

Peer Review

Review of: "Aging as Cybernetic Attractor Decay: Beyond the Stochastic-Programmed Dichotomy"

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Analyzing the mechanisms and causes of aging from the perspective of information processes, using cybernetic concepts, provides an overview of the problem under study. This approach is to be welcomed, especially given the limited number of works devoted to this topic. The section "Aging as a computational phenomenon: a cybernetic computational model" should include specific examples of calculations or graphs illustrating how "computational decay follows predictable trajectories determined by network topology and energy constraints." In my opinion, the author should take into account that the reasons for computational drift presented by him are not entirely convincing. The result is a mixture of initial regulatory imperfection on the one hand and stochastic causes of regulatory disruption on the other. Perhaps the author's reasoning and analysis would benefit from the point of view expressed by us in a number of works [Salnikov, L., and Baramiya, M. G. (2020) The ratio of the genome two Functional parts activity as the prime cause of aging, *Front. Aging*, 1, doi: 10.3389/fragi.2020.608076. Salnikov L. (2022). Aging is a Side Effect of the Ontogenesis Program of Multicellular Organisms. *Biochemistry (Mosc)*. Dec;87(12):1498-1503. doi: 10.1134/S0006297922120070. PMID: 36717443. <https://www.frontiersin.org/journals/aging/articles/10.3389/fragi.2026.1735269/full>], which presents our view on the main causes and mechanisms of aging. By highlighting the relationship between cellular infrastructure and its functional load in the body, we conclude that the main cause of aging is not software errors, but the lack of feedback between the activity of infrastructure and specialized genes in the body's cells. This points to the promise of new approaches to rejuvenation based on restarting the epigenetic program of cells, aimed at restoring the balance of genomic activity that underlies aging.

Declarations

Potential competing interests: No potential competing interests to declare.