Summary

Genetic researchers are finding increasing evidence that there are multiple overlapping codes in our DNA. Try to imagine getting an email and finding that it has three totally different messages – one evident when read as usual, one evident when read in reverse, and one evident when reading every-other letter. That would be an impressive email! Now try to imagine a huge instruction manual which is overflowing with these types of overlapping messages! That is the nature of the human genome. Wow!

It should be obvious that mutations (random letter changes), even given natural selection, can never create this very sophisticated type of compressed information. Scientists have now analyzed how overlapping codes affect the likelihood of getting even a single mutation which is entirely beneficial (benefiting one message while not damaging any overlapping message). Since mutations are typographical errors in a cell's DNA (the instruction manual of life), the vast majority of mutations will be disruptive and will jumble information. New mathematical analyses shows that overlapping codes profoundly reduce the likelihood of getting a truly beneficial mutation.[1]

The bottom line is that overlapping codes cannot arise by any natural process – they must be very carefully designed. Moreover, once a genome is established with overlapping codes, while it can quickly degenerate, it cannot evolve upward (except for rare single-letter changes that enable a superficial adaptation to a new environment). All this new evidence upholds Scripture - we are fearfully and wonderfully made, but due to the Fall we are a dying people in a dying world. It is for this reason we need a Savior!

Divine Design: Overlapping Genetic Codes

How often do beneficial mutations in DNA occur? Recent scientific discoveries suggest that mutations that contribute to improvement in an organism are extremely rare – far too rare for evolutionary advancement. This is supported by numerous published reports that show that messages encoded within DNA actually overlap, causing many "letters" or nucleotides to contribute to more than one message.[1]

In 2005, geneticist Dr. Philipp Kapranov et al. launched a study that uncovered remarkable intricacy within human DNA.[2] The team's analysis showed that a single "letter" (called a nucleotide) can contribute to multiple "messages" or codes in the DNA. Israeli biophysicist Dr. Edward Trifonov published work in 2008 declaring the same.[3] These researchers discovered that genetic codes can

physically overlap on the DNA molecule, so that the "letters" contribute to more than one code. Over 50% of the genome is transcribed in both directions, and a typical human gene produces about seven overlapping transcripts – so the majority of DNA letters are part of more than one message.[4]

A simple example of overlapping messages is an acronym that stores multiple levels of information. In the acronym Roy G. Biv, the letters compose the proper name of a person to act as a memory trigger, but also stand for a list of the colors found in the rainbow (red, orange, yellow, etc). One string of letters makes up two messages. The difference with DNA is that a single letter can simultaneously contribute to many more than two different messages! This is an incredible example of data compression at the highest level, and computer programmers have not even begun to contemplate use of overlapping code.

The mathematical implications of this concept are astounding. Using a computer simulation, researchers tested the crossword illustration where three words intersected at one letter. They tested millions of words and millions of letter changes. They experimentally determined the likelihood that a randomly exchanged letter would result in any valid English words in all three directions.[5] The observed rate was only one in a billion! Imagine what the chances would look like when considering more than just three overlapping genetic codes (which is not uncommon).

These results are strong evidence that even if a single nucleotide affects only a few overlapping codes, it is essentially impossible that a random "typo" will benefit one code without disrupting the others. This fundamental problem has been overlooked until now. The Lord is providing for His people strong new evidences that show that we are clearly designed, and that He is our perfect Designer.

As has been discussed, DNA demonstrates complexity that defies human understanding. Most DNA is optimized, meaning the DNA is already written in the most efficient way to accomplish its purpose. Given an omnipotent Creator, observations of optimized biological systems make perfect sense. These robust genetic systems are even capable of surviving the steady accumulation of harmful mutations—the result of a sin cursed world. The Psalmist even writes, "I will praise You, for I am fearfully and wonderfully made; marvelous are Your works, and that my soul knows very well." (Psalm 139:14) God's creative wisdom is truly unfathomable – wisdom we can trust regardless of what man may say!

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FURTHER READING

New Technology Reveals More Genome Complexity

DNA: Marvelous Messengers or Mostly Mess?

DNA's Sweet Secret: Its Sculptor!

REFERENCES

1. Dunham, I. 2012. An integrated encyclopedia of DNA elements in the human genome. *Nature* 489, 7414:57-74

2. Kapranov, P. et al. 2005. Examples of complex architecture of the human transcriptome revealed by RACE and high-density tiling arrays. *Genome Research* 15:987-997.

3. Trifonov, E. 2008. "Codes of Biosequences." The Codes of Life: the Rules of Macroevolution. Ed. Marcello Barbieri. Netherlands: *Springer*, pp. 3-14.

4. Birney, E. et al. 2007. Encode Project Consortium: Identification and analysis of functional elements in 1% of the human genome by the ENCODE pilot project. *Nature* 447:799–816.

5. Montanez, G. et al. 2013. "Multiple Overlapping Genetic Codes Profoundly Reduce the Probability of Beneficial Mutation." *Biological Information—New Perspectives*. World Scientific, pp. 139-167.

6. Sanford, J. 2008. Genetic Entropy & the Mystery of the Human Genome. Waterloo, NY: *FMS Publications*, pp. 131-133. Print.