

History of penetrative sex reveals unexpected reversal in evolution

The history of sex may have to be rewritten thanks to a group of unsightly, long-extinct fish called placoderms. A careful study of fossils of these armour-plated creatures, which gave rise to all current vertebrates with jaws, suggests that their descendants — our ancient ancestors — switched their sexual practices from internal to external fertilization, an event previously thought to be evolutionarily improbable.

“This was totally unexpected,” says John Long, a palaeontologist at Flinders University in Adelaide, Australia, and lead author of the study, published in *Nature*. “Biologists thought that there could not be a reversion back from internal fertilization to external fertilization, but we have shown it must have happened this way.”

Go back far enough in your family tree — before placoderms — and your ancestors were rather ugly jawless fish who reproduced through external fertilization, in which sperm and eggs are expelled into the water to unite. Some of these distant relatives later gave rise to the jawless fish called lampreys that lurk in seas today and still use this method of reproduction.

The researchers had previously shown in *Nature* that one placoderm species was the [earliest animal known to have engaged in penetrative sex](#). But the latest paper shows that an even earlier group of placoderms, the antiarchs — specifically, a group of antiarchs called *Microbrachius* — also used this method of fertilization. The finding is significant because antiarchs are considered the most ‘basal’ jawed vertebrates (meaning those closest to the roots of the animal family tree), and so it suggests that all placoderms reproduced through internal fertilization using claspers.

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