

# Old flies can become young moms

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Credit: Jon Sullivan

Female flies can turn back the biological clock and extend their lifespan at the same time, University of Southern California biologists report.

Their study, published online this month in *Molecular Genetics and Genomics*, casts doubt on the old notion of a tradeoff between reproduction and longevity.

Popular wisdom and scientific opinion have held that "the more you reproduce, the shorter you're going to live," said senior author John Tower, associate professor of biological sciences at USC College.

While that may be true in some cases, Tower added, recent research has hinted at exceptions to the rule.

The latest study is a striking example.

Tower and graduate student Yishi Li screened 8,000 genes in search of ones that could make older flies lay more eggs. They found two.

When older female flies were altered to over-express either of these two genes, they lived 5 to 30 percent longer and produced more offspring.

Tower speculated that the genes are boosting activity of stem cells in the flies' reproductive system. Stem cell activity declines with age, and reproduction in older flies could not happen without a return of stem cells to peak form.

"This would appear to be stimulating the stem cells to divide more in the old fly and therefore produce more offspring," Tower said.

Next, Tower and Li plan to see if stem cells in other parts of the fly's body also returned to their youthful prime.

If they did, over-expression of the two genes would seem to act as a fountain of youth for the entire organism.

The implications for mammals are not clear, Tower said, though one of the genes has a human equivalent that helps cells to grow and blood vessels to form.

But Tower's method at least provides a proof of concept.

"It both makes females lay more eggs and live longer, so it really argues against any kind of obligatory tradeoff between reproduction and lifespan," Tower said.

Source: University of Southern California

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