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Could red wine help us keep fit and thin at 120?

By Roger Highfield, Science Editor

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The day when people can eat their favourite foods, stay thin and live to be 120 without getting diabetes or cancer may be nearer than many realise, according to a study published today.

Researchers at the Massachusetts Institute of Technology, near Boston, believe they have found the key to a long, lean and healthy life in a single protein - Sirt1 - that controls whether we store fat or shed it.

Intriguingly, the protein is activated by a compound found in red wine, called resveratrol, linked by earlier research with extended lifespan in yeast and tiny worms.

The earlier work linked the activation of proteins called sirtuins to the well-documented life-extending effects of fasting - in people, taking the uncomfortable step of reducing intake to half the normal daily calories could extend lifespan by up to 50 per cent while cutting the risk of diseases of old age.

But just how a low-calorie intake achieves that feat - and thus how to achieve the same end without suffering endless hunger pangs, lethargy and a low sex drive - has been a mystery.

"For the first time, this study gives us a glimpse of how calorie restriction works at the molecular level. And it will ultimately lead to health benefits in people," said Prof Leonard Guarente of MIT.

Today, in the journal *Nature*, scientists describe how one of the sirtuins, Sirt1, senses short-term famine and allows fat cells to release fat.

"The ability of fat cells to sense famine [or short-term hunger] and release the fat is regulated by this gene," Prof Guarente said. "We like to think this applies to people as well as mice, but we don't know for sure."

Prof Guarente speculates that fat cells also tell the body how fast to age.

Ageing and obesity could be curbed by mimicking the molecular effect of famine without actual dieting. "If we could make a drug that would bind to Sirt1 and fool the body into thinking that it needed to release that fat, then maybe people could get the benefits of calorie restriction without the side-effects," he said.