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# Scientists Examine Protein's Possible Connection to Longevity

By Jessica Berman

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Scientists have known for some time that a severely reduced food intake makes some animals live longer. Now, researchers are getting closer to understanding why. They say the finding might also lead to a similar understanding in people, and a treatment for diseases like diabetes.

Scientists have homed in on a protein in the body, SIRT-2, as one that seems to affect longevity. Researchers have managed to increase life spans by up to 40 percent in fruit flies, yeast and worms by stimulating the over-production of SIRT-2. Conversely, reductions in the protein have shortened the organisms' life spans.

Scientists think they may be close to understanding how SIRT-2 works and, potentially, how it might be harnessed to help humans live longer.

SIRT-2 stimulates the liver to produce glucose, a type of sugar, which the body uses as fuel. Glucose also comes from the food we eat, but excess glucose from food causes more wear and tear on cells than the natural glucose produced by liver. The more wear and tear the faster the body ages.

Recently, researchers at Johns Hopkins University in Maryland reported they triggered glucose production in the livers of mice using SIRT-2. They did it by cutting back on the amount the food they ate. The investigators think if they could manipulate the process in mice, they could use SIRT-2 to slow aging in humans, as well.

Cell biologist and study author Pere Puigserver says people age because their bodies are constantly being bombarded by excess glucose from food.

"Increase of calorie intake is not only affecting aging per se, but is also increasing fat and glucose that damage other tissues by creating oxidative stress due to hypoglycemia or high fat content," he explained. "And that consequently decreases life span."

The research by Johns Hopkins scientists looked at how SIRT-2 might be used to treat diabetes more effectively. They think their work could lead to an effective treatment for the metabolic disorder.

David Sinclair, a researcher at Harvard Medical School in Massachusetts, conducts studies of aging in yeast. Professor Sinclair is excited about recent discoveries involving SIRT-2.

"I don't want to claim that we have the cure for aging by any means," he said. "But it's really clear that modern medicine, modern molecular biology, has finally grasped a potential way to manipulate life span, and have a dramatic impact on health care."

Research on SIRT-2 regulation in mice appears in the journal *Nature*.



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