THE MIRACLE IN THE CELL MEMBRANE

HARUN YAHYA
(ADNAN OKTAR)

BACK COVER

The 100 trillion or so cells that make up the human body perform countless activities, without ever stopping, growing tired or needing a rest. In the same way that every living thing needs energy—and therefore, food—to survive, so the cell also needs various nutrients in order to perform its countless functions. In the same way that raw materials to be used in production are carried inside a factory and stored until needed, and waste products are later sent out of the factory later, so a very complex production, storage and waste-disposal system operates within the cell.

In the same way that the qualities of the raw materials brought to the factory are specified by contract, so the cell observes special conditions for the substances it takes into itself. Substances do not enter the cell at random. As if they were already familiarized beforehand, these molecules are subjected to “identity checks” at the cell membrane. There are entryways held open solely for substances regarded as admissible. Other substances, whose entry is regarded as possibly undesirable, are eliminated with a care reminiscent of fingerprint checks. The way the nature of these materials is checked and confirmed before entering the cell is of vital importance. These strict security precautions avoid the risk of entrance of any virus, bacterium or poisonous substance into the cell. This huge responsibility is assumed by the thinnest of membranes.

Each one of the trillions of cells that make up your body acts with this awareness. Each cell membrane implements this sensitive selection mechanism in that part of the division of labor that falls to it. No human being can even be aware that such extraordinary functions are taking place, let alone be able to perform any such selection consciously. The appearance of an intelligence beyond human in the cell membrane shows that the source of that intelligence is not the cell itself but rather the inspiration of Allah, Who created it. By the command of Allah each and every cell carries out its duties for us flawlessly.

About the Author

Adnan Oktar, who writes under the pen-name Harun Yahya, was born in Ankara in 1956. Since the 1980s, the author has published many books on faith-related, scientific and political issues. He is well-known as the author of important works disclosing the imposture of evolutionists, their invalid claims, and the dark liaisons between Darwinism and such bloody ideologies as fascism and communism.

All of the author’s works share one single goal: to convey the Qur'an's message, encourage readers to consider basic faith-related issues such as Allah's existence and unity and the Hereafter; and to expose irreligious systems' feeble foundations and perverted ideologies. His more than 300 works, translated into 63 different languages, enjoy a wide readership across the world.

By the will of Allah, the books of Harun Yahya will be a means through which people in the twenty-first century will attain the peace, justice, and happiness promised in the Qur'an.

ABOUT THE AUTHOR

Now writing under the pen-name of HARUN YAHYA, Adnan Oktar was born in Ankara in 1956. Having completed his primary and secondary education in Ankara, he studied fine arts at Istanbul's Mimar Sinan University and philosophy at Istanbul University. Since the 1980s, he has published many books on political, scientific, and faith-related issues. Harun Yahya is well-known as the author of important works disclosing the imposture of evolutionists, their invalid claims, and the dark liaisons between Darwinism and such bloody ideologies as fascism and communism.

Harun Yahya's works, translated into 63 different languages, constitute a collection for a total of more than 55,000 pages with 40,000 illustrations.

His pen-name is a composite of the names Harun (Aaron) and Yahya (John), in memory of the two esteemed Prophets who fought against their peoples' lack of faith. The Prophet's seal on his books' covers is symbolic and is linked to their contents. It represents the Qur'an (the Final Scripture) and Prophet Muhammad (saas), last of the prophets. Under the guidance of the Qur'an and the Sunnah (teachings of the Prophet [saas]), the author makes it his purpose to disprove each fundamental tenet of irreligious ideologies and to have the "last word," so as to completely silence the objections raised against religion. He uses the seal of the final Prophet (saas), who attained ultimate wisdom and moral perfection, as a sign of his intention to offer the last word.

All of Harun Yahya's works share one single goal: to convey the Qur'an's message, encourage readers to consider basic faith-related issues such as Allah's existence and unity and the Hereafter; and to expose irreligious systems' feeble foundations and perverted ideologies.

Harun Yahya enjoys a wide readership in many countries, from India to America, England to Indonesia, Poland to Bosnia, Spain to Brazil, Malaysia to Italy, France to Bulgaria and Russia. Some of his books are available in English, French, German, Spanish, Italian, Portuguese, Urdu, Arabic, Albanian, Chinese, Swahili, Hausa, Dhivehi (spoken in Maldives), Russian, Serbo-Croat (Bosnian), Polish, Malay, Uygur Turkish, Indonesian, Bengali, Danish and Swedish.

Greatly appreciated all around the world, these works have been instrumental in many people recovering faith in Allah and gaining deeper insights into their faith. His books' wisdom and sincerity, together with a distinct style that's easy to understand, directly affect anyone who reads them. Those who seriously consider these books, can no longer advocate atheism or any other perverted ideology or materialistic philosophy, since these books are characterized by rapid effectiveness, definite results, and irrefutability. Even if they continue to do so, it will be only a sentimental insistence, since these books refute such ideologies from their very foundations. All contemporary movements of denial are now ideologically defeated, by means of the books written by Harun Yahya.

This is no doubt a result of the Qur'an's wisdom and lucidity. The author modestly intends to serve as a means in humanity's search for Allah's right path. No material gain is sought in the publication of these works.

Those who encourage others to read these books, to open their minds and hearts and guide them to become more devoted servants of Allah, render an invaluable service.

Meanwhile, it would only be a waste of time and energy to propagate other books that create confusion in people's minds, lead them into ideological confusion, and that clearly have no strong and precise effects in removing the doubts in people's hearts, as also verified from previous experience. It is impossible for books devised to emphasize the author's literary power rather than the noble goal of saving people from loss of faith, to have such a great effect. Those who doubt this can readily see that the sole aim of Harun Yahya's books is to overcome disbelief and to disseminate the Qur'an's moral values. The success and impact of this service are manifested in the readers' conviction.

One point should be kept in mind: The main reason for the continuing cruelty, conflict, and other ordeals endured by the vast majority of people is the ideological prevalence of disbelief. This can be ended only with the ideological defeat of disbelief and by conveying the wonders of creation and Qur'anic morality so that people can live by it. Considering the state of the world today, leading into a downward spiral of violence, corruption and conflict, clearly this service must be provided speedily and effectively, or it may be too late.

In this effort, the books of Harun Yahya assume a leading role. By the will of Allah, these books will be a means through which people in the twenty-first century will attain the peace, justice, and happiness promised in the Qur'an.

TO THE READER

A special chapter is assigned to the collapse of the theory of evolution because this theory constitutes the basis of all anti-spiritual philosophies. Since Darwinism rejects the fact of creation—and therefore, Allah's existence—over the last 150 years it has caused many

people to abandon their faith or fall into doubt. It is therefore an imperative service, a very important duty to show everyone that this theory is a deception. Since some readers may find the opportunity to read only one of our books, we think it appropriate to devote a chapter to summarize this subject.

All the author's books explain faith-related issues in light of Qur'anic verses, and invite readers to learn Allah's words and to live by them. All the subjects concerning Allah's verses are explained so as to leave no doubt or room for questions in the reader's mind. The books' sincere, plain, and fluent style ensures that everyone of every age and from every social group can easily understand them. As a result of their effective, lucid narrative, they can be read at one sitting. Even those who rigorously reject spirituality are influenced by the facts these books document and cannot refute the truthfulness of their contents.

This and all the other books by the author can be read individually, or discussed in a group. Readers eager to profit from the books will find discussion very useful, letting them relate their reflections and experiences to one another.

In addition, it will be a great service to Islam to contribute to the publication and reading of these books, written solely for the pleasure of Allah. The author's books are all extremely convincing. For this reason, to communicate true religion to others, one of the most effective methods is encouraging them to read these books.

We hope the reader will look through the reviews of his other books at the back of this book. His rich source material on faith-related issues is very useful, and a pleasure to read.

In these books, unlike some other books, you will not find the author's personal views, explanations based on dubious sources, styles that are unobservant of the respect and reverence due to sacred subjects, nor hopeless, pessimistic arguments that create doubts in the mind and deviations in the heart.

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FOREWORD

Is He Who creates like him who does not create? So will you not pay heed? If you tried to number Allah's blessings, you could never count them. Allah is Ever-Forgiving, Most Merciful. Allah knows what you keep secret and what you make public. (Surat an-Nahl, 17-19)

Take a brief walk through your house and consider how many things that make your life easier have been thought of beforehand and laid out for your use.

Before you even enter the front door, you find a doormat set out for you to wipe your shoes on and, as you step inside, a coat rack on which to hang your coat or jacket. Various items such as armchairs, carpets, curtains and a television have been laid out for decoration or comfort; the refrigerator, oven and cupboards in the kitchen are ready to meet all your needs.

The same applies to your desk, lamp, wardrobe and bookcase. There is a purpose behind each of them being located where they are.

No one could claim that all these devices are the products of coincidence or that they installed themselves in their allotted places. Whether the item be as small as a salt cellar, or as heavy as a mirror hanging on the wall, every visitor will agree that these are all deliberate substances, having been arranged in their locations in a conscious manner. It would be exceedingly illogical to try to account for these products of considerable planning, intelligence and knowledge, created to satisfy particular needs and for specific purposes, in terms of coincidence.

However, bring up the subject of living things, and some people claim that a living cell—which even with the most advanced technology, in the most highly developed laboratories and with the accumulated knowledge of many years, has never been brought into being—appeared as the result of a chain of coincidences over millions of years. They defend that claim, which is devoid of any scientific basis, out of their blind belief in Darwin's theory.

In fact, however, just as the theory of evolution has been invalidated in such fields as paleontology, genetics, comparative anatomy and observational biology, so it has collapsed in the sphere of molecular biology, which deals with the very origin of life. The claim of Darwinists, which may be summarized as "life is the product of coincidences and natural laws" reaches an impasse at the molecular level, before even reaching the cellular stage.

In the course of this book you will see that the cell membrane, just one of the complex structures in the cell, is the work of a superior Wisdom and Creation, and will see how by itself, even this delicate membrane invalidates the Darwinists' claims of coincidence.

INTRODUCTION: THE CONSCIOUSNESS BEYOND MATTER AND THE COLLAPSE OF MECHANISM

He is the Knower of the Unseen, Whom not even the weight of the smallest particle eludes, either in the heavens or in the Earth; nor is there anything smaller or larger than that which is not in a Clear Book. (Surah Saba', 3)

Before the spread of materialist philosophy, the scientific world accepted the fact that Allah had created the universe and everything in it from nothing and kept it under His might at all moments. Materialism, however, first denied Allah's eternal dominion over nature. The view known as mechanism advanced the proposition that all the systems in nature and the universe functioned like machinery, in a self-contained manner. One of the foremost 18th-century representatives of this thesis was the Frenchman Pierre Simon de Laplace, who explained the motion of the Solar System by using the laws of gravity. And in a reply to Napoleon, who questioned his theory, he fell into a serious error by denying that the functioning of the universe was under the control of Allah.

In the 19th century, these errors grew still further: the falsehood was propagated claiming that not only the functioning of the universe could be explained solely in terms of natural laws, but so could the origins of living things. In other words, in the same way that Allah's dominion over nature and the universe was denied, so was His original Creation. The forerunner of this rejection was Charles Darwin, who maintained that living things were the product of natural laws and coincidence. In the 19th century, the "eternal universe" model dominated, maintaining that the universe had existed for ever and functioned solely by means of natural laws and coincidence. By the 20th century, materialists imagined that they had accounted for everything in terms of their own theories.

However, the 20th century unfolded in a way they never expected. A string of scientific discoveries in the fields of both astrophysics and biology proved that the Universe and living things had been created. The hypotheses of Darwinism collapsed, one after the other. The Big Bang theory showed that the universe had been created from nothing. New findings showed the great creativity and fine tuning in the material world, again revealing claims of materialism to be groundless.

Over the last years, these two important issues—the scientific collapse of Darwinism and the Creation of the universe from nothing and its fine tuning—have been raised by a great many scientists and scientific writers. In the 1970s, physicists and astronomers raised the Anthropic Principle, which showed that the universe was not a mass of coincidences but on the contrary, reveals an extraordinary Creation and arrangement ideally suited to human life in its every detail. We have already examined these subjects in detail in our previous works. (See Harun Yahya The Creation of the Universe, and The Chain of Miracles.)

All these books concern the origin of the universe and living things and refute Darwinism or the "eternal universe" view that prevailed in the 19th century. The refutation of the materialist view of the functioning of the universe and living things, that is to say of "mechanism," has not yet been revealed in such detail, however.

In fact, scientific findings make this rejection both possible and necessary. It is impossible for the materialist logic, to account not only for the origin of the universe and living things, but also for their functioning.

What Molecular Biology Reveals

From molecular biology came the greatest impact to the evolution theory in the 20th century. According to the scientists, the cell, the fundamental unit of life, was full of irreducibly complex molecular machines. It was impossible to account for the origin of these machines in terms of Darwinism's blind mechanisms, that is natural selection and mutation.

Today, the known fact that molecular biology has invalidated the claims of Darwinism has been stated in a wide-ranging manner by many biologists who question the theory. One point that frequently escapes notice, however, is that coincidence and natural laws cannot explain not only the origins of the molecular machinery and other extraordinary entities within the cell, but also the way these structures function.

To clarify this with an example, consider DNA, the cell's data bank. DNA is a long molecular chain in the form of a spiral staircase, present in every cell. All the data regarding that cell's physical and chemical structure—as well as the entire organism to which the cell belongs—are encoded along that chain. On its own, however, the presence of such a data bank inside the cell has no significance. The use of that data bank is also of the greatest importance. In other words, the data it contains must be read in the correct manner and actions taken according to the information obtained.

Some of the molecular machines in the cell charged with this task are known as enzymes. These find the necessary information for the production of proteins that the long DNA chain requires, and then open up the DNA, in order to read it. They produce a copy of the information in the appropriate region of the DNA and meanwhile, twist the DNA in order to skip past unnecessary sections. When this reading has been completed, they fold the DNA up again and return it to its original form. They perform all these extraordinary processes at the astonishing speed of 1/1,000th of a second. Every cell in your body produces an average of 2,000 new proteins every second.1

These functions carried out by enzymes—of which DNA replication is only one of very many—are truly astonishing. But most molecular biologists have become accustomed to not being astonished. Therefore, if you ask them how enzymes manage to accomplish such complex tasks, in all likelihood they will reply, "chemical reactions and physical effects within the cell require these." According to this claim, in the same way that it is natural for sodium and chloride to combine to make sodium chloride, or salt when brought together, so the tasks performed by enzymes also consist of similar chemical reactions.

Yet their reply would be erroneous, because an important part of the processes inside the cell consists of flawless actions that do not stem from chemical or physical effects. Some of the best examples of that appear not in the cell nucleus, but in the membrane, the subject of this book. The cell membrane seems to know what is needed inside the cell and either admits or rejects outside substances in accordance with those requirements.

One of those realizing the extraordinary nature of this is the Israeli biophysicist Gerald Schroeder, trained in physics at the Massachusetts Institute of Technology (MIT), studied biology for many years, published papers in a great many scientific journals and played a role in nuclear research. As he writes,

The entrance to a living cell is marked by passage through a membrane functioning to keep the bad stuff out, while letting the good stuff in, and expelling what needs to be expelled, waste products and manufactured goods. But who or what decides what comes in and what goes out?

A myriad of portals provide entry, but only if signaled to open and allow entrance. Some of these ports are gated or opened by subtle changes in voltage differences across the membrane. Others open when a molecular key comes and unlocks them, allowing another molecule to pass. The cues come from within the cell, if it's a call from the building blocks needed in protein replication, and from outside if, for example it's a nerve cell coaxing a neighboring cell into action. A vast number of

assumptions are woven into the simple act of signaling a membrane port to open. But where did they get their smarts? Since when do carbon, nitrogen, oxygen, hydrogen, sulfur, phosphorus—the primary building blocks of biology—have ideas of their own, or any ideas at all? They're just atoms strung together to make molecules. Where'd they get the chutzpah to become keepers of the gate?2

After touching on these important matters, Schroeder describes the error of the materialist education he received.

Membrane design is absolutely brilliant. *I've been taught that nature did it all. But there is a catch to this logic of a laissez-faire nature. In the presence of water, they [lipids and phospholipids that make up the cell membrane] do align to form sheets and even spheres. But a leap in information separates a sphere from a cell. That information is the plan of proteins and other molecules required to produce the portals that allow controlled transport across the membrane. 3*

As you see, Schroeder believes the logic of self-contained nature, which has dominated the scientific world since the 18th century, to be mistaken. He also maintains that the claim that the cell membrane functions solely as a result of natural laws—which is an absolute dogma of materialist science—is incorrect.

Schroeder's explanation is that the molecules that constitute life behave in a flawless manner:

Every particle, every being, from atom to human, appears to have within it a level of information, of conscious wisdom. . . . The puzzle I confront in this book is this: where does this arise? There is no hint of it in the laws of nature that govern the interaction among the basic particles that compose all matter. 4

One important distinction is that although intelligence is observed in matter, it is impossible for that intelligence to stem from matter itself. You can see this most clearly by comparing animate and inanimate substances. While intelligence is openly displayed in living matter—in a cell, for instance—there is no such intelligence in inanimate matter. Yet both proteins that constitute the cell and the same molecules that constitute the stones along the road consist of the same kinds of atoms, assembled together. Their materials are fundamentally the same. Yet while we observe no intelligent action in the molecules in the stone, astonishing intelligence can be seen in those of the cell. (In addition, inanimate substances in nature have never been observed to develop into living organisms, although this is the basic claim of the theory of evolution.)

Gerald Schroeder draws attention to this and emphasizes how intelligence appears in the molecules in organisms:

The chemistry of a biological cell is the same as the chemistry that forms sodium chloride. One set of rules for all. But unlike sodium chloride, which follows the rules by rote, life has somehow gotten hold of wisdom, of information, that thought it to take energy from its environment, to concentrate that energy, and with it to build and maintain the meaningful complexity of the biological cell. . . . What enabled these complex arrangements of carbon plus a few other elements to become so clever remains an enigma. 5

In fact, there is no secret here, only a certain truth. The intelligence that appears throughout the material world is not a property belonging to matter itself, but one exhibited in it. It shows evidence of Allah's existence in a scientific way. The molecules that constitute our bodies stage unexpected displays of intelligence through the inspiration of Allah and actually once again reveal the infinite Wisdom of Almighty Allah, their Creator.

Allah created the entire universe from nothing and maintains the universe He has created, and all the living and non-living things in it, under His control.

In the Qur'an, which our Lord has sent down to us as a guide, Allah reveals that He enfolds all things with His infinite knowledge:

"It is Allah Who created the seven heavens and of the Earth the same number, the Command descending down through all of them, so that you might know that Allah has power over all things and that Allah encompasses all things in His knowledge." (Surah Talaq , 12)

". . . There is no creature He does not hold by the forelock. . . ." (Surah Hud, 56)

The Knowledge That Enfolds the Universe Is That of Allah

Following a great many endeavors, the scientific world that embarked with mechanist and other materialist conceptions in the 18th and 19th centuries has now faced the fact that the universe and living things were created and are maintained under control at every moment—some proofs of which we shall examine in this book.

The entire universe consists of proofs of Allah's infinite knowledge. The more science investigates nature in detail, the more reflections of that knowledge are revealed. All efforts over the last two centuries to reduce the source of that information to matter alone (in other words, to portray matter as a product or attribute of itself) have proved fruitless. It has emerged that all materialists—Darwin, Laplace, Freud and Engels—were mistaken.

This book shall examine events taking place in the cell, which are more complex, planned and rational than could possibly have been imagined 40 or 50 years ago. None of the molecules we shall be discussing possesses a mind with which to plan and carry out the rational actions it performs. An incomparable intelligence is exhibited in these molecules, although the source of that intelligence does not belong to matter itself. That same superior intellect appears in the extraordinarily sensitive balances that formed in the aftermath of the Big Bang, in the nuclear reactions inside giant stars, or in the structures of the elements that are ideally suited to life. As Schroeder puts it, "a single Consciousness, an All-Encompassing Wisdom, pervades the universe." 6

That consciousness pervading the universe is the infinite knowledge and mind of Allah. As Allah reveals in one verse of the Qur'an:

"Your god is Allah alone, there is no god but Him. He encompasses all things in His knowledge." (Surah Ta ha, 98)

THE MINIATURE FACTORIES COMPRISING OUR BODIES: THE CELLS

Going inside the body and then inside cell is a journey to wonderland.

—Prof. Gerald L. Schroeder

The 100 trillion or so cells that make up the human body perform countless activities, without ever stopping, growing tired or needing a rest. By means of the cells all fully carrying out their own tasks in an entirely harmonious labor, our organs and tissues are able to perform their functions, and we can go about our daily lives.

In the same way that every living thing needs energy—and therefore, food—to survive, so the cell also needs various nutrients in order to perform its countless functions. In the same way that raw materials to be used in production are carried inside a factory and stored until needed, and waste products are later sent out of the factory, so a very complex production, storage and waste-disposal system operates within the cell. The raw materials taken in are various organic molecules, minerals and metals. As these are used inside the cell to produce various molecules, waste products are removed from the cell or destroyed within it. At this point, exactly as electricity and other forms of energy are needed for production inside a factory, the cell carries out its activities through the energy produced inside it.

In the same way that the quality of the raw materials brought to the factory is specified by contract, so the cell observes special conditions for the substances it takes into itself. Substances do not enter the cell at random. As if they were familiarized beforehand, these molecules are subjected to "identity checks" at the cell membrane. There are entryways held open solely for substances regarded as admissible. Other substances, whose entry is regarded as possibly undesirable, are eliminated with a care reminiscent of fingerprint checks. The way the nature of these materials is checked and confirmed before entering the cell is of vital importance. These strict security precautions avoid the risk of entrance of any virus, bacterium or poisonous substance into the cell. This huge responsibility is assumed by the thinnest of membranes.

Each one of the trillions of cells that make up your body acts with this awareness. Each cell membrane implements this sensitive selection mechanism in that part of the division of labor that falls to it. No human being can even be aware that such extraordinary functions are taking place, let alone be able to perform any such selection consciously. The appearance of an intelligence beyond human in the cell membrane shows, as we already stated, that the source of that intelligence is not the cell itself but rather the inspiration of Allah, Who created it. By the command of Allah each and every cell carries out its duties for us flawlessly.

No human's will and intellect can determine, follow or perform any of these tasks which the cell membrane carries out so perfectly and which require consciousness and intelligence. The number of cells in the human body is a literally astronomical figure: three times greater than the number of stars in the Milky Way. Bear in mind that these tasks need to be performed for all cells at all times, day and night and without error, so you can better comprehend the difficult task of the cell membrane.

It will be useful to recall that the words such as mind, intelligence, and foresight used throughout this book usually refer to human activities. Here, however, these terms are used to describe the activities of a thin layer of fat and protein made up of unconscious molecules—in other words, the cell membrane. It is of course impossible for the thinnest of membranes to assume these duties of its own accord and to perform them without error.

As anyone of reason and good conscience will appreciate, Allah reveals His infinite dominion over life with the example of the cell membrane. The intellect we see in the cell is a manifestation of the infinite intellect of Allah. As Allah reveals in one verse of the Qur'an:

"What is in the heavens and in the Earth belongs to Allah. Allah encompasses all things." (Surat an-Nisa', 126)

The membrane is just one of the cell's many complex structures. Before going into detail regarding the cell membrane's structure and its importance, let us first examine briefly some facts about the cell's irreducibly complex structure. (For more detail, see Harun Yahya, The Miracle in the Cell)

THE CELL'S COMPLEX STRUCTURE CANNOT BE EXPLAINED IN TERMS OF COINCIDENCE

With all the amazingly complex, mutually-dependent components, it seems that the cell had to be complete from the beginning . . . .

—Dr. David Rosevear

To describe the cell's complex structure and the processes requiring information and planning that it carries out, many scientists resort to analogies. Some compare cells to specially designed spaceships, others to highly developed city centers, and still others to laboratory environments at a far higher technological level than those known today. Yet following such comparisons, they always state that the cell is actually far, far more complex.

W. Thorpe, a Cambridge University professor of zoology, refers to the complexity of the cell in these terms:

> *I think it is fair to say that all the facile speculations and discussions published during the last 10 to 15 years explaining the mode of origin of life have been shown to be far too simple-minded and to bear very little weight. The problem in fact seems as far from a solution as it ever was. The origin of even the simplest cell poses a problem hardly less difficult.* ***The most elementary type of cell constitutes a mechanism unimaginably more complex than any machine yet thought up, let alone constructed by man.*** *There is no real clue as to the way in which any of these riddles were solved . . .* 7

The accounts given by Darwinists regarding the beginning of life refer only to an allegedly very simple cell that came into being by coincidence and that gradually acquired its present-day characteristics—again by coincidence. Yet these illogical claims lead them into serious inconsistencies. For example, the cell possesses features that it cannot survive without. Moreover, the cell cannot wait to evolve these complex characteristics. Therefore, it's not possible for the cell to have ever been "primitive", as Darwinists so fondly imagine, nor to have evolved by stages. Indeed, today's Darwinists have had to admit that there was no such developmental process in the cell's formation. The evolutionist biologist Hoimar von Ditfurth admits this:

> *When we look back, we see that we need not be surprised that we have been unable to find those transitional forms so almost painfully sought. Because in all likelihood, no such intermediate stage ever happened.* ***What we know today shows that the general principle of the universe is not a reality here, and that it is out of the question for the primitive cell to have developed in stages and to have eventually turned into a cell with a nucleus and organelles.*** 8

The cell can perform its functions only if all its elements and attributes exist, fully formed. Professor David Rosevear, a member of the British Royal Chemistry Society refers to the cell functioning when it exists as a whole:

> *With the development of molecular biology since the time of Oparin and Haldane, the cell is no longer regarded as simple. The living plasma membrane allows in or out only specific compounds. It is not simply a semi-permeable membrane. Cells contain nucleic acids that carry information about the structure and functions of the organism. They also contain ribosomes where proteins are made using a complex mechanism of nucleic acids and more than a hundred different proteins, each with a specific task. The cell also contains mitochondria where energy (ATP) is produced. The complexity of all these parts of the cell is enormous . . . . However, these components cannot now exist independently, nor could the cell exist without their contributions. . . .* ***With all the amazingly complex, mutually-dependent components, it seems that the cell had to be complete from the beginning, rather than being assembled piecemeal over years of evolution.*** 9

To survive, one feature the cell needs to possess is the ability to recognize danger. Even if we assumed the existence of a cell lacking such ability, it would still be unable to survive. This difficulty is referred to in one Darwinist source:

Ever since the first moment they came into being, living systems must have been equipped with the ability to distinguish the various features of their habitat and environment from one another. Living things have been able to demonstrate an inescapable ability to survive during material assimilation, to be able to recognize and distinguish the environmental factors on which they depend, to survive to the extent that and for as long as they possess the ability to learn and possess these abilities, and the ability to stay alive. They had to be able to determine which of these environmental factors [for example, energy providing large molecules such as sugar and protein] are beneficial for them and which are dangerous or harmful, because these harmful agents in question have a "toxic" effect that blocks and derails the cell's material assimilation processes. This is of course a superstitious belief. 10

As you have seen, a cell can remain alive only so long as it can distinguish between what is beneficial and what is harmful to it. The above quotation refers to abilities of the cell such as selection, differentiation, distinguishing, learning and sorting. Darwinists—who expect unconscious cells to acquire by coincidence these actions that require thought, reasoning and awareness—deliberately ignore this illogical position. They imagine that coincidences will somehow resolve all inconsistencies. They regard coincidence as a potent force that opens all doors, overcomes all difficulties and plans everything right down to the finest detail. This is indeed a superstitious belief!

In the face of the superior intellect in the cell, many issues leave Darwinists in a quandary. For example, how did coincidental accumulations of unconscious atoms bring into being a cell with exceedingly conscious processes? Darwinists maintain that the cell emerged as a result of chemical reactions that took place of their own accord in nature. Yet every detail in the cell is part of a specific plan and order. Every detail reveals the existence of a superior Creator.

Fred Hoyle, the well-known British scientist, examined this question in detail:

If there were a basic principle of matter which somehow drove organic systems toward life, its existence should easily be demonstrable in the laboratory. One could, for instance, take a swimming pool to represent the primordial soup. Fill it with any chemicals of non-biological nature you please. Pump any gases over it, or through it, you please, and shine any kind of radiation on it that takes your fancy. Let the experiment proceed for a year and see how many of those 2,000 enzymes (proteins produced by living cells) have appeared in the bath. I will give the answer, and so save the time and trouble and expense of actually doing the experiment. You would find nothing at all, except possibly for a tarry sludge composed of amino acids and other simple organic chemicals. 11

One evolutionist writer makes the following admission:

*The popular conception of primitive cells as the starting point for the origin of the species is really erroneous. There was nothing functionally primitive about such cells. They contained basically the same biochemical equipment as do their modern counterparts. "How, then, did the precursor cell arise?" The only unequivocal rejoinder to this question is that we do not know.*12

The researcher and writer Howard Peth states that there is no such thing as a *simple* cell:

Formerly, it was thought that a cell was composed of nucleus and a few other parts in a sea of cytoplasm, with large spaces in the cell unoccupied. Now it is known that a cell literally swarms—that is, it's packed full of important functioning units necessary to the life of the cell and the body containing it. The theory of evolution assumes life developed from a simple cell. ***But science today demonstrates that there is no such thing as a simple cell.*** 13

No doubt Darwinists who emerged under the banner of science never imagined that science would one day invalidate their claims. In the 1800s, when there were no electron microscopes; when the science of genetics did not yet exist, no one realized the complex structure of the cell. Therefore, that life was the work of coincidences was a claim based on ignorance, able to deceive people for a time. Today, however, science and technology have shown that the cell actually possesses an exceptionally

complex structure, so much so that despite all scientists' best endeavors and the advanced means at their disposal, they have been unable to create any structure like the cell.

People of intelligence and reason expecting the cell, which cannot be replicated by artificial means and technologies, to be the work of coincidence is a clear nonsense. In the face of this impasse, Darwinists hide behind the concept of "changes over time," maintaining that such changes are actually possible over millions of years. Yet no matter how much time is given, expecting a structure that possesses information, contains a particular order, and exhibits intelligent, purposeful behavior to develop by coincidence is only imagination. Time has no power to create an perfect order, nor to eliminate different coincidences by means of trial and error, nor to make decisions.

The biologist Professor Michael Pitman, who served with the Australian Academy of Science, describes how the effects of time will be the exact opposite of what Darwinists expect:

> *Time is no help. Bio-molecules outside a living system tend to degrade with time, not build up. In most cases, a few days is all they would last. Time decomposes complex systems. If a large word (a protein) or even a paragraph is generated by chance, time will operate to degrade it. The more time you allow, the less chance there is that fragmentary sense will survive the chemical maelstrom of matter.* 14

Ceaseless Activity within the Cell

A living cell is a marvel of Creation that astounds all scientists. Examined under an electron microscope, the cell can be seen to contain activity reminiscent of a beehive's. In the same way that life in the hive goes on even as hundreds of bees die and new ones take their place, millions of cells in the human body die every day, and are again replaced by new ones. And billions of cells work together in harmony to keep the body alive.

Each of those 100 trillion cells functions like a walled city. Power plants generate the cell's energy. Factories produce proteins, vital units of chemical commerce. Complex transportation systems guide specific chemicals from point to point within the cell and beyond. Sentries at the barricades control the export and important markets, and monitor the outside world for signs of danger. Disciplined biological armies stand ready to grapple with invaders. A centralized genetic government maintains order. 15

The intracellular transport system is also quite complex. Plant and animal cells are divided into many discrete compartments; supplies, including enzymes and proteins, must be shipped between these compartments. Some supplies are packaged into molecular trucks, and each truck has a key that will fit only the lock of its particular cellular destination. Other proteins act as loading docks, opening the truck and letting the contents into the destination compartment. 16

The molecules within the cell operate at an astonishing speed. Their organized and coordinated functions are of a complexity that defies description.

Despite being a confirmed atheist and who therefore sought to account for the origin of the cell in terms of coincidence, the American astronomer and biologist Carl Sagan referred to the activities in the cell:

> *A living cell is a marvel of detailed and complex architecture. Seen through a microscope, there is an appearance of almost frantic activity. On a deeper level it is known that molecules are being synthesized at an enormous rate.* 17

Michael Behe, a famous professor of biochemistry from Lehigh University and one of the most prominent contemporary critics of Darwinism, has stated that everything inside the cell contains far more complex structures than it would appear:

> *I believe that Darwin's mechanism for evolution doesn't explain much of what is seen under a microscope. Cells are simply too complex to have evolved randomly; intelligence was required to produce them. Darwin's theory encounters its greatest difficulties*

when it comes to explaining the development of the cell. Many cellular systems are what I term "irreducibly complex." That means the system needs several components before it can work properly. . . . Such a system probably cannot be put together in a Darwinian manner, gradually improving its function. 18

The cell's "irreducible complexity" presupposes that a great many components need to be present and fully formed in order for the system to work. That being so, coincidences would need to bring all the components of the system into being in a conscious manner, capable of performing functions requiring intelligence, data and order, in a single action. Yet because all the parts constituting the system are exceptionally complex, there can be no progression from simple to complex. These components can exist only when they are all present together.

That the cell—the fundamental building block of life—has such a complex structure is one of the main reasons why Darwinists cannot answer the question of how life could have begun by coincidence. This complexity is at such a high level that it cannot be explained in terms of coincidence.

Michael Behe describes this impasse faced by Darwinist scientists with a quotation from the evolutionist James Shapiro:

The bottom line is that the cell—the very basis of life—is staggeringly complex. But doesn't science already have answers, or partial answers, for how these systems originated? No. As James Shapiro, a biochemist at the University of Chicago, wrote, "There are no detailed Darwinian accounts for the evolution of any fundamental biochemical or cellular system, only a variety of wishful speculations." A few scientists have suggested non-Darwinian theories to account for the cell, but I don't find them persuasive. Instead, I think that the complex systems were designed—purposely arranged by an intelligent agent. 19

Professor Gerald Schroeder, who works at MIT in the fields of physics and biology, describes the complexity of the cell with an analogy:

Going inside the body and then inside the cell is a journey to wonderland. Enclosed by its outer membrane, a cell's functions are walled off from the outside. When we look at any structure from outside, we get a highly simplified version of its essence. We decide to pick up a pencil and then do so. Not much to do it. But in the path leading from the thought to the act, millions of cells and millions of atoms acting on command were required to accomplish that mundane feat. From the outside, it seems so straightforward like starting a car: Just turn the key. Or a computer: Just press the power button. A myriad of hours were required to design the circuits and invent the components so that one simple act will activate the billions upon billions of atoms in just the right sequence needed to ignite the motor or light the screen. 20

For a long time, Darwin and the Darwinist biologists who followed him looked at the cell only from the outside, which is why they regarded it as a simple structure and imagined they could account for its origins in terms of coincidence. In the second half of the 20th century, however, as the extraordinary complexity of the cell became increasingly clear, Darwinists found themselves astonished and despairing. Nowadays, they only hope that the origin of the cell will one day be explained by evolutionary mechanisms. They have no evidence, merely that faint hope, which is solely based on their dogmatism on the subject.

The complexity that emerges in the cell proves that there was Creation here. Moreover, however, an astonishing intelligence is on display. No doubt that cells are devoid of such abilities as intelligent thought, learning, decision-making or planning. When we examine the processes they perform, however, we see that cells work in a more far-sighted, rational and precautionary, careful and scrupulous manner than even the most intelligent humans.

This superior intellect displayed in the cell is that of our Lord:

He created everything and determined it most exactly. (Surat al-Furqan, 2)

The Cell Cannot Exist Without the Cell Membrane

Before examining the cell membrane's structure and its selective permeability, it will be instructive to touch on Darwinist views on this subject. We have already detailed in earlier books how truly unscientific and unrealistic is the Darwinist claim that the first cell formed spontaneously as the result of coincidences. (For details, see Harun Yahya, *Darwinism Refuted*, and *The Evolution Deceit*.) But let's ignore all the impossibilities and assume that some organelles of the first cell actually did come into being spontaneously. In that event, the Darwinists' position becomes even more problematic. The first candidate cell would have to acquire, coincidentally, a cell membrane in order to survive—especially in a primordial environment, where atmospheric conditions are known to have been harmful.

Did a living thing alleged to have come into being by coincidence also take the appropriate precautionary measures by coincidence? No matter how irrational that claim may be, let us again assume that this actually happened and continue with what is no more than conjecture: the first cell, having come into existence by coincidence, disappeared due to an inability to withstand the atmospheric conditions. New cells then emerged—again as the result of coincidence. But these, too, could not survive. The cells that formed later learned from what happened to their forerunners and decided that they should not enter that primordial atmosphere unprotected.

Again with the help of coincidence, by means of trial and error, they acquired an outer shell—in other words, a membrane, with all the necessary characteristics—to protect them from these harsh conditions. But consider: can an unconscious cell with no mind or brain come up with such an effective solution for itself, or can coincidence do so? To explain in terms of coincidence for the cell possessing a membrane to protect it from harmful external substances and to arrange for the requisite nourishing substances to enter is a violation of science. A cell cannot survive for even a short time in the absence of these features, and even the slightest error would have fatal consequences. In addition, this flawless perfection would have to be present not only in the first cell, but would have to be maintained in all those that came after.

Darwinists' explanations regarding the first cell are nothing more than accounts, based entirely on assumptions. The evolutionist biologist Hoimar von Ditfurth offers the following explanation for the cell membrane:

> *. . . all these early cells were covered with an outer surface membrane, and in that sense, we may refer to a property common to them all, because the precondition of being able to perform material assimilation is to some extent independent of environmental chemical processes and erects a barrier between the organic system and external factors by making the system relatively independent of the environment and conditions around it. In those terms, we have to assume that almost all the early cells were covered in such an external membrane that acted as a barrier.* 21

How clearly irrational von Ditfurth's explanation is! It is impossible for a cell that came into being by coincidence to reason that it needs an enclosure and then to immediately manage to implement one. Such an event may happen in science fiction films, but to claim that each one of a great number of cells came about by coincidence and displayed the same intellect is an irrational and far-fetched claim.

In conclusion, the cell's very existence requires the existence of its cell membrane. And it is impossible for that membrane to come into existence through the cell's own decision or by any string of coincidences. Professor Gerald Weissman of the New York University Medical Center has emphasized the essential nature of the cell membrane in order to be able to speak of life:

> *In the beginning, there must have been a membrane! Whatever flash of lightning there was that organized purines, pyrimidines, and amino acids into macromolecules capable of reproducing themselves.* 22

Scientists agree that it is impossible to speak of life in the absence of the cell membrane. However, do not forget that the cell membrane also must exist with its present-day complex structure and characteristic of selective permeability. It is out of the question for that feature to develop by stages, as Darwinists hypothesize. If the cell membrane does not possess its present features, then the cell itself cannot survive. The cell membrane must therefore be able to know the external environment,

identify the cell's needs, determine whether substances about to enter the cell are harmful, and make no errors in these selections. Clearly chemical reactions, the laws of physics and coincidence cannot endow this thin membrane—consisting of inert fats and proteins, with such conscious selectivity.

SUPERIOR CREATION IN THE STRUCTURE OF THE CELL MEMBRANE

A living cell is a marvel of detailed and complex architecture.

—Carl Sagan

The cell membrane is a thin, elastic structure surrounding the cell. It is just a few molecules thick: 7.5 to 10 nanometers (a nanometer is 1 billionth of a meter). To obtain the thickness of a piece of paper, you would have to place more than 10,000 cell membranes one atop the other. Basically, the membrane is a border protecting the cell from the outside, but it also possesses very many complex features and duties that scientists have still not discovered.

The microbiologist Professor Michael Denton refers to these duties in one of his books:

.. The cell is uniquely and ideally fit to function as the basic unit of carbon-based life. Cells are capable of carrying out any instruction, adopting any shape, creating the vast diversity of multicellular organisms and ultimately the whole world of life. Evidence is examined which suggests that the cell membrane is uniquely and ideally fit for its role of bounding the cell's contents and conferring on the cells of higher organisms the ability to move and adhere selectively to one another. The membrane is also fit, in that its selective impermeability to charged particles confers additional electrical properties, which form the base of nerve conduction . . . . The known properties of cells are remarkable enough, but still there is much to learn. The possibility that cells may possess powerful computing abilities and may even be able to behave intelligently is considered. 23

Cell membranes are vitally important in holding cells together to form tissue in multi-celled organisms. Together with interior membranes surrounding the many organelles within the cell, the overall cell membrane can be likened to the exterior walls surrounding the rooms in a house. Though it separates the cell's protoplasm from the external environment, the membrane is not completely impermeable, but functions as an exceptionally sensitive control mechanism, allowing suitable substances to enter and leave, while preventing others from entering. For instance, it admits food substances and expels waste products. In addition it transmits chemical and electrical signals that induce the cell to produce proteins or else to divide in two. Therefore, the cell membrane is one of the most vital organelles of the cell.

The Cell's Security Line: The Cell Membrane

The cell membrane separates the cell from the external environment, taking in those molecules that the cell requires and expelling those that need to be removed, without wasting any time.

Think of the cell membrane as the surrounding wall that protects a building with the tightest security measures. At all the doorways, special guards are able to recognize everything within the structure and identify those coming from the outside. Everything must enter or leave through these checkpoints. Only those which need to enter the building are allowed in, and those that need to leave are permitted to depart. But the selection in the cell membrane is not fixed and mechanical, but is a very complex process that alters in accordance with conditions.

The evolutionist biologist Hoimar von Ditfurth refers to this selection mechanism with great amazement:

. . . we are looking at . . . a kind of molecular nerve fence with a far greater ability than any porous web or filter. As we can observe from sieving sand, mechanical sieves do not permit bodies whose circumference is greater than a certain level to pass through. Those with a large circumference are caught in the sieve, while smaller ones pass through. Clearly, such a simple "distinction" that divides matter into only two classes according to size, while making no distinction among those particles above and below the benchmark, will do the cell no good whatsoever. Because in order to grow and develop, the cell needs a wide range of molecules. And in order to survive some of the molecules it has to leave "outside" may be as large or small, or even the same size, as those it lets in.

Thus a non-mechanical, biological nerve membrane is able to flawlessly perform such a process of selection and elimination. This membrane distinguishes between substances according to their type, rather than their size. To put it another way, it selects according to qualitative criteria rather than quantitative ones. This is an astonishing, mind-boggling ability. . . . 24

That such a delicate structure, invisible to the naked eye, should possess such a selection mechanism cannot be accounted for in terms of blind coincidences. The cell's selection mechanism, which we shall detail in later chapters, requires intelligence and awareness. It is certainly impossible for cells to feel such a responsibility of their own accord, to decide what is necessary and what is harmful for the body, and to perform this function flawlessly. Anyone looking at the cell membrane with an open mind will see, as in every point in the universe, the inspiration and dominion of Allah.

The Cell Membrane's Special Structure

Its unique structure enables the membrane surrounding the cell to carry out so many important functions. The membrane consists of fat, protein and carbohydrates, and the fat layer has a most important function. Because the cell as a whole is like a mechanism that has to operate underwater, the cell's very survival depends on the membrane not permitting water to pass through in either direction. At the same time, the water required by the cell—which itself consists of 70% water—must be able to enter and leave. The phospholipid molecule is created especially for this purpose. One end of it is hydrophilic—that is, it attracts water—while the other end of it (being hydrophobic), repels it.

The fatty layer making up the greater part of the cell membrane consists of these special phospholipids molecules. The phosphate end attracts water molecules and holds onto them, while the fat end is hydrophobic. As this structure forms, the hydrophilic phosphate groups turn themselves towards water, and the hydrocarbon chain distances itself from water because of its hydrophobic property. As a result, the phospholipid molecules string themselves together to form a cell membrane in which the hydrophilic phosphate sections face the inner and outer surfaces of the membrane. To put it another way, the phospholipids bind to one another end-to-end and form a double-layered membrane. The hydrophilic ends face both the water-based cytoplasm inside the cell and the liquid between the other water-based cells outside. The hydrophobic "tails" are squeezed between the hydrophobic surfaces of the cell membrane.

This arrangement is most important, because the phosphate parts of the phospholipids being on the outside makes the passage of water possible, one of the cell's basic needs. Were the phosphate parts on the inside, the hydrophobic lipids would repel the water, which would be unable to contact the membrane and enter the cell. In that case, chemical reactions within the cell would fail to take place, and life would be endangered.25 Due to their hydrophobic structures, phospholipids are not permeable to such water-soluble contents of the cell as sugar, amino acids and other organic acids. This, as we shall be examining in detail, is essential for bodily functions, and therefore for life itself.

Phospholipid molecules are irreplaceably important with regard to their arrangements in the cell membrane. The cellular biologist John Trinkaus comments about the molecule's unique structure:

Because water is itself a strongly polar phosphate of the membrane, lipids will inevitably be attracted to the surfaces of the membrane, both external and cytoplasmic. And just as inevitably, their non-polar fatty acid parts will tend to be squeezed into the interior of the membrane. . . . Simply because of their intrinsic chemical nature, phospholipids naturally and spontaneously self-assemble to form a bi-layer in a watery solution. 26

As you see, everything is in the right place and the right form. How do the molecules forming the cell membrane's phospholipid structure know where they need to be during the membrane's construction? In fact, the molecule has the ideal purpose-directed structure. Moreover, no known substance can replace this special structure. The features of viscosity and lack of permeability absolutely must be present in any membrane system surrounding the cell. Yet these features are found together only in the double-layered lipid membrane. To a large extent, the cell's very existence depends on the biochemical and biophysical properties of this double-layered lipid membrane.

In the presence of water, lipids and phospholipids line up alongside one another and can form layers or even spheres. Yet the astonishing information encoded in the membrane distinguishes cells from spheres—necessary for the proteins and other molecules that permit controlled carriage along the length of the cell membrane. Proteins, products of the cell metabolism, permit the cell to function, and the cell is needed to produce them.

In order to maintain life, the proteins, and the data that encode them, and the organelles that produce them must all have appeared simultaneously—an event that is impossible through mere coincidence. This situation, therefore, cannot be explained by Darwinists.

This fact, which demonstrates that coincidence can have no place in the origin of life, is one that Darwinists are forced to accept. Von Ditfurth confesses as much:

. . . the statistical impossibility of living structures emerging as the result of chance is a rather contemporary example of the much-loved and present-day level of scientific development. Looking at the extraordinary peculiarities of the formation of a single protein molecule that performs biological processes, it appears impossible to account for these combining together, in the correct and requisite sequence, in the correct location and with the correct electrical and mechanical properties in terms of a series of individual coincidences. 28

All types of lipids contain long hydrophobic chains of carbon and hydrogen atoms, and these chains are either insoluble or only very minimally soluble in water. The fact that many varieties of lipid are insoluble in water is of vital biological importance. Were there no insoluble compounds, it would be impossible for a cell to be divisible into sections and for its components to remain permanent. That would be unsuitable for life. In a similar way, if water were a universal solvent, then no environment suited to life could exist: It would be impossible for the cell to be divided into compartments or to form durable structures. All cell compounds would commingle or melt away and disappear.

In most lipids in the cell, the length of the hydrocarbon chain is generally 16 to 18 carbon atoms. This length is ideal for several reasons. In terms of biological efficiency, chains longer than 18 carbon atoms are insoluble and cannot react in water. Those shorter than 16 carbon atoms are *too* soluble. At the temperatures at which metabolic processes in living things are carried out, lipids composed of chains of this ideal length are either liquid or in a close to that of liquid state. If chains of this length were solid under typical environmental conditions, then the structures they compose would not be elastic enough to perform any functions within the cell. In addition, in their liquid state, these chains protect living cytoplasm against destructive forces because they are less viscous than water. 29

The hydrophobic (water-repellent) structure of fats lends stability to the cell's structures, borders and compartments. Due to its protective structure, hydrophobic micro-environments independent of water and of vital importance to life can form within the cell. A great many activities essential to the maintenance of life can occur only in water-free environments. In conclusion, were it not for the hydrophobic properties of lipids, carbon-based life would be impossible. This is yet another one of a great many properties especially created for life to exist.

Why Is It Important That the Cell Membrane Is Fluid?

One of the vital properties of the lipid bilayer (or double layer) membrane is that it's not solid but fluid. With its flawless fluid character, it constantly surrounds the disordered and mobile cytoplasm. Protein molecules in the membrane along the surface of the cell are able to change places. These molecules' ability to extend along the membrane permits free passage through the membrane of certain special substances, as you shall see in detail further on.

The cholesterol molecules in the cell membrane are lipids defining the membrane's fluidity and are present in a dissolved state in the double-layer lipid membrane. Their main function is, by maintaining the fluidity of the cell membrane, to increase permeability against soluble substances in body fluids.

In order for the cell to survive, the cell membrane must possess this fluidity. Lowering the temperatures of liquids outside the cell lead to hardening of the cell membrane and loss of fluidity, obstructing the functions of proteins in the membrane.

In his book *Nature's Destiny,* the microbiologist Michael Denton draws attention to the essential nature of this structure of the cell membrane:

One of the most important structures in the cell, which is largely composed of lipids, is the cell membrane. It is difficult to see how a cell could survive without some sort of bonding membrane which was relatively impermeable to the cell's constituents—especially to small metabolites such as sugars and amino acids—to prevent its contents from diffusing away into the surrounding fluid. Such a membrane would also have to be relatively plastic and able to maintain a continuous barrier between the cell and its environment. . . . As one leading biologist points out, it is essential that the cell membrane should behave like a "two-dimensional liquid" and be able to flow in all directions over the surface of cytoplasm to maintain a continuous barrier between the cell and its surroundings in the face of "the ever changing protrusive activities of the cell surface." 30

In conclusion, the lipid double-layer membrane possesses at once a high level of fluidity, but also the viscosity of olive oil. If the membrane possessed many flawless properties but lacked only that viscosity, then the cell could not survive. These properties, all essentially important to the continuation of life, show us the final detail and balances in Allah's Creation. Anyone who sees these proofs of Creation must realize His existence, know that he owes his life to Allah and give thanks to Him.

How Do Substances Enter and Leave the Cell Without Damaging the Membrane?

The cell membrane's fat-based lipid structure prevents water within the cell and the solutes dissolved in it from leaking out. But how are waste products carried outside the cell through a membrane that admits no leakage, without the cell being ruptured or swelling up and bursting? And how do nutrients manage to get inside?

The double-layer lipid membrane represents the main barrier to substances soluble in water such as glucose, urea and ions. At the same time, the lipids in the membrane's structure prevent water and any substances dissolved in it from moving freely from one region to another. But oxygen, nitrogen, and other small molecules are easily dissolved in lipids and thus can move back and forth through the cell membrane. Substances that dissolve in fat, such as carbon dioxide and alcohol, can easily pass through these sections of the membrane. Although the water molecule is insoluble in fat, because of its small size and electrical charge, it easily passes through the cell membrane. The physicist and biologist Professor Gerald Schroeder describes the importance of this special characteristic of the cell membrane:

Though highly flexible, the tenacity of the bonds between the phospholipids molecules maintains structure. Pinch some skin. It doesn't break or crack. Release it, and it returns to the original shape. Puncture a cell membrane with an ultra-sharp needle and then withdraw the needle. The membrane reseals the hole and goes on with its work. Because the membrane has both water-loving (polar) and water-rejecting (nonpolar) molecules, can't get past the polar surface. . . . But nature is clever, somehow filled with wisdom . . . [The membrane's] design is absolutely brilliant. 31

The intellect and Creation excitedly referred to by the author belong to our Lord, Who causes His superior knowledge to manifest in all things. The way that the membrane's structure is not damaged during entries and exits from the cell, how it permits constant entry to a number of substances without splitting or tearing, and also removes substances from the cell are miraculous phenomena taking place in a dimension too small to be seen with the naked eye. Yet they occur through the will

of our Lord, as is revealed in the verses: "**No leaf falls without His knowing it.**" (Surat al-An‘am, 59) and "**Not even the smallest speck eludes your Lord, either on Earth or in heaven. . .** " (Surah Yunus, 61).

Proteins in the Cell Membrane

The cell membrane basically consists of a bi-lipid layer and a large number of protein molecules floating inside it. Because of the membrane's fluid property described earlier, proteins in the membrane act like a security checkpoint. Large molecules like proteins and sugar cannot pass through without assistance. Proteins within the membrane serve to carry these substances into and out of the cell.

The cell membrane lipids are not permeable to electrically-charged molecules, no matter how small they may be, because phospholipid molecules consist of an electrically-charged polar "head" and two non-polar fatty-acid "tails." As in water, the lipid parts repel ions and other polar substances, and so many substances are able to enter and leave the cell only by means of special protein molecules within the cell membrane. As Gerald Schroeder asks, "Who or what decides what should enter and leave?" 32

Viewed from the outside, the cell membrane consisting of fat molecules can be compared to a sphere made out of marbles. Once you enter the "wall" around this sphere, the wall's contents resemble potatoes and rod-like objects. These are the protein molecules that perform the cell membrane's functions, identifying those substances outside the cell that need to be carried inside. They allow these substances in and, depending on their properties, perform functions such as transportation.

The proteins assume a most critical responsibility. The supervision of entry and exit in the cell membrane is comparable to the advanced security checks at the entrance to an important building. Anyone wanting to enter is first searched, and any bags or packages he may be carrying are passed through an X-ray machine. If necessary, his identity is confirmed with optical scanners or fingerprint checks, and only then is the individual allowed in. The security officials performing these duties must make no mistakes and should implement every precaution. One error could threaten the whole building. However, during all these checks trained personnel and technological equipment developed by engineers are employed. Not a single detail can be explained in terms of chance, because an flawless foresight is followed at every stage.

The proteins inside the cell membrane performing such tasks as recognition, transportation and reception, operate according to a plan, just as if they knew the vital responsibility they have undertaken. Any single error will lead to the death of the cell, and thus damage the organ of which it is a part, or the whole body. Is it therefore possible for protein molecules themselves to display this great intelligence and expertise, and for all the proteins in the cell to adopt these common plans? It is of course impossible for the intelligence and foresight displayed to belong to the proteins, consisting of unconscious atoms, themselves. It is Almighty Allah, Who creates the proteins and, through His command, makes them the kind of molecules which remain loyal to their duties and employ flawless methods to accomplish their goals.

The cell membrane proteins may be classified into three groups, each with its own enormous expertise:

Transport Proteins

Some of the proteins in the cell membrane acts as transporters, assisting in regulating what enters and leaves the cell. These proteins have two important parts: the fat-friendly part that adheres to the cell membrane itself, and the other part that binds to substances that need to be transported. These proteins bind to the given substance, change the load's course and carry it along the cell membrane.

These transport proteins adhere to specific molecules and carry only these into the cell. While they perform these functions, their shape changes, and sometimes they require energy to pass substances through the cell membrane. There are no holes in the

cell membrane itself. Therefore, water, protein, nucleic acid and certain small molecules unable to pass directly through the cell membrane's lipid double layer all enter the cell by means of these transport proteins.

Due to their three-dimensional amino acid strings, these carrier proteins can easily construct a narrow passage. Substances of a particular size are thus able to enter that space and pass through the channel. Size alone is not enough to be able to pass through, however: the selective cell membrane allows only those substances the cell needs to be taken inside.

Recognition Proteins

These proteins function like molecular flags and signposts. Rod-like protrusions generally consisting of sugar on these proteins extend outside the cell membrane, allowing cells to recognize and make connections with one another. Because these proteins, leukocyte cells for example can distinguish the body's own cells from foreign bodies like viruses and bacteria. Cells such as the T-cells in the immune system use recognition proteins to tell whether any particular cell belongs to the body or not. Since surgically transplanted tissue possesses the wrong recognition proteins, the immune system rejects such organs unless it is suppressed. These same proteins also permit the sperm cells to recognize the egg cell.

The recognition proteins in the cell membrane are the target of viruses and bacteria, because toxins bind to recognition proteins in order to kill cells. Under typical conditions, as a result of these proteins, the connections between cells regulate cell growth. But in a cancer cell, for example, the number of recognition proteins is very low. For that reason, the immune system cannot identify the cancer cells that need to be eliminated. 33

Channel Proteins

Some proteins form channels along the length of the cell membrane. These proteins have two special sections: the fat-friendly part that adheres to material in the cell membrane, and the water-friendly part that forms in the inner part of the channel. In this way, a route is formed for water-soluble substances to move in and out of the cell. These proteins, function like gates and regulate the movement of molecules entering and leaving the cell, forming particular gaps in the cell membrane that are always open.

Protein channels are accepted to be the waterways in the interior of protein molecules. Using these channels, some substances to be taken into the cell can easily pass from one side of the cell membrane to the other. Protein channels can be distinguished by two important properties: They are generally selective and permeable to specific substances, and most channels open and close with gates (whose features we shall be examining in due course).

CARBOHYDRATES IN THE CELL MEMBRANE

Carbohydrates make up 2 to 10% of the cell membrane, but always combine with proteins or lipids and are present in the form of glycoproteins or glycolipids. The *glycol* parts of these molecules usually form protrusions from the surface of the cell. The carbohydrate ends that bind to the cell's outer surface perform important functions:

- Since most are negatively charged, they cause the outer surface of the cell to be negatively charged as well, repelling other negatively charged substances.
- They bind the glucocalyces of some cells to the glycocalicins of others; and in this way, cells are bound to one another.
- Most of the carbohydrates serve as receptions to bind such hormones as insulin. Later, they cause a series of intercellular enzymes to go into action.
- Some enter into immune reactions.

As you see, even the seemingly smallest detail has very important effects in our being healthy, reading and thinking over these lines. Everything in your body serves a specific purpose, and as a result of the systems that function without your even feeling them, you live your life in considerable comfort. This is therefore a great blessing that we are able to consider all these details, to see the proofs of the existence of our Lord, and to appreciate Him better. Indeed, Allah reveals in one verse: "**. . . Only those of His servants with knowledge fear Allah. . . " (Surah Fatir, 28)**

COMPLEX TRANSPORTATION SYSTEMS IN THE CELL MEMBRANE

The most elementary type of cell constitutes a "mechanism" unimaginably more complex than any machine yet thought up, let alone constructed, by man.

—Professor William Thorpe

No substance that enters the bloodstream for any reason can enter the cell as soon as it reaches the cell membrane. It is met in different ways, depending on its size, its chemical properties, and whether it is beneficial or harmful. Before it enters the cell, any substance is subjected to strict checks, just as at the customs at a country's borders. If it is decided that a foreign substance poses a threat, it is not granted admittance. Depending on their identity, however, the entry and departure of some substances has been facilitated, just as with citizens returning to their home countries. These substances can enter and leave the cell with ease, without being subjected to security checks. Some substances even enjoy a special right of entry, like citizens bearing special passports. In short, various measures are imposed on substances entering the cell membrane.

In order for a substance to pass through the cell membrane—to combine with the substance of the membrane—, it needs to be fat-soluble. No matter how hard you try, you can never mix liquefied fat with water. In the same way, any substance that cannot be dissolved in fat can never mix with the cell membrane. To permit substances insoluble in fat to pass through, a special method is employed, and proteins in the cell membrane play a role in that passage. In this way, many substances insoluble in fat are taken inside the cell.

Because of their size, some molecules are unable to pass through the cell membrane on their own. In that event, channel proteins and transport proteins assist the molecules and ions they have allowed to pass through the membrane and enter the cell. Which substances the cell membrane proteins will carry is already determined, and these proteins select these substances with great care. For example, the system that transports sugar does not carry amino acids. The carrying protein distinguishes the two molecules by their shape and number of atoms. For example, if two molecules have the same number of atoms and chemical groups, but one has the smallest geometrical difference, then the carrying system will recognize this and refuse to carry it. 34

But how can a protein know the chemical formula of another molecule and distinguish it by the number of its atoms? How can a protein devoid of intellect and consciousness assume this responsibility, which will benefit the cell? As the result of blind coincidence, it's of course impossible for these proteins themselves to recognize molecules of use to the cell, to assume the task of carrying these into the cell, or to fulfill these responsibilities. Anyone with an open mind and conscience will appreciate how Allah manifests His might and infinite knowledge in all these details.

Due to the special bilayer lipid of the cell membrane, the liquids inside and outside the cell do not mix. In the fluid outside the cell, sodium levels are high and potassium levels low. The exact reverse is true of the fluid inside the cell. Similarly, although there are many chloride ions in the extracellular fluid, there are few in the intracellular fluid. In the intracellular fluid, moreover, there is a strikingly heavier concentration of phosphates and proteins than in fluid outside the cell. Many differences like these are of great importance to the life of the cell. All these balances help shape the carrying mechanism in the cell membrane.

The exchange of substances through the cell membrane takes place in two main ways, depending on whether the cell uses energy or not:

1. Passive Transport

The cell membrane is the first obstacle a substance encounters upon entering the cell. If the cell expends no energy in the carrying of the substance in question, this is known as *passive transport*, a form of carriage that takes place with movement from a very concentrated environment to a less concentrated one. The main forms of this transport are *diffusion* and *osmosis.*

Diffusion

The dissemination of molecules from a denser environment towards a less dense one is generally referred to as diffusion. In cellular diffusion, this means the passage of molecules through spaces between the cell membrane's molecules or else the movement of molecules bound to a carrying protein. Molecules move in various directions from the environment they are already in. This movement changes according to whether the molecule is a solid, a liquid or a gas. Gas molecules are more active than ones in the liquid or solid state.

Above the freezing point of their particular substance, molecules are in a state of motion and transfer their momentum forces when they strike another object. For that reason, when you drop ink into pure water, both the water and the ink become less concentrated. The cause of dilution is diffusion, because any molecule in motion tends to push out, spreading as far as it can. As molecules move apart, they become less concentrated, more dilute, more diffuse. 35

In bodily fluids, all molecules and ions are in a state of motion, and every second, these molecules make billions of bounds in various directions.

Simple Diffusion

Simple diffusion means the passage of molecules or ions between molecules in the cell membrane, or without being bound to a carrying protein, moving by means of kinetic energy. Water, urea and water-soluble substances pass through these spaces. While strict checks are performed for a great many substances, water is taken into the cell without being subjected to checks. Because water is of vital importance to the body, it must constantly enter and leave the cells. This therefore takes place with no obstacles and with no expenditure of energy.

Though water is almost completely insoluble in cell membrane fats, it can easily enter by means of protein channels in the membrane. The speed at which these molecules pass through the cell membrane is astonishing. If energy were needed for water to enter and leave, as it is for a great many other substances, then our bodies' energy levels would be insufficient to meet that need. For example, the total amount of water that passes through the cell membrane of just one of the 25 trillion red blood cells, or erythrocytes, in the blood in both directions a second is about 100 times the volume of erythrocyte.36 If we multiply this coming and going by all the cells in the body, and multiply this by minutes, days and years, we'd be hard put to express in numerical terms the amount of energy a human would require in a lifetime.

But why is it only water allowed such problem-free passage? The entry and departure of other substances is so strictly controlled, but no need is felt to control the passage of water, which is of such vital importance? No doubt there is a perfect selection mechanism in the cell membrane: Molecules make very intelligent decisions for the cell to remain alive and implement them with the greatest attention.

At every moment, in every cell in your body, water is carried at great speed through the cell membranes in order for you to remain alive, yet you are unaware of all this taking place. Imagine that for one moment, the control of this entry and exit of water to and from the cells was placed in your conscious control. Though you know water's vital importance, you could not do this for a single moment, let alone for a lifetime. In addition, the way that water enters and leaves the cells is just one of the countless processes in your body. The superior Intellect that operates constantly in the billions of details in the body belongs to Allah, Who created us out of nothing. The process of the taking of water into the cell—just one of the countless systems that need to operate inside the body—is just one of the millions of details that remind us of our need for our Lord.

In contrast, substances such as oxygen (O_2), carbon dioxide (CO_2), nitrogen and alcohol are highly soluble in fat. Thus these substances can all easily pass through the cell membrane's fatty layer without expending any energy. If the entry and exit of the oxygen which needs to be taken in at every moment—and of the carbon dioxide that constantly needs to be expelled—required energy, as is the case with such substances as sodium ions (Na+) and potassium ions (K+), then we would need an amount of energy difficult to express in numbers. In fact, however, large quantities of oxygen enter the cell as if no membrane were there. The way substances that the cell needs in large quantities can enter without any energy expenditure is just one of the signs of Allah's compassion for us.

The speed at which substances enter the cell is influenced by the speed of motion of these substances' molecules and the number of spaces in the membrane. At times of urgent need, however, the body is able to accelerate that absorption by secreting a special hormone that widens the gaps between the cell molecules, taking in as much water and expelling as much urea as is needed. In cases of urgent need, sodium (Na+) and potassium (K+) ions, which enter the cell by the expenditure of energy under typical conditions, can be taken into the cell by means of a facilitated passage. For example, when you accidentally burn your hand, rapid communication takes place between the nerve cells. A substance called acetylcholine is secreted, and a negatively charged channel 0.6 nanometers in diameter opens in the cell membrane. In this way, large molecules and positively charged ions can easily enter and leave the cell. As the doorway outside the cell opens, sodium enters, and as the doorway inside the cell opens, potassium exits, waiting in the intercellular fluid until taken in. Thus the warning signal is transmitted from one cell to

another. The signal that goes to the brain when you touch something hot returns by the same route, and you pull your hand back in that same second. 37

What injury would your hand suffer if you pulled it back after a few seconds' delay? Yet in exceptional situations Allah has included precautions to be taken in all parts of the body. By Allah's leave, the cells flawlessly carry out the functions entrusted to them that require intellect, foresight and consciousness, with no confusion ever arising. Yet you are completely unaware of what is taking place.

Facilitated diffusion: In this manner of transport, proteins play a role in the passage of molecules or ions. Facilitated diffusion also refers to diffusion by means of transporters. The transport protein binds to the molecule or ion chemically and thus enables it to pass through the cell membrane.

Once bound to the substance to be transported, the transport molecule changes shape. The end of the cell channel that is closed on the inside opens up, and the molecule enters from there. When it reaches a site close to the inside of the cell, the protein splits away from the molecule with thermal motion,—stemming from heat—because the molecule is bound to it only weakly, and thus the molecule enters the cell.

Under this mechanism, the speed at which the molecules are transported is as great as the alteration in the shape of the transport protein molecule. By this method, the substance being transported can pass in both directions. Glucose and most amino acids pass through the membrane by means of facilitated diffusion. 38

Osmosis

Water diffusion is known as osmosis—the passage of liquid molecules through the semi-permeable membrane from a denser environment to a less concentrated one. In living things, the closed environment is the cytoplasm, containing such substances as organic acids, sugars, and organic and inorganic salts, bounded by the cell membrane. Passage between the two environments takes place according to the difference in density between the cytoplasm and the external environment, and this passage continues until fluid concentration reaches equilibrium.

Water molecules pass through the cell membrane in large quantities by means of simple diffusion. The constant flow through the cell membrane is very important for the body—for example, in the secretion of and absorption of water in your small intestine.39 In addition, water regularly flows in both directions through the red blood cell's membrane.

The level of water flowing in both directions has been very carefully regulated, so that the amounts of water entering and leaving are equal. Thus the cell's volume remains the same. Under some conditions, however, a difference forms in concentration between the two sides of the membrane, and the cell either swells or shrinks, depending on the direction of the water's movement.

For example, if there is a large protein molecule inside a cell, the inward flow of water will be faster than the speed at which it exits, and the cell will expand. The cell membrane behaves like a balloon: If too much water enters the cell, its membrane may rupture split, in such a way as to lead to the cell's death. For that reason, cells have been created with a mechanism that prevents too much water from entering the cell, or too much being pumped out. As a result of this mechanism, a sound external shell that will not split remains around the cell.

When starch or other large molecule lies right outside of the cell, the cell then loses water faster than it's absorbed, and the cell shrinks. In that case a need for water arises, due to chemical reactions that take place inside that keep it alive.40 As you see, there is a delicate equilibrium in water's entry and departure from the cell—a system functions that flawlessly by the compassion of Allah—, without any need for supervision from us.

2. Active Transport

Substances also enter the cell membrane by other methods. If a substance passes through the membrane with an expenditure of energy, this is known as *active* transport, wherein a substance is carried from a less dense environment to a denser one. The energy required is met by ATP, the cellular energy molecule given off with respiration. Energy is needed for glucose, some amino acids, and sodium (Na+) and potassium (K+) ions to be transported into and out of the cell. These passages take place with the help of enzymes in the membrane, and along with the kinetic energy stemming from the motion in this carriage, additional energy is needed.

In diffusion, as already stated, the substance behaves according to the prevailing density. However, if a substance is to move from a lower density to a higher one, then energy is expended and active transport takes place. Passive transport may be compared to how water flows downhill under the effect of gravity. Active transport, on the other hand, may be thought of as water being carried up a hill against the force of gravity, by the expenditure of energy. Similarly, someone carrying a load upstairs or drawing water from a well requires energy. In this form of passage through the cell membrane, therefore, requires energy together with enzymes.

Active transport is required for sodium, potassium, calcium, carbon, iron, nitrogen, urate ions, various amino acids and sugars. Inside the cell, there must be considerable levels of potassium (K+), magnesium (Mg++), phosphate and sulfur for all kinds of functions to take place in our internal and external organs, for certain control mechanisms inside the cell to operate, and to enable cell reactions. At the same time, there must be high levels of sodium (Na+), calcium (Ca++) and bicarbonate in the outer part of the cell.

If these substances entered and left through the cell membrane, not by active transport but in the easy way, involving no energy expenditure—as water, urea, oxygen and carbon dioxide do—what would happen? In that event the ions inside and outside the cell would be equal. You could do nothing with your muscles because they would not contract. You could not taste the food that entered your mouth, nor secrete saliva. Nor could you send food to your stomach by contracting your esophagus, nor would there be hydrochloric acid in your stomach to digest it. Foodstuffs would not pass through the duodenum to the intestine. The pancreas would not secrete enzymes. It would be impossible for you to absorb nutrients into your bloodstream. Blood pressure could not be regulated, blood could not be pumped and your brain would not function. In short, none of your bodily functions could be performed. The way that all your organs can perform their functions depends on this order at the cellular level. 41

As you see from these examples—and many more could be cited—it is impossible for atoms to think up such detailed plans by themselves. The fat and protein molecules constituting the cell membrane do not realize that there need to be high levels of sodium and potassium ions within the cell. That being so, who tells them that the passage of these substances must be restricted? How can they regulate this vital balance, with no error being made? These questions once again lead us to Allah's creative artistry and knowledge. This flawless system, possessed by every one of your body's trillions of cells, has been created by Allah, the Omniscient.

Endocytosis: The Transport of Large Molecules into the Cell

In order for a cell to survive and grow, it needs to take into itself liquid, nutrients and certain substances from its surroundings. In order for large particles to be taken inside the cell, a special method known as *endocytosis* is employed. The principal forms of this method are phagocytosis and pinocytosis.

- **Phagocytosis:** In this way, bacteria, viruses and particles that will result in damage to the cell or tissue are taken into the cell. The substances taken in are ones that can do harm to the cell or tissues are taken inside the cell, where they are dismantled by substances known as *lysosomes.* After useful components have been absorbed into the cell, the remaining substances are expelled from the cell and readied for disposal by the excretory system. For example, if you strike a part of your arm against something hard, the bruise will turn purple, and dead cells in that region are taken up and disposed of by this method. Or when you catch an infection, cells absorb the microbes and destroy them. For that reason, phagocytosis is one of the major techniques employed by the immune system, providing swift and generally certain defense against infections.

Only specific cells can perform phagocytosis, the most important of them being tissue macrophages and some leucocytes. Macrophages, known as the defense system's clean-up cells, literally destroy enemies by swallowing them. Despite their small size (10 to 15 micrometers), macrophages also possess the ability to ingest and digest large molecules.

Macrophages can aim at a number of targets at once, like a machinegun spraying bullets, and can destroy a number of enemies at the same time. Antibodies, on the other hand, are weapons that aim at a single target, with protein structures produced specifically for foreign cells entering the body. The surface of a bacterium becomes covered with antibodies "tailor made" for itself. These antibodies are bound to receptors on the phagocyte, which pulls in the bacterium. At the connection point, the phagocyte's membrane collapses in on itself in less than a second and completely enfolds the particle. Increasingly, a greater number of receptors are bound. All these events take place similar to a zipper's being done up. As the membrane closes, it literally forms a pocket. Then, proteins in the internal cell fluid contract and pull the pocket into the cell, after it is left free inside the cell.

How did the phagocyte cells come to assume the responsibility of combating harmful substances, while almost all cells draw both necessary and useful substances into themselves? How did they arrive at implementing this process, known as phagocytosis, in contrast to other cells? How did they develop the lysosomes that fragment within the cells the substances they have swallowed? How does this fragmenting substance—the lysosome—know that it must destroy harmful bodies and not the cell itself? Who decides that a body is harmful, and how? In short, how did the cell acquire the knowledge with which to identify and destroy enemies? As you watch a bruise or infection in your body heal without your doing anything, your cells protect you from danger with exceedingly rational methods. It is not possible for them to have assumed such an important responsibility on their own and then to implement it with such great expertise.

No rational person can maintain that these cells possess consciousness and reason. This miraculous Creation we are looking at belongs to Allah, Who created us out of nothing. Allah created every single cell and taught them all their duties. As a result of this perfectly functioning system, every cell performs the task allotted to it.

- Pinocytosis is one of the methods employed to transport into the cell substances too large to pass directly through the cell membrane. By this method, large molecules outside the cell are taken inside the cell within small sacs. These large proteins that touch the cell membrane initiate a reaction and cause a change in the cell's surface tension so that the cell membrane folds inwards to enfold the protein. That part of the membrane connected to the sac separates from the membrane and attaches to the cytoplasm. Thus useful substances unable to enter the cell by simple transport are absorbed into it. Let us now consider this process in rather more detail.

In order for large molecules to enter the cell, they bind to a special receptor on the surface of the membrane. These receptors surround the exterior of the membrane and become concentrated around the indentation-like sacs. When protein molecules attach to the receptors, the surface of the cell membrane changes in such a way as to cause the sac to collapse in toward the interior of the cell. Fibrous and shrinkable proteins form a net on the part of these sacs facing the cell, allowing the proteins binding to the receptor to be enfolded. Immediately thereafter, that part of the membrane taken within the cell separates from

the cell's surface and in the form of a capsule, joins the cell cytoplasm. During this process, calcium ions need to be present in the extracellular fluid because calcium allows the proteins, which permit the capsule to separate from the cell membrane, to shrink.

Pinocytosis can be observed constantly in most cell membranes, although in certain cells it may take place very rapidly. In macrophages, for instance, a total of 3% of the cell membrane may be taken into the cell in the form of sacs in the space of one minute. These sacs used during pinocytosis are very small, their diameters generally vary between 100 and 200 nanometers. For that reason, they are visible only under an electron microscope.

Immediately after these sacs are formed inside the cells, by either method, phagocytosis and pinocytosis, one or more lysosomes combine with the sac and transfer into the sac various enzymes inside themselves. In this way, a digestive sac is formed inside which substances are broken down. As a result of the digestive process, small molecules are formed such as amino acid, glucose and phosphate, which are disseminated into the intracellular fluid. Lysosomes may therefore be called the cell's digestive organs.

Pinocytosis is the chief method by which very large molecules can enter the cell. Most proteins, for instance, enter in this way. However, how the necessary changes come about for the cell membrane to assume the form of such a sac is still a mystery. All the methods by which useful substances are brought inside the cell have been flawlessly created. But how did this special method come into being, permitting large molecules that cannot be absorbed by any other means to enter the cell? How do large molecules know that they must bind to receptors that will bring them inside? How do receptors in the cell membrane recognize the large molecules that need to be absorbed? This is not something that can be explained in terms of coincidences.

Never forget, the perfect behavior being described is effected by molecules formed by the joining together of unconscious atoms. It is definitely impossible for these stages, each of which requires foresight and coordination, to have been achieved by unconscious molecules. Clearly, no system could have come into being as the result of decisions by atoms devoid of intellect and consciousness. This process, which occurs in the delicate membrane of every one of the trillions of cells in your body, manifests the fact of Creation. Humans have lived for ages without any knowledge of this perfect system. These facts, which were discovered only in the 20th century, are only some of the proofs of the existence of our Almighty Lord, the Creator of humanity.

Exocytosis: The Expulsion of Large Molecules from the Cell

Exocytosis is the name given to the expulsion of substances too large to pass through the cell membrane. During exocytosis, the cell takes whatever is to be expelled into a sac and transports it to the surface of the membrane. The sac's membrane and the cell's membrane combine with one another and dissolve, and substances inside the sac are secreted outside the cell. Substances left over after the digestion (as described above) are expelled from the cell by this method—the exact opposite of endocytosis.

As you have seen, these exchange methods taking place in the cell membrane are most rational and planned out. First of all, the cell needs to establish whether a substance is useful or harmless to the cell, to be absorbed or expelled. After the substances have been taken into the cell, who considers making use of their useful components? Who recognizes their useless components, and how? Who created the special system whereby these wastes are expelled? Working just like a molecular biologist or chemist, who takes the decisions that maintain the cell's life?

The answer to these questions is very definitely not the cell, which has neither the consciousness nor the intellect to take such important decisions. Yet the evidence of a great Intellect is plain to see. That superior Intellect is one of the manifestations of our Lord. It is revealed in the Qur'an that Allah enfolds all things:

"Your god is Allah alone, there is no god but Him. He encompasses all things in His knowledge." (Surah Ta ha, 98)

THE VITAL IMPORTANCE OF WATER MOLECULES FOR THE CELL'S METABOLISM

SScientists have documented that water molecules pass by the various proteins in the cell membrane in as brief a time as 1 billionth of a second. As reported in the 19 April, 2002, edition of Science magazine, a group of proteins known as aquaporin form channels in the cell membrane. People have 10 varieties of aquaporin, most of them in the kidneys, the brain and the lens of the eye. Only the passage of water molecules along the aquaporin is permitted; the passage of ions between the cells is impossible. That's because if ions were to enter as well as water, then the energy stored in the form of electrical potential between the interior and exterior of the cell membrane would be lost. However, absorption of water into the cell takes place in the healthiest way for the body as a whole.

Despite intensive research into the structure of aquaporins, the functioning of these channels has still not been unraveled. According to a prominent expert in this field, professor of Physics Klaus Shulten Swanlund of Illinois University, this research "still could not resolve exactly how water is conducted in the channel, and how it prevents the conduction of ions. Crystallographic methods available today cannot capture such minute detail." 1

Klaus Shulten Swanlund emphasizes the importance of the order in which water is taken into the cell thus:

The strictly opposite orientations of the water molecules maintain a rapid flow while keeping them from conducting protons…If these channels were leaky for ions, the electrical potentials of the cell walls would be abolished, leading to a complete breakdown of the cell metabolism. 2

Since water makes up 70% of your body, you need a great deal of water every day in order to survive. Every process in your body takes place in water, the solvent that carries nutrients, hormones, antibodies and oxygen by means of the blood or the lymph system. At the same time, water is needed for waste products to be expelled from the body. If not enough water is taken into the body, then metabolic activities become unproductive. Since the body has no means of storing water, the body uses less when it is deprived of it, and all activities in which water would be expelled are reduced. Instead of toxic substances being disposed of, they get stored in the tissues, fat, joints and muscles.

From that point of view alone, water is vital for the tissues and cells. Without fresh water, the human body can survive for only a few days. A loss of just 3% of the body's water can lead to serious health problems, and a 15% loss can result in death.

THE ROLE OF WATER IN THE LUNGS

As the lung tissues take in oxygen and give off carbon dioxide, they are moistened with water. Symptoms of allergies and asthma may be indications of not drinking enough water.

BODY TEMPERATURE

Water is the body's coolant, regulating body temperature by means of perspiration. If there isn't enough water to regulate body temperature, heat exhaustion may ensue.

THE BRAIN

Up to 90% of the brain is water. Though the brain constitutes only 2% of body weight, it uses 5% of all the blood in the body. Water is also an important factor in concentration. When water levels decline, so does energy production in the brain. Depression, headaches, loss of memory and chronic fatigue syndrome are frequently observed indications of dehydration.

THE HEART

Some 75% of the heart and 85% of the blood consist of water. Good water intake increases the productivity of the heart and artery system. Arteriosclerosis, high blood pressure and cholesterol can be reduced by increasing water consumption.

THE KIDNEYS

The kidneys constantly filter water, collect waste products and expel them by means of the urinary system. In the event of insufficient water, the kidneys need to concentrate the urine they send to the bladder.

THE DIGESTIVE SYSTEM

Water is essential for food to be properly digested. Water carries nutrients to the cells by means of the blood. Increasing water intake reduces gastric problems. Chronic water loss can result in weight gain and weakened muscles.

THE JOINTS

Water makes up 22% of the bones, and 75% of muscles. A large quantity of water is needed for the joints to preserve the elasticity of the connective tissue around them and be able to move easily. Water is a main component of the fluid that lubricates the joints and allows them to move with ease.

THE BACK

The backbone relies on the hydraulic properties of water to be able to move. The water conserved in the vertebrae supports 75% of the weight of the upper body.

We have only touched on the body's need for water in very general terms, but you can see that every human being needs water to survive. However, the distribution of water to the cells is just as vitally important as its entering the mouth in the first place. If the water taken into the body were unable to enter the cells, then the tissues and organs would die and life would be impossible. But by means of the perfect Creation in the cell membrane, water is easily able to enter the cells. This is a result of Allah's compassion for human beings. This system is ready without a person's being aware of it, present and fully functioning in every one of our trillions of cells.

1-http://unisci.com/stories/20022/0419022.htm; Klaus Schulten Swanlund, Peter Nollert, Larry J. W. Miercke, Joseph O'Connell, International Science News, April 19, 2002.

2- Ibid.

THE SELECTIVE PERMEABILITY OF THE PROTEIN CHANNELS IN THE CELL MEMBRANE

A living cell is a marvel of detailed and complex architecture. Seen through a microscope there is an appearance of almost frantic activity. On a deeper level it is known that molecules are being synthesized at an enormous rate.

—Carl Sagan

Proteins do not float freely in the cell; their movements within the cell are tightly controlled. Inside the cell, there are compartments just like rooms in a house. The walls of the compartments within the cell are equipped with a gate and chemical receptors. If a protein with the correct identification tag approaches, the receptor gate opens and lets the protein pass through. If a protein with the wrong tag approaches, the gate remains closed. In order for this passage to take place, the gate, receptor and tag all need to be present at once. The organ where these processes can be observed most clearly is the liver, the largest organ in the body and which controls the levels of essential nutrients, such as proteins, in the blood. If the gate, receptor and tag were not present at the same time in the liver's cell membranes, then the liver itself and consequently, the body would be unable to survive. Moreover, this is only one of the preconditions for life.

In the previous chapters, you read how some of the proteins in the cell membrane serve as channels. The passage of substances through them varies according to the diameter of the channel, its shape and internal electrical charge. As the result of experiments he carried out with the support of the US National Academy of Sciences, the biochemist Phillip Klebba discovered that the cell membrane proteins that regulate entry to the cell behave like gateways and that they recognize the substances necessary for the cell to grow. Furthermore, it has been established that these gateways—after permitting substances to enter the cell and preventing unnecessary, harmful materials from entering—absorb the molecules they need. The results, published in the May 23 1997 issue of *Science*, reveal that these entrance portals recognize substances that the cell needs for growth. They actively open to allow their entrance, and then close. In this way, cells obtain the molecules they need. 42

In short, the gates control what proteins will pass along the channels. Scientists' accounts of this employ verbs such as *choosing, feeling, perceiving, permitting, recognizing,* as if they were referring to a conscious system. Certainly the components comprising the cell—atoms, amino acids, proteins—are all unconscious, whatever their size and function. Yet the emerging mechanism evidences conscious activity. This superior Intellect we encounter belongs to our Almighty Lord, the Creator of all things, Who pervades all places.

Sensitive Selection by Ion Channels

The cell membrane is selectively permeable for ions, and for many other substances. (Ions are atoms or molecules that carry an electrical charge, having lost or gained an electron.) In addition to the cell membrane's phospholipid structure, it also repels ions in the extracellular fluid. Therefore, ions can enter or leave the cell only by way of the special proteins in the cell

membrane. However, ions do not pass at random along these protein channels: The channels behave most selectively on which ions will pass.

Ions are generally mobile, in order to balance their electrical charges. In any solution under typical conditions, there are as many negatively charged ions as positively charged ones. So long as this equilibrium is not disrupted, no potential difference in charge arises. (Potential difference is the difference in electrical tension between two points.) If that equilibrium is disrupted, the + and – charged ions in the solution will move in order to keep the solution neutral.

The passage of ions through the cell membrane takes place via this mechanism. Since the content of the intracellular fluid is different from that outside the cell, ions cross over in order to restore equilibrium between these fluids. The channels by which the ions pass assume the form of liquid pores in the cell membrane. In this way, some ions—particularly sodium, potassium, calcium and chloride—are permitted to enter the cell.

One of the ion channels' most important features is that they are capable of selecting different ions. It is of course extraordinary for one atom to recognize another and permit it to pass. It's impossible to imagine that any atoms assumed such a duty of their own accord, functioning like conscious doormen without ever making a mistake. It is also irrational to maintain that atoms assembled flawlessly by coincidence and gave rise to such a vital function. Anyone with reason and good conscience will appreciate that the obvious order here is the work of Allah, and that He is the sole Ruler of all. As Allah reveals in the Qur'an, **"He knows everything in the land and sea. No leaf falls without His knowing it. There is no seed in the darkness of the Earth, and nothing moist or dry which is not in a Clear Book"** (Surat al-An'am, 59). Allah possesses knowledge of everything.

Research has revealed that the ion channels are not always open, but work like gates or circuit breakers, allowing passage to just one variety of ion. Eric Young, a professor of biomedical engineering at Johns Hopkins University, refers to the selectivity of ion channels in these terms:

> *The most striking property of ion channels is their selectivity for different ions. Channels are classed as potassium, sodium, calcium or chloride channels, based on the ions that can permeate. Often channels are able to select between chemically almost identical ions (e.g., sodium and potassium). . . . At present, the portions of the protein molecule responsible for the selectivity of several types of channels are known, but detailed theories to explain the selectivity have not appeared. Some aspects of ion selectivity of sodium can be accounted for by charge and size. But neither of these effects can count for the relative selectivity of sodium, potassium and calcium channels. For example, the sodium ion Na+ is smaller than the potassium ion K+ and has the same charge, but potassium channels discriminate against sodium by a factor of between 10 and 100.* 43

As the above quotation emphasizes, the selection mechanism in ion channels possesses a very complex system. The unconscious molecules making up the channel recognize atoms' chemical structures and can distinguish a sodium ion (Na+) from a potassium ion (K+), leaving scientists with questions in their minds. These channels have an effective control mechanism that lets them open and close under particular conditions. For instance, some channels open as the result of changes in the electrical charge around the cell membrane, while others open in response to chemical transmitters and hormones.

These messages are transmitted at great speed. Despite the recognition and selection processes, passage through the ion channels takes place very rapidly. There is no delay or deceleration during the course of selection. Indeed, ions are carried so rapidly that messages are transmitted to any point in the body in just a few thousandths of a second. For example, movement is very high in a nerve cell, and millions of ion flows take place in a millisecond (1 thousandth of a second).44 Bearing in mind that ions enter and leave the ion channels at every point in your body 24 hours a day, the magnitude of their movement in your body can be better comprehended.

There are countless preconditions for our survival. We have touched on only a few of them here, but they are all ready and constantly fulfilled in our bodies on our behalf. Indeed, before we are even born; even as a single cell, the data for these systems were encoded in our genes.

Human beings make no contributions to the Creation of this order, to its construction, nor to its functioning. Allah reveals His compassion for human beings as follows in the Qur'an:

". . . He has given you everything you have asked Him for. If you tried to number Allah's blessings, you could never count them. . . ." (Surah Ibrahim, 34)

Electricity Production in Ion Channels

The passage of ions through the channels is vitally important for the functions and maintenance of the life of the cells, and thus to life itself. As ions enter and depart from the cell via these channels, they set up small electrical currents that enable your nerve cells to function and permit communication between cells. All the vital functions in the body are regulated by the information carried by these electrical signals. Without proteins, the cell membranes would be in a state of electrical slumber, which would end any signaling within the body. From that point of view, the proteins constituting the ion channels in the cell membrane are vital to the body's electrical activities.

When an ion channel is opened, positively-charged sodium ions immediately enter the cell. This movement starts the events that form the power in nerves and muscles. In that regard, sodium channels also possess a vital importance. The entry of calcium into a cell via special channels enables nerve transmissions between cells and the secretion of hormones. 45

The movement of ions in these channels takes place very quickly and selectively. For example, when a cell membrane opens a sodium-selecting channel, it permits sodium to enter the cell and gives the internal cell voltage (or electrical tension) a positive charge. When a potassium-selecting channel opens, it permits potassium to leave the cell and reduces voltage to a negative value. In this way, voltage changes constantly and very rapidly.

Cellular electricity is a very important topic in biology. As phosphate compounds, amino acids or ions are carried through the cell membrane, their movement sets up an electrical current, which creates a voltage differential along the cell membrane, known as *cell membrane potential.* This electrical potential formed in the cell membrane balances electrical build-up by storing energy inside the cell.

When the flow of ions in the cell membrane changes, the membrane disrupts this potential, allowing the sodium channels to open. The dimensions of the sodium channels is between 0.3 and 0.5 nanometers (A nanometer is 1 millionth of a millimeter). As the opened channel attracts sodium ions, there is a large change in the cell membrane's potential, and the cell becomes electrically active. When in a state of rest, the sodium channels in nerve and muscle cells remain tightly closed. If there is a fall in cell membrane potential—if the charge within the cell becomes more negative compared to the outside—the sodium channels are opened. Channels of this kind are known as *voltage-gated ion channels.*

Voltage-Gated Ion Channels

The movement of ion channel in the form of gates depends upon the electrical charge of the cell membrane. For example, when a strong negative charge exists on the inner side of the cell membrane, the sodium channels' outer sides are tightly closed. When the inner side of the membrane loses its negative charge, these gates suddenly open and large amounts of sodium enter the cell. Potassium gates, on the other hand, open when the inner side of the cell membrane becomes positively charged.

You might compare the gates opening and closing to doors that are opened and closed under the control of a security officer. In the same way that the officer opens the door only when he recognizes people or approves their identity cards, so the ion channels open only when they recognize the appropriate ions. However, every opening and closing in the cell membrane takes place in a few millionths of a second—an exceptionally brief space of time. Were it any longer, then all your bodily functions would slow down, and you would be late in perceiving our surroundings and in reacting to those perceptions. With that decelerated mode of life, it would be impossible for the cells—and therefore, for you—to survive. In that regard, the speed at which your systems function is just as important as those systems themselves. If entry and departure through just one cell membrane was slower than it should be, then the order in your body would be disrupted. Therefore, every detail in your body represents a refutation of the theory of evolution's claims of gradual development.

Scientists who first measured the voltage changes that occur in the ion channels arrived at astonishing results. The 16 December, 2000 edition of *Nature* magazine announced that the amino acids in the voltage receptor did not make simple two-way movements, as had previously been thought. On the contrary, behave like keys turning in a lock.

Professor of Physics Paul Selvin of Illinois University refers to the results of their research:

The nerve cell membrane contains special cavities or channels that regulate the flow of sodium and potassium ions. The channels open and close like gates, depending on the voltage in the membrane, for which reason they control the manufacture and dissemination of nerve impulses. Our aim in this study was to discover how the ion channels detect voltage change and how the amino acids in the voltage detectors in the channels behave as these open and close. . . . In our view, the amino acids form cleft-like folds on the cell membrane. The rotation amends the chemical entry of the charge inside the cell to the charges outside it. Thus a small action can have very considerable consequences. 46

Francisco Bezanilla of California University refers to the complex structure of the voltage-gates in ion channels:

We marked specific amino acids in the ion channel and measured the change in distance according to the function of the voltage on the membrane... Astonishingly, some of these amino acids moved away while other drew closer; and some did not move at all. These movements cannot be explained as simple actions with the up-and-down motion of the pump in the cell membrane. This movement is like the turning of a lock and is totally compatible with the data. 47

As the above quotations express, the events taking place in the cell membrane's ion channels are not simple individual mechanisms. The entry and exit from the cell, which we have examined only in fairly general terms, show that the entire system has been created as a whole. It benefits the body only when all its components are operating together flawlessly. Otherwise, life would not be possible at all.

The voltage-gate potassium channels are a part of the signaling in the cell membrane. Signaling proteins have gaps that allow millions of ions every second through the cell membrane. These gaps allow ions to pass with an extraordinary selectivity and speed. Also, a perception mechanism identifies voltage changes in the gateways and whenever it detects any change in voltage, the gates open and close in as little as a millisecond.

According to Gary Yellen, of the Harvard Medical School Neurology Department: "*The architectural modules and functional components of these sophisticated signaling molecules are becoming clear, but some important links remain to be elucidated.*" 48

The cell membrane's complex structure, whose other processes scientists are having great difficulty unraveling, clearly reveals that coincidence has no place at the molecular level. Incredible speed, perfect order and flawlessness are all operating at dimensions too small to be seen with the naked eye. The components of this order are unconscious atoms, and such an astonishing system could never come about by these same atoms combining together at random. According to those blindly devoted to Darwinism, however, this sublime Creation is the product of coincidence. Seeing this obvious Creation but calling it

purposeless and describing it as coincidence, is nothing more than denying the facts. Even a few superficial pieces of information about the cell membrane are sufficient to demonstrate that claims of coincidence are illogical, irrational, and impossible.

The Sodium-Potassium Pump

In addition, protein pumps requiring energy are also used to transport ions. One of the best known pumping systems is the sodium-potassium type. The protein constituting the channel in the cell membrane uses up a third of the cell's total energy production. This protein works non-stop, day and night, pumping sodium ions to the outside, while attracting potassium ions to replace them. During each pumping process, three sodium ions (Na+) are sent outside the cell, and two potassium ions (K+) brought in.49 Thus, different concentrations linked to the sodium (Na+) and potassium (K+) ions arise in the cell. These pumps present in all the body's cells, are used to ensure concentration of ions inside the cell and to control cell volume.

One side of the transport protein forms a protrusion towards the inside of the cell. On it are three receptors for the binding of sodium ions. When three sodium ions are attached to the inner side of the transport protein, the protein's ATP-az (an enzyme inside ATP—adenosine triphosphate, the cellular energy used directly by living things) is activated. This enzyme breaks down the energy-bearing ATP and turns it into ADP (adenosine diphosphate, a compound emerging when the phosphate group separates from ATP). As the energy is freed, a change occurs in the transport protein molecule that causes sodium ions to head for the outside and potassium ions to enter.

The ion-pumping system we have described in general terms is only one of the complex processes in the cell membrane that scientists have spent years studying. There is great wisdom in all the details that emerge under an electron microscope. Allah has created humans to be in need of every one of these systems. The information discovered in recent years offers us an important opportunity to appreciate the omniscience of Allah, Who pervades all places. In the Qur'an it is revealed that:

". . . My Lord encompasses all things in His knowledge, so will you not pay heed?" (Surat al-An'am, 80)

SELECTIVITY IN NERVE CELLS

Cells are simply too complex to have evolved randomly; intelligence was required to produce them.

—Michael Behe

In contrast to other cells, a nerve cell or neuron possesses sections known as dendrites and axons.

A *dendrite* consists of a large number of short protrusions like roots or branches and plays a role in receiving stimuli from other neurons and cells and transmitting them to the cell body. *Axons* are long, thin fibers emerging from the body of the cell, consisting of one single part along which stimuli are sent, serving to transmit messages to the brain. Nerve cells thus form a dense network of long chains.

Every cell has an electrical charge around its membrane. Every neuron resembles a miniatured biological battery ready to discharge its energy. The ions, electrically charged molecules both inside and outside every nerve cell, set up a difference of

electrical charges along the length of the cell membrane. To send a stimulus, human neurons require an average electrical charge of minus 50 millivolts (One millivolt is 1 thousandth of a volt).50 At this point, the nerve signal is transmitted by the axon. After every nerve signal passes, potassium ions flow from the cell membrane. After every signal, the neuron must be recharged. In order to do that, it takes ions back until the potential level is regained.

For a neuron to send a signal takes around 1 thousandth of a second, so in one second, it is possible to send at most 1,000 signals. In general, however, only 300 to 400 signals take place every second. Human nerve cells are of different lengths.51 The transmission between cells takes place at speeds between 3 and 100 meters (9.8 and 328 feet) per second. 52

Professor Peter Suckling, a neurophysicist at the Downstate Medical Center, speaks of the cell membrane with great amazement: "*This very thin membrane can sustain an electrical tension better than most insulators. The insulation strength is high. It has to be strong; it's so very thin.*" 53

Nerve cells are able to communicate as a result of the electricity produced in the cell membrane, to transmit information from one place to another, and ensure the healthy operation of the body's functions. In addition, these electrical messages produced in the cell reach their intended destinations, carrying a message for the recipient cell. Every cell knows the meaning of the message that reaches it, and begins operating accordingly. Were there no such flawlessly operating systems among the cells, it would be impossible for any living thing to maintain vital functions. That being so, then how did such a flawless system requiring consciousness and intelligence arise? It is of course impossible to maintain that unconscious masses of atoms and molecules took a decision to form cells and that such a system later spontaneously came into being among those cells. The existence of such a conscious system proves that living things were created. The magnificent creation in such microscopic dimensions that astonishes scientists belongs to our Lord, the Creator of all.

"Is He Who creates like him who does not create? So will you not pay heed?" (Surat an-Nahl, 17)

The Neuron at Rest

When a nerve cell is not transmitting a signal, it is at rest, but is not entirely immobile. It must be ready to forward messages that may arrive at any moment from neighboring cells. A neuron at rest must always be polarized, so that the fluid within it is more negatively charged than the fluid outside. Along its membrane, a nerve cell has an electrical potential of approximately 70 millivolts. This is called the *membrane potential* or *resting potential.* Though this appears very small, it means that a tiny cell produces up to 1/20th of the voltage of a flashlight battery, and the axon holds the potential for electrical activity along the membrane. How does this resting potential come about? How is it conserved?

Outside the axon, there are sodium (Na+) and chloride (Cl-) ions. Inside are charged proteins and potassium (K+) ions. The electrical imbalance between the cell membrane and the exterior forms a resting potential along the membrane, an imbalance formed by the charged ions that lets the cell membrane be selectively permeable for different ions. Sodium, potassium and chloride ions pass through the cell membrane, but the passage of highly-charged proteins is restricted—and thus, so is the formation of electrical potential.

However, selective permeability cannot be the sole answer, because the number of potassium (K+) ions in the cell is always greater than the number of sodium (Na+) ions. Furthermore there are more sodium (Na+) ions outside the cell than there are potassium (K+) ions. For the requisite ion balance to be established, the densities inside the nerve cell must be reversed.

The cell achieves this by using the kind of ion pump we touched on earlier. The sodium-potassium pump, a protein molecule, forms a channel in the cell membrane, taking its energy from ATP (or adenosine triphosphate, the cellular energy molecule used directly by living things) and takes in potassium (K+) ions as it expels sodium (Na+) ions. In this way, the

correct ion proportions are maintained inside and outside the cell. There are between 100 and 200 sodium-potassium pumps on every square micrometer on the cell membrane surface. Each one expels 200 sodium ions a second, and admits 130 potassium ions.

Movement Potential and Signal Transportation

The signal begins when a neuron is stimulated by another neuron or its environment. Immediately afterward, the signal acts along the length of the axon, causing the cell membrane's potential to suddenly reverse. In the cell membrane, there are thousands of protein channels or gates for the passage of ions, but these gates are generally closed. In the event of a signal, the sodium channels open, and positively charged sodium ions flow in. Temporarily, therefore, the interior of the cell membrane has a greater positive charge than the outside, and the resting potential is reversed, raising the cell membrane's potential to +50 millivolts. The reversal of these charges is called *movement potential.* During movement potential, the potassium gates open, and positively charged potassium ions flow out. This again balances the resting potential, so that the neuron's interior is again negatively charged and the exterior positively charged.

One single nerve impulse triggers this entire process. You can therefore compare the signals to dominos. As one domino falls over, it pushes the one next to it. But in this case, as the signal passes, the "dominos" right themselves again and stand up, preparing themselves for a subsequent movement potential.

Synapse Paths

The human nervous system is a complex network consisting of billions of nerve cells that establish communication among themselves and other cells in the body by means of *synapses*—small parts of the nerve cells that approach one another very closely but never actually touch. Since they never come into contact with one another, signals do not pass from one cell to another directly, but are carried through the gaps by chemical neurotransmitters.

When a signal reaches the transmitting cell, that cell causes some neurotransmitters to be secreted into the extracellular space. At this the neurotransmitter molecules diffuse in this space—passing directly into a less dense environment—and attach to the receptor protein molecules on the second cell. Since there are many kinds of neurotransmitter and receptor molecules, the synapse can cross very quickly (in 1/1000th of a second) or rather slowly (1/100th of a second). Chemical agents set the second cell in action, or else halt it. Therefore, synapses serve to alter the information in the nervous system or set it in motion. Because of these properties, the function of synapses in the brain is connected with learning and memory.

As neurons transmit messages by means of the synapses, they exchange chemical signals. The nerve cells in your brain have 100 trillion connections, where there is a constant and enormous molecular traffic. The electrically-charged chemicals known as ions and large and small varieties of proteins tell this traffic when to flow, and when to halt.

SPECIAL CREATION IN THE CELL MEMBRANE'S CHLORIDE CHANNEL

N ature **The 17 January, 2002 edition of Nature magazine carried three-dimensional images of the chloride ion channel, obtained by using X-ray crystallography. Roderick MacKinnon, a Howard Hughes Institute researcher at Rockefeller University, and his team revealed the protein architecture specially created for chloride ions to pass through the cell membrane in the most efficient manner.[1] About the complex structure they encountered, MacKinnon said:**

It is a complicated structure. "Scientists did an excellent job deducing many aspects of the chloride ion channel . . . To understand the physical principles of anion selectivity, an atomic structure is needed. Although the structure is complicated, it conveys a simple message of how nature arranged the protein to stabilize an anion such as chloride inside the membrane. [2]

Living things use electrically charged ions for communications of various kinds—control of the heart rhythm, the formation of nerve signals and the secretion of hormones. As explained earlier, cells use ions to transmit signals by setting up an electrical differential between the inside and the outside of the cell. When ions are charged, they prefer to be in water instead of in a membrane composed of fat. The ion channels, able to distinguish two ions, offer a solution to that problem.

In human beings, there are nine different chloride channels that serve different functions, from salt absorption in the kidneys to muscle contraction. The chloride ion channel possesses a totally different structure from that of the potassium ion channel. Meanwhile, the potassium ion channel is largely filled with water, of a pyramidal shape. The chloride channel has two spaces, each with a narrower space in the middle, rather like an hourglass or egg-timer. Scientists have found that the protein sub-units comprising both channels are laid out in entirely different ways. In the potassium channel, four protein sub-units constitute a single space. In the chloride ion channel, each protein sub-unit has its own space and both halves of the sub-units possess opposite faces in a way known as *two-layered reversible symmetry.*

Understanding this structure may help scientists understand how the channel opens and closes to maintain the correct ion concentration. As you saw, despite all their advanced technology, scientists have still not fully unraveled the complex processes that transpire within their own bodies, within the cell membrane. R. MacKinnon, who studies the ion channels, has stated that these structures—the gateway to the cells—have only newly begun to be understood, and that continuing experiments seek to understand how they function.[3]

The cell membrane possesses a special structure for admitting chloride ions. Despite all obstacles, the cell membrane is capable of admitting the necessary ions. That exceptional solution cannot, of course, be the product of molecules devoid of intellect and consciousness. The order here is a part of the complex system that Allah has created in our cells.

1. R. Dutzler, E.B. Campbell, M. Cardene, B.T. Chait & R. Mackinnon, "X-ray structure of a ClC chloride channel at 3.0 A reveals the molecular basis of anion selectivity," *Nature,* No. 415, 17 January 2002, pp. 287-294.

2. http://www.hhmi.org/news/mackinnon5.html; "Images Reveal How Body Regulates Salt Uptake in Cells," *Howard Hughes Medical Institute News.*

3. http://www.hhmi.org/news/mackinnon5.html; "Images Reveal How Body Regulates Salt Uptake in Cells", *Howard Hughes Medical Institute News.*

3. Brain Cell Selectivity: "The Blood-Brain Barrier"

In the brain, special sentries admit the necessary nutrients in the blood but keep out substances that would keep nerve cells from functioning. These sentries form a barrier between the brain's nerve tissues and prevent substances in the blood from entering. This barrier is constituted by endothelium cells that line the brain's blood vessels. The barrier's importance stems from the fact that nerve cells need a specific chemical environment. Lacking such an obstacle, when you ate foods that increase the concentrations of glucose, amino acids, hormones or other compounds, or when you engaged in exercise, nerve functions would move out of control and would even suffer seizures.

In the brain, countless capillaries bring nutrients and carry away waste products. The brain's endothelium cells have special connections that prevent substances in the blood from passing through the cell membrane and reaching the nerve tissue. For that reason, the endothelium cells are almost totally impermeable. But did the barrier not allow anything pass, then the brain would be deprived of the needed oxygen, glucose and amino acids and would die. Yet the blood-brain barrier's special mechanisms keep unwanted substances out, but carry vital molecules to the brain.

Molecules soluble in fat can generally pass through the blood-brain barrier immediately. These include nicotine, ethanol and heroin. However, if charged molecules are not soluble in fat and must depend on special transport systems, they enter the brain very slowly, or not at all. These may be large molecules such as proteins or small ones like sodium. Glucose—the brain's main source of the energy it needs—and the amino acids that it cannot produce itself, are not soluble in fat. Therefore, these substances are carried through the cell membrane by particular transporters. The human brain uses more than 120 grams of glucose a day. But since it cannot store more than 2 grams, glucose must be constantly pass through the barrier.

In the light of this need, a great many transporters in every endothelium cell allow it to absorb large quantities of glucose from the blood. The glucose transport system is the body's hardest-working transport system. The cell itself uses only a very small part of this sugar, and the remainder is transferred to the brain. Yet the structure of the transport molecules is still a mystery to scientists. In all likelihood, the transporters are one or more proteins that open the channels so as to permit glucose to pass through the cell membrane.

Amino acid transport systems are far more complex, because every one of the 20 amino acids has a different molecular structure. These can be grouped into four classes depending on their chemical properties: *large neutral, small neutral, basic and acidic.* Each category has its own transport system. As with glucose transporters, large neutral amino acid transporters lie on both sides of the barrier, and amino acids can thus enter and leave the brain. Small neutral amino acids can be synthesized by the brain cells, so there is no need for them to be transported to the brain.

The idea of the blood-brain barrier was first advanced by the German bacteriologist Paul Ehrlich at the end of the 19th century. It was possible to be proved, however, only with the development of the electron microscope in the 1950s. Although in appearance capillaries in the brain resemble the veins in other parts of the body, they possess different features. First of all, the connections between cells in the capillary vein in the brain are exceedingly dense. At their connection points, cell membranes are attached to one another just like a zipper. Unions between the endothelium cells in the capillary vessels in the other parts of the body have spaces. Second, in cells in the brain's capillary vessels, there are very few pinocytosis sacs that help transport fluids and solutes through the cell membrane. In cells outside the brain, however, these sacs are widespread.

The importance of the barrier

We can better understand the importance of the blood-brain barrier from diseases that occur in that barrier's absence. Tumors, brain-tissue defects and edema—swellings due to the accumulation of fluids and proteins—cause this barrier to collapse. Since fewer sacs form in the walls of the endothelium cells, leakage begins, or the tight bonds between the cells are loosened.

Damage to the barrier leads to the accumulation of fluid and lead poisoning in brain tissue. The metal first enters the endothelium cells and then the astrocytes. After the lead has damaged the barrier, the brain is more vulnerable to other substances.

The blood-brain barrier is no longer considered a passive structure, but a dynamic interface between the blood and the brain. Yet our understanding of its maintenance and transport mechanisms is still incomplete. 54

Every portion of our bodies has been specially created for life. These parts, only a few of which we shall look at in this book, have occupied scientists for decades and contain mechanisms that astound investigators. Why is this blood-brain barrier in exactly the right place only and not among cells in any other part of the body? How do the cells know that the brain needs a stable environment, and so entry to and exit from its cells must be more tightly controlled? No doubt the cells themselves do not decide to form a barrier and then construct one in the membranes. It is out of the question for this to be the work of coincidence. The barrier in the brain serves a vital purpose, and this complex structure is directed towards that end.

Therefore, Darwinists hoping to account for the origin of life in terms of coincidental mechanisms are once again at a dead end. Even if all the body's complex systems existed but only this barrier in the brain cells did not, then you could not survive. That being so this same barrier must have been present, along with all its systems, from the very outset. Gradual development, the basis of the Darwinists' claims, is again invalidated, as this example shows.

As an indicator of planned structure, this precautionary measure taken for human beings is one of the countless proofs of the existence of Allah.

"Then inquire of them: Is it they who are stronger in structure or other things We have created? We created them from sticky clay. No wonder you are surprised as they laugh with scorn!" (Surat as-Saffat, 11-12)

SIGNAL SELECTION IN TRAFFIC OF DATA AMONG CELLS

With all the amazingly complex, mutually-dependent components, it seems that the cell had to be complete from the beginning. . . .

—Dr. David Rosevear

Every moment hundreds of messages literally rush from one part of our bodies to another. Your cells have been equipped with exceedingly complex recognition systems able to make the right selections from among all this information traffic and extracting relevant information. Codes belonging to the information are translated as the result of a chain chemical transformation.

The chemical messengers carrying these messages are liquids that allow different organs to correspond with one another.55 As a result of this connection, the cells of any living things behave as a whole and act as one in the face of sudden external changes or attacks. The French biologist Andre Lwoff, a Nobel Prize winner in physiology, has stated that every organism can remain alive only by means of the existing complex information:

An organism is a system formed by inter-related structures and functions. It is formed by cells and cells are formed by molecules that are in a flawless cooperation. Each molecule should be aware of what the other is doing. It should be able to receive messages and act according to them.56

The way that cells are able to send and receive messages, recognize signals and unravel codes reveals organisms' abilities to act as a single unit. Coincidence cannot explain how the unconscious, unthinking cells work together in full cooperation and harmony, acting like a single entity with a single aim. This great harmony that results from the messages constantly exchanged by millions of cells is indicative of a superior Creation.

The Communications Provided by Hormones

In many ways, the communications system among cells resembles the system used by human beings. For example, the receptors on cell membranes let them perceive the messages reaching them. Immediately beneath these receptors are structures like switchboards that decode the message reaching the cell. These receptors are located in a cell membrane just 1/100,000 of a millimeter thick, which entirely surrounds the cell. Each receptor, known as *tyrosine kinase*, consists of three main sections: the antenna, the body and the tail. The shape of that part of the antennae projecting outside the cell membrane resembles the dishes used to receive satellite broadcasts. In the same way that every dish is aimed to receive broadcasts from a specific satellite, so the messages carried by various hormone molecules are interpreted by different receptors. Hormonal messages from other cells make contact with the receptors in the cell membrane. However, every receptor has been created to perceive just one single "message." This special Creation prevents any message setting another receptor into action by mistake.

The hormone and receptor have been so ideally created for one another that almost all biological texts compared theirs to a lock-and-key relationship. Only the right key can open the lock; only the right receptor responds to the hormone being sent, which means nothing to other receptors.

From the moment hormone reaches a cell, a system begins to work inside it. The incoming message reaches the cell's DNA by a special communication system; movement of the cell is provided by the help of this message.

The hormone is transmitted at great speed to the cell nucleus. A most superior technology is employed during this communication process—an even greater miracle than the invention of a computer too small to be seen with the naked eye. Each cell is made up of unconscious protein molecules, and in your body there are 100 trillion cells, each of which possesses an advanced communications system. (For details, see Harun Yahya, *The Miracle of Hormones*.)

Hormones, secreted by special cells of the endocrine glands, spread throughout the body through the bloodstream. These hormones secreted into the body fluids are chemical substances that control the body's other cells. It is impossible for hormones, unaware even of the existence of other cells, to choose to assume the task of affecting them. These tasks, requiring a superior intellect, knowledge and consciousness, cannot be determined by tiny molecules. Neither can hormones know that the body has a given need and establish a way to affect the relevant cells accordingly… They simply perform the task set out for them flawlessly, within a perfectly established system, in full submission to Allah, Who gave them this duty and created them as components of this system.

As stated earlier, great harmony exists between cells and hormones. Cells immediately understand the meaning of the messages that hormones bring. For example, when growth hormone arrives, the cells immediately recognize it and systematically implement such details as the rate at which various parts will grow. From that perspective, the cells are told when to produce hormones and in what quantities, to begin and halt production at the right times, and thus direct other hormones. This is clearly the result of an intellect. In the human body, as in every point in the universe, the artistry and knowledge of Allah, the Omniscient is revealed for all to see.

Strikingly, though hormones reach all the cells via the bloodstream, they have an effect on only their targeted ones. As the hormone moves in the extracellular fluid, certain cells recognize by means of the special receptors on the cells' surface. The

chemical message then affects neighboring cells. In order for its message to be deciphered, the chemical messenger binds to the receptors, the most widespread of which are on the cell membrane. Almost all hormone receptors are large proteins, and every cell to be stimulated has between 2,000 and 100,000 receptors.57 But the number of receptors on the target cell is not fixed but can vary from day to day, even from minute to minute. Generally, when a hormone attaches to the target cell's receptor, this leads to a fall in the number of active receptors and to a reduction in the target tissue's sensitivity to the hormone. For that reason, either the receptors are activated at other times, or are re-activated, or else new receptors are produced by the mechanisms forming the cell protein. As you see, everything taking place at every stage is directed towards a particular end. It is self-contradictory to maintain that purposeful phenomena are the work of chance—just one of many matters that face Darwinists with an insoluble dilemma.

In addition, cells generally possess different receptors for the same message. These receptors are generally specific to a single hormone, so that only the receptor that needs to be stimulated is stimulated, and the tissue that needs to be affected is affected.58 In the same way that only a key of a specific shape will open a lock, each receptor functions only when it binds to a molecule (ligand) of the right shape.

These receptors select the different hormones to which they need to bind themselves, never making a mistake. However, there is no need of trial and error for the right lock and key to finally come together. Bear in mind that a single error could have fatal consequences, and you can better appreciate the perfect order in your body. This order of our Lord's is revealed in a verse from the Qur'an:

. . . He created everything and determined it most exactly. (Surat al-Furqan, 2)

Hormones' Effect on the Receptors

A hormone creates its effect by activating target receptors in the cell membrane. When hormones attach themselves to these receptors, they cause changes in the receptor's protein structure. Some hormones have opening and closing effects, similar to the ion channels in the cell membrane. For example, they cause sodium and potassium channels to open and close. In this way, these ions alter the potential of muscle cell membranes and lead to a stimulating effect in some cells, and a calming effect in others.

The Speed of Signal Transmission

The speed at which hormones' complex system works is also astonishing. The messenger molecule's reaching the cell, its attachment to the cell membrane's antenna, initiation of the chemical reaction forming the bond between the hormone and antenna, transference of the hormonal message to the receptor antenna and the forwarding of that message to the cell nucleus—this all takes place exceedingly quickly.

To achieve the necessary speed, many hormones form secondary messengers within the cell. For example, when a hormone in the G protein system reaches the cell surface, it attaches to a receptor and sends a signal to a G protein inside the cell membrane. That G protein, activated according to its type, either increases or reduces the effect of a string of enzymes. *Adenylate cyclase* is one instance; stimulating this enzyme leads to the production of periodic-AMP, a secondary messenger. A series of chemical reactions then take place, changing the forms of specific proteins within the cell, leading to other cellular reactions. When the level of the primary messengers falls, the G protein is inactivated and its effects come to an end.

The cell uses this exceedingly complex signaling system to increase the efficiency and speed of message transmission. The arrival of a single messenger molecule initiates a series of reactions, reinforcing the original message and transmitting it onward. In addition, the delay between a signal arriving at a G protein and the cell's reaction is only a fraction of a second. By

means of the G protein system, for example, light-sensitive retinal cells react to a single photon in just 1/100th of a second. In contrast, other cells may take up to 30 seconds to react to external signals.

The harmony between the messenger and the receptor, and the way that their communication with one another keeps us healthy at all times, are certainly a great miracle. Many trained chemists and biologists are unable to match the activities inside the cell, carried out on a scale too small to be seen with the naked eye. This undermines the claims of coincidence. Indeed, Darwinists have admitted their helplessness in the face of the complex system in hormones.

The evolutionist writer Von Ditfurth expresses the perfection that he observes at the cellular level, with regard to the communications network among cells:

> *The many currently known details constitute a field that no medical student can master, yet the pores of the network relationship in question have not even properly opened themselves to modern physiological research. Although we are still at the beginning of the road, we must not forget that the mechanisms of the network that regulates this "internal environment" we are referring to here have a fluid property.* 59

The communication among cells, touched on here in only very superficial terms, possesses a complexity that has occupied scientists for decades. Many volumes have been written on the subject. For that reason, the information obtained by scientists is substantial, but nevertheless superficial. There are many issues to consider here. How do the cells take and implement decisions? They assume responsibility for the protection of other cells they have never seen, so carefully as not to overlook the slightest detail. They are sufficiently farsighted to recognize danger. How did they acquire such sensitivity, measurement and timing? In addition, how is it possible for them to make other cells around them aware of what they need to know, to warn them, set them in operation, seek help and act on what other cells tell them in turn? It is a violation of reason and logic to claim that cells acquired all these abilities by blind coincidence.

Furthermore, proteins bring the messages to the cells, receive messages and evaluate them. The gates and pumping systems that control entry to and departure from the cells are proteins too. Proteins accelerate chemical reactions. Whenever there is a need for any protein in the body, certain messengers—themselves proteins—know to find the right location in the body and forward the request for help in the correct way. The protein supplies this communication without becoming lost in the dark recesses of the body, without losing the message it carries, and without doing any harm anywhere. In other words, there is an enormous awareness of the duties to be carried out in every component of the system.

After a series of complex processes, the message reaching the cell nucleus generates a protein. In an astonishing way, the protein request reaches the right cells from among the body's 100 trillion cells, and the cell receiving the message immediately understands it, acts on it, and obtains a perfect result. We are not dealing with a community of human beings possessed of intellect, information and will power, but with minute unconscious entities, consisting of substances such as phosphorus, carbon and fat. There is no way that these molecules, invisible to the naked eye, can acquire such properties as communications, understanding and identification on their own. Like all molecules, they exhibit seemingly conscious behavior by acting in accord with the special inspiration given them by Allah.

Indeed, anyone who analyzes the molecular structure of the protein, DNA helixes and chromosomes would see that the phenomena of coincidence and chance could never bring such perfect structures into existence. This nonsense has hypnotized literally millions of people, whose reason and good conscience should prompt them to appreciate the marvels in Allah's Creation:

> "**Your Lord creates and chooses whatever He wills. The choice is not theirs. Glory be to Allah! He is exalted above anything they associate with Him! Your Lord knows what their hearts conceal and what they divulge. He is Allah. There is no god but Him. Praise be to**

Him in this world and the Hereafter. Judgment belongs to Him. You will be returned to Him."(Surat al-Qasas, 68-70)

SELECTION IN THE IMMUNE SYSTEM'S CELLS

The theory of evolution assumes life developed from a "simple" cell but science today demonstrates that there is no such thing as a simple cell.

—Howard Peth

> Microscopic living things that do not belong to the body itself can enter it by one means or another, and thus set the body's defense forces in motion. Certainly, not every foreign substance that enters the body is treated as an enemy. Substances with foreign properties enter the body every time we eat, take medicines or drink water. Yet our bodies do not declare war on these substances. In order for the defense cells to regard a foreign substance as hostile, certain conditions must be fulfilled: such as the size of the "foreign" molecule, the speed of expulsion from the body, and the way it entered.60

T cells play the main role in the immune system's fight against viruses and other microbes. T cells begin their life in the bone marrow. After receiving an enemy warning, immature ones head for the thymus gland to acquire more expertise. In order for T cells to be useful, they need to be added by means of receptors to the antibodies targeted against specific microbes.

Cells in the immune system such as T cells use recognition proteins like molecular flags and signposts to determine whether a cell belongs to the body. These proteins enable cells to recognize and make contact with one another. The rod-like extensions (molecules containing sugar and known as glycoprotein) of these proteins protrude from the cell membrane to the outside.

Recognition proteins make it possible for sperm cells to recognize an egg cell of the same species; they also permit viruses and bacteria to determine the right cells to attack and form areas where one cell can bind to another. Toxins bind to recognition proteins in order to kill cells. Since the wrong recognition proteins are present in transplanted organs, the body rejects these tissues unless its immune system is suppressed.

The absence of recognition proteins plays an important role in the formation of cancer. By means of the recognition proteins, connections normally develop among cells that regulate cellular growth. Cancer cells, however, evade these precautions to form tumors or metastasize, spreading cancer cells throughout the body. Cancer cells can also produce recognition proteins seen in other types of cell, and use these false proteins to assist their metastasis.

Very few recognition proteins are peculiar to cancer cells, so the immune system does not identify them as cells needing to be destroyed. Cancer researchers' basic aim is to identify the recognition proteins peculiar to cancer cells and to increase their number, so that the immune system can identify the tumor as foreign and destroy it. Knowing the structure of cancer cells' recognition proteins could also make possible special drugs for these proteins and specific cancer cells.

Exchange of Information among Cells in the Immune System

In the event of an injury to tissue, immune system reactions begin. Defense cells known as macrophages identify the location and counterattack the invading microbes as quickly as possible. This makes it possible for the body to withstand the countless dangers it is exposed to every day.

A T cell identifies a location, analyzes the situation posing a threat and takes necessary precautions by sending messages where required—all exceedingly conscious behavior. No cell thought of these duties by itself. To say that your body developed this life-saving system by chance flies in the face of reason and logic.

Also important is that normally, most macrophages have encountered such an attack for the first time. Cells with no prior training can evaluate the situation of which they have no previous knowledge, and distinguish between what is dangerous and what is not. This can't possibly be the result of coincidence. This perfect system is a great blessing from our Lord, the Compassionate and Merciful, as well as being an example of His omniscience. (For details, see Harun Yahya, *The Miracle of the Immune System*.)

The Placenta's Selection of Nutrients

An egg cell fertilized by a sperm or zygote, begins rapidly dividing into two cells, then four, then eight. To do this, it requires large quantities of nutrients. In order to take nourishment from the mother, some of the embryo's cells form the placenta, a structure that permits the exchange of foodstuffs, oxygen and other substances between mother and her baby. In order to constitute new cell groups—tissues, in other words—the placenta carefully selects the right nutrients and oxygen, and in carrying these to the fetus, the placenta also separates out waste products to be sent out of the mother's body.

Placental cells know what the baby will need and when. They take the necessary measures in the light of that need, select the needed substances and remove unnecessary ones from the baby. This they do day and night without rest—an extraordinary phenomenon. Not even a doctor equipped with the latest medical knowledge could assume such a responsibility. However, Allah reveals to us His matchless artistry by equipping the placenta cells with their most superior ability.

The womb is filled with amniotic fluid that protects the fetus. It is impossible for a baby to grow in its mother's womb in the absence of amniotic fluid, through which both mother and child are protected. At 12 weeks of age, the fetus's own circulatory system has developed. However, it still depends on its mother's bloodstream to receive oxygen and nutrients and to expel carbon dioxide and waste products. The exchange that takes place between their two circulatory systems must occur without the two blood supplies becoming intermixed up, or the results could be fatal.

The placenta flawlessly separates the circulatory systems of mother and fetus. Gasses, foodstuffs and wastes are exchanged between the mother's and the fetus's blood. However, these physical barriers—separate circulatory systems and amniotic fluid—are not sufficient by themselves for the baby's survival. 61

Examined more closely, the placenta is seen to consist of trophoblast cells, which comprise this wall, a barrier specially created for the blood. The embryo is closely connected to the mother's tissues. On the one hand, the embryo is nourished by substances in the blood arriving from its mother, and on the other, it is under threat from the mother's defense cells. That is because the mother's body regards the embryo as a foreign body that might be an enemy. Therefore, it is vital that the defensive cells in the mother's blood should not reach the embryo. However, the placenta possesses a special Creation that prevents the cells in the mother's blood reaching the fetus. Oxygen, foodstuffs and minerals from the mother's blood pass through these small gaps to reach the embryo. Defense cells, being larger, cannot pass through this barrier.

How is it that the placental cells know that the fetus needs these substances in the mother's blood, and not others? How do they separate and distinguish between the two? How do they know to comprise a structure that protects the baby from its

mother's immune system? Clearly the baby is specially protected in the mother's stomach. The placenta cells have assumed this responsibility under the inspiration of Allah.

Macrophages that Choose to Die to Save the Body's Life

Whenever you cut yourself, leukocyte cells sacrifice themselves to protect you from invading bacteria. These self-sacrificing macrophages emit large quantities of alarm-chemicals that call the immune system for help.

> Immunologists have long puzzled how the macrophages identify invaders. The secret, say Arturo Zychlinsky from New York University Medical School is the lipoproteins found on the surface of almost all bacteria. Zychlinsky exposed macrophages to bacterial lipoproteins and discovered that these immune cells have a "death receptor" that recognizes lipoproteins. When these bind to the receptor, a suicide order is issued within the cell instantly, triggering pre-programmed cell death. The death receptor provides a short cut, speeding up inflammation before the bacteria can gain a foothold. 62

Waste products from cells that commit suicide are immediately destroyed by neighboring cells. But even more astonishing is that not all the dead cells get cleaned up. Tissues such as the lens of the eye consist of dead cells, but these are not eliminated because they are necessary for the body. Some dead cells are deliberately left in place, because their functions in the body are not yet finished. The trillions of cells in the body decide which dead cells to destroy and which to leave.

What gives a cell the awareness to act on such a vital decision? The answer is that all cells have been programmed in the ideal way for their organism to survive. The author of that programming is our Lord, Whose matchless Creation and omniscience can be seen in every detail of life.

Disposal of Harmful Substances and Dead Cells

It is essential that cells be well cleaned of useless or even harmful proteins. For example, when cells need to stop dividing, they must destroy the proteins that stimulated that division. If they do not do so, then uncontrolled division of cells leads to cancer. Thus, the correct proteins needs to be eliminated at the right time. This process is important in all areas from the fetus's development process to the immune system's defense against microbes. Furthermore, protein decay takes place just about everywhere in the body, and these defective proteins also need to be cleaned away.

> Biologists have established that proteins exposed to trauma form pockets with a specific shape. For more than ten years now, we have known that the breakdown of proteins plays a vital role in a cell's life cycle.

When a cell decides to destroy any protein, the cell labels it with a small molecule known as ubiquitin. The cell then separates this labeled protein into its components. To prevent the wrong proteins being labeled, the ubiquitin is accompanied to the right target. After the label has been attached, the target is destroyed: There can now be no going back. Cells use different enzymes to be certain that the right proteins are destroyed at the correct time. 63

Who decides that a protein's defective structure or aspects are harmful to the cell, and how? Whose consciousness orders these proteins to be eliminated? How was it learned that failure to act on that decision would have dangerous consequences for the cell? How does the cell arrive at labeling proteins so that no error should be made? The answer to all these questions is the superior intellect and consciousness of our Lord, Who created the Earth and skies.

VITAL SELECTIONS IN THE BLOOD

The elegance of the way the hemoglobin system functions is simply astounding, and a source of wonder to everyone who is familiar with its intricate ingenuity.

—Michael Denton

Some of the vital components of the blood are proteins. Through the circulatory network reaching all points in the body, proteins in the blood have the means to reach every cell where they are needed. For example, the protein hemoglobin carries oxygen to the tissues, and the protein called transpherine in the blood carries iron. Immunoglobins are proteins that protect the body against bacteria and viruses. Fibrinogen and thrombin cause the blood to clot. Insulin is a variety of protein that regulates sugar metabolism in the body. All of these essential proteins reach the tissues by means of the bloodstream.

Albumin, one of the transport proteins in the blood, attaches to fats such as cholesterol, hormones, poisonous bile and drugs such as penicillin. Later, the blood moves it through the body to the liver, where it deposits the toxins it collects to be neutralized, and carries nutrients and hormones to where they are needed. How can a molecule like albumin, composed of atoms with no knowledge or consciousness, distinguish between fats, toxins, drugs and nutrients? Moreover, how is it able to deposit the substances it carries in the liver, gall bladder and stomach, without ever making a mistake, and in the needed quantities? If you examine the toxins, drugs and nutrients carried in the blood under a microscope, you could never tell one from another without studying clinical biochemistry. You could never tell how much of each needs to be deposited at which organ.

Molecules know this information, which most people without special training do not possess, and they have been performing their function in the body flawlessly ever since the first human being appeared. No doubt the display of consciousness by a collection of atoms is possible only through Allah's infinite might and knowledge.

Hemoglobin's Oxygen Selection

The most important property of the protein hemoglobin in the blood's erythrocyte cells is its ability to trap oxygen atoms. Hemoglobin carefully selects oxygen molecules from among the millions of molecules in the blood. However, a hemoglobin molecule attaching to an oxygen molecule would be oxidized and lose its function. For that reason, hemoglobin traps the oxygen molecule with a special technique, the result of a special Creation—not touching it at all, as if it were using tongs.

Hemoglobin consists of the assembly of four different proteins, in which there are special iron atom-bearing sections. These regions that carry iron atoms are known as heem (or haem) groups. The iron atoms in these heem groups are the special tongs by which oxygen is held. Each heem group can hold one oxygen molecule.64 Special folds and angles within the molecule let the heem groups trap oxygen without touching it and carry it to the tissues. These angles change in specific proportions during the binding process. 65

After the first heem group has trapped oxygen, the hemoglobin structure changes, and greatly facilitates the trapping of oxygen by the other heem groups.66 If the hemoglobin combines directly with the oxygen during the trapping process—if oxidized, in other words—then a disorder known as methemoglobinemia results,67 causing the skin to lose its color and turn blue, accompanied by shortness of breath and weakening of the mucous membranes. 68

As a result of the special Creation of the hemoglobin molecule, however, these molecules regularly carry 600 liters of oxygen every day to the 100 trillion or so cells in your body. It is impossible for hemoglobin to know that oxygen will damage it, to take the appropriate precautions by making a special arrangement in its own structure and to know that it must carry oxygen to every cell in the body. The molecule in question is nothing more than a collection of unconscious atoms. However, our Omniscient Lord, Creator of all, has created the hemoglobin molecule to protect it from oxygen's harmful effects, and reveals to us the fine detail of His Creation. In his book Nature's Destiny, the famous microbiologist Michael Denton describes the flawless Creation in hemoglobin:

> *As the efficient transport of oxygen is essential to the viability of any large active organism with a high metabolic rate, a molecule with properties of hemoglobin would seem to be essential. Might there be any alternatives to hemoglobin? None of the many other oxygen-carving molecules which occur in the blood of invertebrates, such as the copper-containing proteins of the molluscs, come close to the efficiency of hemoglobin in transporting oxygen in blood. As Ernest Baldwin commented, "Mammalian haemoglobin is far and away the most successful of the respiratory pigments from this point of view". . . . The evidence is consistent with the possibility that hemoglobin is the ideal and unique respiratory pigment for metabolically active air-breathing organisms. . . .* 69

As Michael Denton states here, hemoglobin is the most ideal form of transport. The way that a mass of molecules can distinguish one molecule from another in the darkness of the body, in an area very large compared with its own size, and attach itself to that molecule in the most appropriate way reveals one of the proofs of Almighty Allah's infinite knowledge.

The way that cells bind to one another selectively is another of their most important features. According to the biologist John P. Trinkhaus:

> *The adhesions that cells make with one another lie at the very basis of multicellularity. The form and functioning of all creatures that consist of more than one cell depend on their cells adhering firmly to one another and to the extracellular materials that intervene.* 70

The way cells selectively attach to other cells around them also depends on the properties of the cell membrane. With such features as viscosity, density and electrical activity, the double-layered phospholipids cell membrane is the most suitable structure for making life possible. The phenomena taking place in the cell membrane should require consciousness and intellect. How does a cell membrane, a combination of unconscious molecules, recognize another cell? How does it know that it must attach to other cells to form an organ, and how it can do so? This property of the cell is one of the examples of our Lord's dominion over living things.

THE IMPORTANCE OF THE CREATION IN THE CELL MEMBRANE IN TERMS OF MULTI-CELLULARITY

The lipid bilayer . . . ideally and uniquely suited for the cell to carry out its designated task of building a biosphere of multi cellular life.

—Michael Denton

How Does a Cell Select the Cell to Bind to?

The surface of a typical cell is not smooth, but rough. Most cells make contact with one another by means of micro-protrusions on their surfaces known as *phyllopods,* which are generally no longer than 0.1 microns in length and cover no more than 1/100th of a square micron. The cell uses these micro-protrusions as if they were fingers, to discover its environment and feel the surfaces of other nearby cells.

Binding to another cell takes place as a result of special molecules on these micro-protrusions. Binding molecules, present in pairs, bind with their mutually complementary surfaces. Proteins apply the lock-and-key recognition principle they use to recognize substances. The bond between two binding molecules is known as the affinity link, whose strength consists of the totality of various weak chemical bonds that attach two molecules together.

The external surfaces of cells are negatively charged. For that reason, cells repel each other electrostatically. Under these conditions, it would appear impossible for them to remain in physical contact with one another. But because of the cell membrane's special Creation, cells are able to do just that. Along with a decrease in the field of contact in these micro-protrusions in the cell membrane, the repellent effect here is also reduced and ceases to represent any obstacle.

The binding of cells by micro-protrusions also plays an important role in the cell's direction-finding. For example, cells migrating in the body of a developing embryo adhere to a large number of other cells until they find their intended destination. They thus open the path before them by repelling other cells and continue to extend these protrusions in many directions until the correct contact is made. If a cell did not possess the ability to extend these protrusions, then it would be as impossible for it to find its way, no more than a human can do so in the dark without using his hands. Here, however, the wealth of Allah's knowledge again reveals the perfection of the Creation in the entities He has created.

To establish an affinity link between cells, the distance between the surfaces of the two complementary adhering molecules must be less than 1 nanometer, and they must be correctly aligned. It is difficult for these conditions to be met, yet binding still takes place, even if the links in the cell membrane not approach one another to the requisite extent. These links are strong enough to bear a 40-nanogram weight (1 nanogram = 1 billionth of a gram). If the affinity links between cells were not that strong, it would be exceedingly difficult for one cell to bind to any other.

Many cells can establish bonds to other cells by means of a single protrusion; this can constitute a permanent bond by means of two affinity links. Were the affinity links in this bonding system a few times weaker, the cell could not attach to another. In addition, proteins would not be stable, and enzymes would not bind to the relevant substances. If these links were stronger, then it would be very hard for bonded cells to separate from one another. As you have seen, there is a most delicate balance for one cell to be able to bind to another, and it is impossible for that equilibrium to have attained its ideal form by trial and error.

Another of the Cell's Essential Abilities: Crawling

If cells could not move, life would be impossible. During crawling, the cell extends fan-like protrusions known as *lamellae* that permit a temporary attachment to the adjacent surface and slide forward, dragging the cell behind them. This process is made possible by the cell's constantly changing shape. To do so, that the cytoplasm inside the cell wall must have the property of a semi-solid and be adhesive in such a way as to form protrusions extending to the outside. But at the same time, the inside of the cell must also have solid structural elements to constitute a flexible skeleton.

Evidently, the cell's crawling ability depends on the cytoplasm being readily deformable so that the cell's interior can be drawn into an advancing protrusion. If too viscous, the cell's contents would be immobilized. The cell must be able to reversibly adhere to a substratum, and, as you just saw, the property of adhesion depends on the strength of weak chemical bonds. The cell must be able to generate enough traction to pull its mechanically rigid scaffold. If the viscosity of water, the energy levels of weak chemical bonds and the power of the traction forces were all slightly different from what they are, such crawling would likely be impossible.71 The cell's propulsive ability plays a vital role in all stages of bodily development.

The cell's crawling and binding also depend on its dimensions. If cells were 10 times smaller than they are, then their crawling would become impossible: It would be very difficult for the systems inside the cell to fit into a volume just 1/1000th of its size. Moreover, since the surface of the cell would also be 100 times smaller, the number of molecules able to attach to its surface would be reduced. It would be very difficult, too, for such small cells to form the complex protrusions that let them feel their way, and it would be impossible for the cell to perform vital functions such as bonding and crawling.

Dr. Juliet Lee of the Connecticut University Molecular and Cell Biology Department made the following comment about the cell's ability to move in the wake of her research published in *Nature* magazine:

A lot of people don't realize that many cells are not stationary but can travel from one place to another. . . If cells could not move, none of us would exist. Embryos would not develop, wounds would never heal... When cells are stretched, such as when they're going forward and their back end gets stuck, calcium channels along the sides open to admit more calcium ions. This boosts the cell's motility so that the back end is pulled away from whatever it's been stuck on, and it can move forward again. . . We also found that if we prevented cells from exhibiting these pulses of calcium, the cells became stuck so they could no longer pull their back edges in. . . . As soon as the rear of the cell retracts, stretching is released, the calcium channels close and the level of calcium drops back. 72

The cell's abilities to selectively bind and to crawl depend on the features of its cytoplasm and the structure of the cell membrane. Cytoplasm has a most plastic and mobile structure, ideally suited to crawling and binding. The cell's abilities to move and bind are possible only when cytoplasm possesses exactly the proper characteristics. DNA, protein, sugar and lipids—the basic compounds of life—also possess exactly the right structure and need to be present in the right proportions for the cell to maintain its activities and multiply. As a result of this, however, the cells are able to move and bind and thus, make larger organisms possible. In short, there is no room for gradual development in the structure of cells, as Darwinists claim. On the contrary, all of the cell's components and features constitute a whole, possessing a very special structure for the emergence of life.

The famous British mathematician and astronomer Sir Fred Hoyle expressed the impossibility of claims of coincidence:

The notion that not only the biopolymer but operating program of a living cell could be arrived by chance in primordial organic soup here on the Earth is evidently nonsense of a high order. 73

THE DELICATE BALANCE IN SUBSTANCES

SELECTED IN THE BODY

The entrance to a living cell is marked by passage through a membrane functioning to keep the bad stuff out, while letting the good stuff in… But who or what comes in and what goes out?

—Gerald L. Schroeder

The cell is exceptionally sensitive about what substances it will absorb into itself. The cell takes a substance into itself only after determining whether it will be harmful or beneficial. But how does it makes that determination? No doubt, hiding behind an irrational and illogical explanation such as coincidence is a refusal to see the facts.

> If someone placed a pile of freshly powdered metal in front of you, how well could you tell whether it was steel, aluminum or some other useful metal? If you also imagine that you made that distinction quickly, and that the slightest mistake could have fatal consequences, then you can better understand the importance of the ability the cell displays. For example, in cases of need or lack, the brain gives orders to the intestine to absorb more iron or phosphorus; and the intestinal cells immediately absorb iron or phosphorus. The exact opposite also applies. In the event of a surplus of any such metals, they are expelled from the cells after receipt from a command from the brain.

In a similar way, cells in the kidney identify level of the surplus calcium in the blood and expel that surplus from the circulation. How is it that cells composed of unconscious molecules possess the ability to recognize minerals and adjust their levels in the body according to need? The way that brain cells command the necessary substances to absorb is itself sufficient to refute claims of coincidence. These cells are aware of their responsibilities and give orders. These commands reach the intestinal cells, for example, by means of special messenger fluids. There, the cells obey the order and fulfill their duties flawlessly. Recognizing the iron atoms before them, they duly absorb them.

How can these cells possibly engage in such conscious behavior? Where did they acquire the sense of responsibility that will mobilize them for the life of the body they belong to? It's nonsensical to maintain that cells acquired such organized behavior on their own. It is Allah Who flawlessly creates cells, too small to be seen without an electron microscope, and Who creates them in an order. Our Lord's incomparable Creation and infinite knowledge are so evident in every detail of life that no one can conceal them.

The Metal-Mineral Balance within the Cell

Minerals in molecular form are essential for life. Your body needs 15 minerals in order to maintain normal structure and cell functions. The most needed minerals are calcium, magnesium and phosphorus. Other requirements are smaller amounts of chrome, iron, selenium, zinc, copper, fluoride, manganese, molybdenum, iodine, manganese, chloride, potassium and sodium.

> Minerals are of vital importance in the way that they constitute components of your bones, teeth, soft tissues, muscles, blood and nerve cells. In addition, minerals assist muscle reactions, the transmission of nerve signals, digestion, metabolism function, and hormone production. 74

Among the inorganic nutrients related to digestion are water, sodium, potassium, chloride, calcium, phosphate, sulphate, magnesium, iron, copper, zinc and manganese. A deficiency in the level of any one will cause functions connected with those minerals not to take place.

Along with playing major roles in biological systems, metals that accumulate also have toxic effects. Therefore, the absorbance of particular metals into the cells, and their storage and expulsion by means of toxin disposal, are all performed scrupulously so that the metals' rich chemistry can be utilized. The provision of the right metals when needed, and the prevention of their accumulating to a potentially poisonous level are of the greatest importance. Many conditions stem from disruptions of the metal ion balance—including anemia, haemochromatosis, Menkes disease, Wilson's disease, nervous disorders such as Alzheimer's disease, Friedrich's ataxia, and Parkinson's disease. Moreover, micro-bacterial infections can easily occur due to defects in metal ion transport.

Supervision of the metal balance is provided by proteins that recognize and transport specific metals. These proteins are able to distinguish the proper metal from among the many present in the cellular environment in higher amounts, and can identify metals whose quantities have declined or accumulated. 75

All minerals have astonishingly different duties and effects on the body. The cells recognize all kinds of minerals and permit needed ones to pass the cell membrane. In doing so, they ensure that these minerals are absorbed in the right quantities. For example, if the body needs iodine, the thyroid gland alone recognizes it, and takes in only iodine from among all other metals such as cobalt and phosphorus. Alternatively, the necessary iodine inside the thyroid cells is not removed in error. It exhibits a selection and application, displaying an astonishing consciousness. Yet you are unaware of all this happening. If regulation were to be left to the individual, then you would find it impossible to supervise the system for even a brief moment, let alone for your entire lifetime. Obviously, it's impossible for anyone to maintain delicate balances at great speed without making mistakes and, what is more, to follow this up for every single cell in the body.

The following pages list the minerals essential for the body. Although many are present in the body at the milligram level (or even less, in some cases), they are still of vital importance for health. It's also essential that these substances be present in exactly the right quantities in the body, neither more nor less. This important responsibility is assumed by the cell membrane.

Calcium

One of the minerals necessary for a healthy body is calcium, which is present in large quantities in the bones. When lacking in substantial amounts, pains in the teeth and back, weakening in the bones, and easy fractures can all occur. The level of calcium in the body is important not only for the bones, but also plays a role in all the body's functions. It is also an essential mineral for the absorption of iron in the body and for nutrients to be able to pass through the cell membrane.

Calcium is also important for cells to perform their functions, the transmission of nerve signals, muscle development and contraction, blood coagulation, and the development of the baby's bones during pregnancy. It also protects the baby from mercury poisoning, prevents kidney stones, reduces the risk of cancer and heart attacks, provides energy, accelerates the activities of various enzymes, breaks down fats for use by the body, and helps the skin to remain healthy.

In his book *Nature's Destiny*, the microbiologist Michael Denton touches on the importance of calcium for the body:

In biological systems, it is calcium which is pre-eminently used where chemical information must be transmitted at great speed, as in the triggering of muscle contraction, transmission of nerve impulses across the synapse, triggering hormone release, the changes following fertilization, etc. As Williams points out in his review, "Amongst the metal ions available to biology, only calcium can be high in concentration, can diffuse rapidly, can bind and dissociate strongly." Of particular relevance to its role as the "mercury of the cell" is the fact that the chemical characteristics of the calcium ion are perfectly fit for specific association with proteins . . . and, second, because of the particular affinity of calcium ions for oxygen atoms, which are readily provided by the amino acids of proteins. . . . Proteins in their molecular irregularity and in their possession of readily accessible oxygen atoms provide an ideal molecular matrix for the design of calcium binding sites. 76

Copper

This metal protects the body, prevents aging, and also has great importance in treatment processes concerning tissue renewal and skin repair. It also has effects in bone formation, hair and skin color, and the formation of hemoglobin and red blood cells (erythrocytes). Most of the copper in the body attaches to proteins, and plays a role in antioxidant effects, energy

production and tissue renewal. But a high intake of copper reduces zinc absorption, and a high intake of zinc reduces copper absorption. Therefore, a delicate equilibrium exists between these two metals.

Research shows that copper deficiency raises the levels of cholesterol and LDL-cholesterol (bad cholesterol) in the plasma, and also lowers HDL-cholesterol (good cholesterol) levels, thus increasing the risks of heart attack.77 Irregularities in copper metabolism play the leading role in Wilson's and Menkes' diseases. Both these genetic diseases occur because of defects in the copper-transporting proteins. The special channels that permit copper ions to pass through the cell membrane are damaged, leading to a fall in copper levels in the liver and brain, and to their rise in the intestines and kidneys. This causes Menkes' disease, resulting in mental retardation and death before the age of three.

A lack of copper also manifests itself in the form of delayed healing of wounds, leg ulcers and mouth lesions, eczema, acne, lines on the nails, restricted growth, weak taste perception, chronic immune deficiency, and the frequent contraction of contagious diseases. 78

Iron

Iron is an important nutrient necessary for a healthy immune system, energy production and growth. Another important aspect of iron is that it facilitates hemoglobin production, ensuring that sufficient oxygen is transported to the red blood cells. There are 3.7 grams of iron in the body of a 70-kilogram individual. Two-thirds of the iron in the body is found in hemoglobin.79 Other forms are found in smaller quantities in the liver and bone marrow.

There are electron transporters containing iron in the mitochondria of all the cells, necessary for most of the oxidation in the body. Therefore, iron is of absolute importance in both the transport of oxygen to the tissues and for the functioning of the oxidation in the cells. Life comes to an end within a few seconds in the absence of iron. Iron deficiency usually stems from poor nutrition, rapid growth and heavy bleeding. Anemia is generally the symptom of iron deficiency, also leading to lethargy and the inability to do physical work.

Iron can also be exceedingly poisonous, and so the storage of iron in the body must be carefully controlled. Iron is chemically highly active and binds to many proteins in various ways, often giving rise to harmful consequences. It acts as a catalyst in oxidation reactions in cell membranes, and since it is always present in compound forms, it is not expelled from the body. A loss of iron from the body takes place only through such processes as bleeding, cell renewal and transport of iron to the developing fetus. 80

Iron is a vital micronutrient, an inseparable component of hemoglobin and essential to the transport of oxygen and carbon dioxide in the blood. The biologist draws attention to the importance of iron:

Of all the metals, there is none more essential to life than iron. It is iron which by its delicate association with oxygen in the hemoglobin in human blood is able to convey in subdued form this most ferociously reactive of atoms, the precious giver of energy, to the respiratory machinery of the cell. Without the iron atom, there would be no carbon-based life. The intriguing and intimate relationship between life and iron, between the red color of blood and the dying of some distant star, not only indicates the relevance of metals to biology but also the biocentricity of the cosmos. No other metal atom could exactly mimic the properties of iron in heme. None of the other transitional metal atoms closely related to iron will substitute for iron in hemoglobin, because none are of precisely the same size, nor do any possess precisely the same chemical characteristics allowing them to undergo the same subtle changes on associating with oxygen. 81

Magnesium

This is a vital catalyst in enzyme activities, particularly in energy production. It assists in the taking in of calcium and potassium, playing a role in bone formation and carbohydrate and mineral metabolism. Magnesium deficiency prevents the transmission of nerve and muscle signals, also causing such disorders as irritability, mental confusion, insomnia, restlessness, poor digestion, heart palpitations, fainting, hypertension, sudden heart failure, asthma, chronic fatigue and chronic pain.

Manganese

Manganese affects the working of enzyme activities, reproduction and growth, the production of sex hormones, tissue respiration, and Vitamin B1, Vitamin E, fat and carbohydrate metabolism.

Phosphorus

Human beings need this important mineral for the formation of bones and teeth, cell growth and repair, energy production, the contraction of the heart muscle, nerve and muscle movement, and kidney function. Phosphorus also benefits the body by assisting vitamins in nutrients being turned into energy. Up to 85% of phosphorus is stored in the bones in the form of phosphate, the main anion in the intracellular fluid. As well as being convertible, phosphates can also combine with compounds necessary for the functioning of many coenzyme systems and metabolisms. Phosphates are also linked to many important reactions, especially ATP, ADP and phosphocreatine processes.

Potassium

This mineral is important for a healthy nervous system and a regular heartbeat. It assists in the prevention of heart attacks, establishes regular heart contractions, and together with sodium, controls the water level in the body. It is important for chemical reactions within the cell, and assists in the regulation of blood pressure and in the transmission of electrochemical stimuli. Potassium absorption declines with age, leading to circulatory disorders and weakness.

Selenium

Selenium is an antioxidant that plays a role in such bodily functions as the synthesis of DNA and proteins, immune reactions, cell membrane integrity, pancreas functions, production of retinal blood vessels, retinal light absorption, production functions and tissue elasticity.

Sodium

This element is important with regard to nerve stimuli transmission, the maintenance of cell fluid levels, the transport of nutrients to the cell membranes, and smooth muscle contractions. Sodium and water deficiencies are the most widespread and serious deficiencies worldwide. In the event of long-term water loss from the body, sodium—one of the main components of the fluids in the circulatory system—also disappears. Fluids nourish the heart, veins, arteries and capillaries. A serious loss of them can lead to shock in the circulatory system.

Important Trace Elements In The Body

Elements found in very small quantities are known as trace elements. The levels of these in foodstuffs are very low. In the absence of any one of these, however, symptoms and disorders

appear. The three most important trace elements are iodine, zinc, and fluoride.

Iodine

Iodine, the best-known trace element, is associated with the formation of thyroid hormones and functions. There is an average of 14 milligrams of iodine in the human body, whose only use is in the production of thyroid hormones—thyroxin and triodothyronin—necessary for metabolism in all the body's cells to continue at the normal speed. A lack of thyroid secretion leads to a 40 to 50% drop below normal levels in general metabolism, and an excess of thyroid secretion leads to an increase of 60 to 100%. Since the thyroid hormone plays various roles in embryo development, iodine deficiency during pregnancy may cause various birth defects.

Iodine deficiency also causes goiter, resulting in the growth of the thyroid gland, as well as mental retardation, an enlarged tongue and sometimes deafness, an inability to speak, and lameness. A daily iodine intake of 0.10 to 0.15 milligrams is regarded as sufficient, and an intake of less than 0.05 milligrams leads to iodine deficiency. Iodine, in such miniscule quantities, is of great importance in maintaining a healthy life and the full performance of bodily functions.

Zinc

A component of more than 80 enzymes in the body, zinc is also a nerve transmitter. Low levels of zinc lead to a slowing of nerve activities and abnormal behavior. In addition, it is of great importance in healing of burns and wounds, carbohydrate digestion, the functioning of the prostate gland, the growth and development of the reproductive organs, and the use of Vitamin B1 and phosphorus and protein metabolisms.

Fluoride

Although it does not appear as an essential for metabolism, the presence of fluoride in small quantities is important during teeth formation and in preventing tooth decay at later ages. Fluoride does not strengthen teeth, but it suppresses decay in a manner not yet fully understood. It is agreed that fluoride combines with many trace elements present in tooth enamel, and its presence neutralizes the enzyme activities of bacteria that cause tooth decay.

The Selection of Vitamins in the Body

Vitamins, which cannot be produced in the body's cells, are organic compounds necessary in small quantities for normal metabolism of the body. An absence of vitamins in the foods you eat may cause metabolism defects. Vitamins are very important for healthy development, digestion functions, and immunity to infections. They also permit the use of carbohydrate, fat and protein in the body.

Vitamins are not digested or burned up in the body. Energy in the form of calories cannot be taken from them directly. The body ensures that there is exactly the right amount of each vitamin in the bloodstream. Surplus water-soluble vitamins are expelled from the body in urine, and surplus fat-soluble vitamins are stored in fatty tissue, where excessive doses of these vitamins may be harmful. Vitamins are stored in small quantities in all cells, and some vitamins are stored in large quantities in the liver. Special care must be taken with Vitamins A and D in particular. The liver's store of Vitamin A, for example, can last someone who consumes no vitamins for five to ten months, and the liver's store of Vitamin D can generally last for two to four months.

The storage in the body of water-soluble vitamins is relatively low. This is true of most vitamins, especially Vitamin B. Symptoms of a lack of B complex vitamins appear within a few days. This does not apply to Vitamin B12 because the amounts stored in the liver can last a person for a year or more. A lack of Vitamin C, another water-soluble vitamin, leads to symptoms within a few weeks. Scurvy, caused by Vitamin C deficiency, can lead to death in 20 to 30 weeks.

Of the 13 known vitamins, four fat-soluble ones —Vitamins A, D, E and K—are stored in the body's fatty tissues. The other nine vitamins are water-soluble, and most are not stored in the body: Vitamin C and the nine varieties of Vitamin B: Thiamine (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), cobalamin (B12) biotin and folic acid (folacin).

Vitamin A

Prevents eye problems, blindness, and skin problems by strengthening the immune system. It also helps treat ulcers that form in the digestive system, and protects the body against chills, and against infections in the kidneys, bladder, lungs and mucous membranes. Vitamin A is highly important for the maintenance and repair of tissues, the development of new cells, and the formation of teeth and bones. In addition, it protects against cancer and other diseases by acting as an antioxidant, decelerates the aging process, and assists in the storage of fat. Another important aspect of Vitamin A is that proteins cannot be used without it.

When Vitamin A levels are too low, skin problems such as acne, growth defects such as the slowing of skeletal development, problems with the cornea and blindness arise. In addition, a lack of Vitamin A makes the body more prone to infections, for which reason it is known as the "anti-infection vitamin."

Vitamin B2 (Riboflavin)

Vitamin B2 is necessary to prevent and for treatment of eyestrain and cataracts; it assists the metabolism of carbohydrates, fats and proteins. Moreover, it supports the use of oxygen by the skin tissues, nails and hair, and eliminates dandruff. In addition, it assists with the intake of iron and Vitamin B6. A lack of B2 can hurt the development of the fetus during pregnancy.

Vitamin B12

Necessary to prevent anemia, B12 assists in the regularization of folic acid in red blood cell production, and assists iron consumption. It is essential for the absorption of nutrients, protein synthesis, and carbohydrate and fat metabolism. The body can store five years' worth of Vitamin B12, although the vitamin is usually found in animal tissues. It prevents nerve damage, encourages fertility, provides cell formation and a long life, facilitates the normal development of nerve endings, and helps with strengthening the memory and learning.

The absence of this vitamin causes disorders such as difficulty in walking, chronic fatigue, depression, digestive disorders, dizziness, lethargy, liver growth, visual problems, hallucinations, headache, tongue infections, restlessness, respiratory difficulty, memory loss, nervous system problems, palpitations, anemia, ringing in the ears, and spinal deterioration. Vitamin B12 deficiency generally causes the loss of thick cell fiber myelin. As a result, many people suffer an excessive loss of external sensation, and this even results in paralysis in extreme cases.

As a hydrogen receiver, Vitamin B12 serves as a co-enzyme, performing various metabolic activities. Perhaps its most important function is that of a co-enzyme in gene copying, so that its two most important functions are the acceleration of growth and erythrocyte formation.

Vitamin C (Ascorbic Acid)

In addition to ridding the body of harmful foreign substances, Vitamin C is also a cleaning vitamin. It may behave as an antihistamine by making naturally produced cortisone work better. Vitamin C also contributes to the production of hemoglobin and erythrocyte production in bone marrow, assists the placing of collagen in connecting tissue, increases iron absorption in the intestines, and helps with wound healing.

The body cannot produce Vitamin C by itself, so it must be ingested together with foods. Vitamin C deficiency can result in the slow healing of wounds, bleeding, edema, extreme weakness, subdermal bleeding, proneness to infection, chills and bronchial infections, joint pains, lack of energy, digestive disorders, healing delays, easy bruising, and tooth loss.

Vitamin C enables anti-stress hormones to be produced, assists in the prevention of cancer, protects against infections, strengthens immunity, increases iron absorption, can lower cholesterol levels and high blood pressure, and protects the body against blood clots and bruising.

In the absence of Vitamin C, the collagen fibers produced in nearly all the tissues become defective and weak. It is therefore necessary for subdermal tissue, cartilage, bone and teeth fiber growth and resistance. The speed of wound healing drops when Vitamin C is lacking, because of a lack of collagen fiber accumulation in the cells and the insufficiency of intercellular binding substances. It takes months to heal a wound that should heal in a matter of days.

The absence of Vitamin C also stops bone growth. In the absence of new collagen accumulation between growing cells, bone growth is insufficient, and bones can easily break at their growing points. New bone matrixes cannot form in those whose bone growth is completed but who lack ascorbic acid, as a result of which their fractures fail to heal.

In the past, scurvy stemming from Vitamin C deficiency was often seen in sailors who spent long periods without fresh fruit and vegetables. In that disease, since the endothelial cells are unable to bind properly to one another there are insufficient collagen fibers in the vein membranes. As a result, the membranes become excessively sensitive, and the capillary vessels easily torn. Considerable internal bleeding is seen everywhere in the body. This hemorrhaging under the skin sometimes covers the entire body. In severe Vitamin C deficiency red marks may appear in the skin of the arms. In advanced cases of scurvy, muscle cells sometimes split away from one another, teeth are loosened and infections occur in the mouth.

Vitamin D

Of great importance in the use and absorption of calcium and phosphorus in the digestive tract, and particularly for children's growth, this vitamin protects the body against muscle weakness, helps regulate the heartbeat, strengthens the immune system, and is necessary for thyroid functions and normal coagulation.

Vitamin D increases the digestive system's calcium absorption and assists with accumulation of calcium in the bones. It accelerates the absorption and active transport of calcium, and increases the formation of calcium-binding proteins, which help with the absorption of calcium in the epithelial cells in the intestinal tissues.

Vitamin E

This important antioxidant prevents cancer and arterial diseases. Consisting of eight separate but interconnected molecular families, it strengthens the circulation of the blood and normal coagulation. It is necessary for tissue repair, and reduces the probability of scarring around some wounds. It lowers blood pressure, prevents cataracts, improves athletic performance, relieves leg cramps, strengthens capillary vessel walls, and maintains healthy nerves. It protects the body against anemia and eye defects that occur particularly in premature babies, delays the aging process and can prevent liver spots.

Many interconnected compounds display Vitamin E effects. As is the case with almost all vitamins, lack of Vitamin E obstructs normal growth and sometimes leads to defects in kidney cells. In the event of a lack of Vitamin E, unsaturated fatty acids in the cells

decrease, and abnormal structural and functional changes can be observed in such organelles as mitochondria, *lysosomes* and even the cell membrane.

Folic Acid

Regarded as "brain food," this is essential for energy production, accelerating growth and for the production of red blood cells. It is also important with regard to correct cell division and DNA copying. In cases of folic acid deficiency, control over cell division is weakened, which raises the risk of cancer. Linked to protein metabolism, folic acid protects against depression and nervous disorders. During pregnancy, it assists in the regularizing the embryo's and nerve cell development, and helps protect against premature birth. Folic acid's most important function may be the synthesis of purins and thiamin necessary in the synthesis of DNA.

Vitamin B3 (Niacin)

Essential for blood circulation and healthy skin, this vitamin affects the workings of the nervous system, carbohydrate, fat and protein metabolism, lowers cholesterol, and strengthens the memory.

Vitamin B1 (Thiamin)

This undertakes important functions in the body, strengthens the circulation, assists in blood formation, and affects the regular working of carbohydrate metabolism. It also supports the production of hydrochloric acid, develops perception activities and brain functions, and is important for proper digestion. This vitamin is known to act as an antioxidant protecting against the wear and tear of aging.

Vitamin B1 deficiency leads to digestive disorders, sensations of burning in the skin and eyes, cracking at the corners of the mouth, headaches, depression and forgetfulness. Nearly all the energy of the central nervous system depends on carbohydrate metabolism. In thiamin deficiency, chromatolysis and swelling in the central nervous system's neurons are frequently observed. These changes, typical of poorly nourished neuron cells, may damage communication between various parts of the central nervous system. Thiamin deficiency can also lead to degeneration in the myelin coverings around nerve fibers, making the nerves excessively sensitive. Degeneration causing a paralyzing effect in the pathways from the cerebellum to the spinal column can be seen. Even if there is no paralysis, the muscles may remain exceedingly weak. Thiamin deficiency also weakens the heart muscle. Severe deficiency leads to coronary insufficiency. Disorders related to digestion also appear in thiamine deficiency.

Pyridoxine

Pyridoxine acts as a co-enzyme for many chemical reactions linked to acid and protein metabolism in the cells. Its most important role is as a co-enzyme in the synthesis of amino acids and so plays a key role in protein metabolism in particular. It also acts in the transport of amino acids in the cell membrane.

Pantothenic Acid

This binds with the co-enzyme A (KoA) which plays a role in many metabolisms. A concentration of this substance can damage the working of carbohydrate and fat metabolism, but for metabolism, it is as necessary as the other vitamins.

Vitamin K

Vitamin K is needed to form prothrombin, factor VII, factor IX and factor X in the liver, which play an important role in coagulation. Coagulation is therefore delayed when there is a lack of Vitamin K which is synthesized by bacteria in the large intestine. If the bacteria are reduced by a large intake of antibiotics, then Vitamin K deficiency results, because this compound is found in very small quantities in foods.

THE CELL MEMBRANE INVALIDATES CLAIMS OF THE THEORY OF EVOLUTION

. . . Cells are simply too complex to have evolved randomly . . . . … Darwin's theory encounters its greatest difficulties when it comes to explaining the development of the cell.

—Michael Behe

Evolutionist Myths Concerning the Origin of Life

According to Darwinist scenarios, the first living cell arose in a "primordial soup," a liquid environment where certain organic molecules co-existed. Many Darwinists suggest that this primordial soup was oceans or lake. In the scenario, simple organic molecules in the primordial soup formed amino acids, which later turned into molecules able to copy themselves by forming proteins. But there is no evidence for this tale of chemical evolution whose different versions have been defended for the last 100 years. No such process has ever been observed. Furthermore, it is now known that the atmosphere's general structure is unsuited for the formation of amino acids, the simplest building blocks of life, and that for proteins to come into being by coincidence is mathematically impossible. However, Darwinists refuse to accept Creation and continue to believe in this *chemical evolution* story.

According to their scenario, which lacks any scientific foundation, the cell membrane—which would protect the first organic molecules and other cell organelles that formed the basis of the primordial cell—must all have come into being spontaneously, simultaneously.

Statements made by the evolutionist biologist Hoimar von Ditfurth are an example of Darwinists' biased views on this subject:

. . . the cell has to seal itself against the outside world on the one hand, while keeping itself open to it on the other. . . . The way to establish a border that is both open and closed is by forming a highly "specialized" connection equipped with very great abilities. That connection must be . . . able to perform selective and discriminatory functions. The substances and level of energy needed by the cell must be easily transmitted, and yet chemical processes taking place in the cell must remain unaffected by instabilities and fluctuations in the outside world; they should not reach such levels that suppress and impair these processes. To put it another way, the cell has to be able to determine the various and different characteristics of the outside world and natural environment and to make selections among them. So long as external agents, whether they be in the form of matter or energy, are not included in the list of necessary items for the survival of the cell, the cell must be capable of excluding them. . . .

In fact, the task that the cell (or evolution, to be more accurate) is presented for resolution defines a paradoxical relationship. But unless it had been resolved, because of the chemical and physical causes known to us, there could have been no life at all. Since we are alive today and matters have progressed as far as they have, evolution must have found a way out of this dilemma. . . .

The solution found by evolution, or rather the concession, was to develop the "semi-impermeable" cell membrane as a cell coating. It also needs to be said that the term "semi-impermeable" goes nowhere near expressing the astonishing abilities of the very thin membrane. In fact, we cannot pass by without saying that the term semi-permeable fails to fully reflect those astonishing abilities and skills of the thin cell membrane. 82

In referring to the complex, conscious selection mechanisms in the cell membrane, this well-known evolutionist also engages in forced evolutionary explanations. Offering no evidence at all, his approach is basically "Since we are alive today evolution must have emerged from this apparently contradictory state of affairs." His statements also constitute a significant example of evolutionists' poor scientific logic. Instead of drawing conclusions in the light of known findings, evolutionists regard the theory as irrefutable dogma. Von Ditfurth's statements might begin in a clearer form, thus: "*Since we are alive, and have made it clear from the outset that we will accept no other explanation than the theory of evolution. . .*" Once again, it emerges that the sole basis for the theory of evolution is not scientific proof, but a belief held for philosophical reasons.

Evolutionists perform experiments on the cell membrane, fondly dreaming that it might have come into being by chance. Despite invalid experiments that fail to square with scientific data, they still make evolutionist interpretations. In one experiment performed with that aim in mind, a group of researchers from the University of California, directed by university graduate student Charles Apel, maintained that in fresh water in a laboratory environment, they had obtained membrane-structured blebs, structures that proved that life could appear spontaneously in fresh waters.83 These claims are unscientific, however, nothing more than biased interpretations put forward in the light of evolutionists' preconceptions. We shall examine the reasons for this in detail in the following pages.

The Membrane Produced in the Laboratory Is Not As Complex as the Cell Membrane

Up to this point evolutionists have maintained that life emerged in the oceans, in salt waters. Yet in experiments carried out in salt waters, no membrane ever appeared. Fresh water was used in Apel's experiment, and obtained blebs with a membranous structure.

That these were obtained in the laboratory offers no support for the theory that the DNA, the cell, or the organelles and proteins within it formed spontaneously in water.

1. The laboratory membrane does not possess the features of the cell membrane. Of course, certain chemical and physical effects can align molecules in water, depending on whether they are hydrophilic or hydrophobic.). Yet this membrane bears no resemblance to the cell membrane, because the cell membrane has selective permeability between the inside and outside of the cell and possesses the complex gate systems to make this possible.

Evolutionists, however, portray the cell membrane and molecules like DNA as simple structures and thus suggest that these structures came into being by chance. That is why they seek to depict the simple membrane produced in the laboratory as the first stage in this far more complex structure. However it is impossible for the membrane obtained in the laboratory to evolve into the cell membrane over the course of time. In order to see this, consider just one of the many attributes of the cell membrane.

- The cell membrane, just 1/100,000th of a millimeter thick, recognizes countless chemical substances in the extra-cellular environment, and takes in only those needed for continuing organelle functions and cell survive. It possesses an extraordinary capacity for recognition.

- It is most economical. The cell never admits any more than the amount it actually needs.

- The cell also recognizes the harmful waste products inside it and loses no time in getting rid of them.

- An exchange of very large molecules sometimes takes place into and outside the cell membrane. In that case, their passage is ensured with no harm befalling the membrane. The cell forms small sacs from its own membrane, through which storage and transportation are carried out. In the process known as pinocytosis, part of the cell membrane bends inwards, and large molecules on the outside enter this hollow. This hollow contracts inwards, and a sac is formed that is drawn into the cell. In a sense, the cell swallows the substances it needs.

- In the process known as *exocytosis*, the cell forms a sac inside itself, fills it with waste products, then expels this sac through the cell membrane. Substances in the sac are thus released into the external environment.

In order for the cell membrane, consisting of fat molecules, to perform all of these processes, it must know all the activities and developments inside the cell, produce a list of all necessary or harmful substances, keep stocks under control, and maintain a superior memory and decision-making ability. In addition, it must also develop a system for transporting large molecules without harming them, and to form itself accordingly. It is impossible for coincidence to organize unconscious molecules flawlessly and construct an extraordinarily complex system. Even scientists, who possess millions of dollars' worth of equipment and the most advanced technology, are able to produce only a membrane that has no function and resembles an envelope with a few molecules inside. How could unconscious molecules and coincidence succeed where scientists have failed?

2. The formation of the cell membrane is hardly the only subject for which evolutionists can provide no explanation. They allege that the primordial cell membrane formed in the primordial soup, after which molecules in that membrane turned into exceedingly complex molecules capable of replicating themselves. Yet they do not explain how that might have happened. Even prominent evolutionists admit that such an evolution is impossible. One of these, Dr. Leslie Orgel, an

evolutionary biochemist from the California Salk Institute, says:

> *Pre-biotic soup is easy to obtain. We must next explain how a pre-biotic soup of organic molecules, including amino acids and the organic constituents of nucleotides evolved into a self replication organism... **I must admit that attempts to reconstruct this evolutionary process are extremely tentative.*** 84

Each of the structures and organelles that make up the cell possesses very complex features. The probability of any one of these emerging by chance is zero. Indeed, scientists' efforts for decades have all ended in failure. Not even the smallest component of the cell can be replicated and constructed in the laboratory.

Darwinists' Attempts to Portray the Cell Membrane as a Simple Structure

Another study that fell into error, an experiment carried out by a group of researchers at NASA's Ames Research Institute maintained that these structures possessed the features of membranous structures found in all living things. When the content of the experiment is examined, however, it's clear that the structures that emerged definitely did not have the same properties as those of a living cell membrane. The microscopic balloons that emerged as a result of this study can immediately be recognized to be structures physically very different from the cell membrane.

First, the balloons produced have a fatty structure consisting of a single layer. Every living cell membrane has a lipid structure consisting of two layers, the product of a common Creation. In the original paper, dated 30 January 2001 and published in the US National Academy of Science journal *PNAS*, the chemical structures were described as single layered soap bubble.85 No claim was made that the products of the experiment, described as *amphiphilic* (likening two different environments) because of their properties, were actually organic. As every biologist closely acquainted with the cell knows, the functions and organelles that make the life of the cell possible are extraordinarily complex. It is not yet possible for them to be produced or replicated by human beings. This experiment, in fact, once again made apparent the matchless structure of the cell membrane. It emerged that the cell membrane's double-layered lipid property could not be replicated even by the efforts and knowledge of dozens of scientists.

Professor Werner Gitt, until recently a professor at the Federal German Physics and Technology Institute and head of the Information Technology Department, says this:

> *The biological energy conversion system has been so amazingly and rationally designed that energy engineers are able to do no more than look on, spellbound. Nobody to date has been able to replicate such a miniature but exceedingly efficient mechanism.* 86

To be able to speak of a molecular chain possessing the membranous structures found in living things, it is essential that the cell's selective-permeable functions be replicated. Yet the results obtained in the laboratory—with an enormous budget and a human workforce and knowledge—went no further than producing sac-like blebs.

Faced with the structure of the cell, whose origin they are totally unable to account for, Darwinists try to reduce its complexity from the debate and to depict the cell as simple as possible. Yet their

efforts are bearing no results. Despite being a well-known evolutionist, W.H. Thorpe has admitted that the cell is not simple at all: "*The most elementary type of cell constitutes a mechanism unimaginably more complex than any machine yet through up, let alone constructed, by man.*" 87

The membrane's function is not solely to enclose the cell. This membrane, giving the cell life with its vital functions, is the cell's brain in terms of its superior abilities, memory and the intelligence it displays. As touched on in earlier chapters, this membrane resembles a double-sided wall of fat molecules facing both inwards and outwards. Gates between these fat particle permit entry to and exit from the cell, and receptors permit the membrane to recognize the extracellular environment. These doors and receptors are composed of protein molecules. Located within the cell wall, they carefully supervise all entry to and departure from the cell.

To be able to maintain that living structures came about by coincidence, Darwinists first portray life as simple. In light of the scientific facts, however, life is actually exceedingly complex and has nothing to do with simplicity. Far from demonstrating coincidence emergence, experiments reveal that life cannot be replicated even by the advanced technology. Scientific findings, including this NASA experiment, refute the Darwinists' theory that life is the product of coincidence and confirm the fact of Creation. Almighty Allah, the All-Knowing Lord of infinite might, has created all living things, from the cell to human beings. In one verse, Allah reveals:

"Say: "Have you thought about those you call upon apart from Allah ? Show me what they have created on the Earth." "(Surat al-Ahqaf, 4)

Unable to Account for the Origin of Life, Darwinists Hope for a Solution from Space

Darwinist scientists, unable to obtain a cell membrane by artificial means, have sought an extraterrestrial solution. Some have referred to intergalactic substances to explain the origin of the double-layered compounds comprising the cell membrane.88 It was initially determined that carbon-containing meteors possessed compounds consisting of long hydrocarbon chains. Those who made these claims imagined that they'd found proof of their other claims. But subsequent analyses demonstrated that these compounds had formed after contact with the Earth. Recent laboratory experiments also support the view that amphiphilic substances have an earthly origin. 89

Darwinist researchers maintain that these compounds may be the first components of the cell membrane, and that when the right compounds emerged, then double-layered membranes could have arisen spontaneously. They assume that after primordial membranes formed, they became double-layered membranes consisting of phospholipids. These evolutionary models consist of gross simplifications. Darwinist researchers claim that the primordial membranes of the first cells consisted of aromatic hydrocarbons combined with octanoic and nonanoic acids.

These views are deceptive, however. Octanoic and nonanoic acids can form double layers only when present in very high concentrations.90 This is incompatible with the primordial environment scenarios hypothesized by Darwinists. In order for octanoic and nonanoic acids to form double-layered membranes, therefore, they need powerful environmental conditions, at specific pH levels.91

If the solute's pH level departs from neutral values, then those double-layered membranes remain unstable. The temperature of the solution is also of enormous importance for the stability of double-layered membranes,92 and the stability of octanoic and nonanoic double layers also depends on the substances with the right molecular structure. For example, only of nonanol is included at a particular stage, then nonanoic acid double-layered membranes become stable. 93

That these exacting prerequisites arrived by means of meteors or comets, and then constituted the first cell membrane, is as impossible as it is for a river to flow uphill. All the various preconditions need to be met at the same time. If a double-layered membrane does form, the smallest changes in the surrounding conditions may cause it to lose stability and break down into micelles (the smallest molecular fragments in a solution) of no biological significance.

After the first phospholipids appear, therefore, the cell membrane's systems do not come together spontaneously. Some phospholipids produce only structures consisting of a single, double-layered membrane—and then under laboratory conditions, with the intervention and supervision of scientists. When formed in this manner, double-layered single membrane masses form hollow, spherical structures known as liposomes, which can survive for only short periods. Their stability is brief, and they gradually dissolve and merge together. 94

For example, when human red blood cells are kept above 37 °C (normal body temperature), they begin to deform. As a result of the phospholipid compound in the cell membrane changing, unhealthy compounds begin to emerge. Professor Norman Gershfield, a researcher at the National Institute of Health in the 1980s and 1990s, discovered that it was possible for cell membranes to form and to protect structures under specific conditions only and the physical and chemical conditions had to be adjusted with the greatest sensitivity.95 It is impossible for the physical processes active when the Earth first formed to have produced a chemically stable cell membrane. Even if random effects gave rise to the proper phospholipid compound, any variation in temperature in the cell membrane would ruin its structure. With that loss, the first cell would disappear.

As you see, the sensitivity of the cell membrane invalidates any scenarios proposed for the beginning of life and reveal the proofs of Allah's Creation at every stage. The formation of biological membranes and the absolute conditions that must be met for them to survive make it impossible for them to have come about naturally.

No scientist has discovered how to produce a cell from inanimate substances. Professor Klaus Dose, head of the Johannes Gutenberg University Biochemistry Institute, who has researched the origin of life, expresses the problem:

> *More than 30 years of experimentation on the origin of life in the fields of chemical and molecular evolution have led to a better perception of the immensity of the problem of the origin of life on Earth, rather than to its solution. At present, all discussions on principal theories and experiments in the field either end in stalemate or in a confession of ignorance. . . . Considerable disagreements between scientists have arisen about detailed evolutionary steps. The problem is that the principal evolutionary processes from prebiotic molecules to progenotes have not been proven by experimentation, and that the environmental conditions under which these processes occurred are not known . . . It appears that the field has now reached a stage of stalemate, a stage in which hypothetical arguments often dominate over facts based on experimentation or observation.*96

The claim that "If earthly conditions were unsuitable, then the first cell came from space," is

invalid. What makes it fundamentally impossible for the first cell to appear spontaneously is the cell's extraordinarily complex organization. No matter where one may go in outer space, the physical, chemical and mathematical laws that make it impossible for a cell to emerge by coincidence will never change. It is just as impossible for stones to produce a 10-storey building by randomly piling on top of one another. The scenario of the chance formation of the cell is equally impossible on any other planet in the universe.

The cell consists of a great many organelles, each with complex structures of their own. The cell membrane allows specific compounds to enter or leave the cell, identifying substances that are harmful and refusing to admit them. Inside the cell are found the nucleic acids, DNA and RNA that contain all the information for life. These structures contain incomparably more information than even a large library. In the cell are also protein-producing ribosomes that use hundreds of proteins, all with different functions. The complexity of every component is quite extraordinary, yet none of these components serves any purpose on its own, and the cell cannot survive in the absence of any one. Therefore, the cell needs all its many organelles and components right from the outset. It is impossible, as the evolution theory would have us believe, for small components to combine in stages over millions of years.

As you see, the single point that makes it impossible for the first cell to have formed is not the insufficient conditions on the primordial Earth, but the fact that the cell's intricate structure could never arise by coincidence. Therefore, how should something that cannot possibly occur on Earth be able to take place in space?

CONCLUSION: ALLAH PERVADES EVERYWHERE WITH HIS WISDOM

The resulting realization that life was designed by an intelligence is a shock to us in the twentieth century, who have gotten used to thinking of life as the result of simple natural laws.

—Michael Behe

Many people have only limited information about what goes on inside their own bodies. Until they fall ill and require treatment, they remain unaware of how much has been planned in advance on their behalf. Until they feel ill one day, they take no interest in how their bodies actually work.

The cell membrane is just one of the countless details created for human life to continue. Everyone needs the tireless working of this thin layer of fat, because no human being can determine and perform a single one of the functions that the cell membrane carries out with such expertise. Nobody can meet the needs of 100 trillion cells at the same time, and determine which substances should enter or leave them, at what time, and in what quantities. Allah has given life to each cell membrane, creating it around every cell, leaving individuals still utterly unaware of its importance.

If the cell membrane were not created as it is, then the cell could not exist, and neither could life itself. How can you expect coincidence to fulfill these functions in a flawless manner, for a whole lifetime, in a more professional manner than any biologist or chemist can do? Of course, this is quite illogical. Therefore, if Darwinists expect coincidence to perform miracles, they should ask themselves the following questions—relying solely on reason and leaving aside all prejudice, social pressures, and fears of being in error:

Can fat and protein cells devoid of consciousness, intellect and memory make selections? Can they distinguish if a substance is useful or harmful? Can they know how to make use of that substance? If it's of no use, can they learn to eliminate that substance without damaging themselves? Can they act together in a coordinated and purposeful manner? Can they assist one another by communicating, planning and taking precautions?

One cannot expect any of this from the cell membrane. Nobody can deny its perfection of intellect and Creation. No matter how much they wish to ignore the facts and the proofs of the existence of Allah, they will live their entire lives surrounded by His might, wisdom and artistry of Allah in every cell in their bodies.

In the Qur'an, Allah reveals:

"It is He Who created you. Yet among you are those who disbelieve and those who believe. Allah sees what you do. He created the heavens and the Earth with truth and formed you, giving you the best of forms. And He is your final destination." (Surat at-Taghabun, 2-3)

THE DECEPTION OF EVOLUTION

The probability of evolution bringing into being organisms in the shape of the birds, fish, insects and mammals we are familiar with by selecting the same ones from all the astronomical numbers of possibilities in terms of manufacturing living things from cells is effectively "zero."

Hoimar Von Ditfurth

Darwinism, in other words the theory of evolution, was put forward with the aim of denying the fact of Creation, but is in truth nothing but failed, unscientific nonsense. **This theory, which claims that life emerged by chance from inanimate matter, was invalidated by the scientific evidence of miraculous order in the universe and in living things, as well as by the discovery of more than 300 million fossils revealing that evolution never happened.** In this way, **science confirmed the fact that Allah created the universe and the living things in it.** The propaganda carried out today in order to keep the theory of evolution alive is based solely on the distortion of the scientific facts, biased interpretation, and lies and falsehoods disguised as science.

Yet this propaganda cannot conceal the truth. The fact that **the theory of evolution is the greatest deception in the history of science** has been expressed more and more in the scientific world over the last 20-30 years. Research carried out after the 1980s in particular has revealed that the claims of Darwinism are totally unfounded, something that has been stated by a large number of scientists. In the United States in particular, many scientists from such different fields as biology, biochemistry and paleontology recognize the invalidity of Darwinism and employ the fact of Creation to account for the origin of life.

We have examined the collapse of the theory of evolution and the proofs of Creation in great scientific detail in many of our works, and are still continuing to do so. Given the enormous importance of this subject, it will be of great benefit to summarize it here.

The Scientific Collapse of Darwinism

As a pagan doctrine going back as far as ancient Greece, the theory of evolution was advanced extensively in the nineteenth century. The most important development that made it the top topic of the world of science was Charles Darwin's *The Origin of Species*, published in 1859. In this book, he opposed, in his own eyes, the fact that Allah created different living species on Earth separately, for he erroneously claimed that all living beings had a common ancestor and had diversified over time through small changes. **Darwin's theory was not based on any concrete scientific finding; as he also accepted, it was just an "assumption."** Moreover, as Darwin confessed in the long chapter of his book titled **"Difficulties on Theory," the theory failed in the face of many critical questions.**

Darwin invested all of his hopes in new scientific discoveries, which he expected to solve these difficulties. However, contrary to his expectations, scientific findings expanded the dimensions of these difficulties. The defeat of Darwinism in the face of science can be reviewed under three basic topics:

1) The theory cannot explain how life originated on Earth.

2) No scientific finding shows that the "evolutionary mechanisms" proposed by the theory have any evolutionary power at all.

3) The fossil record proves the exact opposite of what the theory suggests.

In this section, we will examine these three basic points in general outlines:

The First Insurmountable Step: The Origin of Life

The theory of evolution posits that all living species evolved from a single living cell that emerged on Earth 3.8 billion years ago, supposed to have happened as a result of coincidences. How a single cell could generate millions of complex living species and, if such an evolution really occurred, why traces of it cannot be observed in the fossil record are some of the questions that the theory cannot answer. However, first and foremost, we need to ask: **How did this "first cell" originate?**

Since the theory of evolution ignorantly denies Creation, it maintains that the "first cell" originated as a product of blind coincidences within the laws of nature, without any plan or arrangement. According to the theory, inanimate matter must have produced a living cell as a result of coincidences. Such a claim, however, is inconsistent with the most unassailable rules of biology.

Life Comes From Life

In his book, Darwin never referred to the origin of life. The primitive understanding of science in his time rested on the assumption that living beings had a very simple structure. Since medieval times, spontaneous generation, which asserts that non-living materials came together to form living organisms, had been widely accepted. It was commonly believed that insects came into being from food leftovers, and mice from wheat. Interesting experiments were conducted to prove this theory. Some wheat was placed on a dirty piece of cloth, and it was believed that mice would originate from it after a while.

Similarly, maggots developing in rotting meat was assumed to be evidence of spontaneous generation. However, **it was later understood that worms did not appear on meat spontaneously, but were carried there by flies in the form of larvae, invisible to the naked eye.**

Even when Darwin wrote *The Origin of Species*, the belief that bacteria could come into existence from non-living matter was widely accepted in the world of science.

However, **five years after the publication of Darwin's book, Louis Pasteur announced his results after long studies and experiments, that disproved spontaneous generation, a cornerstone of Darwin's theory.** In his triumphal lecture at the Sorbonne in 1864, **Pasteur said: "Never will the doctrine of spontaneous generation recover from the mortal blow struck by this simple experiment."**97

For a long time, advocates of the theory of evolution resisted these findings. However, as the development of science unraveled the complex structure of the cell of a living being, the idea that life could come into being coincidentally faced an even greater impasse.

Inconclusive Efforts of the Twentieth Century

The first evolutionist who took up the subject of the origin of life in the twentieth century was the renowned Russian biologist Alexander Oparin. With various theses he advanced in the 1930s, he tried to prove that a living cell could originate by coincidence. These studies, however, were doomed to failure, and Oparin had to make the following confession:

Unfortunately, however, the problem of the origin of the cell is perhaps the most obscure point in the whole study of the evolution of organisms.98

Evolutionist followers of Oparin tried to carry out experiments to solve this problem. The best known experiment was carried out by the American chemist Stanley Miller in 1953. Combining the gases he alleged to have existed in the primordial Earth's atmosphere in an experiment set-up, and adding energy to the mixture, Miller synthesized several organic molecules (amino acids) present in the structure of proteins.

Barely a few years had passed before it was revealed that **this experiment, which was then presented as an important step in the name of evolution, was invalid, for the atmosphere used in the experiment was very different from the real Earth conditions.**99

After a long silence, **Miller confessed that the atmosphere medium he used was unrealistic.**100

All the evolutionists' efforts throughout the twentieth century to explain the origin of life ended in failure. The geochemist Jeffrey Bada, from the San Diego Scripps Institute accepts this fact in an article published in *Earth* magazine in 1998:

*Today as we leave the twentieth century, we still face the biggest unsolved problem that we had when we entered the twentieth century: How did life originate on Earth?*101

The Complex Structure of Life

The primary reason why evolutionists ended up in such a great impasse regarding the origin of life is that even those living organisms Darwinists deemed to be the simplest have outstandingly complex features. The cell of a living thing is more complex than all of our man-made technological products. **Today, even in the most developed laboratories of the world, no single protein of the cell, let alone a living cell itself, can be produced by bringing organic chemicals together.**

The conditions required for the formation of a cell are too great in quantity to be explained away by coincidences. However, there is no need to explain the situation with these details. Evolutionists are at a dead-end even before reaching the stage of the cell. That is because the probability of just a single protein, an essential building block of the cell, coming into being by chance is mathematically "0."

The main reason for this is the need for other proteins to be present if one protein is to form, and this completely eradicates the possibility of chance formation. This fact by itself is sufficient to eliminate the evolutionist claim of chance right from the outset. To summarize,

1. Protein cannot be synthesized without enzymes, and enzymes are all proteins.

2. Around 100 proteins need to be present in order for a single protein to be synthesized. There therefore need to be proteins for proteins to exist.

3. DNA manufactures the protein-synthesizing enzymes. Protein cannot be synthesized without DNA. DNA is therefore also needed in order for proteins to form.

4. All the organelles in the cell have important tasks in protein synthesis. In other words, in order for proteins to form a perfect and fully functioning cell needs to exist together with all its organelles.

The DNA molecule, which is located in the nucleus of a cell and which stores genetic information, is a magnificent databank. If the information coded in DNA were written down, it would make a giant library consisting of an estimated 900 volumes of encyclopedias consisting of 500 pages each.

A very interesting dilemma emerges at this point: DNA can replicate itself only with the help of some specialized proteins (enzymes). However, the synthesis of these enzymes can be realized only by the information coded in DNA. As they both depend on each other, they have to exist at the same time for replication. This brings the scenario that life originated by itself to a deadlock. Prof. Leslie Orgel, an evolutionist of repute from the University of San Diego, California, confesses this fact in the September 1994 issue of the *Scientific American* magazine:

It is extremely improbable that proteins and nucleic acids, both of which are structurally complex, arose spontaneously in the same place at the same time. Yet it also seems impossible to have one without the other. And so, at first glance, one might have to conclude that life could never, in fact, have originated by chemical means.102

No doubt, if it is impossible for life to have originated spontaneously as a result of blind coincidences, then it has to be accepted that life was **"created."** This fact explicitly invalidates the theory of evolution, whose main purpose is to deny Creation.

Imaginary Mechanism of Evolution

The second important point that negates Darwin's theory is that both concepts put forward by the theory as "evolutionary mechanisms" were understood to have, in reality, no evolutionary power.

Darwin based his evolution allegation entirely on the mechanism of "natural selection." The importance he placed on this mechanism was evident in the name of his book: The Origin of Species, By Means of Natural Selection…

Natural selection holds that those living things that are stronger and more suited to the natural conditions of their habitats will survive in the struggle for life. For example, in a deer herd under the threat of attack by wild animals, those that can run faster will survive. Therefore, the deer herd will be comprised of faster and stronger individuals. However, unquestionably, this mechanism will not cause deer to evolve and transform themselves into another living species, for instance, horses.

Therefore, **the mechanism of natural selection has no evolutionary power. Darwin was also aware of this fact** and had to state this in his book The Origin of Species:

*Natural selection can do nothing until favourable individual differences or variations occur.*103

Lamarck's Impact

So, how could these "favorable variations" occur? Darwin tried to answer this question from the standpoint of the primitive understanding of science at that time. According to the French biologist Chevalier de Lamarck (1744-1829), who lived before Darwin, living creatures passed on the traits they acquired during their lifetime to the next generation. He asserted that these traits, which accumulated from one generation to another, caused new species to be formed. For instance, he claimed that giraffes evolved from antelopes; as they struggled to eat the leaves of high trees, their necks were extended from generation to generation.

Darwin also gave similar examples. In his book The Origin of Species, for instance, he said that some bears going into water to find food transformed themselves into whales over time.104

However, the laws of inheritance discovered by Gregor Mendel (1822-84) and verified by the science of genetics, which flourished in the twentieth century, utterly demolished the legend that acquired traits were passed on to subsequent generations. Thus, natural selection fell out of favor as an evolutionary mechanism.

Neo-Darwinism and Mutations

In order to find a solution, Darwinists advanced the "Modern Synthetic Theory," or as it is more commonly known, Neo-Darwinism, at the end of the 1930s. Neo-Darwinism added mutations, which are distortions formed in the genes of living beings due to such external factors as radiation or replication errors, as the "cause of favorable variations" in addition to natural mutation.

> Today, the model that Darwinists espouse, despite their own awareness of its scientific invalidity, is neo-Darwinism. The theory maintains that millions of living beings formed as a result of a process whereby numerous complex organs of these organisms (e.g., ears, eyes, lungs, and wings) underwent "mutations," that is, genetic disorders. Yet, there is an outright scientific fact that totally undermines this theory: **Mutations do not cause living beings to develop; on the contrary, they are always harmful.**

The reason for this is very simple: **DNA has a very complex structure, and random effects can only harm it.** The American geneticist B. G. Ranganathan explains this as follows:

First, genuine mutations are very rare in nature. Secondly, most mutations are harmful since they are random, rather than orderly changes in the structure of genes; any random change in a highly ordered system will be for the worse, not for the better. For example, ***if an earthquake were to shake a highly ordered structure such as a building, there would be a random change in the framework of the building which, in all probability, would not be an improvement.***105

Not surprisingly, no mutation example, which is useful, that is, which is observed to develop the genetic code, has been observed so far. All mutations have proved to be harmful. It was understood that mutation, which is presented as an "evolutionary mechanism," is actually a genetic occurrence that harms living things, and leaves them disabled. (The most common effect of mutation on human beings is cancer.) Of course, a destructive mechanism cannot be an "evolutionary mechanism." Natural selection, on the other hand, "can do nothing by itself," as Darwin also accepted. This fact shows us that **there is no "evolutionary mechanism" in nature.** Since no evolutionary mechanism exists, no such imaginary process called "evolution" could have taken place.

The Fossil Record:No Sign of Intermediate Forms

The clearest evidence that the scenario suggested by the theory of evolution did not take place is the fossil record.

> According to the unscientific supposition of this theory, every living species has sprung from a predecessor. A previously existing species turned into something else over time and all species have come into being in this way. In other words, this transformation proceeds gradually over millions of years.

Had this been the case, numerous intermediary species should have existed and lived within this long transformation period.

For instance, some half-fish/half-reptiles should have lived in the past which had acquired some reptilian traits in addition to the fish traits they already had. Or there should have existed some reptile-birds, which acquired some bird traits in addition to the reptilian traits they already had. Since these would be in a transitional phase, they should be disabled, defective, crippled living beings. Evolutionists refer to these imaginary creatures, which they believe to have lived in the past, as "transitional forms."

If such animals ever really existed, there should be millions and even billions of them in number and variety. More importantly, the remains of these strange creatures should be present in the fossil record. In The Origin of Species, Darwin explained:

*If my theory be true, numberless intermediate varieties, linking most closely all of the species of the same group together must assuredly have existed... Consequently, evidence of their former existence could be found only amongst fossil remains.*106

However, **Darwin was well aware that no fossils of these intermediate forms had yet been found.** He regarded this as a major difficulty for his theory. In one chapter of his book titled "Difficulties on Theory," he wrote:

Why, if species have descended from other species by insensibly fine gradations, ***do we not everywhere see innumerable transitional forms? Why is not all nature in confusion instead of the species being, as we see them, well defined?… But, as by this theory innumerable transitional forms must have existed, why do we not find them embedded in countless numbers in the crust of the earth?… Why then is not every geological formation and every stratum full of such intermediate links?***107

Darwin's Hopes Shattered

However, although evolutionists have been making strenuous efforts to find fossils since the middle of the nineteenth century all over the world, no transitional forms have yet been uncovered. All of the fossils, contrary to the evolutionists' expectations, show that life appeared on Earth all of a sudden and fully-formed.

One famous British paleontologist, Derek V. Ager, admits this fact, even though he is an evolutionist:

The point emerges that if we examine the fossil record in detail, whether at the level of orders or of species, ***we find - over and over again - not gradual evolution, but the sudden explosion of one group at the expense of another.***108

This means that in **the fossil record, all living species suddenly emerge as fully formed, without any intermediate forms in between.** This is just the opposite of Darwin's assumptions. Also, this is very strong evidence that **all living things are created.** The only explanation of a living species emerging suddenly and complete in every detail without any evolutionary ancestor is that it was created. This fact is admitted also by the widely known evolutionist biologist Douglas Futuyma:

*Creation and evolution, between them, exhaust the possible explanations for the origin of living things. Organisms either appeared on the earth fully developed or they did not. If they did not, they must have developed from pre-existing 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.*109

Fossils show that living beings emerged fully developed and in a perfect state on the Earth. That means that "the origin of species," contrary to Darwin's supposition, is not evolution, but

Creation.

The Tale of Human Evolution

The subject most often brought up by advocates of the theory of evolution is the subject of the origin of man. The Darwinist claim holds that man evolved from so-called ape-like creatures. During this alleged evolutionary process, which is supposed to have started 4-5 million years ago, some "transitional forms" between man and his imaginary ancestors are supposed to have existed. According to this completely imaginary scenario, four basic "categories" are listed:

1. Australopithecus
2. Homo habilis
3. Homo erectus
4. Homo sapiens

Evolutionists call man's so-called first ape-like ancestors Australopithecus, which means "South African ape." These living beings are actually nothing but an old ape species that has become extinct. Extensive research done on various Australopithecus specimens by two world famous anatomists from England and the USA, namely, Lord Solly Zuckerman and Prof. Charles Oxnard, shows that these apes belonged to an ordinary ape species that became extinct and bore no resemblance to humans.110

Evolutionists classify the next stage of human evolution as "homo," that is "man." According to their claim, the living beings in the Homo series are more developed than Australopithecus. Evolutionists devise a fanciful evolution scheme by arranging different fossils of these creatures in a particular order. This scheme is imaginary because it has never been proved that there is an evolutionary relation between these different classes. Ernst Mayr, one of the twentieth century's most important evolutionists, contends in his book One Long Argument that "particularly historical [puzzles] such as the origin of life or of Homo sapiens, are extremely difficult and may even resist a final, satisfying explanation."111

By outlining the link chain as Australopithecus > Homo habilis > Homo erectus > Homo sapiens, evolutionists imply that each of these species is one another's ancestor. However, recent findings of paleoanthropologists have revealed that Australopithecus, Homo habilis, and Homo erectus lived at different parts of the world at the same time.112

Moreover, a certain segment of humans classified as Homo erectus have lived up until very modern times. **Homo sapiens neandarthalensis and Homo sapiens sapiens man) co-existed in the same region.**113

This situation apparently indicates the invalidity of the claim that they are ancestors of one another. The late Stephen Jay Gould explained this deadlock of the theory of evolution although he was himself one of the leading advocates of evolution in the twentieth century:

*What has become of our ladder if there are three coexisting lineages of hominids (A. africanus, the robust australopithecines, and H. habilis), none clearly derived from another? Moreover, none of the three display any evolutionary trends during their tenure on earth.*114

Put briefly, the scenario of human evolution, which is "upheld" with the help of various drawings of some "half ape, half human" creatures appearing in the media and course books, that is, frankly, by means of propaganda, is nothing but **a tale with no scientific foundation.**

> Lord Solly Zuckerman, one of the most famous and respected scientists in the U.K., who carried out research on this subject for years and studied Australopithecus fossils for 15 years, finally concluded, despite being an evolutionist himself, **that there is, in fact, no such family tree branching out from ape-like creatures to man.**

Zuckerman also made an interesting "spectrum of science" ranging from those he considered scientific to those he considered unscientific. According to Zuckerman's spectrum, the most "scientific"-that is, depending on concrete data-fields of science are chemistry and physics. After them come the biological sciences and then the social sciences. At the far end of the spectrum, which is the part considered to be most "unscientific," are "extra-sensory perception"-concepts such as telepathy and sixth sense-and finally "human evolution." Zuckerman explains his reasoning:

*We then move right off the register of objective truth into those fields of presumed biological science, like extrasensory perception or the interpretation of man's fossil history, where to the faithful [evolutionist] anything is possible - and where the ardent believer [in evolution] is sometimes able to believe several contradictory things at the same time.*115

The tale of human evolution boils down to nothing but the prejudiced interpretations of some fossils unearthed by certain people, who blindly adhere to their theory.

Darwinian Formula!

Besides all the technical evidence we have dealt with so far, let us now for once, examine what kind of a superstition the evolutionists have with an example so simple as to be understood even by children:

> The theory of evolution asserts that life is formed by chance. According to this irrational claim, lifeless and unconscious atoms came together to form the cell and then they somehow formed other living things, including man. Let us think about that. When we bring together the elements that are the building-blocks of life such as carbon, phosphorus, nitrogen and potassium, only a heap is formed. No matter what treatments it undergoes, this atomic heap cannot form even a single living being. If you like, let us formulate an "experiment" on this subject and let us examine on the behalf of evolutionists what they really claim without pronouncing loudly under the name **"Darwinian formula":**

Let evolutionists put plenty of materials present in the composition of living things such as phosphorus, nitrogen, carbon, oxygen, iron, and magnesium into big barrels. Moreover, let them add in these barrels any material that does not exist under normal conditions, but they think as necessary. Let them add in this mixture as many amino acids and as many proteins as they like. Let them expose these mixtures to as much heat and moisture as they like. Let them stir these with whatever technologically developed device they like. Let them put the foremost scientists beside these barrels. Let these experts wait in turn beside these barrels for billions, and even trillions of years. Let them be free to use all kinds of conditions they believe to be necessary for a human's formation. ***No matter what they do, they cannot produce from these barrels a human, say a professor that examines his cell structure under the electron microscope.*** *They cannot produce giraffes, lions, bees, canaries, horses, dolphins, roses, orchids, lilies,*

carnations, bananas, oranges, apples, dates, tomatoes, melons, watermelons, figs, olives, grapes, peaches, peafowls, pheasants, multicoloured butterflies, or millions of other living beings such as these. Indeed, they could not obtain even a single cell of any one of them.

Briefly, **unconscious atoms cannot form the cell** by coming together. They cannot take a new decision and divide this cell into two, then take other decisions and create the professors who first invent the electron microscope and then examine their own cell structure under that microscope. **Matter is an unconscious, lifeless heap, and it comes to life with Allah's superior creation.**

The theory of evolution, which claims the opposite, is a total fallacy completely contrary to reason. Thinking even a little bit on the claims of evolutionists discloses this reality, just as in the above example.

Technology in the Eye and the Ear

Another subject that remains unanswered by evolutionary theory is the excellent quality of perception in the eye and the ear.

Before passing on to the subject of the eye, let us briefly answer the question of how we see. Light rays coming from an object fall oppositely on the eye's retina. Here, these light rays are transmitted into electric signals by cells and reach a tiny spot at the back of the brain, the "center of vision." These electric signals are perceived in this center as an image after a series of processes. With this technical background, let us do some thinking.

The brain is insulated from light. That means that its inside is completely dark, and that no light reaches the place where it is located. Thus, the "center of vision" is never touched by light and may even be the darkest place you have ever known. However, you observe a luminous, bright world in this pitch darkness.

The image formed in the eye is so sharp and distinct that even the technology of the twentieth century has not been able to attain it. For instance, look at the book you are reading, your hands with which you are holding it, and then lift your head and look around you. Have you ever seen such a sharp and distinct image as this one at any other place? Even the most developed television screen produced by the greatest television producer in the world cannot provide such a sharp image for you. This is a three-dimensional, colored, and extremely sharp image. For more than 100 years, thousands of engineers have been trying to achieve this sharpness. Factories, huge premises were established, much research has been done, plans and designs have been made for this purpose. Again, look at a TV screen and the book you hold in your hands. You will see that there is a big difference in sharpness and distinction. Moreover, the TV screen shows you a two-dimensional image, whereas with your eyes, you watch a three-dimensional perspective with depth.

For many years, tens of thousands of engineers have tried to make a three-dimensional TV and achieve the vision quality of the eye. Yes, they have made a three-dimensional television system, but it is not possible to watch it without putting on special 3-D glasses; moreover, it is only an artificial three-dimension. The background is more blurred, the foreground appears like a paper setting. Never has it been possible to produce a sharp and distinct vision like that of the eye. In both the camera and the television, there is a loss of image quality.

Evolutionists claim that the mechanism producing this sharp and distinct image has been formed

by chance. Now, if somebody told you that the television in your room was formed as a result of chance, that all of its atoms just happened to come together and make up this device that produces an image, what would you think? How can atoms do what thousands of people cannot?

If a device producing a more primitive image than **the eye could not have been formed by chance,** then it is very evident that the eye and the image seen by the eye could not have been formed by chance. The same situation applies to the ear. The outer ear picks up the available sounds by the auricle and directs them to the middle ear, the middle ear transmits the sound vibrations by intensifying them, and the inner ear sends these vibrations to the brain by translating them into electric signals. Just as with the eye, the act of hearing finalizes in the center of hearing in the brain.

The situation in the eye is also true for the ear. That is, **the brain is insulated from sound** just as it is from light. It does not let any sound in. Therefore, no matter how noisy is the outside, the inside of the brain is completely silent. Nevertheless, the sharpest sounds are perceived in the brain. **In your completely silent brain, you listen to symphonies, and hear all of the noises in a crowded place.** However, were the sound level in your brain measured by a precise device at that moment, complete silence would be found to be prevailing there.

As is the case with imagery, decades of effort have been spent in trying to generate and reproduce sound that is faithful to the original. The results of these efforts are sound recorders, high-fidelity systems, and systems for sensing sound. Despite all of this technology and the thousands of engineers and experts who have been working on this endeavor, no sound has yet been obtained that has the same sharpness and clarity as the sound perceived by the ear. Think of the highest-quality hi-fi systems produced by the largest company in the music industry. Even in these devices, when sound is recorded some of it is lost; or when you turn on a hi-fi you always hear a hissing sound before the music starts. However, the sounds that are the products of the human body's technology are extremely sharp and clear. A human ear never perceives a sound accompanied by a hissing sound or with atmospherics as does a hi-fi; rather, it perceives sound exactly as it is, sharp and clear. This is the way it has been since **the creation of man.**

So far, no man-made visual or recording apparatus has been as sensitive and successful in perceiving sensory data as are the eye and the ear. However, as far as seeing and hearing are concerned, a far greater truth lies beyond all this.

To Whom Does the Consciousness that Sees and Hears within the Brain Belong?

Who watches an alluring world in the brain, listens to symphonies and the twittering of birds, and smells the rose?

The stimulations coming from a person's eyes, ears, and nose travel to the brain as electro-chemical nerve impulses. In biology, physiology, and biochemistry books, you can find many details about how this image forms in the brain. However, you will never come across the most important fact: Who perceives these electro-chemical nerve impulses as images, sounds, odors, and sensory events in the brain? **There is a consciousness in the brain that perceives all this without feeling any need for an eye, an ear, and a nose.** To whom does this consciousness belong? Of course it does not belong to the nerves, the fat layer, and neurons comprising the brain. This is why Darwinist-materialists, who believe that everything is comprised of matter, cannot answer these questions.

For **this consciousness is the spirit created by Allah,** which needs neither the eye to watch the images nor the ear to hear the sounds. Furthermore, it does not need the brain to think.

Everyone who reads this explicit and scientific fact should ponder on Almighty Allah, and fear and seek refuge in Him, for He squeezes the entire universe in a pitch-dark place of a few cubic centimeters in a three-dimensional, colored, shadowy, and luminous form.

A Materialist Faith

The information we have presented so far shows us that **the theory of evolution is incompatible with scientific findings.** The theory's claim regarding the origin of life is inconsistent with science, the evolutionary mechanisms it proposes have no evolutionary power, and fossils demonstrate that **the required intermediate forms have never existed.** So, it certainly follows that the theory of evolution should be pushed aside as an unscientific idea. This is how many ideas, such as the Earth-centered universe model, have been taken out of the agenda of science throughout history.

However, the theory of evolution is kept on the agenda of science. Some people even try to represent criticisms directed against it as an "attack on science." Why?

The reason is that this theory is an indispensable dogmatic belief for some circles. These circles are **blindly devoted** to materialist philosophy and adopt Darwinism because it is the only materialist explanation that can be put forward to explain the workings of nature.

Interestingly enough, they also confess this fact from time to time. A well-known geneticist and an outspoken evolutionist, Richard C. Lewontin from Harvard University, confesses that he is "first and foremost a materialist and then a scientist":

It is not that the methods and institutions of science somehow compel us accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations,

*no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, so we cannot allow a Divine [intervention]...*116

These are explicit statements that **Darwinism is a dogma** kept alive just for the sake of adherence to materialism. This dogma maintains that there is no being save matter. Therefore, it argues that inanimate, unconscious matter brought life into being. It insists that millions of different living species (e.g., birds, fish, giraffes, tigers, insects, trees, flowers, whales, and human beings) originated as a result of the interactions between matter such as pouring rain, lightning flashes, and so on, out of inanimate matter. This is a precept contrary both to reason and science. Yet Darwinists continue to ignorantly defend it just so as not to acknowledge, in their own eyes, the evident existence of Allah.

Anyone who does not look at the origin of living beings with a materialist prejudice sees this evident truth: **All living beings are works of a Creator,** Who is All-Powerful, All-Wise, and All-Knowing. **This Creator is Allah,** Who created the whole universe from non-existence, in the most perfect form, and fashioned all living beings.

The Theory of Evolution: The Most Potent Spell in the World

Anyone free of prejudice and the influence of any particular ideology, who uses only his or her reason and logic, will clearly understand that belief in the theory of evolution, which brings to mind the superstitions of societies with no knowledge of science or civilization, is quite impossible.

As explained above, those who believe in the theory of evolution think that a few atoms and molecules thrown into a huge vat could produce thinking, reasoning professors and university students; such scientists as Einstein and Galileo; such artists as Humphrey Bogart, Frank Sinatra and Luciano Pavarotti; as well as antelopes, lemon trees, and carnations. Moreover, as the scientists and professors who believe in this nonsense are educated people, it is quite justifiable to speak of this theory as "the most potent spell in history." Never before has any other belief or idea so taken away peoples' powers of reason, refused to allow them to think intelligently and logically, and hidden the truth from them as if they had been blindfolded. This is an even worse and unbelievable blindness than the totem worship in some parts of Africa, the people of Saba worshipping the Sun, the tribe of the Prophet Abraham (pbuh) worshipping idols they had made with their own hands, or some among the people of the Prophet Moses (pbuh) worshipping the Golden Calf.

In fact, Allah has pointed to this lack of reason in the Qur'an. In many verses, He reveals that some peoples' minds will be closed and that they will be powerless to see the truth. Some of these verses are as follows:

As for those who do not believe, it makes no difference to them whether you warn them or do not warn them, they will not believe. Allah has sealed up their hearts and hearing and over their eyes is a blindfold. They will have a terrible punishment. (Surat al-Baqara, 6-7)

… They have hearts with which they do not understand. They have eyes with which they do not see. They have ears with which they do not hear. Such people are like cattle. No, they are even further astray! They are the unaware. (Surat al-A'raf, 179)

Even if We opened up to them a door into heaven, and they spent the day ascending

through it, they would only say: "Our eyesight is befuddled! Or rather we have been put under a spell!" (Surat al-Hijr, 14-15)

Words cannot express just how astonishing it is that this spell should hold such a wide community in thrall, keep people from the truth, and not be broken for 150 years. It is understandable that one or a few people might believe in impossible scenarios and claims full of stupidity and illogicality. However, "magic" is the only possible explanation for people from all over the world believing that unconscious and lifeless atoms suddenly decided to come together and form a universe that functions with a flawless system of organization, discipline, reason, and consciousness; a planet named Earth with all of its features so perfectly suited to life; and living things full of countless complex systems.

In fact, in the Qur'an Allah relates the incident of the Prophet Moses (pbuh) and Pharaoh to show that some people who support atheistic philosophies actually influence others by magic. When Pharaoh was told about the true religion, he told the Prophet Moses (pbuh) to meet with his own magicians. When the Prophet Moses (pbuh) did so, he told them to demonstrate their abilities first. The verses continue:

He said: "You throw." And when they threw, they cast a spell on the people's eyes and caused them to feel great fear of them. They produced an extremely powerful magic. (Surat al-A'raf, 116)

As we have seen, Pharaoh's magicians were able to deceive everyone, apart from the Prophet Moses (as) and those who believed in him. However, his evidence broke the spell, or "swallowed up what they had forged," as revealed in the verse:

We revealed to Moses: "Throw down your staff." And it immediately swallowed up what they had forged. So the Truth took place and what they did was shown to be false. (Surat al-A'raf, 117-118)

As we can see, when people realized that a spell had been cast upon them and that what they saw was just an illusion, Pharaoh's magicians lost all credibility. In the present day too, unless those who, under the influence of a similar spell, believe in these ridiculous claims under their scientific disguise and spend their lives defending them, abandon their superstitious beliefs, they also will be humiliated when the full truth emerges and the spell is broken. In fact, world-renowned British writer and philosopher Malcolm Muggeridge, who was an atheist defending evolution for some 60 years, but who subsequently realized the truth, reveals the position in which the theory of evolution would find itself in the near future in these terms:

*I myself am convinced that **the theory of evolution**, especially the extent to which it's been applied, **will be one of the great jokes in the history books in the future.** Posterity will marvel that so very flimsy and dubious an hypothesis could be accepted with the incredible credulity that it has.*117

That future is not far off: On the contrary, people will soon see that "chance" is not a deity, and will look back on **the theory of evolution as the worst deceit and the most terrible spell in the world.** That spell is already rapidly beginning to be lifted from the shoulders of people all over the world. Many people who see its true face are wondering with amazement how they could ever have been taken in by it.

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They said, "Glory be to You!
We have no knowledge except
what You have taught us.
You are the All-Knowing,
the All-Wise."
(Surat al-Baqara, 32)

RESİM ALTLARI

17
(People with intelligence are) those who remember Allah, standing, sitting and lying on their sides, and reflect on the creation of the heavens and the Earth: "Our Lord, You have not created this for nothing. Glory be to You! So safeguard us from the punishment of the Fire." (Surah Al 'Imran, 191)

19
The invalidity of materialism and its so-called scientific basis, Darwinism, has now been scientifically demonstrated. The titles of books and articles reflect the fact that Allah created the universe: Fred Hoyle's The Intelligent Universe; "Science Finds God" in Newsweek; "Evolution is Dead" in New Scientist.

21
The complex structure of DNA, with the vital and high capacity of information it contains, represents an insuperable difficulty for accounting for the origins of life in terms of coincidence.

22_23
The Inside of the Cell

Fats

Protein Molecule

Protein Molecule

The molecules in the cell membrane have never received any training in chemistry, biology or physics, yet they can recognize the molecular structures of potassium, sodium, glucose, and water. On that basis, they decide which substance will be admitted or removed, and in what quantities. If any substance were selected at random for entry and removal, then it would be impossible for your body to survive in good health until the cell membrane had stumbled on the right molecule. Yet the cell membrane acts under the inspiration of Allah Who created them, and carry out their duties to perfection.

Carbo hydrate Bonds

The Out side of the Cell

24_25

Entry to and departure from the cell take place under highly sensitive supervision. The passage of a substance through the cell membrane is regulated with the greatest care, according to its type, whether it is useful or harmful, and its size. This selective permeability of the cell membrane leaves scientists astonished.

27

Darwinists claim that the cell could have formed spontaneously as a result of coincidence. But the structure of the cell is so complex that scientists cannot reproduce any cell-like structure, even with all their advanced technology. Contrary to their preconceptions, their studies actually reveal that the cell was created.

29

Darwinists claim that the cell could have formed spontaneously as a result of coincidence. But the structure of the cell is so complex that scientists cannot reproduce any cell-like structure, even with all their advanced technology. Contrary to their preconceptions, their studies actually reveal that the cell was created.

30

The consciousness evident in the material world is not an innate property of matter, but one manifested through it. The consciousness in the brain that interpret the signals reaching it does not belong to the brain's cells themselves. The intellect and consciousness they manifest reveal another of the countless proofs of the existence of Allah.

32

Every detail in the universe is part of an ordered plan. Whether you examine the universe by means of giant telescopes, or the complex activities in the cell under an electron microscope, you see the same flawlessness, order and harmony prevailing. All details, especially and consciously created, clearly reveal the existence of Allah and the infinite knowledge of our Lord.

37

Substances entering the cell do not do so haphazardly, but are subjected to a very careful identity check. It is of vital importance that substances to the cell be identified correctly. Because of this strict security system, any virus, bacterium or toxin is prevented from entering the cell and doing any harm.

39

The cell membrane resembles a wall surrounding a building that protects it with strict security measures. In selecting those substances it will admit or expel, the membrane employs a most complex selectivity that varies according to circumstances.

43
The theory of evolution alleges that life began from a so-called simple cell and developed gradually. Yet current science shows that there is no such thing as a simple cell. Dozens of books have been written about the cilia—thin hairs on the cell surface—alone, and scientists have researched them for years.

45

THE CELL CAN FUNCTION ONLY WHEN ALL ITS COMPONENTS ARE PRESENT AND FULLY FORMED
Mitochondria
Cell membrane
Cell skeleton
DNA

There can be no cell in the absence of the CELL MEMBRANE.
There can be no cell in the absence of DNA.
There can be no cell in the absence of the CELL SKELETON.
There can be no cell in the absence of MITOCHONDRIA.

46
The cell membrane's selective permeability is of vital importance. Water molecules that the body constantly needs pass easily through the cell membrane, but hormones cannot enter unless they are recognized by receptors on the membrane. There is a sensitive plan and order in the selection of substances to be absorbed. That order belongs to Omniscient Allah, Who is most worthy of praise.

GLUCOSE
SODIUM
IRON
POTASSIUM
CARBON
PROTEIN
WATAR MOLECULE

49
THERE IS NO ROOM FOR COINCIDENCE
IN THE ORIGIN OF LIFE
If you placed all the components of life—amino acids, proteins, lipids, carbon, phosphorus, calcium, and carotene—into a huge vat and then heated it, froze it, subjected it to lightning, passed electric currents through it and brought in any advanced technological equipment you liked and performed any processes you wished, not a single cell would emerge from that mixture. Even if you continued the experiment for billions of years, no cell, the product of Creation, will ever emerge.

50-51
Light microscope

Electron microscope

Early microscope

Scanning electron microscope

Ion microscope

Until the 20th century, it was assumed—given the early state of scientific knowledge—that living things had very simple structures and that inanimate substances could randomly come together and form a living cell. However, the 20th and 21st centuries saw a turning point in the history of science. Once the complex structure of the cell was discovered, it was realized that coincidence had no place in the origin of life.

53
IF THERE IS A CREATION ANYWHERE, THERE MUST ALSO BE A CREATOR

Imagine an impressive building by the side of the road… Would you say "Coincidence has created something really perfect here"? Nothing so illogical would ever enter your mind. You might well think how carefully the architect had drawn up the building, how flawlessly engineers had planned it, how many details the designers thought of to make it user friendly. In the same way, the knowledge, intellect and might of our Lord can be seen in the cell, created by Him.

55
Inside the cell there are power stations that provide the cell with energy, factories that produce proteins and vitally important chemicals, complex transportation systems that carry these into and out of the cell, and sentries to maintain security. This complex structure, here summarized in just a few words, runs with a far more perfect order than any major city.

57
For people possessed of reason, the presence of a highly complex electrical system in nerve cells too small to be seen with the naked eye is one of the proofs of Allah's infinite wisdom.

58
The eye's retinal cells have been specially created to be sensitive to light. When photons strike these cells, they set one another in motion, like dominos stacked up in a row. This causes various proteins to change form and for new attachments to take place among them. Following a chain of chemical reactions, electrical stimuli are generated. Nerves transmit these to the brain, where the process we refer to as vision takes place. This bright world you see in all its details is a great blessing imparted by our Lord, by means of the flawless structure of your retinal cells.

Retina

Cone
cell

Rod cell

60
Almost any system appears simple when viewed from the outside. For example, it's enough to turn the ignition key to start your car's engine running. Yet for that to happen, thousands of components have been produced and brought together within a specific plan. A great many people have spent their time, energy, knowledge, and experience, to bring this about. You do not even have to turn a key for the systems in your body to work. Whether at the cell, organ or system level, it functions without your intervening in any way. All this is a manifestation of our Lord, the Compassionate and Merciful.

63

Smooth endoplasmic reticulum

Cell membrane

Mitochondrial undulations

Mitochondrion

Nuclear pores

Nucleolus

Chromatin

Nuclear envelope

Ribosomes

Golgi apparatus

Centriole

Granular endoplasmic reticulum

Lysosomes

The cell and its other organelles could not exist without the selectively permeable membrane. The cell needs to possess a membrane to prevent harmful substances entering from the outside, and to nourish by admitting the needed substances.

64

The cell membrane understands that substances like potassium and sodium differ from one another, and employs different methods for these substances' quantities and speeds of passage. Some substances it does not permit to pass. Darwinists assume that the cell membrane's selective permeability could have developed gradually, but this is not possible. If the cell membrane lacked any of the properties it possesses, the cell could not survive.

Potassium

Sodium

EXTRACELLULAR ENVIRONMENT

Phosphorus

INTRACELLULAR ENVIRONMENT

69
ORGANELLES INSIDE THE CELLS ARE DIVIDED FROM ONE ANOTHER BY MEMBRANES SURROUNDING THEM, LIKE WALLS AROUND THE ROOMS OF A HOUSE

Cell nucleus

Golgi apparatus

Cell nucleus

Microvillus

Nucleolus

Cell skeleton

Centrioles

Ribosomes

Mitochondria

Smooth endoplasmic reticulum

Rough endoplasmic reticulum

Lysosome

Golgi apparatus

Cell
membrane

Centriole

Smooth endoplasmic reticulum

Mitochondrion

Together with interior membranes surrounding many organelles inside the cell, the cell membrane can be compared to the exterior wall of a house. Though it separates the cell from the outside environment, the cell membrane is not totally impassable. Rather, it operates as an exceedingly sensitive control mechanism, permitting suitable substances to enter and depart, while preventing others from doing so.

71
Just as in buildings protected by security systems, special elements in the cell membrane gates check everything going in or out, using sensitive detectors. The fact that such an important security system is performed by the membranes in trillions of cells is an example of Allah's compassion for human beings.

73
The cell membrane does not operate like a sieve or filter, in which only size counts, and the question is ignored of whether a substance is harmful or beneficial. Yet with its selective permeability, the cell membrane performs selection based on the qualities of substances. Ones that might damage the cell are excluded, and useful ones are taken inside by a variety of means, without regard to their size.

74

The Water-attracting Hydrophilic Section

The Water-repelling Hydrophobic Section

The water-retaining phosphate parts of the phospholipid molecules making up the cell membrane face the cell's exterior surface. If the phosphate sections were inside, then the water-repellent lipid parts would repel water.

Water could not enter the cell, chemical reactions in the cell could not take place, and its life would be endangered.

75
Air

Micelle

Water

Sequence of molecules in the single-layer phospholipid layer

Water

Phospholipids form micelles—small insoluble particles made up by fat molecules—in water.

Water

The water-attracting (hydrophilic) part attached to water

Sequence of molecules in the double-layered phospholipid layer

Water-repellent (hydrophobic) tail remaining in the inner part of the cell

This sequence of the cell membrane is of the greatest importance, because the phosphate part of the phospholipids makes possible the passage of water, one of the cell's basic needs.

77

Integral protein

Oligosaccharide

Glycolipid

Hydrophobic alpha helix

Integral protein

Phospholipid

Cholesterol

All along the cell membrane, there are proteins, products of cell metabolism, that permit controlled transport. While these allow the cell to function, the cell is necessary for their production. Therefore, in order for living beings to exist, both the proteins and the information that codes them and the organelles that produce them must all be present at the same time.

79
THE PHOSPHOLIPID MOLECULE CONSTITUTING THE CELL MEMBRANE IS A MIRACLE OF CREATION

Phospholipid

Various groups (choline)

$(CH_3)_3$

Phosphate group head part

Charged pole head part

Uncharged pole tail part

Fatty acid tail

Two-layered phospholipid membrane

{

Fatty part

(b) Cavity-filling model: In this model, unsaturated fatty acid assumes a very convoluted shape.

(c) Cell membrane

Saturated fatty acid

Unsaturated fatty acid

The molecules making up the cell membrane's phospholipid structure are present in just the needed form and place. The fact that phospholipid molecules have the ideal molecular structure for the cell, and that no known substance can replace that structure, is no doubt a proof of Creation.

(a) The structural formula of phosphatidylcholine: The special phospholipid shown here is phosphatidylcholine. Phospholipids are the building blocks of the cell membrane.

Glycolipid

Carbohydrate chain

Glycoprotein

Outer surface of membrane

Inner surface of membrane

Water-repellent (hydrophobic) region

Protein molecule

Water-attracting (hydrophilic) region

Cholesterol

Double-layer phospholipid layer

For the cell to survive, its membrane must have a viscous property. If the cell membrane loses this, then proteins in the membrane can't fulfill their functions and the membrane loses its permeability.

83

Small, uncharged polarized molecules

Water-repellent (hydrophobic) molecules

Large, uncharged polarized molecules

Ions

Hydrocarbon

Glucose

The cell membrane is permeable to oxygen, fats and small molecules bearing no electrical charge. It is impermeable to electrically charged or polarized large molecules such as ions or protein. That a layer made up of fat—the cell membrane—possesses such a sensitive selection mechanism is just one example of the infinite wisdom of Allah.

84

Proteins in the cell membrane perform functions such as recognition, transport, and absorption into the cell. A single error might lead to the death of the cell and thus, to damage of the organ to which it belongs or the whole body. It's of course impossible for proteins, accumulations of unconscious atoms, to spontaneously undertake functions requiring reason and foresight. These are inspired in them by Allah.

85
THE CELL MEMBRANE’S IDEAL STRUCTURE FOR LIFE

(a) THE CELL

Cell membrane

Carbohydrate bonds

Cell membrane, consisting of a double-layered phospholipid layer

{

(b) Membrane protein passing inside the cell membrane

(c) Enlarged view of spiral sections passing through the membrane

In 1972, S. Jonathan Singer and Garth Nicholson of California University proposed a model to describe the relationship between the proteins and lipids in the cell membrane. They compared the proteins to icebergs floating in a sea of lipids, saying that part of these proteins—the tips—were folded above or beneath the cell membrane, and that the protein's middle part was buried inside the membrane. It is known that proteins consisting of such three regions play important roles in biological processes. One of them was examined in detail following Singer and Nicholson's liquid-mosaic model.

87

Proteins buried in the cell membrane

Entry and departure in the cell membrane is controlled like the security measures implemented at the entrance to a building. For the survival of the cell, it's vital that the cell membrane fulfills this function with great care, never making a mistake. Bear in mind that security systems are produced by engineers, and the cell membrane's superior function becomes even clearer.

Cross-section of
the double-layered
lipid layer

88

He is the Originator of the heavens and the Earth. How could He have a son when He has no wife? He created all things and He has knowledge of all things. That is Allah, your Lord. There is no god but Him, the Creator of everything. So worship Him. He is responsible for everything. Eyesight cannot perceive Him, but He perceives eyesight. He is the All-Penetrating, the All-Aware. (Surat al-An‘am, 101-103)

90

THE HORMONE ADRENALIN MEANS DIFFERENT THINGS TO EACH VARIETY OF CELL

At times of danger, your body declares a state of emergency, and your adrenal glands secrete the hormone adrenalin. Adrenalin molecules carried by the bloodstream mean different things to every organ: Going to the veins, this molecule expands them. When it goes to the heart, it accelerates the contraction of the heart muscle. When adrenalin molecules reach muscle cells, they enable them to contract more powerfully. At the liver, they command cells to release more sugar into the blood, providing the muscles with the extra fuel they need. This activity by the adrenalin requires considerable intellect, knowledge and ability. All these are definitive proofs that Allah has created every molecule in your body and that throughout your life, they act under His will and control.

The heart cell

Adrenalin gland

Adrenalin molecules

Adrenalin

Kidney

The physicist and biologist Professor Gerald L. Schroeder, has written:
But nature is clever, somehow filled with wisdom. Thousands of receptor and transporter molecules, special proteins, penetrate the wall, determining what can and cannot pass. Muscle cells and especially muscle cells of the heart have large numbers of receptors created to pass adrenaline, a stimulant hormone that greatly increases a muscle's energy production. Taken up by the heart muscles, the beat increases dramatically, pumping oxygen-rich blood to power-hungry muscles in arms and legs.

(Gerald L. Schroeder, How Science Reveals the Ultimate Truth, New York: The Free Press, 2001, p. 64.)

Liver cell

91

Cell exterior

Cell membrane

Antibody recognizing microphage

Cell interior

Cells like the immune system's T cells employ proteins to determine whether a cell belongs to the body. In this way, the T cell identifies foreign substances and emits signals for the necessary measures to be taken.

94
INCOMPARABLE FUNCTIONS OF THE CELL MEMBRANE PROETINS
The different cell membrane proteins (shown in blue in the diagram) have a number of very important functions: Some form "channels" through which various substances enter and depart from the cell.
Enzymes help speed up chemical reactions.
Some proteins, when attached to special chemicals, serve as receptors, setting functions such as hormone synthesis into operation. This attachment launches the beginning of a certain function such as the synthesis of hormon in the cell.
The identifiers of the cell are the proteins receiving information regarding whether other cells in the body are foreign invaders.

Some proteins assume structural functions; others serve as attachment points for cells to adhere to one another. Other proteins are important in anchoring the cell skeleton.
Every protein and cell in your body, has been created for a particular purpose, equipped with particular attributes, and specially located in the place where its function needs to be performed. In short, man was created —and every detail in your body is proof of that Creation.

Enzyme

Receptor section

The cell's
identity-checker

Cell attachment

Transport channel

Binding of the cell skeleton

Carbohydrate bonds

Protein chain

Non-polarized section of cell membrane protein

Spherical protein

Cholesterol

Phospholipid

99

Amino acids

Protein

Cell membrane

Amino acids are the building blocks of proteins in the cell membrane. Amino acids, made up of unconscious atoms, display intelligence and are able to decide and act and build structures—which cannot be explained by coincidence. Moreover, these molecules recognize other collections of atoms in different sequences, know whether these are sugar, metals or hormones, and let them enter the cell accordingly.

101
Mixture of water and permanganate particles

Water

At above right, you can see the latticed molecular structure of wet snow.

DIFFUSION IN WATER
Place potassium permanganate in water, and its blue color will gradually spread. The water molecules push the permanganate particles apart. In the same way, a tea bag placed into a cup gradually spreads its contents throughout the water, imparting color and flavor.

Potassium permanganate crystals

102
Molecules are in constant motion—but not random motion, however. Molecules slide over one another in liquids, move away from one another in gasses and approach one another very closely in solids, but never disrupt this order.

103

Polarized, ionized, water-attracting (hydrophilic) substances

Water-repellent (hydrophobic) unpolarized substances

Above, the passage of molecules and ions through the channels and gaps in the membrane's molecules, by means of "simple diffusion"—without their binding to any transport protein.

104
PROTEINS UNDERTAKING DIFFERENT FUNCTIONS IN THE CELL MEMBRANE SHOW THE VARIETY IN ALLAH’S ART OF CREATION!

Extracellular environment

Receptor protein

Channel protein (always open)

Closed channel protein (in closed position)

Cell skeleton connections

Double-layered lipid layer

Phospholipid

Glycoprotein

Transport protein

Cholesterol

Cytoplasm

The cell membrane has entryways for various molecules, but water passes through particularly quickly and easily. Although water scarcely dissolves at all in the cell membrane's fats, it can enter with ease by means of the protein channels in the membrane. The way that water enters so quickly is most wise, in view of the cell's need for large amounts of water, and is one of the countless proofs of Creation.

HOW DOES THE CELL MEMBRANE KNOW THAT IT NEEDS LARGE AMOUNTS OF WATER?

Extracellular fluid

Concentration slope

Integral protein

Double-layered phospholipid layer

Fat-soluble substance

Cytosol

Fat-insoluble substance

107
If you put your hand in a fire, a substance known as acetylcholine is secreted, and a negatively charged channel opens in the cell membrane. Ions are able to enter and leave easily, enabling more rapid transmission of the signal from nerve cell to nerve cell, letting you retract your hand from the fire that same instant.

Acetylcholine

Conjunction of Alpha Subunits

Na+

Open

The Gate

Closed

Na+

The Structure of Acetylcholine Receptor

Functions of Receptors

The Miracle in the Cell Membrane

(2)

(1)

(3)

108
Facilitated diffusion takes place by means of a transporter: (1) When the substance to be transported attaches to the transporter protein, the transport protein changes shape, and the end of the cell channel opens. (2) The molecule begins to enter from here. (3) When the protein reaches a location near the inside of the cell, the protein—whose movement results from heat— separates from the molecule to which it is only weakly attached, and the molecule enters the cell.

109
THE VARIOUS METHODS OF ENTRY IN THE CELL MEMBRANE ARE PROOF OF CONSCIOUS CREATION

High
concentration

Low concentration

Diffusion from the fat layer:

Molecules such as O2 and CO2, which are soluble in fat, pass freely through the cell membrane.

Diffusion among the channels:

Some polarized and electrically charged molecules pass through protein channels forming a bridge on the cell membrane. Water is a typical example.

Facilitated Diffusion:

Some molecules attach to a protein. The molecule causes a change in the shape of the protein. In this way, the molecule is able to pass through the cell membrane. Glucose enters the cell in this way.

The above diagram shows the simple diffusion and facilitated diffusion methods of passing materials through the cell membrane. If the substance to enter the cell is dissolved in fat, then it enters the cell through gaps in the double-layered lipid layer. If not fat-soluble, then it enters through the water-filled channels of certain transport proteins. As you see, the structure of the cell membrane is ideally suited to letting necessary substances enter the cell.

110
Osmotic pressure

Glucose

Water

Selective permeable membrane

Diffusion of water

Water movement in less pressure

Osmosis is the passage of liquid molecules through the semi-permeable membrane, from a dense environment to a less dense one. The cell membrane forms a barrier between the intracellular fluid (cytoplasm) and the

extracellular environment. Water passes through the cell membrane depending on the density differential between these two environments, and this flow continues until the fluid concentration reaches equilibrium.

111

Isotonic
(Osmotic pressures being equal)

Hypotonic
(Osmotic pressure lower than that in the cell)

Hypertonic
(Osmotic pressure higher than that in the cell)

Water regularly passes through the red blood cell's membrane. If too much water enters, that could split the cell and lead to its death. If not enough water enters, the cell will shrink and lose elasticity. Under typical conditions, the amount of water passing in both directions has so sensitively adjusted that the cell's volume remains stable.

113

Extracellular fluid

Ion

Integral protein

Concentration slope

Cytosol

The diagram shows the active transport of ions into the cell that takes place with the expenditure of energy. Different methods of passage are employed according to the size, electrical charge and importance to the cell of the substances to pass through the membrane. Planned movement, directed towards a specific end, can be seen in each one of these methods. The cell membrane, composed of unconscious atoms, adopts such objectives and

knows which substances are necessary for the cell. That cannot, as Darwinists maintain, be explained in terms of coincidence. All these are portions of the order established by Allah for the maintenance of human life.

115
You who believe! Eat of the good things We have provided for you and give thanks to Allah if you worship Him alone. . . . (Surat al-Baqara, 172)

116
RATIONAL METHODS EMPLOYED BY THE CELL MEMBRANE, DEPENDING ON THE CONDITIONS, ARE A MANIFESTATION OF THE INFINITE WISDOM OF ALLAH!

SIMPLE DIFFUSION

Molecules in a high-density area collide at random more frequently.

High-concentration area

Cell membrane

Low-concentration area

Collisions direct molecules towards low-concentration areas.

This is employed by small molecules such as H20, C2, CO2, and ethanol.

FACILITATED DIFFUSION

Transport molecules in the pore-like protein channels in the cell membrane permit some molecules through the membrane, depending on the concentration.

Cell membrane

Some soluble substances cannot pass directly through the double layer of fat. Their passage is made possible by means of channels. The cell's ATP is not used to facilitate this process.

Soluble molecules

1. Soluble molecules attach to the binding point of the opened transport protein in the cell membrane.

ACTIVE TRANSPORT

Transport protein

Binding region

2. ATP transmits phosphate to the transport protein.

3. The phosphorized transport protein opens and changes shape so as to deposit the soluble molecules inside the cell.

4. The phosphate separates from the protein by assuming its original form. The stage is now set for another soluble molecule to be transported.

Extracellular environment

ENDOCYTOSIS

Cytoplasm

For the cell to remain alive and grow, it must take in nutrients and other substances from the surrounding fluid . This special method to transport large particles inside the cell is one of the countless details Allah has provided for human life.

Cytoplasm

Nucleus

Cell
membrane

Nucleus

2 µm

Lysosome dissolving and binding with the vacuole

Vacuole

Substances unable to pass directly through the cell membrane are taken into the cell in small sacs. The diagram shows an erythrocyte taking a bacterium into the cell, and the lysosome fragmenting the bacterium. The sacs employed during this method, known as pinocytosis, are very small, their diameters generally 100 to 200 nanometers. Such an important function is flawlessly discharged, at a dimension only visible under an electron microscope—just one of the proofs of our Lord's superior Creation.

(2)

(1)

These diagrams show the entry into the cell of LDL (low density lipoprotein) particles by means of endocytosis. LDL particles build a covalent bond with the protein ferritin, and then the cell membrane forms a sac by which these particles are absorbed. Under an electron microscope, every small iron particle within the ferritin can be seen as a small dot.

Clathrin covered cavity

0.2 µm

LDL-ferritin

LDL-ferritin

(3)

(4)

Harun Yahya (Adnan Oktar)

The Miracle in the Cell Membrane

EXOCYTOSIS

124
Nutrients too large to pass through the cell membrane are expelled by means of exocytosis. However, first the cell must determine whether the substance to be removed is useful. A cell lacks the consciousness and the intelligence to make such a decision. This intelligence belongs to Allah, our Creator. Everything that takes place inside the cell does so because of the flawless system established by our Omniscient Lord.

126
Have you thought about the water that you drink? Is it you who sent it down from the clouds, or are We the Sender? If We wished, We could have made it bitter, so will you not give thanks?
(Surat al-Waqi‘a , 68-70)

133

2- Channel in closed position.

3- Channel in open position.

1- Channel in neutral position.

The cell membrane channel in a neutral position (1) is polarized because of a change in the electric current around the membrane (2). This later opens in such a way as to permit ions to pass through the channel (3). Movement of ions along the channel is of great importance for the survival of the cell and for it to perform its functions.

135
We created man from a mingled drop to test him, and We made him hearing and seeing.
(Surat al-Insan, 2)

136

Nerve cell

Despite such processes as recognition and selection, the passage of ions through the channels takes place very quickly. Indeed, ions are transported so rapidly that the nerve cells carry messages to any point in the body in as little as 1/1000th of a second.

Message-transmitting molecules

Membrane channels

138

UNCONCIOUS ATOMS CANNOT ESTABLISH THE COMPLEX ORDER IN OUR BODIES THEMSELVES: THIS FLAWLESS CREATION BELONGS TO ALLAH…..

Extracellular fluid

When a nerve cell is not receiving a message, its sodium (Na+) and potassium (K+) channels are closed.

Cell membrane

Closed potassium gate

Closed potassium gate

Resting potential

Sodium gates

When movement potential is established, the sodium (Na+) gates are opened and sodium ions enter.

The sodium gate is opened.

When sodium (Na+) gates are closed and potassium (K+) gates are opened, potassium (K+) ions begin to exit.

Potassium gates

The potassium gate is opened.

The sodium (Na+) and potassium (K+) gates are closed, but still ready to open with a new signal.

The sodium-potassium pump

When sodium ions enter the cell through the membrane, the interior of the cell becomes positively charged. The channels in the cell membrane, now also positively charged, start working. Potassium ions start flowing out of the cell, and the positive charge inside it declines. Due to this order inside your cells, you are able to perceive our surroundings and act accordingly. Whether you know it or not, this system in the cell membrane constantly functions in order for you to survive. This system never forgets, becomes tired or is caught unawares. That is because Allah, the Compassionate and Merciful, creates that order and causes it to continue in all of your cells.

140

Ion

The diagram at the side shows the passage of ions through channels in the cell membrane. This passage is most important in terms of the body's electrical activities. This special structure in the membrane shows evidence of

the most superior Intelligence that belongs to our Lord, Who manifests it in every cell in your body, reflecting His infinite knowledge.

Ion channel

Cell membrane

143
He created the heavens and the Earth with truth and formed you, giving you the best of forms. And He is your final destination. (Surat at-Taghabun, 3)

144

Extracellular fluid

Intracellular fluid

(a)

(b)

The above diagram shows the closed voltage ion channels in the cell membrane. (A) Normally the closed voltage sodium channel is closed. (B) When the electrical current reaches a specific level, the voltage gate is opened and sodium is permitted to enter the cell. After a certain time, the gates are again neutralized and the channels are closed.

146
THE AMAZING ORDER INVISIBLE TO THE NAKED EYE

1- Channel is closed

2- The channel opens and Sodium enters inside the cell

3- The channel closes again

Sodium channel with voltage-gate

The exterior of the cell

Na+

The interior of the cell

Na+

Region sensitive to the voltage

Voltage Gate

Particle neutralizing the channel

Particle neutralizing the channel

The structure and functions of the closed voltage sodium
channel:
Scientists recently discovered that the amino acids in the voltage preceptors do not make simple back-and-forth motions, as they previously imagined, but act like keys turning in a lock. The complex structure of the cell membrane, so difficult for scientists to unravel, clearly reveals that there is no room for coincidence at the molecular level.

147
He makes night merge into day and day merge into night, and He has made the Sun and Moon subservient, each one running until a specified time. That is Allah, your Lord. The Kingdom is His. Those you call on besides Him have no power over even the smallest speck. (Surah Fatir, 13)

149
A potassium ion combined with water molecules

Open

Closed

Ion binding region

Neutralizing particle

(b) Gate formation in the channel

(a) Channels' ion selectivity

These diagrams show how the closed voltage ion channels select the potassium ion. (a) 1- Negative charges at the entrance to the channel attract positive charges. 2- The diameter of the channel restricts the amount of ions that will pass through. 3- After the ions have been selected they separate from the water molecules. (b) When the electrical state of the membrane changes, the structure of the channel changes, and the channel gate opens. (c) After ion passage has taken place, the channel is again closed by a neutralizing particle.

151

HUMAN BEINGS NEED THE ORDER CREATED IN THE CELL BY ALLAH, CYSTIC FIBROSIS IS ONE EXAMPLE TO BE BORNE IN MIND,

Cell
membrane

Neutralizing particle

(c) Neutralization of the channel

Cells extending along an air cavity

Air cavity

Normal cells and the departure
of chloride ions

Air cavity

Defect in the cells and chloride ion departure of someone with cystic fibrosis.

The fatal disease of cystic fibrosis results in closure of airways in the lungs due to an increase in fibrous connective tissue between cells. At the same time, this disease may also lead to blocked channels in the liver and pancreas. There is currently no cure. The researcher Paul Quinton determined that the cause of this disease is the faulty working of a protein in the cell membrane.

In healthy individuals, sodium ions enter the channel in the cell membrane by being transported by the sodium-potassium pump. Chloride ions follow through a passive channel. In cystic fibrosis sufferers, the potassium pump carries sodium ions into the channel, but chloride ions cannot enter through the cell membrane. In other words, the passive chloride channels do not function properly. (Sandra S. Gottfried, Biology Today, Mosby-Year Book Inc., ABD, 1993, p. 70.)

As you have seen, a defect in just one passage through the cell membrane can have fatal consequences. Countless conditions need to be met at the same time for you to survive.

Cell body

Dendrite

Cell nucleus

Cell body

Axon

Myelin sheath

Node of Ranvier

Dendrites

On the left you can see the general structure of a nerve cell (neuron). This structure of nerve cells is specially created to transmit signals. Because of these structures, you perceive what is happening around you and act as you wish.

155

Signals moving my jumping from one synapse to another speed up the pace of transmission.

Myelin sheath

Axon

Electrical current accumulated on a myelin sheathed axon ganglion continues on by moving from one to the next. Signals are thus transmitted along the nerve cells. Every detail of this system has been specially created for you to perceive the outside world and react as necessary, and to establish coordination with the brain for your body to perform all its vital functions.

157

Signal

Movement potential region progressing along the neuron

Repolarization region

Movement potential forms through the action of the closed voltage sodium and potassium channels in the axon membrane. At rest, these channels are generally closed, and open when the cell membrane potential attains a

negative value. Potassium channels open in a millisecond, and sodium channels in even less time. It has become possible to identify and follow all these processes through 20th-century technology.

160

(a) RESTING POTENTIAL

Axon

Electrodes

The sodium-potassium pump transports Na+ ions out of the cell, and K+ ions inside it, against the pressure of concentration. This process requires ATP.

K+ ion gates are active gates with a voltage that enables K+ ions to be absorbed outside the cell when they are opened. K+ ion gates are closed during resting potential.

Na+ ion gates are active gates with a voltage that permits Na+ ions to pass swiftly into the cell. Ions are absorbed during a motion potential in the light of the concentration slope. Na+ ion gates are closed during resting potential.

Negatively charged protein ions cannot be absorbed, since they impart a negative charge to the inner part of the neuron.

HOW MUCH DO YOU KNOW ABOUT WHAT TAKES PLACE IN YOUR CELLS, WITH ALL THEIR RESPONSIBILITIES?

Many people feel no need for the information in this book, unless they are particularly interested or it falls within their sphere of expertise. That is because this information will make no change or difference in their lives. Yet our cells have vital responsibilities, implementing them without ever making a mistake. Cells carry out all these activities ceaselessly, without ever making you aware of them. They remain devoted to these tasks for decades, never going wrong, forgetting or needing rest. The signals carried along channels that open and close in less than a second are actually invisible portions of an enormous Creation. As a result of this system, you can taste the apple you eat, smell the scent of a rose, recognize your mother's voice, remember a telephone number, can operate your television's remote control, answer a question, run down stairs, and do all these things without ever thinking about them. Your responsibility is to be grateful to our Lord Who created this system in your body without your ever realizing you needed it.

161

(b) MOVEMENT POTENTIAL
Stage 1: Disruption of polarity
Na+ ions move in at high speed.

Na+ ion gates open in reaction to a stimulus. Na+ rapidly enters the cell by disrupting polarity. The inner part of the axon rises from -70 mV to +30 mV.

(C) MOVEMENT POTENTIAL:
Stage 2: Repolarization
K+ ions rapidly move out.

K+ ion gates open shortly after, and K+ ions begin moving out of the cell at high speed. The cell is thus repolarized, falling to under -70 mV.

As the sodium-potassium pump moves Na+ ions outside the cell, it takes K+ ions in. It thus again achieves resting potential. This process requires ATP.

- At the beginning of movement potential, most sodium and potassium channels are closed.
- Electrical current passing by the axon or carrying a stimulus causes the potential of the axon's cell membrane to fall.
- This opens some of the sodium channels, and sodium ions flow into the cell.
- Though positive charges enter in this way, the cell membrane potential is still negatively charged. Therefore, sodium channels open, and more sodium ions enter.
- At this point, the exact opposite happens to the axon: Sodium channels begin closing one after the other, and the inward flow of sodium is halted.
- In contrast, the axon's potassium channels begin opening and potassium ions leave.
- Finally, as the positive charge inside the cell declines, the cell membrane potential returns to its former level.

CONSIDERING THE EXTRAORDINARY
ACTIVITIES IN OUR BODIES IS AN OPPORTUNITY
TO PROPERLY APPRECIATE OUR LORD.

Muscle Movement and Acetylcholine Channels:
A muscle contracts when the motor nerve it's attached to is stimulated. When it reaches the terminals, the nerve transmission in the axon belonging to this motor nerve enables a transmitter known as acetylcholine to be

secreted. This substance spreads in the space known as the synapse between the nerve and muscle cell, binding to complex proteins (acetylcholine receptors) in the muscle cell membrane. This binding causes the ion channel in every receptor to open, and thus the current continues along the muscle cell membrane. This causes electrical activity in the muscle cell, resulting in the muscle's contraction. By means of the perfect functioning of these systems, you are able to turn the pages of this book with ease, sip tea with one hand and tap a rhythm out with the fingers of the other.

One way of stopping this chain of events permitting muscle movement is to block the acetylcholine receptors. This method is employed by some poisonous animals to cause paralysis. The venom of the black widow spider, for instance, causes acetylcholine disruption.

As you have seen, living your life in comfort, doing what you like when you like, perceiving the world around you and reacting appropriately, all take place flawlessly by means of this special system Allah has created in your body. However, acetylcholine channels represent but a tiny part of your body's complex Creation. Yet every detail in the body has been created for some important function with the knowledge of our Lord.

Synaptic sac

Closed channel

Receptor

Potassium ions

Nerurotransmitter molecules

Target cell

Axon

Synapses work like biological keys to transmit electro-chemical signals. Every synapse consists of two parts: the rounded part at the end of the transmitter neuron, and the receiving region in the target cell membrane. The synaptic gap is as tiny as 1 billionth of an inch (2.54 centimeters) long and separates the two cell membranes. At the bulb-shaped end of the synapse are very small spheres called synaptic sacs. Each one contains thousands of molecules that transmit stimuli.

When the nerve signal reaches the tip, the sacs attach to the membrane and release their contents into the synaptic cavity. This enables specific receptor channels to open and sodium ions to move rapidly towards the target cell. This ion flow sets one region of the target cell membrane into operation, and an electrical impulse is formed within the target cell.

This molecular traffic among our nerve cells, here described in very superficial terms, continues constantly at very high levels. Ions and some proteins determine when this traffic should stop or start. It is of course impossible for molecules to construct a nervous system of their own accord and subsequently to organize it in a most impeccable manner. These molecules have come together within a specific Creation, to serve a particular purpose. This system is one of the examples exhibiting Allah's infinite dominion.

The direction of the nerve

Synaptic sacs

Tip of the synapse

Synaptic cavity

Target cells

The magnified region left

Receptors

Open channel

Sodium ions

Receptor

166

At the side you can see how the chloride channel structure is organized and the way in which salt is absorbed into your cells. Two equal sub-units, colored blue and green, are seen in the channel. Each sub-unit constitutes its own ion space. The red spheres show the pathways of chloride ions.

169

The picture above shows absorption of alcohol molecules by brain cell membranes. Alcohol molecules close brain cells down one by one by preventing the passage of nerve signals.

170

It is Allah Who made the Earth a stable home for you and the sky a dome, and formed you, giving you the best of forms, and provided you with good and wholesome things. That is Allah, your Lord. Blessed be Allah, the Lord of all the worlds. (Surah Ghafir, 64)

177

If the communication system within the 100 trillion cells in the human body remains inoperative for just a matter of seconds and cellular messages cannot reach one another, death can ensue. Present-day communication systems have been established using the very latest electronic technology. The communication system in the cell, however, possesses a technology whose mysteries humanity has yet to fathom.

178

Structure of the thyroxin kinase receptor

In the diagram, some antenna-like components remaining outside the cell are carrying out very similar functions. Messages carried by different hormones are interpreted by different antenna, in the same way that radio antennae collect different wave emissions. The systems within your body are interconnected, acting towards a common purpose. It is of course impossible for coincidence to explain the compatibility between the hormones and the receptors that will interpret them, and for the actions of the cell then to be determined accordingly. This is another proof of the existence of our Lord, Who rules and has knowledge of all.

Antenna (thyroxin kinase)

Cell membrane

Body

Tail

180

The steroid hormone passes through the cell membrane without the help of a receptor molecule, attaching to a receptor molecule inside. The hormone-receptor complex enters the cell nucleus and affects the DNA to produce protein there. These proteins control physiological processes controlling growth and development. All the systems in your body have been created dependent on one another. For example, the body's activities cannot continue without protein production. But for there to be protein production, all units of the cell must work together. There needs to be packets of information—hormones—to direct those activities, as well as a pituitary gland that instructs hormones to go to the relevant cells and much more besides. It is a violation of reason and the science to suggest that such magnificent balances could have come about gradually and by coincidence.

Steroid hormone

Cell Membrane

Hormone

Hormone receptor complex

Hormone receptor

Cell Nucleus

DNA in motion

mRNA in ribosomes direct protein synthesis

182

Receptors for many peptide hormones, amino acids obtained from growth factors and hormones

All of a living thing's systems and organs must be operative at the same time. The system will not work if there are hormones, but no receptors to perceive them, or if there are receptors, but no hormones. It will also fail if the cell does not know how to use the information being carried. These interconnected balances point to a single truth: Man was created in a single moment, and in a flawless manner.

Steroid hormones and receptors

Nucleus

Cell
membrane

Hormone

Special steroid hormone receptor

Intracellular fluid

Thyroid hormone receptor

183
What is in the heavens and in the Earth belongs to Allah. Allah encompasses all things. (Surat an-Nisa', 126)

185
SUPERIOR TECHNOLOGY IN INTERCELLULAR INFORMATION TRANSFER: THE MODULAR SYSTEM

In terms of speed and capacity, the nerve cells in the brain and the eye possess the fastest information transfer capacity known to man. The modular system, used as one of the latest technologies in a great many fields, makes possible rapid and flawless information exchange. The speed of communication between nerve cells is made possible by certain proteins' possessing a multi-connection module, permitting the proteins to coordinate several communication elements at the same time. Through this system, proteins can constantly keep messenger protein groups together and establish exceedingly rapid communications.
To a large extent, for example, your ability to read this book stems from the rapid communication system in your eyes. Were it not for that speed, you would need several seconds to perceive what you had just read.
We may cite the International Space Station, whose construction is still ongoing, as the closest analogy of the cell's modular system. This station, one of the greatest engineering achievements in history, is being built according to the modular system. Nobody can maintain that this space station emerged through the random accumulation of atoms, molecules, winds, lightning and Solar energy. This space station is being consciously constructed as a result of long years of accumulated knowledge and very detailed engineering calculations.
The same applies to the cell. No coincidental effects can create such an advanced technology, requiring intellect and conscious planning. That being so, who established the communication system in the cell, whose secrets scientists have been unable to fully unravel? How was the communication network constructed to respond instantly to the needs of 100 trillion cells? And who created the marvelous modular system that permits communication at such extraordinary speed? Allah "Created all things" (Surat al-An‘am, 101) and "Directed the

whole affair from heaven to Earth." (Surat as-Sajda, 5). He created the messenger proteins and the marvel of communications these represent, with a flawless structure.

186

THE INTERCELLULAR COMMUNICATION THAT ASTONISHES SCIENTISTS

A great miracle can be seen in the harmony between the transmitter and the receptor, how the message finds the receptor without losing its way, the way the message means something to the receptor, and how the cell immediately acts on the message.

The role of the G protein: (a) A hormone attaches to a receptor on the cell membrane. The hormone-receptor complex attaches to a G protein. (b) GTP replaces GDP on the G protein. The G protein undergoes a change of shape, making it possible for the protein to attach to adenylate cyclase. Adenylate cyclase is activated and ensures the transformation of ATP into AMP.
A series of chain reactions then follow, and these reactions lead to a number of changes inside the cell. The G protein is closed with the transmission of the message, and the reaction comes to an end.

a)

Extracellular cell

Hormon

G protein

Cell Membrane

Receptor (

Adenylate cyclase

Intracellular fluid

GDP

b)

Intracellular fluid

Hormon

G protein

Cell membrane

Receptor (

Adenylate cyclase

Intracellular fluid

GTP

SIGNAL SELECTION IN BONE-CELL COMMUNICATIONS

For bones to take shape, a series of complex processes must occur with flawless coordination. Bone cells known as osteoblasts, osteocytes and osteoclasts constitute a sensitive structure and need to communicate with one another in order to take shape in a balanced way. This requires intense coordination between the cells. Intercellular communication takes place by means of tubular channels known as gap junctions. These channels join cell membranes like a bridge, by entering into interactions with neighboring cells, and make direct contact with those cells' cytoplasm, permitting substances to pass directly from one cell to another.1
In addition, these channels make selections based on substances' molecular dimensions. Permission is given for movement by small molecules, while those of proteins and nucleic acids is prevented. These channels are a perfect means for transmitting bone cell signals.
As you see, communication has a separate importance for every kind of cell. A well proportioned symmetrical bone structure emerges as a result of complex communication. Never forget that to engage in communication, there is a need for a language, and a consciousness to understand that language and act upon it. Such a system

cannot spontaneously emerge among cells and then function in the greatest harmony. Allah has created the complex systems possessed by cells and has inspired in every cell its own task.

1. http://herkules.oulu.fi/isbn9514259351/html/i245454.html; Dr. Joanna Ilvesaro, Finland, Oulu University.

Gap-junction channel

Junction

NH3+

Intracellular fluid

COO-

Sub-junction element

Intercellular gap

The diagrams show how cells bind to one another to produce a tissue. How do cells know they need to come together to construct an organ? Depending on their location, for example, bone cells form a pelvis bone, a rib cage, or fingers. How do cells know which region of the body they are in? How do they open cavities for the eyes or form a skull to protect the brain? It is impossible for unthinking, unconscious bone cells to create plans requiring a superior intellect. No doubt every detail in the human body exhibits the matchless Creation of Allah.

What if Proteins' Tasks were given to you?

If we think of a protein (1 millionth of a millimeter) in human terms, then the cell in which the protein is found would be the size of a city. Bearing in mind that there are 100 trillion cells in our bodies, then the area governed by that protein would be equal to that many cities.
Were you given responsibility for doing what protein does, what kind of administration could you maintain? You would need to check entries and departures at every one of those cities, ensure flawless communication, identify the needs in each city and ensure that they were met at once, identify the location of the smallest attack and go there at once to intervene. Bear in mind that unconscious collections of molecules do all these things,

and the extraordinary nature of what takes place becomes even more apparent. Proteins perform all these difficult and vital functions at every moment, as a result of the order established by Allah.

A protein just 1 millionth of a millimeter long

194
MOLECULAR TRAFFIC ON THE CELL: PROTEIN TRANSPORT

After a car has been produced in the factory and before it reaches the consumer it needs to go through such stages as sale to distributors and registration. The way that proteins produced by cells reach the regions where they are needed is a complex process. The body of a mammal contains approximately 1 billion protein molecules that need to be renewed at least once a month.
The Rockefeller University researcher Günter Blobel and his team analyzed an important part of this protein distribution system and found that a kind of molecular postal code directs protein to particular locations. Special receptors on the surface of the cell membrane read these signals and permit only the correct protein to pass through or be installed in the cell membrane.
One portion of the newly produced proteins are removed from the cell under the supervision of the cell membrane, to be used outside the cell. Those proteins entering from outside—again regulated by the cell membrane—constitute major protein traffic. The extraordinary coming and going inside the cell is far too small to be seen with the naked eye. But so many particles in such a small space, each with its own important function, can go where they are needed in great order and harmony. Every protein produced in what is known as the ribosome and every protein from other cells will be used in a specific place. But how do these proteins know where they need to go? How do they pass through the cell membranes with their tight safeguards? How does this astonishingly heavy protein traffic function without a mistake ever being made?
There can be no doubt that proteins to be drawn into or removed from a cell, and the cell membrane that permits this, are just some of the proofs of the existence of Allah.

Günter Blobel

195
What! Are they in doubt about the meeting with their Lord? What! Does He not encompass all things? (Surah Fussilat, 54)

199
The task of the antigen identification cells is to offer the antigen (enemy) to the T cells. This is a most serious responsibility. That is because the antigen identifying cells know that the T cells will defend the body, and they pass the enemy they catch on to the T cells for intelligence to be gathered. It is impossible for a cell to undertake such a responsibility and to serve a system for the defense of the body by coincidence. It is Almighty Allah Who inspires these responsibilities in the cells.

Antigen peptide section

Peptide-recognition region

Antigen-recognizing cell (macrophage)

201
YOUR BODY CONTAINS CELLS WITH AN AWARENESS THAT DEFENDS YOU FROM ATTACKERS. THIS CONSCIOUSNESS OBSERVED IN THE CELL IS AN INSPIRATION FROM ALLAH

B cell offers up an antigen.

Macrophage hands over an antigen.

Endocytosis sacs

Endocytosis sacs

Antigen

Bacterium carrying antigens

MHC protein

MHC antibody complex

Antigen peptides

Receptor

Helper T cell

Helper T cell

Lymphokines

Lymphokines

The diagram shows how the defense system cells neutralize a bacterium. The communication among cells possesses a complexity that has occupied scientists for decades. Darwinists' evolutionary mechanisms cannot account for the existence of a special language between cells and molecules, nor the way that the molecules and cells take appropriate measures in the light of this, nor how they initiate hostilities against a foreign invader. Darwinist scientists are baffled in the face of the reason and consciousness manifested in the cell through the inspiration of Allah.

203

Left auricle

Aorta

Right ventricle

Hole between valvula

Blood to the fetus

Blood from the fetus

Lower vena cava

Left ventricle

Liver

Artery connected to the abdomen

Blood from the mother

Ilium vein

Blood to the mother

Vein connected to the abdomen

Villi of Placenta

Villi

The fetus is connected to its mother's placenta and is nourished by substances reaching it from its mother's blood. However, it is most important that the defense cells in the mother's blood should not also reach the embryo. Indeed, cells in the placenta's structure perform exactly that function. Fine gaps between these cells permit the passage of nutrients that the embryo needs. But since the mother's defensive T cells cells are larger, they are unable to pass through. For us to survive, more systems need to be present than we can possibly list here. Each of these flawlessly created details is an act of mercy from our Lord, with His superior intellect and knowledge.

204

HOW DOES THE EMBRYO EVADE ITS MOTHER'S IMMUNE CELLS?

he mother's immune system does not reject the foreign tissue—the embryo, which represents a foreign substance—inside her body. In the same way that foreign tissue is rejected by organ transplant patients, so the embryo should be regarded as a foreign body by the mother's immune system. Half of the unborn baby's genes come form the mother and half from the father, and every compound from the father should be regarded as an antigen or attacker. Therefore, one would expect the defense system to set about eliminating the embryo. However, the mother's body does not declare war on the embryo, because the components of the immune system in her blood are not permitted to pass through the placenta; and so these elements cannot perceive the embryo as a foreign tissue and destroy it.

The defensive cells standing guard in the body become acquainted with foreign substances before moving to destroy them. To do this, they use molecules known as the major histocompatibility complex (MHC) in the cell membrane. Since the embryo's cells do not have the MHC molecules, they are not identified by the mother's defense cells. However, the absence of MHC molecules in these cells can lead to natural killer cells determining that these cells are abnormal and destroying them. Therefore, the embryo cells carry a non-classical type of molecule in their cell membranes: human leukocyte antigen G (HLA G).

Therefore, the mother's defense system does not perceive the embryo's HLA G as a foreign substance, and the natural killers ignore it. Yet in addition to these methods, chemical signals are also employed. The placenta produces a series of chemical signals that affect the mother's defense system, which is why the mother is more exposed to infections during pregnancy.
If this exception were to apply to any other foreign substance in the mother's body, then she would be exposed to lethal dangers. On the other hand, if this exception did not apply to the embryo, then its survival would be impossible. As revealed in the verse "He is Allah—the Creator, the Maker, the Giver of Form. . . . " (Surat al-Hashr, 24), every detail reveals the perfection in our Lord's creative artistry.

(Bea Perks, Andrew Coulton, "The Great Escape," New Scientist, Vol. 171, No. 2308, 15 September, 2001.)

206

He is Allah —the Creator, the Maker, the Giver of Form. To Him belong the Most Beautiful Names. Everything in the heavens and Earth glorifies Him. He is the Almighty, the All-Wise. (Surat al-Hashr, 24)

213

Blood cells perform analyses far more expertly than any chemist or biologist, and carefully transmit the substances needed by the cells to every point in the body. Unconscious blood cells cannot take such vitally important decisions themselves. That decision is inspired in them by our Lord.

214

The hemoglobin molecule shown has a very special structure created to carry oxygen in the blood, and one that scientists speak of with amazement:
"It would seem that in designing an oxygen-transporting molecule from first principles we are led inevitably to a molecule very like hemoglobin. The evidence is consistent with the possibility that hemoglobin is the ideal and unique respiratory pigment for metabolically active air-breathing organisms. . . .The elegance of the way the hemoglobin system functions is simply astounding, and a source of wonder to everyone who is familiar with its intricate ingenuity." (Michael J. Denton, Nature's Destiny, The Free Press, 1998, p. 202.)

215
The way that hemoglobin knows it will be damaged if it binds to oxygen and takes the requisite precautions is an indication that Allah enfolds all places with His knowledge.
Fe+2

porphyrin

Porphyrin

Heme

O2

In carrying an oxygen molecule to the cells, the hemoglobin molecule does not bind to it fully, but grasps it from one end, as if it were using tongs. Oxygen poisons the molecules to which it attaches and leads them to lose their function. To eliminate that danger, hemoglobin employs a very special method. Yet a molecule lacks the consciousness to recognize danger, and the reason with which to take precautions. All these details display our Lord's superior knowledge.

221
Phyllopod

Cells attach to one another and find their way through micro-protrusions known as phyllopods. One cell recognizes another and is capable of selecting it to attach to it is a miraculous phenomenon. For example, in order to constitute a kidney, a kidney cell binds to other kidney cells. Never, however, does a kidney cell attach to a blood cell or a liver cell. How does this tiny structure know which cells to attach to, in order to form a kidney? The knowledge of Allah, as manifested in the cell, is sufficient to fill countless volumes.

Tail

A fibroblast seen under electron micrography

223
. . . Not even the smallest speck eludes your Lord, either on Earth or in heaven. Nor is there anything smaller than that, or larger, which is not in a Clear Book.
(Surah Yunus, 61)

225
20 minutes

34 minutes

0 minute

8 minutes

28 minutes

50 µm

The above micrographics show the movement of a fibroblast cell on glass. One reason you are able to read this book is this ability of your cells to move. If they did not move towards specific objectives, then it would be impossible for them to combine to produce an organ, and life would be impossible. A great many interconnected details permit cells to move, such as the density of the intracellular fluid and the elasticity of the cell membrane. This is an example of the knowledge of Allah manifested in small details.

227
The 100 trillion or cells currently comprising your body came into being from the division of a single cell—itself the product of an egg cell and a sperm cell. The construction of your body, starting from a single cell, is just one of the marvels of Allah's Creation. The human body has a perfect and inimitable complexity.

231
Membrane cells in the digestive tract

Kidney cell

Liver cells

Red blood cells

Each of the vitamins and minerals that enter your body is used by different organs. Red blood cells, for instance, select the iron necessary for oxygen transport from among the metals that enter the body. Liver cells and kidney cells are all different in terms of their needs and the substances they select. This cellular selection mechanism that operates so flawlessly is a clear indication of Allah's compassion for human beings.

232

He has given you everything you have asked Him for. If you tried to number Allah's blessings, you could never count them . . . . (Surah Ibrahim, 34)

235

THE FLAWLESS SELECTIONS THAT TAKE PLACE IN EVERY POINT IN OUR BODIES BELONGS TO ALLAH, THE OMNIPRESENT.

Iodine is used primarily to produce thyroid hormones, which play an important role in the body's metabolic balance, and in the regulating all the biological processes in your body. Iodine deficiency affects the thyroid gland, and thus the working speed of the body's cells. In the event that not enough iodine is absorbed from food and water, the disorder known as goiter results. This generally occurs in connection with insufficient iodine consumption. But if thyroid cells do not recognize iodine or cannot gather it from the food we eat, then everyone would be faced with that disorder. However, by the mercy of Allah, human beings have been created with thyroids able to select iodine for the regular functioning of their metabolism.

238
François Despartes (1661-1746)

241
It is He Who sends down water from the sky from which We bring forth growth of every kind, and from that We bring forth the green shoots and from them We bring forth close-packed seeds, and from the spathes of the date palm date clusters hanging down, and gardens of grapes and olives and pomegranates, both similar and dissimilar. Look at their fruits as they bear fruit and ripen. There are Signs in that for people who believe. (Surat al-An‘am, 99)

249
And also the things of varying colors He has created for you in the Earth. There is certainly a Sign in that for people who pay heed. (Surat an-Nahl, 13)

253
Capillaries in the Havers canal

Rubbery red marrow in bone

The Havers canal

Dense bone

In the fracture pictured above, the broken forearm has damaged the skin.

Yellow bone marrow

Vitamin C deficiency halts bone growth. Since there exists no new accumulations of collagen among growing cells ossification remains insufficient, and bones can easily break at their points of fusion. When the Vitamin C absorbed from fruit and vegetables enters the body, it is used in the construction of healthy bones capable of bearing 60 to 70 kilograms. Coincidence cannot explain the way bone cells know the vitamin necessary for their health, recognize it by performing a chemical analysis, and then use it in the most productive way. The way that an unconscious cell selects only those substances that it can use from among dozens of minerals and vitamins is just one of the countless perfections created by Allah for the human body.

Dense bone

258

Red blood cell

Thrombocyte

When you cut yourself and start bleeding, thrombocytes—one of the most important elements in coagulation—go into action. The initial clotting, through the effect of various enzymes and proteins, is of vital importance. Were the flow of blood not halted by clotting, there would be nothing you could do to stop it. Clotting within the normal time frame basically depends upon Vitamin K. If bleeding fails to stop, this means you are lacking in Vitamin K. If Vitamin K is present in the body but the blood cells fail to absorb it, then the coagulation system will not function. It is impossible for this system's countless details to implement themselves flawlessly, , at a level invisible to the naked eye, through conscious efforts, , let alone through coincidence. This order belongs to Allah, "the Giver of Form" (Surat al-Hashr, 24).

Collagen in damaged skin

a) Thrombocyte plug

b) Thrombocyte movement

Thrombocyte plug

c) Thrombocytes gathering together

259
And by it, He makes crops grow for you and olives and dates and grapes and fruit of every kind. There is certainly a Sign in that for people who reflect. (Surat an-Nahl, 11)

263

THE CELL MEMBRANE'S SELECTIVE PERMEABILITY
CANNOT BE EXPLAINED BY ANY RANDOM PROCESS.
THAT FEATURE IS THE FLAWLESS ARTISTRY THAT OUR
OMNISCIENT LORD MANIFESTS IN ALL BEINGS.

Of vital importance to all life is the way the cell membrane recognizes the external environment, identifies the cell's needs, can distinguish whether substances about to enter the cell are harmful and never makes a mistake during that selection. Clearly, coincidental chemical reactions and physical laws could never provide the membrane of unconscious fats and proteins, with such conscious selectivity.

Cell membrane

264

ATTEMPTS TO SHOW THAT THE COMPLEX CREATION IN THE CELL CAME ABOUT AS THE RESULTS OF COINCIDENCE ARE A WASTE OF TIME

Scientists who misdirected research by regarding claims of coincidence as a scientific approach have caused the delay of the many benefits that science can impart to mankind, and knowledge, time and material resources have been squandered on empty objectives. They invested fortunes to answer the question, "Could the perfect order in the universe have come about by coincidence?" But on every occasion, they encountered the marvels in Allah's creative artistry from an ever closer perspective, by obtaining new proofs confirming the impossibility of random effects.

269
That is Allah, your Lord. The Kingdom is His. Those you call on besides Him have no power over even the smallest speck. (Surah Fatir, 13)

270

Keeping the legacy of Darwin going, evolutionists continued to assert that living beings advanced by themselves from a so-called primordial cell. They also assumed that the first cell emerged from an environment, which they called, the "primordial soup" by chance. Having this dogmatic faith, they made countless experiments for years. However all their efforts proved to be failure. That is because, let alone the formation of a living cell by chance, it is impossible to form a cell by chance even in the most advanced laboratories of the world.

272

Darwinists claimed that the cell membrane could have come into being spontaneously as the product of coincidence. Actually, however, the cell membrane is so complex that even with all their advanced technological means, scientists have been unable to replicate a membrane-like structure with selective permeability. Therefore, not only has research invalidated claims of coincidence, but it also reveals the fact of Creation in the cell.

274

Both East and West belong to Allah, so wherever you turn, the Face of Allah is there. Allah is All-Encompassing, All-Knowing. (Surat al-Baqara, 115)

275

Do you not know that Allah is He to Whom the kingdom of the heavens and the Earth belongs and that, besides Allah, you have no protector and no helper? (Surat al-Baqara, 107)

277

He to Whom the kingdom of the heavens and the Earth belongs. He does not have a son and He has no partner in the Kingdom. He created everything and determined it most exactly. (Surat al-Furqan, 2)

279

HEAT

Gelatinous density

Fluid density

When the temperature of the cell membrane's phospholipid structure changes by a few degrees, it immediately undergoes an alteration. This change spells the degeneration of some cells. Heat is just one of the countless preconditions for the cell's survival. Bearing in mind the sensitivity of these balances, the illogical claims of coincidence become even more apparent.

281
Your Lord creates and chooses whatever He wills. The choice is not theirs. . . .
(Surat al-Qasas, 68)

284
What is in the heavens and in the Earth belongs to Allah. Allah encompasses all things. (Surat an-Nisa', 126)

297
In Darwin's time, the primitive scientific understanding and technology led to the assumption that the cell was simple enough to have come into being by coincidence. Present-day science and technology, however, reveal the cell's exceedingly complex structure, and the invalidity of these claims put forward due to Darwin's ignorance.

298

LIVING FOSSILS REFUTE EVOLUTION

Fossils are proof that evolution never happened. As the fossil record shows, living things came into being in a single moment, with all the characteristics they possess and never altered in the least for so long as the species survived. Fish have always existed as fish, insects as insects and reptiles as reptiles. There is no scientific validity to the claim that species develop gradually. Almighty Allah created all living things.

A 54-to-37-million-year-old fossil sunfish

Crane Fly
Period: Eocene
Age: 48 to 37 million years old

A 295-million-year-old fossil sea urchin

299

Starfish
Period: Ordovician

Age: 500 to 440 million years old

Birch Leaf
Period: Eocene
Age: 50 million years old

A 125-million-year-old fossil cicada

A 50-million-year-old fossil sequoia leaf

301

Unbiased scientists now admit that the complexity of life could never have come into being in a random manner. Even the smallest living thing has billions of components all working together, and all are essential for it to perform its basic functions.

307
false

309

Graeophonus:
A scorpion fossil dating back to the Carboniferous Age (354-292 million years ago)

A trilobite fossil dating back to the Carboniferous Age (354-292 million years ago)

A frog fossil dating back to the Mesozoic Age (251-65 million years ago)

312
The archives of evolutionist publications are full of corrections to fossil reports submitted as supposed evidence for evolution. The fossil known as Lucy was also used as a tool by the evolutionist media at one time, but was then abandoned when it was realized it constituted no evidence for evolution at all.

317

We watch the images that form in our brains throughout the course of our lives as if we saw them on a television screen. We see the vivid colors of flowers and the brightness of the Sun inside a space that is pitch-black, where light never enters and in which there are no colors, but these images are incomparably more perfect than those on any television with even the most advanced technology. It is the human soul that delights in this wealth of images made up of countless details.

319

You actually perceive the delightful melodies played by an orchestra inside the profound silence in your head. All the sounds you hear are re-interpreted by the brain in a space where no sound ever enters.

323
..Those who remember Allah, standing, sitting and lying on their sides, and reflect on the Creation of the heavens and the earth: 'Our Lord, You have not created this for nothing. Glory be to You! So safeguard us from the punishment of the Fire.
(Surah Al ‘Imran, 191)