

Antagonistic Pleiotropy has been the dominant theory for evolution of aging for 60 years since it was first proposed. Genetics and phenomenology of aging in nature seem to support the existence of antagonistic pleiotropy, but details do not fit comfortably with the theory's predictions. Indeed, examples of pleiotropy have been observed, but there are also many examples of mutations that lead to longer lifespan without apparent cost. This poses a dilemma for the logic of the theory, which depends critically on the assumption that pleiotropy has imposed an inescapable precondition on evolution. Another interpretation is possible for the pleiotropy observed in nature. Natural selection may actually favor pleiotropy as an evolved adaptation. This is because the combination of high fertility and long lifespan is a temptation for individuals, but a danger for the health of populations. Once an appropriate mix of fertility and longevity has been identified by natural selection, pleiotropy can help to assure that it is not lost. The population is free to shift from (high fertility/short lifespan) to (lower fertility/longer lifespan) as varying environmental conditions demand, without risking population overshoot and collapse. I describe herein experiments with an individual-based computer simulation in which pleiotropy evolves handily as a group-selected adaptation within a broad swath of parameter space.