

## Review Article

# Genetic Redundancy Eliminates the Dream of Beneficial Mutations

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### Abstract

Redundancy is the duplication of a system's components or functions in order to increase its reliability. This system is provided with a pack of duplications of the components for saving backups in case of sudden malfunctioning. A satellite, for instance, is provided with basic duplications before its launch such as inertial navigation system which depends on 5 duplicate computers on the satellite and 3 inertial measurement congruent units.

This is the same in living organisms, where genes duplicate in a way that protects them from any sudden mutations or failures. Redundancy is a biological Safety system that destroys the effect of mutations. Redundant mechanisms' duty is to achieve the aims of growth in complete perfection. This mechanism is necessary; as there is no system with such complexity as that of living organisms unless it will need the redundancy in its different phases of decoding.

This phenomenon imposes a giant challenge to the conception of beneficial mutations. In order to get a beneficial mutation with evident effect, this mutation should have the same semblance and technique in all the redundant copies which produce this effect in a genome. The more redundant the genes are, the more we need synchronizing effective mutations on the progressive change, and the more difficult it is to believe in the ability of this change to get a wholesome model. This article sheds light on the decisive difficulties which face the hope of inducing any beneficial mutations.

**Keywords:** Encode; Original genes; Paralogy; Parallel Computing; Saturn Rocket Model; Skylab; Spacelab; Tenascin-C

### Redundancy's Function in Genes

In space shuttles and high-tech equipment, there exist redundant copies for sensitive navigation systems, which lead to quickly bypassing any emergency and avoiding any problem due to the existence of intact substitutes to which no harm was done due to emergency [1]. For instance,

**Skylab:** (a space station launched by NASA) was managed by two giant Computers, both of which had the same tasks because they were congruous copies, so that if one failed the other took the same tasks.

**Saturn Rocket Model** used Triple Modular Redundant (TMR) as model of computer used 3 congruous copies of directing programs.

**Spacelab** the Shuttle used five identical redundant IBM 32-bit General Purpose Computers (GPCs), model AP-101, constituting a type of embedded system [2] and many other examples, but this is a different context.

**Parallel Computing:** improves the efficiency of high-technology systems to the extent of perfect performance. Synchronization of efficiency in redundant circuits is the suitable way to ensure the reliability of electronic devices.

It's been demonstrated through the transfer of engineering to biological devices which exist at the organisms since the 1990s, that there are completely redundant components which protect the organisms from the random mutations, whereas these biotic components exist in the genome in many copies as a strategy to fulfil the developmental target and the protection of the organism. If any of these copies fail, the others perform the same function with the same efficiency. Decoding takes place within the other

copy to produce the same proteins produced by that copy, avoiding any failures that may have damaged the previous copies [3]. It's amazing that this information is encoded in two different ways, this staggering feature manufactures the same results in ways other than the congruous copies. If the original gene loses its function, the redundant gene takes over and keeps the cell alive [4].

### Examples of Original Genes Which Lost Their Functions While the Cell Was Still Alive

- The gene that encode Tenascin-C was lost from mice while the protein was still alive with the same productive efficiency [5].
- Zeste (so biotic gene Encodes proteins that transmit zones of DNA) was lost from the Drosophila, after the transmission it remained without changes in its function [6].

This phenomenon is not a partial one in living systems; rather, it is the basis, and genes redundancy is one of the principles of DNA's strand, whereas you could see no gene without being redundant elsewhere [7].

Homologous sequences are paralogous if created by a duplication event within the genome. For gene duplication events, if a gene of an organism is duplicated to occupy two different positions in the same genome, then the two copies are paralogous. Paralogous sequences provide useful and dramatic functions [8,9].

### Redundancy Eliminates the Dream of Beneficial Mutations

If you change one of the redirecting programs into the Spacecraft, irrespective of your thinking is it right or not, the other copies will recorrect any damages which may happen because there are always other congruous copies can receive easily the original data with perfect reliability. So, if you decided to modulate the data for better performance in one of the redirecting programs, you should carry out this change discreetly in every copy at the same time and place. Any other attempt will cause a damage in the program in general if your changes take place in different areas of the identical copies, or else your changes will be useless if they were not applied on every copy.

Therefore, trying to manufacture synthetic mutations in the Drosophila leads to induce only a strange flaw in its shape or function because mutations weren't in the same postures in the same characters [10]. The most important condition of what was mention is that a mutation must produce a benefit. And that a mutation must occur at the same time, at the same place. Thus, if you want to arrange the conditions for producing a beneficial mutation, you would require the following:

- An alteration in the form or the arrangement of letters.
- An alteration of letters that produces a beneficial mutation.
- The alteration must occur in the exact place.
- The alteration must occur at the same time.

If one of these conditions was not met, the alteration shall have no place, nor shall it have meaning. Hence, redundancy destroys the dream of beneficial mutations.

### Redundancy is a Duplication in Every Developmental Level

Redundancy is a system that exists in every growth level. Redundancy is not confined to single (individual) genes or to a certain level of growth for the living being; rather, it is a phenomenon that exists in all levels, and what is fascinating as was mentioned earlier in this article is that redundancy does not produce with the existence of identical gene copies only, but also produces via other alternatives, as it produces a function through identical copies as well as alternatives which produce the same function, whereas the growth function, whatever its type, a target for the cell for which it directs all its units to achieve, and this occurs by direct means though identical genes, or indirect ones which we know nothing much about [11].

In an independent study of the reproductive system for the filarial nematode *Brugiamalayi*, in which the traditional hybridization method was used, it was indeed observed that the reproductive system arises via different genetic methods and many available alternatives that exist on the DNA strap [12].

And this poses a stranger and more complicated issue, as this is not just identical redundancy for producing a functional system; rather, this functional system began producing alternatives other than identical copies, and in order to have a beneficial mutation in this context, you are in need to know the secrets of available alternatives in order to produce that system which you will be adjusting (altering). And after knowing all available alternatives, you must apply the four conditions mentioned above (requirements).

### What is the Implication of Identical and Non-Identical Redundancy in Living Beings?

This is not a philosophical question, and although it has many philosophical implications, it remains a geometrical (engineering) question in the first place. Achieving growth goal requires a practical error rate that is close to zero, such a high level of identical and non-identical redundancy for all functional systems in a living being is not something additional, but rather something essential and necessary; as we do not have a system which contains such a degree of complexity that is similar to the complexity of living beings.

This strange and fascinating phenomenon poses a fundamental challenge to the idea of the possibility of the evolution of a living being as a consequence of consecutive small mutation. If we were to assume that a beneficial mutation occurred in one of the genes of a living being, then all of the give conditions mentioned about must be met, in addition to conducting parallel changes in all copies, the identical and non-identical ones, and the more complex redundancy becomes, the more the ability to conduct geometrical

tasks becomes hard to believe.

If we were to assume that we have a catalogue for making an electric light bulb, and this catalogue contains the basic components for making the electric light: the filament, a lead wire to conduct electricity to the filament, inert gas which protects the filament and does not react with it or with electricity, glass which prevents air from entering and inert gas from escaping or else the filament would burn out, and the bulb base which connects the bulb with the socket to make a path for the electric current.

This catalogue contains more than one copy in its pages, whereas if one copy is ruined, there would be another copy in which the same method of manufacturing exists. If we assume the appearance of additional information in one of the copies that could transform this electric light to an amplified laser light, the benefit of this magical additional information will not appear because there are other copies that will ruin and stop its function, hence, there must be parallel changes in all copies in order to make the laser light.

### The Sixth Condition (Additional)

It is important to note that beneficial mutations need a sixth additional condition which was not mentioned, which is: fine-tuning the remaining organs of the living being to accept and accommodate for the compensated changes in the organ. For instance, in order to change the eye of a wild animal such as the bear in case it evolves into a whale - the origin of species -, we will not just need changes in the system which exists in the whale's eyes to adapt to the new water environment only! Rather, we are in need of fundamental changes in the visual perception center in the brain, the composition of the Cerebellum and the eyelid, the endurance of the Sclera, and the eye's ability to see in a water environment that is full of impurities. We would also be in need of other required adaptations that are necessary for providing visual perception under water. And this puts Darwin's theory before a real problem.

"I can see no difficulty in a race of bears being rendered, by natural selection, more and more aquatic in their structure and habits, with larger and larger mouths, till a creature was produced as monstrous as a whale" [13].

### Discussion

#### What's the Possibility of Applying Duplication Mutation Simultaneously in More Than One Redundant Model?

If you believe in the beneficial mutations whereas it's statistically impossible to take place in all redundancies at the same time and format, then hold still that mutation is the source of all biological systems, it has nothing to do with empirical observational science. If you put a possibility for mutational growth in one of the Nucleotide pairs simultaneously in all the redundancies with the symbolization to that Nucleotide pair with (N), the number of Redundancies with (R), to apply it simultaneously by counting the generation's age and the possibility of mutation with (t) there is a

need to (N) exponent (S) exponent (T) of the chances.

Assuming that the average of encryption by the simplest functional systems is 100 thousands of base-Nitrogen pairs, the lowest number of Redundancies in no time for the generation regardless about the average of mutation, the ratio won't be enough for the whole universe because the universe's age is 10 exponent 17 sec. Whereas the very least possibility for mutation simultaneously in all duplications transcend 100.000 exponent 2 exponent 2 sec, that equalizes 10 exponent 20 sec that equalizes billions of the universe's age.

### Conclusion

Scientific and statistical mathematical objection over the mutations system destroys every hope and every dream of being able to generate a beneficial functional system, and in case we wanted a new living being to appear, then we would be taking about entertaining stories for children, and not about observational, probabilistic, or empirical science.

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