Ancient muscle tissue extracted from 18 million year old fossil

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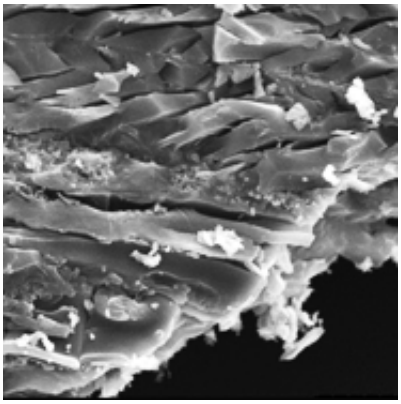

(PhysOrg.com) -- Scientists have extracted organically preserved muscle tissue from an 18 million years old salamander fossil. The discovery by researchers from University College Dublin, the UK and Spain, reported in the *Proceedings of the Royal Society B* shows that soft tissue can be preserved under a broader set of fossil conditions than previously known.

The scientists claim that their discovery is unequivocal evidence that high-fidelity organic preservation of extremely decay prone soft tissues is more common in the fossil record - the only physical record of the history of life on earth.

Previous examples of soft tissues fossilised in this way have been limited to samples extracted from amber or inside bone - a very rare set of circumstances. This latest discovery simply occurs inside the body of the salamander tucked in beside the spine.

“We came across the muscle tissue during our analysis of several hundred fossil samples taken from an ancient lake bed in Southern Spain. It was immediately identifiable by the sinewy texture visible under the microscope,” says Dr Patrick Orr from the UCD School of Geological Sciences, University College Dublin.

“After first sighting the material, we completed a series of highly detailed analyses to limit the possibility that it was simply an artefact of preservation or something unrelated to the biology of the animal.” says UCD geologist, Dr Maria McNamara, the lead author of the report.

”We noticed that there had been very little degradation since it was originally fossilised about 18 million years ago, making it the highest quality soft tissue preservation ever documented in the fossil record.”

According to the University College Dublin geologists, the muscle tissue is organically preserved in three dimensions, with circulatory vessels infilled with blood.

Using the same sampling methods and high resolution imaging that led to this find, scientists will now begin to investigate existing fossils in national museums and elsewhere across the world, for similar types of soft tissue preservation.

Although examples of soft tissue preservation are likely to remain incredibly rare, further discoveries will help scientists paint a better picture of life on earth since the beginning of evolutionary time.