

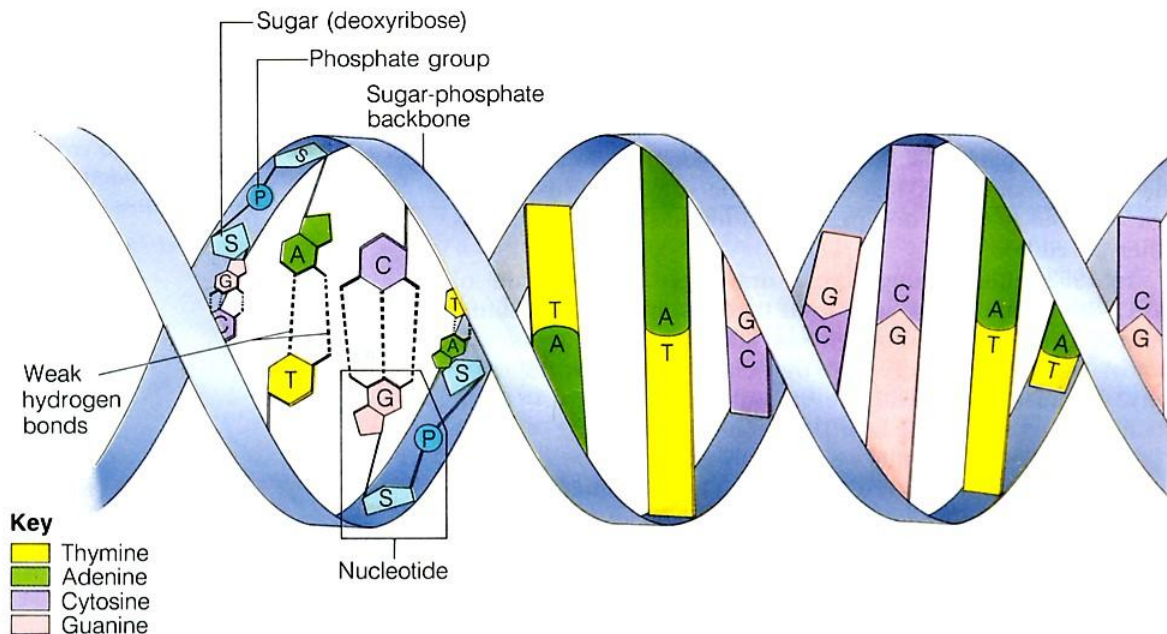
## Unexpected complexity of simplest life

Dr Michael Jarvis

Scientific discoveries are continuing to reveal more about the complexities of life processes and living creatures. Every discovery reveals its complexity in greater detail. In 1953 Francis Crick and James Watson published a paper detailing the structure of DNA. This is the complex chemical code of life that resides in every cell of living organisms. Variations in DNA structure determine what every living organism looks like and its life processes.

Since that discovery there has been a massive volume of research into how DNA manages to regulate the thousands of intricate processes that take place simultaneously within the cells of living creatures.

Below is a diagrammatic representation of one small section of the double helix DNA strand. In this article I am not going into detailed explanations of DNA construction. We simply need to understand that **this amazing structure is the blueprint for life**. Various combinations of the so-called base pairs, Thymine, Adenine, Cytosine and Guanine, can be likened to 'letters' of instruction.



**These strands of DNA are very long.** For instance, in each human body cell the tightly coiled DNA measures about 3 meters if we unravel all the twists and loops and stretch it out in a line. Just imagine 3 meters coiled up so tightly that it can fit into a body cell so small that we can only see the cell with a microscope!

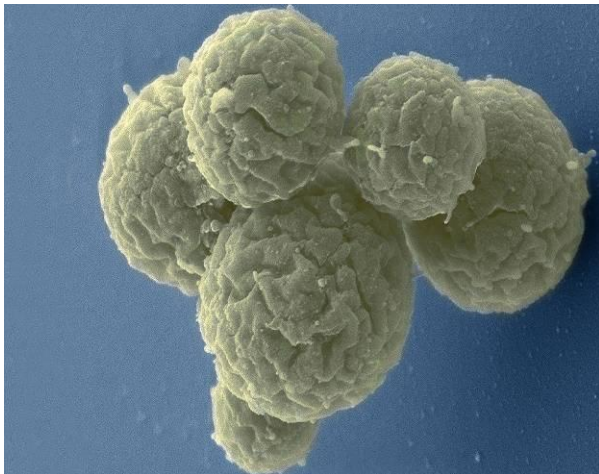
On the DNA strand various sequences of the base pair 'letters' that produce specific proteins are called '**genes**'.

The number of genes in the DNA of various organisms varies. Mankind have about 21,000 genes in each body cell. Since each gene is made up from many base pair 'letters', the total DNA 'letters' in each human body cell is about 3.3 thousand million. In other words, **3.3 billion instruction letters in our genetic code**.

2.

**The total genes in any organism is called its Genome.** The first analysis of the human genome was achieved by a large team in 2001.

In 2016 various scientific journals announced another breakthrough in our understanding of how life processes work. One article by Coghlan (2016) talks about this breakthrough and describes how Craig Venter and his research team took a simple bacterium and then removed one gene at a time, so as to determine which genes were essential for the life of this organism.



The picture shows a much enlarged simplest life produced by the Craig Venter team. The research established that the smallest number of genes capable of allowing the cell to 'live' was 473.

The research team were also surprised to find that **about a third of the essential genes had no known function in the cell.** Nevertheless, if they tried to remove any of these genes with unknown functions then the cells died. Clearly they were also essential for life.

Early studies of DNA revealed a large amount of DNA in cells of living organisms that had no known function and some researchers concluded that at least some of this DNA did not actually have any function. Some labelled it as 'Junk DNA'.

However, further research has **steadily reduced this category of 'junk DNA'** because more and more of it has been found to have functions vital for the cell's life processes. This latest research has shown that one third of the DNA needed in the simplest possible cell, that previously might have been classified by some researchers as 'junk DNA' is in fact vital for the life of this simple cell.

**It is in fact possible that further research will show that the cells of living creatures do not contain any 'Junk DNA'.** All of it may possibly serve some important functions, such as enabling organisms to adapt to changing conditions in the places where they live and other functions yet to be discovered.

When we look at the amazing complexity of even the simplest living cell, it can stimulate us to ask the question: How did the DNA code of life and the complexity of even the simplest ones come to exist on Earth? Science has at present no answer.

**For those of us who accept the evidence for God as Creator of our universe, these studies help to enlarge our sense of awe.** Many scientists who believe in God look upon their research as 'thinking God's creative thoughts after him'.

3.

For those of us who accept the very strong evidence for our universe and earth being billions of years old, it is logical to conclude that the Creator has used long processes to bring about his pre-ordained plans for the universe, for our earth, for life on earth and for a humanity who have the potential for relationship with their Creator.

The Bible tells us NOTHING that exists has come about other than through the planning and creative wisdom of God (John 1:3, Colossians 1:16-17 and others). For that reason scientists who believe in God and who study the intricate mechanisms involved in life processes, realise that for the Creator to ensure that he is in total control of outcomes he must be intimately aware of every event and process, right down the ages of time. In other words he must be vastly greater than any of us can imagine!

**My conclusion is that God is a very 'hands on' Creator.** He appears to have achieved the wonders of creation through intimate involvement in creative processes over vast time-spans. As Jesus said, our God is intimately aware of every minute detail: *Your heavenly father is aware of even one sparrow that falls to the ground and he knows how many hairs are on your head* (Bible: Matthew 10: 29)

Scientific discoveries in no way remove the need for a designer, initiator and guider of creation. However, in order to reconcile acceptance of our universe being billions of years old and containing long evolutionary processes, with the biblical revelation that all things were created by God, **we need to understand that God is far greater than many people think.**

God is great enough that his plans can be brought into existence, even if he has chosen to use laws and processes stretched over vast time-scales. **If we ever discover scientifically how the first life came into existence then we can be certain that the Creator was intimately involved in every step and process.** This not only applies to the first life but also to every one of his pre-ordained creative outcomes. God plans, initiates and guides all things so as to ensure that his plans are realised. What an amazing HANDS ON Creator!

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