathers have yielded the first evidence-based interpretations of the original integumentary colours of diverse ancient animals. Fossil melanin also has broad applications beyond colour reconstructions, however, and can inform on the taxonomic affinities, physiology and internal anatomy of fossil animals. These fossil discoveries are underpinned by an increasingly comprehensive understanding of melanin preservation – its taphonomy. Now that the field of fossil melanin research is maturing, it is timely to consider which aspects of the fossil record and evolution of melanin are relatively well understood (or not).

A holistic perspective reveals that even seemingly well-constrained elements of the current research landscape are not well supported, and many fundamentals of melanin biology and preservation are simply unknown. Here I will review progress to date in fossil melanin research, highlighting key advances and the major challenges that remain. Future research in the field must be informed by a better understanding of melanin biology and fossilization, and most critically must be more strategic, in order to address major questions in melanin evolution.