

## Scientists find genetic link to ageing

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Scientists have found specific genetic variants which may explain why some people age earlier than others and say their findings have important implications for understanding cancer and age-related diseases.

Dutch and British researchers analysed more than 500,000 genetic variations from human gene maps and found that people with particular variants near a gene called TERC were likely to be biologically older by three to four years.

"What our study suggests is that some people are genetically programmed to age at a faster rate. The effect was quite considerable in those with the variant," says Professor Tim Spector from [King's College London](http://www.kcl.ac.uk/) ( <http://www.kcl.ac.uk/> ), who co-led the study.

In a study published in the *Nature Genetics* ( <http://www.nature.com/ng> ) journal, the scientists explained that there are two forms of ageing - chronological ageing, counted in years, and biological ageing, in which the cells of some people are older, or younger, than their chronological age.

"There is accumulating evidence that the risk of age-associated diseases including heart disease and some types of cancers are more closely related to biological rather than chronological age," says Professor Nilesh Samani, a cardiology professor at Britain's [Leicester University](http://www2.le.ac.uk/) ( <http://www2.le.ac.uk/> ), who worked on the study.

### Protective caps

The researchers studied structures called telomeres - protective caps on the ends of chromosomes whose length is associated with cell ageing.

Fraying or shortening of telomeres can lead to premature ageing and cancer, a finding that helped Australian researcher Professor Elizabeth Blackburn and her colleagues win the 2009 Nobel Prize for Medicine for discovering the enzyme telomerase, which helps prevent such fraying.

Scientists have known for some time that the TERC gene, which regulates the length of telomeres, plays a key role in ageing and cancer, but Spector says the importance of this study was that it identified particular variants of it in humans that suggest earlier ageing is more likely.

"We have known about telomeres for a long time, but finding a common variant in humans that changes them is an important step," he says.

People carrying a particular variant of the gene had shorter telomeres, and appeared biologically older, the scientists say.

"Given the association of shorter telomeres with age-associated diseases, the finding raises the question whether individuals carrying the variant are at greater



People carrying a particular variant of the gene had shorter telomeres, making them biologically older (Source: *iStockphoto*)

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risk of developing such diseases," says Samani.

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