Review of: "Quantum Evolution and Genetic Mutations"

Jonghoon Kang[1]

1 Valdosta State University

Potential competing interests: No potential competing interests to declare.

The author wrote a very interesting article. In the article, the author examined the implications of quantum tunneling in genetic mutations. I am going to briefly discuss the strengths and weaknesses of the article.

Strengths:

1. In the introduction, the author introduced some ancient views on life and genetics. The references cited for this purpose are rarely seen in typical biology papers. Therefore, those references may provide readers with a historical and philosophical background on the matter. Specifically, I found references [3], [4], and [8] worthy of reading.
2. I found that the author raised several good questions. For example, “how do characteristics from one generation pass on to a new one, and how do new characteristics appear in new generations?”, and “How have changes in a species happened and been saved?”

Weakness:

1. The statement “Sometimes DNA is called a map” needs citations.
2. R-CO-OH was denoted as the ester linkage. Please check that the notation is correct.
3. In the statement, “The ladder part of the molecule, composed of sugar-phosphate molecules and their neighbor nucleotides, holds covalent interactions, and there is a hydrogen connection between the phosphates that form the curled DNA strand,” I am not sure what you mean by a hydrogen connection. The same confusion occurred with “hydrogen link.”
4. In the sentence, “In a DNA molecule, adenine is always connected to thymine (A-T), while cytosine is connected to guanine (C-G),” connected should be replaced with paired.
5. “A combination of this approach with natural selection is also known as Neo-Darwinism, whereby a mutation is caused by a change in the genetics of the parent cell.” In the sentence, genetics should be replaced with genetic materials.
6. The DNA polymerase enzyme joins a base to T and a C base to G along the DNA fiber and then checks the entire process.
7. The sentence “The position of the proton (H) is not exactly in the middle of the two bases, but it is closer to one of them.” should be revised as “The position of the proton (H) is not necessarily exactly in the middle of the two bases, but it can be closer to one of them.”
8. The following statements are not clear. “However, in 2011, a research group at Duke University tried to clear that mistake of coupled bases in DNA with protons in tautomeric form. Actually, it can stay on in the DNA polymerase

places. Therefore, it is possible to suddenly change to a new DNA that exhibits mutation."

9. This statement needs citations. "Few classical solutions state that the reason goes back to the molecular vibrations caused by external factors."
10. This statement cited Stryer's Biochemistry textbook, but no page number of the citation is provided. "Quantum tunnelling can pave the way for the protons to overcome hydrogen bonds to create tautomeric forms."
11. Finally, the author needs to update the paper and references since there have been several findings on the implications of quantum tunneling in genetic mutations.