

# UCC scientists showing animals' true colours

## Discovery could change the way we see dinosaurs

■ Robert McNamara

**UCC scientists may have found the most accurate way to depict extinct animals such as dinosaurs, in what has been described as a “remarkable” discovery.**

The “world-first” finding shows a new way to reconstruct the anatomy of ancient vertebrate animals, analysing the chemistry of fossilised melanosomes from internal organs.

This could lead to the hidden features of long-extinct animals coming to light and force scientists to rethink how they reconstruct the colour of fossil birds, reptiles, and dinosaurs.

It means the colours that had been widely assumed dinosaurs were millions of year ago may be radically different to what has previously been depicted in popular culture such as movies.

Many recent studies of fossil colour have assumed fossilised granules of melanin — melanosomes — come from the skin. But new evidence shows that other tissues — such as the liver, lungs, and spleen — can also contain melanosomes, suggesting that fossil mel-

anosomes may not provide information on fossil colour.

The team studied internal tissues in modern frogs with powerful microscopes and chemical techniques to show that internal melanosomes are highly abundant.

The study was published in the journal *Proceedings of the National Academy of Sciences of*

*the United States of America* and was led by UCC's Valentina Rossi and her supervisor Dr Maria McNamara, in collaboration with an international team of chemists from the US and Japan.

Dr McNamara said: “This discovery is remarkable, in that it opens up a new

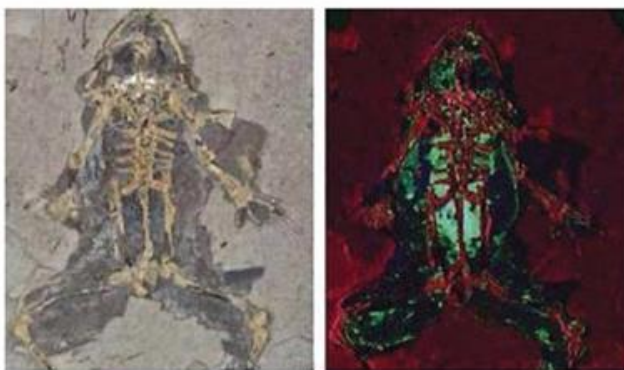
avenue for reconstructing the anatomy of ancient animals.

“In some of our fossils, we can identify skin, lungs, the liver, the gut, the heart, and even connective tissue.

“What's more, this suggests that melanin had very ancient functions in regulating metal chemistry in the body going back tens, if not hundreds, of millions of years.

“It's absolutely critical that we understand the origins of melanosomes in fossils if we want to produce accurate reconstructions of the colours of ancient animals,” Dr McNamara added.

Cutting-edge synchrotron techniques were used to analyse the chemistry of the fossil and modern melanosomes using X-rays, allowing researchers to have a look inside the anatomy of fossils and uncover hidden features.



A 10m-year-old fossil frog from Libros, Spain, and X-ray map.



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**Maria McNamara, senior lecturer, and Valentina Rossi, PhD student, with a fossil sample.**

Picture: Michael Mac Sweeney/Provision