

How being an older parent could be beneficial for offspring

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Caenorhabditis elegans. Credit: Wikipedia

Becoming a parent later in life could have beneficial effects for your offspring—in roundworms at least—according to new research from the University of East Anglia.

A new study published today shows how the age of parents affects offspring over several generations in roundworms (*Caenorhabditis elegans*).

It finds that the offspring of [older parents](#) developed faster into larger adults that reproduce earlier and more, while their [lifespan](#) was not affected.

Lead researcher Dr. Laura Travers, from UEA's School of Biological Sciences, said: "Reduced lifespan in the offspring of older parents has been observed in many species, including humans. Producing offspring in later life may be harmful to offspring for several reasons.

"For example, older parents may have lower quality [eggs](#) or sperm, or be less well able to take care of their offspring. On the other hand, in some species it has been shown that older parents can produce more robust offspring because they have more resources to invest and are more experienced in later life which allows them to take better care of their offspring.

"We wanted to find out more about how parental age influences reproduction and lifespan of offspring. So, we investigated how older parents affect offspring over several generations in roundworms."

The research team carried out a large-scale multi-generational experiment where they bred offspring from young and old parents over many generations.

Every second [generation](#), they measured lifespan and reproduction in the offspring from these parental lines.

They also measured several other important traits in offspring from young and old parents, including egg size, development time from egg to

adult and adult body size.

Dr. Travers said: "Unlike us, roundworms are transparent, about 1mm long and live in the soil.

"They don't have bones, a heart, or a circulatory system. But they're a classic model organism for studying ageing and reproductive processes in biology because they do share many genes and molecular pathways that control development with humans.

"They are also really useful because they have a short lifespan of about three weeks, so we can study them over several generations in a short amount of time. Doing a similar study in humans would take more than a century!

"What we found is that older parents lay larger eggs that develop more quickly into larger adults, reproduce earlier and more, while their lifespan is not affected. We think that older [parents](#) are able to invest more nutrients into each egg, which results in larger offspring that reach sexual maturity faster and produce more offspring over their lifetime.

"It has often been suggested that old parental age is detrimental for offspring lifespan, health and fitness. But our results show that old parental age has strong [beneficial effects](#) for offspring development and lifetime reproductive success.

"This is really important because it contradicts the established view that old parental age invariably reduces offspring lifespan and fitness."

This research was led by the University of East Anglia in collaboration with researchers at Uppsala University in Sweden. It was funded by the European Research Council (ERC).

"Beneficial cumulative effects of old parental age on [offspring](#) fitness" is published in the journal *Proceedings of the Royal Society B* on Wednesday, October 13, 2021.

More information: Beneficial cumulative effects of old parental age on offspring fitness, *Proceedings of the Royal Society B*, rspb.royalsocietypublishing.org/doi/10.1098/rspb.2021.1843

Provided by University of East Anglia

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