



News in Science

News in Science - Australian snakes reveal deadly secrets - 15/07/2004

[This is the print version of story <http://www.abc.net.au/science/news/stories/s1154556.htm>]

Australian snakes reveal deadly secrets

Judy Skatssoon
ABC Science Online

Thursday, 15 July 2004

A researcher who says snake venom developed in a single evolutionary event between 60 and 80 million years ago has revealed why Australian snakes are so deadly.

Dr Bryan Fry of the Australian Venom Research Unit at the [University of Melbourne](#) told a genetics conference this week that DNA analysis showed venom originated from one ancestral type.

This became a trigger for snakes to evolve from large, heavy python-types into faster and more agile types.

"In order for them to dump the really heavy muscle that they were using to kill their prey they need something to replace it," he said.

"The evolution of venom allowed them to become more gracile and athletic."

Fry said his research, which was presented to the [Genetics Society of Australia's annual conference](#) in Melbourne this week, also explained the extreme toxicity of Australian snakes.

He said taipans and brown snakes were close relations despite being very different.

"The taipan is 50 times more toxic than a cobra," Fry said, and the key to that toxicity lay in a combination of ecology and chance.

He said Australian snakes recruited a potent blood enzyme called factor Xa into their venom after colonising the continent about 15 to 20 million years ago.

The common ancestor of taipans and brown snakes also used a component known as factor V, which is needed for factor Xa to become completely active.

"This combination is extremely potent and this is what gives the Australian brown snakes and taipans their extreme lethality, more so than any other snake in the world," he said.



Threat or attack posture of the venomous eastern brown snake (Image: AVRU/MW Gillam)

No competition

Fry said when snakes arrived in Australia they had the entire continent open to them with no competition.

This isolation led to rapid expansion and radical innovations in the development of their venom.

Toxicity was also influenced by adapting to new forms of prey, which in turn were potentially dangerous to snakes, such as large rats.

"People have always wondered why Australian snakes are so toxic and now we know the biological reason," Fry said.

"They just hit the absolute jackpot and it makes perfect evolutionary sense that it would occur [in Australia]."

Because of the way venom evolved all snakes previously thought to be non-venomous were actually venomous, including pet snakes, Fry said.

The north American rat snake, the most popular pet snake in the world, contained the same toxins found in a death adder or cobra, he said.

But non-venomous snakes lacked the delivery system to make them lethal to humans.

Related Stories

Suburban snakes, *The National Interest* Radio National 14 Sep 2003

Venom common, predates snake evolution, *News in Science* 22 Aug 2003

First snakes may have come from the water, *News in Science* 27 Jan 2000

© 2004 Australian Broadcasting Corporation

Copyright information: <http://abc.net.au/common/copyrigh.htm>

Privacy information: <http://abc.net.au/privacy.htm>