

Study shows humans still evolving

4 October 2011, by Deborah Braconnier

(PhysOrg.com) -- A new study published in the *Proceedings of the National Academy of Sciences* provides evidence of human evolution and rapid genetic changes suggesting that, contrary to modern claims, technological and cultural advancements have not halted the evolutionary process in humans.

The new study, led by geneticist Emmanuel Milot from the University of Quebec, looked at a group of women from the remote island town of Ile aux Coudres in Quebec, Canada. The team looked at the birth, death and marriage records kept by the Catholic Church in the town. They were specifically looking at the data from women who married between 1799 and 1940.

What they discovered was that within that 140 year time frame, the age that the women conceived their first child dropped from 26 to 22. Looking at cultural, social and economic differences in the women, the researchers were able to determine that 30 to 50 percent of this variation in age was explained solely by genetic variations.

This island town was settled by 30 families between 1720 and 1773 and researchers believe that a genetic change occurred in order to provide more time for women to produce a larger number of children in order to grow the population. While the researchers did not look at which specific genes may have been altered over time, they believe possible reasons could have been a change in the age in which the women hit puberty and heritable [personality traits](#) which pushed them to wanting to start families earlier. These changes were a response to natural selection and the need for a higher number of children in order for gene lines to survive into the future.

This is not the first study to show that human evolution is still happening. Recent studies include the Tibetans [evolutionary change](#) to adapt to the lower [oxygen levels](#) found in their [high altitude](#) environment. This change has only occurred throughout the last few hundred generations. Other

studies show that humans have only evolved the ability to tolerate lactose in their systems over the last 5,000 or so years.

While many scientists have trended toward the idea that changes in populations are typically due to environmental or social influences in today's societies, this study shows that while these factors do play a role, [genetic changes](#) and evolution are also still very much a part.

More information: Evidence for evolution in response to natural selection in a contemporary human population, *PNAS*, Published online before print October 3, 2011, [doi: 10.1073/pnas.1104210108](#)

Abstract

It is often claimed that modern humans have stopped evolving because cultural and technological advancements have annihilated natural selection. In contrast, recent studies show that selection can be strong in contemporary populations. However, detecting a response to selection is particularly challenging; previous evidence from wild animals has been criticized for both applying anticonservative statistical tests and failing to consider random genetic drift. Here we study life-history variation in an insular preindustrial French-Canadian population and apply a recently proposed conservative approach to testing microevolutionary responses to selection. As reported for other such societies, natural selection favored an earlier age at first reproduction (AFR) among women. AFR was also highly heritable and genetically correlated to fitness, predicting a microevolutionary change toward earlier reproduction. In agreement with this prediction, AFR declined from about 26 - 22 y over a 140-y period. Crucially, we uncovered a substantial change in the breeding values for this trait, indicating that the change in AFR largely occurred at the genetic level. Moreover, the genetic trend was higher than expected under the effect of random genetic drift alone. Our results show that microevolution can be detectable over relatively few

generations in humans and underscore the need for studies of human demography and reproductive ecology to consider the role of evolutionary processes.

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