

Reunion of fossil halves splits scientists

Well-preserved primate suffers identity crisis.

Lucas Laursen

Palaeontologists have identified a new species of primate by putting together two halves of an unusually complete fossil, which were separated for decades by the vagaries of the fossil trade. One half of the fossil — which some media reports have been quick to label 'the missing link' — was even doctored by a past owner to make it look more impressive.

The relationship of the new species, *Darwinius masillae*, to other early primates has sparked an academic controversy, a press conference earlier today at the American Museum of Natural History and a television documentary to air next week.

The lack of certain key features ally the 47-million-year-old *Darwinius* with early haplorrhines, the ancestors of anthropoids such as monkeys, apes and humans, write the authors. However, in the same paragraph they write, "We do not interpret *Darwinius* as anthropoid."

This nuance was missing from an announcement last week made in advance of the study's formal publication, which declared in block capitals that the find would "change everything". The *Daily Mail* reported the fossil's existence on 10 May when it announced the documentary about the find, and *The Wall Street Journal* followed with a 15 May story highlighting the potential for the find to stoke conflict between creationists and evolutionary scientists.

Family tree

The fossil is "mainly notable for its completeness", says Christopher Beard, curator of the Carnegie Museum of Natural History in Pittsburgh, Pennsylvania, who was not involved in the study. In addition to the bones, the fossil contains an outline of the animal's soft tissue, including partial impressions of its fur and digestive tract. But the authors' interpretation of the species as a haplorrhine ancestor is less likely to meet with wide acceptance, he says. "It's very easy to allocate this fossil to the adapiform group", which includes ancestors to modern lemurs and lorises, Beard says.

Where the species belongs on the primate family tree is unlikely to be resolved between the publication of the study in *PLoS ONE*¹ today and the appearance of the television documentary next week. "That's the fundamental scientific issue that I suppose will have to be hashed out in the months ahead as more people get access to the specimen," Beard says.

"There are four different views about the relationships between the different kinds of primates," says Colin Tudge, an author of *The Link*, a book that was commissioned to accompany the documentary of the same name. Most scientists who study primate fossils from this period, the Eocene, associate adapids with modern-day lemurs, he says, which, unlike modern-day anthropoids, have wet noses and special teeth and claws used for grooming. *Darwinius* lacks the modern grooming features, a detail that the study authors say helps place it among the early haplorrhines but that Beard says could simply be because the specimen is older than present-day lemurs.

Fossil furore

The skeleton was found in sediments in Messel, Germany. Tudge says study author Jørn Hurum of the University of Oslo in Norway nicknamed it 'Ida', after his daughter. The sediments were a paratropical rain forest at the time Ida lived, but they were a failing shale mine when the site was excavated in the 1970s and 1980s. Sheets of shale containing fossils were often broken apart, report the study authors, and many such fossils appeared in private collections in subsequent years.

One half of Ida appeared in a private Wyoming museum in 1991, and an analysis by Jens Franzen of the Natural History Museum of Basel, Switzerland, revealed that the fossil contained fake parts². The second half of Ida reportedly appeared on the open market in Germany in 2007, where Hurum purchased it on behalf of the Natural History Museum of the University of Oslo.



Darwinius masillae was found in Messel, Germany.

Franzen et al.

"Basically it looks like a road kill," Tudge says — because the layers of sediment slowly compressed the fossil, which lay on its side at the bottom of an anoxic lake that may have periodically released methane, killing nearby animals and providing an excellent fossil record of life in the Eocene. The study authors suggest that Ida died young — perhaps just nine months old — and might have weighed 600 to 900 grams if she had grown to full size. The lack of a baculum bone, found in the male genitalia of many mammals, identifies her as a female.

Beard says that such well-preserved fossils are of great interest to the palaeontology community, particularly because this individual was young and because her gender is known. "This lets you study the growth and development of a primate that lived almost 50 million years ago." For instance, researchers debate when primates began to show signs of sexual dimorphism — identifiable differences between males and females. "That's commonly encountered especially among living anthropoid primates," he says, but not among lemurs. "What we need now is we need males [from Messel] in order to get at that."

"It's always good to have more indications of what the soft anatomy was like," says Beard.

"As for the who's related to who," says Tudge, "that'll go on forever."

References

1. Franzen, J. L. *et al.* *PLoS ONE* **4**, e5723; doi:10.1371/journal.pone.0005723 (2009).
2. Franzen, J.L. in *Anthropoid Origins* (eds Fleagle, J. F. & Kay, R. F.) 99-122 (Plenum, New York, 1994).

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This is obviously a complete fossil. What Evolution has to show us is fossils of transtional forms with incomplete organs. Half fish half reptile, half reptile half bird. Montrous creatures. And the transitional forms must outnumber the stable species. we must have trillions of hem if evolution is a fact. But we dont have any. We have 100 million fossils today belonging to complete stable species. we dont have even single transitional form. That scientific fact refutes all the claims of Darwinism. Scientific fact disproves the theory of evolution. Species appear abruptly, complete and perfectly formed. This fact poves us an exalted Creation by Allah.

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Posted by: **Oktar Babuna** | 20 May, 2009

It is asserted that species evolved into one another by successive minute variations, and that this happened over billions of years, then evolutionist have to show us these slow minute changes in the fossilized examples of those species. They must show us half-fish half-reptile half bird fossils. These imaginary species are called transitional forms. There can be no doubt that if there is no such fossil proof concerning changes among the fossil of stable species, then there is nothing left to discuss as regards the theory of evolution?But the number of the so called transitional forms transitional species must be much higher than that of the stable species we observe today.

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Posted by: **Oktar Babuna** | 20 May, 2009

Oktar, Do you really think you've highlighted something that thousands of scientists from around the world and over the past 150 years haven't thought of? There will never be half fish/half reptile organisms (unless evolution is NOT true!) because evolution doesn't work that way. Evolutionary theory does NOT predict that kind of organism. Evolutionary theory DOES, however, predict the existence of transitional characteristics. And transitional species DO in fact outnumber stable species. In fact, EVERY species that ever existed is a transitional species between it's ancestor and it's descendent--all you have to do is compare their anatomy to see that. Have you spent any time comparing the anatomy of the dozens of fossil whales? Ever compared the jaw/ear anatomy of fossil reptiles, mammal-like reptiles, and reptile-like mammals? Transitional characteristics abound for those interested in looking at them. You probably won't be able to get your hands on the actual specimens, but they're all recorded in great detail in the scientific literature--head on over to your local university library and take a look.

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Posted by: **Russell Pfau** | 20 May, 2009

They attempted to show the complete lemur fossil named Ida, which is an extinct species, as a transitional form. About 90 percent of the animal and plant species on earth became extinct. There are 99 species of lemurs. And 16 species of lemurs became extinct and many other species are now being determined as extinct. And many more species have been lost. All the extinct species are all perfect living forms with no sign of the so called transitional forms. Ida, is one the extinct species of lemur. It is a perfect developed lemur and it shows no sign of transitional form. It is an evidence of creation.

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Posted by: **Oktar Babuna** | 21 May, 2009

Does anyone have any links concerning the geology of the host rocks in Messel? I'm wanting to run a palaeoenvironment exercise with my class while this is in the news.

Oktar, have you ever studied the coelacanth, archaeopteryx, or the Ambulocetus? Have you ever sat and pondered in front of the floating hip bones of the modern whale in a museum? Have you ever studied the Hox alleles? Have you ever studied the Burgess shale? Have you ever smelled a smell in nature that you have also smelled coming from your own human body? Have you ever entertained the idea that your world of religious certainty might be fallacious? If you are capable of doubt, if you are capable of questioning things then perhaps we can start a very important conversation. But if you are already certain you are correct about the evidence in the fossil record then a real dialogue is impossible. If you can answer any of these questions honestly and using your own mental faculties and not some line from a book or saying passed down to you then we can talk about your supposition that "This is an evidence of creation." please consider these questions. Your fellow earthling

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Posted by: **Kris Hite** | 22 May, 200

Clive, this should get you started: <http://www.unep-wcmc.org/sites/wh/pdf/Messel%20Pit.pdf> for more: <http://scholar.google.com/scholar?hl=en&lr=&q=messel+pit+fossil+site&btnG=Search>

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Posted by: **Russell Pfau** | 22 May, 200

Oktar, I'm not sure what characteristics a 'perfect' lemur has, but all living forms have a unique comb tooth. Evolutionary theory would predict that there should be lemur-like primates without a comb tooth (a transitional form) predating those with the comb tooth. A quick review of the literature reveals that just such a transitional form existed: "The Djebelmurinae, including Djebelmur and 'Anchomomys' milleri, are considered as stem lemuriforms preceding tooth comb differentiation" (Lemuriform Origins as Viewed from the Fossil Record, *Folia Primatologica* 77:2006.). As I said, if you're looking at a fossil, you're looking at an organism that has at least some transitional characteristics--all fossil species are transitional in some form or another. Researchers predicted they would find a fish-like amphibian (transitional form) in rocks of a certain age. When they went to look they found just what evolutionary theory predicted--Tiktaalik: <http://blogs.discovermagazine.com/loom/2008/10/15/the-shoulder-bones-connected-to-the-ear-bone/> The only way to NOT see fossil species that are transitional is to NOT LOOK! Saying that things don't exist when they so obviously do exist is being disingenuous.

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Posted by: **Russell Pfau** | 22 May, 200

Thanks Russell. The first link was excellent.

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Posted by: **Clive Portman** | 23 May, 200

Mr. Babuna, If you can set aside religious dogma for an hour, point Apple's free iTunes application at iTunes Store -> iTunes U -> Cassiopeia Project - Evolution and download all 10 tracks. Very informative, complete and easy to follow.

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Posted by: **Walter Williams** | 29 May, 200

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