



September-October 2015

DNA

by Lanny and Marilyn Johnson

“Dad, what is this stuff called DNA that I keep hearing about?” Mary asked.

“DNA is a three-letter abbreviation that stands for deoxyribonucleic acid, a chemical found in the nucleus of a cell. Cells are small compartments (like rooms) that are the building blocks of all life. All living things (organisms or life forms) on Earth are made from cells. Plants, animals and humans are made of cells. If you remember, we have looked at how amazing cells are¹.”

Mr. Jones continued, “There are many different types of cells. Each kind of cell is different and has its own job to do. There are over 200 cell types in the human body - that is over 200 different jobs! In our body we have blood cells, bone cells, nerve cells, brain cells, muscle cells, heart cells and lung cells. We have cells that digest food, cells that carry oxygen to your lungs, cells that fight infection, cells that heal wounds, cells for tears, cells for earwax, cells for sight, cells for hearing, cells for hair, cells for fingernails, cells for touch ... and many more cells in our body that help us function and stay alive.”

Amazed, Mary asked, “Wow! How do cells

know what to do?”

“That’s DNA’s job,” replied Mr. Jones. “Inside the nucleus of a cell are *chromosomes*, which are long strands of tightly coiled DNA. DNA is like a blueprint or instruction book that contains information used to build all living things. This information is in the form of a language. Whereas the English language has 26 letters in its alphabet, DNA language is written in a special alphabet that is only 4 letters long!”

“DNA has a special shape called a *double helix*. This shape looks a little like a beautiful spiral ladder. The rails of the ladder are made of a sugar and a chemical called phosphate. The rungs of the ladder are made up chemicals called *nucleotides* or *bases*. In DNA there are four different types of bases represented by their first letters A, T, C, and G.

“The DNA alphabet is like puzzle pieces where the letter A can only fit together with T, and G can only fit together with the letter C. If you look at a length of DNA, you can read out the letters all in a row: ATCTGAGGAAATGACCAG². Three letters in a row make up words (called *codons*): ATC TGA GGA AAT GAC CAG. Each word makes one *amino acid*. These words make up sentences or codes called *genes*: [ATC TGA GGA AAT] [GAC CAG]. Each sentence tells a cell to make a special molecule called a *protein*. Each gene makes one protein, and only one protein. These proteins tell each cell what kind of a cell it is and help each cell do its job. Proteins are a part of everything that happens within cells.

“But, Dad, that’s only 12 letters! Cells are very complicated. How can just 4 letters make that much information?” a puzzled Mary asked.

“These 12 letters are just an example, Mary. Even though there are only four different letters,

there are 64 possible three-letter-words. Strands of DNA are thousands of letters long. This allows for billions and billions of different gene combinations.” Mr. Jones answered. “You have about 30,000 genes in your DNA. Those genes determine how you look, move and grow. You got your genes from your mother and me, yet yours are not identical to ours or anyone else’s. Just like a fingerprint, your genes have made you truly unique!”

“I hope you understand, Mary, that this is a very simplified explanation of DNA. It is actually much more complicated than this and I hope you also understand that chance and accident could never have made you ... only God could design the amazing language that we find in DNA!” concluded Mr. Jones.

“Wow, I guess so!” answered Mary, “And the Bible also says how wonderfully we have been made!”

¹ See <http://www.discovercreation.org/documents/kids/NovandDec1995KTB.pdf>

² <http://tfsicentist.hubpages.com/hub/explaining-dna-to-a-six-year-old>



