

WORLD OF REPRODUCTIVE BIOLOGY

The Ovary's Event Coordinator

A single regulatory pathway coordinates the number of germ cells and somatic cells in the ovary, according to a study in *Drosophila* [1]. The Hippo pathway regulates the number of stem cell niches and the proliferation of germ cells within those niches, while assuring the proper balance of somatic and germ cells.

Hippo is known to regulate organ size and stem cell proliferation in numerous tissues. Tissue-specific knock-outs of this kinase, for instance, result in oversized organs. But little is known about how the different cell types within an organ communicate with each other to assure that their proliferation is coordinated and proportionate. In the new study, Didem Sarikaya and Cassandra Extavour show that Hippo can act as such a coordinator—regulating proliferation of different cell types using distinct mediators, and mediating communication between cell types.

There are two major somatic cell types in the *Drosophila* ovary. The terminal filament cells determine the number of germ cell niches, and the intermingled cells are thought to help determine how many germ cells populate each niche. The researchers over- or under-expressed various Hippo family members, in either somatic or germ cells, to understand how cell number is established and coordinated.

They found that the canonical Hippo pathway cell-autonomously regulated the number of terminal filament cells, thereby controlling the number of germ cell niches. The Hippo pathway also cell-autonomously regulated the number of intermingled cells via a distinct set of mediators. In germ cells, proliferation was cell-autonomously regulated not by Hippo but by Yorkie, a transcriptional co-activator that in other tissues operates downstream of Hippo.

Hippo was also found to coordinate communication between germ cells and intermingled cells to generate roughly proportional numbers of these cell types.

Future studies should help unlock how the Hippo pathway works with other regulators that affect cell proliferation in the ovary, such as insulin. Meanwhile, the new study neatly lays out a blueprint for how the number of germ cells is established in the ovary in coordination with supporting somatic cells.

—Charlotte Schubert

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