High-tech scan for 320 million-year-old fossil

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A scan of the skull of Megalocephalus pachycephalus. Credit: Radiology Department, Freeman Hospital, Newcastle upon Tyne

(Phys.org) —A 320 million-year-old fossilised skull – found in Newsham, Blyth in Northumberland in the 18th century by a local grocer – has undergone state-of-the-art CT scanning by a University of Bristol researcher at Newcastle's Freeman Hospital.

Laura Porro, Marie Curie Research Fellow in Bristol's School of Earth Sciences, together with experts from the Great North Museum, scanned the 42cm-long specimen, named *Megalocephalus pachycephalus*, on the

hospital's newest machine.

Megalocephalus is a tetrapod, a group of vertebrates that includes humans and which evolved limbs with digits and crawled out of the sea and onto land. Megalocephalus is distantly related to living amphibians, such as frogs and salamanders, but had a lifestyle more similar to that of a modern crocodile.

The specimen, which dates back to the Carboniferous swamps of approximately 320 million years ago, was collected by Thomas Atthey, a local grocer known as the 'Village Palaeontologist'. It now belongs to the Natural History Society of Northumbria and is part of the Great North Museum: Hancock's natural history collection.

Dr Porro said: "As animals moved from water onto land they faced enormous challenges. They had to change the way in which they captured and ate prey, how they breathed, how they sensed the world around them, and how they moved about. All of these changes impacted the shape of their skeleton, including the skull.

"We are particularly interested in linking changes in skull shape with changes in mechanical behaviour, so we can better understand diet and jaw function in these amazing, pioneering creatures. This project is a wonderful marriage of palaeontology, biology and engineering."

Provided by University of Bristol

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