

# Supercentenarian may have genes that protect against bad effects of aging

[nextbigfuture.com/2017/11/supercentenarian-may-have-genes-that-protect-against-bad-effects-of-aging.html](http://nextbigfuture.com/2017/11/supercentenarian-may-have-genes-that-protect-against-bad-effects-of-aging.html)

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James Clement has collected blood, skin or saliva from supercentenarians in 14 states and seven countries over a six-year period.

Lifestyle and luck, it seems, still factor heavily into why people live into their 90s and 100s.

However, supercentenarians are more uniformly healthy than centenarians in their final months and years. Rather than having won dozens of hereditary coin tosses with DNA variations that are less bad, scientists suggest, supercentenarians may possess genetic code that actively protects them from aging.

[There was four genetic studies of extreme longevity that contributed 2,070 individuals who survived to the oldest one percentile of survival for the 1900 U.S. birth year cohort.](#) Researchers conducted various analyses to discover longevity-associated variants (LAV) and characterized those LAVs that differentiate survival to extreme age at death (eSAVs) from those LAVs that become more frequent in centenarians because of mortality selection (eg, survival to younger years). The analyses identified new rare variants in chromosomes 4 and 7 associated with extreme survival and with reduced risk for cardiovascular disease and Alzheimer's disease. The results confirm the importance of studying truly rare survival to discover those combinations of common and rare variants associated with extreme longevity and longer health span.

## Ten Oldest Verified Women

Rank	Name	Birth Date	Death Date	Age	Residence
1	Jeanne Calment	21 February 1875	4 August 1997	122 years, 164 days	France
2	Sarah Knauss	24 September 1880	30 December 1999	119 years, 97 days	United States
3	Lucy Hannah	16 July 1875	21 March 1993	117 years, 248 days	United States
4	Marie-Louise Meilleur	29 August 1880	16 April 1998	117 years, 230 days	Canada
5	Emma Morano	29 November 1899	15 April 2017	117 years, 137 days	Italy
6	Misao Okawa	5 March 1898	1 April 2015	117 years, 27 days	Japan

In 2014, a study was released from the whole genome sequences of 17 supercentenarians.

Supercentenarians (110 years or older) are the world's oldest people. Seventy four are alive worldwide, with twenty two in the United States. We performed whole-genome sequencing on 17 supercentenarians to explore the genetic basis underlying extreme human longevity. We found no significant evidence of enrichment for a single rare protein-altering variant or for a gene harboring different rare protein altering variants in supercentenarian compared to control genomes. We followed up on the gene most enriched for rare protein-altering variants in our cohort of supercentenarians, TSHZ3, by sequencing it in a second cohort of 99 long-lived individuals but did not find a significant enrichment. The genome of one supercentenarian had a pathogenic mutation in DSC2, known to predispose to arrhythmogenic right ventricular cardiomyopathy, which is recommended to be reported to this individual as an incidental finding according to a recent position statement by the American College of Medical Genetics and Genomics. Even with this pathogenic mutation, the proband lived to over 110 years. The entire list of rare protein-altering variants and DNA sequence of all 17 supercentenarian genomes is available as a resource to assist the discovery of the genetic basis of extreme longevity in future studies.

SOURCES – NY Times, PLOS One, Betterhumans