

## Is macroevolution an accumulation of a lot of microevolution?

*Many people think that there is only one type of change and that the accumulation of a lot of small changes eventually leads to a big change. In a peer-approved paper, William DeJong and Hans Degens show that there are two types of change that are fundamentally different from each other and that the accumulation of a lot of microevolution cannot produce macroevolution. As a result, the abundant evidence for microevolution cannot be used as evidence for macroevolution.*

### Change in parameters or in dimensions

In their research on micro- and macroevolution<sup>1</sup>, DeJong and Degens use a systems-theoretical, genotype-based approach. Every system, including a biological system (for example: a cell, an organ, an organism or an ecosystem), can be described by a state vector, which represents the value over time of a number of characteristic properties of the system. The state vector of a system can change in two fundamentally different ways: in its parameters or in its dimensions. DeJong and Degens define the first way in which the state vector of a biological system can change as first-order evolution and the second way as second-order evolution. They show that both types of evolution are caused by completely different molecular processes. First-order evolution is driven by: production, recombination and selection of gene variants; gene regulation; and epigenetic modification. Second-order evolution is driven by the accumulation of unrepaired, code-expanding mutations. Because the underlying molecular processes are completely different, first-order evolution cannot produce second-order evolution. The authors illustrate this with a simulation of the evolutionary dynamics of a population of digital amoebas. Finally, they show that microevolution and macroevolution are largely the same as first-order evolution and second-order evolution, respectively; and that first-order evolution and second-order evolution do not form a continuum, but are two fundamentally different processes of change. This means that the concept of 'evolution' can be specified more precisely by indicating which type of evolution is meant.

### Invalid argumentation for 2nd-order evolution

In discussions about creation and evolution, examples of first-order evolution (e.g. the change in the shape of the beaks of Darwin's finches) are often used as evidence for second-order evolution (e.g. the change of bacteria into humans). The research by DeJong and Degens makes it clear that this argumentation is not valid. The confident claim of Darwinists and Naturalists that science has shown long ago that bacteria have transformed into humans after many billions of years of accumulation of mutations, is incorrect. Moreover, it is important to know that the mechanism that is supposed to bring about second-order evolution (the accumulation of unrepaired code-expanding mutations) is counteracted during the production of sex cells. The simulation of second-order evolution of a population of digital amoebas by DeJong and Degens illustrates how difficult it is for random change processes to achieve an accumulation of code-expanding mutations that provides a selective advantage.

### Creation Belief

Christians believe that living nature was created by God. Living nature continuously adapts to changing circumstances in first-order evolution. But first-order evolution cannot bring about second-order evolution. Everyone may believe that as yet unknown processes in organic molecules can bring about second-order evolution step by step, but that is an irrational belief. Believing that a creative force from outside our physical reality brought about living nature (including the mechanisms for

first-order evolution and including the mechanisms that counteract code-expanding mutations) is a rational belief.

## **References**

DeJong, W., & Degens, H. (2024). Micro-and Macroeolution: A Continuum or Two Distinct Types of Change? *Qeios*.