



Prof. Maria McNamara

**School of Biological, Earth and Environmental Sciences
University College Cork, Ireland**

Not just a pretty pigment: how melanin has shaped the evolution of vertebrates



Melanins are widespread pigments in vertebrates, with important roles in visual signalling, UV protection, and homeostasis. Fossil evidence of melanin and melanin-bearing organelles – melanosomes – in ancient vertebrates may illuminate the evolution of melanin and its functions, but macroevolutionary trends are poorly resolved. Here, we integrate fossil data with current understanding of melanin function, biochemistry and genetics. Mapping key genes onto phenotypic attributes of fossil vertebrates identifies potential genomic controls on melanin evolution. Taxonomic trends in the anatomical location, geometry and chemistry of vertebrate melanosomes are linked to the evolution of endothermy. These shifts in melanin biology suggest fundamental links between melanization and vertebrate ecology.