# Animals' eyes pose big questions for evolution

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"If you ask people what animal eyes are used for, they'll say: same thing as human eyes. But that's not true. It's not true at all."

In his lab at Lund University in Sweden, Dan-Eric Nilsson is contemplating the eyes of a box jellyfish. Nilsson's eyes, of which he has two, are ice blue and forward facing. In contrast, the box jelly boasts 24 eyes, which are dark brown and grouped into four clusters called rhopalia. Nilsson shows me a model of one in his office: It looks like a golf ball that has sprouted tumors. A flexible stalk anchors it to the jellyfish.

Around 540 million years ago, the ancestors of most modern animal groups suddenly appeared on the scene, in an outburst of speciation known as the Cambrian explosion. Many of these pioneering creatures left fossils behind. Some are so well preserved that scientists have been able to use scanning electron microscope images to piece together their inner anatomy, eyes included, and reconstruct their owners' view of the world.

But these eyes were already complex, and there are no traces of their simpler precursors. The fossil record tells us nothing about how sightless animals first came to see the world. This mystery flustered Charles Darwin. "To suppose that the eye, with all its inimitable contrivances … could have been formed by natural selection, seems, I freely confess, absurd in the highest possible degree," he wrote in *Origin of Species.*

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