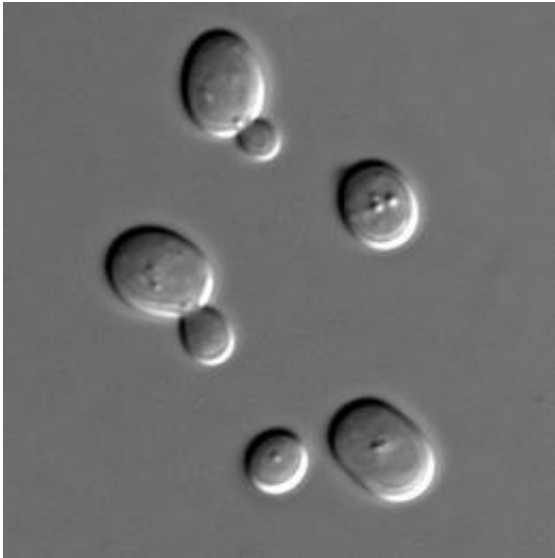


Yeast study yields insights into cell-division cycle

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Sacharomyces cerevisiae cells in DIC microscopy. Credit: Wikipedia.

Studies using yeast genetics have provided new, fundamental insights into the cell-division cycle, researchers at the University of Michigan Life Sciences Institute report.

Findings published Aug. 31 in the journal *eLife* show that an organelle known as the vacuole, which performs a variety of cellular housekeeping functions, plays an essential role in the initiation of the [cell-division](#) cycle.

The cell-division cycle, also known simply as the [cell cycle](#), is the series of events inside a cell that leads to its division.

"The [yeast](#) vacuole has a counterpart in the [mammalian cell](#) known as the lysosome," said study senior author Lois Weisman, a faculty member at the LSI, where her lab is located, and a professor of cell and developmental biology at the U-M Medical School.

"So this research raises the possibility that if the lysosome is similarly required for mammalian cell division, then the discovery of the molecular interconnection between the lysosome and nucleus may provide new insights into treatment of cancer, where cell division becomes a runaway train."

Because yeast grow quickly and have well-mapped genetics, it is an ideal model for opening new avenues of research in more complex systems, including humans, Weisman said.

Weisman and first author Yui Jin, a research fellow at the LSI, looked at how yeast daughter cells are still able to create a new vacuole when vacuole inheritance from the mother is blocked.

Importantly, the research also showed that the signal from a functional vacuole is required before a new cycle of cell division can be initiated.

"These findings suggest that this may be a 'checkpoint mechanism' that prevents cell-cycle progression if essential organelles aren't present," Jin said.

More information: The vacuole/lysosome is required for cell-cycle progression, dx.doi.org/10.7554/eLife.08160

Provided by University of Michigan

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