Review of: "Quantum Physics and the Origins of Genetic Change: A Tutorial Approach"

Shokhan M. Al-Barzinji[1]

1 University of Anbar, Iraq

Potential competing interests: No potential competing interests to declare.

The paper provides a thought-provoking exploration of quantum mechanics as a potential driver of genetic mutations. While it succeeds in presenting a novel perspective, the lack of empirical evidence and quantitative analysis limits its impact. By integrating experimental data and providing a more rigorous treatment of quantum phenomena, the paper could make a stronger contribution to the growing field of quantum biology. The paper addresses the intersection of quantum physics and biology, focusing on the role of quantum mechanics in genetic mutations, specifically point mutations. It integrates historical perspectives on heredity with contemporary insights, concluding with a quantum explanation of mutations through Heisenberg's uncertainty principle and quantum tunneling.

Suggestions for Improvement

1. Include studies that demonstrate quantum effects in biological systems, such as experiments showing tautomerization or quantum tunneling in nucleotide bases.
2. Provide a deeper explanation of quantum phenomena, possibly including equations or models to explain their relevance to DNA mutations.
3. Condense the historical overview to allow more focus on the quantum mechanics and biological aspects of the paper.
4. Explore how quantum effects might interact with other known mechanisms of mutation, such as oxidative stress or chemical mutagens.
5. Quantify the rates or probabilities of quantum tunneling and tautomerization under physiological conditions to provide a clearer sense of their biological relevance.

Furthermore, the paper would benefit from the inclusion of more updated references to strengthen its relevance and reliability. Integrating recent studies and findings related to the topic will demonstrate the author's awareness of current developments in the field and ensure that the paper remains up-to-date.

DOI: https://doi.org/10.1109/NeuroNT62606.2024.10585548

These enhancements will contribute to the overall quality and impact of the paper, enhancing its value to the academic community and readers interested in the subject matter.