Discovery of 'Methuselah gene' unlocks secret of long life

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Scientists have pinpointed the Methuselah gene - a stretch of DNA that confers healthy old age on men and women - raising the prospect that researchers may one day be able to create drugs that extend human life.

'There is no reason why we cannot do this,' said Kari Stefansson, chief executive of DeCode Genetics, an Icelandic biotechnology company. 'We know the location of this gene. Soon we will study its exact DNA sequence and work out how it works in the body. You can then think of making drugs that could replicate its action.'

The discovery was made by DeCode researchers who used Iceland's unique birth and death records, which stretch back to Viking times, to trace individuals, many of them still living, who had lived exceptionally long lives - to ages over 90 or more.

'We wondered if these people were related,' said Stefansson. 'Fortunately that is easy to find out in Iceland. We are obsessed with genealogical records. So we compared a group of about 1,200 long-lived people with a similar group who had lived to an average age - and found that, yes, the former were far more closely related to each other than the control group.

'Of course, their longevity could have been produced by them sharing a common environment, but that seemed unlikely given that Icelanders all have similar lifestyles.'

So DeCode researchers began to study Icelanders' blood for genetic markers that might help pinpoint factors that predisposed some of them to live to their nineties and beyond. This proved relatively simple: the company already had a bank of blood samples from 60,000 islanders, which it had used to identify genes that predispose people to schizophrenia, asthma, strokes and osteoporosis.

'Our tight heritage and records are ideal for this sort of work,' says Stefansson. 'We have the same genes as everyone else on the planet, but because we have a

small, tight population of only 270,000, it is much easier to pinpoint those of us that carry genes that have interesting functions.'

A genetic disposition to long life could work in two ways, the researchers calculated. It was possible the Methuselah group simply came from families that did not inherit genes that predisposed them to illnesses. Alternatively, group members were inheriting a single gene that protected them against the rigors of middle and old age.

'We simply did not know, until we studied our markers, and to our surprise found that old age behaved as if it was being conferred by a simple, single gene,' said Stefansson. 'Somehow this gene is making a protein in the body that is helping people live to ripe old ages.'

But the gene will not make you immortal, Stefansson stressed. If you also inherit other bad genes that make people ill in young adulthood, you won't reach an age when the Methuselah gene will add years to your life.