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If you thought the incubation time of prion infections made for tediously long experiments, save a thought for Teotónio and Rose. As they report in the 23 November [Nature](#), their experiment in fly evolution has been running for 20 years, and now the verdict is in: evolution can be, but is not always reversible (*Nature* 2000, **408**:463-466). Over 100 or more generations, Teotónio and Rose selected flies for survival under starvation conditions, or for reproduction near the beginning, middle or end of their lifespan. Then the different fly populations were returned to their ancestral conditions for 50 generations. Some of the assayed phenotypes returned completely to the values seen at the start of the experiment, but in other cases there was either no significant change, or an initial rapid reversion followed by stalling of evolution, without full convergence to ancestral values. Thus reverse evolution is neither inevitable nor impossible; it is contingent. The failure of full reversal did not appear to be caused by a lack of genetic diversity, as hybrid populations showed similar evolutionary patterns. Instead, the pressure for evolutionary reversal appears to vary depending on the evolved characteristics of each derived population.

References

1. *Nature*, [<http://www.nature.com/nature/>]