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## Science News

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### In the Race of Life, Better an Adaptable Tortoise Than a Fit Hare

*ScienceDaily* (Mar. 23, 2011) — When it comes to survival of the fittest, it's sometimes better to be an adaptable tortoise than a fitness-oriented hare, a Michigan State University evolutionary biologist says.

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investigator of BEACON, MSU's National Science Foundation-funded Science and Technology Center. "The eventual winners were able to overcome their short-term disadvantage over the course of several evolutionary moves by producing more beneficial mutations."

Lenski is recognized as a leading evolutionary experimentalist, recording evolutionary change over 52,000 generations of bacteria grown during nearly 25 years. He and his team recently revived a frozen population of *E. coli* and compared the fitness and ultimate fates of four clones representing two genetically distinct lineages. One lineage eventually took over the population even though it had significantly lower competitive fitness than the other lineage that later went extinct.

By replaying evolution over and over with the clones, the researchers showed that the eventual winners likely prevailed because they had greater potential for further adaptation.

"In essence, the eventual loser lineage seems to have made a mutational move that gave it a short-term fitness advantage but closed off certain routes for later improvement," Lenski said. "And the dead-end strategy allowed the eventual winners to catch up and eventually surpass the eventual losers."

So, yes, sometimes the tortoise really does beat the hare.

Lenski's collaborators include co-author Robert Woods, an MSU graduate who worked in Lenski's laboratory and is now a physician scientist at the University of Michigan; Jeffrey Barrick, another Lenski lab researcher now on the faculty at the University of Texas; Tim Cooper from the University of Houston; MSU undergraduate student Mark Kauth; and University of Houston student Utpala Shrestha.

While Darwin's theory of natural selection has been confirmed by a great deal of other research, it has never before been observed directly for so many generations and in such detail as Lenski's long-term experiment has afforded. Lenski's research is supported by the National Science Foundation, the Defense Advanced Research Projects Agency and by MSU AgBioResearch.

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*Redfoot tortoise (Geochelonia carbonaria) and a Dutch rabbit. When it comes to survival of the fittest, it's sometimes better to be an adaptable tortoise than a fitness-oriented hare, an evolutionary biologist says. (Credit: iStockphoto/Mark Tooker)*

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