



Who Wants to Live Forever?

Biologists have now created baker's yeast capable of living to the age of 800 in yeast years without apparent side effects. The basic but important discovery, achieved through a combination of dietary and genetic changes, brings science closer to controlling the survival and health of the unit of all living systems: the cell. "We're setting the foundation for reprogramming healthy life," said one scientist.

The research group put baker's yeast on a calorie-restricted diet and knocked out two genes (RAS2 and SCH9) that promote aging in yeast. "We got a 10-fold life span extension that is, I think, the longest one that has ever been achieved in any organism," said the scientist. A few years ago, the same research group reported a five-fold life span extension. Normal yeast cells live about a week.

Baker's yeast is one of the most studied and best understood organisms at the molecular and genetic levels. Remarkably, yeast has led to the discovery of some of the most important genes and pathways regulating aging and disease in mice and other mammals. Another recent study reported that a mouse with a gene mutation (first identified by the same group) lived 30 percent longer than normal and was also protected against heart and bone diseases without apparent side effects.

Scientists plan to further investigate life span extensions in mice, and also study a human

population in Ecuador with mutations analogous to those described in yeast. Finding drugs to extend the human life span without side effects will not be easy, he said. "Maybe it will do nothing, but having nothing else, I think it's certainly a good thing to try," said the scientist.

In the study, scientists identified a major overlap between the genes previously implicated in life span regulation for yeast and mammals and those involved in life span extension under calorie restriction. Calorie restriction, which in practice resembles controlled starvation, has been shown to reduce disease and extend life span in species from yeast to mice. Scientists believe that a nutrient shortage kicks organisms into a maintenance mode, enabling them to re-direct energy from growth and reproduction into anti-aging systems until the time they can feed and breed again.



Will we one day have a drug that can reverse aging?

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