



Gene clue to long life diet

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Could cutting down be the key?

By BBC News Online's Ivan Noble

Scientists are a step closer to understanding how cutting down food intake could make animals and people live longer.

Researchers at the University of California in Riverside, US, identified key genes involved in the ageing process and showed how short and long-term food deprivation could reverse changes in the way some of these genes operated.

The study was carried out using "gene chips" or microarrays - a technology that allows scientists to examine the way thousands of genes operate at once.

The team looked at how the livers of mice change with age and discovered 46 genes, which functioned differently as the mice got older.

Diet link

They found that cutting down long-term calorie intake to almost half the normal level reversed some of these changes.

And by way of encouragement to those who might hope to use diet to control ageing in later life, they found that most of these reversals would still take place after only a short period of relative starvation.

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UCR researchers

"Caloric restriction (CR) is the only intervention shown to extend lifespan in mammals," write Shelley Cao, Stephen Spindler and colleagues in the journal Proceedings of the National Academy of Sciences.

"It is also the most effective means known of reducing cancer incidence and increasing the mean age of onset of age-related diseases and tumours," they write.

Short-term effect

The fact that short-term CR - reduced food intake - has some of the effects of long-term deprivation could be significant.

"These results raise the possibility that relatively brief treatments with drugs or nutraceuticals and other procedures can be used to search for CR mimetics," the researchers write.

Microarray analysis is a powerful technique allowing scientists to analyse how active several thousands of genes are at a specific point during a biological process like ageing or tumour formation.

More traditional methods allow researchers to look at only a small number of genes, so they need to have a fairly strong hunch about which ones are interesting.

Screening process

But microarrays mean they can screen huge numbers of genes and then narrow down the search later.

Once it is clear which genes are behaving differently, the hard work of sorting out cause from effect and coincidence begins.

When culprit genes have been identified, attempts can be made to target them with drugs or other therapies.

The Californian research is one of a number of studies using the microarrays to unravel the process of ageing.