

Post-menopausal whales may help solve the mystery of female longevity

March 24 2024, by F.D. Flam, Bloomberg Opinion



Credit: Unsplash/CC0 Public Domain

Although life can seem to go whizzing by, humans are actually weirdly long-lived animals. A new study helps explain why: menopause.

The fact that female humans lose fertility while still remaining vigorous and strong is extremely rare—most other animals keep reproducing until they are near death. Only five other [animal species](#) are known to undergo menopause and experience a long post-fertile phase—all of them toothed whales.

Now scientists found that the females of those whale species [live on average 40 years longer](#) than females of species that remain fertile. They published their [findings](#) in the journal in *Nature*.

The most likely explanation is that menopause evolved not as a loss of fertility but a gain of 40 some-odd bonus years. The same may apply to humans as well, since we live about 40 years longer than chimpanzees. Last year, scientists reported observations of a post-menopausal phase in a single population of chimpanzees, but the vast majority of female chimps still reproduce through their lives.

The paper also helps solve a longstanding disagreement among biologists—which is what [evolutionary advantage](#) would have allowed menopause to evolve.

The researchers combined data on 23 species of toothed whales, five of which showed a post-menopausal phase. An analysis of their behavior paralleled what anthropologists are learning about the natural role of elders in human groups—they serve as leaders and as helpful grandparents.

Old people are not some sort of aberrant byproduct of modern medicine—it's a myth that most humans used to die at 35—and have always been an integral part of human society. In [hunter-gatherer societies](#), some people live into their 70s and are valued for their experience and wisdom.

But there's a crucial difference between us and orcas, the most studied other menopausal species. For them, females live to be 60, 70 or even 80, while males almost all die at 40. That vast disparity may have evolved because male orcas do nothing to provide for or care for their offspring while females provide care two generations down. That's enough to tip the evolutionary balance to favor longevity only in females.

Intriguingly, the whale species that undergo menopause, which also include beluga whales and narwhals, are not all closely related. By looking at the [evolutionary tree](#), scientists conclude that menopause evolved independently several times.

Michael Gurven, an anthropologist at the University of California Santa Barbara who studies human life history, said he was impressed by this new paper because it helps put humans into a bigger context in the natural world. We've learned a great deal from studying our primate relatives, but in terms of our longevity, we may have more in common with whales.

Whales in the wild are hard to study—and since they're long-lived it can take years to understand their life histories. Captive orcas don't live nearly as long and can't form their normal social structures. "They aren't suited to be in captivity" said Darren Croft, an expert on animal behavior at the University of Exeter and co-author on the paper.

He and his colleagues collected all the data they could from long-term observations as well as data gleaned from mass whale strandings. In those cases, they could measure the ages of whales by counting rings in their teeth, and their reproductive history by studying their ovaries.

To understand the evolutionary benefits of menopause, it helps to consider how the concept of the "selfish gene" can explain very unselfish behavior. Many species, including humans, will help their genes survive

by providing care for their offspring and other relatives. Sometimes it's better for your genes to help your grandkids than to have more babies yourself—such as in social groups where an older mom's offspring would be competing with her daughters' offspring for limited resources.

In the whale species that experience [menopause](#), all the offspring stay with the mother for life. That means that the females become increasingly related to their pod-mates as they age, so helping the pod is also helping her genes to survive.

Some of the postmenopausal females become leaders, said Croft. Among orcas, the older females use their experience to help the group locate migrating salmon, which are abundant only if you know how to be in the right place at the right time.

Previous studies showed orca moms continue to provide care for their sons through adulthood, he said. Males who lose their mothers early have more scars from fights, suggesting the mothers help mediate conflicts or help their sons avoid it.

Humans are unusual in that our children are helpless for so long. "It takes a long time to just be able to pull up your own pants and tie your own shoes," said Gurven, and humans can have three or even four dependent kids at once. Human parents, he said, have to take help wherever we can get it—from friends, siblings, uncles, aunts, grandmothers and grandfathers. Elders not only provide food and babysitting, but knowledge and perspective.

In this era of youth culture and anxiety about the age of our leaders, it's good to remember that longevity evolved in humans for a reason. Maybe instead of fretting over getting old, we could just be thankful for our 40 bonus years.

More information: Samuel Ellis et al, The evolution of menopause in toothed whales, *Nature* (2024). [DOI: 10.1038/s41586-024-07159-9](https://doi.org/10.1038/s41586-024-07159-9)

2024 Bloomberg L.P. Distributed by Tribune Content Agency, LLC.

Citation: Post-menopausal whales may help solve the mystery of female longevity (2024, March 24) retrieved 27 April 2024 from <https://phys.org/news/2024-03-menopausal-whales-mystery-female-longevity.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.