

oven, shall He not much more clothe you, O ye of little faith?" (Mt. 6:28-30).

These words show that the Lord Jesus was ahead of his time in understanding just how marvellous is the growth and resultant array of a flower. But the Lord Jesus was not just making a comment about the marvel of creation. He then went on to say that the lilies were clothing for the grass. Furthermore, if such clothing were given to the grass, then even more so would God clothe His people.

It might be argued that we need the words of the Lord Jesus before we can come to such a conclusion from considering the lilies of the field. Maybe so, although perhaps that would indicate that we have little faith. However, the words of Hebrews 11:6 show that there is at least one thing

that the disciples were expected to conclude from the lilies of the field, even before the Lord Jesus spoke of them. That thing is this: given the wonder of creation, it is clear that Whoever created it must be a rewarder of those who diligently seek Him.

An appreciation of the above should encourage us to be more forthright and less defensive when preaching the gospel. Our starting position is much stronger than perhaps we realise. As Christians, whilst we are happy to acknowledge empirical scientific evidence as well as the truth of the Word of God, perhaps we are sometimes reluctant to conclude more from the evidence of creation itself. The amazing creation shows not only that does God exist, but also that the Creator must be a rewarder of those who diligently seek Him.

I am fearfully and wonderfully made

John Nicholls

Long before the advent of modern science, the Bible correctly described the complexity of all life as evidence of the wisdom of the Creator. Modern discoveries about the brain and DNA have served only to confirm the deeply intricate design of the human frame, which accords with the Divine description in the Scriptures.

THE TITLE comes from David's words in Psalm 139, in which he is praising God for His all-embracing and detailed knowledge of his ways and thoughts. Wherever in the universe David might go, his God would always see His servant, understanding his thoughts and leading and holding him with His right hand. By the Spirit, David was able to declare that God had created him with an intricate and wonderful body; He even saw David in his mother's womb, without the need for an ultrasound scan, and supervised the orderly development of his embryo and foetus. As the NIV renders it, "You knit me together in my mother's womb" (v. 13). What a wonderful thing, that from one tiny cell a baby can be created with all its limbs and organs perfectly formed and in proportion, to become, ultimately, a man whose mind is in tune with his God and a man of great faith!

This article is about these wonderful bodies of ours, in particular our genetic material and our brains, and will show that David's words still hold true today, and that his assessment of the human body is confirmed by the most recent discoveries.

In the 1990s two ambitious research programmes were set in motion, the Human Genome Project and the Decade of the Brain. By mapping the complete human genome it was hoped to show that it is our genes that make us different from all other creatures. (The genome is the total genetic content of a living cell.) The Decade of the Brain used PET¹ scanners, which made 'moving pictures' of brain activity by detecting increases in blood flow in regions where neurons (nerve cells) were 'firing'. This, it was confidently believed, would reveal how the brain operated.

The following account of the outcomes of these two projects is based on the book by Dr James Le Fanu, a medical doctor and writer.² The author is

1. Positron Emission Tomography.
2. James Le Fanu (2009), *Why Us? How Science Rediscovered the Mystery of Ourselves*, Harper Collins, £18.99. This book was reviewed by Brother David Burges, *Testimony*, Oct. 2009, p. 301.

sceptical about natural selection being the means by which living organisms arose, but is not a creationist. He does, as will be seen later, believe that we cannot ignore or ridicule religion, for the simple reason that science is unable to explain everything, as has become apparent from the results of these two research programmes.

The impenetrable helix

This, of course, refers to the two intertwining strands of DNA (deoxyribonucleic acid) described by Watson and Crick in 1953, each strand a sequence of four chemicals called C, G, A and T, after the first letters of their names. When

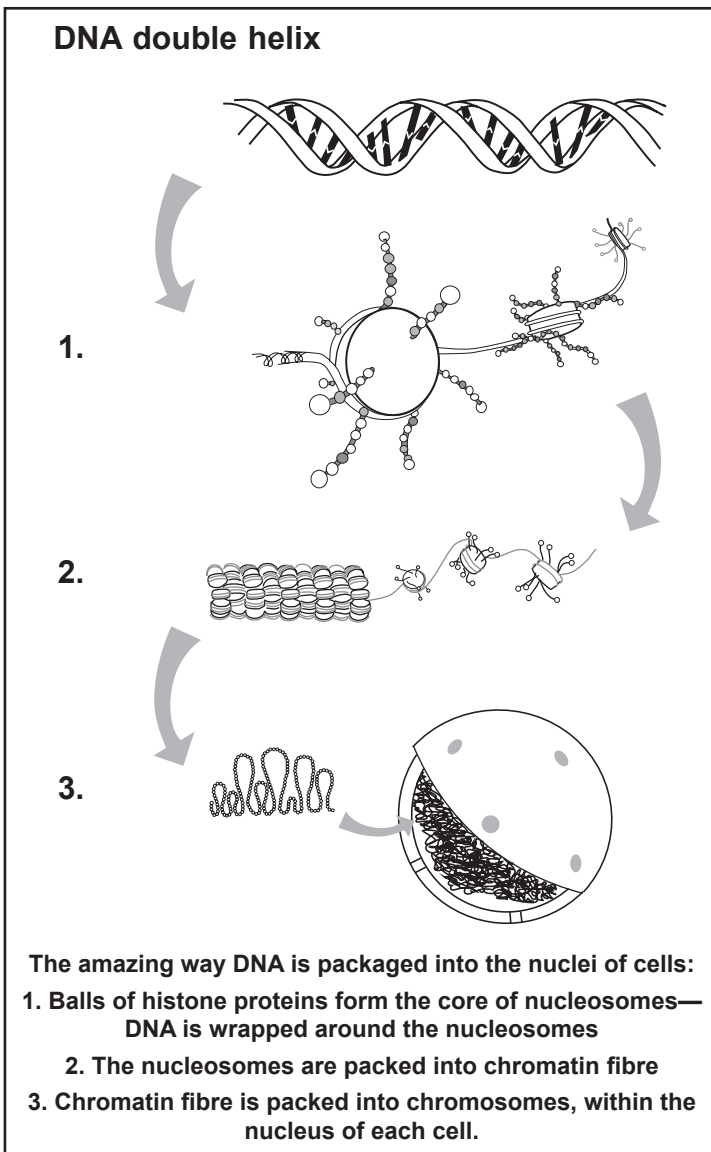
strung together in the double helix, the strand is seventy-five millimetres long, but by much folding and coiling the whole strand in the form of chromosomes can be packed into the nucleus of a human cell only 1/500th of a millimetre across. It is a marvellous molecule! Long sequences of the CGAT molecules form individual genes, and at the right time the cell can make a copy of the gene's sequence onto another type of nucleic acid called RNA. This travels out of the cell's nucleus and, in conjunction with various enzymes, food molecules and pieces of cell machinery, makes what can be called a 'factory assembly line'. From this line, protein molecules in their thousands

pour out and are whisked away to the parts of the cell that need them.

This raises questions still unanswered by research. How does the cell *know*, at any given moment, that it needs to activate, say, the haemoglobin gene rather than any of the other tens of thousands of genes along the DNA length? How was the 'code' enshrined in the CGAT sequences in DNA established?

But the marvel of DNA does not end with the way it directs the assembly of proteins. Periodically the assembly lines are shut down and protein synthesis ceases for a while in a massive upheaval in the cell. The DNA unwinds, and, with enzymes and food molecules, makes an *identical copy of itself* (it is often called a 'self-replicating molecule'). The cell then tears itself apart to form two 'daughter cells', each a direct copy of itself with identical DNA molecules. DNA, therefore, has amazing properties. It is *stable*, passing on the same genetic information from generation to generation over thousands of years;³ it is an *architectural blueprint*, with the plan of the organism; and it is a *skilled craftsman*, directing the development of the cell.

3. Genesis 1:11,12,21,24,25 shows that God created plants and animals with the ability to reproduce "after their kind", which we now know is due to the DNA in their reproductive cells.



Little wonder, then, that, when armed with the technology to map out rapidly the DNA sequence of human cells, scientists back in the 1990s believed that they would be able to explain how cells are controlled and develop, and locate the genes causing diseases of all kinds, and indeed answer all the mysteries of life!

One of the first surprises to emerge as the work got on its way was that ninety-five per cent of the DNA did not carry any code for the manufacture of proteins, but was thousands of repetitions of just one letter of the genetic code (an A say, or a T). This DNA has been termed 'junk' as it apparently has no use in expressing the human genome. It is amazing that so much of this intricate molecule plays no part in forming genes, but is just there, doing, as we understand it, nothing!

Much progress was made in identifying mutant genes that cause genetic diseases such as sickle-cell anaemia, cystic fibrosis and haemophilia. Mutations are the raw material of natural selection, and it was hoped that knowing the location and codes for these disease mutations would throw light on how natural selection and evolution operated at the molecular level. But it soon emerged that, for example, there were at least 200 mutations that cause cystic fibrosis, and a further 200 that made no difference, all of these mutations of the same gene. There was even a case of two sisters, both of whom had the same defective gene for a form of blindness called *retinitis pigmentosa*. The younger sister was indeed blind, but the older sister had good sight and worked as a night-time truck driver.

The study of genes involved in embryonic development has begun to show that individual genes do not have single, separate functions but are 'multitasked': the same gene can be involved in the development of many different parts, such as eyes, nose, brain, pituitary gland, gut and pancreas. And they are not alone; thousands of genes work together. It depends on the context of the gene as to what it does, for in one context a gene can promote the growth of a cell, and in another it can cause its self-destruction. How can evolution occur at the genetic level if it takes 6,000 genes to build a heart? What chance would there be that a random mutation in any one of them would generate a beneficial variation (and these are rare) in favour of the heart's further perfection?

A further surprise from the Human Genome Project was the relative fewness of the genes. It was anticipated there would be at least 100,000, but the final count was 26,000. Amazingly, other

primates (monkeys and great apes) and mice had similar numbers of genes to humans; whereas a much simpler organism like a small roundworm had 19,100 genes, and yet the more complex fly had just 13,600. We share many of the genes found in bacteria, other primates, the fly and the mouse, for many of the processes that keep us alive are the same.

We even share 'master' or regulatory genes,⁴ which exert control over other genes to form major parts of an organism's body. For example, a 'master gene' called Pax 6 controls eye formation in very different animals. Our eyes and those of other vertebrates are quite different from invertebrate eyes like those of the fly, yet this gene controls eye formation in them all. How is it that the same genes can give rise to such different eyes? Darwin's idea was that natural selection acting on small numerous random genetic mutations would give rise to the eye. But there are too few genes, the genes 'multitask' anyway, and the master genes are shared among species. Darwin's idea is impossible. The Human Genome Project, showing how sophisticated and complex our genetic system is, simply increases our wonder and praise for our Maker's wisdom and power.

The unfathomable brain

Every minute during embryonic development 25,000 new neurons (nerve cells) are formed, so that at birth a baby has one hundred billion brain cells, each connected by delicate synapses to a thousand other brain cells, a staggering trillion connections in all. No one knows how the precision of this circuitry comes about, but the genes involved number just a few thousand. They 'hardwire' character traits, modules for language, perception and much else. The two per cent difference in DNA separating humans from other primates instructs not only for a 300-per cent bigger brain, but for an immeasurably more powerful and talented mind.

In 1988 PET scanners were used to show the areas of the brain being used in various tasks. They revealed that millions of neurons were needed to learn a simple task, which, once mastered, would then show up as a mere flicker of activity on the brain scan. How the brain constructs the visual images that are our perception of the world outside ourselves is still not understood, despite

4. These genes are called Hox genes, and in 1992 it was discovered that they were interchangeable between species.

“This essay in defence of simple faith is undertaken with the object of making the position of such devoted adherents of the Bible more intelligible to critics who have often treated them with a contempt which is undeserved. There is a real need for such a book, even in a world with libraries already too full. It is not that there are many absolutely new arguments or ideas to be presented. The arguments may be old and well known, but hitherto they have not been elaborated in such a manner as to give an outsider a proper understanding of the case as it appears to the devoted defenders of Scripture.

“The force of the evidence is cumulative. It is impossible to appreciate the real value of any part of it unless we have a comprehensive grasp of the whole. This principle is recognized in connection with ordinary matters. It is possible to identify a man by a multitude of minor peculiarities, any one of which would seem absurdly trivial when considered by itself. He is exactly five feet ten in height, he has red hair, he is slightly lame in the left leg, he has an anchor tattooed on the right arm, and so on. Let the number of such peculiarities be multiplied sufficiently and we can be absolutely certain that we have the right man. If a casual, uninterested critic witnessed only a single point of the test he might exclaim scornfully: ‘What fools these people are. They think they have identified this man as the one that they want merely because he has red hair!’

“The injustice of such a comment is obvious. The significance of the man having red hair is wholly dependent on the fact that it is one of many peculiarities all pointing in the same direction. Let the critic master all the facts of the case, and even if he is not convinced that they have found the right man he will at least see the reasonableness of others holding such a conviction.

“In the same way let the man who repudiates the claims of the Bible obtain a comprehensive grasp of the evidence as it appears to the real believer, and even though he remain a sceptic he will find a new respect for Christian ‘simpletons.’ Unfortunately this cumulative evidence is more complex than the most detailed description of a man. It requires many months of close study to enable one to grasp it fully, and generally speaking, sceptics of all degrees are unwilling to give the necessary time to such investigation. They brush aside the first point of evidence as absurdly inadequate by itself, and then by the time they have been persuaded to examine a second point they have forgotten the first.”

Islip Collyer, *Vox Dei*, The Christadelphian, 1963, pp. 8-9

the sophistication of brain-scanning experiments. Nor can the PET scanner explain the power of memory to retain visual images over decades and retrieve them at will, any more than it can account for remembering the words of a familiar hymn or recalling a telephone number. Nor do experiments cut across Scriptural teaching that we are responsible for our actions. A professor of psychiatry⁵ who studied obsessive compulsive disorders and the effects on the brain showed that “beliefs and expectations” can “modulate” the physical activity, and upheld the notion of personal responsibility.

In his conclusion to this section Doctor Le Fanu summarises what the Decade of the Brain has achieved: “The [unanticipated] legacy of the Decade of the Brain has been to show five mysteries of the mind: the Mystery of Subjective Awareness; the Mystery of Free Will; the Mystery of the Richness and Accessibility of Memory; the Mystery of Human Reason and Imagination; and the Mystery of the Self” (pp. 225-6).

Far from recent research being able to ‘explain’ everything and giving compelling reasons why we should be atheists, believing in Natural Selection as the source of living things, it shows the opposite—that Natural Selection is inadequate to explain the facts, and that belief in an all-wise Creator is both reasonable and necessary. Surely we can join with the psalmist in his conviction that he was fearfully and wonderfully made! And if that is our conviction, then the words which conclude the psalm should also be on our lips and minds:

“Search me, O God, and know my heart: try me, and know my thoughts: and see if there be any wicked way in me, and lead me in the way everlasting”.

5. Professor Jeffrey Schwartz (1996), “Systematic Changes in Cerebral Glucose Metabolic Rate After Successful Behaviour Modification Treatment of Obsessive Compulsive Disorder”, *Arch. Gen. Psychiatry*, Vol. 53, pp. 109-13.