The Secrets of Longevity

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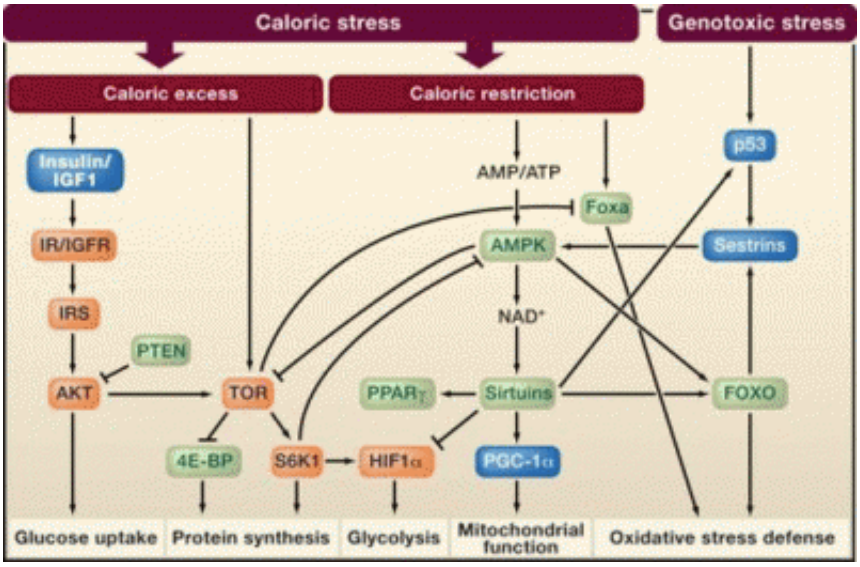

(PhysOrg.com) -- A complex network of genes, in combination with a low-calorie diet and exercise, appears to be a key factor in a long life expectancy. Professor Johan Auwerx's team has published an article on this topic in *Cell* magazine.

Why do some of us live longer than others? The answer may well lie in a combination of several factors, including a network of genes and certain lifestyle habits. Professor Johan Auwerx and researcher Riekelt Houtkooper, of the EPFL's Nestlé Chair in Energy Metabolism, in collaboration with Rob Williams of the University of Tennessee, have just published an essay on this topic in *Cell* magazine.

The researchers have discovered that long life involves a network of some 750 genes. A third of these play an important role, particularly in the ability of cells to generate energy from food. Experiments have shown that in mice, for example, the presence or absence of these genes can change life expectancy from 350 to 900 days.

“Looking at a whole group of genes and their interactions to understand longevity is an original approach,” Johan Auwerx explains, “because until now researchers were looking more at individual genes to find the answer.”

However, simply having this network of genes is not sufficient to guarantee a long life. The genes work in combination with certain lifestyle habits—eating a low-calorie diet and exercising—thus confirming popular wisdom. “It has been shown that, in order to live longer, we should meet only 80% of our food needs,” says Professor Auwerx.

The next step will be to gain a better understanding of how the interactions between these genes and lifestyle habits work, and to find chemical compounds that can reproduce them. Some substances, such as Rapamycin, have already been shown to affect longevity. When this immunosuppressant—used especially in organ transplantation—was administered to mice, it made them live longer even if they were already old.

“The long-term goal of this research is not only to allow people to live to a ripe old age, but also to get them there in good health,” notes Riekelt Houtkooper.

It will be recalled that Professor Auwerx and his team have also made significant discoveries concerning lipid metabolism and the pathogenesis of complex metabolic disorders such as obesity, type 2 diabetes (insulin

resistance) and arterial hypertension.

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