

4. What is coded by DNA

For more than 50 years scientists have been convinced that all the information needed for the development of life on Earth is coded in the DNA and that genes contain all the data necessary to build a cell – the fundamental block of all living organisms. However, this might not be the case and the latest scientific discoveries show that our understanding of cells should be revised.

We know now that genes provide information on how to build basic blocks of life such as proteins, enzymes etc, but genomes apparently contain no genes that specify cellular forms such as a membrane or cytoskeleton. So genes specify molecular parts, but not their arrangement into a higher order. In conclusion, the architecture and the functioning of the cell is not determined by its DNA.

How does the cell know how to reproduce itself? It simply copies existing structures and, for example, cellular membranes grow by extension of the existing membranes. Newly made proteins and other molecules are released into the body that already has spatial structure, and this framework ensures that the placement of new molecules is harmonious with the old structure. This means that every cell originates from a mother cell.

It is not known how molecules coded by DNA make complex constituents of the cell, and what determines their position and operation inside the cell. However, we do know that the breaking up of a cell into its basic molecular constituents does indeed destroy the spatial organization that makes that cell alive. It has been proven beyond any doubt that DNA is not responsible for the architecture of the cell but the cell itself.

Coding information for the structures of the cell's biochemical components, mainly proteins, is preserved in the genes and their copies are passed to the daughter cells. The DNA strands are subject to mutations and therefore the cell's building molecules can change. However, cell architecture does not change because it is not affected by mutations. Many parts such as new membranes, cytoskeletons or mitochondria arise as a result of growth of the old structures and therefore they are their exact copies. These structures are completely independent of the genetic processes and therefore are not subject to random detrimental changes. This is why the cell's functions and basic structures have hardly changed over 2 billion years. The question is, how did

the first mother cell originate?