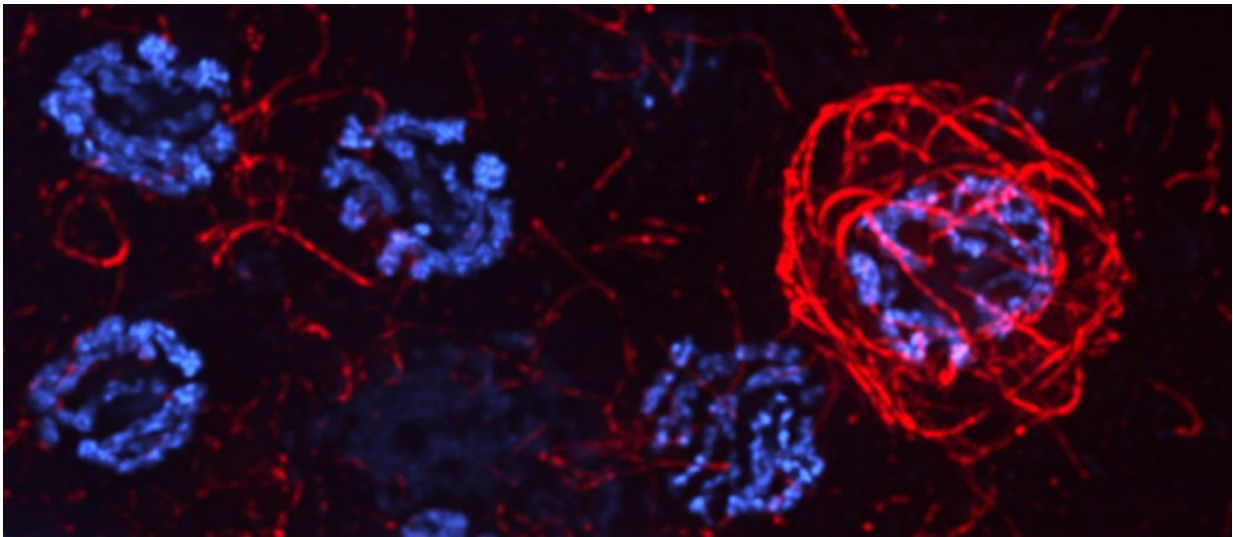


Why does making new egg cells require so much cell death?

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Microtubules (red) in an apoptotic germ cell (far right) and four non-apoptotic germ cells. Credit: James R. Priess and colleagues

A highly detailed study of how the roundworm *C. elegans* forms oocytes suggests that the egg-making process leads to the formation and subsequent destruction of cells with an extra nucleus, but that some cellular materials are recycled into new eggs. James Priess of the Fred Hutchinson Cancer Research Center and colleagues, report these findings in a new study published July 19th, 2018 in *PLOS Genetics*.

When animals create [egg cells](#), a large percentage of the potential eggs

get culled through a controlled demolition process called apoptosis. Studies have shown that many of these sacrificed cells could go on to form healthy embryos, and researchers don't yet understand why animals target so many cells for destruction. In the current study, researchers used live imaging of [microscopic cells](#) to observe the formation of eggs inside the gonad of the model roundworm, *C. elegans*. They saw that when oocytes don't make the cut, they begin apoptosis by dumping their mitochondria, which act as the powerhouses of cell, into a shared pool of cellular material. The mitochondria then become recycled into new oocytes. The process also involves the formation of oocytes with two nuclei, but these always undergo apoptosis.

The study details the steps of cell death associated with egg formation and shows that the apoptosis machinery effectively recognizes two populations of cells, those with and without an extra nucleus. The researchers also observed early stages of apoptosis that had not yet been identified. These findings will aid future studies of egg development, as well as studies of Alzheimer's and Huntington's disease, which both cause certain types of damage to brain [cells](#) that are similar to [apoptosis](#).

More information: Raiders SA, Eastwood MD, Bacher M, Priess JR (2018) Binucleate germ cells in *Caenorhabditis elegans* are removed by physiological apoptosis. *PLoS Genet* 14(7): e1007417. doi.org/10.1371/journal.pgen.1007417

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