

Peer Review

Review of: "Do We Understand Heredity and Evolution? No"

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Dr Baverstock commented on an important and very disputable topic, "Do we understand heredity and evolution". Indeed, the old classical conception that the genotype determines the phenotype is transformed nowadays by several pieces of evidence: (a) an absence of phenotype changes in many gene knock-out experiments, (b) the acquisition of many phenotypic alterations during individual lives that are not simply explained by the classical genotype alterations, (c) sequencing of human genomes showed that some of the structural variants of the genes did not result in loss of function. On the other hand, the conception of evolution as an adaptive process is doubtful, as some mutated alleles have a high incidence.

I suggest addressing a few points:

1. I believe that the conception of epigenetics could be better described in that review. We have a new complexity in phenotype-genotype relationships. While it is still very disputable, the epigenetic marks are inheritable by several generations from the ancestors.
2. Another factor could be considered: the evaluation in humans. The spatial separation of species has become more and more challenging. The COVID situation showed that humans and other species will interact more as a growing population of humans makes them attractive as a host organism. At this point, the evolution in humans may have new features as they develop new features, such as coexistence.
3. The inheritance in sexually divided organisms does not follow classical rules. These species exchange genetic information between parental alleles. The meiotic drive favours certain alleles. From this point of view, heritability is somewhat less predictable in sexually divided organisms.
4. The LTEE experiment was done on a simple organism. Will it proceed similarly in more complex organisms? Could thermodynamics and cellular dynamics explain the processes of evolution in multicellular organisms?

5. What if the LTEE experiment were done in conditions where the environment would change? Could the author comment on that?

Declarations

Potential competing interests: No potential competing interests to declare.