



THE UNIVERSITY *of* EDINBURGH

## *News Release*

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### **Insight into our 50-plus lifespan still evolving, genetic study shows**

It is an evolutionary riddle that has long puzzled scientists ... now the quest to find out why we live beyond 50 is being helped by a new genetic study.

Researchers seeking to explain why people – unlike some species – can reach older age with no obvious evolutionary benefit say the mystery is more complex than they thought.

The team of evolutionary biologists was surprised to find that men's ability to father children later in life is not the reason why they survive to old age.

The research separately found no evolutionary explanation as to why women live well beyond menopause, despite being no longer able to bear children.

Researchers sought to understand how our genes underpin our ability to survive into old age. Many species in nature do not live beyond reproductive age. It is believed that this is because infertile individuals can no longer further their population.

Scientists from the University of Edinburgh studied detailed family records of people born in Utah from 1860-1899. This society, recently descended from pioneers to the area, had no birth control and so their data reflects natural fertility.

Researchers used the records to investigate three possible explanations for longevity in men and women. They examined whether genes that aid survival or reproduction in early life might also bring benefits in later life, or whether genes linked to elderly fertility in men might increase lifespan in women.

Finally, they examined whether having grandparents on hand to care for children might validate living into old age, and they developed the first mathematical genetic model to describe this idea.

Scientists were surprised to find no genetic evidence that men evolve to live longer by virtue of being able to father children late in life. Instead, they found that genes which are beneficial to both early and late life are most likely the reason why men live past reproductive age.

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They found no indication that genes that promote women's survival past the age of 50 are favoured by evolution. Further studies, with additional population records, may help to shed light on the mystery of why women live to old age, they add.

The study, published in *Nature Ecology and Evolution*, was supported by the Natural Environment Research Council.

Dr Jacob Moorad, of the University of Edinburgh's School of Biological Sciences, said: "Why we live beyond 50 has long puzzled scientists – there are no obvious evolutionary benefits to genes that promote living in infertile individuals. We were surprised to find that fertility has little genetic link to male longevity, and puzzled that we are no closer to explaining why women live far beyond menopause."

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