
CRITICAL COMPONENTS OF LIFE

<i>Components</i>	<i>Assembled Organic Compounds</i>	<i>Function</i>
Structural Materials	Proteins (assembled from amino acids)	<i>Construction</i> (shape and mobility)
Tools and Machinery	Enzymes (special forms of proteins)	<i>Metabolism</i> (growth and maintenance)
Blueprints	Genes -- Nucleic Acid (DNA and RNA)	<i>Reproduction</i> (information and directive function)

A living cell is made up of a number of enormously varied proteins and nucleic acids. All components are highly specific to each other. For example, only a highly specific enzyme can assemble a particular protein from amino acids (the right wrench sizes must be used for the right bolt sizes). Also, only highly specific enzymes can be used to assemble a particular nucleic acid.

Proteins, the base materials of life, are made from specific numbers and kinds of organic building blocks called amino acids. There are

about eighty amino acids in nature, but only twenty are important to present life as we know it.

DNA (information) and RNA (transfer and coding) are made from four kinds of molecules (nucleotide bases). These must be strung together in very precise linear arrays on spiral chains of sugars and high energy phosphate molecules. The resulting nucleic acids provide the basis for the coding and transfer of the genetic information necessary for replication.

Table 6.2

and therefore no "natural selection." The basis of biological evolution cannot operate without a mechanism for biological duplication.

The third problem is the need for the special organic material known as *lipids* to enclose and protect the first living cell. To my knowledge these have not been produced in the laboratory by what are assumed to be prebiotic methods.

The fourth problem is the need for some form of mutual recognition