

Keeping an eye on evolution

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University of Queensland research has found the “missing link” in the evolution of the eye.

Professor Shaun Collin, from UQ's School of Biomedical Sciences, together with colleagues from the Australian National University and the University of Pennsylvania, have identified animals that have eyes that bridge the evolutionary link between those designed to simply differentiate light from dark to those that possess a camera-like eye.

Professor Collin said his research gathered evidence from multiple branches of biology, in support of a gradual evolution of the eye, and it proposes an explicit scenario to explain how it was that our eye emerged.

“Charles Darwin wasn't able to reconcile the evolution of the eye given its complexities and diversity of eye designs,” Professor Collin said.

“So it was a major surprise for us that we have found what appears to be a clear progression from a simple eye to a complex eye, which occurred over a relatively short period (30 million years) in evolutionary history.”

Professor Collin said the researchers studied a very primitive fish, the hagfish, to discover the missing link.

“This animal diverged from our own line somewhere around 530 million years ago,” he said.

“Hagfish are simple, eel-shaped jawless and ugly animals, that inhabit the oceans at great depth, and that are renowned for the revolting ‘slime’ they exude when disturbed.

“They behave as if blind, though they have a primitive eye-like structure beneath an opaque eye-patch on either side of the head. Previously it had widely been thought that the hagfish eye had degenerated from a lamprey-like precursor.

“But our research suggests hagfish did not degenerate from lamprey-like ancestors, but are instead the remnants of an earlier sister group.”

Professor Collin's research with Professor Trevor Lamb from the Australian National University and Professor Ed Pugh from the University of Pennsylvania, was recently published in *Nature Reviews Neuroscience*.

Source: University of Queensland

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