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How did air-breathing animals evolve?

UAF scientists may have identified ancestral trait

by [Alaska Dispatch](#) posted on October 19, 2012 01:22AM GMT

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How did air-breathing vertebrates evolve from their sea-dwelling counterparts? University of Alaska scientists think they have identified the ancestral trait that allowed for the evolution of the lung, according to a press release sent out Monday.



“To breathe air with a lung ... you need neural circuitry that is sensitive to carbon dioxide,” Michael Harris, UAF neuroscientist, said.

That neural circuitry is called a rhythm generator, and it is what allows air-breathing organisms to take in oxygen and expel carbon dioxide as waste.

So scientists went looking for a rhythm generator in non-air breathing vertebrates. They found one in the lamprey, an ancient fish with characteristics similar to the first vertebrates.

As larvae, Lampreys live in tubes dug in soft mud and breathe by pumping water through their bodies. When its tube gets clogged, a lamprey clears it with a cough-like mechanism. A rhythm generator is what controls the cough.

“We thought the lamprey ‘cough’ closely resembled air breathing in amphibians,” said Harris.

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