FROM GENOMICS
TO BIOMEMETICS
The Quran rewrites biology

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1. Introduction

Historically, religion and science are considered mutually opposing ideologies [1, 2]. Majority of scientists and religious scholars hold this view even today. Nevertheless this view has of late started changing. Fixing boundaries between epistemic spaces is meaningless. Science and religion are not mutually exclusive spaces. As Philip Farese rightly pointed out, "If one believes in objective truth and is using a rational system of thought (and when properly applied, both scientific and religious thought meet these two criteria) there is no need to feel threatened by another's pursuit of truth. In the worst case, the two groups can agree to disagree, but in the best case they can learn more about truth together, through respectful dialogue, than they can separately." [3]. The studies conducted by me during the past three decades in the Quran-science area indicate that holistic knowledge of the universe and human life can be developed through synergistic integration of the Quran and science. What is not realized yet is keeping these two domains of knowledge apart has virtually deprived us of the benefit of their togetherness.

Majority of scientists are atheists and hold the view that God and religion are no more than blind beliefs. As will be clear from the later discussions on the satanic theories, this notion of atheist scientists is unscientific. Scientific discoveries and theories only validate theism. It is the belief in atheism that is blind. The Quran contains many revelations of great significance in various branches of human knowledge including science. This is made very clear in the following Quranic verse: "…We (Allah) sent down the Book to you as an explanation to everything, a guide, a mercy, and good news to Muslims (i.e., those who submit to the will of God)." (Q. 16:89). The world has not realized this truth yet. The Quran is not merely a religious text but is the unique source of truth from the Creator. It gives information on several aspects of the

universe and human life such as the divine purpose of creation, automated or programmed functioning of the living and nonliving components of the universe, the ultimate fate of man and the universe, etc. The Quran may be best considered as the *Universal Reference Standard for Truth* given by Allah to the nation of Prophet Muhammad, the last prophet of Islam. Such a conclusion can be arrived at in the light of Allah's description of the Quran as *furqan*, which means the one that distinguishes truth from untruth (Q. 25:1). Whatever information that is not revealed through science but Allah wants to give the nation of Prophet Muhammad is conveyed through the Quran. This assertion is based on the scientific evaluation of the Quran and the Quran-science mutualism [4]. Science is as divine as the Quran although the general belief including that of Islamic scholars and the scientific community is it is man-made. The Quran states that the source of knowledge is God and it is Allah who gives knowledge to man (Q. 96:5, 17:85). "He (Allah) taught man that which he did not know." (Q. 96:5). It is because true science is from Allah, science and the Quran become complementary to each other. The Quran and science together constitute the totality of knowledge about man and universe Allah has revealed. To the dispassionate unprejudiced truth seeker, these two domains of knowledge are two sides of the same coin. The Quran serves as the divine lens through which man can look at the creations and understand them scientifically from the divine perspective – as Creator Allah sees them.

The Quran-science mutualism and compatibility led to the development of a computer model of the universe to explain the self-propelled and self-regulated functioning of the universe [5, 6, 7]. Konrad Zuse, German scientist who built the first programmable computer was the first to suggest in 1967 that the entire universe was being computed on a computer, possibly a cellular automaton [8]. He referred to this as "Rechnender Raum" (Computing Cosmos or Computing Space) which in fact started the field of "Digital Physics".

Jurgen Schmidhuber proposed an algorithmic theory of everything. Schmidhuber assumes: "a long time ago, the Great Programmer wrote a program that runs all possible universes on His Big Computer….Each universe evolves on a discrete time scale….Any universe's state at a given time is describable by a finite number of bits." [9].

The computer models of living and nonliving components of the universe based on the Quran and science were first proposed by me in 1998 in my book *The Divine Expert System* [5]. Four years later, Seth Lloyd published a research paper on the computational capacity of the universe [10] and Stephen Wolfram published a book *A New Kind of Science* [11]. According to Seth Lloyd, the universe is a quantum computer that can perform millions of computations simultaneously. Quantum computers process the information stored on individual atoms, electrons, and photons. Stephen Wolfram proposes that all of reality might result from a kind of algorithm like a computer program being enacted again and again on the underlying building blocks of space and matter. He argues that the whole universe can be viewed as one huge cellular automaton. Lloyd also published a book *Programming the Universe: A Quantum Computer Scientist Takes On the Cosmos* in 2006 [12]. In 2009, a book entitled *Wetware: A Computer in Every Living Cell* by Denis Bray [13] suggesting that living cell is also a computer has also been added to the literature.

Although the knowledgebase created by science covers almost every aspect of the universe from subatomic level to galaxies and beyond, questions like how the various components of the universe acquired their characteristic properties and behaviour cannot be addressed in science. Did the components decide themselves how to react and what to produce or how to function? The universal components carry divine instructions or programs and their functioning is in accordance with that. Natural cycles, planetary movement and

a host of other phenomena occur with clock-work precision and accuracy. The system indeed 'knows' how to function and can be described as natural computer system. The Quranic revelations enable us to answer the fundamental questions about the automated functioning of the living and nonliving components of the universe in the light of computer model of the universe. The basic change that the computer concept of the universe based on the Quran brings to our present knowledge of the universe and cosmology is that it is the patterns of divine information (instructions) carried by the energy that forms the basis of reality.

The phenomenon of life has to date remained elusive to scientific pursuits in spite of the fact that a lot of information has been generated on the subject over the past seven decades or so. Biology has swollen with concepts and theories, and has branched into several new areas. Besides the traditional areas like anatomy, physiology, taxonomy, cytology, and biochemistry, the new branches include molecular genetics, synthetic biology, genomics, proteomics, molecular biology, evolutionary biology, systems biology and so on. These new branches of biology are directly concerned with explanation and description of the phenomenon of life. Nevertheless, it has not been possible to explain what "life" is. The current scenario in biology leaves much to be desired. Although biology is the science of "life", biologists are unable to define what "life" is, what the gene is and what the species is. The basic reason for this unfortunate and unpleasant situation is the attempt to understand life as material phenomenon. Genome, the totality of genes (DNA segments), is supposed to encode the genetic program responsible for the development and biological functioning of an organism. As molecular genetics advances, perception of the gene becomes more and more blurred instead of being clearer calling for the reexamination of the concepts of molecular gene and genome.

The Quran mentions about the phenomenon of life at several places and provides much-needed insights into the working of biosystems. The problems being faced with molecular gene and genome concepts in biology are the result of erroneous perception of the genetic information as encoded by a chemical structure (DNA). The Quran on the other hand reveals that the nonphysical intangible *rooh* is the cause of life. It is this revelation that holds the key to scientifically understanding the phenomenon of life. This book is a compilation of my work relating to biology from the already published work in the Quran-science area. The Quranic revelations provide new insights into the phenomenon of life that can lead biology to the right path.

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2. The satanic theories

It will not be too difficult to find there is deep-rooted, well-organized conspiracy going on to promote atheism in the garb of science. In this context, it is necessary to distinguish technology-oriented domain of science from technology-not-oriented (or non-tech) domain. Scientific knowledge in the technology-oriented domain is self-correcting and directional as otherwise the targeted technology will not result. This domain has therefore factual content and will not in any way contradict the Quran. On the other hand, the non-tech domain lacks mechanism for self-correction. Since this space does not contribute to the development of technologies, it does not attract much public attention and remains not of immediate concern to the people. Obviously, this domain can be easily manipulated and is being manipulated. It is the non-tech domain of science that nurtures theories against theism. Theories not consistent with or opposed to the Quran originate in science through the influence of Satan. The action of Satan is to divert man from the path of Allah. It is imperative therefore the non-tech domain of science should be developed in conformity with the Quran.

A classical case is the introduction of steady state theory in cosmology to oppose the big bang theory of origin of the universe. In 1917, Albert Einstein described the universe based on General Theory of Relativity, which inspired many scientists including Russian mathematician Alexander Friedmann. Much of today's cosmology is based on Friedmann's solutions to the mathematical equations in Einstein's theory. In 1922 and 1924, Friedmann published papers that used solutions to Einstein's general theory of relativity, to predict the expansion of the universe. The general theory of relativity implied a non-static universe which was however modified by Einstein himself by introducing a cosmological constant into the theory to bring in anti-gravity

effect and thereby avoiding the prediction of a non-static universe. It was perhaps that Einstein was so much influenced by the then prevalent view of a static universe that he made such a modification. Einstein regretted this modification later stating that it was the greatest blunder in his life. On the contrary, Friedmann preferred to explain the non-static implication of the theory in an elegant manner. Friedmann's models predicted that all galaxies were moving away from each other. In other words, the universe has been expanding ever since it began. His models thus indicated that the galaxies were at some point of time (between ten and twenty thousand million years ago), together and compressed into a tiny mass of infinite density. This point of infinite density is known in physics as "singularity" to which Cambridge astrophysicist Fred Hoyle gave the fashionable epithet 'big-bang' [1]. Time had a beginning at the big bang. Later, Roger Penrose, a British physicist and Stephen Hawking showed that the general theory of relativity implied that the universe had a beginning and possibly, it would have an end too [2].

The big bang theory implied divine intervention since there was a beginning for the universe. While discussing the big bang model, Stephen Hawking wrote: "Many people do not like the idea that time has a beginning, probably because it smacks of divine intervention….There were therefore a number of attempts to avoid the conclusion that there had been a big bang. The proposal that gained widest support was called the steady state theory….Another attempt to avoid the conclusion that there must have been a big bang, and therefore a beginning of time, was made by two Russian scientists, Evangenii Lifshitz and Isaac Khalatnikov, in 1963." [2].

In 1949 Hermann Bondi and Thomas Gold (two Austrian scientists) along with British astronomer Fred Hoyle proposed the steady state model. According to this theory, the universe does not evolve or change with time. There was no beginning in the past and there will be no change in the future.

This model is based on the perfect cosmological principle which states that the universe is the same everywhere on the large scale, at all times. This theory attracted a lot of attention as it avoided the big bang event and hence a beginning for the universe which implied divine hand. The steady state universe postulates creation of matter out of vacuum so that the perfect cosmological principle (i.e., density is constant) is satisfied. The theory held the centre stage for nearly two decades. No evidence is there to prove the continual matter creation predicted by the theory. The theory has been almost rejected now. On the other hand, scientific evidences for the predictions of the big bang theory namely, discovery of the cosmic microwave background radiation, expansion of the universe, and relative abundances of light elements following the big bang have been obtained. It is important to note in this context that the Quran reveals that the universal components were together before they were separated (Q. 21:30) and the expansion of the universe (Q. 51:47). Thus the big bang theory, which upholds existence of God, remains accepted in cosmology despite the efforts of atheist lobby to overthrow it. Attention is particularly drawn here to the deliberate move of the atheist lobby of the scientific community to bring atheism-oriented steady state theory to replace the big bang theory with theistic implications. It was not because big bang theory was inadequate to explain the origin of the universe the scientists brought the steady state theory but to cast science in atheistic mould and to propagate atheism in the garb of science. The confirmation of the validity of the big bang theory based on scientific evidences was a great blow to their efforts and no wonder the atheist lobby has turned completely to theories in biology particularly Darwin's theory of evolution. Particular attention is drawn here to the fact that science confirms the existence of God and the belief in God is rational and scientific.

The Quran is the *furqan* (Q. 25:1) that distinguishes truth from untruth. It is therefore the divine guidance or what

can be considered as the *Universal Reference Standard for Truth* given to the people of Prophet Muhammad by Allah. The Quran can be used to adjudge the validity of information in any domain of human knowledge; be it religion, science or other. "…We sent down the Book (the Quran) to you as an explanation to everything, a guide, a mercy, and good news to Muslims (those who submit to the will of God)." (Q. 16:89). Any theory which does not conform to the Quranic revelation will be wrong. The theory will naturally remain controversial or get rejected. The Quran being the truth from Creator Allah, we should reject any theory not consistent with the Quran and accept any theory consistent with the Quran. That way the Quran helps to purify and preserve the factual information content of science and other epistemic domains. In biology, there are theories and concepts that are not scientifically proven but yet they are treated as scientific facts. These theories also do not conform to the Quran. The important ones are theory of evolution of species, theories relating to the origin of life from nonlife and the concept of molecular gene (genome) to explain genetic program. These are briefly discussed here.

2.1 Darwin's theory of evolution

Darwin's theory of origin of biological species is against theism and the Quranic revelation of creation of living species by Allah (Q. 21:30, 24:45). According to the theory, the millions of diverse biological species existing on the earth as well as the extinct ones evolved by chance from a common ancestor organism through descent with modification. As can be expected, for any information that is at variance with the Quran, this theory also remains controversial right from its publication (*The Origin of Species*) in 1859. Naturally, it is doomed to be rejected. The scientific inadequacies of the theory are briefly presented here.

British naturalist Charles Darwin published the book *On The Origin of Species by Means of Natural Selection, Or*

The Preservation of Favoured Races in the Struggle for Life in 1859, which formed the basis of the theory of evolution [3]. Darwin utilized his vast knowledge about biodiversity generated from observation of nature to build his views about the origin of biological organisms. Darwin believed that species were mutable and could give rise to newer forms if beneficial heritable variation occurred. In this way new species evolved as descent with modification. He assumed heritable variations occur in species by chance. He further assumed there is severe competition between species leading to struggle for existence. If any variation occurs in an individual that helps it in some way to outcompete, that individual survives and the variation is transmitted down to future generations. In this way the variation gets preserved in the population. He called this mechanism "natural selection". According to the theory, natural selection is a purposeless, unconscious mechanism driven by chance whose result is supposed to take geologic time for manifestation. Gradual accumulation of small variations ultimately leads to speciation.

With the publication of Theodosius Dobzhansky's book *Genetics and the Origin of Species* [4] in 1937 the evolutionary theory started being understood and appreciated as genetic change in populations. This led to the development of "synthetic theory" (also called "modern synthesis" or "neo-Darwinism"). Compared to Darwinism, the modern synthesis gives more emphasis to random genetic drift than to natural selection. It recognizes that *genes are discrete entities* through which characteristics are inherited and the existence of multiple alleles of a gene is responsible for variation within a population. Speciation occurs as a consequence of gradual accumulation of small genetic changes.

Although Darwin's theory has been widely publicized, it has not been possible to defend the hypothesis with scientific evidence. We also do not find proof in real situation to substantiate his arguments. On the other hand, evidences and

findings are mounting against the theory. In his book, *Darwinism: The Refutation of a Myth*, Soren Lovtrup, professor of zoophysiology at Universityof Umea, Sweden, points out a very important fact about the critics of Darwinism. He states: "Some critics turned against Darwin's teachings for religious reasons, but they were a minority; most of his opponents…argued on a completely scientific basis." He goes on to explain so many reasons for the rejection of Darwin's proposal. "…first of all that many innovations cannot possibly come into existence through accumulation of many small steps, and even if they can, natural selection cannot accomplish it, because incipient and intermediate stages are not advantageous." [5]. Lovtrup's remarks in effect clear the misunderstanding of many people who think that the theory is opposed only by religious leaders. Scores of scientists have either rejected it or are skeptical about it.

Is Darwin's theory scientific?

Over the past century and a half, biologists have been hailing the theory as scientifically proven fact. A brief review of the evolutionary literature is made here to show this claim is far from truth. The theory is examined here from two angles namely, whether the assumptions of the theory have been scientifically validated, and whether predictions of the theory have been proved correct.

a) Invalid assumptions

The strength of a theory lies primarily on the validity of its assumptions. None of the assumptions of Darwin's theory is valid. Four important assumptions of the evolutionary theory namely, diverse species evolved from a common ancestor organism, competition exists between species, heritable variations occur in the organisms by random chance processes (mutations), and natural selection offers a mechanism for evolution, are examined here.

Common ancestor organism

The theory assumes that the evolution of diverse species occurred from a common ancestor organism that originated on the earth. This assumption goes against the very foundation of the theory as it admits that an organism can originate without the process of evolution. If that is possible every other organism (species) can also originate the same way. Secondly, it indicates that the assumption of a single common ancestor is also invalid because there can be any number of 'common ancestors' and any number evolutionary trees. Either way, this assumption is scientifically invalid. The assumption of a common ancestor organism in the theory itself is more than sufficient proof of its unscientific nature.

Competition

Darwin assumes there is severe competition between species leading to struggle for existence. "A struggle for existence inevitably follows from the high rate at which all organic beings tend to increase" [3, p. 55]. "Nothing is easier than to admit in words the truth of universal struggle for life" [3, p. 54].

Darwin's assumption of high rate of increase of organic beings as the cause of competition implies that both intraspecific competition (competition among the members of the same species) and interspecific competition (competition between species) exist in nature. Ironically we find the parents taking care of their children who are their 'enemies' according to Darwin. Darwin's assumption that evolution of new structures or innovations enables a species to outcompete the others and that results in its survival is perhaps the most misleading and foolish idea. If competition is present in nature, that should also be a product of evolution. This means evolution only creates competition and does not eliminate it. There is no rationale for the argument that evolution takes place for enabling the species to overcome the competition (for

its survival) when evolution itself is responsible for creating that competition. The theory becomes a circular argument.

The existence of competition between species in nature is a distortion of facts. What we find is cooperation and harmony among species in an ecosystem. Struggle for existence due to competition between species is the key factor required to sustain Darwin's model of biological evolution. Do conditions leading to competition of such magnitude prevail for a long time anywhere on this planet for natural selection to operate? Active competition in contemporary assemblages has often been inferred from the degree of niche overlap displayed, and invoked to explain observed patterns of distribution, abundance and behaviour. Studies conducted with lotic fish communities at the University of Southampton, U.K., showed little unequivocal evidence for the occurrence of interspecific competition because there exists no definitive relationship between similarity of resources use and degree of competition [6]. Peter Kropotkin was a Russian revolutionary anarchist and a critic of Darwinism. He categorically denied that evolution resulted from struggle for life. Kropotkin could not accept Thomas Huxley's (a staunch believer and protagonist of Darwinism) 'gladiatorial' Darwinism as valid: "They conceive of the animal world as a world of perpetual struggle among half-starved individuals, thirsting for one another's blood." Stephen Jay Gould devotes a full chapter in his book *Bully for Brontosarus* presenting Kropotkin's views on biological evolution based on cooperation [7]. Coexistence of species is a natural reality. A time-tested proof against competition is 'plankton paradox'. Application of the principle of competitive exclusion, i.e., the species with greater competitive ability will crowd out the less competitive one, seems to contradict with some of the well known facts (referred to as paradoxes). The plankton organisms use the same resources. All plankton algae use solar energy and minerals dissolved in the water. There are not so many variations in mineral components to account for the large variability in plankton algae species [8]. In other

words diverse species of algae coexist with identical resource requirement without competition and mutual exclusion.

Random chance mutations

Darwin says: "…we may feel sure that any variation in the least degree injurious would be rigidly destroyed. This preservation of favourable variations and the rejection of injurious variations, I call Natural Selection." [3, p. 69]. First, the very assumption that "any variation in the least degree would be rigidly destroyed" is itself wrong because even the first ever organism evolved with the most lethal attribute – death! The variation referred to by Darwin is the genetic variation. Heritable variation is supposed to be caused by genetic (DNA) mutation. It is now well established that spontaneous mutation is extremely rare and even if it occurs, it is mostly deleterious to the organism. Nevertheless, the evolutionary theory leans heavily on the occurrence of these random mutations.

Francis Crick, L. M. Murkhin, and Carl Sagan had estimated that the difficulty of evolving man by chance processes alone is 1 in $10^{2,000,000,000}$ which according to Borel's law is no chance at all [9]. Orthodox Darwinists however believe that despite the tremendous odds against evolution, the large amount of time involved somehow makes the impossible possible. Unfortunately, the argument that time alone solves the difficulty of probability considerations, is not only intellectually uncomfortable but also preposterous. For example, Borel's "Single Law of Chance" declares that when the odds are beyond 10^{200} (on a cosmic scale) an event will never occur, no matter how much time is involved [10]. Stephen C. Meyer, Director of Discovery Institute's Center for Science and Culture, U.S.A., in an excellent comprehensive review of the evolutionary literature discusses the problems and difficulties in the evolution of novel genetic information through random mutations [11]. A typical gene contains over one thousand precisely arranged bases. For any specific

arrangement of four nucleotide bases of length n, there is a corresponding number of possible arrangements of bases, 4^n. For any protein, there are 20^n possible arrangements of protein-forming amino acids. A gene 999 bases in length represents one of 4^{999} possible nucleotide sequences; a protein of 333 amino acids is one of 20^{333} possibilities. Since the 1960s, biologists have thought functional proteins to be rare among the set of possible amino acid sequences. The presumed ability of mutation and selection to generate information in the form of novel genes and proteins has been questioned by many scientists and mathematicians. Morris cited work relating to site-directed mutagenesis on a 150-residue protein-folding domain within a B-lactamase enzyme. On the basis of these experiments, he estimated that the probability of finding a functional protein among the possible amino acid sequences corresponding to a 150-residue protein is 1 in 10^{77} [12]. These observations question the possibility of evolution of organisms requiring new genetic information. The Cambrian explosion is a case in point. The "Cambrian explosion" which is also called "biology's big bang" refers to the geologically sudden appearance of many new animal body plans about 530 million years ago. At this time, at least nineteen, and perhaps as many as thirty-five phyla of forty total made their first appearance on earth within a narrow five- to ten-million-year window of geologic time. Many new subphyla, between 32 and 48 of 56 total [13] and classes of animals also arose at this time with their members displaying significant morphological innovations. The Cambrian explosion thus marked a major episode of morphogenesis in which many new and diverse organismal forms arose in a geologically short period of time [9]. New Cambrian animals would require proteins much longer than 100 residues to perform many necessary specialized functions [11]. Cambrian animals would have required complex proteins such as lysyl oxidase in order to support their stout body structures [14]. Lysyl oxidase molecules in extant organisms comprise over 400 amino acids.

These molecules are both highly complex (non-repetitive) and functionally specified. Reasonable extrapolation from mutagenesis experiments done on shorter protein molecules suggests that the probability of producing functionally sequenced proteins of this length at random is so small as to make appeals to chance absurd, even granting the duration of the entire universe. DNA mutation rates are far too low to generate the novel genes and proteins necessary to building the Cambrian animals, given the most probable duration of the explosion as determined by fossil studies [12]. According to Ohno [14], even a mutation rate of 10^{-9} per base pair per year results in only a 1% change in the sequence of a given section of DNA in 10 million years. Thus, mutational divergence of preexisting genes cannot explain the origin of the Cambrian forms in that time.

Histone H4 and H3 lack functional intermediates in eukaryotes. Histone H3 is one of the slowest 'evolving' proteins known (1,000 times more slowly than the apolipoproteins). That would mean about 1-2 (non-synonymous) substitutions per nucleotide per trillion (=1,000,000,000,000 or 10^{12}) years! That is, the time for Histone H3 and H4 to substitute one amino acid is longer than the age of the Earth, our solar system and the universe [15].

Discovery of the phenomenon of cell-directed mutagenesis by Miroslav Radman was another blow to the theory of evolution. He showed that bacteria harboured a genetic program to make mutations. At that time, no one believed this heretical proposal [16]. Many evolutionary biologists were skeptical about this discovery because genetic mutation was believed to be a random phenomenon. Obviously, the scientists refuse to think beyond Darwinism. In 1988 another report of cell-induced mutagenesis appeared in the literature, which was more startling than Radman's. Molecular biologist John Cairns and his colleagues at the Harvard School of Public Health demonstrated that bacteria

could induce specific mutations depending on their environmental conditions [17]. As expected, the evolutionists gave only a cold shoulder to this discovery because cell-directed mutagenesis indicates that there is built-in mechanism in the cell by which the organism can induce required changes at times of need.

Natural selection

Darwin assumed "natural selection" as the mechanism of organic evolution. "Owing to this struggle for life, any variation, however slight and from whatever cause proceeding, if it be in any degree profitable to an individual of any species, in its infinitely complex relations to other organic beings and to external nature, will tend the preservation of that individual, and will generally be inherited by its offspring….I have called this principle, by which each slight variation, if useful, is preserved, by the term of Natural Selection" [3, p. 53]. "It may be said that natural selection is daily and hourly scrutinizing throughout the world, every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working …" [3, p. 71]. Natural selection implies that a structure evolves through accumulation of a series of beneficial variations in an individual of a species.

Many scientists have questioned the very rationale behind natural selection. Stephen Jay Gould remarks: "…how do you get from nothing to such an elaborate something if evolution must proceed through a long sequence of intermediate stages, each favored by natural selection? You can't fly with 2% of a wing or gain much protection from an iota's similarity with a potentially concealing piece of vegetation. How, in other words, can natural selection explain these incipient stages of structures that can only be used (as we now observe them) in much more elaborated form?" [18]. Cohen writes in his book *Darwin Was Wrong: A Study in Probabilities*: "'Survival of the fittest' and 'natural selection.' No matter what phraseology one generates, the basic fact

remains the same: any physical change of any size, shape or form is strictly the result of purposeful alignment of billions of nucleotides (in the DNA). Nature or species do not have the capacity for rearranging them, nor adding to them. Consequently no leap (saltation) can occur from one species to another. The only way we know for a DNA to be altered is through a meaningful intervention from an outside source of intelligence: one who knows what it is doing, such as our genetic engineers are now performing in their laboratories." [19].

Results of several scientific studies also question the existence of a mechanism called natural selection. Robert Macnab of Yale University concludes his elaborate and thorough review of the sensory and motor mechanism of the bacterium, *E. coli*, with the following thought-provoking remarks: "As a final comment, one can only marvel at the intricacy in a simple bacterium, of the total motor and sensory system which has been the subject of this review…that our concept of evolution by selective advantage must surely be an oversimplification. What advantage could derive, for example, from a "preflagellum" (meaning a subset of its components), and yet what is the probability of "simultaneous" development of the organelle at a level where it becomes advantageous?" [20]. The report of the restricted role of natural selection in evolution by Weinreich and his colleagues from Harvard University is another frontal attack on the efficiency of the much hyped evolutionary mechanism. They demonstrated the haplessness of natural selection, the driving force behind evolution. "Five point mutations in a particular ß-lactamase allele jointly increase bacterial resistance to a clinically important antibiotic by a factor of 100,000. In principle, evolution to this high-resistance ß-lactamase might follow any of the 120 mutational trajectories linking these alleles. However, we demonstrate that 102 trajectories are inaccessible to Darwinian selection and that many of the remaining trajectories have negligible probabilities of realization…. we

conclude that much protein evolution will be similarly constrained…" [21].

Motoo Kimura's neutral theory is another, which questioned natural selection. Orthodox Darwinists did not like Kimura's theory, because he maintained that all-powerful natural selection was not powerful at all. At the molecular level, the power of natural selection was greatly minimized. Molecular variation in proteins and DNA that had no influence on the fitness of the individual organism was observed, i.e., selectively neutral, questioning the importance of natural selection in the traditional areas of morphology and anatomy [22].

These and many other reports clearly indicate that natural selection is not operating in nature and hence to consider it as the mechanism of evolution is in itself meaningless.

b) Failure of predictions

A theory like evolutionary theory is best verified by the success of its predictions. The theory predicts many things that are verifiable. But none of the predictions has been scientifically proved. Evidences are against the predictions of the theory.

Gradualism

Despite the scientific inadequacies of the assumptions, the only possible natural evidence that would have swayed in favour of the theory is the fossil record showing intermediate forms predicted by the theory. Darwin stated: "…the number of intermediate and transitional links between all living and extinct species, must have been inconceivably great. But assuredly, if this theory be true, such have lived upon this earth." [3, p. 231]. "Lastly, looking not to any one time, but to all time, if my theory be true, numberless intermediate varieties, linking most closely all the species of the same group

together, must assuredly have existed; but the very process of natural selection constantly tends, as has been so often remarked, to exterminate the parent forms and the intermediate links. Consequently evidence of their former existence could be found only amongst fossil remains…" [3, p. 149-150]. But the fossil record did not live up to Darwin's expectations. It is barren for transitional forms. Darwin's reaction to the absence of intermediate forms is: "Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps, is the most obvious and gravest objection which can be urged against my theory. The explanation lies, as I believe, in the extreme imperfection of the geological record." [3, p. 230]. His remark about the imperfection of the fossil is unscientific and uncalled for. It is Darwin's theory and not Nature that necessitated the intermediate forms and it is Darwin who predicted their presence in the geological record.

Whatever argument evolutionists may advance, the geological record is against Darwin's theory. It shows that no intermediate forms as envisaged by the theory ever lived on this planet. The lack of transitional forms in the fossil record thus prompted Darwin to state: "He who rejects these views on the nature of the geological record will rightly reject my whole theory. For he may ask in vain where are the numberless transitional links which must formerly have connected the closely allied or representative species, found in the several stages of the same great formation." [3, p. 279-280]. To call nature's archive of biodiversity as imperfect for the reason that it does not agree with one's idea is something unheard of and unthinkable in science. There are many theories in physical and chemical sciences that provide predictions to enable us to verify their veracity. But in the event of failure of a prediction, no one would consider the theory is correct and the natural evidence wrong!

If natural evidence goes against the predictions of a theory, it is preposterous to defend it by perfunctory

arguments. It is a fact that Darwin knew there were no organic gradations in the fossil record even before he proposed the theory. But he deliberately ignored that and chose to cover it up by declaring the natural archive of biological history as incomplete! No evolutionist would have doubted the perfection of the fossil record if Darwin's theory had not predicted transitional forms. In no other field of science can one find such unethical move to deliberately misinterpret natural formation in defense of a theory. David Raup, the curator of the Chicago Field Museum of Natural History commented in 1979 on the situation of the missing link thus: "Well, we are now about 120 years after Darwin, and knowledge of the fossil record has been greatly expanded. Ironically, we have even fewer examples of evolutionary transition than we had in Darwin's time. By this I mean that some of the classic cases of Darwinian change in the fossil record, such as the evolution of the horse in North America, have had to be discarded or modified as the result of more detailed information." [23].

According to the theory, a hereditary change will be retained only if that change is useful in some way to the individual. This fundamental requirement goes against the very operation of the so-called natural selection because none of the initial hereditary changes is in any way useful to its possessor. Implied in the gradualism concept is the evolution of a perfect structure or organ through several intermediate stages, which is also self-contradicting because it foresees a viable functional body part eventually. In fact, Darwin's theory, which is based on random chance mutation, cannot visualize the evolution of many and varied structurally and functionally perfect organs that ultimately form the organism. Further evolution of that organism also does not happen.

The theory of punctuated equilibrium (PE) proposed by Eldredge and Gould literally shook the very foundation of Darwinism namely, phyletic gradualism. According to Prothero, their work not only showed that paleontologists had

been out of step with biologists for decades, but also that they had been unconsciously trying to force the fossil record into the gradualistic mode [24]. The PE does not support gradualism, the backbone of Darwin's theory. Naturally, the gradualists started a frontal attack at PE. The debate still goes on. The minds of paleontologists were deep set in gradualism. As Eldredge and Gould observed, "the paleontologists were raised in a tradition inherited from Darwin known as *phyletic gradualism*, which sought out the gradual transitions between species in the fossil record." [24].

If evolution takes place in steps, intermediate forms of emerging species with new organs or body parts in various stages of development will have to be present at all times – past, present and future. But we do not find intermediate forms or incomplete body parts among extant organisms. Among the two million or so documented species, not one of them has been identified by taxonomists as intermediate form; all of them have been described as perfect species clearly indicating that transitional forms as predicted by Darwin's theory do not occur in nature. The absence of intermediate forms in the existing biodiversity, besides the lack of transitional forms in the fossil record, invalidates Darwin's theory of origin of species.

Conceptual integrity is also very much lacking in Darwin's discussion of the origin of biological diversity. "We are far too ignorant, in almost every case, to be enabled to assert that any part or organ is so unimportant for the welfare of a species, *that modifications in its structure could not have been slowly accumulated by means of natural selection.* But we may confidently believe that many modifications, wholly due to the laws of growth, and at first in no way advantageous to a species, have been subsequently taken advantage of by the still further modified descendants of this species." [3, p. 170, emphasis added]. Darwin states that a modification in a structure will be retained only if it is in any way advantageous

to the species. If that were the case, no body structure would evolve as its initial stages would be of no use to the species. What use is there for an individual with a partially developed heart or for that matter any organ? Evolutionists are also silent about how the evolving species would have survived with underdeveloped organs like heart and reproductive organs in the beginning.

Moreover, there are also body parts that are not beneficial to the individual who possesses it. For example, uterus is in no way useful to the woman. How did it evolve? How could human species survive if the reproductive organs in male and female had evolved through intermediate stages and not in single step? How could the male and female genitals evolve without a plan or design so as to be ultimately befitting to each other? How could the human species exist while the reproductive organs are in the evolving stage? How can breast milk in mother (woman) to suit the baby's system (another individual) evolve through intermediate steps? How could the baby live while breast milk is still in evolving stage? The origin of male and female sexes in human species (and also in other species) varying widely in their phenotype and genotype cannot be explained as the result of evolution. Further, an initially useless structure heading to become a useful one in the end is a clear indication of the pre-determination implied in the theory of the morphological, anatomical, physiological and functional aspects of the structure being evolved. The pre-determinism implied in the evolutionary theory goes against the very assumption of random mutation and gradualism. In fact there is not a single structure or character in the millions of organisms existing on Earth that can be proved as the product of evolution through random chance mutations. On the other hand, every organism is perfect in its design and functioning. It only proves there is Creator God. The notion of evolution by chance is absurd for a programmed system.

Usefulness of a structure to other species

"Natural selection cannot possibly produce any modification in any one species exclusively for the good of another species; though throughout nature one species incessantly takes advantage of, and profits by, the structure of another" [3, p. 167]. This statement is against the spirit of natural selection proposed by Darwin. If a species can take advantage of the structures of another species, competition is nullified and natural selection is disabled. Further Darwin tries to hide this contradiction by stressing on exclusivity. Darwin puts up the challenge: "If it could be proved that any part of the structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory for such could not have been produced through natural selection" [3, p. 167]. In the next breath, however, he presents an example that would annihilate his theory. "One of the strongest instances of an animal apparently performing an action for the sole good of another, with which I am acquainted, is that of aphids voluntarily yielding their sweet excretion to ants…." [3, p. 175]. But Darwin treats this case as not a challenge to his theory. He remarks: "But as the excretion is extremely viscid, it is probably a convenience to the aphids to have it removed…." [3, p. 175]. How strange the arguments and counterarguments are! Any number of cases of evolution of organs and parts in organisms for the exclusive use of other organisms can be cited. For example, banana fruit is of no use to banana plant but serves as food for other species; similarly many plants produce tubers not required for them but useful to others.

Extinction of old species

"The theory of natural selection is grounded on the belief that each new variety, and ultimately each new species, is produced and maintained by having some advantage over those with which it comes into competition; and the consequent extinction of less-favoured forms almost inevitably follows." [3, p. 261-262]. "The extinction of old forms is the almost

inevitable consequence of the production of new forms" [3, p. 280]. How could Darwin make such a prediction when there exist millions of older species including the most primitive single-celled organisms on the earth? Although the theory predicts their extinction as soon as new forms evolved, they are all there even after the evolution of the so-called newer species millions of years ago.

Descent with modification

'Evolutionary tree' is the representation of the concept of descent with modification through the portrayal of the common ancestries assumed to have been shared by diverse species. Evolutionists use structural, anatomical, morphological or traditional homology for the purpose on the assumption that phenotypic similarities between species are inherited from common ancestral species. Besides these, genetic homology called molecular homology also exists. This homology is based on DNA sequence. From the genetic point of view, the evolutionary tree is a portrayal of the evolutionary history based on genetic relationships. It is also called phylogenetic tree. Since the idea hinges on genetic lineage, the similarities among organisms are considered to be the result of genetic relationships among them [25].

The 'similar genes' found in two species need not be an indicator of a common ancestor. For instance, a paper published in *PloS Biology* in 2006 says: "Genome analyses are delivering unprecedented amounts of data from an abundance of organisms, raising expectations that in the near future, resolving the tree of life (TOL) will simply be a matter of data collection. However, recent analyses of some key clades in life's history have produced bushes and not resolved trees… Whereas genomic analyses have shown that at the species level, chimpanzees are humans' closest relatives…, many of the genes and genomic segments examined have followed different evolutionary paths." [26]. Therefore deduction of phylogeny of a species from the phylogeny of a gene is not

correct. As Crawford mentioned, phylogenies generated from sequences of a protein represent the phylogeny of the gene encoding the protein, and may or may not be equivalent to the phylogeny of the species [27]. A particularly unexpected outcome of the studies in this field is that structures traditionally viewed as being analogous are regulated in their development by genes that are clearly homologous. We must accept that homology is usually a hypothesis about evolutionary history rather than a deduced matter of fact [28].

Genomic similarity is the norm for determining the phylogeny. Basically, comparative genomics is a description of the matches between genomes. The most glaring omission in the stories constructed from genomic data is the comparison of phenotypic similarities *vis a vis* genomic similarities. Without describing the genome-phenome correspondence, genomic comparison of two species is of no value. For instance, the argument that man evolved from chimpanzee makes no sense without specifying the phenotypic similarities conferred by the 98% genomic similarity shown by these species. In reality we find man and chimp are different in every phenotypic aspect. In the absence of demonstration of genome-phenome correspondence between the assumed ancestor and the species evolved from it, the idea of descent with modification (phylogenetic tree) loses its scientific appeal.

The rooting of the evolutionary tree has also come under fire. Evolutionary biologists look at the universal tree of life as being consisted of three domains: the ordinary bacteria, the Archaea which are microbes best known for living in extreme environments and the eukaryotes (eukarya) including man having nucleated cells [29]. From the comparisons of the genes encoding ribosomal RNAs of the microbes it was assumed that life began with some primitive bacteria. These then branched into Archaea, modern bacteria and later to eukaryotes. However, comparisons of DNA sequences of other kinds of genes had led to varied versions of the evolutionary

tree making the tree of life more confusing rather than more focusing. "More genomes have only further blurred the branching pattern of the tree of life. Some blame shanghaied genes; others say the tree is wrong." [30].

Woese proposed the concept of the 'universal ancestor' to look at the rooting of the evolutionary tree [31]. The ancestor according to this model is not an organism but a loosely knit, diverse conglomeration of primitive cells that evolved as a unit, and it eventually developed to a stage where it broke into several distinct communities, which in turn became the three primary lines of descent. The primary lines, however, were not conventional lineages. Each represented a progressive consolidation of the corresponding community into a smaller number of more complex cell types, which ultimately developed into the ancestor(s) of that organismal domain. The universal ancestor is not an entity, not a thing. It is a process characteristic of a particular evolutionary stage. But the question how such an ancestor, which was not an organism, came into being puts evolutionists in a quandary.

Evolutionary tree also changes with the method used for defining the species. Construction of phylogenies relies on the principle that a bigger difference in sequence between two species means a more remote common ancestor. The number of possible trees rises exponentially with each species added to the analysis. Although mathematical techniques have been devised to find out the most likely tree, it is often difficult to choose between the many possibilities with any confidence although comparing many genes can make the choice easier [32]. The patterns of ancestry vary depending on the gene considered. In other words, what the phylogeny reveals is the ancestry of only the gene and not the phylogeny of the species that carries it [32].

Lateral gene transfer has literally shaken the hypothesis of descent with modification. According to Andre Goffeau, a geneticist at the Universite Catholique de Louvain, Belgium,

there is so much lateral transfer that even the concept of the tree is debatable. The genomes of modern microbes may be mosaics of genes from different organisms rather than descendants of any single early form of life suggesting thereby that not even the ribosomal genes reflect evolutionary relationships [30]. Evolutionists now realize that the contemporary view of vertical gene flow, which is what Darwin's theory predicts and the basis of the evolutionary tree concept, is not consistent with genomic data. To their amazement, the least expected horizontal gene flow is more common. It is like saying children are born to their parents inheriting more genes from their neighbours! With the evolutionary history becoming more horizontal, the basis on which the theory has been founded is getting blurred by the day. If Darwin's idea of biological evolution were correct, it should have been possible to construct tree of life. Descent with modification is not only a prediction of the theory but is also its central aspect. If vertically oriented evolutionary tree cannot be constructed no more evidence is required to reject the theory. In reality none of the predictions of the theory has been found true.

The picture that emerges from the foregoing discussion is that the diverse forms of life could not have evolved from a common ancestor. There is no evidence whatsoever to say that morphological, anatomical, embryonic and genetic relationships among diverse forms of life are indicators of descent with modification from a common ancestral species. The literature on phylogeny passes a clear verdict of the failure of phylogenetic concepts. Neither the tree based on morphological characters nor molecular homology is correct. The reason is that the evolutionary tree is just a figment of evolutionists' imagination. All the anomalies observed in the construction of the tree tell us so. There is no species, no phylogeny and no evolutionary tree of the kind evolutionists claim. According to Doolittle and Brunet, although a universal tree of life has long been the goal of molecular

phylogeneticists, reticulation at the levels of genes, cells and species has rendered interpretation of the tree problematic [33]. With both the rooting of the tree and the topology coming under fire, what is left of the evolutionary tree is its uprooting. What can be understood from the evolutionary literature [30, 34] is that the evolutionary tree is all poised to be rooted out.

The basic assumption of the evolutionary theory that all the biological species had evolved from a common ancestor in fact shakes the very foundation of the theory. If a living cell could originate by chance as emergent phenomenon from nonlife, there is no reason why it should be a unicellular organism and not any other organism. There is equal chance for the emergence of multicellular organisms also. Every multicellular organism, be it a plant or animal, develops from a cell. A plant or animal develops from a cell such as zygote or fertilized egg. It can also develop from a somatic cell (e.g., cloning) that carries the genetic program of the organism concerned. In other words, if a common organism can originate on Earth, there is no reason why every other organism cannot originate the same way. The origin of biodiversity on Earth can be explained that way also as independent emergent phenomena and not through evolution. The assumption of non-requirement of the evolutionary mechanism for the origin of the common ancestor organism on the one hand and the necessity of the evolutionary mechanism for the origin of the rest of millions of species on the other hand is not only mutually contradicting but is also unscientific.

Another possibility the assumption of common ancestor organism offers is that if a living cell (common ancestor) can originate from nonlife by chance as assumed in the theory, it will not stop with one such event. Any number of cells can emerge in time and space followed by evolutionary process leading to as many evolutionary trees with different or similar common ancestor organisms. This possibility questions the

scientific validity of the current evolutionary tree rooted on a single common ancestor.

The most glaring fact that goes against the theory is that there is not an iota of evidence in nature or from the laboratory to show a living cell can emerge from chemical compounds. If life can arise from nonlife as emergent phenomenon the event should be happening now also. The origin of a cell being the primary requirement for setting the stage for evolution, the lack of evidence for the origin of a living cell from nonlife is literally the death knell to the theory of evolution.

c) Species problem

"Species" is an undefined concept in biology. The term "species" means different things to different people and it will continue to be so in future as there is no indication of a unified concept in sight. This leads to a very complicated situation in the field of evolutionary biology because species is the unit of evolution. Even Darwin did not know what "species" is and how to define it. It is without knowing what "species" is he wrote his famous book about origin of species! Obviously it would be wrong and that reflected in his theory also as discussed earlier. He admits this fact in his book. "… I look at the term species, as one arbitrarily given for the sake of convenience to a set of individuals closely resembling each other, and that it does not essentially differ from the term variety, which is given to less distinct and more fluctuating forms. The term variety, again, in comparison with mere individual differences, is also applied arbitrarily, and for mere convenience sake." [3, p. 46]. There are as many definitions of species as there are authors who have written about them. Some of these are: morphological species concept, biological species concept, evolutionary species concept, recognition species concept, cohesion species concept, phylogenetic species concept, Greek species concept, tyological species concept, Darwin's species concept, ecological species concept,

phenetic species concept, etc. Mayden identifies 24 species concepts [35].

The species concept was originally used to classify the biodiversity. Karl von Linne, a Swedish botanist and medical doctor known to scientific world as Carolus Linnaeus, published the most influential book in taxonomy *Systema Naturae* in 1735 in which he outlined a scheme for classifying organisms based on morphological and anatomical similarities. The order of hierarchy in Linnaeus classification is: Kingdom-Phylum-Class-Order-Family-Genus-Species. There is no reason why organisms cannot be described in terms of characteristics other than the visual ones. If the criteria are changed, the placement of species in the classification scheme will also change. Nevertheless, the concept is certainly advantageous and essential to describe and study diverse organisms. The problem arises when the classification system is used to describe the pedigree of a species (evolutionary tree).

It is clear from the above discussion that the theory of evolution has no scientific basis. Its predictions have failed and its assumptions have proved wrong. But yet evolutionists propagate that it is as scientific as any theory in physics or chemistry! More importantly the results generated from evolutionary studies are interpreted to suit the assumption that the theory of evolution is a proven fact. As Thompson commented: "This situation, where men rally to the defense of a doctrine they are unable to define scientifically, much less demonstrate with scientific rigor, attempting to maintain its credit with the public by the suppression of criticism and the elimination of difficulties, is abnormal and undesirable in science.... I am not satisfied that Darwin proved his point or that his influence in scientific and public thinking has been beneficial." [36].

Darwin's confessions

Although evolutionists blindly believe in Darwinism, Darwin himself tells us the grave shortcomings of his theory. "I have hitherto sometimes spoken as if the variations so common and multiform in organic beings under domestication, and in a lesser degree in those in a state of nature had been due to chance. This, of course, is a wholly incorrect expression…" [3, p. 111]. Darwin wrote later in his another book, *The Descent of Man* that: "I admit…that in the earlier edition of my *Origin of Species* I probably attributed too much to the action of natural descent of the survival of the fittest." [37]. He also commented about his own theory as "grievously hypothetical". Saying "The eye to this day gives me a cold shudder." Darwin couldn't possibly believe the eye had evolved by natural selection. He openly admitted his doubts saying that "this seems, I freely confess, absurd in the highest possible degree." [38].

In a letter to Asa Gray, Harvard biology professor, Darwin wrote: "I am quite conscious that my speculations run quite beyond the bounds of true science." [39]. Fourteen years after the publication of *The Origin of Species*, Darwin wrote to a friend thus: "In fact the belief in Natural Selection must at present be grounded entirely on general considerations….When we descend to details, we can prove that no one species has changed…nor can we prove that the supposed changes are beneficial, which is the groundwork of the theory. Nor can we explain why some species have changed and others have not." [40]. The most important message in these statements is that Darwin did not claim what he proposed was a scientific theory. Surprisingly however biologists not only accepted Darwin's idea of origin of species but also elevated it to the status of a scientific theory without proving it scientifically. Retention of theories like Darwin's theory in science would only tarnish science. A more detailed analysis of Darwin's theory may be found elsewhere [41].

2.2 The molecular gene (genome) concept

The current perception in science is that the living and non-living systems do not differ in the nature of their composition; they are all made of chemical atoms and molecules. A living system however carries genetic program that is responsible for the development and functioning of its chemical structures. The genetic information is supposed to be the information encoded by a chemical structure, DNA (deoxyribonucleic acid). The complete genetic information or the genetic program of an organism is given by the entire genes or the genome. On the other hand, the Quran reveals that the intangible *rooh* is the cause of life. A brief review of the literature on molecular (or material) gene is presented here to bring out the scientific inadequacies of the concept and the need for a change in our perception of genetic information.

Brief history of the molecular gene

In 1865, the Austrian monk Johann Gregor Mendel proposed three laws governing heredity, which however did not see light of the day until after 30 years when in 1900 three botanists independently and almost simultaneously rediscovered them. Bateson coined the term "genetics" for the emerging science of heredity in 1906. Subsequently in 1909, Wilhelm Johannsen introduced the notions of "genotype" and "phenotype". In addition, for the elements of the genotype, he proposed the term "gene". Johannsen had reservations with respect to gene's particulate nature and had also warned against conceiving genes for a particular character [42]. Thus the gene remained as hypothetical non-physical entity since Mendelian genetics did not permit supposition of material genetic elements. Thomas Hunt Morgan and his group contributed substantially to the understanding of the mechanism of heredity. In the year 1933, on the occasion of his Nobel address, Morgan observed: "At the level at which the genetic experiments lie it does not make the slightest difference whether the gene is a hypothetical unit, or whether the gene is a

material particle." [43]. Nevertheless, many geneticists like Herman J. Muller (Morgan's student), believed that genes had to be material particles. In 1950, on the occasion of the fiftieth anniversary of the rediscovery of Mendel's work, Muller however admitted: "[T]he real core of gene theory still appears to lie in the deep unknown. That is, we have as yet no actual knowledge of the mechanism underlying that unique property which makes a gene a gene… its ability to cause the synthesis of another structure like itself, [in] which even the mutations of the original gene are copied. [We] do not know of such things yet in chemistry." [44].

The growing success of various studies relating to classical genetics led to hardening of the belief that the gene is discrete, material entity [45, 46]. It has been known since about 1913 that the individual active units of heredity - the genes - are strung together in one-dimensional array along the chromosomes, the threadlike bodies in the nucleus of the cell. It has also become apparent that the information-containing part of the chromosomal chain is the DNA molecule [47].

George Beadle and Edward Tatum during the late 1930s and early 1940s established the connection between genes and metabolism. They proposed the "one gene, one enzyme hypothesis". Since chemical reactions occurring in the body are mediated by enzymes, and since enzymes are proteins and thus heritable traits, it is supposed that the gene and proteins are related. These views of gene function strengthened the idea of genetic specificity leading to molecularization of the gene. In the early 1940s, Oswald Avery and his colleagues purified the deoxyribonuleic acid (DNA) of one strain of bacteria, and demonstrated that it was able to transmit the infectious characteristics of that strain to another, harmless one [45]. Elucidation of the structure of DNA as macromolecular double helix by Francis Crick and James Watson in 1953 and *in vitro* characterization of the process of protein biosynthesis led to the idea that it was the linear sequence of ribonucleic

acid derived from one of the DNA strands that directed the synthesis of a linear sequence of amino acids, or a polypeptide, and that this process was mediated by an adaptor molecule (RNA template).

In 1958 Francis Crick formulated the "sequence hypothesis" (triplet code or codon, i.e., three bases at a time specified one amino acid) and the "central dogma" of molecular biology. All these considerations ultimately led to defining the molecular gene. According to the classical molecular concept, *a gene is a stretch of DNA that encodes a functional product, a single polypeptide chain or RNA molecule*. The entire collection of genes encoded by a particular organism is the "genome" that is supposed to constitute the genetic program. Johannsen's non-particulate gene thus metamorphosed into particulate gene (Fig. 2.1). The molecular gene was born!

The material gene is not strictly a product prompted by research findings; rather it is more a product of the conviction of geneticists that *the gene has to be a material entity*. The assumption of "one gene, one protein" makes the genes generally synonymous with proteins. Thus the term "gene" refers to the gene that codes for protein. Molecular biology opened the floodgates of boundless optimism about the ability of the super molecule DNA to decipher the mechanism of life as well as the potential of gene for genetic manipulation. In his classic and influential textbook, *The Molecular Biology of the Gene*, James Watson stated: "We have complete confidence that further research of the intensity given to genetics will eventually provide man with the ability to describe with completeness the essential features that constitute life." [48]. But he was grossly wrong. Peter Cook reflects: "Watson and Crick must have thought that the sequence was everything. But life is much more complicated than that." [49].

Problems with the molecular gene

a) The gene is indefinable

Although molecular biologists hoped that it would be possible to identify the genes for different attributes of an organism, the gene remained elusive. The subject has been discussed in detail elsewhere [50].
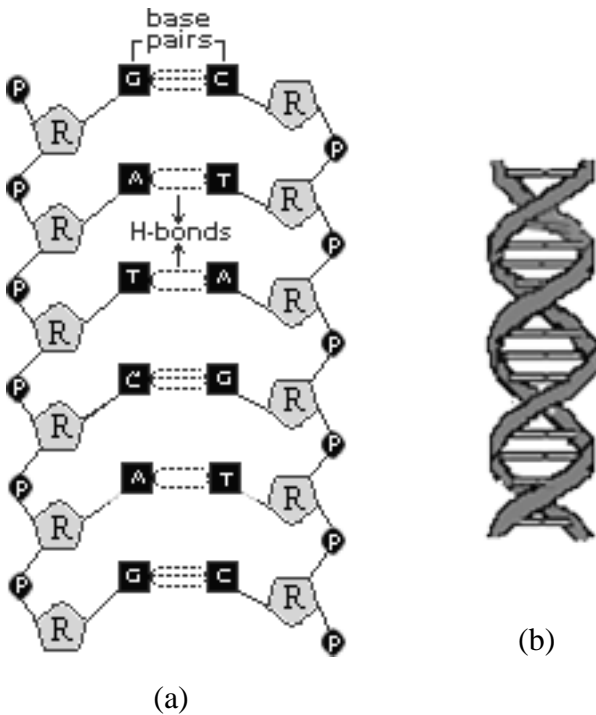
(a)

(b)

Fig. 2.1. Double helical model of DNA

(a) Structural components of DNA (b) Double helix

According to geneticist Peter Portin, "The gene is no longer a fixed point on the chromosome, producing a single messenger RNA. Rather, most eurkaryotic genes consist of split DNA sequences, often producing more than one mRNA by means of complex promoters and/or alternative splicing. Furthermore, DNA sequences are movable in certain respects, and proteins produced by a single gene are processed into their constituent parts. Moreover, in certain cases the primary transcript is edited before translation, using information from different genetic units and thereby demolishing the one-to-one correspondence between gene and messenger RNA. Finally, the occurrence of nested genes invalidates the simpler and earlier idea of the linear arrangement of genes in the linkage group, and gene assembly similarly confutes the idea of a simple one-to-one correspondence between the gene as the unit of transmission and of genetic function...." [51]. Other leading scientists like Thomas Fogle and Michel Morange also concede that there is no longer a precise definition of what could count as a gene [52, 53].

The Human Genome Project has revealed that human genome encodes 20000-25000 protein-coding genes [54]. Horace Freeland Judson notes: "The phrases current in genetics that most plainly do violence to understanding begin "*the gene for*": the gene for breast cancer, the gene for hypercholesterolaemia, the gene for schizophrenia, the gene for homosexuality, and so on. We know of course that there are no single genes for such things." [55]. In spite of that the phrase 'the gene for' is still in vogue.

The objective of genomic research is to ultimately understand the relationships between heritable units and their phenotypes. But it appears that genome concept would not deliver that information. The genome organization is extremely complex. Genes reside within one another, share some of their DNA sequences, are transcribed and spliced in complex patterns, and can overlap in function with other genes of the

same sequence families. "Today, in the era of genomic sequencing and intense effort to identify sites of expression, the declared goal is to search for genes, entities assumed to have physical integrity. Ironically, the sharper resolving power of modern investigative tools make less clear what, exactly, is meant by a molecular gene, and therefore, how this goal will be realized and what it will mean", observes Fogle [52].

Instead of generating more evidence in support of the particulate nature of the gene, research in molecular biology is generating evidence to the contrary. Craig Holdrege observes (italics added): "The complexity at the molecular level reveals that the simple mechanisms one imagined in the 1960s simply do not exist in that form. It has become less and less clear what a gene actually is and does. And although the deterministic gene is still the gene that lives in the minds of many students, lay people, and - at least as a desire - in the minds of many biologists, *the findings of late twentieth century genetics show one thing clearly: the simple deterministic gene, the foundational "atom" of biology is dead.* There is no clear-cut hereditary mechanism - no definite sequence of nitrogenous bases in a segment of a DNA molecule that determines the make-up and structure of proteins, which in turn determine a definite feature of an organism." [56].

Evelyn Fox Keller makes the case for a radically new thinking about the nature of heredity in her book *The Century of the Gene*. In her articulate and insightful history of genetics and molecular biology, she suggests that most of our common assumptions about genes are either too simplistic or simply incorrect. It turns out, for example, that a single functioning gene may be split and found in several locations on a chromosome, and it is rare that a gene can be determined to have caused any particular trait, characteristic or behavior [57]. An excellent review of the crisis of the molecular gene concept has also been presented by El-Hani [58].

b) Lack of genome-phenome correspondence

Studies at the molecular level fail to demonstrate the expected correspondence between genome structure and phenotype. The most spectacular example of this is the morphological dissimilarity between human being and chimpanzee despite a 98.7% similarity in their DNA [59]. Although evolutionary biologists speak of genomes of chimp and man as being almost identical in support of their argument of human evolution from animal, and for establishing chimpanzee as the closest animal ancestor of human being, they have not enumerated so far the identical phenotypic characters in human and chimp in terms of anatomy, physiology, development and other biological features. In fact there is none. A chimp is not even 0.1% human being or a human being 0.1% chimp. A human being differs from chimp in every detail and at every point of the body. The only similarity between chimp and man is in the DNA. The differences in traits, characteristic behaviour, instincts and capabilities between human (Homo sapiens) and chimpanzee (*Pan* sp.) are far greater than the small degree of sequence divergence (1.3%) could account for.

The chimp-human comparison is a case of similar genomes but dissimilar phenotypes. The reverse case is also known. *Caenorhabditis elegans* and *C. briggsae* are physically very similar organisms. It takes an expert to distinguish them. The two have near-identical biology, even down to the minutiae of developmental processes. Surprisingly, however, their genomes are not so similar. *C. elegans* has more than 700 chemoreceptor genes when *C. briggsae* gets on by just 430. There are also many genes unique to each of them [60]. There is no clear correspondence between the complexity of a species and the number of genes in its genome. Fruit flies have fewer coding genes than roundworms and rice plants have more than humans [61].

Many insects exhibit alternative morphologies (polyphenisms) based on differential gene expression rather than genetic polymorphism (differences in genes themselves). One of the best understood insect polyphenisms is the queen-worker dimorphism in honey bee. Both the queens and the workers are females but morphologically distinct forms. Besides, the queen is fertile whereas the worker is sterile. Studies conducted with *Apis mellifera* revealed that numerous genes appeared to be differentially expressed between the two castes [62]. The seven differentially expressed loci observed in the study belonged to at least five distinctly different functional groups. The queen and the worker castes in honey bee provide an unfailing proof of the natural existence of similar genomes exhibiting dissimilar phenotypes. The absence of genome-phenome relationship is very much evident from these studies. It implies that genome does not constitute the biological program.

c) Genome - chemically untenable

Several non-chemical features have been attributed to material genome. Some of the obvious departures from the chemical fundamentals are given below.

Genome can change its structure: How is it possible for a chemical structure to encode an integrated dynamic program? For example, in human beings with the formation of the zygote, the biological program begins to execute. It passes through ontogenetic development, adult stage, old age and then death in a continuous fashion like the operation of computer program. Studies have also revealed that the genomes of the tissues are not identical [63, 64]. This discovery sprang from an investigation into the underlying genetic causes of abdominal aortic aneurysms (AAA). The researchers found major genetic differences between blood cells and tissue cells of the same individuals. The finding calls into question one of the most basic assumptions of human genetics that DNA in every cell in the body is essentially identical to every other cell. Apart from

that, "This discovery may undercut the rationale behind numerous large-scale genetic studies conducted over the last 15 years, studies which were supposed to isolate the causes of scores of human diseases. Except for cancer, samples of diseased tissue are difficult or even impossible to take from living patients. Thus, the vast majority of genetic samples used in large-scale studies come in the form of blood. However, if it turns out that blood and tissue cells do not match genetically, these ambitious and expensive genome-wide association studies may prove to have been essentially flawed from the outset." [63, 64]. The discovery also challenges the belief that mitosis produces identical genomes. Now the question is how the information constituted by the genome of a zygote can lead to the production of different genomes and organelles? A chemical molecule cannot do that. There are two angles to this issue. One is, if genome remains the same, how cytologically and functionally different tissues arise; and the other is, if genome is different in different tissues, how such variation can occur. Either way, the molecular gene concept fails to explain.

A familiar example of physical impermanence of genome is the conversion of the single-stranded RNA genomes of the retrovirus into double-stranded DNA in the host cell following infection [65]. The paper also gives a good account of extra-genomic information.

Junk DNA: It has been observed that an overwhelming 95% of genome consisted of non-coding DNA in eukaryotes and about 5% is constituted by the coding-DNA or genes. The non-coding DNA (ncDNA) is referred to as "junk DNA". Though structurally comparable with the coding DNA, the so-called junk DNA does not encode similar biological information (or vice versa).

Dead cell genome does not encode biological information: A fundamental nature of chemical molecule is that it cannot lose the properties assigned by its structure. The genome is an exception to this rule also! It appears that it can lose its

property as is evident from its behaviour in a dead body. Although the genome is intact in the dead body, it does not show the signs of carrying the biological program encoded by its structure. If biological program is encoded by the structure of DNA, how can the body die? Even if it dies, it should be possible to restore life through repair of the faulty DNA. How can information encoded by a chemical structure become inactive or inoperable? The molecular bioinformation concept (genome) is thus opposed to the fundamentals of chemistry. There is no scientific explanation for this observed anomaly.

Added to that is the failure of synthetic genome to spring to life. A team of molecular biologists at the J. Craig Venter Institute, U.S., produced the complete genome of an organism *Mycoplasma genitalium*, a parasitic bacterium with the smallest genome for any free-living cell [66]. This is a landmark achievement in biology for two reasons: one is that it has been possible to synthesize the genome of a living organism in the laboratory, and the other is that it proved genome cannot come to life implying that genome does not encode biological information. This experimental evidence also confirms that life cannot be produced from nonlife. The assumption that life originated as 'emergent phenomenon' from nonlife is therefore wrong. Efforts are still going on to produce life from nonlife. To create "life", biologists start from scratch by synthesizing genome, chromosome, or a cell through artificial means using chemical molecules. It is important that the synthesis of these should in no way involve the use of living cell at any stage of the experiment. However, living cell is used in the process. The synthesis of a cell without employing a living cell in the process is a non-feasible proposition. However, the problem can be approached from a totally different angle. Instead of synthesizing a cell, a dead cell can be considered as equivalent to a prosthetic cell. It can be used as the starting material for the creation of life. The dead cell provides all the material components of a cell (genome, cytoplasm and other cell structures including cell

wall) except life. That is to say, it is materially identical to a living cell. Biologists only have to restore life to it by chemical means without employing a living cell to prove that life is a material phenomenon and it originated from the combination of chemical molecules in the primitive environment.

d) Other aspects

Although there are certain criteria suggested to identify the genes, their application has not been straightforward. Besides, issues like overlap, alternative splicing, and pseudogenes are also involved. "Pseudogenes are similar in sequence to normal genes, but they usually contain obvious disablements such as frameshifts or stop codons in the middle of coding domains. This prevents them from producing a functional product or having a detectable effect on the organism's phenotype…. The boundary between living and dead genes is often not sharp. A pseudogene in one individual can be functional in a different isolate of the same species… and so technically is a gene only in one strain…. there are other pseudogenes that have entire coding regions without obvious disablements but do not appear to be expressed…. Ultimately, we believe that identification of genes based solely on the human genome sequence, while possible in principle, will not be practical in the foreseeable future." [67].

The variation observed in the use of triplet codes among organisms is another issue. Like the pseudogene this aspect is against chemical fundamentals and remains unexplained. The degenerate nature of the biological code implies several triplets coding per amino acid. Further, two amino acids have only one mRNA codon each; AUG for methionine and UGG for tryptophan. Hence 59 degenerate triplets code 18 amino acids; these 18 have two to six synonymous codons each. Choices between synonymous codons are not random; some codons in the set specific to an amino acid are used more than the others [68]. The 'genome hypothesis' which tries to explain the variation in codon use

states that codon use is species specific, i.e., each genome or type of genome shows a particular pattern of choices between synonymous codons. Thus overall codon usage differs between taxa; but codon bias is also influenced by other factors like gene length, gene expressivity (the amount of protein made per gene), environment and lifestyle of the organism [69]. The codon bias gives rise to the paradox whether protein evolution determined DNA sequence or DNA commanded protein evolution. Many such dilemmas remain in molecular evolution. The origin of bias in codon and anticodon frequencies continues to elude researchers [68].

Besides the anatomical, physiological, biochemical and similar other characteristics, there are an altogether different set of heritable attributes. Instincts (e.g., food habits, mating behaviour, etc.) exhibited by various species, and intelligence, imagination and feelings expressed by human beings fall under this category. It is not possible to explain how chemical structures or base sequence in nucleic acids can be translated into information of this kind. An animal changes continuously in its phenotype right from its development from the zygote till death. This integrated nature of the biological program cannot be explained by a 'constant' molecular genome. All these facts go against molecular gene concept and do not support the contention that a material (genome) constitutes the genetic program.

Richard Strohman considered genetic determinism as a failing paradigm in biology and medicine. According to him, the genetic elements are only one aspect of biological regulation and they cannot specify details of the phenotype including diseases like cancer and cardiovascular diseases [70]. He asks: "But if genes don't determine us, if our disease causality cannot be located in genetic agents alone, if developmental processes…cannot be reduced to genetic programs, if the source of evolutionary change is not traced solely to random genetic mutation, then what does determine

us? …In short, if the program for life is not in the genes…and organisms are clearly programmed…, then where is the program?" His short answer is the program is in no one place but is distributed at many levels in the organism [70].

It is becoming increasingly evident from genetic studies that the current view about the genome as "the complete set of chromosomes" [71] or "an organism's complete set of DNA" [72] is too inadequate to explain genetic information and functioning of biological systems. The most convincing proof against the argument that the genome encodes the genetic program of the organism is the fact that a living cell and its dead counterpart are materially identical (including DNA). This would mean that the cell irrespective of whether it is alive or dead should have the genetic program encoded by its DNA. But yet the latter fails to exhibit any sign of life!

Presently an organism, be it a single-celled microorganism or a multicellular animal, is treated as a bundle of chemical molecules. In this context, it is important to note that it is the chemical information that is encoded by the chemical structure and it is that information which determines the specific physical and chemical properties of the substance. The specificity and stability of the properties under a given set of environmental conditions are characteristics of the chemical structure. There is no chemical structure in nature that shows departures from these chemical fundamentals. On the other hand, the biological information (genetic program) is dynamic in nature as evidenced from the variable phenotypes it produces with time. It is this dynamic information that is superimposed over the chemical information encoded by the DNA structure in the genome theory. There is no chemical structure in nature that shows dynamic properties with time or under similar environmental conditions. The superimposition of dynamic biological information on the DNA structure cannot be scientifically justified as it violates the structure-property specificity. Take the case of a butterfly egg. It has a

chemical structure derived from the sum total of chemical structures including genome. Even if it is accepted that the genetic information is encoded by the genome, the entire structure can have specific constant biological information commensurate with its structure. But what is observed is that it produces constantly changing phenotypes with time and even develops totally different biosystems indicating that the constant structure encodes dynamic genetic program. The larva and butterfly developed from the same genome in the egg are two different biosystems (Fig. 2.2). How is it possible to explain evolution of two different phenotypes from the same genome without sacrificing chemical fundamentals? All these provide sufficient proof against the molecular gene concept. It is high time the theory is reexamined in view of the anomalies associated with it.

2.3 Theories of origin of life

All the theories relating to the origin of life are based on the assumption that the molecular gene (DNA) encodes the biological information, which is not in agreement with the Quranic revelation of the invisible nonphysical *rooh* as the cause of life. Therefore, these theories are incorrect and will be ultimately rejected.

Theories advanced to explain the origin of life can be broadly categorized into four a) prebiotic soup theory, b) gene-first model, c) metabolism-first model [73] and d) panspermia theory. A brief review of these theories is presented here.

a) Prebiotic soup theory

In the beginning, the earth was very hot and did not possess an atmosphere. But as it cooled, an atmosphere began to develop from the gas emitted from the rocks. The early atmosphere was without oxygen, the vital gas required for higher forms of life. Only primitive forms of life could have survived then. It was supposed that by *chance* combination of atoms macromolecules were formed from which self-

reproducing structures were formed. The reactions leading to their formation took place when the earth had been sufficiently cooled. The lowering of temperature would have also caused the condensation of steam into water creating large water bodies like oceans, seas, etc., on the planet. Several chemical elements particularly carbon, hydrogen, nitrogen and oxygen present in the primitive atmosphere combined to form amino acids from which proteins were formed. Stanley L. Miller and Harold Urey of the University of California, San Diego U.S.A., demonstrated that simple amino acids and several complex organic compounds could be formed in a closed system containing hydrogen, ammonia, methane and water vapour under the influence of an electric discharge [74]. These results were considered strong evidence to suggest that a similar reaction might have taken place in the early atmosphere under the influence of lightning, resulting in the formation of amino acids and from them, the proteins. These organic substances might have accumulated in the soupy sea. In a discussion of the origin of life, George Wald concluded that life arose in the sea: "Here were the necessary salts and water. The latter is not only the principal component of organism, but prior to the formation provided a medium which could dissolve molecules of the widest variety and ceaselessly mix and circulate them" [75].

These suggestions are at best speculations without valid assumptions supported by natural evidence. As Robinson observed: "The suggestion that random chemistry could produce the molecules of life "held the field for a long time." But later calculations appeared to show that the early atmosphere contained much more carbon dioxide and much less hydrogen than Miller's model required, and correcting these concentrations cast doubt on the likelihood that complex molecules would form in abundance. Where, then, might organic precursors have come from? There is some, albeit scant, evidence for their arrival on comets colliding with the earth, but there is little enthusiasm for this as a solution.

Finally, there is no geologic evidence, in either sediments or metamorphic rocks that such a soup ever existed." [73].
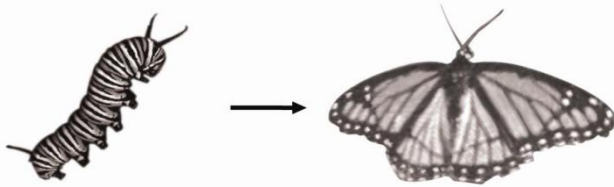

Fig. 2.2. The larva and butterfly – two different biosystems – developed from the same genome

b) Gene-first model

This model is handicapped by the chicken-and-egg problem associated with DNA and protein. Since DNA codes for protein, it is required for the production of protein while protein is required for the synthesis of DNA as catalyst. The role of DNA in the prebiotic scenario thus became suspect. The importance shifted to RNA as it can function as temporary information carrier and catalyst. According to the RNA world hypothesis, the first living system was a polymer(s) of catalytic RNA capable of self-replication that subsequently evolved the ability to encode more versatile peptide catalysts [76, 77]. Mineral-catalyzed reactions, followed by a series of fractionations, have been suggested to offer the most plausible route to RNA [78, 79]. According to Smith *et al*., a stable cell wall is required to protect the first primitive organism. The first cell wall might have been an internal mineral surface, from which the cell developed a protective biological cap emerging into a nutrient-rich "soup". Ultimately, the biological cap might have expanded into a complete cell wall, allowing mobility and colonization of energy-rich challenging environments [80].

c) Metabolism-first model

Even while the RNA world hypothesis was seriously considered, Wachtershauser proposed a radical alternative theory of the origin of life based on iron sulfide. Iron disulfide (pyrite) can catalyze a variety of crucial biochemical reactions. According to him the earliest living system was not a nucleotide-based replicator but a mineral-based metabolizer converting simple and abundant inorganic compounds like carbon dioxide and hydrogen sulfide into more complex organic ones on the surface of a pyrite crystal [81, 82, 83]. Wachtershauser's theory of auto-origin suggests pyrite formation as the earliest energy source for life based on surface metabolism and autocatalytic reproduction cycle. Essentially, it is a theory of carbon fixation from an archaic, pyrite-pulled version of the reductive citric acid cycle. Another view is that life on the earth might have begun in rocks on the ocean floor more than four billion years ago. Hot springs deposit a honeycomb of iron sulphide mineral on the ocean floor. This would have served as the ideal place for life to originate [83]. Bernal preferred life to begin by catalytic assembly on a mineral surface [84].

Another suggestion is the clay system of Cairns-Smith [85]. Clays may have been the catalysts that spurred the spontaneous assembly of fatty acids into small sacs that ultimately would have evolved into the first living cell. These vesicles could be induced to grow and split into separate vesicles under laboratory conditions. Many other substances with negatively charged surfaces also catalyze formation of vesicles. When montmorillonite particles were loaded with a fluorescently labeled RNA and those particles were added to micelles, the RNA-loaded particles could be detected inside the resulting vesicles. When the labeled RNA alone was encapsulated inside vesicles, it did not leak out. This is considered as a demonstration of growth and division without any biochemical machinery [86].

d) Panspermia theories

The idea that life originated on this planet in continuation of the inorganic evolution received a jolt when, in 1973, Francis Crick and L. Orgel proposed a new theory called the 'directed panspermia' [87]. According to them, spores of life might have been sent to the earth in an unmanned spaceship by a more advanced civilization evolved billions of years ago on a planet of another star. In effect the theory only shifts the venue of origin of life from earth to another planet; but does not indicate how life originated. The original panspermia theory did not say that the spores were intentionally sent to other planets, but merely said that microbes in space brought life to planets like the earth. In different versions of the theory, the microbes are supposed to have been transported by light pressure (Arrhenius's radio-panspermia), meteorites (ballistic panspermia), or comets (modern panspermia) [88]. However, as of today, there is no evidence whatsoever to believe that there is a region in the universe other than the earth that supports life of the kind we are familiar with.

Problems with the theories

All attempts to assemble an integrated scheme of physicochemical processes have significant weaknesses [89]. Problems occur with hypotheses of the earliest molecules with the properties commonly associated with life. These include the unlikelihood of formation of complex self-replicating molecules such as RNA by chance encounters even over geological time; the difficulty of protecting such molecules following their formation from dilution and destruction by high temperatures, hydrolysis and ultraviolet radiation; and finally the difficulty of imagining how self-organization alone could lead to encapsulation of a complex hierarchy of biochemical reactions in a membrane to form the simplest unicellular organism [89]. The "RNA world" theory is not a feasible proposition and is losing ground. The theory is appealing

because of the supposed dual roles played by RNA – both as genetic material and as a catalytic molecule in the protobiological evolution. However this concept encounters considerable difficulties for the fact that RNA is chemically fragile and difficult to synthesize abiotically. The known range of its catalytic activities is rather narrow, and the origin of an RNA synthetic apparatus is not clear [90].

A high temperature origin of life (80° to 110^oC) was widely favoured because hyperthermophiles which grow at temperatures between 80° and 110^oC are claimed to be the oldest organisms on the earth, although there are dissenting opinions [91]. The atmospheric models depicting an early warm (approximately 85° to 110^oC) Earth support this theory. Still higher temperature origin (350^oC in submarine vents) was also proposed. However, the instability of nucleobases (adenine, uracil, guanine, cytosine and thymine) at temperatures much above 0^oC would make them unlikely to accumulate on the early Earth. Since these compounds are essential for the formation of the first genetic material in the pre-RNA and RNA world, a low-temperature origin of life and atmospheric models suggesting a cool early earth (about 0^oC) rather than a warm one (around 85° to 110^oC) can only be considered, if origin of life involving these nucleobases is assumed [91]. Many of the theories of origin of life including those relating to the origin of the genetic code have been tested in laboratory experiments on the assumption that the protocol used in those experiments shall provide suitable proxy for a prebiotic environment [92]. A pre-RNA world would have come first, during which some substance, RNA-like polymer carried out the genetic functions later taken over by RNA. Although the hypothesis required the existence of a nucleotide soup in which RNA molecules performed the catalytic activities to assemble themselves, the experimental evidence does not appear to support the existence of such a soup [93].

Another serious problem is explaining the chirality. "To date, none of the models have proposed a solution to one of the more vexing origin problems: chirality. Three-dimensional molecules such as sugars and amino acids can exist in two mirror-image forms, like left and right hands (*chiros* means hand in Greek). Any nonbiological synthesis of such molecules, as would have occurred before life arose, produces equal amounts of each type. Nonetheless, modern cells use exclusively left-handed amino acids and right-handed ribose sugars, and interference from the wrong kind shuts down biological reactions. How could chiral life arise in the presence of so much interference?" [73]. According to Freeman Dyson, the popular accounts of the origin of life side step the issue of the origin of the complex cooperative schema worked out between proteins and nucleic acids – the controlled production of self-replicating catalytic systems of biomolecules. Instead they focus on other hurdle, i.e., producing amino acids and nucleotides, and getting them to polymerase into proteins and nucleic acids (typically RNA). All the scenarios that have been proposed for producing RNA under plausible natural conditions lack experimental demonstration and this includes the RNA world, clay crystals and vesicle accounts. No one has been able to synthesize RNA without the help of protein catalysts or nucleic acid templates, and on top of this problem, there is the fragility of the RNA molecule to contend with [94]. It seems very unlikely that minerals played an important part in prebiotic chemistry, both as simple adsorbents and as catalysts. It is also unlikely that a single mineral would have functioned as a specific catalyst for several unrelated reactions. Even if the members of a suite of minerals could each catalyze one step in a complex cycle, it does not seem likely that the cycle would self-organize on their surfaces [95].

The common feature of all the theories of origin of life is that they all assume that the genome encodes the biological program and therefore life originated from nonlife through chance combination of the 'right' molecules. There is no

evidence whatsoever in nature or from laboratory experiments to assume life originated from nonlife. Obviously these theories have failed to come up with any reasonably sound proposal of how life originated. Research papers published on origin of life are mere views of the scientists about the likely scenarios that might have occurred prior to the origin of life, and nothing more! They all still remain in the province of nonlife. This will be made amply clear from the following conclusions drawn from a study of the origin of life (italics added): "A CO-dominant atmosphere *may have* existed when life originated. This atmosphere *could have* produced a variety of bioorganic compounds with yields comparable to those obtained from a strongly reducing atmosphere. A small amount of CO_2 *could have* allowed the primitive Earth to freeze. This could mean that CO *would have been* more stable in the atmosphere than previously thought because of the reduced vapor pressure of water. Methane and ammonia *would have been* also more stable and *could have* contributed to the synthesis of bioorganic compounds. CO_2 is *likely to have been* present, but it *might not have been* significantly involved in the synthesis of bioorganic compounds" [96]. As such, theories of origin of life are mere hypotheses or views of the scientists who propose them. Any number of such 'theories' can be proposed by anybody, not necessarily by scientists. The most important reason for the scientific invalidity of these 'theories' is the fact that to date there is no evidence for the origin of life from nonlife. For this very reason, all these theories are to be rejected.

What transpires from the above is the fact that the evolutionary theory, molecular gene concept and theories of origin of life do not have valid scientific foundation. Nevertheless, hundreds of journals and other publications in biology are publishing annually tens of thousands of research papers in these areas. Although the literature generated in these subject areas is voluminous it is of no avail. Since anything that is published in a science journal is taken as scientific, these

'theories' that go against the spirit of religion and God are retained in science by the strong atheist lobby in the scientific community to create the false impression that belief in God is irrational and unscientific. However, the truth will prevail and falsehood will disappear. The Quran being the truth from Allah, any theory that is not consistent with the Quran is destined to be rejected sooner or later. "And say: The truth (the Quran) has arrived and falsehood has vanished. Indeed falsehood is non-lasting." (Q. 17:81). All the theories discussed above go against the Quranic revelations. Naturally, they will all disappear from the scientific arena. To that end, we find the theory of evolution has remained controversial ever since its publication more than one hundred and fifty years ago and now the number of scientists who reject the theory is increasing by the day. The material gene theory also has serious conceptional problems and the theories of origin of life stay in science as mere stories to fill the gap. Clearly, these theories cannot be considered as scientific.

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3. Biomemetics

The Quran provides sufficient indications about the mode of automated functioning of the universe like a computer system. The Quran states: "So He (God) completed them as seven heavens…and inspired in each heaven its duty and command…" (Q. 41:12). The mode of behaviour and functioning of the universe are therefore in accordance with the divine commands (instructions or programs) immanent in the universal components. It is this divine program that represents the underlying reality of the universe.

Information is basically nonphysical. The entity which we call energy is the form in which the divine information exists in the universe. Energy is God's word carrying His instruction [1]. The universe is therefore basically information-laden system. We find two kinds of systems in this universe, nonliving system (abiosystem) and living system (biosystem). Although both these systems are composed of atoms of chemical elements, one behaves in an entirely different way from the other. We may infer that these two systems differ in their programs. The properties and behaviour of abiosystems can be attributed to the divine abioprogram (chemical information) and the properties and behaviour of biosystems can be attributed to the divine bioprogram (biological information) present in them.

A discrete quantum of energy that carries divine instruction or program may be considered as 'meme'. The term 'meme' was introduced by Richard Dawkins to mean 'replicator' [2]. However the term is not used here with the connotation of a "replicator" or with the other characteristics originally assigned to it. The universe being information (energy)-laden space, its science is in one way or the other memetics (or informatics). The meme in the nonliving world (chemical information) may be referred to as 'abiomeme' and

the meme in the living world (biological information) may be referred to as 'biomeme' [1]. Accordingly, science dealing with chemical information may be distinguished as *abiomemetics* and that dealing with biological information as *biomemetics* [3]. The nonliving and living segments of the universe can thus be understood as the reflection of execution of two different kinds of divine programs. We shall briefly discuss these aspects here. Detailed description may be found elsewhere [1, 3, 4, 5].

3.1 Abiomemetics (chemical information)

Abioprogram is the driving force behind the inorganic evolution and the one which determined its course and the properties of the inanimate forms of energy [5]. The big bang singularity may be best understood as the event of origin of divine abioprogram (chemical information) rather than origin of the universe. The abioprogram may be explained in terms of configuration-code concept. Insofar as the properties of inanimate forms of energy are governed by their configuration, we may assume that the configuration signifies a code written in a special language. This code is deciphered in terms of the abioprogram and the energy configuration derives its properties.

To illustrate the configuration-code concept, let us consider the properties of matter. The atom is the basic unit of matter. Taking the proton-neutron-electron model (excluding other particles for convenience) we may say that it is by changing the proportion and arrangement of these three fundamental units of matter, elements (or more precisely, nuclides) are produced. The numerous substances formed in the universe owe their vastly diverse properties to their chemical structures which, in turn, are decided by the composition and arrangement of atoms. Structure at the level of a molecule (substance) is defined here as the totality of the nuclide composition and arrangement of the atoms. In the structure-code language, the nuclides form the alphabets and

along with their arrangement, as in a word, through bonding, etc., the code is translated into its properties based on the abioprogram (Fig. 3.1).
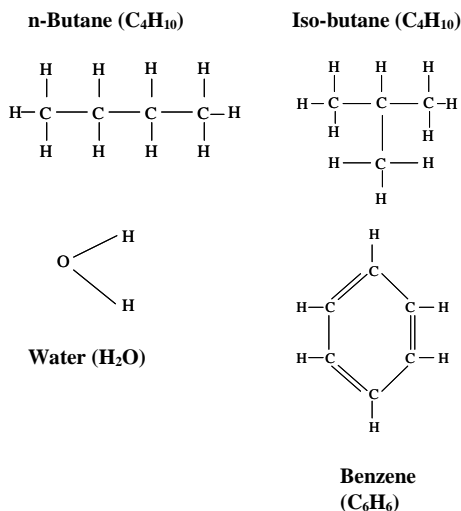

Fig. 3.1. Illustration of structure-code concept.
Note: A chemical structure represents an abiomeme
like a word in a language.

A set of alphabets can carry meaning only if it has affiliation with a language. The meaning of a word depends on its alphabetic composition as well as the order in which they are arranged. Two words may be different in their alphabetic composition or in their arrangements. For instance, English words 'nest' and 'sent' have the same alphabets but different arrangements whereas the words 'take' and 'buy' are different in their alphabetic composition. Likewise, different chemical structures are formed based on the composition and arrangement of the atoms of the elements. The structures of n-

butane and iso-butane have the same elements and same number of atoms with the chemical formula of C_4H_{10}; but the arrangement of the atoms is different in the two substances. On the other hand, the chemical structures of water (H_2O) and benzene (C_6H_6) are different in their elemental (alphabet) composition (Fig. 3.1). By this analogy, the phenomenon of how chemical substances acquire their properties based on the divine instructions (abioprogram) encoded by their structures can be explained. Chemical structures therefore represent different abiomemes. Periodicity in the properties of elements which provide the basis for their classification (Periodic Table) and also for the prediction of properties of a hitherto unknown element, specificity in the change of properties of a substance with a change in structure, etc., are clearly the clauses of the abioprogram operating at different levels of structural organisations. In fact by studying the structure-property relationships, we are deciphering the abioprogram at various hierarchal levels of the universe.

3.2 Biomemetics (biological information)

Realization of the inadequacy of the molecular gene concept to define and explain the phenomenon of life calls for a reexamination of the entire gamut of the issue. It leads to the ultimate rejection of the concept in favour of the nonphysical gene originally proposed by Wilhelm Johannsen as discussed in the previous chapter. The terms 'nonphysical', 'nonparticulate' and 'nonmolecular' are used here synonymously to mean 'intangible' to human senses. The nonphysical biological information or bioinformation for short is not encoded by any chemical structure (e.g., DNA) but the mode of its storage may be understood as similar to the storage of information including software on a computer disk. Broadly speaking bioinformation includes biosoftware as well as any other information (e.g., information collected from the environment and stored in human memory tissue) that is stored

in the biosystem. The term 'biomemetics' refers to the science of nonphysical or intangible bioinformation.

Understanding the bioworld requires knowledge of what life is, how it originated, and how diverse organisms came into existence. Several different criteria have been used by biologists for defining the phenomenon of life. According to Cleland and Chyba: "There is no broadly accepted definition of 'life'. Suggested definitions face problems, often in the form of robust counter-examples…In the absence of an analogous theory of the nature of living systems, interminable controversy over the definition of life is inescapable." [6]. As already discussed in chapter 2, the reason for the failure to understand the phenomenon of life is the wrong perception of biological program as encoded by a molecule (genome). Phenomenon of death also remains undefined and unexplained in science. In medical field, brain death is considered to judge a person dead. Life and death can be convincingly explained based on the nonphysical biological information concept.

Computer model of organism

The Quranic revelations about the phenomenon of life provide valuable hints that can help understand the phenomenon scientifically in the light of computer model. Biosystems carry divine instructions as stored information. The first man (Adam) was created from a clay model (Q. 15:26-29) and the female member (Eve) was created as partner to him subsequently (Q. 2:35). After fashioning him (Adam) from mud moulded into shape, God breathed into him from His *rooh*. In the Bible the phrase, "breathing of life" (Genesis 2:7) was used. "Breathing of *rooh*" mentioned in the Quran (Q. 15:26-29) and "breathing of life" mentioned in the Bible refer to one and the same event − installation of divine biosoftware (bioprogram) in the clay model of man. Upon installation of the *rooh* in that non-living clay model, it sprang to life much like a lifeless computer springs to "life" when software is installed. Software is the invisible soul of a computer.

Similarly, the invisible (*ghayb* in Arabic) soul (*rooh* in Arabic) of an organism is its biosoftware (the word *nafs* is also used in the Quran in place of *rooh* [7]). The Scriptural revelations thus make clear distinction in the nature of God's instructions (programs) carried by the non-living and living components of the universe. While in former, divine instructions are coded by the configuration or chemical structure, in the latter the divine bioprogram is stored on a physical medium. The Quran further informs that it is the removal (or in computer parlance, 'deletion') of the *nafs* (biosoftware of human being) that causes death (Q. 6:93). *The phenomenon of death may be therefore defined as deletion of the divine biosoftware from the biosystem.* In other words, a dead body is like a computer without software. A system is said to be 'living' if it carries divine biosoftware. Based on this argument *the phenomenon of life can be defined as manifestation of the execution of the bioprogram.* Going by this definition, all the so-called non-living and living systems are in reality 'living systems' in their own right as they do carry divine programs. The physical universe is in reality a 'living system' as it operates on the abioprogram. We may distinguish the so-called 'living' and 'non-living' systems as two different forms of life as they are operated on different programs. The two programs (abioprogram and bioprograms) may be differing in their language. However, for convenience we shall retain the conventional terms 'living' and 'non-living' to distinguish the two systems. Computer, robot, etc., are also 'living' systems as they work on man-made software. They in fact represent forms of 'artificial life' [5, 8].

A computer consists of basically two components namely, the visible (tangible) hardware and the invisible (intangible or nonphysical) software. Although the software is nonmaterial, it requires a physical medium for its storage. The storage medium of the computer is its hard disk. An organism can also be described as biocomputer or more precisely biorobot in view of the presence of sensory organs. An

organism is made of one or more cells. The structures in the cell (organelles and nuclear structures including DNA), tissues and organs at the level of the organism constitute the hardware or the so-called phenotype. The invisible or nonphysical biosoftware, as in the case of computer software, is stored on a physical medium. The storage device of the cell is chromosome. It is the hard disk of the organism. The biological information is not encoded by a chemical structure; it is independent of chemical structure. It has no visible features. The major components of the eukaryotic chromosome are nucleic acids (DNA and RNA) and proteins (histones and nonhistones). Of these, DNA (35%) along with histone protein (55%) constitutes 90% of the chromosome. The remaining 10% is called residual chromosome containing RNA (12 to14%), DNA (2 to 3%) and residual protein (83 to 86%). In prokaryote DNA forms the chromosome. Extrachromosomal DNA is also common in several biological species. In the light of the available literature, however, it is not possible to identify which chromosome component serves as the physical medium (hard disk) for storage of the biosoftware. The most likely candidate may be nucleic acid. That does not mean nucleic acid structure encodes the bioinformation but it only means it serves as the medium for storage as is the case with computer hard disk.

Since the hardware components (chemical structures) are intended for the execution of the bioprogram, they are produced in the cell in accordance with the biosoftware of the organism to carry out the intended functions. The variations observed among the tissues in their hardware including DNA confirm this. Since the biological functions of the tissues are different, their hardware must also be different to suit the functions. In computer parlance the biosoftware may be described as integrated divine program or sets of divine instructions in the right sequence for the development of the organism (phenotype or hardware), execution of various bioprocesses, its behaviour, instincts, habits and every other

task performed by it. Accordingly, an organism can be viewed as natural biorobot whose development and functioning are determined by an integrated divine biosoftware (bioprogram).

A biosystem is composed of abio (chemical) structures (cell components, tissues, organs whose physical and chemical properties are abioprogram-controlled) as well as intangible bioprogram (biosoftware) stored in its cells. The bioprogram dictates which abiostructure of the system should come into action and when. The computer, robot, etc. that man has developed with the God-given science and technology also operate by more or less the same mechanism. These systems may be regarded as artificial counterpart of the natural biosystem. A conspicuous difference is that natural biosystem (organism) is carbon-based (i.e. basically organic) and the divine instructions (biosoftware) stored in the cells operate at the atomic and molecular levels (e.g. biochemical reactions at the cellular level) and at macrolevel (e.g. functioning of various organs in the multicellular organisms). On the other hand, in man-made robot the software stored in the hard disk operate at the macrolevel only.

We may differentiate the divine bioprogram at various levels. At the level of species, it may be termed as microbioprogram and at the level of individual as biomemome. Microbioprogram constitutes the source of biological information for the generation of diverse biomemomes (individuals) within a species. Biomemome at the level of the individual represents the biosoftware for a term (i.e., lifespan of the individual) starting from time zero (e.g., zygote formation in human being) to death.

The cell, the basic unit of a living system, is a biochip (Fig. 3.2). The structures in the cell (organelles and nuclear structures including DNA), tissues and organs at the level of the organism constitute the hardware. One major difference in the operation of man-made computer (or robot) and natural biorobot (organism) is that in the former the required hardware

components are to be provided to the system whereas in the latter program packages are available in the biomemome itself to synthesize necessary hardware components. It is the production of the required hardware that ultimately constitutes the biosystem development or the ontogenetic development. The product is the individual (or biorobot) or the so-called phenotype. The biomemome may be described as integrated program or sets of divine instructions in the right sequence for the development of necessary structures including the genome, various bioprocesses, and which determines the behaviour, instincts, habits and every other task performed by the natural biocomputer, the organism. The biomemome is thus responsible for designing and creating the phenotype, which forms the hardware configuration, as well as providing appropriate programs for functioning of the various hardware elements and their coordination.

The biomemory storage device (chromosome) is assumed to have been organised in sectors (Fig. 3.3). Each sector stores one or more biomemes. *Biomeme is the smallest unit of biological information that can be transmitted from parent to offspring and that can take part in natural biosoftware engineering processes.* Physically this corresponds to chromosome sectors that store the biomemes. If a sector does not store a biomeme, it would be like a blank sector in computer memory disk. Every biological phenomenon may be viewed as the manifestation of the execution of the respective biomeme(s). This manifestation is the phenomenon of life. In this way, the nonphysical or nonmolecular biosoftware (*rooh* or *nafs*) revealed through the Quran can be conceived and applied to biological systems. Johannsen's nonphysical gene agrees well with the Quranic revelation of invisible *rooh* as the cause of life.
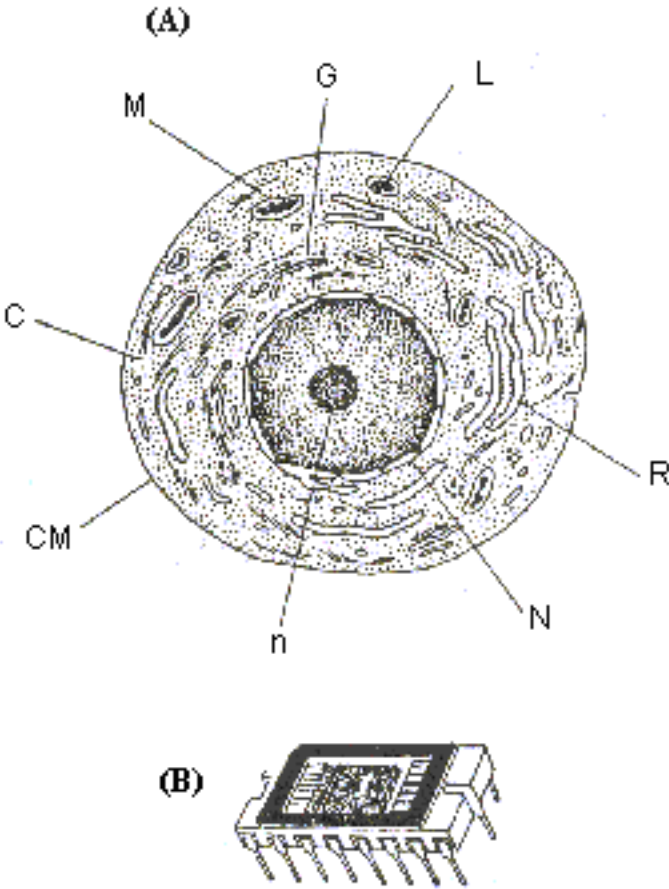
(A)

(B)

Fig. 3.2. A generalized diagram of the biochip (living cell) contrasted against man-made computer chip

The present-day DNA technology is mere manipulation at the hardware level. It is precisely biohardware technology and not biosoftware technology. Molecular biologists are

erroneously pursuing a chemical trail to find out the source of biological information. In the process they are altering some of the hardware elements (DNA) assuming that these structures encode the biosoftware. This is like changing the typeface of an electronic typewriter connected to a computer. The typewriter will print out the words as ordered by the software. If a typeface is changed it will print most of the time a wrong word with the changed typeface although occasionally it *may* print a meaningful word. This will explain why in spite of all-out global effort in genetic engineering, not much success has been achieved in this field.
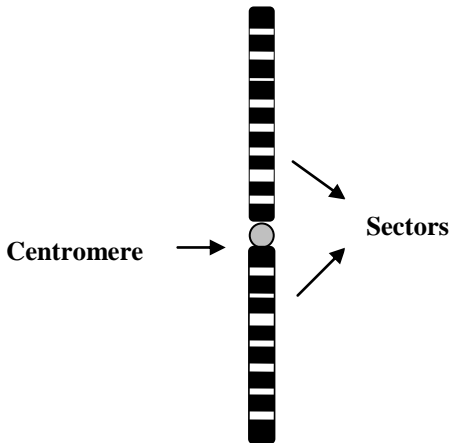

Fig. 3.3. Biomemory organization on a chromosome.
Note: The chromosome (biomemory or the hard disk of organism) is divided into many sectors; each sector storing one or more biomemes.

Body structure and function

In biological organism (natural robot), separate programs are available for the development of structures

(hardware components) and for their functioning. An organism may have a well developed structure, but it may not function if biomeme(s) for its functioning is either lacking or if present, it may be in dormant (inoperable) condition at that time. For every activity of the biosystem, be it an externally performed action (e.g., walking, taking, etc.) or an internally performed biological activity (e.g., biochemical processes), appropriate programs or biomemes are required. The execution of specific biomemes is manifested as outward actions by the organs or internal biochemical reactions. Further, there must be biomemes that coordinate all the developmental processes and functions of the organs (hardware) at the level of the organism. For instance hand is a hardware component developed as per the biomemome of the individual stored on the chromosomes in the zygote to perform a set of functions for which biomemes are available in the biomemome. The hand will not be able to perform a function (e.g., writing by left hand) for which biomeme is not available or if the biomeme(s) is in inoperable or dormant state. An individual is able to function only to the extent the biomemes permit the hardware. This is also the case with internally performed house-keeping biological activities such as digestion, blood circulation, etc. We have now fairly good knowledge of the biological processes taking place in a natural biosystem (organism). These bioprocesses do offer sufficient insight to characterise and describe an organism as natural biocomputer.

All the biochemical processes and biological activities including externally executed bodily actions show clearly defined steps and sequences in which they take place. The cell function may be viewed as the manifestation of working of hardware elements (chemical structures) at the behest of biosoftware stored on the chromosomes. For every biological function there is a biomeme or a group of biomemes. A biological process, which appears as a series of chemical reactions, is in reality manifestation of the execution of the instructions in the specified sequence in the biomeme(s). The

biochemical reactions are nothing but nano level operations in which chemical structures including DNA act as hardware elements. The biomemome of an individual is therefore a collection of large number of biomemes required not only for the development of body structures (hardware) but also for the execution of a wide variety of biological activities using those structures at the cellular level and at macrolevel using diverse organs.

3.3 Abioprogram-bioprogram interactions

Abioprogram also has its role in moulding the phenotype and its functioning. The so-called environmental effect arises from that. Although the influence of the environment is recognized in biology, the actual mechanism has not been understood. A biomemetic explanation is given here. At the level of the biomemome, two states namely 'operating' and 'dormant' can be distinguished. The operating state refers to the condition in which the biomemome is in operation while the dormant state refers to the condition in which the biomemome although present is not in operation (e.g., seeds, eggs, etc.). A dormant seed is live because it has the biomemome intact. It remains without showing any sign of life because the biomemome is in the inoperable or dormant state. A seed may remain dormant (i.e., without executing its biomemes) for long on a dry parched land. With the receipt of rain, the seed germinates and grows. Evidently, water molecule (abiomeme) acted as command or switch to spur the biomemome into operation. This brings the biomemome from the dormant mode to operation mode. Similarly, when a hen broods on an egg or an egg is kept in an incubator, the heat acts as switch to bring the biomemome to operation mode, which starts the development of the chick.

It is also supposed that biomemes in the biomemome can also be in operation mode or in dormant (inoperable) state. That is to say, not all the biomemes in the biomemome stored in a cell are in operation at any given instant as in the case of

instructions carried in the software of a computer. Only those biomemes required at that instant are in operation, which may be designated as operamemes. The others are latent. There is a constant changeover for the biomemes to come into operation or to switch off during the life of an individual. A latent biomeme comes into operation at the time and sequence stipulated in the biosoftware (e.g., ontogenetic development, development of secondary sexual characteristics at puberty) or when the situation (e.g., environmental stress condition) warrants. For example, the operamemes in summer are not the same as the operamemes in winter. The operamemes change depending on the environmental abioswitch (in this case, temperature). Consider an example. If a person spends some time in a hot place and then enters an air-conditioned room, the operameme(s) will also change accordingly as specified in the biomemome. The environmental condition (temperature) acts as abioswitch and turn on the stipulated biomemes in the body cells to come into operation. The individual thus feels the atmosphere cool. The instances, which the biologists often refer to as environmental effects, epigenetics, etc., can thus be explained memetically as the products of abiomeme-biomeme interactions.

When an insecticide is sprayed against a pest in a crop field and if the pest has the biomeme that can resist its harmful effect, the chemical (abiomeme) will act as stimulus to turn on that biomeme(s) which in turn will confer protection to the organism against that chemical. Another possibility is that the abiomeme turns off the biomeme responsible for making the organism susceptible to the chemical. The biomeme in that case would be rendered inoperable. The consequence of either of these is "resistance development" in the pest against that chemical. Although the biomeme is present in the pest all the while, it has not been in operation thus far. It came into operation when the appropriate abiomeme (pesticide molecule) switched it on. The cell synthesizes the necessary hardware (any structure including DNA) or modifies the existing

hardware according to the biomeme to make way for the execution of the newly turned-on biomemes. It is such events that biologists refer to as cell-induced mutagenesis or cell-directed mutation with reference to change of DNA hardware structure.

Cell-directed changes in structures including genome provide strong evidence to the existence of biological information in nonphysical form. Miroslav Radman discovered the phenomenon of cell-directed mutagenesis in 1970. He showed that bacteria harboured a genetic program to make mutations. At that time, no one believed this heretical proposal [9]. Many biologists were skeptical about this discovery because genetic mutation was considered as a random phenomenon. The study reported by Cairns *et al*. in 1988 however galvanized the critics [10]. They reported that *Escherichia coli* (a bacterium) induced specific mutations depending on the environmental conditions. Unfortunately these discoveries were sidelined. Another report of resistance of bacteria to antibiotics by Kohanski *et al* provided further evidence to the cell-induced mutation [11]. Commenting on the work, Martin Enserink wrote: "Traditionally, the development of antibiotic resistance – a big and growing problem in medicine – has been seen as a passive phenomenon. Haphazard mutations occur in bacterial genomes, and bacteria randomly swap genetic elements. Every now and then, a mutation or a bit of newly acquired DNA enables the microbes to detoxify antibiotics, pump them out of the cells, or render them harmless in another way. When these microbes are exposed to antibiotics, natural selection will allow them to outcompete the ones that aren't resistant. But in the past 6 years, a different view has emerged, says microbiologist Jesús Blázquez of the Spanish National Research Council in Madrid. Researchers have discovered that mutation rates in bacteria sometimes go up in response to stress, in some cases promoting resistance. And studies by Blázquez and others have shown that the

antibiotics themselves can cause this phenomenon, called hypermutability." [12].

These reports are clear evidence of the existence of programs (biomemes) in the cell itself independently of any structure (e.g., DNA) to bring about the necessary changes in hardware as the situation warrants. In all these cases depending on the abiomemetic stimuli (signals received from the environment), specific biomeme(s) in the biomemome (biosoftware) of the organism is triggered into operation. As a result the organism reacts to the environmental condition in accordance with the biomemome. Such instances represent abioprogram-bioprogram interactions and confirm the availability of biomemes in organisms to counter environmental stresses and also for developing resistance.

Results obtained in several other studies can also be explained the same way. For instance, the observations made by Grant and Grant of the changes in beak size of Darwin's finches (bird species) [13] can be explained as environment-induced biomemetic change and not as evolution as the authors explained. They studied two predominant species namely, *Geospiza fortis* (medium ground finch) and *G. scandens* (cactus finch). The main food items of the birds were seeds, flowers, etc. The former had a bigger beak and could crack larger and harder seeds whereas the latter had a smaller beak and hence was more efficient in handling smaller seeds. Their results indicated that mean body size and beak shape were significantly different in both species at the end of a thirty-year experimental period. The changes in beak size occurred depending on the kind of seeds available to them in a changing environment influenced by drought etc. The environmental changes provided abiomemes to act as switches to bring specific biomemes into operation and as a result beak size altered to suit the new environment. The other examples often cited as "evolution in action" are also products of cell-directed mutations and not random mutations. The variations in

morphological characters observed in these organisms cannot be considered as random phenomena but are biosoftware-directed changes to counter specific environmental stress experienced by the organism concerned. There is no such phenomenon called random, accident or chance. The very idea is wrong. Everything that happens in the biosystem is divine biosoftware-based.

From the foregoing, it is clear that biomemes for every bioprocess that the organism exhibits do exist inside the body cell itself, which come into operation when actuated. The so-called environment-induced effect may be explained as the result of abiomeme-biomeme interaction. Both matter (e.g., atom, molecule, compound, etc.) and non-matter (electromagnetic radiation, pressure, heat, etc.) forms of energy act as abioswitches to turn on specific biomemes in the cell. Development of disease can also be explained as the result of such a mechanism. Consider human example. The biomemes for the development of every disease an individual can get are present in his biomemome itself. An individual becomes susceptible to a disease when the biomeme concerned is turned into operation. Take the case of pathogenic disease. When a pathogen enters the body, it produces certain abiomeme(s) (or substances), which acts as abioswitch to activate specific biomeme(s) in the host biosoftware. The biomeme(s) comes into operation and its execution produces the disease symptoms. If the specific biomeme(s) is not available or even if available it is in inoperable state, the host cell does not produce the disease condition. The host is said to be resistant to that disease. The execution of the disease biomeme in the host will be manifested as biochemical reactions and processes leading to the production of symptoms of the disease. Similarly the development of allergy can also be explained as the consequence of execution of biomemes activated by an invading abiomeme (e.g., dust particle, allergens, poisons, etc.) or pathogen. The same mechanism of biomeme actuation can be attributed to the development of pain when a person is

beaten, bitten or pricked. All these cases illustrate that a disorder or a disease is caused by the operation of biomemes present in the biosoftware of the host itself. In other words, the instructions to create diseases exist in the body itself; the role of pathogen, allergen, etc., is limited to triggering the disease-producing biomeme(s) concerned into operation. In short, every disease is developed in the body as a result of execution of the respective biomeme(s) either as programmed in the biosoftware or when the biomeme(s) is activated by an abiomeme produced by an external agent. This is opposed to the current view that the pathogen is responsible for the disease. The host itself is the source of disease biomemes and not the external agent. The external agent is responsible only to the extent of triggering the biomeme into operation.

The fundamental basis of how a chemical molecule (medicine) induces a therapeutic effect in organisms also remains unknown. A memetic mechanism somewhat similar to that proposed for disease resistance may be responsible for the therapeutic effect of certain chemicals. When an abiomeme (a chemical) is administered into the body, it acts as command to switch off either the biomeme of the host that caused the disease condition or the biomeme of the pathogen that produced the abiomeme to actuate the disease-causing biomemes of the host. The drug may be lethal also to the pathogen.

3.4 Natural biosoftware engineering

Insofar as biomemes are stored on the chromosome, qualitative and quantitative changes in the biosoftware can be brought about by shifting, adding, deleting and shuffling the chromosome sectors. We find a variety of such mechanisms in operation in the cell that can do all these and more. The bioinformation content of a cell as a whole can also be altered by increasing or decreasing the number of chromosomes. Processes that lead to change in the biosoftware qualitatively and/or quantitatively form the natural biosoftware engineering

mechanisms. Unfortunately, biologists look at them as 'errors' or 'mistakes' although these are carried out in accordance with the biological program as any other function of the cell. Some of the natural biosoftware engineering mechanisms are presented here.

Mitosis and meiosis

Mitosis and meiosis are two kinds of cell division found in living organisms. They are in fact examples of natural mechanism to produce daughter cells with equal number (mitosis) or half the number of chromosomes (meiosis) carried in the parent cell. Mitosis comes into operation during ontogenetic development to create diverse tissues in the body, repair of body parts, etc., while meiosis is responsible for the production of haploid gametes. Mitotic cell division also serves as the method of multiplying cell (biochip) population.

Crossing over

During meiosis through a process of 'crossing over', the segments of non-sister chromatids of a homologous pair of homologous dyads are exchanged (Fig. 3.4). This swapping of portions leads to alteration of bioinformation content in the chromosomes involved.

Trisomy mosaicism

During cell division (both mitosis and meiosis) sister chromatids may not sometimes separate but move together to the same daughter cell increasing its chromosome number by one. This phenomenon is called non-disjunction. Anaphase lag is another mechanism in which one chromosome fails to get incorporated into the nucleus of a daughter cell. These mechanisms can increase or decrease the number of chromosomes in the daughter cells.
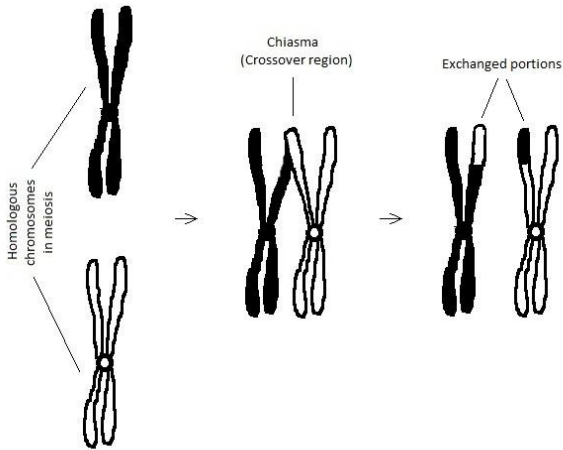
Fig. 3.4. Crossing over phenomenon exchanging sectors between homologous chromosomes

Chromosomal aberrations

The so-called 'aberrations' are changes encountered in the chromosomes during cell division. Although many types of aberrations are found, the more commonly observed are deletion (loss of a small segment of chromosome usually in only one homologue), translocation (a segment of one of the two homologous chromosomes breaks and binds to the other), duplication (occurrence of the same sectors twice on the same chromosome), inversion (a particular sector is reversed in the chromosome), insertion (a new sector is inserted into the chromosome), and substitution (a certain chromosome sector is replaced with another). Occurrence of more than the usual set of chromosomes in the same cell (polyploidy, a consequence of lack of disjunction between the daughter chromosomes following replication) is also seen in nature. Although these

phenomena are generally treated as "errors", they in fact serve as powerful tools to produce radically different chromosome compositions and hence bioinformation content.

Transposable elements (TEs)

The discovery of built-in natural genetic engineering mechanisms dates back to Nobel laureate Barbara McClintock's pioneering cytogenetic studies on transposable elements during the late 1940s and early 1950s [14]. These mobile elements offer a versatile cut-and-splice tool in bringing about specific changes in the organization of chromosomes. Transposition plays an important role in chromosome rearrangements. Insertion, deletion and inversion occur either as a direct consequence of transposition or by general recombination. These elements are present in all prokaryotes and eukaryotes.

Viewed in the light of the computer model, all these processes are programmed functions to produce specific changes in the chromosome sectors and hence biomeme composition.

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4. Biogenesis and programmed evolution of species

The various theories of origin of life advanced in biology are based on the assumption that life originated from nonlife (abiogenesis). In fact the molecular gene concept does not permit this assumption because the live cell and its dead counterpart are materially (chemically) identical. In other words, a chemically synthesized cell without involving a living organism at any time during the process will never be a living cell. It will not spring to life. There is no evidence whatsoever in nature or in the laboratory for the origin of life from nonlife.

4.1 Biogenesis - origin of biological information

Nature provides certain clues to the mode of origin of species in the example of ontogenetic development of an individual from zygote. One is that there is a source of biomemome in the zygote to guide the development, and the other is it is through programmed stepwise differentiation of the biomemome (biosoftware engineering), the various operamemomes representing the tissues of the individual are formed. The Quran also indicates the need for bioinformation source to create biodiversity. The creation of diverse human beings is described in the Quran (Q. 4:1) as originating from a single bioinformation source namely the *nafs* of Adam (*nafs* is another word used in the Quran to indicate *rooh*, biosoftware) [1]. Allah says: "O mankind! Fear your Lord who created you from a single soul (*nafs*, biosoftware) and from that, He created its mate and from them both, He (created and) spread plenty of men and women…." (Q. 4:1). Evidently, creation of diverse forms of life can be perceived as creation of diverse microbioprograms from a single biomeme pool. Both the Quran and natural biological events thus reveal the need of bioinformation source as pre-requisite for creation of biodiversity.

In the light of the Quranic indication, it is supposed here that biological information originated first and the forms of life (species) appeared subsequently from it much like the programmed evolution of body tissues as specified in the biosoftware stored in the zygote. The source of biological information and the mechanism of evolution of organisms are the most crucial aspects of the origin of biodiversity. The Quran gives certain hints, which with the help of computer technology and informatics can be scientifically explained.

In the computer model of the organism, biological information is treated as nonphysical entity existing independently of chemical structure. The description of the mechanism of creation of Jesus Christ in the womb of Virgin Mary given in the Quran provides ample insight into the possible mode of origin of life on the earth (Q. 19:16-22; 66:12; 21:91). "And remember Mary in this Book when she retreated from her family to a place in the east. She placed a screen (to separate herself) from them. Then We sent to her Our *rooh* and he (i.e., the angel) appeared to her as man in all respects. She said: "I seek refuge in Most Gracious (Allah) from you (i.e., the angel in human male form), if you fear Allah." He (i.e., the angel in human male form) said: "Indeed I am only a messenger from your Lord to gift to you a pure son." She said: "How can I have a son as no man has (ever) touched me and I have not been an unchaste (woman)?" He (i.e., the angel in human male form) said: "It is like that. Your Lord says, "It is a simple thing for Me and (We wish) to make him (her son Jesus) a sign to mankind and a Mercy from Us." It is a matter ordained." So she conceived him (her son Jesus) and she retired with him to a remote place." (Q. 19:16-22). "And Mary the daughter of Imran who guarded her genital organ and We breathed into it (i.e., her genital organ) from Our *rooh*. She believed in the Words of her Lord and His Books. She was one of the devout (servants)." (Q. 66:12). The messenger mentioned in the verses (Q. 19:16-22) must be the angel who carried the *rooh* (biomemome of Jesus Christ) and appeared

before her in human male form. It was that angel who transmitted (breathed) the *rooh* (biosoftware) of Jesus Christ into the womb of Virgin Mary (Q. 66:12). This is inferred from the Quranic revelation that it is with an angel *rooh* is sent (Q. 16:2) and the angel is also referred to in the Quran as messenger who can appear in human form (Q. 15:51-60).

Virgin Mary thus became pregnant when the nonphysical *rooh* (biosoftware) to create Jesus Christ was transmitted into her womb by the angel appointed for the purpose by Allah. Evidently the *rooh* led to the formation of a cell (zygote) carrying the biomemome of Jesus Christ in her womb, which developed into baby Jesus Christ through ontogenetic differentiation. The mode of transmission of *rooh* (bioinformation) into Mary's womb and its materialization into a zygote carrying the biosoftware of Jesus Christ have all the ingredients of the phenomenon of teleportation. The whole episode may be perceived as the transformation of the teleported nonphysical or nonmatter (*ghayb* in Arabic) biological information (*rooh*) into matter form (tangible - *shahadat* in Arabic) - a cell carrying the biomemome of Jesus Christ at its targeted destination – Mary's womb. Detailed discussion of the divine process of creation by Allah may be found elsewhere [1].

Teleportation involves what is called "quantum entanglement", a less understood concept of entwining two or more particles without physical contact – in essence Albert Einstein's expression of 'spooky action at a distance'. Although the use of teleportation is traditionally found in sci-fi and mythology, and would normally be dismissed as superstitious, the phenomenon has instead gained importance and has become a subject of considerable interest to physicists. As a result, commendable advancement has been made in recent years in understanding the quantum teleportation phenomenon and its practical realization [2, 3].

Much like the creation of the zygote in the womb of Virgin Mary, a cell carrying the bioprogram to create diverse biological species might have appeared on planet Earth via teleportation. The arrival of the divine bioprogram thus marked the origin of life (biogenesis) on Earth. It was the defining moment of the bioworld. The notion that life originated from nonlife is impossible. Life cannot and did not jump-start from nonlife based on chemical principles through a hypothetical emergent phenomenon; it appeared only when the biological information was made available on Earth by God.

4.2 Programmed biological evolution

Although biologists do agree that water is the most probable and appropriate medium for the origin of life, the need of an aqueous milieu for subsequent evolution of diverse organisms is not recognized. The evolutionary theory assumes that species evolved not only in aqueous environment but in other environments as well consequent to chance mutation and natural selection. The Quran, however, states that all the species on the earth arose from water: "…We made from water every organism. Will they not believe then?" (Q. 21:30). The Quran also explicitly informs about the creation of all kinds of animals from water: "And Allah created every organism from water. Among them are those that move on their bellies, those that walk on two legs and those that walk on four (legs). Allah creates what He pleases. Verily, Allah has power over all things." (Q. 24:45). The divine statements apply to all living beings from the unicellular organisms like bacteria to multicellular organisms like plants and animals but not human species as it is clearly stated that man was created by God through a special process (Q. 15:28-29 discussed in chapter 5). Therefore, the reference to the creation in the verse 21:30 must be relating to all forms of life excepting man.

From these considerations, it may be suggested that the first cell created on this planet was not an organism (common ancestor) as suggested by Darwin's theory but a cell

(comparable with zygote) which carried the divine bioprogram necessary for the evolution of millions of microbioprograms (species) specified in it. This cell was formed in water as a consequence of divine teleportation of *rooh* similar to the teleportation event that created the zygote in the womb of Virgin Mary to create Jesus Christ. The cell so formed in water may be distinguished as the primordial biochip (PBC). The PBC represents the common biomeme pool for the creation of biodiversity on the earth [4]. The term 'programmed biological or organic evolution' does not imply in any way evolution of a species from another species as hypothesised in Darwin's theory of evolution. The term denotes an entirely different concept.

Woese proposed the concept of the 'universal ancestor' to look at the rooting of the evolutionary tree [5]. It was a genetic annealing model to develop a picture of the universal ancestor. The ancestor according to this model could not have been a particular organism, a single organismal lineage. It was communal, a loosely knit, diverse conglomeration of primitive cells that evolved as a unit, and it eventually developed to a stage where it broke into several distinct communities, which in turn became the three primary lines of descent. The primary lines, however, were not conventional lineages. Each represented a progressive consolidation of the corresponding community into a smaller number of more complex cell types, which ultimately developed into the ancestor(s) of that organismal domain. The universal ancestor is not an entity, not a thing. It is a process characteristic of a particular evolutionary stage. Woese advanced a theory of evolution of cellular organization based on the dynamics of horizontal gene transfer [6]. According to him, horizontal gene transfer is one of the important keys to understand cellular evolution. If a cell was simple and highly modular in organization, horizontal gene transfer would play a stronger role in its evolution than otherwise and the cellular evolution would have been driven in the main by horizontal gene transfer at its beginnings.

Molecular evolutionists gave the name LUCA (last universal common ancestor) for the common ancestor of all life [7]. Despite the wealth of genomic data, LUCA has remained elusive. Whether it is a simple or a complex one is not yet understood. Genome sequencing has given hope to find out the answers to many such questions, and the general thinking is that LUCA may be a pool of genes shared by a host of primitive organisms [8].

The LUCA concept comes very close to the requirement and role of the PBC in the programmed evolution of species. A species is biomemetically defined as a microbioprogram. In other words, evolution of species implies evolution of millions of diverse microbioprograms, each of which specifies a species. Morphologically a species represents the phenotypes that can be created from a microbioprogram. The LUCA differs from the PBC in an important aspect namely the latter has the divine bioprogram to guide the evolution of millions of microbioprograms (or species). The biodiversity observed on Earth is the result of programmed evolution and not by chance mutation and natural selection. The PBC which started the organic evolution is the counterpart of the zygote that started the evolution (development) of a human individual through creation of diverse tissues. The programmed evolution of species from an original source of bioinformation (PBC) can be explained biomemtically consistent with natural evidence.

Ontogeny as the model for programmed organic evolution

Developmental biology is concerned with biosystem (hardware) development in accordance with the program carried in the zygote. The program stored on the chromosomes of the zygote is the source of biological information for creation of the biosystem, its functioning and repair, and for producing next-generation program for perpetuation of the species. Developmental biology currently rooted in the molecular gene concept faces problems in explaining various phenomena involved in the ontogenetic development. On the

other hand, the development of an individual can be convincingly explained biomemetically.

Biomemome carried in a zygote is an integrated bioprogram for the creation of a full-fledged organism and operates till the death of the organism. An important difference between the computer technology and natural biosystem is the availability of programs in the latter for creation of the necessary hardware (cell structures including DNA) for the execution of the program. In computer technology, the required hardware is not produced by itself but has to be provided to the system. This is also the case with the system repair. The biomemome stored in the zygote produces a dynamic phenotype that changes continuously with time from time zero (the time at which a zygote starts developing) to its death. The biomemome is thus an integrated program deciding the phenome (phenotype or hardware) at every instant. As already mentioned, it consists of biomemes for creation of hardware components (cell structures, organs, etc.), programs for the functioning of the structures and their repair, programs to co-ordinate the metabolic, physiological and other biological functions, information like instincts, etc. The production of biosystem with the hardware configuration stipulated in the biomemome is what is referred to in biology as ontogenetic development. For example, consider the development of a human individual from the zygote. It is a case of on-going creation process on earth in which the intangible (*ghayb*) *nafs* (biosoftware) builds a tangible (*shahadat*) phenotype. Thus it is from the biosoftware, a human individual is created. The same holds true for other organisms as well. The spores, seeds, eggs, etc., carry the intangible biosoftware of the diverse organisms. The execution of the biosoftware leads to the development of their individuals (phenotypes).   All these examples are manifestations of the creation process in action.

In the case of human being, the zygote undergoes mitotic division to form a ball of cells. Once there are 32 cells

(blastomeres), the developing baby is called a morula. With further cell division, the morula becomes an outer shell of cells with an attached inner group of cells. This stage is called blastocyst stage. The inner cells become the embryo. These cells of the embryonic stage multiply through repeated divisions and initiate differentiation on time schedules as prescribed by the program. Physically the differentiation process would appear as transformation of the cells from the more general to the particular along a pre-determined direction. Thus a neuroblast, which may be indistinguishable from another cell in the beginning, would become increasingly different from the others as the process of differentiation continues and eventually becomes a nervous tissue. Embryo formation is completed in about two months during which, almost all of the internal organs are well laid down. Ultimately, through repeated mitotic division, morphogenesis and histogenesis, the baby is formed which following birth develops into an adult. The human being (and other organisms) is thus a dynamic system right from the start till death. Although boundaries cannot be fixed, we may identify several developmental stages (zygote, embryo, foetus, baby, adult, youth) and post-developmental stages (senescence or old age) for convenience.

The developed individual (phenotype) consists of several organs. Each organ is made up of several functionally different tissues each of which, in turn, is composed of more or less homogeneous cells. A cell is thus the basic unit of the system. The development (or creation) of an individual from the biosoftware stored on the chromosomes of the zygote is thus a programmed evolution process.

From the biomemetic point of view, the basic process involved in the development of an individual may be perceived as programmed step by step (mitotic division) differentiation of the biomemome into ultimately specific number of operamemomes, which constitute the operable biomemes

stored on the chromosomes of diverse tissues. The process can be visualized as selective switching on and switching off of biomemes at each cell division step in accordance with the biomemome. Certain chemical molecules or compounds (abiomemes) formed as the product of biochemical processes during mitosis may be acting as switches to turn on the biomeme to execute the next cell division. Some of these abiomemes may also be responsible for switching on or off specific biomemes in the daughter cells paving way for the production of diverse tissues. In this way, we may suppose specific biomemes come into operation in the sequence stipulated in the biomemome. The process will create eventually tissues with operationally different biomeme packages or what can be called "operamemomes". Each tissue so created carries a set of homogeneous cells with respect to operamemome and hardware (cell structures) required to execute the operamemome. Thus each tissue represents structurally and functionally different hardware component of the biosystem (Fig. 4.1). This is reflected in changes in cellular structures (including DNA). The existence of genomic differences among tissues in human body has been proved [9]. This evidence however goes against the current view that mitosis leads to the production of daughter cells with identical genomes and hence all the somatic cells in the body have identical genomes.

A characteristic feature of the biorobot (multicellular organism) is its anatomical hierarchy in the system hardware from the cell through tissues, organs and body systems to finally the individual. All these hardware components are made of basically biochips. Thus a tissue is a collection of biochips with identical operamemome, an organ is constituted by a combination of tissues, and ultimately the individual is formed of a set of organs. Every biological activity from the molecular level (inside the cell) to the level of the organism (individual) is treated in the computer concept as programmed function.
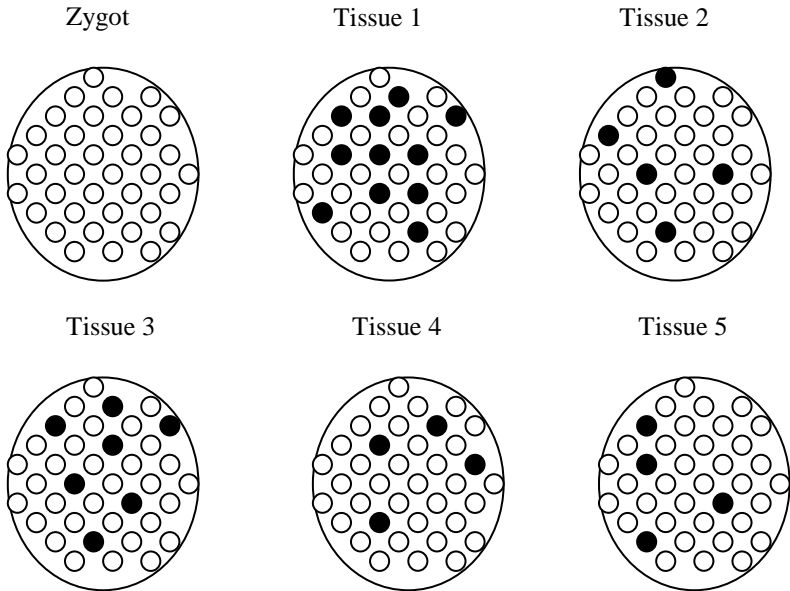
Fig. 4.1.   Diagram showing the biomemome of zygote and various tissues formed during ontogenetic development.
Note: Unfilled circles indicate biomemes in operation (operamemes) in different tissues. The totality of operamemes constitutes the operamemome of the tissue. Filled circles indicate dormant biomemes.

Programmed evolution of species from the PBC

The PBC may be likened to a zygote, which carried the program for the development of various tissues in the human individual. The execution of the divine bioprogram in the PBC to create diverse species might have taken place in water as can be inferred from the above verses (Q. 21:30; 24:45). The

evolutionary process can be thought of as programmed phenomenon to resolve the original bioinformation pool (the divine bioprogram) stored on the chromosomes of the PBC into as many microbioprograms as specified in it. Each microbioprogram so produced represents a species. The whole phenomenon would appear as series of cell divisions in a programmed manner. Each cell division represents a stage during which the chromosomes in the cell undergo specific morphological changes through processes like cutting and splicing of sectors, shuffling of the sectors, crossing over, replication, deletion and copying of the sectors with remarkably high fidelity. Systems like mobile elements and enzymes would also have come into operation to perform wide range of tasks of this kind. All these biosoftware engineering mechanisms produce changes in bioinformation content of the chromosomes of the daughter cells produced during cell division. The stepwise differentiation is a reflection of the execution of the bioprogram in the sequence specified in it. These processes might have gone on until the original biomeme pool got differentiated into as many microbioprograms as specified in the original biomeme pool. The phenomenon as a whole may be viewed as programmed evolution of cells in the end carrying diverse microbioprograms. Each microbioprogram so evolved forms the biological program of a species.

Taking cue from the evolution of a human individual from the zygote, we may visualise the entire process as follows [4, 10]. The primitive aqueous milieu in which the PBC was created was such that it would serve as medium for subsequent cell culture. It would have contained all the necessary ingredients of a culture medium. The PBC formed in the primitive aqueous milieu might have undergone division to produce as many number of mother cells as there are evolutionary lineages (domains of life) to be created (Fig. 4.2). Taking the phylogenetic classification for convenience, three mother cells corresponding to three domains namely, Bacteria,

Archaea (microbes living in extreme environments) and Eukarya (or sometimes termed Eukaryota) [11] might have been formed as a result of initial cell divisions. Subsequent division of each of these would have produced cells representing the next lower order mother cells. For example, the three kingdoms – animals, plants and fungi – are just three of about a dozen extant major branches of the eukaryote domain [12]. Each mother cell might have undergone further divisions step by step to create still lower order mother cells successively say, phylum, order, class, etc. in accordance with the program ultimately producing specified number of end cells. The intermediate stages before the creation of the end cells are comparable with the various stages of the ontogenetic development of an individual from the zygote (such as morula, blastocyst, etc.) leading ultimately to the production of anatomically and functionally different tissues. The end cells with diverse microbioprograms formed on completion of the biomemetic differentiation process are comparable with the diverse tissues with different operamemomes formed at the end of ontogenetic development of a human individual from the zygote. In this way programmed evolution of biological species can be visualized. The programmed organic evolution is essentially complete with the production of the end cells. That would mean that the entire biosoftware differentiation process resulting in the ultimate creation of end cells (species) would have occurred in an aqueous medium as revealed in the Quran (Q. 21:30).

The end cells produced by the animal mother cell might have been in the form of eggs while those originated from the other mother cells might have been in the form of single cells, spores, seeds, etc. Whatever the form in which they emerged, these cells might have been dispersed over the water and land areas by natural processes resulting in their widespread distribution on the earth. The end cells played the role of 'zygotes' from which the first members (phenotypes) of diverse species emerged through ontogenetic development.

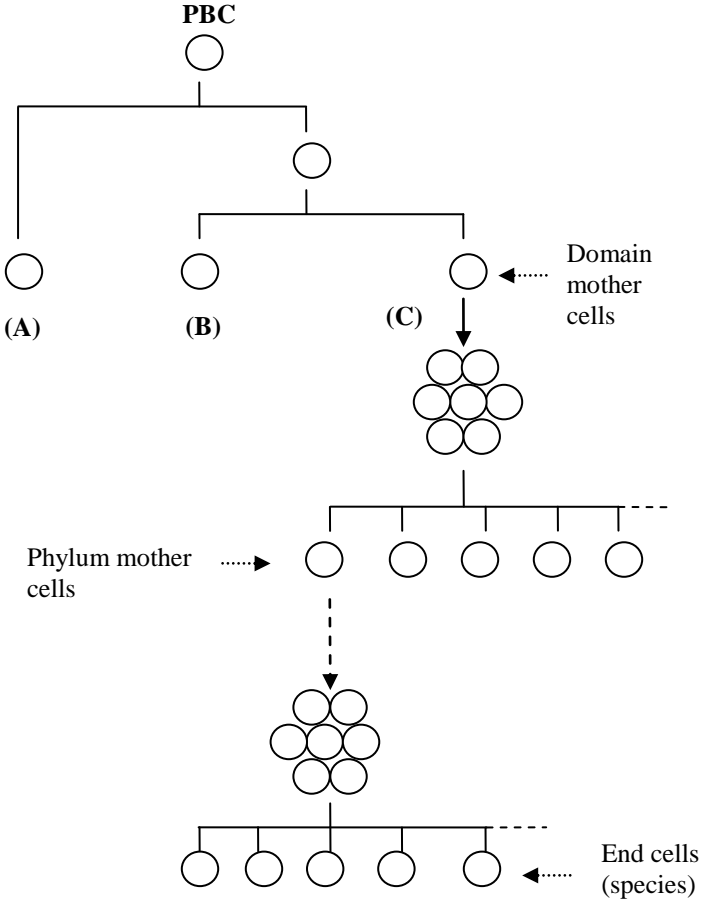The end cells would have remained dormant on the earth for varying periods of time as scheduled.

Fig. 4.2. Proposed pathway of programmed biosoftware differentiation involved in the creation of microbioprograms (representing species) from a single biomeme pool

Note: PBC: Primordial biochip (biomeme source). A, B and C represent the three domains - Bacteria, Archaea and Eukarya.

The microbioprograms of the end cells might have been switched to operation mode by some prescribed environmental abiomemetic signals (e.g., water molecule, heat, etc.) initiating development of the first members (phenotypes) of the species. It is the sequence of appearance of diverse phenotypes (species) on earth from these end cells that is reflected in the fossil record.

Depending on the species, sexually dimorphic, polymorphic, asexual and other forms of individuals would have developed from the end cells, which through further reproduction increased their population and perpetuated their species. The diverse biological species on the earth are referred to in the Quran as 'nations' or 'communities' like human species. "There is not an animal on the earth or a bird that flies on its two wings but as communities like you…" (Q. 6:38).

Supporting evidences

It may be noted that programmed evolution does not involve intermediate stages to create a fully designed, perfect organism. It is creation in one go through a programmed evolutionary process. Therefore the theory is consistent with the natural evidence of lack of transitional forms in the fossil record.

Sudden appearance of new species punctuated by long periods of stasis (punctuated equilibrium) can be explained by the proposed theory of programmed evolution. According to Douglas Futuyma, "Organisms either appeared fully developed or they did not. If they did not, they must have developed from preexisting species by some process of modification. If they did appear in a fully developed state, they must indeed have been created by some omnipotent intelligence." [13]. Almost all groups at all taxonomic levels first appear in the fossil record as 'type' forms, and then 'explode' into a large number of diverse lineages with a mix of related but not identical potentials for adaptive morphological change [14, 15, 16, 17].

This pattern is suggestive of partitioning of a very large common bioinformation package with a large number of alternate morphological potentials. But no known mechanism is so far available for generating such information-dense primordial source. According to Grasse, evolving species acquire a new store of biological information through "a phenomenon whose equivalent cannot be seen in the creatures living at the present time (either because it is not there or because we are unable to see it)" [18]. These observations are fully consistent with the need of a common source of bioinformation prior to the evolution of species. Evolutionary biology is however silent about the source of biological information. On the contrary, the proposed theory of programmed evolution not only recognizes the need for prior existence of bioinformation pool for the evolution of biodiversity (based on the Quranic verse 4:1) but also suggests a probable mode of origin of bioinformation source on Earth. The divine bioprogram (the common source of biological information) originated on Earth is the driving force behind evolution of all the biological species excepting *Homo sapiens*.

The theory of programmed evolution allows great flexibility in time scales required for the evolution of the biological species. Although the time schedules stipulated by the divine bioprogram for various stages of biosoftware differentiation cannot be reasoned out, the rapidity with which the chromosomal changes, cutting and splicing of chromosome sectors and cell division occur in nature is very much indicative of the speed with which the organic evolution up to creation of the end cells (microbioprograms of the various species) would have occurred. Evidently the entire process of creation of end cells would have been over in a very short time.

The proposed theory of programmed evolution involves extensive mixing of chromosomal regions during biomemetic differentiation process. Therefore it is possible to find chemically identical regions in the chromosomes of different

species. Since DNA is part of the chromosomal material, the existence of identical sequences in the genomes of different species is a reflection of the existence of identical chromosomal sectors in them. This can be taken as a confirmatory proof of biosoftware engineering that occurred during evolution. Studies relating to molecular evolution provide considerable evidence of chromosome rearrangement, shuffling, reorganisation, etc., during the evolution of species. These findings serve as a window to the mechanism of biosoftware engineering that was in operation during programmed evolution of species. Little wonder that Philippe and Forterre [19] found the phylogenies as highly confusing due to the combining effects of gene duplication, gene loss, lateral gene transfer, etc. Experimental evidence for the occurrence of biosoftware engineering can also be obtained from several published reports on comparison of genome sequences. Wide variations are observed in karyotypes (number, size and shape of chromosomes in a somatic cell) of organisms. Comparison of karyotypes within and between species reveals that the differences are due to chromosome rearrangements. These rearrangements had played a major role in organic evolution [20]. There is undoubtedly a correlation between the rates of speciation and chromosome rearrangement [20, 21]. Cases of genes in the same phylogenetic clade occurring in different chromosomal regions and genes belonging to distantly related phylogenetic clades occurring very closely in a chromosomal region are quite common [22]. These observations were explained as the result of several chromosomal rearrangements occurred at the regions of these genes and the shuffling of genes (physically chromosomal regions) contained in different genomic clusters. In another study, Pevzner and Tesler [23] found large number of rearrangements and extensive reuse of breakpoints from the same short fragile regions in mammalian evolution. All these phenomena reflect the operation of biosoftware engineering mechanisms during biomemetic differentiation during

programmed evolution of species from a common bioinformation source and validate the proposed theory of programmed organic evolution.

4.3 Classification of biospecies

Based on the computer model, biological species may be classified into the following four categories.

Class 1. Single-chip bioprocessors: Unicellular   organisms like bacteria, amoebae, etc., are examples of this category. These systems are characterised by a single biochip. The microbioprogram and the hardware required to execute the program are carried in that single biochip. The system has only a limited number of functions to perform and is totally 'unconscious' in its activities.

Class 2. Multi-chipped bioprocessors: The multicellular plant species belong to this category. They are unconscious systems like the Class-1 systems. The system does not have a central processing unit like the brain of an animal or human system and its peripherals are more or less independent of each other in their functioning. These systems are relatively simple with considerably less number of peripherals than in animals and man.

Class 3. Multi-chipped unconscious biorobots: Animal species are included in this class. Their internal functioning as well as external activities like mobility and behaviour are fully controlled by their microbioprograms. An animal performs its internal and external activities in response to stimuli transmitted by both internal and external (sensory) organs. The internal activities are the biological activities occurring inside the system (housekeeping activities) that are responsible for the moment-to-moment existence and sustenance of the system. For example, the functioning of cardiovascular system, digestive system (energy generation), nervous system (communication network and control), reproductive system, etc., are internal activities. On the other hand, tasks such as

movement from one place to another, etc., are externally executed activities. A central processor controls both internal functions and external activities are involuntary in accordance with the microbioprogram. The system is not self-conscious. It is fully programmed like our computer machine.

Class 4. Multi-chipped free-willed conscious biorobot: This special class of biosystem comprises only one species, *Homo sapiens.* The human biosystem is comparable with a vertebrate animal system except that it has an additional processor, the *qalb* (mind). The mind is endowed with consciousness and freewill (see chapter 6).

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5. Human species

The Quran reveals that man was created by Allah through a special process independently of the creation of other biological species. The creation of human being was through a single step process and not through evolution from an animal as believed by the atheist lobby in the scientific community. Human species (*Homo sapiens*) and the universe were created with a purpose. Before we discuss human species, it is important to know the divine purpose of creation.

5.1 Purpose of creation

Knowledge of the purpose of an object is a pre-requisite to understand it holistically in the right perspective. The knowledgebase we generate about the universe and human life in science is incomplete as it lacks information on the purpose of creation. We will be able to develop holistic knowledge of the universe and man only if the purpose of creation is known. We cannot arrive at the purpose of the universe through speculation and scientific experimentation. The knowledge of the purpose is with the Creator alone. He alone can provide that information. Allah reveals that information not through science but through His Book – the Quran. The Quran is the only source that reveals to us the divine purpose of creation. The atheist scientific community however argues that the universe was not created but it originated by chance with no purpose to serve. But the Creator conveys to the unbelievers they are wrong: "Not without purpose did We create the sky, the earth and all in between! That is the impression of the unbelievers. So woe to the unbelievers from the (punishment of) Fire!" (Q. 38:27). "We created the skies and the earth and all in between in truth (i.e., with purpose) and for a fixed term. But those who reject Faith turn away from what they are warned of." (Q. 46:3).

Allah reveals the purpose of creating man and the universe as follows. "I have created *jinn* and man only to serve Me." (Q. 51:56). Allah uses the word *abd* in this context. *Abd* in Arabic means servant. In computer parlance the word *abd* means robot. Therefore human species is created as Allah's robot. Human beings endowed with intelligence, consciousness and freewill (freedom to take decision) are created to serve Allah as His vicegerents on planet Earth (Q. 2:30). The earth mentioned in verse 2:30 refers to the earth of the next permanent universe (Q. 14:48, 21:104-105) where human robots will serve Allah forever. It is that earth (and not the present earth) which is described in the Quran as the Garden (or Heaven) that will be inherited by Allah's selected human robots. "The Day the earth will be changed to a different earth and so will be the skies, and they (human robots) will appear before Allah, the One, the Irresistible." (Q. 14:48). "The Day We roll up the sky like a scroll rolled up for books! As We originated the first creation, so shall We repeat it – a promise binding on Us. Truly shall We fulfill it. Before this, We wrote in the *Zaboor* (the Book given to Prophet David) after the Reminder (*Taurat* given to Moses) that My righteous servants will inherit the earth (Heaven)." (Q. 21:104-105).

Not all human robots are going to be deployed by Allah as vicegerents on the next Earth (Heaven), but only the selected righteous human robots (Q. 21:104-105) will be admitted to Heaven. Since man is bestowed with freewill, he has discretionary freedom. He is at liberty to take decision himself. He can either accept Allah as his Master and obey His instructions or reject Him and His directions. This necessitates testing of human robots for their obedience to Allah prior to their deployment as His robots on the next Earth. The present temporary universe was therefore created by Allah as infrastructure facility for testing the human robots. "It is He who created the skies and the earth in six days. And His Throne was over water – in order to test which of you are best in conduct. But if you tell them you will indeed be raised up

after death, the unbelievers will surely say this is nothing but obvious sorcery." (Q. 11:7). The present Earth, the habitat of human beings, serves as the human robot testing laboratory. It is on Earth Allah has provided all the necessary resources and means of livelihood in accordance with Adam's biosoftware for a fixed term, the test period. "He (Allah) said: You (Adam and Eve, the first human couple) get down with mutual enmity among yourselves. And on the earth is your dwelling place and means of livelihood for a term (fixed). He (Allah) said: "Therein shall you live and therein shall you die and from there shall you be brought out (i.e., resurrection)." (Q. 7:24-25). The present life on Earth is therefore test life for man. Allah has given this life to man as an opportunity to prove one's voluntary submission to Him by living this life in accordance with His commandments, the religion Islam. For the nation of Prophet Muhammad it is Allah's commandments given in the Quran. So, it is up to the individual to live accordingly and make his test life successful. Death marks the end of the test life of an individual. "(Allah) who created death and life to test which of you is best in deed. And He is the Mighty, Oft-Forgiving." (Q. 67:2).

5.2 Process of creation of man

Holy Quran describes the creation of Adam, the first member of human species, as a single step process and not through evolution from an existing animal species. Allah created first the male member, Adam. He was created from clay (Q. 2:30, 15:28-29). The location of creation of Adam appears to be God's abode in the presence of angels. After moulding clay into human shape, God breathed into it from His *rooh* to create Adam. "Behold! Your Lord said to the angels: I am going to create a vicegerent on earth. They said: Will You place therein one who will make mischief therein and shed blood while we do chant Your praises and glorify Your holiness? He (Allah) said: I know what you do not know." (Q. 2:30). "Behold! Your Lord said to the angels: I am about to

create a man from sounding clay (made) from sticky mud. When I have fashioned him and breathed into him from My *rooh*, you fall down in obeisance to him." (Q. 15:28-29).

Based on the computer model of biological organism, the phrase, "breathed into it (clay mould) from My *rooh*" can be interpreted as the process of installing the biosoftware of human species in the clay model to transform it into a living human individual. The Quran further reveals that the first female member (Eve) was created from Adam's *nafs* (the *rooh* breathed into the clay model) and from them, the entire humanity (Q. 4:1, 39:6). "O mankind! Fear your Lord who created you from a single soul (*nafs*) and from that, He created its mate, and from them both He (created and) spread plenty of men and women. Be conscious of Allah about whom you ask each other and (be also conscious of) the family relations. Verily, Allah is watching you." (Q. 4:1). "He created you (all) from a single soul; then He created from it its mate; and he sent down from the cattle eight pairs; He develops you in your mothers' wombs in stages one after another in three veils of darkness. That is Allah – your Lord; to Him belongs (all) dominion. There is no God but He; then how do you get misled (from the truth)?" (Q. 39:6).

Since it was from Adam's *nafs*, the female member (Eve) was created, it can be inferred that the male biosoftware carries information needed to create female also. In reality this is reflected in the chromosome composition of male and female sexes. The message conveyed through verses 4:1 and 39:6 therefore permits us to determine the karyotype of Eve in relation to Adam. The human biosoftware is stored on 23 pairs of chromosomes of which 22 pairs are autosomes and one pair sex chromosomes. Female member has two X chromosomes whereas the male has one X chromosome and one Y chromosome as sex chromosomes indicating that biological information relating to female characteristics is stored on X chromosome and that relating to male is stored on Y

chromosome. Thus XX combination determines the femaleness and XY combination determines the maleness. This also shows that only male member has the full complement of chromosomes of the species. Thus the *nafs* of Adam which forms the microbioprogram of human species (i.e., the source of biological information for creating mankind) is stored on 22 pairs of autosomes and one pair of X and Y chromosomes. Adam's karyotype may be designated as (22 autosome pairs)$_A$ plus (one XY pair)$_A$, where subscript A stands for Adam. Since it was from Adam's *nafs* Eve was created, the karyotype of Eve can be written as (22 autosome pairs)$_A$ plus $X_A X_A$. It is from this human couple, generations of mankind arose and spread as different communities worldwide.

After creating Adam, Allah ordered the angels to bow down to him (Q. 15:28-29 quoted above). All the angels except *Iblis* bowed down to Adam. Allah asked *Iblis* to explain his non-compliance. *Iblis* responded boastingly that he was much above man in status and that prevented him from prostrating before Adam. Allah asked him to get out from the divine abode. *Iblis* pleaded for respite till the Day of Judgement when all human beings are raised up again. Allah granted *Iblis* respite. *Iblis* then swore that since Allah misguided him, he would mislead all human beings from the divine path except the most sincere and pious ones (Q. 2:34, 7:12-18).

Allah asked Adam and Eve to live in the Garden. They were ordered by God not to touch the *Tree* there. That was the only directive Allah had given to test them. However, they were lured and misguided by the loathsome Satan (not *Iblis*) to disobedience. It is important to note that it was *Iblis* who vowed before Allah to mislead man. But it was not *Iblis* but Satan who put the misleading suggestions onto the minds of Adam and Eve. The Quran did not use the word *Iblis* after his conversation with Allah (i.e., after verse 7:18), but used the word "Satan" instead. The use of the word Satan in place of *Iblis* in verses 7:19-25 is glaring. It is because Satan is different

from *Iblis*. If not, there is no need to introduce a different term. The religious scholars have not distinguished the two terms from each other. The situation has led to so much confusion in understanding the verses, which is reflected in Quran translations. A plausible explanation can be given based on the computer model of human biosystem [1]. Treating *Iblis* and Satan at par is not correct. They are physically different because Allah warned Adam and Eve of Satan and not *Iblis* as avowed enemy. Further Allah conversed with *Iblis* and not Satan. Since *Iblis* was an angel at the time of creation of Adam, it may be presumed that *Iblis* was using Allah's programs. This is evident from the statement of *Iblis* that it is with Allah's permission and power he misleads human beings (Q. 38:80-85).

Going by the computer model, the human robot system requires a program to make misleading suggestions. Without such program, the mind of human robot, which is endowed with freedom to take decision would accept only Allah's instructions. The mind cannot be misled. If a program to tempt the mind from Allah's path is present, man has to make a choice. Man has to reject the satanic temptations and obey only Allah's instructions. The test becomes effective that way. Therefore it may be inferred from these verses that with Allah's permission *Iblis* installed a suitable program in Adam's biosystem. This program thus became part of Adam's *nafs*. In computer parlance it was a virus program that was installed by *Iblis*. A computer virus is a small program designed to interfere with the functioning of the system the way its author wanted. The Satan mentioned in the Quran may be considered as virus program. The intention of *Iblis* was to mislead man from Allah's path. Satan virus does this job by interfering with the decision-making function of the human *qalb* (mind) by offering tempting (evil) suggestions to it (Q. 7:19-22). Since Eve was created from Adam's *nafs*, the Satan virus also entered Eve's biosoftware. Thus we find Satan putting suggestions onto the *qalb*s of Adam and Eve instead of *Iblis*. The virus analogy

enables us to visualize how *Iblis* carries out his threat. The Satan is the tool of *Iblis* operating inside the human biosystem and not from outside as is believed now. It is through Satan virus and not by direct physical involvement *Iblis* carries out his threat of misleading man from the divine righteous path. For a detailed discussion see *The Quran: Scientific Exegesis* [2].

Adam and Eve fell an easy prey to Satan's temptations and failed in the test – they ate from the tree. That led to their ouster from the Garden to Earth where the human beings born till the end of the world will undergo the divine test for obedience to Allah. "He (Allah) said: "You (Adam and Eve) get down with mutual enmity among yourselves. And on the earth is your dwelling place and means of livelihood for a term (fixed). He (Allah) said: "Therein shall you live and therein shall you die and from there shall you be brought out (i.e., resurrection)." (Q. 7:24-25).

The planet Earth is so designed by Allah as to serve as the habitat of man. The present Earth may be thought of as a simulated miniature replica of the final abode, Heaven, promised by Allah to the successful human robots. The provisions given on Earth are to meet the human requirements stipulated in the biosoftware of human species - Adam's *nafs*. Everything created by Allah is for human beings and they are all subjected to man. Several verses in the Quran reveal that (e.g., Q. 13:2, 21:33, 9:36, 30:23). The Quran speaks at length about the facilities, amenities and infrastructure provided in the test centre – the planet Earth. The importance of Earth in the overall divine mission is reflected in the description of the universe in the Quran as heaven and Earth. The physical resources, plant resources, animal resources and marine resources provided on Earth are to meet human requirements. In other words, the universe is anthropocentric in every respect. The biodiversity on Earth was created to suit the human requirements. Man is not just another animal as supposed by

the scientific community. Through the Quran Allah provides a glimpse of His organizational set up for the accomplishment of His mission – testing *Homo sapiens*. We have to look at every creation from that divine perspective.

5.3 Human biodiversification

Verses 4:1 and 39:6 quoted above indicate a very important fact about humanity. It is from a single bioprogram (i.e., the *nafs* of Adam) billions of human individuals varying widely in their physical and mental potentials are created. In other words, Adam's *nafs* serves as the source of biological information required for that. Adam's *nafs* can therefore be considered as the microbioprogram of human species. It is the Quran that reveals to us the source of biological information required to create huge variability in human population. Scientific community is silent about the source of biological information. The issue is beyond the scope of science and has not been addressed. It is not possible to say whether *Homo sapiens* has attained the maximum potentials physically and mentally. Perhaps still more wonderful show of human potential is yet to come. What we observe now is the scale of human biodiversity created so far.

Human biodiversification process can be understood as biomemetically programmed phenomenon to create diverse phenotypes, biomemetic lineages representing races, nations, tribes, etc. The phenomenon is natural demonstration of how varied phenotypes (human individuals) are produced from diverse biosoftware created from a single original source of biological information (Adam's *nafs*) through natural biosoftware engineering mechanisms. Appropriate natural biosoftware engineering mechanisms play a major role in shuffling, redistributing and reorganizing the biomemetic package during meiosis to produce biomemetically varying gametes. During fertilization, male and female gametes unite to produce the biosoftware of the offspring (next generation). Transmission of bioinformation in this way to the offspring

preserves the Adam-Eve lineage and its continuity over generations. It is these lineages that, in turn, represent diverse ethnic groups, races, cultures, etc. along the timeline prescribed in Adam's *nafs*.

During meiosis biomemetic changes occur through a process called 'crossing over' in which segments of non-sister chromatids of a homologous pair of homologous dyads are exchanged. This swapping of chromosome portions leads to alteration of bioinformation content in the resulting chromosomes. The 'crossing over', as any other bioprocess, is a programmed phenomenon. It is responsible for the production of the next generation biosoftware in human species. It is this process that leads to biodiversification in human populations in time and space in a programmed manner. Since scientists do not view this natural process as mechanism designed and programmed to accomplish the divine objective of creating biodiversity, they consider this and other similar process as random phenomena or errors and mistakes.

Mere production of gametes slated for the next generation is not enough. The male gametes (sperms) and female gametes (eggs) so produced must also meet their right partners and fuse to form the zygotes to produce the intended biomemomes and from them the human individuals via ontogenetic development. To that end Allah informs us thus: "Allah knows what every female (womb) bears, by how much the wombs fall short (of their time or number) or do exceed. Every single thing is before His sight, in (due) proportion." (Q. 13:8). The verse indicates that fertilization taking place in human biosystem is as programmed by Allah and therefore He knows what every female conceives. Spermatozoa normally encounter the egg at the fertilization site (in the Fallopian tube) within 24 hours after ovulation. A considerable fraction of the spermatozoa in the semen ejaculated into the female reproductive tract remains motionless in storage sites until ovulation, when the spermatozoa resume maximal motility and

reach the fertilization site within minutes. "Sperms have the opportunity to interact with many other kinds of cells in the female," says Jerry Hedrick, a biochemist in the Division of Biological Sciences, UC Davis. "How egg and sperm recognize one another is a fundamental question in reproductive biology." [3]. Although the nature of the signal for sperm movement is not known, there are indications to suggest that attraction of spermatozoa to a factor(s) released from the egg may be a key event in the fertilization process and may give insight into the mechanism underlying early egg-sperm communication [4]. This is indicative of some kind of chemical signaling for drawing the sperms towards the egg for fertilization. However, the exact mechanism involved in the fertilization process particularly the question of how only a single sperm is enabled to fertilize the ovum is not known. Allah says: "It is He Who shapes you in the womb as He likes." (Q. 3:6). This message implies that which sperm must fuse with which ovum has also been programmed so that the individual developed from the fusion becomes Allah's choice. In other words, it is according to what Allah has programmed, individuals (phenotypes) with their physical and mental abilities are created. We do not have sufficient information on human fertilization to understand the mechanism involved in bringing together 'biomemetically labelled' pair (male and female) of gametes for their eventual union. Studies conducted with human beings in this area are scanty. Fertilization of female egg with male sperm is a highly controlled phenomenon as only one sperm out of millions in the ejaculated semen is capable of fertilizing the egg. Further, once fertilized by a sperm, the zygote (fertilized egg) becomes inaccessible to another sperm. It is closed for ever. Evidently there is mechanism to guide sperm to the egg it has to fertilize. In other words, a sperm is programmed to fuse with certain egg and not at random. The biomemome so produced in the zygote decides the phenotype, the individual. The verse 3:6 means that. This is

how Allah creates human robots with diverse physical and mental abilities as He likes for the test.

Further, the Quran also reveals that Allah taught man to speak (Q. 55:4) and write (Q. 96:3-5), two modes of communication. Allah has also given many languages to man (Q. 30:12). In computer parlance, this would mean that Allah has included necessary software in Adam's *nafs* for speaking and writing in various languages.

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6. Human biosystem

As the purpose of creating human being is to serve Allah as His robot, the human biosystem must be so designed to suit the divine purpose. Man is a new phenomenon in the history of the planet Earth bringing into the world thought, language, social relations and civilizations, and exerting an active influence on nature. Human race thus stands out from the rest of bioworld. However, scientific community without considering the divine purpose of human species places *Homo sapiens* in the animal kingdom as a member of genus *Homo*, of subfamily Homininae, of family Hominidae, of order Primata, of class Mammalia, of subphylum Vertebrata, of phylum Chordata, of kingdom Animalia. Man has to be seen as a single species kingdom being the only species bestowed with mind, which imparts to him the unique features like consciousness, analytical power (intelligence), and more importantly freedom to take decision (freewill) that are absent in other species. Every other species is created to serve as resource during the test period and has been subjected to man as already discussed in chapter 5.

The human brain weighs roughly 1.4 kg and has a volume of 1.5 l. It is the most intricate and eluding network of transmission of information. Brain contains approximately 10^{11} nerve cells, each 10^{-4} cm diameter, each connected to 100-1000 others; the total number of connections is a staggering 10^{14}. On computer parlance, the brain has an extremely complex architecture with very low power consumption (10 W). It is endowed with a gigantic memory and executes hundreds of physiological control functions simultaneously. Yet it has 80% of its capacity left for functions such as thinking, solving problems, etc. The brain has built-in back up system in some cases. If one pathway in the brain is damaged, there is often another pathway to take over the function of the damaged pathway [1].

Our knowledge of the mechanisms involved in the functioning of the brain is fragmentary. A comparison of human and animal biosytems is made here based on the computer analogy mainly to differentiate between the conscious and unconscious activities. Since brain is the controlling centre of all activities performed by the biosystem, it is but logical to conclude that there must be some location in the brain which functions as the Central Processing Unit (CPU). We may consider the CPU as responsible for controlling and regulating all the unconscious activities and functions. Unconscious activities refer to all the life-sustaining (housekeeping) functions going on inside the human biosystem as well as such actions as reflex and instincts (fully controlled by the microbioprogram of the species). This is the only processor present in all the animal biosystems. Besides this processor, man is also provided with another processor called mind. This unique processor is bestowed with intelligence, consciousness and freedom to take decision (freewill). Conscious activities refer to those ordered by the mind using its freewill.

The two exclusive features of human biosystem revealed by the Quran are mind (*qalb* in Arabic) and memory (*sadr* in Arabic). These two system components are treated here as the most distinguishing features of human species from the rest of the living world (Fig. 6.1).

6.1 Human mind

The mind functions independently of the CPU although they are linked. This linkage is reflected in the internal body functions depending on the mental state of the individual. Any information processed by the mind is a conscious activity and any action ordered by the mind is also a conscious activity. It is the mind-commanded activities that are referred to as voluntary activities. Several features of human *qalb* and functions are identified in the Quran [2].

Animal biorobot

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Input          CPU          Memory
ports

            Commands

             Organs
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Human biorobot

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            Memory                  Qalb
                                   (Mind)
Input        CPU
ports                               Sadr
                                  (Memory)
           Commands

            Organs
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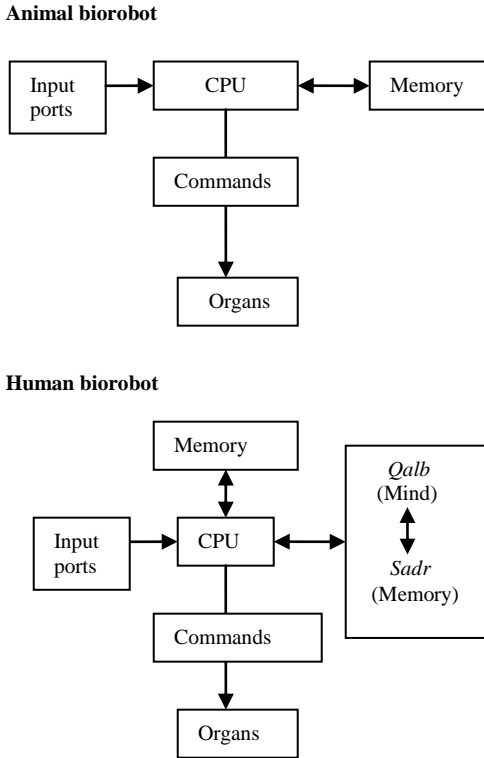
Fig. 6.1. Contrast between animal and human biorobot systems

a) Mind is the processor that creates conscious perception such as vision, hearing and feelings (Q. 67:23). This means that when a signal (abiomeme) is received from the outside environment through appropriate input port or sensor (eye, ear, nose, skin or tongue), it is transmitted ultimately to the mind, which processes it in accordance with the human biosoftware and transforms it into conscious perception. It decides the action to be taken and communicates the same to the CPU. The CPU directs the organs accordingly for action. The Quran says

that conscious perception is taking place only in human beings. The Quran reveals this fact in two ways. One is that mind and the faculties responsible for vision, hearing, feeling, etc. are given by God only to human species (Q. 67:23), and the other is that although animals have external input ports like eye, ear, etc., they do not see or hear as humans do (Q. 7:179; 25:44). Clearly, due to the absence of mind and appropriate biomemes, the signals inputted through the external sensory organs in animals do not result in conscious perception of the environment. The data are processed by the CPU and the animal responds to it unconsciously.

These Quranic revelations have far-reaching implications. To put it in simple terms, man alone experiences the universe around him. In other words, the universe is tangible only to man. The processor mind creates perceptible universe in accordance with human biosoftware. The animals are incapable of creating conscious perception of the world around them. To them the world does not exist. They do not see, hear or feel (including pain) as we do. They function unconsciously as commanded by their CPUs in accordance with their programs. They are comparable with man-made robots. A robot can be aptly considered as the artificial counterpart of animal biosystem in a limited sense.

The universe *per se* is without sound, smell, colour, shape, etc. It is the human mind that imparts all these characteristics to the universe in response to abiomeme-biomeme interaction. For instance, when you put a grain of sugar (sucrose) on your tongue, its chemical structure acts as abioswitch to actuate certain biomemes in the cells of the tongue. The mind interprets the instructions carried in the biomemes turned on and produces certain feeling which is the sweet taste we consciously experience. It is not because the sucrose molecule is inherently sweet but because it turns on the biomemes required to produce sweet taste by mind that we experience the sweetness. In other words, if it turns on the

biomemes, which the human mind interprets as bitter, the sucrose will be bitter in taste. This is the case with every other sensory experience like smelling, seeing or hearing. We do not feel the weight of various organs in the body. While eating we do not feel the weight of food reaching the intestine. Similarly, a pregnant woman does not feel the weight of the developing foetus inside her womb. Evidently the biomemes of cells inside our body are not in operable mode. On the other hand if a small mass is taken in our hand or placed on the skin, we readily feel its weight and thus its presence.

The production of images and conscious perception happen inside the brain in accordance with the biosoftware. Take another case say, the colour we see. Colour is not an intrinsic property of the object. When we see an object red, our impression is that the object is in reality red. But it is not. It only emits or reflects electromagnetic radiation of wavelengths around 600 nm. This wavelength actuates certain biomemes in the eye, which the mind processes resulting in the perception of the object as red. In other words, if that radiation turns on some other biomemes as specified by our biosoftware, our mind would have given it another colour. The human visible spectrum ranges from 400 to 700 nm. This means we have biomemes in our biosoftware that can be actuated by radiation ranging in wavelength from 400-700. In short, which abiomeme originating from outside the body should actuate which biomeme is determined by our biosoftware. Only that biomeme(s) will alone be triggered into operation. Every experience we get about the surrounding environment depends on the abiomeme-biomeme interaction stipulated in our biosoftware. Thus it is our mind that creates the world around us depending on the abiomeme-biomeme interactions (see also the discussion in chapter 3).

The absolute nature of energy is unknown (*ghayb*) to man. What man experiences is the form in which his mind transforms the divine information carried in the energy in

accordance with his God-given biosoftware. That is, human mind is transforming the intangible (*ghayb* in Arabic) energy (information) into tangible (*shahadat* in Arabic) form using its biosoftware. The information (energy) that is beyond the processing ability of human mind and not covered in the biosoftware will remain intangible to man [3]. Thus it can be stated that the tangible or physical universe is created by human mind by processing information in accordance with the biosoftware. Thus it is human biosoftware that decides how the world should look to man. In other words, man experiences the world around him as decided by God.

Another implication is that it is mind that imparts self-consciousness or the 'I feeling' that is lacking in animals and other biosystems. This in turn is responsible for development of ego in humans. Feelings are developed only in human biosystem. The Quran indicates that. "Say: It is He (Allah) who created you and made for you the faculties of hearing and seeing, and feelings (mental faculties). Little thanks it is you give." (Q. 67:23). Insofar as animals are unconscious biosystems (without the conscious processor mind), feeling including pain is lacking in animals. Whatever expressions an animal shows are purely unconscious responses to the signals (abiomemes) it receives from the environment. Man-made robots can also be programmed to show expressions of this kind – expressions like anger, love, pain, etc., which are mere expressions without experiencing. This is the case with animals also. The expressions they produce are not emotions (i.e., a feeling experienced by mind) because animals lack mind. However we treat animal expressions as conscious experiences akin to ours because we treat animal biosystem like ours. This is a misconception.

b) The *qalb* is the part that thinks and learns (Q. 22:46; 7:179). Thought process may be categorised into at least two. One is information search and the other is deductive reasoning. Information search is the process of information retrieval from

the memory (*sadr*) by mind. The mind can get particular information only if it is available in the memory or else, it cannot. It may also happen sometimes that even if that information is available in the memory, due to failure of some mechanism retrieval will not take place. Such an event is referred to as forgetfulness.

Deductive reasoning, interpretation, conceptualisation, etc. are other kinds of thought processes which involve analysis of data and information available in the memory to generate more comprehensible knowledge about some observed matter or phenomenon.

c) The Quran further reveals that man is endowed with freedom to take decision and act (Q. 17:84). It is the freewill or the freedom the mind enjoys to take decision that enables man to act as he likes. The human mind is the only component in the whole universe that is given freedom to take decision at will; everything else is totally programmed. This is clearly mentioned in the Quran (Q. 16:48-50, 22:18).

6.2 Human memory

Another unique feature of human robot is the memory (*sadr* in Arabic), which is the storehouse of information about the activities of the mind (Q. 11:5; 28:69). Any information inputted to mind from the five sensory organs as well from inside the system, decisions taken by the mind, and activities performed as directed by mind are recorded in the memory in real time. It is these data, information or knowledge that can be accessed and/or retrieved by the mind. This information base is the repository of what is transmitted from inside the system as well as from the environment outside of the biosystem and constitutes *a posteriori* information. Besides this, there is another category of information that is transmitted to the zygote of an individual through germ line. This category referred to as *a priori* knowledge is mainly responsible for the

development of science and technology, and other epistemic spaces.

6.3 Evolution of science and technology

It has already been mentioned that it is for human use Allah has created everything and subjected them to man. We find renewable (e.g., water, air, etc.) and non-renewable (e.g., oil, minerals, etc.) resources in nature. Every species other than man utilizes only renewable resources. Only man requires both renewable and non-renewable resources to meet the requirements as stipulated in his biosoftware. It may be noted that other species are also created as renewable resource for man. Further, other species utilize the resources as such. For example, they eat whatever nature provides. A bird builds its nest utilizing certain materials available in nature. Likewise every requirement of these species is met directly from what is provided in nature. On the other hand, humans do not utilize the natural produce including food as such like other organisms. To man nature only provides raw materials from which he produces things using appropriate technologies. Human requirements are stipulated in the biosoftware that way. Excepting perhaps some fruits and water, every item of food we eat is processed one (e.g., cooking). This is true not only for food but also for every other material requirement like house building, transport, and so on. This would mean that we need a wide range of technological know-how for utilization of the natural resources as prescribed in our biosoftware. This knowledge is science and technology.

It is Allah Who taught man that he did not know (Q. 96:5). The Quran reveals that following creation of Adam, Allah taught him names of things (Q. 2:31). What Allah taught Adam constitutes the knowledge human species is entitled to get. The word "teach" in computer parlance may be interpreted as uploading knowledge in Adam's biosystem. This means that besides the biosoftware, Adam's *nafs* also carries knowledge. This forms the repertoire of every kind of knowledge including

scientific and technological knowledge human species is entitled to get. At another place in the Quran, it is more explicitly stated that the quantum of knowledge communicated to human species is finite (Q. 17:85). The knowledge gifted by Allah to Adam is transmitted down the germ line so that it reaches generations of mankind in a phased manner as programmed in Adam's *nafs*. This would mean human beings also receive knowledge at birth through germ line. Many philosophers have indicated the existence of *a priori* knowledge although its source has remained unknown.

The process of transmission of *a priori* knowledge can also be explained biomemetically through germ line as the case of human biodiversification phenomenon. A computer or a robot can retrieve certain information only if that information is stored and hence available in its memory. Likewise a human being can retrieve particular information only if it is available in his memory. Otherwise he cannot. That being the case how can anyone acquire new information about the universe or technology, if that information is not available in his memory? If a scientist wants to conduct an experiment, he should first get that idea. The idea may be what he derived from already available information in which case it is *a posteriori*. However on several occasions it can be new – not known yet. Idea or information of that kind cannot pop up on one's mind from thin air. It should have come from his memory. One strikes an idea when it is downloaded to his mind. We call such events as intuition. We all experience this once in a while. Remember that our mind is constantly being bombarded with information (downloading process) we acquired from our experience (*a posteriori*) and also with new information (ideas), which we are not aware of until then. The new information also originates from our memory. It does not fall under the category of known (*a posteriori*) information which we store in our memory. The new information arrived through germ line. The source of any information other than *a posteriori* is Adam's *nafs*. As the knowledge included in Adam's *nafs* is transmitted

through germ line, its release to mankind in time and space depends on how it is programmed. Both biodiversification and transmission of *a priori* knowledge must be operating in tandem so that individuals with appropriate phenotypic attributes are created to receive certain knowledge. When certain knowledge reaches a zygote biomemetically through germ line, the individual developed from that zygote would carry that knowledge. That knowledge gets stored in his memory during development. If he is the person to whom that knowledge is to be revealed, it will be downloaded onto his mind from the memory at the time stipulated in his biosoftware. Till then he will not be even aware of that knowledge. Once downloaded to the mind, it becomes a piece of known information and the individual can retrieve it from the memory any time he wants. If he is not the person to whom that knowledge is to be revealed, it will be passed on to the next generation. Discovery of new information (knowledge) other than that is gained from experience happens in this way in every sphere of human activity as programmed by Allah in Adam's *nafs*.

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