الله
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THE MIRACULOUS MACHINE THAT WORKS FOR AN ENTIRE LIFETIME:

ENZYME

HARUN YAHYA

An enzyme is a chemical miracle in which more than a hundred microscopic molecules come together in a three-dimensional structure, whose details are difficult to fully comprehend. The purpose of enzymes is to accelerate all bodily processes, essential for your ability to blink, move your muscles, see and digest—in short, to stay alive. Even as you read these lines, billions of these chemical micro-devices are working away, performing an incredible number of processes simultaneously—initiating all the countless functions essential for your living, minute by minute.

This book demonstrates the blessings imparted by Allah in creating the miraculous structures and functions of enzymes. He has made these microscopic enzymes as structures by which He reveals His sovereignty over all living things. All the miracles exhibited through the function of enzymes extol His matchless artistry.

ABOUT THE AUTHOR: Adnan Oktar, who writes under the pen-name Harun Yahya, was born in Ankara in 1956. He studied arts at Istanbul's Mimar Sinan University, and philosophy at Istanbul University. Since the 1980s, the author has published many books on political, faith-related and scientific issues. Greatly appreciated all around the world, these works have been instrumental in helping many to return their faith in Allah, and, in many others, to gain a deeper insight into their faith. Harun Yahya's books appeal to all kinds of readers, regardless of their age, race, or nationality, for they focus on one objective: to broaden the reader's perspective by encouraging him or her to think about a number of critical issues, such as the existence of Allah and His unity, and to live by the values He prescribed for them.


بسم الله الرحمن الرحيم
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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 chance 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. Thanks to 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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HARUN YAHYA

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 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 57 different languages, constitute a collection for a total of more than 45,000 pages with 30,000 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 (may Allah bless him and grant him peace) seal on his books' covers is symbolic and is linked to their contents. It represents the Qur'an (the Final Scripture) and Prophet Muhammad (may Allah bless him and grant him peace), last of the prophets. Under the guidance of the Qur'an and the Sunnah (teachings of the Prophet [may Allah bless him and grant him peace]), 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 (may Allah bless him and grant him peace), 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 Mauritius), 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, thanks to 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 chaos, 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.

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THE MIRACULOUS MACHINE THAT WORKS FOR AN ENTIRE LIFETIME: ENZYME

Contents

Introduction

A great many processes take place in your body to allow you to move just a single limb. These processes begin with the mental decision you make, becoming ever more complex in only a few instants. The series of reactions that begins with an urge arising in your brain may number in the billions, the countless enzymes in your body carry out every one of them. For even a very ordinary movement that you may want to perform, a vast number of processes occur, one after the other, inside each of your cells. Even while these thousands of reactions take place to enable that single movement, your brain carries on, and your heart beats, and the blood circulates at full speed. Foods entering your body are digested, your cells carry on their tasks, and all your organs continue to function in a flawless, systematic manner.

The activities in your cells never cease. You are not aware of them, nor do you have any control over them. All you can do is to gratefully accept the tasks they perform in order to keep you alive.

The truth is, however, that in the same way that you have no control over these processes, neither do enzymes, other proteins, or the larger molecules that control them actually have any power to do anything. All these processes taking place in your body are under the control of Allah (God), and by depending on and placing your faith in this perfect system, you have actually submitted to Him. You are well aware that, apart from times of illness, none of your bodily functions will behave unexpectedly. The reason for your confidence is your trusting knowledge of the sublime might of Allah, Who created you so perfectly.

No one who claims to believe in coincidences can live out a calm, untroubled and peaceful existence by trusting in a DNA that began copying itself by chance, enzymes that first entered into reactions by happenstance, or a heart that began beating accidentally. The reason why people can remain unconcerned and untroubled is their total confidence that their body's systems are able to function free of error. Such individuals are well aware that these countless processes cannot be explained in terms of chance.

If a person knows how a single system in his body works—the enzyme system, for example—and can grasp the marvels that take place, he will better understand that nothing in the body can happen at random. He will realize that he is witnessing a miracle, bestowed upon him as a blessing. He will discover how molecules invisible to the naked eye work constantly to keep him alive, even though he is unaware of it, and how they have literally been programmed to do so. He will realize how they seem to make various decisions, behave economically, engage in a division of labor and act in a controlled manner—in short, how they behave like conscious entities. He will understand that it is Allah alone Who causes inanimate molecules to carry out actions requiring consciousness and how every molecule possessed by all liv-

ing entities on Earth acts under Allah's inspiration.

Comprehending such things is itself a blessing, because anyone achieving a full understanding of this will trust in Allah throughout the course of his life. He will see that it is Allah Who keeps him alive, Who sets out his destiny and constantly bestows blessings upon him. He will know that He Who gives him life in this world, will also grant him life in the Hereafter, and will reward him with Paradise if He so wishes. He will turn to Allah, trust in Him and enjoy a peaceful life, free from all worries.

That is one of the reasons why Allah produces perfect examples of His creative artistry. It is to be hoped that people will appreciate them and come to know Allah, our sublime Creator.

Allah is He Who raised up the heavens without any support—you can see that—and then established Himself firmly on the Throne. He made the Sun and Moon subservient, each running for a specified term. He directs the whole affair. He makes the signs clear so that hopefully you will be certain about the meeting with your Lord. (Surat ar-Ra'd: 2)

Enzymes and Their Perfect Properties

If Allah so chose, it could take us decades to produce just a fleeting smile. We would have to wait for years to be able to eat, to think, or to move and speak. If Allah so chose, a whole lifetime even might not be enough for us to turn over a single page of this book, nor even lift a single finger for the purpose of doing so.

Our bodily systems do not work at this slow pace, of course. We can smile whenever we wish, walk and run, think unrestrictedly, blink in an instant, and instantaneously begin to do everything we have planned. That is because Almighty Allah has blessed us with a system that permits our bodies, which He has created so perfectly, to perform all their functions at great speed. Enzymes, with their extraordinary structures, are one of the most important elements in this system's functioning.

In the chemical miracle known as enzymes, more than a hundred microscopic

structures are combined in a three-dimensional form, whose details the human mind can grasp only with difficulty. Their function in the body is to accelerate all processes. Enzymes are essential in order for us to blink, move our hands, see, digest—in short, for us to pursue our lives. If the enzymes in your body were unable to function, you would perish.[1]

Billions of the chemical devices known as enzymes are at work within you, even as you read these words. They initiate countless functions essential to your survival by performing countless processes at the same time. Unless the enzymes in your body initiated their particular events, it would be impossible for you to breathe, read these lines or move your eyes from one letter to another, let alone understand their meaning. You possess a nose, windpipe, lungs, and red blood cells to transport oxygen—everything, in short, that you need in order to breathe. But if the enzymes in your body did not function properly, you would be unable to draw breath.

By the mercy of Allah, we have very superior helpers in our bodies that, by His will, are in a constant state of activity. Again by the mercy of Allah, these all help to keep us alive. Were it not for them, just one of the millions of links in the chains

that keep us alive would snap, and our lives would come to an end. In providing details concerning the miraculous structures and functions of enzymes, this book aims to exalt the glory of Allah. That a protein too small to be seen with the naked eye can determine whether a person lives or dies, is an example of Allah's matchless artistry.

Allah demonstrates His dominion over humans by making the microscopic structures known as enzymes just means for this end. He reminds us of this important truth in a verse:

> **Say: "Who provides for you out of heaven and Earth? Who controls hearing and sight? Who brings forth the living from the dead and the dead from the living? Who directs the whole affair?" They will say, "Allah." Say, "So will you not guard against evil?" (Surah Yunus: 31)**

The Structure of Enzymes

When you wish to take just one single step, the events that take place in your body are truly amazing. Countless nerve cells inside the brain begin emitting tiny electrical impulses to set your legs in motion. By way of the spinal cord, these impulses are transmitted to other parts of the body, and thus to your legs. When this electrical signal

from the brain reaches the legs, it causes the muscles in that region to contract and thus your legs begin to move.

All these events take place almost simultaneously. A constant flow of information from your legs and from your other senses continues to reach the brain, very fast and without interruption. At the same time, the brain controls the commands it has issued for your leg muscles to move and also the movements that take place in their wake.

The above paragraphs describe in a highly superficial manner the events that take place in order for us to take a single step. However, they all take place thanks to the presence of enzymes.

Dr. Edward Howel, who has spent many years studying enzymes, summarizes their importance and effects:

> Enzymes are substances that make life possible. They are needed for every chemical reaction that takes place in the human body. No mineral, vitamin, or hormone can do any work without enzymes. Our bodies, all of our organs, tissues, and cells, are run by metabolic enzymes. They are the

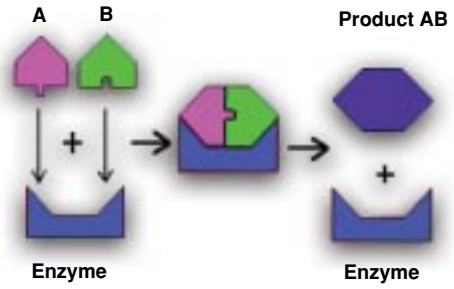
Every moment of our lives, every step we take or whenever we take a bite of anything, we are in constant need of enzymes. The events that occur in your body when you wish to take just one single step are truly amazing. Enzymes, the main agents in this molecular activity, are all miracles created by Allah.

manual workers that build our body from proteins, carbohydrates, and fats, just as construction workers build our homes. You may have all the raw materials with which to build, but without the workers (enzymes) you cannot even begin.[2]

Enzymes are proteins that turn a cell into a highly developed miniature factory working within a highly ordered system. To date, over 2,000 enzymes have been identified.[3] Working inside the arteries are 98 distinct enzymes, each with its particular job to do. No one has yet been able to determine how many enzymes control the heart, brain or liver.[4]

Enzymes initiate countless reactions within the cell, halt them when necessary, alter the shape of molecules, produce new combinations or eliminate ones that already exist. However, they themselves never suffer damage or undergo any changes. Having performed the needed tasks, they are ready to undertake new duties.

Enzymes function like catalysts: They accelerate chemical reactions without actually taking part in them. To better understand this concept, we need to understand just what catalysis is. In an environ-

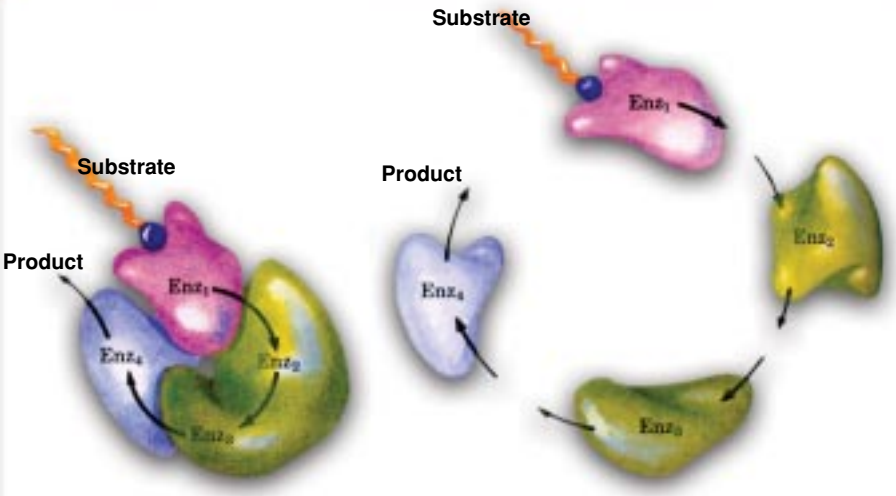


Enzymes are catalysts that accelerate chemical reactions without actually taking part in them. In a matter of moments, they enable tasks that can be carried out only under intensive laboratory conditions and using enormous energy.

ment where no enzymes are present, intense conditions—for example, extreme heat or highly acidic or alkaline conditions, and large amounts of what's known as *activation energy* are needed to break down a substance. In the laboratory, the production of activation energy depends on very critical conditions, of which the most important is high temperature. Yet inside the cell, thousands of reactions all take place at the same time and activation energy cannot be provided by way of body temperature, since the high temperatures needed would completely damage all other functions taking place within the cell.

A cell exposed to high heat will lose all its cytoplasm and moreover, heat would break down the hydrogen bonds, have a negative impact on DNA replication and disable many other systems within the cell. It is therefore impossible for the activation energy constantly required in the cell to be provided through heat. Enzymes are therefore essential for reactions to take place inside living organisms without the need for a rise in temperature, because they reduce the amount of activation energy such reactions need. *Catalysis* is the name given to the process performed through the reduction in this energy.[5]

Enzymes perform catalysis by establishing temporary unions with the molecules they interact—but do not react—with. This temporary union weakens existing chemical bonds and allows new ones to form, allowing for a low level of energy to be used in order for the reaction to take place.[6] In this way, enzymes accelerate the reactions they participate in by a factor of 1 million to 1 trillion times, in comparison to uncatalyzed reactions.[7] In just one second, a single enzyme molecule may catalyze tens of thousands of identical molecules. Processes that chemists can perform only with the aid of high temperatures, reagents and special equipment, are undertaken so easily and regularly by enzymes, with no need for any acids, special apparatus, extreme temperatures or long periods of time. They carry out their functions flawlessly in a fraction of a second by producing a very low level of heat. These



Enzymes enter reactions in various forms, and as a result, they give rise to new products. They process fats, break down starch and form new nutrients. Enzymes are special helpers that work to keep human beings alive.

special proteins process fats, alter the structure of sugar, break down starch, form new nutrients, expel wastes and purify the blood. At the same time, they assist in delaying ageing, increase the resistance of the immune system, strengthen the memory and eliminate carbon dioxide from the lungs.[8] Enzymes are like special assistants, constantly working to keep a person alive, and are essential to the working of all bodily functions.

For that reason, the complex functions—and indeed, the very presence—of enzymes both represent major problems for the theory of evolution, which maintains that all of life's structures came into being in stages spontaneously, through a series of random genetic changes. But evolutionists' claim that life developed by chance starts from the assumption that the original structures were "simple" ones. However, modern medicine encounters new complexities regarding the human body with every passing day, further expanding the list of difficulties that evolutionists are unable to resolve. New discoveries constantly invalidate the 19th-century theory of evolution, which was invented in order to oppose the fact of creation.

Aware of this significant fact, the Cambridge University evolutionists Malcolm Dixon and Edwin C. Webb provide the following definition of enzymes, one of the major stumbling blocks confronting the theory of evolution:

> The whole subject of the origin of enzymes, like that of the origin of life, which is essentially the same thing, bristles with difficulties. We may surely say of the advent of enzymes, as Hopkins said of the advent of life, that it was the most improbable and the most significant event in the history of the universe.[9]

What Dixon and Webb describe as "difficulties" are the complexities and perfections that evolution cannot account for. Evolution can offer no explanation for enzymes' mind-boggling complexity. Because the sole Creator of this sublime work is Allah, and He creates all things in a perfect manner.

Frank Salisbury, an evolutionist and biologist, expresses this extraordinary complexity in enzymes—for which evolutionists are unable to account—thus:

> Now we know that the cell itself is far more complex than we had imagined. It includes thousands of functioning enzymes, each one of them a complex machine itself. Furthermore, each enzyme comes into being in response to a gene, a strand of DNA. The information content of the gene—its complexity—must be as great as that of the enzyme it controls.[10]

This information is most significant. Enzymes are proteins that, by the will of Allah, form and also act under the control of genes. Therefore, genes themselves must have as at least as much complexity as enzymes. These words will serve as a reminder of the sophistication genes possess:

> For example, we are told that the information content of the gene in its complexity must be as great as the enzyme it controls. Yet just one medium-sized protein will consist of about 300 amino acids! That protein was

made by a DNA gene, which would have to have about 1,000 nucleotides in its chain. Since there are four kinds of nucleotides in a single DNA chain, **one with 1,000 links could exist in 4^{1000} different forms** [*Emphasis added*]. That is 4 followed by a thousand zeros.

Yet all this complexity is required to make the simplest living creature.[11]

Evolutionists claim that every structure in any living organism came into being as the result of long, slow stages and formed by chance by way of various mechanisms. (For more details on this subject, see Harun Yahya, *Darwinism Refuted*.) But the fact is that mutation and natural selection, which evolutionists propose as evolutionary agents, actually provide no evolutionary properties at all. No organ in *any* living thing has ever been observed to "evolve" by changing and assuming a form that could be of benefit to the organism as a whole. In addition, recent advances in medicine, biology and microbiology have revealed that any change in the protein or genes of an organism will only result in breakages, impairments and serious damage to its genetic information.

It is impossible for any gene or protein to turn into some other gene or protein with a completely different function. Evolutionists claim that the first protein was formed by chance under totally uncontrolled conditions, but they have never been able to produce one in the laboratory. It is unequivocally impossible for such a complex structure—which eminent scientists have been unable to reproduce using modern-day technology in state-of-the-art laboratories—to have come into existence spontaneously through random accidents.

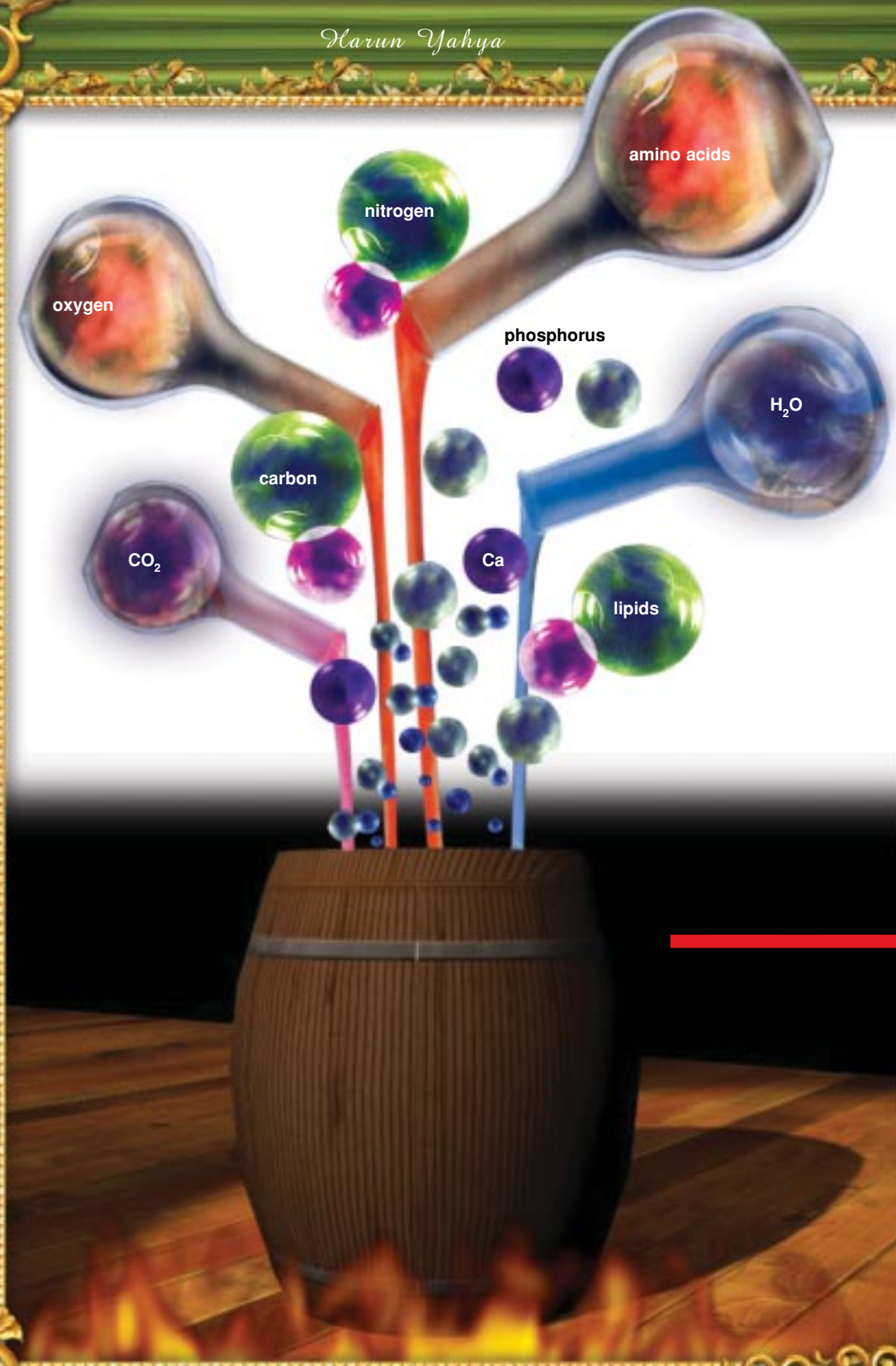
Enzymes are all proteins, complex structures formed by way of extraordinary information contained in genes that themselves cannot have come into being by chance, and which function, at Allah's choosing, under the control of that gene. It is therefore impossible for them to have come into existence in stages, since the functions that enzymes perform are too precise, and the information that genes contain is so enormous.

Despite being an evolutionist, Sir Fred Hoyle, the Cambridge University mathematician and astronomer, summarized the fact that enzymes cannot come into being by chance:

> If there were a basic principle of matter which somehow drove organic systems towards life, its existence should easily be demonstrable in the laboratory. One could, for instance, take a swimming bath to represent the primordial soup. Fill it with any chemicals of a 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 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. How can I be so confident of this statement? Well, if it were otherwise, the experiment would long since have been done and would be well-known and famous throughout the world. The cost of it would be trivial compared to the cost of landing a man on the Moon.[12]

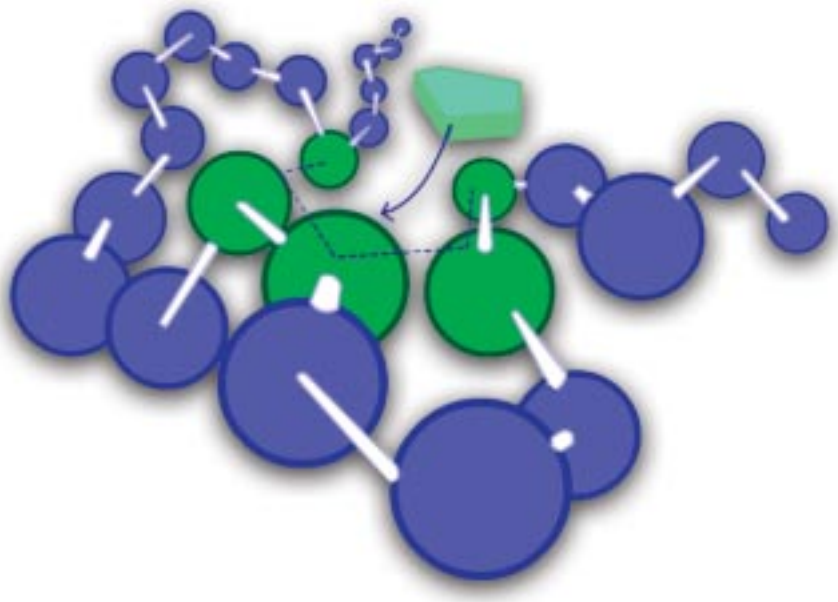
Even if evolutionists possessed a great many more conditions than those Hoyle refers to; even if they ran such an experiment in as many laboratories as they wished; even if they added to the experiment all the existing organic substances, all the gasses and chemicals they could; even if they exposed them to whatever external influences they liked; even if they added as many amino acids and protein building blocks as they wanted; and then waited for centuries alongside the beaker or retort into which they placed all these substances, never will they be able to produce a single enzyme produced in a living thing. Evolutionists have not the slightest piece of evidence to offer as proof for the formation of a single protein.

We need to bear this constantly in mind as we examine the subject of proteins. Because the existence of one single enzyme is sufficient to


amino acids
nitrogen
oxygen
phosphorus
H_2O
carbon
CO_2
Ca
lipids

Let evolutionists, who believe in the creative power of chance, take an enormous barrel. Let them place in it whatever substances they think will be needed to produce a living cell. Then let them warm the barrel, chill it or let lightning strike it. Let them stand guard over the mixture for billions or even trillions of years, passing their task down from one generation to the next. Let them leave nothing to chance, watching over the mixture at every moment. Let them be free to employ whatever conditions they think are necessary for life to emerge . . .

They will still be unable to extract a single cell from their barrel. They will be unable to produce a horse, butterfly, flower, duck, cherry, lemon, owl or ant. No matter what they do, they will be unable to produce scientists who examine themselves under the microscope, human beings who think, reason, make judgments, feel excitement, rejoice or grieve.



The folded polypeptide chain structure of a three-dimensional enzyme molecule

do away with the nonsense of evolution—as well as being major proof that constantly displays the boundless might and power of Allah.

Enzymes take part in almost all an organism's chemical reactions, speeding them in an extraordinary manner. But again, they emerge from the reaction in the same state as they went into it—in other words, they remain unaltered. Once the reaction has taken place, newly formed molecules separate from the enzyme, and the enzyme continues on its way, ready to enter into still other reactions.

This feature is very important, because in this way, an enzyme is able to enter into countless reactions inside the cell and is able to keep the entire organism alive. In this way, hundreds of thousands of reactions take place constantly every minute, inside every cell.[13]

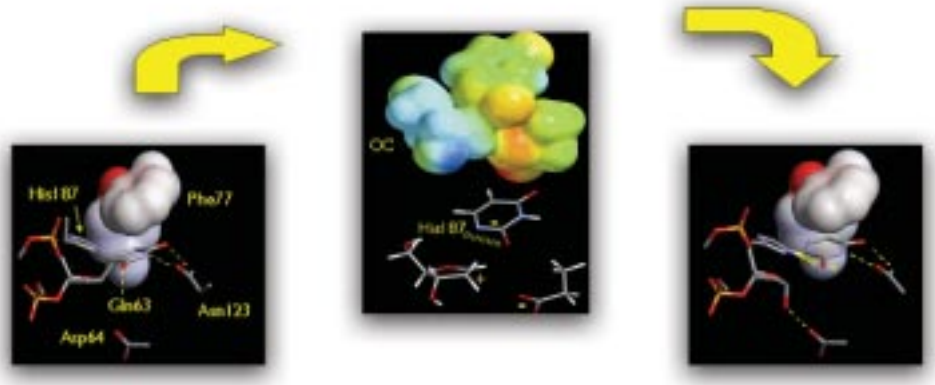
Every one of the 2,000 or so different enzymes in the human body is able to catalyze a specific chemical reaction. Understandably, cells

with different functions have different kinds of enzymes. Cells work only with those enzymes that will carry out the required reactions. Therefore, the specific enzymes any cell produces are an important element in identifying that cell's actions and functions.

Fred Hoyle made the following calculation regarding the astonishing power of enzymes:

> The probability of forming the 2,000 or so enzymes needed by a cell lies in the realm of 1 in $10^{40,000}$. This makes the conceptual leap from even the most complex 'soup' to the simplest cell in the time available (that is about 500 million years) so dramatic that it requires some suspension of rationality in order to accept it.[14]

All the structures of the living things on Earth have different levels of complexity. And the enormous variety of structures they possess reveal only a flawless creation. Living things possess molecular "handymen" that divide tasks among themselves, constantly communicate with one another, act dependently on each other and carry out true miracles of efficiency. It is impossible for them to decide beforehand how many reactions they will enter into, to then act in a conscious manner, know which cell to operate in, determine what processes to accel-



Enzymes combine with various chemicals, impel them into amazingly fast reactions, and then depart. A brand new product now emerges. This special ability of enzymes allows life to continue.

erate and by how much. Yet although this is indeed impossible, enzymes never make a mistake, because all their actions are inspired.

It is Allah Who constantly inspires them with what they have to do. And it is He Who continually creates them. In the same way that Allah gives a human being both a body and a soul, and creates him with all his perfect organs and senses, He also creates with the same perfection the extraordinary events that take place within the cell. For that reason, the enzyme system functions perfectly, just like the other systems inside the cell. No power apart from Allah's can create these, and Allah reveals this fact in one verse:

Is it other than the religion of Allah that you desire, when everything in the heavens and Earth, willingly or unwillingly, submits to Him and to Him you will be returned? (Surah Al 'Imran: 83)

Flawless Harmony Between Enzymes and the Human Body

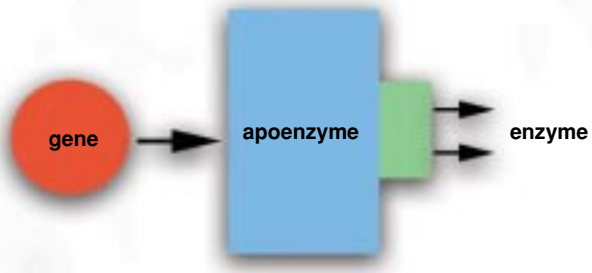
The Genes that Encode Enzymes

Enzymes are all proteins, and therefore have a protein structure, possessing the three-dimensional structural features unique to proteins. For that reason they are easily able to attach to other molecules and take part in reactions.

Although amino acids are the building blocks of proteins, what gives a protein—and thus, an enzyme—its characteristic feature is the order and number of the amino acids and the so-called peptide bonds that connect two amino acids together.[15] Which reactions an individual enzyme will affect, as well as their speed, are determined by the features and arrangement of the amino acids. But what determines which amino acids an enzyme should consist of?

Imagine an enzyme consisting of 100 amino acids. Since there are 20 different kinds of amino acids in living organisms, these hundred amino acids can be arranged in 100^{20} different ways. Yet only one of all these sequences will constitute the proper enzyme. Here it is the genes that, by the will of Allah, determine the correct sequence. As already pointed out, enzymes are arranged and controlled by genes. All proteins, whether within the structure of the cell or those exhibiting enzyme activity, are synthesized by genes, which tell the enzymes which duties they are to assume. In other words, their encoded instructions determines which reactions enzymes must enter into. In light of this information, enzymes head for the specific molecules they will launch into reactions.

Here, it will be useful to recall that neither enzymes nor the genes that encode their behavior are conscious entities. It is impossible for genes, much less the enzymes that receive data from them, to act of



Enzymes are regulated and controlled by genes. Genes inform the enzymes they produce of their duties—in other words they encode their instructions. Therefore, enzymes must be at least as complex as the information encoded in the genes. This fact clearly shows that evolutionists, who are unable to account for the existence of genes in the first place, also have no explanation to offer on the subject of enzymes.

their own accord, to think about making any decision, or to produce their own special codes. Made up of protein and fats, they are not conscious entities and have no way of knowing what a human being needs to live, how to intervene in a reaction, nor what purpose that reaction is to serve. They cannot have acquired their complex structure, nor accelerate thousands of reactions a second as the result of chance. Yet although lacking consciousness, they perform miraculous processes in every cell because they have submitted to Allah, their Creator. They obey Him, and act in the light of His inspiration. Keep this in mind as you read these pages.

Genes encode both the proteins inside the cell and also those that serve as enzymes. But what determines that a protein they manufacture will serve as an enzyme? In other words, what determines the enzyme's ability to become involved in chemical reactions and accelerating them millions of times?

In strictly chemical terms, this is explained by characteristics in the chemical structure of the amino acids. Amino acids consist of an amino group ($-NH_2$) attached to a single carbon atom, hydrogen, a carboxyl group (-COOH) and varying side chains (-R) that can be composed of different molecules. What distinguishes one amino acid from another are its size, shape, electrical charge, water affinity and activity of the

Enzymes are proteins with a tertiary structure. The amino acids making up the protein bend and fold to give each enzyme its particular form. Enzymes' tasks are determined as a result of the bends and folds in these tertiary structures.

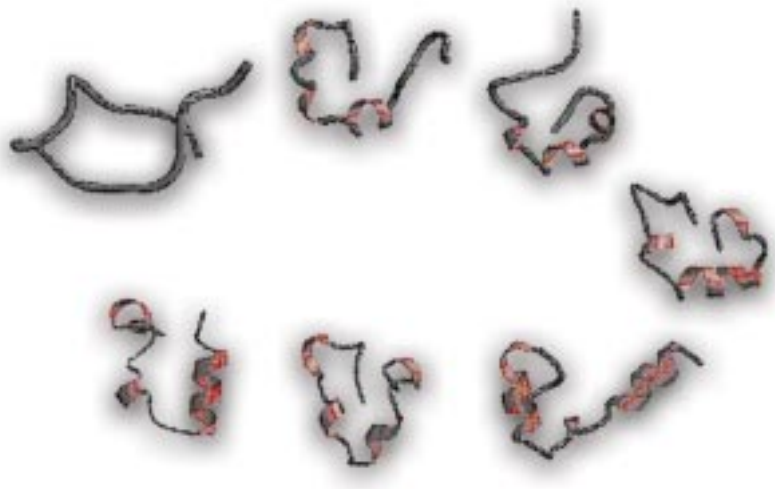
side chains it carries. The characteristic of the amino acids constituting enzymes is that they interact with one another, as a result of which they acquire a three-dimensional form that allows the chain to bend and curve.

How these amino acids are arranged gives the resulting proteins various properties. Accordingly, proteins assume what are called primary, secondary, tertiary and quaternary structures. In the primary structure, a flat polypeptide chain operates. In the secondary structure, the protein acquires a three-dimensional shape and its functions are determined according to its particular three-dimensional shape. The polypeptide chains are packed in the same horizontal plane and give the protein a helix shape. In a tertiary structure, that helix structure in question assumes a special shape by becoming bent. In a quaternary structure, all the emerging subunits come together, giving rise to a

more complex structure.

Enzymes are proteins with a three-dimensional tertiary structure. By folding and bending, the amino acids making up their proteins endow enzymes with a special shape that's of the greatest importance, because they enable a great many life-giving functions to take place. Their three-dimensional tertiary structure permits polypeptide chains to fold over, knot together or wind around themselves, and permits enzymes themselves to vary greatly.

The tertiary structure endows an enzyme with still other properties. The primary structure of proteins consists solely of covalent bonds—a form of chemical bonding formed by the sharing of electrons between atoms. These powerful bonds decrease ever further in subsequent structures, until in a quaternary structure there are no covalent bonds at all. In a tertiary structure, the covalent bonds that form enzymes appear only in regions between adjacent chains. This enables only the surface regions of the enzyme to bond tightly to one another in order to grasp molecules and let them enter into reactions. The power



An enzyme's three-dimensional form determines whether it is involved in blood coagulation or digestion. This fact is just one of the astonishing details in the perfect structures created by Allah.

of these bonds keeps them from breaking.

It is only the enzyme's "shape" that determines whether it's a blood-clotting enzyme or one that is involved in digestion. But how did any enzyme come to possess its highly specialized form? Out of millions of possibilities, how is it that enzymes always assume the correct shape? If evolutionists maintain that the first enzyme or the first gene that formed it appeared on Earth spontaneously and by chance, then they are forced to explain the development of all of an enzyme's complex details, as well as the three-dimensional form that determines its properties. In addition, they must account for the special abilities of the genes responsible for encoding this. If the special form in the very first enzyme came about by coincidence, through trial and error—impossible, though assuming that it actually did happen—then a simple calculation reveals that for a single enzyme molecule consisting of 100 amino acids to test out all the different possible permutations would take 20 billion years[16]—a much greater time frame than the age of the universe itself!

It would take 20 billion years for a single enzyme molecule consisting of 100 amino acids to try all the different possible combinations and find the correct shape. That is longer than the age of the universe.

And that probability emerges only if we imagine that amino acids are consciously able to employ the method of trial and error. Yet it is completely impossible for amino acids to combine without any conscious method, to form a small enzyme molecule consisting of 100 amino acids. Therefore, evolutionists are totally unable to account for the formation of an enzyme and its particular three-dimensional form.

Duane T. Gish, director of the Institute of Creation Research, explains this impossibility:

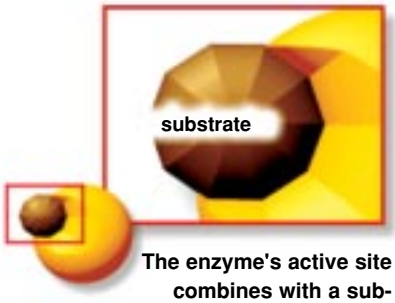
One hundred amino acids of 20 different kinds can be arranged in 20^{100} (10^{130}) different ways. If 10^{11} of these could function as the primitive enzyme, and if a billion trillion (10^{21}) of the various protein molecules of 100 amino acids formed each second for five billion years (approximately 10^{17} seconds) the chance of getting a single molecule of one of the required sequences is $10^{130}/10^{21}x10^{17}x10^{11}$, or only one chance out of 10^{81}. This is, for all practical purposes, equal to zero probability.[17]

As this example shows, it's impossible for amino acids to come together by chance in the correct sequence to form an enzyme. Therefore, any one enzyme's existence and functions totally eliminate the idea of gradual evolution.

How Does an Enzyme Determine the Reaction It Will Affect?

In the structure of the amino acids that make up the enzyme, the various side chains accumulate in one region of the enzyme to form a three-dimensional structure known as the "active site." This is where the enzyme binds to other substances during a reaction.

That substance, on which the enzyme will act, is known as the substrate. The active site of any particular enzyme can fit into the substrate of only the molecule it will affect. It is impossible for this substrate to bind to the active site of any other enzyme. The enzymes' active sites possess two important components. One of them recognizes the substrate and the other, upon binding to the substrate, is responsible for catalyzing the reaction.



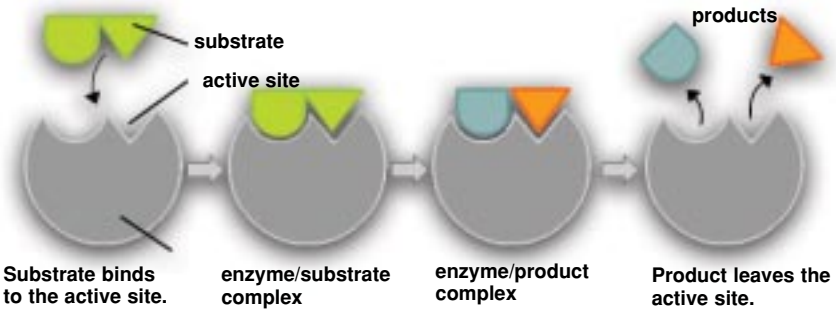
The enzyme's active site combines with a substance known as the substrate. The substrate on which every enzyme acts is unique to that enzyme.

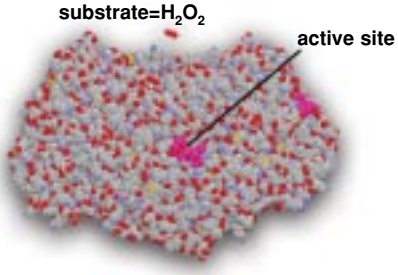
Within the body, in fact, the enzyme and the substrate are two structures that are entirely foreign to one another. Although they have

never seen each other, the moment they meet inside a volume many billions of times larger than themselves, they can distinguish each another from among a very large number of molecules and bind together.

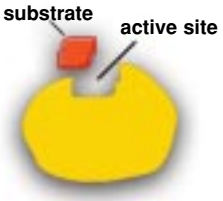
One of the main features that permits this bonding to occur is the enzyme's tertiary structure. The molecule that bends and assumes its own special three-dimensional shape possesses a gap of highly complex geometry into which the substrate will fit perfectly. The active site and the substrate fit together just like a lock and a key. In the absence of the key—the enzyme, in other words—the door can be opened only by forcing it, which inside the human body is impossible because of the high level of energy that would be required.

In the same way that any single lock can only open a single door,





molecular shape of the enzyme catalase



schematic appearance of enzyme

The enzyme and substrate fit each other like a lock and key. In the same way that a single key opens a single door, so specific enzymes will fit only specific substrates.

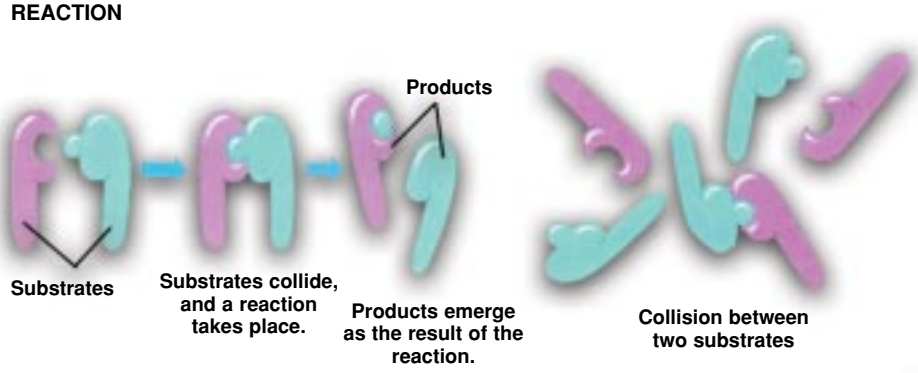
specific enzymes are compatible only with specific substrates. This compatibility also takes effect at an impressive speed—so great that an enzyme sometimes binds to 300 substrates, in a specific sequence, in just one second. It converts those substances into different molecules, then breaks away. This process will continue uninterruptedly throughout your life.

Within the cell, the numbers of enzymes and substrates are actually quite small. That being so, how are the enzymes and the substrates matching them able to locate one another? If the cell's inside structure were static, it might never be possible for enzymes and substrates to bond together, despite their both being in the same environment. But no such problem exists, since the contents of the cell is in a constant state of motion. Various movements caused by heat occur at the molecular level; and molecules inside the cell are moving constantly from one place to another. The interconnected atoms that compose these molecules vibrate *in situ*. Proteins, which are larger molecules, revolve around their own axes some million times a second. This astonishing motion leads to all molecules within the cell constantly colliding with one another.

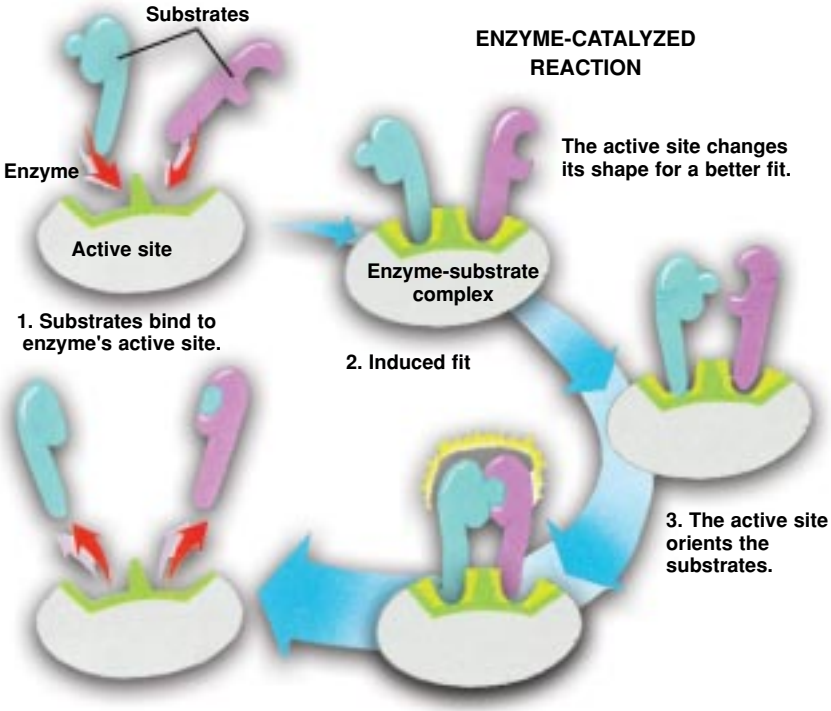
As a result of these collisions around 500,000 times a second, the active site of an enzyme is subjected to a bombardment by the relevant substrate molecules, despite their low numbers inside the cell. As a result of this bombardment, the substrate fits into the surface of the relevant enzyme and these molecules immediately assume the form of an enzyme-substrate molecule, now ready to enter into a reaction.[18]

Enzymes bind to any substrate they meet—whether compatible with them or not—by means of very weak hydrogen bonds. The structure of the hydrogen bonds give the enzyme and substrate their own unique shape and property. In addition to the hydrogen bonds, however, when the enzyme encounters the correct substrate and the two join together, new bonds form—including such chemical interactions as

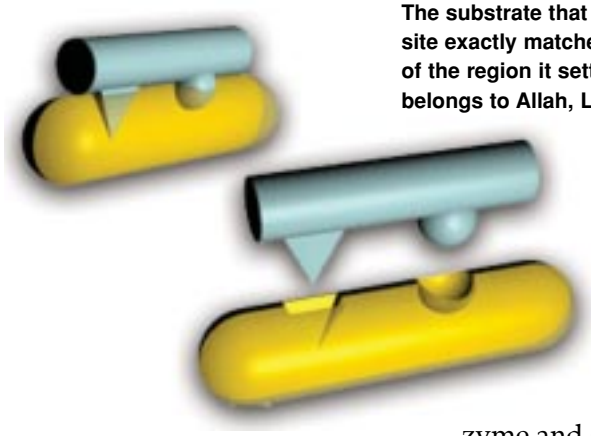
REACTION



ENZYME-CATALYZED REACTION



Enzymes carry out countless reactions in the space of a second and produce new products. A truly amazing order operates within the enzyme system for this purpose. It is Almighty Allah, the Creator of all things, Who maintains this order at every moment and constantly preserves it.



The substrate that binds to the enzyme's active site exactly matches the three-dimensional form of the region it settles on. This perfect artistry belongs to Allah, Lord of the worlds.

van der Waals force, electrostatic force and hydrophobic bonds. Thanks to such bonds, the link between the enzyme and substrate is strengthened, reducing the possibility of their separating.

If one of the two colliding molecules is not a substrate of the other, then the conditions are rather different. Two molecules form a weak bond between their more or less compatible surfaces, as if they were attempting to join together. The energy released is insignificant. The moment the enzyme recognizes that it does not have the key to open the substrate in question, it breaks these weak bonds and rapidly moves away. This is a most important precaution, preventing incorrect or unwanted bonds from forming between incompatible molecules.[19]

Enzymes and substrates that fit together also take precautions. Recent evidence indicates that when an enzyme interacts with the substrate, it may change shape slightly, much as a glove that changes shape somehow to fit the hand it covers.[20]

The structures we have described here as seemingly conscious entities are simply two molecules, with no ability to see, hear, communicate or make any decisions. The abilities they appear to display successfully inside the human body actually belong to Allah, Who controls and supervises them at every moment. No substrate can bind to an enzyme unless Allah so wishes it, nor perform the processes that permit a person's vital functions. An enzyme only locates the component nec-

essary for it, matches it and tries various ways of combining with it—exhibiting seemingly rational, conscious behavior under the direction of Allah.

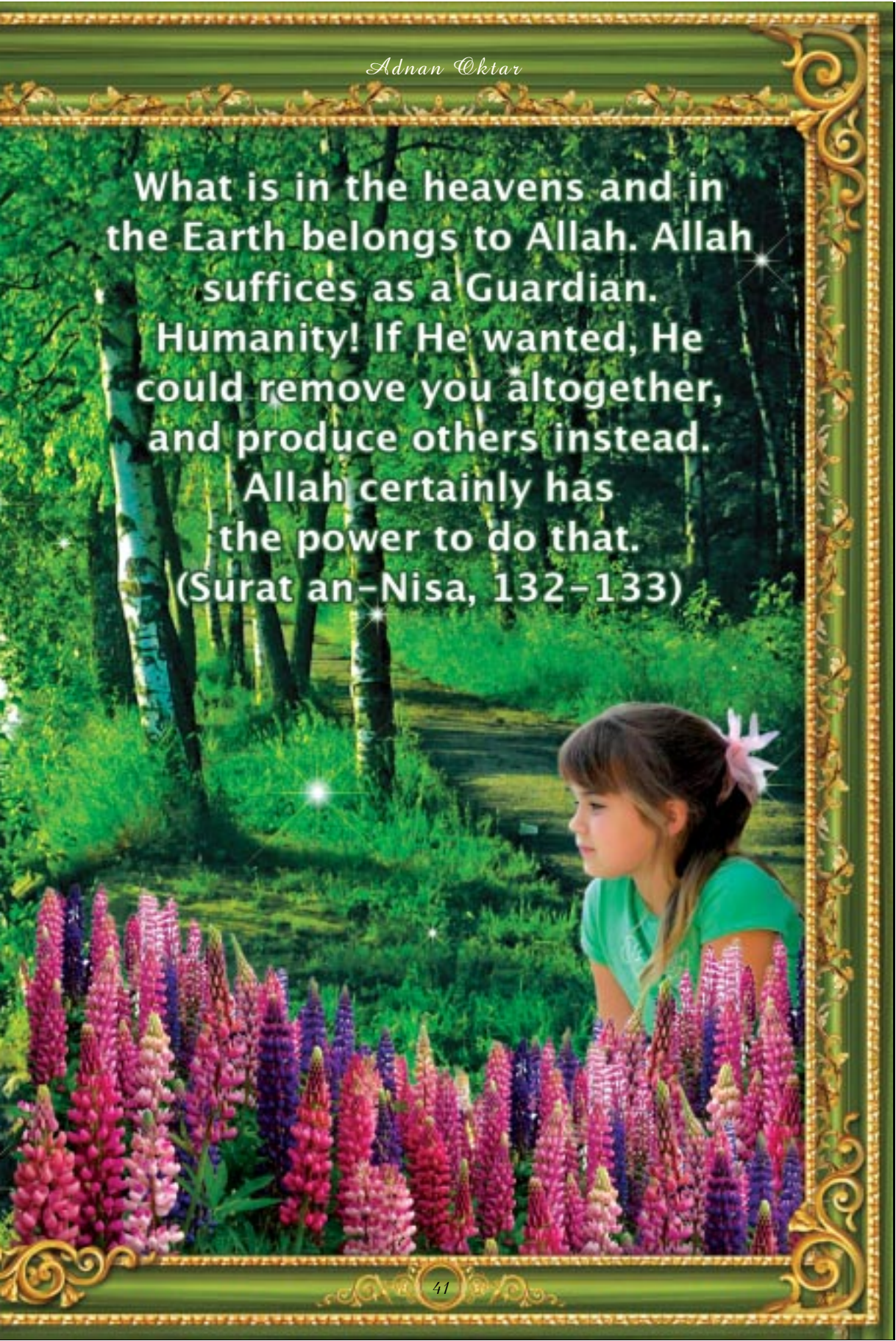
The way that inanimate molecules display such behavior is a great miracle. Those unable or unwilling to see the evident miracle here look elsewhere by ascribing some extraordinary intelligence to molecules themselves, to atoms, or even to chance itself. In fact, however, all scientific endeavor declares that Allah is the sole Lord of Earth, the sole mighty and sublime Creator. Allah creates from nothing and manifests His own omniscience in the entities He chooses.

> **Yes, indeed! Everyone in the heavens and everyone on the Earth belongs to Allah. Those who call on something other than Allah are not really following their partner-deities. They are only following conjecture. They are only guessing. (Surah Yunus: 66)**

What if the key did not fit the lock? What if the enzyme were in the correct location, but did not match the substrate? What if the enzyme reached the site of the reaction needing to be accelerated, but then passed by the relevant molecules? If because of just such a structural incompatibility, the enzymes necessary to coagulate the blood flowing from an open wound failed to perform their duties, then the blood would never be able to clot. No reactions essential for cell renewal could ever occur, nor could vital processes be maintained at the same rate and in the same order. For an enzyme to do what is expected of it, it has to recognize the substance—in other words, the substrate—on which it has to act and to match it completely. By the will of Allah, there is never any such problem in this regard in the living body. Every enzyme recognizes without difficulty the substrate it must react with and, since it acts under the inspiration of Allah, never makes a mistake in carrying out the process it needs to perform. The key always fits the lock; the needed reaction always takes place.

All this happens inside a cell with a diameter of just 0.01 millimeter. (A cell is between 10 and 100 microns in size.) Compatible molecules and the chemical bonds between them are all contained in a space just 0.01 mm in size. Three-dimensional structures, molecules attached to one another, cavities with specific geometries on the molecular surface, and other molecules with the geometric shapes to fit those cavities are all contained inside that area. Molecules that are compatible with one another—that are evidently aware of one another and can determine each other's requirements, that are capable of setting aside time, that never tire and are easily able to identify any molecule they encounter—all work within that environment. And recall that environment is only a cell less than 100 microns in diameter, in which electrons are in constant motion. A system inside the cell gives rise to a perfection exceeding all human capabilities, intelligence and knowledge, one that mankind can scarcely ever equal, which never goes wrong or makes a mistake—a totally conscious system.

That consciousness does not belong to the cell itself, of course. It cannot belong to molecules, mere collections of atoms that are unaware of one another inside the cell, nor to unconscious enzymes that come and go among these molecules. Neither does this consciousness belong to the human body that


What is in the heavens and in
the Earth belongs to Allah. Allah
suffices as a Guardian.
Humanity! If He wanted, He
could remove you altogether,
and produce others instead.
Allah certainly has
the power to do that.
(Surat an-Nisa, 132-133)

harbors all of these, nor to the human brain. The source of this consciousness is Allah, the Omniscient and Almighty, and He manifests His infinite might and intelligence in everything that He creates. He is manifest in the boundless universe as well as in enzymes just a hundredth of a millimeter in size. Great or small, it makes no difference—there is the same complexity, perfection and artistry in all, because Allah creates them all with His boundless knowledge.

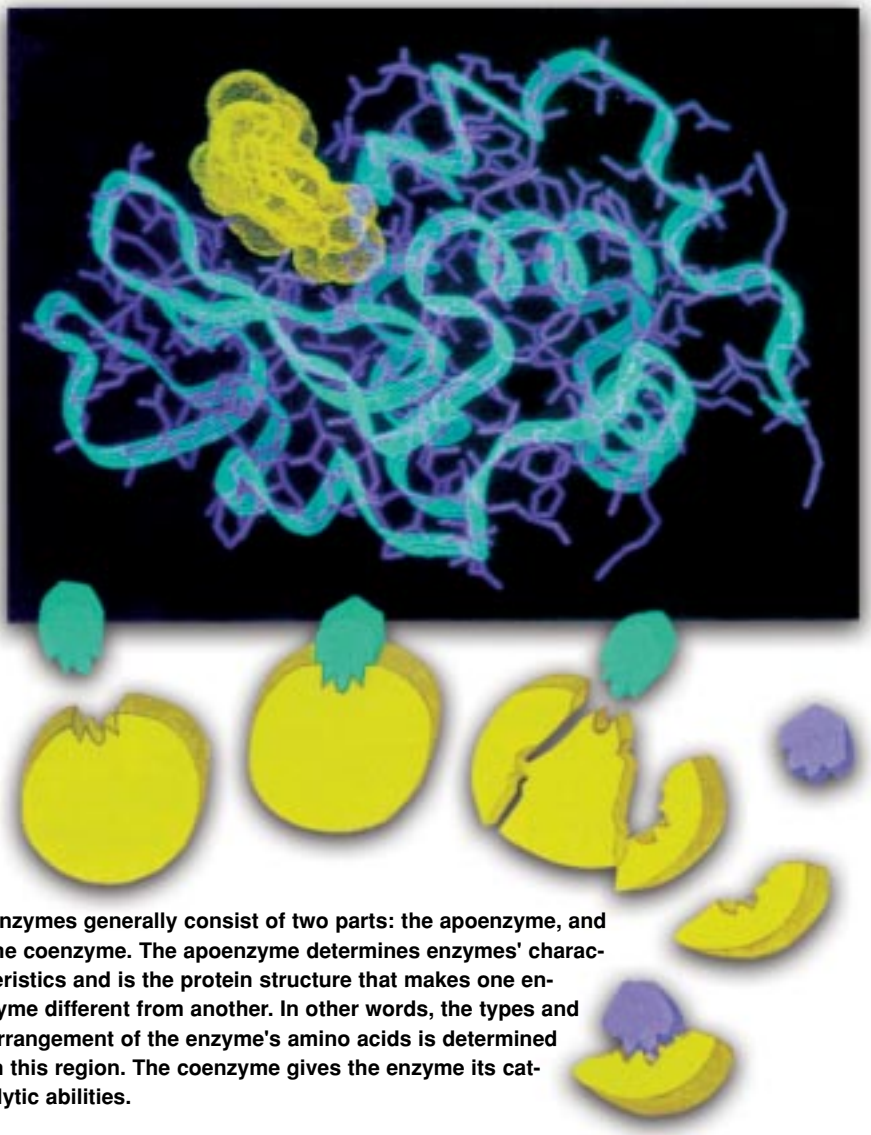
Allah tells us this in a verse:

Don't they see that Allah, Who created the heavens and Earth, has the power to create the like of them, and has appointed fixed terms for them of which there is no doubt? But the wrongdoers still spurn anything but disbelief. (Surat al-Isra': 99)

The Enzyme's Perfect Components

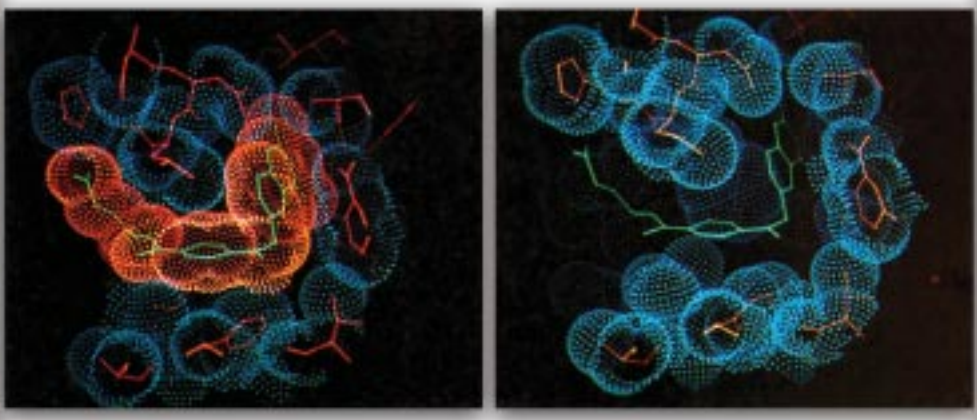
The detail, fineness and complexity observed down to the very smallest part of the cell is equally striking in all the components that make up enzymes. In the micro-world composed of molecules, even enzymes, which can be discerned only by the use of advanced microscopes, have components with their own complex and astonishing features. Every minute element that goes to make up an enzyme, that permits it to function and bestows upon it a three-dimensional structure, is vital to the enzyme's survival. The removal of any one of these parts, or a change in its shape or location, will mean that the enzyme can no longer function.

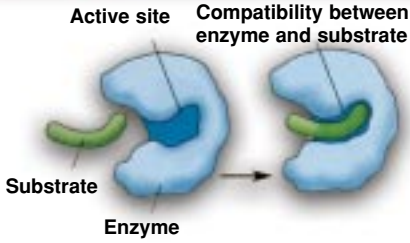
Some enzymes, referred to as "simple enzymes," are composed wholly of protein. Other enzymes, however, consist of two separate parts, known as the apoenzyme and the coenzyme. The apoenzyme part is made up of large protein molecules, and this section determines the nature of the enzyme. The protein structure that distinguishes this enzyme from all others—in other words, the types and arrangement of amino acids—is determined in this region.



Enzymes generally consist of two parts: the apoenzyme, and the coenzyme. The apoenzyme determines enzymes' characteristics and is the protein structure that makes one enzyme different from another. In other words, the types and arrangement of the enzyme's amino acids is determined in this region. The coenzyme gives the enzyme its catalytic abilities.

The coenzyme is that part which gives the enzyme is catalytic quality, the part that enables it to serve as a catalyst. By themselves, apoenzymes exhibit no catalytic features. In the same way, although coenzymes endow the enzyme with its catalytic activity, coenzymes have virtually no effect on their own. Both components need to be present together in order for the enzyme to be active and functional.





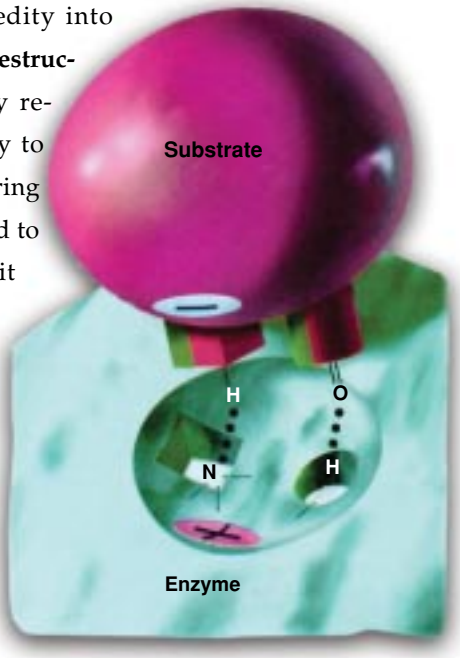
Above: **This three-dimensional computer image of an enzyme shows the enzyme structure and the cavity in the active site into which the substrate will fit. The substrate is a complete match, both chemically and structurally, for the special region in the active site.** ***Left:*** **An illustration setting out the compatibility between substrate and enzyme.**

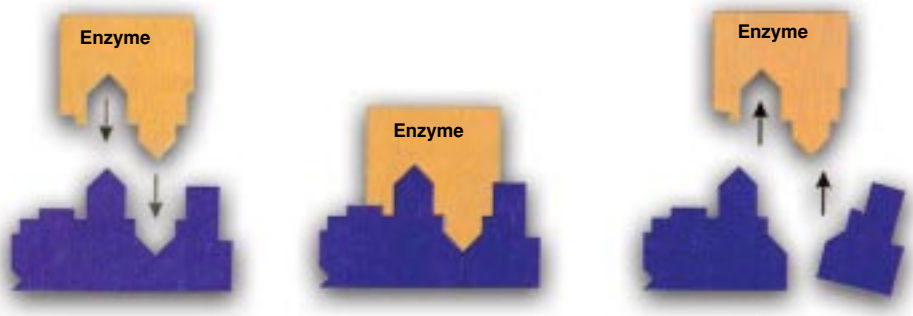
The coenzyme section permits the bonding between the enzyme and the substrate. Basically, it is the portion of the enzyme that does the work. All vitamins serve as the coenzyme part of the enzyme in the cell.[21] For example, Vitamin A is part of the enzyme that carries out reactions involved in vision. Vitamin A completes the enzyme protein by serving as a coenzyme and sets it in motion in order to carry out the processes that enable the eye to see. If Vitamin A is absent, even if all the mechanisms that permit sight are present, the result is night blindness.[22] Vitamin C, on the other hand, serves in synthesizing the protein collagen that binds our tissues together.

Minerals also act as enzymes' coenzymes. Calcium, magnesium, potassium and zinc are essential for some enzymes to function. For example, zinc is essential to the DNA polymerase enzyme, which we shall be examining in more detail in due course; and nickel is essential as a

side chain for the enzyme urease. In addition to these basic elements, enzymes may become functional with the presence of many other molecules. The Illinois University biologist Dr. Gary Parker, who was formerly an evolutionist but who is now an advocate of the fact of creation, makes this remark about the enzymes' indispensable components:

> When it comes to "translating" DNA's instructions for making proteins, the real "heroes"' are the activating enzymes. Enzymes are proteins with special slots for selecting and holding other molecules for speedy reaction. Each activating enzyme has five slots: two for chemical coupling, one for energy (ATP), and most importantly, two to establish a non-chemical three-base "code name" for each different amino acid R-group. And that is not the end of the story. The living cell requires at least 20 of these activating enzymes I call "translases," one for each of the specific R-group/code name (amino acid/tRNA) pairs. Even so, the whole set of translases (100 specific active sites) would be (1) **worthless** without ribosomes (50 proteins plus rRNA) to break the base-coded message of heredity into three-letter code names; (2) **destructive** without a continuously renewed supply of ATP energy to keep the translases from tearing up the pairs they are supposed to form; and (3) **vanishing** if it weren't for having translases and other specific proteins to re-make the translase proteins that are continuously and rapidly wearing out because of the destructive effects of time . . . on protein structure![23]





All kinds of activity in the human body take place uninterruptedly and without error as a result of an appropriate substrate joining with the correct enzyme. This flawless activity requires an impressive molecular compatibility and constant control. Allah is the Creator and maintainer of this perfect system.

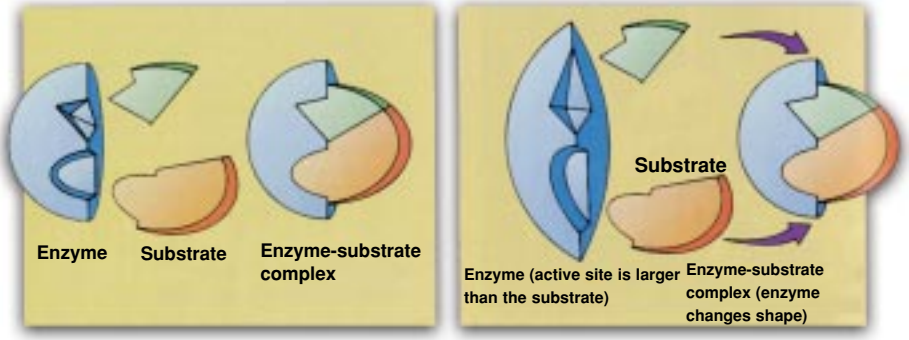
An enzyme is an irreducibly complex molecule, all of whose components work together and must be present at the same time. When you remove any single component, the system will not just suffer minor damage but will cease to function. An enzyme has to exist together with all the systems within it, the amino acids, ribosome and all other organelles. Neither is it sufficient for it to exist with all its parts; it must be present in an environment containing the other molecules with which it will react and be suitable to the working conditions of that living environment.

This all goes to make the enzyme a complex structure that Darwinists are absolutely unable to account for. It is impossible for even one single component of this perfect system to develop independently of the others, to wait for the others to come into being, and for all the parts that have arisen by chance to combine—again by chance.

Moreover, certain enzymes are capable of functioning in different organisms with completely different characteristics. An enzyme devoid of consciousness and composed of inanimate atoms can assist in the human body's cell reproduction and also assist with the process of sight

in another organism with a completely different structure and function. This is a literal miracle, because under normal circumstances, it is not possible for an enzyme to depart from its own normal working conditions, adapt to others and still continue to function. Even the enzymes in the human stomach are unable to change their working environment and operate in the muscles or the kidneys. This shows that the same enzymes were specially created for different life forms. It is Allah, the Lord of all the knowledge in the worlds, Who creates them in such a way as to know how they will function in which body and Who endows them with different functions, despite giving them the same appearance. The way that an enzyme knows how it must work in the human body and yet assumes the functions determined for it in another creature's body with no confusion arising is one of the awe-inspiring works of Almighty Allah.

That some enzymes can serve different functions in different organisms does not alter the fact that very different enzymes are constantly at work in all living things. It will be useful to recall that in addition to the 1 million living species on Earth, there are some 10 million more that have become extinct. Bearing these figures in mind, the vari-



The enzyme and substrate, made up of inanimate molecules with no consciousness whatsoever, assist with cell multiplication in the human body, make vision possible, digest foodstuffs and produce new materials that can be used by the body. With their structures, functions and miraculous properties, enzymes are one of the amazing works of Allah.

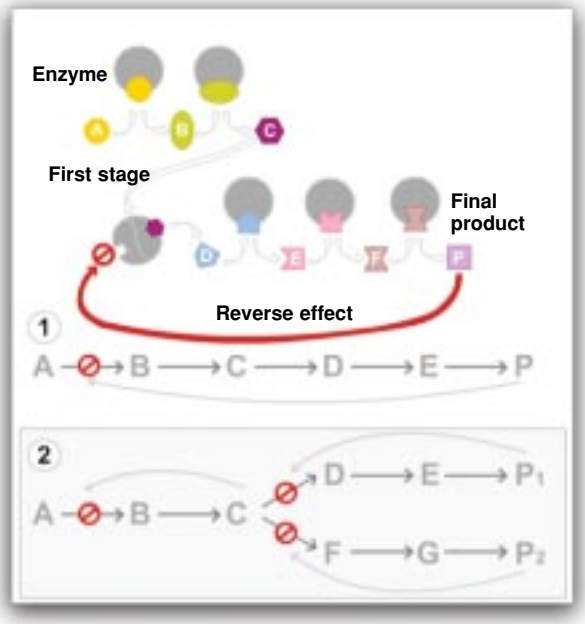
ety of enzymes specially created for each living species is really astounding.

The late Isaac Asimov, one of the 20th century's best known writers on science, describes this great variety of proteins possessed by living things:

> Now, almost each of all the thousands of reactions in the body is catalyzed by a specific enzyme . . . a different one in each case . . . and every enzyme is a protein, a *different* protein. The human body is not alone in having thousands of different enzymes—so does every other species of creature. Many of the reactions that take place in human cells also happen in the cells of other creatures. Some of the reactions, indeed, are universal, in that they take place in all cells of every type. This means that an enzyme capable of catalyzing a particular reaction may be present in the cells of wolves, octopi, moss, and bacteria, as well as in our own cells. And yet each of these enzymes, capable though it is of catalyzing one particular reaction, is characteristic of its own species. They may all be distinguished from one another. It follows that every species of creature has thousands of enzymes and that all those enzymes may be different. Since there are over a million different species on earth, it may be possible—judging from the enzymes alone—that different proteins exist by the millions![24]

Recall that in addition to all this, enzymes work in a completely interconnected system. One enzyme merely initiates an event, and countless other enzymes subsequently become involved. During these stages, known as the *metabolic pathway*, there is perfect coordination and control among all the enzymes. But in order for this system to operate fully, it is vital that the enzymes setting one another in motion should know their tasks and the exact timings thereof.

An enzyme inside a particular metabolic pathway uses the product previously manufactured by another enzyme as its new substrate. To put it another way, the results of a reaction carried out by one en-



Enzymes function within a completely interdependent system. An enzyme merely initiates an event, before handing over its task to countless other enzymes that become involved. During this series of reactions, known as the metabolic pathway, there is enormous cooperation and control among different enzymes. All the enzymes in the metabolic pathway are inspired with a complete knowledge of their tasks and timings by Allah.

zyme is necessary in order for another enzyme to initiate its own reaction. When the whole chain has been completed, the final product emerging is the inhibitor of one of the enzymes that initiated the chain—in other words, it prevents its operation. In this way, the production within the entire chain is balanced. For example, the enzyme amylase turns starch into maltose, which the enzyme maltase then converts into glucose. Eleven enzymes become involved one after the other and eventually, glucose is transformed into lactic acid.

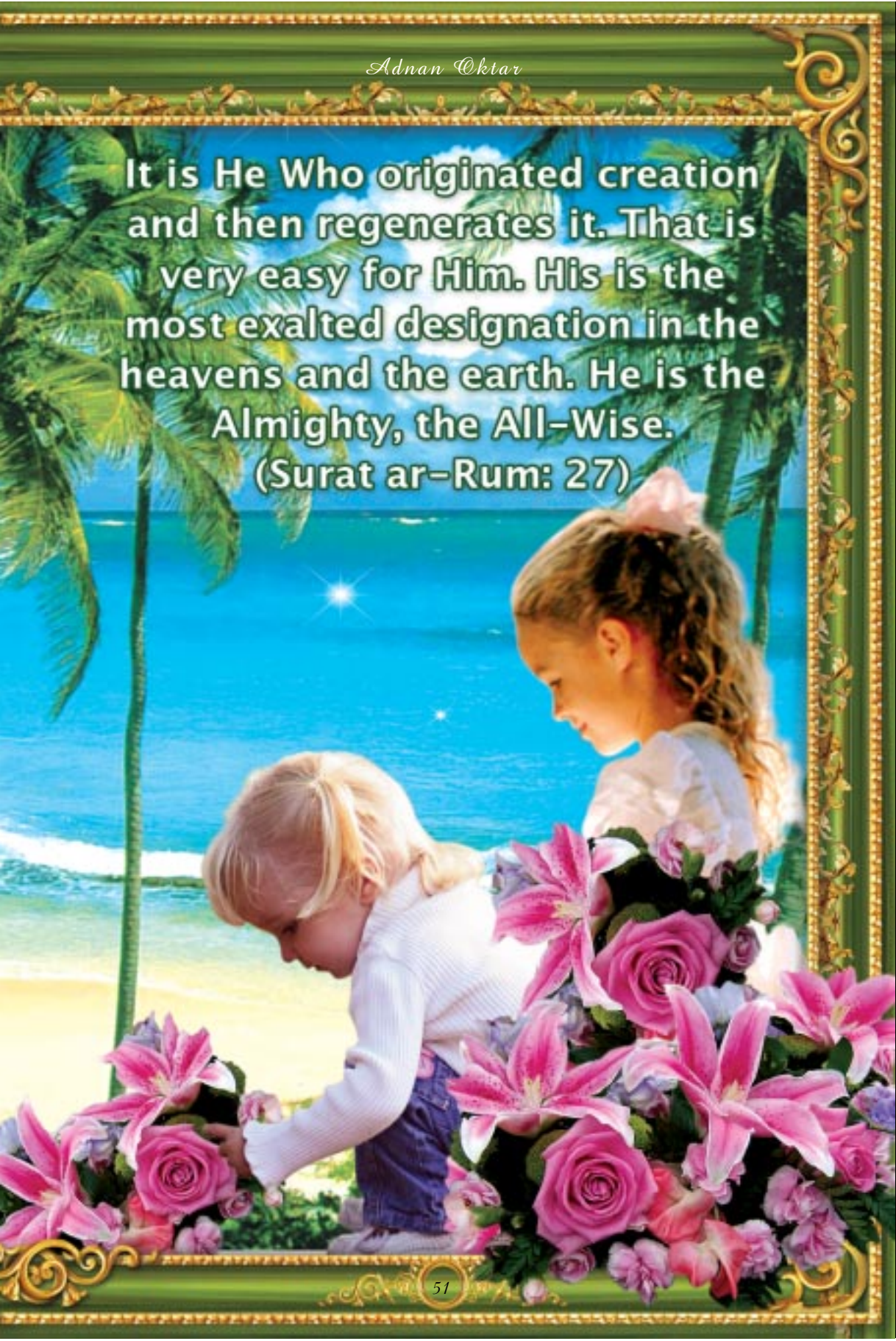
Another similar awe-inspiring chain can also be seen in the blood-clotting process, whose details we shall examine in due course. Thanks to the features in this metabolic pathway that let enzymes set one another in motion, the system functions with a perfect timing and division of labor. Clotting takes place over the wound site in just the right way. Evolutionists are unable to account for the existence of just one single enzyme, and have absolutely no way of explaining this entire "irreducibly complex" chain established by a number of interconnected

enzymes, no component of which can be removed. They claim that chance carried out these extraordinary processes, shaping all their scenarios in the light of that preconception.

In fact, however, these scenarios have no scientific or logical foundation. The evolutionist physicist and astronomer Fred Hoyle openly states this fact:

> I don't know how long it is going to be before astronomers generally recognize that the combinatorial arrangement of not even one among the many thousands of biopolymers on which life depends could have been arrived at by natural processes here on the Earth. Astronomers will have a little difficulty in understanding this because they will be assured by biologists that it is not so, the biologists having been assured in their turn by others that it is not so. The 'others' are a group of persons who believe, quite openly, in mathematical miracles. They advocate the belief that tucked away in nature, outside of normal physics, there is a law which performs miracles (provided the miracles are in the aid of biology).[25]

All evolutionist claims regarding the development of life are based upon deceptions. They seek to expand this method of deception and to use it on readers and listeners. Yet the one truth that evolutionists are unwilling to understand is that chance cannot work miracles. Chance does not represent a mind, a


It is He Who originated creation and then regenerates it. That is very easy for Him. His is the most exalted designation in the heavens and the earth. He is the Almighty, the All-Wise.
(Surat ar-Rum: 27)

consciousness or an intelligence. It is impossible for it to give rise to phenomena and functions that operate in any conscious manner. Allah is the Creator of all the astonishing and miraculous beauty on Earth.

Allah is the Creator of everything and He is Guardian over everything. The keys of the heavens and earth belong to Him. It is those who reject Allah's signs who are the losers. (Surat az-Zumar: 62-63)

Enzymes' Control Mechanisms

The thousands of enzymes inside a cell are in constant competition with one another for substrates. Each one is a part of a chain reaction or a link in a metabolic pathway; and different enzymes will compete for the same substrate. So complex is this system that keen organization is essential to determine the timing of each reaction and the speed at which it occurs.

For that reason, the sequence, number and timing of reactions are maintained under meticulous control. So well ordered is the catalytic activity of enzymes that the products emerging from their reactions are sufficient to meet all the cell's needs.[26] There must be constant order if enzymes are to work together and carry out the requisite processes at such high speeds. All the stages are thus subject to strict control. Synthesizing reactions take place when a new product is needed in the cell, and destructive ones occur when molecules need to be eliminated. Generally speaking, enzymes are synthesized at low rates unless the cell has a particular need. If demand rises, however, new enzymes are synthesized at great speed.

Enzymes are also adapted to the equilibrium determined for them. The enzyme lipase, for example, breaks down fat, but also has the job of combining glycerin and fatty acids. Which reaction will take place is of great importance, because as energy is expended in one of the reactions performed, it is supplied by another. Any reaction requiring energy needs to occur at the same time as those producing energy, or else it

must in some way be stored beforehand. The compound adenosine triphosphate (ATP for short) works just like a battery to conserve this energy.[27]

Enzyme control is established also by specialized inhibitors entering the equation. As will be examined in greater detail in due course, each enzyme has, in turn, its own inhibitor enzyme. These inhibitors establish an important balance inside the cell that prevents excessive production of enzymes.

Enzymes are not active until the need for them becomes felt. One example of this can be seen in the formation of purine and pyrimidine bases. Pyrimidines activate purine molecules, and equal quantities of

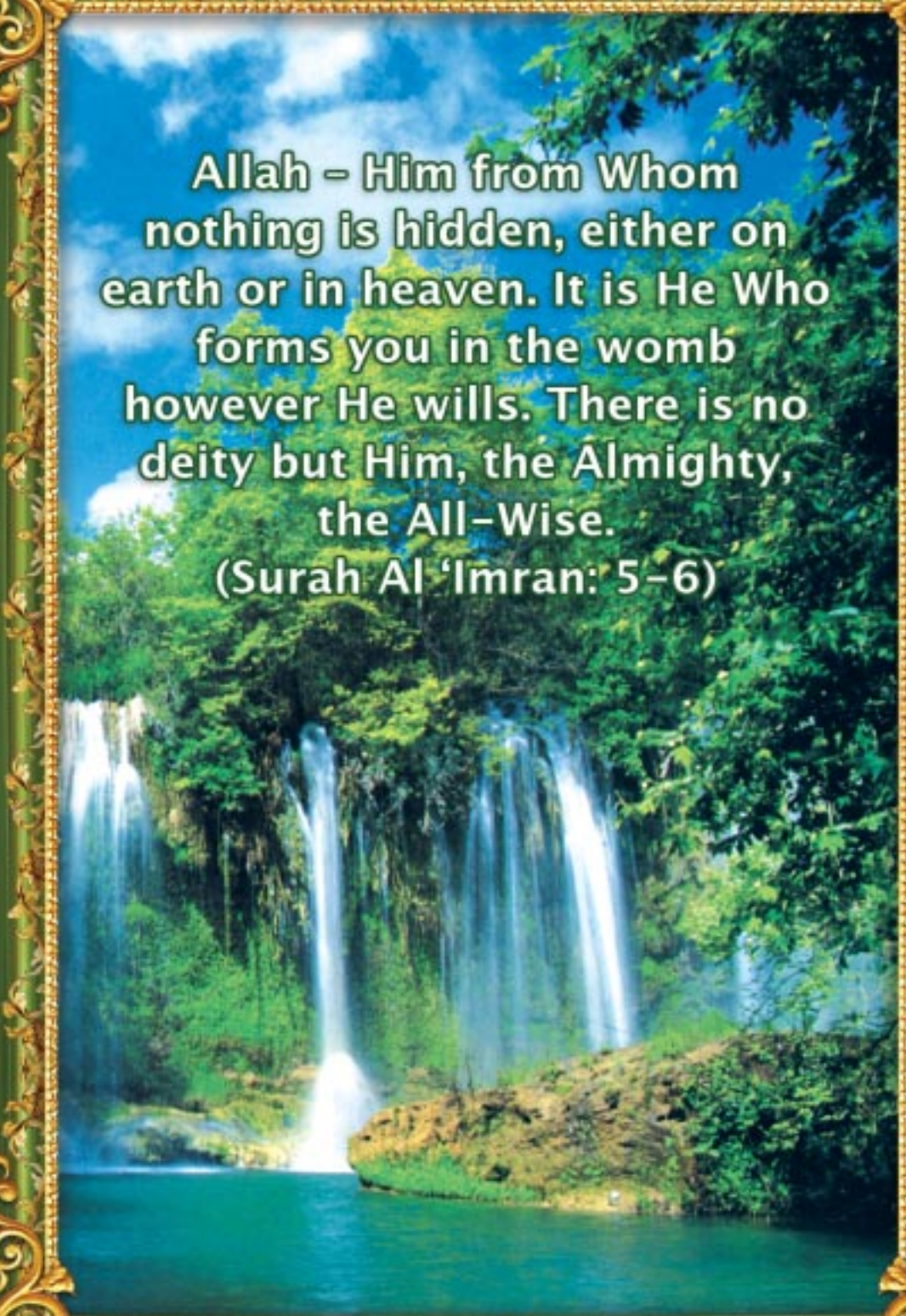
As reactions take place in the body, numbers and timings are kept under constant control. The products that emerge as a result are sufficient to meet all the body's requirements. Enzymes are synthesized at quite low levels until the cells require them. When cell demand rises, however, enzyme synthesis increases considerably. It is Allah, Creator of all things, Who determines the need in the body, controls every single enzyme and assgns each one its duty.

both substances need to be present in the cell to enable the production of DNA and RNA. When a sufficient amount of purine forms, inhibitors halt further purine production by stopping the enzyme that releases it, and activate enzymes that initiate production of pyrimidine. In response to this, when pyrimidines halt their own enzymes, they also activate purine enzymes. The relationship between the synthesis of these two substances ensures that the same level of each is always maintained inside the cell.[28]

Regulatory systems constantly maintain the control system within each cell and make the requisite arrangements when the need arises. As you can see, it is not enough for enzymes merely to accelerate reactions and to obtain the substances that the body requires. Your body is so complex that while a series of reactions takes places uninterruptedly, their timing also needs to be determined at the very same instant. In regard to this timing, it is vitally important that the amounts produced should be regulated—neither a milligram too much or too little. Precautions must be taken so that there is high production when the body needs it, but that the production can be halted when it is no longer necessary...

First, of course, that need must be determined. So perfect is this determination that an enzyme "knows" and reacts in as little as 1/1000 second. All these occurrences continue on in an error-free manner, in complete order, without you ever being aware of what's happening.

Within the human body, there is a miraculous system wherein everything is planned and arranged to perfection. Every component monitors and appears to encode everything else. The presence of one component is essential to the functioning of all the others, and thus the chain system carries on its work. The human body is a perfect machine whose marvels are displayed at every point, right down to the smallest organelles inside the cell. The reason for this is that all components have bowed to Allah. All the elements comprising this system operate


Allah – Him from Whom
nothing is hidden, either on
earth or in heaven. It is He Who
forms you in the womb
however He wills. There is no
deity but Him, the Almighty,
the All-Wise.
(Surah Al 'Imran: 5-6)

through His inspiration, performing the tasks determined by Him in the place determined by Him. It is Almighty Allah Who determines how much of which enzyme is required and how production should take place. All the control mechanisms discussed operate solely by Allah's leave, and all the systems that encode proteins and regulate enzymes are also under His control. Unconscious molecules clearly have no power to carry out the processes that take place in the cell every second. That power belongs to Allah alone.

Allah's sublime artistry prevails in all things. A person can see this everywhere he looks, in every cell he examines. Because this is the sole truth that prevails throughout the Earth and heavens. Allah has revealed this in another verse:

> **The Unseen of the heavens and the Earth belongs to Allah and the whole affair will be returned to Him. So worship Him and put your trust in Him. Your Lord is not unaware of what you do. (Surah Hud: 123)**

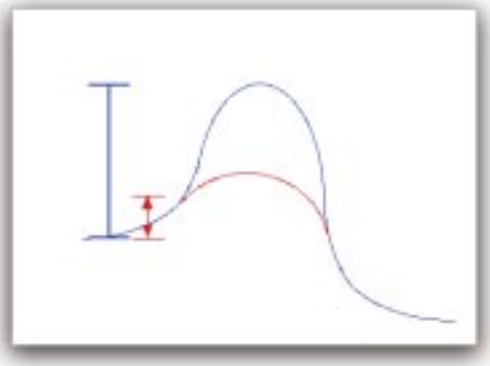
Enzymes' Extraordinary Speed

Were it not for enzymes, a whole lifetime would not be enough for a single chemical reaction to take place. Reactions that would otherwise take hundreds of years to occur are so accelerated by enzymes that they do so not in hours or minutes, but in a matter of milliseconds. Enzymes can accelerate a reaction by up to 10^{14} times.[29] This is a number consisting of 1 followed by 14 zeros. Were it not for that speed, a simple five-second process, such as the reading of this sentence, would last 1,500 years.[30]

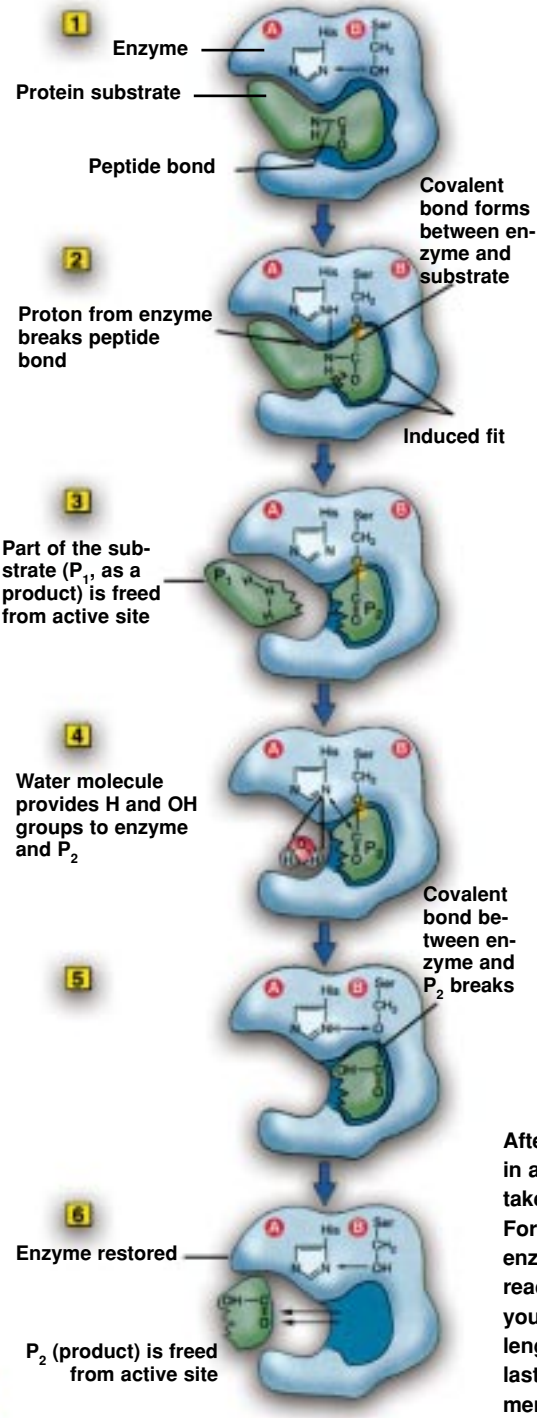
Were it not for enzymes, processes that cells can perform in seconds would take thousands of years. To put it more bluntly, life would be impossible. Enzymes have been charged with accelerating countless reactions essential for the vitality of any organism, to an extraordinary rapidity.

But what does an enzyme do to establish such speed? As we have already seen, enzymes reduce the energy needed for a reaction to take place. But just what is this activation energy? We can describe it thus: In terms of energy, under normal conditions, the most suitable molecule for carbon to combine with is carbon dioxide. When these two are present in the same environment they will act on one another and have a combustive effect. Yet even though these two substances are present in the same living body, they never combust. Although the book you are holding contains carbon and is in constant contact with carbon dioxide, it never suddenly bursts into flames. The reason for this is that the carbon-based molecules in living organisms and books have stable structures, and in the absence of new energy (i.e., heat) from outside, they cannot break those bonds and suddenly combust. New energy arriving from the outside in such a way as to destabilize the structure in question is called "activation energy." The activation energy needed to impair the stable structure we are discussing here—in other words for this book to ignite—is a burning match. For the molecules in the watery solution inside the cell, that heat energy is released as a result of the collisions of molecules around them.[31] Enzymes are responsible for reducing the considerable energy released during these collisions.

In order to measure the speed of enzymes' activity, biochemists



This diagram shows how reaction speed can increase as a result of enzyme involvement—which speed is essential to the survival of the human body. These superior abilities of enzymes are a manifestation of Allah's mercy towards human beings.



calculate the number of substrates an enzyme sets into reaction in the course of a second. This is known as the enzyme's *turnover number*, and this number varies for every individual enzyme. Many enzymes have turnover numbers in the tens or even hundreds; a few even have turnover numbers expressed in thousands.

One example is carbonic anhydrase. Nearly half the carbon dioxide produced by tissues is carried in a dissolved state to the lungs via the bloodstream. For this process, the level of carbon dioxide solution in the liquid environment is rather high for

After the enzyme becomes involved in a reaction, wide-ranging processes take place, at an extraordinary speed. For example, the speed at which the enzyme carbonic anhydrase enters a reaction is just 2 microseconds. If you stretched out a second to the length of a whole year, 1 microsecond lasts just as long as a soft-drink commercial.

which reason carbonic anhydrase catalyses the system, speeding it up by 10 million times, setting 600,000 water molecules and an equal number of carbon dioxide molecules into reaction every second. In other words, the enzyme enters into a reaction every 2 microseconds—a truly astonishing speed. To make this more comprehensible (and dramatic!), if you expanded a second out to the length of a whole year, a microsecond would last the same amount of time as a soft-drink commercial.[32]

The breaking down of a molecule, the digestion of a foodstuff, or the elimination of a waste product is due to the enzymes that function every instant, non-stop, by Allah's leave. As you shall shortly see, the working of special digestive enzymes permits food to be digested in the stomach and intestines. The process of human digestion lasts between three and six hours, depending on the particular food involved. Were it not for enzymes, however, it would take you more than 30 years to digest a single meal![33] To make this enormity clearer, just 30 grams of pepsin, one of the chief elements in digestion, can digest 2 tons of egg white.[34] Were it not for enzymes, you would need years to digest even a single egg; and a normally five-second reaction might last up to 1,585 years. For example, it would take you 115,000 years to read this page![35]

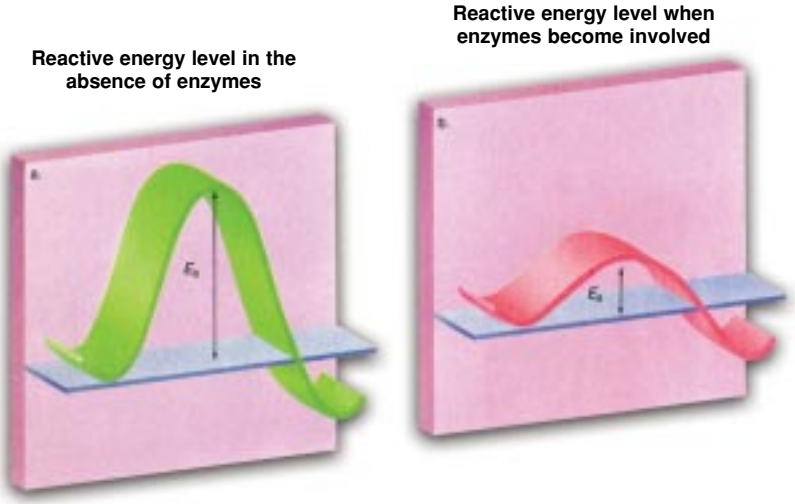
Regarding this amazing speed of enzymes, the late evolutionist Carl Sagan gave the following description:

> 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. Almost any enzyme catalyzes the synthesis of more than 100 other molecules per second. In ten minutes, a sizeable fraction of total mass of a metabolizing bacterial cell has been synthesized. The information content of a simple cell had been estimated as around 10^{12} bits, comparable to about a hundred million pages of the Encyclopedia Britannica.[36]

As you can see, a single cell containing more information than an *Encyclopaedia Britannica* consisting of some 100 million pages, is produced in 10 minutes, by the leave and under the supervision of Allah. The enzymes created flawlessly by Allah make this production possible.

Every enzyme accelerates reactions at different speeds. Actually, a major miracle lies in the information compressed into just that one sentence. Some of the body's reactions need to take place more quickly than others. With the help of catalyzers, for example, some reactions may last just one second. In the absence of catalyzing enzymes, this reaction would take 10^8 seconds, or approximately 3 years. In the presence of an enzyme, however, some reactions may take 10 minutes to achieve equilibrium. This is a relatively slow-working reaction in the world of enzymes, but in the absence of a catalyst, it would take 10^9 minutes to achieve equilibrium—a number of roughly 2,000 years.[37]

In the world of enzymes, the speed required for reactions that need to take place so quickly might have a damaging effect on reactions



Enzymes accelerate reactions to an extraordinary degree. Were it not for enzymes' assistance, a 5-second reaction might last 1,585 years. And it would take you 115,000 years just to read this page.

that need to take place relatively slowly. The enzyme that copies DNA, for example, cannot work any faster, while those enzymes that break down toxic substances in the body must not slow down at all. Also, some enzymes give off hydrogen peroxide as a byproduct of their reactions. And as we know, this is a combustive substance, powerful enough to dissolve and destroy all the organs in the human body. That such a dangerous substance emerges as the byproduct of cell metabolism is astonishing, but also potentially hazardous. For that reason, hydrogen peroxide needs to be eliminated before it can damage any of the body's tissues.

Therefore, an important precaution has been taken for the body. The enzymes that produce hydrogen peroxide are kept inside special organelles known as peroxisomes. These organelles contain a high level of the enzyme catalase, which breaks down the hydrogen peroxide before it can spread to body tissues.[38] This enzyme can break down up to 5 million hydrogen peroxide molecules a minute, turn them into harmless water and oxygen. The activation energy required for this is 18,000 calories per molecule. If the enzyme catalase did not undertake this function, and if the iron atom attempted the task by itself, it would take some 300 years to break down a single hydrogen peroxide molecule.[39]

In order to break down 5 million hydrogen peroxide molecules, an activation energy of 5,000,000 x 18,000 = 90,000,000,000 calories would be necessary. Not all the food consumed and all the energy released by all the living things on Earth would be enough to provide that level of energy.[40]

Duane T. Gish expresses the importance of the enzyme catalase and how it could not have come into being by chance:

> There could be no selection of any kind in an inanimate environment. For example, hydrogen peroxide, highly toxic to living cells, is a metabolic product of cellular activity. We therefore possess an incredibly efficient

> enzyme for catalyzing the breakdown of hydrogen peroxide. This enzyme, catalase, has a turnover rate of several billion per minute. Because of the high toxicity of hydrogen peroxide, our cells require an exceedingly efficient enzyme to catalyze its decomposition. We certainly couldn't survive without this enzyme.[41]

But what would happen if enzymes could not accelerate reactions that quickly? Would it be enough for them to carry out in, say, 100 years a reaction that in their absence would last 10,000 years in their absence? Would they be of any use to us if they performed their tasks in 10 years instead of a century? Leaving aside years, months and hours, could we stay alive if a single reaction lasted just 10 minutes?

In fact, an interruption of just a millisecond—let alone one of 10 minutes' duration—in the phase of the catalysis would be enough to impede the function in question. For example, if the enzyme catalase operated at the speed of the DNA polymerase enzyme, this would let all the hydrogen peroxide molecules escape to spread to the nearby cells, thus leading to their death.

The enormous time difference involved between the absence and presence of enzymes makes clear just what an important task these crucial proteins undertake. This phenomenon is far too extraordinary to permit any hint of coincidence. Indeed, it is even impossible for even a conscious human being to design and implement so complex a system.

A great many other details need to be considered here. How is it that every enzyme has a different accelerative force? How do enzymes know that they must carry out every reaction at a different speed? It is impossible for enzymes to know on their own, what purpose a given reaction serves and determine how quickly they need to accelerate it, and equally impossible for them to communicate that speed to other enzymes. It is wholly impossible for them to acquire all these characteristics by chance. Coincidence is supposed to be an event that takes place unconsciously and due to random influences, and any chance im-

pact on a structural unit as complex as the cell will cause it to stop working and thus, to the death of the cell. Therefore, all the systems within the cell are controlled, just like the enzyme system—but that control does not lie with the cell itself nor with the organelles inside it.

There is only one explanation for the apparently conscious processes that are carried out in this microscopic system composed of unconscious atoms. If all of these literally know what they need to do, never make a mistake in their work, and maintain that same perfection in all humans from one generation to the next, then they exhibit the intelligence and flawlessness manifested in them. That intelligence and perfection obviously belong to Allah, their Creator. Since Allah wills enzymes to keep working inside the human body in such a perfect manner, and for each to function with different molecules and to engage in constant activity to keep humans alive, these molecules can successfully perform processes that require consciousness. Enzymes are all blessings from Allah, the Creator of all the entities on Earth, human beings, and the universe they inhabit—in short, of everything.

Allah acquaints us with His creative artistry through all the perfection on Earth and through His verses. One of our Lord's verses reads:

> **Allah is He Who raised up the heavens without any support—you can see that—and then established Himself firmly on the Throne. He made the Sun and Moon subservient, each running for a specified term. He directs the whole affair. He makes the signs clear so that hopefully you will be certain about the meeting with your Lord. (Surat ar-Ra'd: 2)**

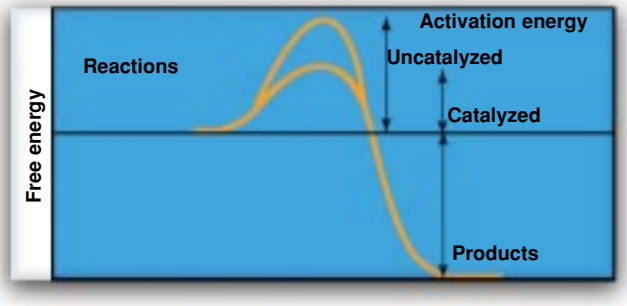
An Important Discovery Regarding Enzyme Speed

One of the most striking pieces of research into the speed of enzymes was carried out by Richard Wolfenden, a professor of biochemistry, biophysics and chemistry at the University of North Carolina at

Chapel Hill and also a member of National Academy of Sciences. A statement he issued in 1998 helps us obtain a better understanding of the extraordinary speed possessed by enzymes. In his earlier research, Prof. Wolfenden calculated that in water containing no enzymes—in other words, uncatalyzed water—the biological transformation essential in the formation of the fundamental building blocks of DNA and RNA would take 78 million years. But his subsequent discovery was even more astonishing. In his own words: "Now we've found one that's 10,000 times slower than that . . . Its half-time—the time it takes for half the substance to be consumed—is 1 trillion years, 100 times longer than the lifetime of the universe. Enzymes can make this reaction happen in 10 milliseconds."[42]

Wolfenden published this discovery, made together with Chetan Lad and Nicholas H. Williams from Sheffield University in England, on the National Academy of Sciences website on 29 April 1998.

The enzyme that attracted Wolfenden's attention was phosphatase. The catalytic power of phosphatase increased the speed of reaction in water of a chemical group known as phosphate monoesters to an extraordinary degree. The phosphatase enzymes acting on these mo-



In the absence of phosphatase enzymes, which enable reactions to occur in 10 milliseconds, it would take 1 trillion years to consume just half the substance entering the reaction. That figure is 100 times greater than the age of the universe.

noesters regulated the molecular cross-talk within cells and the cell signaling pathways. Wolfenden sets out the importance of esters as follows:

> We have esters floating around in our cells with all kinds of functions. Every aspect of cell signaling follows the action of the type of phosphatase enzyme that breaks down phosphate monoesters. Other phosphatases highlighted in the study for their catalytic power help mobilize carbohydrates from animal starch and play a role in transmission of hormonal signals.[43]

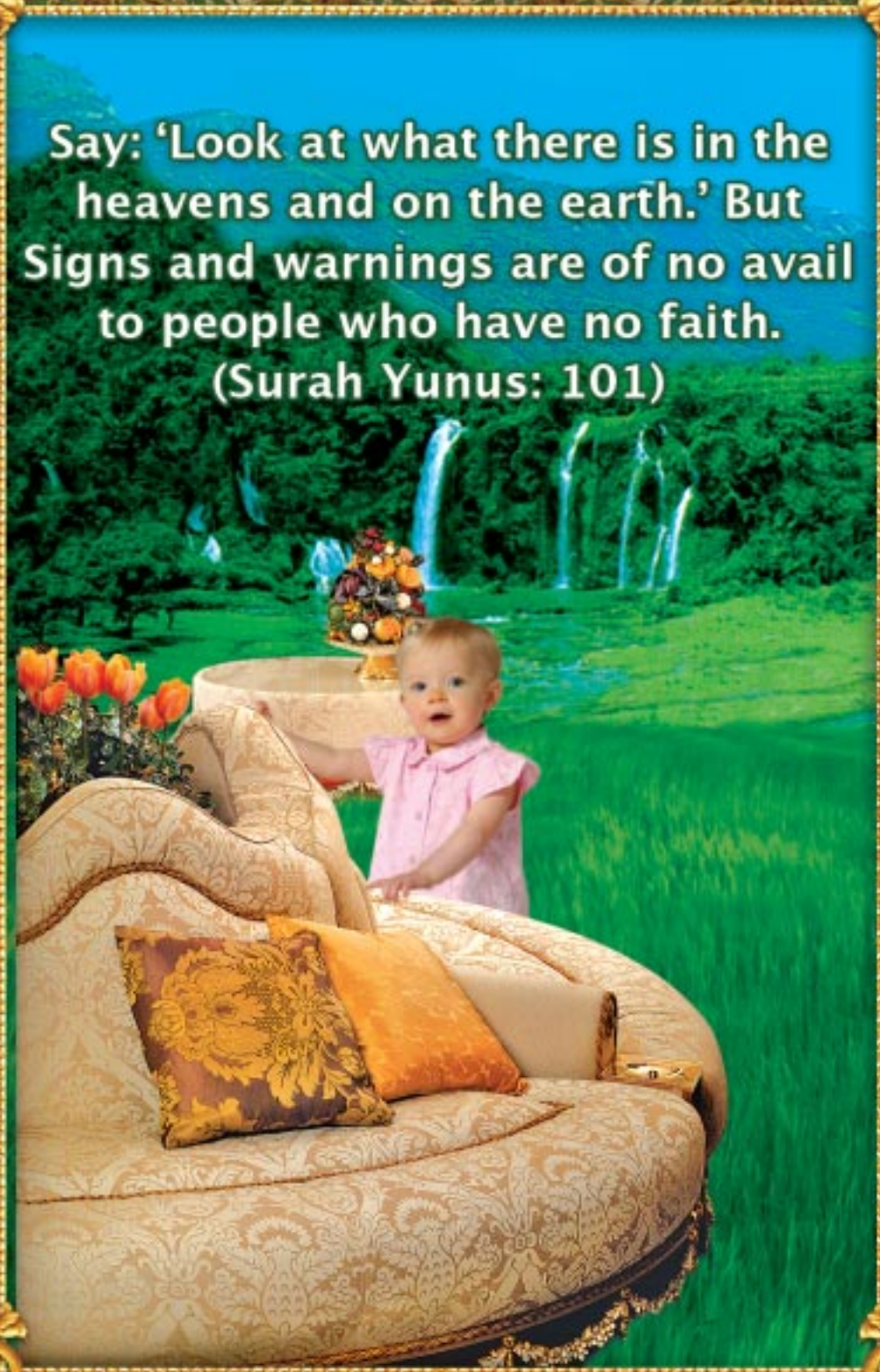
Wolfenden went on to express his surprise in the face of this discovery saying that the enzymes they studied in this report were fascinating for they exceeded all other known enzymes in their power as catalysts and that they had only begun to understand how to speed up reactions with chemical catalysts, and no one had even come within shouting distance of producing their catalytic power.

The reaction that would take 1 trillion years in the absence of enzymes made Wolfenden, himself an evolutionist, appreciate their astounding quality. This number achieved is an incomprehensible time period. As Wolfenden explained:

> This number puts us way beyond the known universe in terms of slowness. [The enzyme reaction] is 21 orders of magnitude faster than the uncatalyzed case. And the largest we knew about previously was 18. We've approached scales than nobody can grasp.[44]

If a protein—a combination of several amino acids—can accelerate a reaction that would last 1 trillion years into just a few milliseconds, then its significance is truly extraordinary. If everyone in the world cannot achieve something that a single protein manages, much less fully understand how this comes about, then there is a perfection here that they must accept. Only Allah has the power to create this perfection.

In one verse, Allah tells us that He has created all things within an order:


Say: 'Look at what there is in the heavens and on the earth.' But Signs and warnings are of no avail to people who have no faith. (Surah Yunus: 101)

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)

In another verse, He informs us that all things are under His control:

[Hud said,] "I have put my trust in Allah, my Lord and your Lord. There is no creature He does not hold by the forelock. My Lord is on a Straight Path." (Surah Hud: 56)

Allah is He Who creates all entities, Who gives them the most perfect form and keeps them constantly under His control. Allah has endowed them with amazing features and matchless forms. Those who ignore this fact have no other alternative explanation to offer, however. To claim that these things are all a matter of chance, or to seek to portray them as miracles of so-called evolution, will not alter this truth in the slightest. Those who make such claims are clearly aware of the extraordinary state of affairs that confronts them. Chance cannot give rise to a living thing, nor can it give rise to a single living cell, a single enzyme within that cell, nor the chain reaction carried out by that enzyme. Allah creates all of these, and the work of each one displays His greatness and the perfection in His creations.

Enzymes Are Different from Hormones, Despite Having Similar Structures

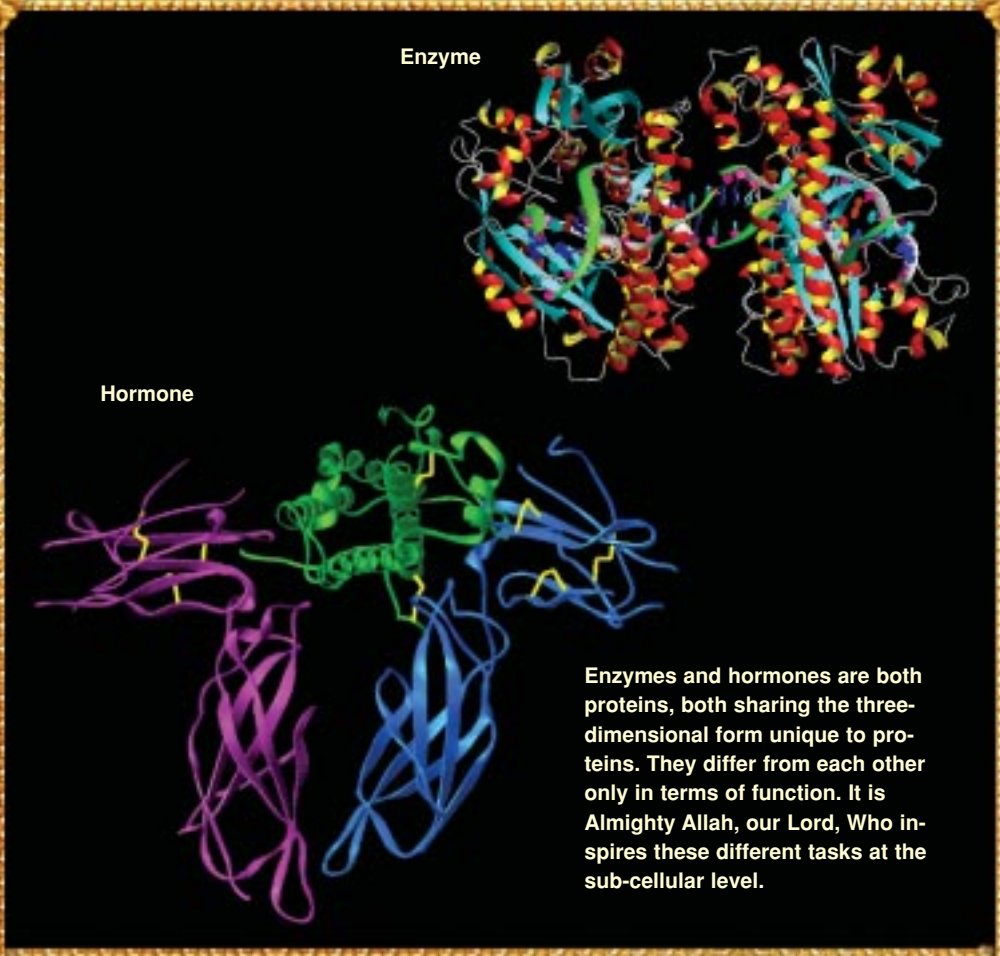
Both enzymes and hormones are proteins, both encoded by DNA. Both fit their targets like a key fits a lock, and their shapes are of great importance in terms of their functions. However, hormones are informational molecules, manufactured in various regions of the body and forwarded to other regions by being released into the bloodstream. In this way, they signal for events to take place in far distant parts of the body. Growth hormone, for instance, sends out the necessary signals for cell division and bone growth. It has its effect only on cells that have

proper receptors, or that have docking stations on their surfaces. Enzymes, on the other hand, are catalysts. They arrange for chemical reactions to be accelerated so that metabolism can take place at a useful rate.[45]

Hormones are very similar, though unlike enzymes, they do not constantly enter into and exit from chemical reactions. In addition, hormones have long-term effects on the organs they reach via the bloodstream. For example, if you do become hungry or thirsty while reading this book, these sensations are completely hormonal in origin. Hormones released from specific regions of the body reach the brain and begin setting up a sensation of hunger, making you want to eat. (For detailed information, see Harun Yahya, *The Miracle of Hormones*.)

What distinguishes these two proteins, which are almost identical in their structure and working conditions? Although they have the same characteristics and similar geometrical shapes, proteins manufactured in the body suddenly begin working as either enzymes or hormones. The body has no conscious apparatus to determine that one should act as a catalyst while the other should transmit messages. All the other organs in the body are no different from protein and fats. It is impossible for them to have intelligence, be able to plan and share labor, identify missing components in the metabolism and to engage in production accordingly. It is Almighty Allah Who tells the proteins produced what to do, how to behave and how to establish communications with one another. It is He Who fully knows the body He has created, what takes place in it and the reasons behind its operations. He determines the body's needs and how and where these will be satisfied. He inspires each with its own task and tells each one how to behave. Every structure in the body behaves accordingly. It is His inspirational direction that makes enzymes different from hormones.

Allah creates whatsoever He wishes out of nothing. Our Lord has revealed this fact in a verse:



Enzymes and hormones are both proteins, both sharing the three-dimensional form unique to proteins. They differ from each other only in terms of function. It is Almighty Allah, our Lord, Who inspires these different tasks at the sub-cellular level.

It is He Who created the heavens and the Earth with truth. The day He says "Be!" it is. His speech is Truth. The Kingdom will be His on the Day the Trumpet is blown, the Knower of the Unseen and the Visible. He is the All-Wise, the All-Aware. (Surat al-An'am: 73)

Enzymes Are Constantly at Work in Our Bodies

The human body is known to contain more than 2,000 enzymes.[46] Thanks to them, we can remain alive. The way we eat, breathe, hear sounds, see what is going on around us—in short, all the systems in our bodies function by way of enzymes. When you remove one enzyme from the system, the functions it performs are also eliminated. Nothing

else can perform the tasks carried out by these proteins too small to be seen by the naked eye.

So exactly what is it that enzymes do, whose presence is so essential to the functions taking place in your own body and to the survival of other living things around you?

If you leave a green banana on the windowsill for a few days, it will turn sweet and yellow. This process, which we call maturation, takes place thanks to enzymes.

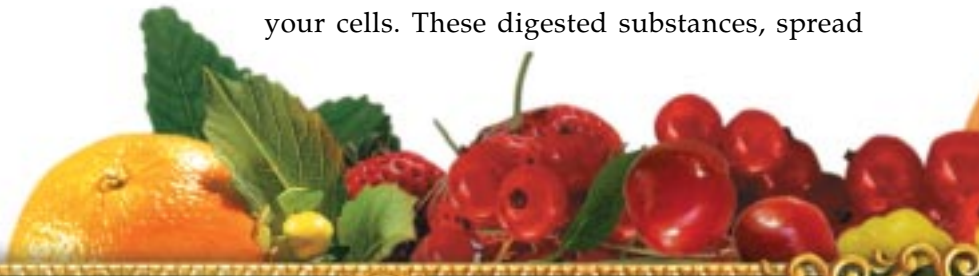
A dog buries a bone. When it digs it up again, that bone—which was previously very hard—has become softer and has assumed an edible texture. This too happens thanks to enzymes.

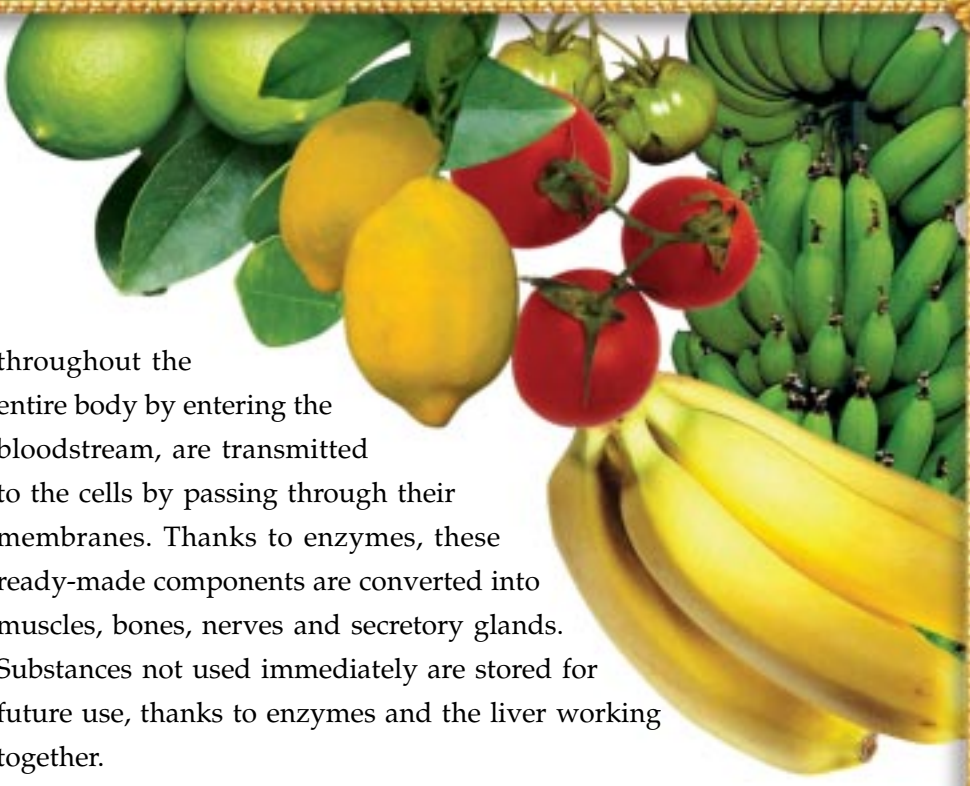
If you place green tomatoes that are still on their stems under the Sun, shortly afterwards they turn red. This happens thanks to enzymes being set in motion by the Sun's light and heat.

Seeds cannot sprout in the absence of enzymes. Fruit cannot mature, leaves cannot change color and we ourselves cannot come into being.[47] In short, enzymes are one of the reasons why, by Allah's choosing, living things achieve life.

Enzymes are responsible for all the chemical processes that take place in all our bodies' systems, and are important components of the immune system as well. We depend on enzymes in order to be able to eat and digest, just as we do in order to see, feel, hear, breathe and move. Enzymes play a leading role in blood coagulation, the functioning of the heart and circulatory system, the function of the liver and kidneys, the expulsion of toxic substances, the functioning of the brain, the distribution of hormones throughout the body, and in your being able to think and even dream.

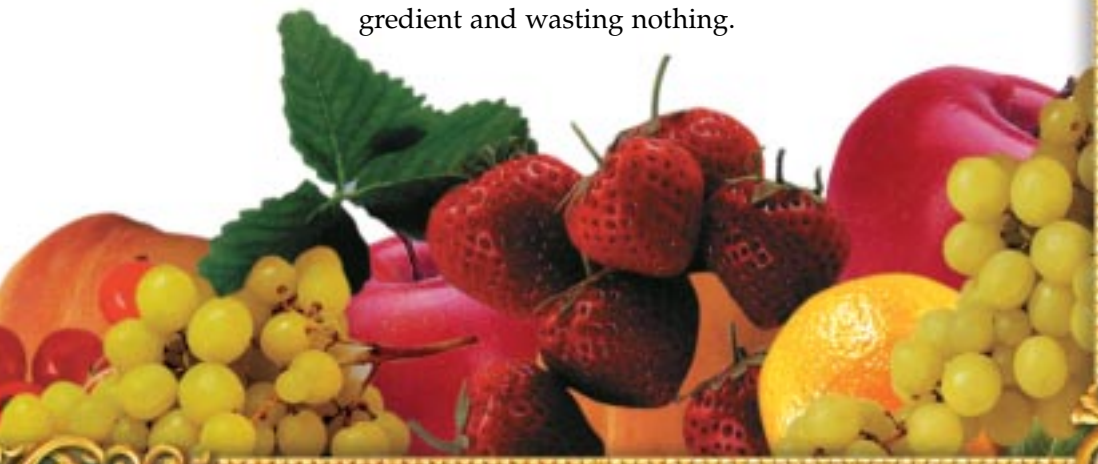
Enzymes convert the food you eat into small molecules that can enter your cells. These digested substances, spread





throughout the entire body by entering the bloodstream, are transmitted to the cells by passing through their membranes. Thanks to enzymes, these ready-made components are converted into muscles, bones, nerves and secretory glands. Substances not used immediately are stored for future use, thanks to enzymes and the liver working together.

The transportation of foodstuffs in the body depends entirely upon enzymes. If they did not fully perform their tasks, you would suffer memory loss, be unable to think properly and would start suffering fatigue, because your brain would receive insufficient nutrients.[48] However, such a problem never arises because under normal conditions, enzymes never neglect their duties, never neglect to evaluate the foodstuffs entering your body. They are aware of the importance of every nutrient, using every ingredient and wasting nothing.



That is Allah, your Lord. There is no deity but Him, the Creator of everything. So worship Him. He is responsible for everything. (Surat al-An'am: 102)

Enzymes are constantly active inside the cells, breaking down, synthesizing and regulating. The division of labor among them is truly amazing. One enzyme uses phosphorus for bone building; another enables blood to clot, while still another bonds iron to red blood cells. Some enzymes carry out oxidation, combining other substances together with oxygen. Meanwhile, other enzymes eliminate carbon dioxide from the lungs; while still others are responsible for converting protein into fat, or sugar or carbohydrate into fat.[49] The sperm cell has special enzymes that permit it to pierce the egg. Enzymes in the immune system take constant action against waste products and toxins in the blood and tissues.[50]

Still other enzymes carry out such chemical processes as breaking down sugar into carbon dioxide and water in a matter of seconds, hundreds or even thousands of times, non-stop throughout the entire course of your life.

An average of 40 separate reactions take place inside the cell every second, all by means of enzymes. But once they have accelerated reactions and discharged their duties, enzymes leave without themselves undergoing any changes and continue taking part in other reactions, and thus maintain a constant state of employment. This is a most important economy measure, since there is no need for enzymes to be manufactured constantly. They maintain their various stocks inside the body and continue to carry out their duties.

Enzymes heal wounds and cure infections.[51] They also clear away the dead cells that are casualties in the immune system's war against microbes. Once the war is over, destroyed microbes, antibody-microbe compounds and toxins are all eliminated as the result of the scrupulous activity of enzymes. If these wastes are not expelled from the body, they will cause congestion of the arteries.

Enzymes also seem aware of situations in which precautions need to be taken and know how to behave during emergencies. For example,

animals that hibernate cannot use food to meet their energy requirements, so their bodies' enzymes behave with deliberation. They begin converting stored fats in the body into carbohydrates that will give off energy[52]—an action they do not take at other times. They make use of this privilege when the body cannot consume nutrients, and Allah inspires in them the knowledge of when they need to do so. Enzymes in the human body have also been created in such a way as to take relevant precautionary measures when necessary. For example, if someone eats nothing for a long time, enzymes inside the body convert fats into carbohydrates. This process is a precaution that enzymes take to preserve our bodies, and you are never even aware of the methods they employ to keep your body alive and healthy. These miraculous substances constantly perform countless tasks and precautionary measures in order to keep you alive, possessing abilities that transcend any human intelligence.

It is Almighty Allah Who equips them with all these abilities. Allah calls upon people to reflect upon these facts they witness. Not to forget the blessings bestowed by Allah and to think deeply about these miraculous phenomena they see are some of human beings' most important responsibilities. Allah tells us of this in a verse:

> **Everything in the heavens and the earth belongs to Allah. He knows what you are engaged upon. On the Day when they are returned to Him, He will inform them of what they did. Allah has knowledge of all things. (Surat an-Nur: 64)**

Enzymes' Working Conditions

Specific enzymes are charged with every chemical reaction in the body. Since enzymes do not perform one another's work, a special enzyme charged with a specific duty has to be present on site. If enzymes were used up and not renewed, there would be no other enzymes to replace them. As already mentioned, reactions also depend upon one another, rather like dominoes. If one reaction fails to occur because of the lack of an enzyme, then the whole chain will come to a halt. For example, the absence of even a single enzyme that supervises the new chain of DNA being copied will lead to faulty copying. Subsequent enzymes will be unable to perform their own functions, producing flawed or functionless DNA in the body.

Enzymes are able to operate only within a specific pH level and temperature—generally between 30 and 70 degrees Centigrade, which is known as "optimum temperature."[53] This is a rather special temperature range, because the average internal temperature of the human body is 36.5 degrees C, an ideal level for human enzymes to work. Indeed, because of the sensitive conditions under which some enzymes work, they demand a much narrower temperature range. Therefore, the slightest change in body temperature can affect the functioning of these enzymes. When the body feels freezing cold or has high fever, the

rate at which enzymes work declines, along with the number of processes they can perform. Some enzymes even die. (See Harun Yahya, *The Miracle of the Immune System*.)

When the temperature rises by as much as 10ºC, reaction speed doubles. To put that another way, increase in reaction speed is directly proportional to temperature. After this considerable rise, however, reaction speed suddenly slows to a standstill. Although reaction speeds show a sudden initial increase, this temperature is clearly not productive in terms of enzymes' working conditions. Although enzymes grow ineffective a little above optimum temperature, they can once again become effective when the temperature falls. But if that high temperature persists or even rises a little further, enzymes lose all their effectiveness, because they have a tertiary structure and at high temperatures, they lose that helical three-dimensional structure. The enzyme structure breaks down, their former order is destroyed, and as a result, they cease to function.

Enzymes also become functionless at low temperatures, but cold does not damage their structure. Efficacy is restored once the temperature returns to earlier levels. The frozen food industry makes considerable use of this fact.[54] Foods are preserved for long periods by freezing, and when thawed, they regain much of their former nutritional value, thanks to the enzymes being reactivated.

Also important for enzymes, in addition to temperature, is the body's pH level. pH stands for "potential hydrogen," showing the concentration of hydrogen ions in a region or a solution. Concentration values can range between 1 and 14. A level of 7 indicates the presence of water and describes a neutral environment. Numbers higher than 7 indicate an alkaline environment, and numbers lower than 7 show that it is acidic. This distinction is of great importance for reactions taking place in a fluid environment, because while some molecules dissolve in water, others are unaffected by it and can dissolve only in acid.

Enzymes generally operate within a specific pH range, known as "optimum pH." All enzymes need an average pH level in order to be able to work, and some operate within a particular pH level appropriate to their own working conditions. For instance, pepsin—which breaks down proteins in the stomach—can work best only at a acidic pH of 2. Trypsin, secreted by the pancreas and which plays a role in protein digestion, works most efficiently at a pH of 8.5. But a powerfully acidic or alkaline environment will damage most enzyme's structure.[55]

Although enzymes demand highly sensitive working conditions, the living body possesses the ideal properties for these molecules to function. The fact that every one of the 2,000 types of enzymes in a living body can work in a manner appropriate to its environment shows that both body

and the enzymes have been specially created. It is Allah Who creates the human body, Who determines the different conditions that apply in each of the body's different structures and Who creates enzymes accordingly. With His infinite knowledge, Allah has created all the conditions necessary for a human being to stay alive. It is impossible for these many enzymes to have come about or have become mutually compatible as the result of chance.

His sublime artistry is revealed in verses:

He Who created the seven heavens in layers. You will not find any flaw in the creation of the All-Merciful. Look again—do you see any gaps? Then look again and again. Your sight will return to you dazzled and exhausted! (Surat al-Mulk: 3-4)

Types of Enzymes

There are enzymes everywhere in your body, but each one has to perform the task set out for it. Different enzymes work in different forms, at different speeds and with different substrates, which accounts for their variety.

Enzymes are generally classified according to the basic functions they perform. Enzymes that maintain the body's entire metabolism, from the respiratory system to the nervous system, are known as *metabolic enzymes*. Those groups known as *food enzymes* are those we absorb together with the foods we eat. The third enzyme group is known as *digestive enzymes*.

Metabolic Enzymes

Foodstuffs are broken down and digested, following which countless metabolic processes take place. Metabolism is the name given to the magnificent phenomena taking place in an organism's cells and controlled by enzymes, which direct every metabolic process in the body, bringing about energy and substance production.

ATP production and protein synthesis are two major metabolic reactions. Metabolic enzymes are responsible for taking over and performing all these processes.

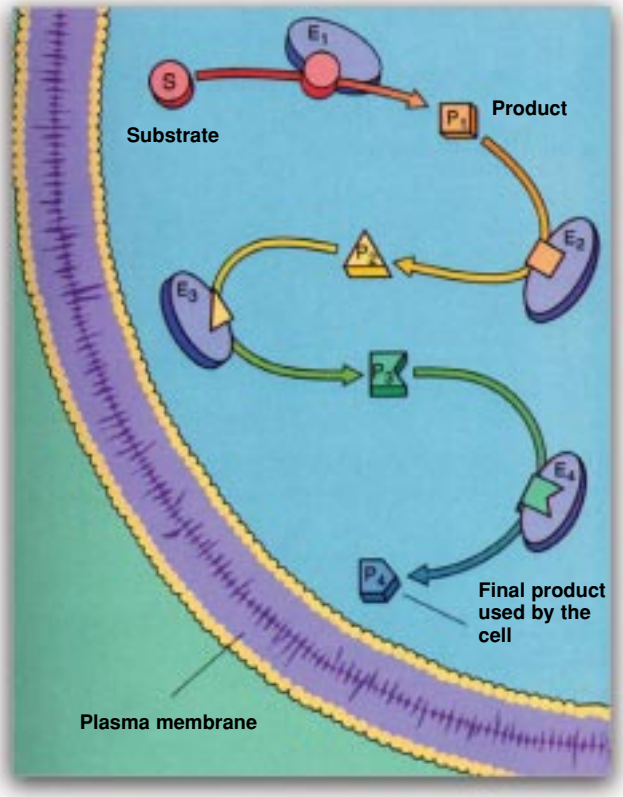
With the exception of reproductive cells—which represent only 0.1% of the body's weight—your body is completely different from what it was 12 years before. Over those dozen years, all the cells in your body have been renewed. Your liver is not the liver it once was. In the same way that the blood cells in your circulatory system are not the same ones that existed 10 years ago, neither are the veins through which they flow. Your organs have completely changed and have been renewed, with entirely new cells and molecules. This is of course an astonishing phenomenon.

The most rapid renewal takes place in the epidermis. Every three months, you are given a new skin. The rest of your organs then follow. Over the years, your lungs, kidneys, stomach and all your other organs change—even your eyes that now read these lines. The slowest changes take place in the bone and cartilage. It takes some 10 years for them to change—yet these, too, are finally renewed.

For that reason, there is a constant need for construction in the body. And of the workers engaged in the construction of

your body, the most important are the metabolic enzymes. They take in 45 essential nutrients, and convert them into muscles, nerves, bones, blood and organs. At a basic level, they provide the fuel that keeps the cells alive. They enter all the reactions essential for the cell to fulfill its own functions and finish them in a very short space of time. They operate in all vital matters, such as the DNA replication, ATP energy storage, nutrient entry into cells and waste products' exits, and the transmission of electrical signals along the nerves from your sense organs.

Metabolic enzymes are a great blessing bestowed on us by our Lord, important treasuries we enjoy from the moment we are born. They are at work from the moment our lives begin, ready to perform countless functions. These same enzymes will repeat the same tasks time and time again, never stopping. Yet they also have their own life spans. Enzymes decline in number as we grow older. "Old age" is another term for the decrease in the number of enzymes in the body, and therefore they are unable to function as efficiently as before. Old age is actually an indication not of how much a person has lived, but whether or not the tissues in the body are fully functioning. These tissues depend on the level of enzymes charged with the metabolism of every cell. In other words, the more numerous and functional the enzymes,



Metabolic enzymes are a treasure bestowed on us from the moment we are born. Like construction workers in our bodies, they take 45 essential nutrients and convert them into muscles, bones, nerves and organs. In fact, however, enzymes are simply tools. It is our Lord Allah, the Creator of all things, Who supplies all the countless means by which we are kept alive.

the more youthful a person's metabolism.[56]

Of course, the functioning of all these systems and the maintenance of this metabolic order are totally beyond your control. Even if people are young and enjoy a balanced diet, there is nothing they can do to keep their bodies alive if their enzymes do not perform the requisite functions. Cells will continue to die, but will not be renewed, and the organs will increasingly lose their capacity to function. Enzymes are entities that keep one alive. However, do not forget that enzymes are all proteins with no intelligence or consciousness. What we refer to as "metabolism" is nothing more than the functioning of these proteins. There is no point in your trusting in these entities to keep you alive, and it is

totally irrational to think that these entities were charged with keeping people alive by chance. We need to realize that it is Allah Who keeps human beings alive. Allah has created all the systems belonging to a human, inspires them to carry out their functions at every moment, creates them at every moment and keeps them under His control at all times.

If a system of yours is interrupted, all you can do is to take the necessary precautions, turn to Allah and seek His assistance. It is Allah, Who keeps you alive, Who will help you. Allah has revealed this in a verse:

> **Allah is He to Whom the kingdom of the heavens and earth belongs. He gives life and causes to die. You have no protector or helper besides Allah. (Surat at-Tawba: 116)**

Food Enzymes

Every bite you eat contains important building blocks to be used in the construction of your body. Food that you eat enters with an even more important factor that helps digest the food itself: its own enzymes.

Food enzymes are present in every food we can encounter anywhere on Earth, but they are not resistant to heat. When you cook food, you lose all the enzymes it contains. However, if you eat a raw food, its own enzymes will digest 75% of it. Digestion of any food by its own enzymes makes a very important contribution to the body, since your system need not become fatigued by manufacturing extra enzymes, and it has no need to slow down the production of metabolic enzymes, so essential to the cells, in order to produce digestive enzymes.

Excellent examples of the enzymes constantly active in foods are those present in fruit. In its green state, a banana is 20% starch. When left in a warm place for a while, however, the enzyme amylase converts that 20% starch to 20% sugar. Around a quarter of that sugar is glucose, which the body now has no need to digest.[57] Thanks to the

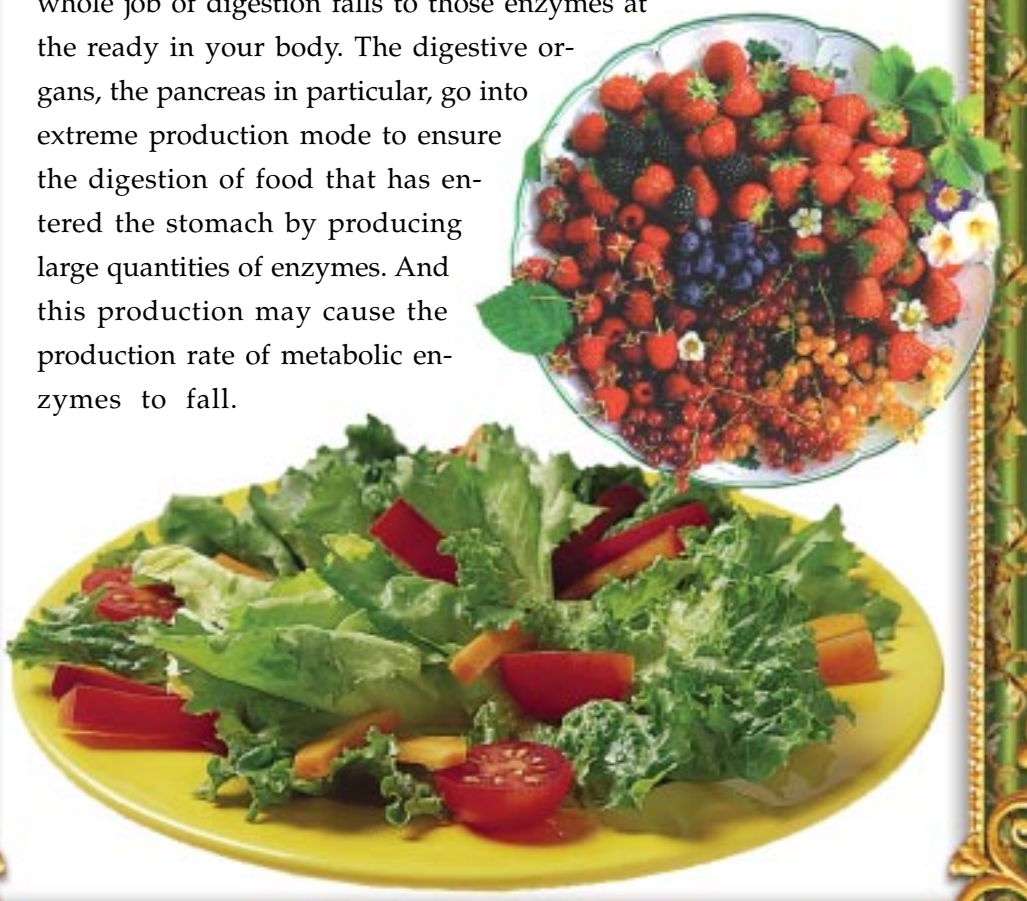
enzymes it possesses, fruit completes a major task that is usually carried out in the body before it's even consumed.

Like the banana cited in this example, every fruit or vegetable eaten without being cooked conveys various nutritional benefits without putting the body to any trouble. When you eat a banana, its own enzymes offer it already prepared for your cells by breaking it down—together with the digestion process that begins in the mouth—into small components that can be utilized by your metabolic enzymes, which then assimilate them into the body by converting them into the structural materials needed for cells and organelles.

The enzymes concealed in foodstuffs are able to digest only the particular food in question. For example, the amylase in

bananas works only on the banana starch. This enzyme cannot digest the starch in a potato. After you eat a banana, enzymes in the banana cannot help you digest a slice of cooked meat. Nor can these enzymes add any extra enzymes to the body. Their task comes to an end with the digestion of the food in question. An enzyme that enters the body along with food recognizes the food it is going to digest, despite its being broken up in the mouth, and sets itself to digesting it. Given these properties, enzyme molecules literally behave with intelligence. Of course an inanimate molecule cannot really exhibit intelligence—the wisdom we see in the functions that enzymes perform actually belongs to Almighty Allah, Who creates them and places them at the service of living things.

When you eat a cooked food that has lost all its enzymes, the whole job of digestion falls to those enzymes at the ready in your body. The digestive organs, the pancreas in particular, go into extreme production mode to ensure the digestion of food that has entered the stomach by producing large quantities of enzymes. And this production may cause the production rate of metabolic enzymes to fall.



This means that insufficient production can be made for the organs to function, renew themselves, and fight disease. Thus the body expends on digesting foods the energy it should use for its own development and defenses.

One of the first researchers into the importance of enzymes in human nutrition, Dr. Edward Howell, founder of the National Enzyme Company, has said this:

> They are the most precious asset we possess and we should welcome outside enzyme help. If we depend solely upon the enzymes we inherit, they will be used up just like inherited money that is not supplemented by a steady income.[58]

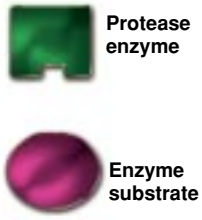
By endowing foods with enzymes, Allah has bestowed a most important blessing on us. The way that these enzymes know what they must do as soon as they enter the body, adapt to a mechanism that is completely foreign to them and immediately begin to process the food they need to digest is literally miraculous. These enzymes literally behave in a conscious manner and know that they should go into action the moment the food is broken down. They neither destroy it by acting prematurely, nor go into action hours after it has entered the mouth. They begin working at just the right moment and conclude the whole enterprise at great speed. With the help of these molecules, every fruit you eat is turned into building blocks with which the body can renew itself. Thus it is that your eyes continue to see, your legs to move and your organs to function.

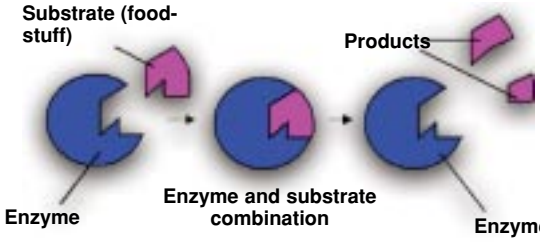
Remember, these unconscious molecules are entities created by Allah and never go wrong because they act under His direction. They act under the infinite intelligence of Allah and have bowed their heads to Him. Allah tells us of this in another verse:

> **[Hud said,] "I have put my trust in Allah, my Lord and your Lord. There is no creature He does not hold by the forelock. My Lord is on a Straight Path." (Surah Hud: 56)**

Digestive Enzymes

Certain enzymes have been charged with digestion in the body. Lipase breaks down fats, protease breaks down proteins, cellulase breaks down fiber, amylase breaks down starch, lactase breaks down dairy, sucrase breaks down sugars, and maltase breaks down grains. The presence of digestive enzymes is of great importance to metabolic enzymes, because digestion being undertaken by a special enzyme group prevents the metabolism from fatigue. As long as digestive enzymes are present, our bodies' metabolic enzymes can carry out their own tasks alone and

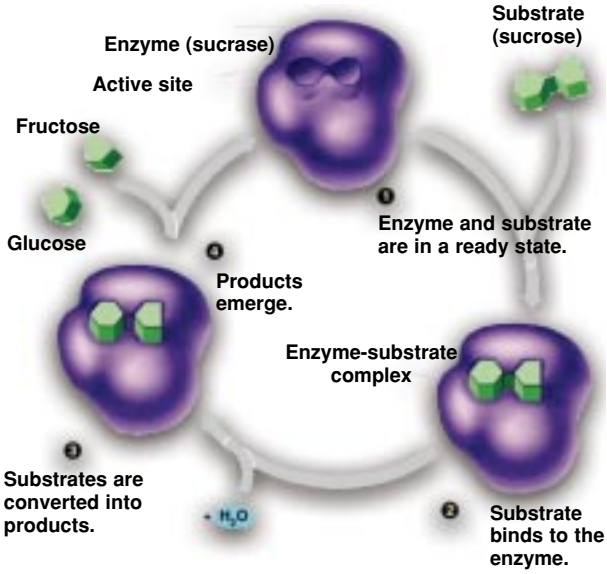




Enzymes break down foodstuffs and convert them into forms that the body's cells can use. This perfect system enables all the system's needs to be met almost instantaneously.

Methods used by enzymes to break down foods

This diagram shows the activity of the enzyme sucrase in breaking down sugar products. The new product emerging as a result of this reaction will be used in meeting the needs essential to the body's metabolism.



need not become involved in such a complex and detailed process as digestion.

For that reason a glorious mechanism operates constantly inside the human body. Whenever you see or smell something to eat, or even if you only think about it, your body triggers the production of digestive enzymes. These stimuli are of great importance, helping ready your body to deal with food before you have even taken a bite.

The process of digestion begins in the mouth, immediately after the food has been chewed. Saliva contains special enzymes, and as soon as they come into contact with food, they start breaking it down. We break down the exterior walls of foods through the chewing process. If the food is raw, the enzymes it contains are released and initiate the digestion process. Carbohydrates begin to be digested in the mouth, when the amylase in saliva breaks the molecular bonds in starch and adds to them the water molecules in saliva. The reason why you feel an increasingly sweet taste when you chew a piece of bread is that the enzymes in your saliva are converting the starch it contains into sugar.

For digestion in the mouth to take place, the necessary pH value is between 6.0 and 7.4, and the enzyme amylase functions best in that pH range. The stomach, on the other hand, is a highly acidic environment, with a pH level of between 1.0 and 3.5—which acidic conditions halt the activity of amylase. For that reason, carbohydrate digestion does not take place in the stomach.

The process of digestion begins in the mouth, then continues in

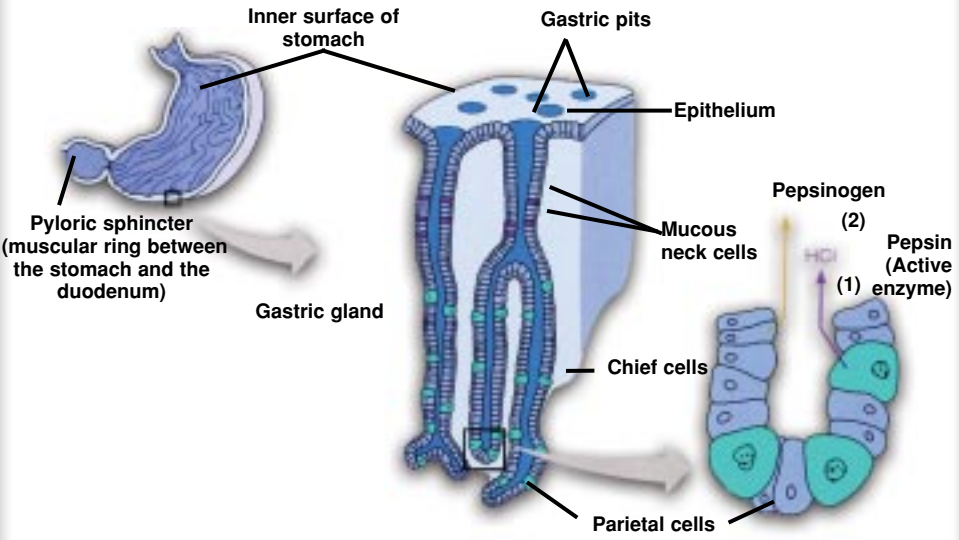
the stomach and the intestines, all of which are rather different from one another in their working conditions. They therefore harbor appropriately different enzymes.

Special Enzymes in the Stomach

Along the digestive route that starts with the mouth, the next major station is the stomach. As with all organs, the stomach contains enzymes that perform special functions. Their very presence in the rather harsh environment of the stomach, which dissolves and breaks down everything that enters it, is of course very surprising. Yet in any case these assistants are specially equipped for working in the stomach, and are another part of this great miracle inside the body.

The stomach is a highly acidic environment, whose walls need to be protected against its own acid. The digestive enzymes also need to be able to survive within it. The stomach meets both conditions. The internal lining of the stomach wall, covered in a mucous layer that comes into contact with food, contains three kinds of cells. One of these secretes hydrochloric acid (HCl), a very powerful acidic solution, strong enough even to dissolve stone. This powerful chemical also plays an important part in the digestive process by breaking down all proteins, particularly meat, entering the stomach, and kills all microbes. Another important characteristic of this acid is that it sets into action pepsinogen, also present in the stomach and which breaks down proteins. Pepsinogen is not secreted when the stomach is empty. Yet when any food reaches the stomach, pepsinogen is converted into the enzyme pepsin by an activator protein, literally as if someone had told it to, and breaks down the foodstuff there.

How can we account for the way that pepsin initiates digestion by recognizing a piece of meat consisting of protein and fats, but does no harm to the stomach, which consists of basically the same protein and fats? Again, how are we to explain the way that hydrochloric acid does



The anatomy of the stomach and the production of pepsinogen by the chief cells in the stomach. This production takes place as follows:
The chief cells manufacture molecules such as pepsinogen, which are converted into the enzyme pepsin by activator enzymes. Parietal cells secrete HCl (hydrochloric acid) that activates the chief cells. It is totally illogical to imagine that such a system with its interdependent and exceedingly complex processes could have come into being by chance.

not dissolve the stomach itself and the helper enzyme? It is impossible under normal conditions for an enzyme, an acid, molecules, messenger hormones or even the stomach itself to recognize acid's dangers, or the foods that need to be digested, and to take the relevant precautionary measures on a constant, error-free basis at specific times of day. It is Allah Who makes this possible, ensuring that these processes take place uninterruptedly inside all the humans living on Earth, and Who ensures that the molecules receive their instructions, obey them and are compatible with one another.

It is impossible for a molecule to be aware of another molecule by chance, for it to activate by chance, to be aware of dangers by chance and to take appropriate precautionary measures. Each one of these complex structures, literally in communication with one another, can-

not have emerged "out of nothing" by chance, nor have been assembled by means of a chain of unconscious events and begun their functions, again by chance. Anyone of reason and good conscience, who reflects honestly and is not unmoved by what he sees and knows, will immediately appreciate this obvious fact. The boundless nature of the blessings imparted by Allah is revealed in a verse:

> **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. (Surat an-Nahl: 17-18)**

Even more striking details are contained within the stomach's digestive processes. The stomach is lined with a perfect protective material. The sensitive goblet cells secrete this protective mucus, which works just like a protective layer, even before the acid and breaking-down enzymes are emitted. Despite this protective substance's extraordinary strength, the stomach still loses 1.5 million cells a day to the effects of acid and enzymes. The entire internal lining of the stomach is destroyed, but then renewed, every three days.

The stomach might not have always renewed these naturally dying cells. This system is so tightly controlled that you are totally unaware of its ongoing intervention. New cells are always produced to replace those that die. Both the destruction of old cells and the production of new ones take place at Allah's choosing.

Ulcers are a reminder of the consequences of the absence of such a system. The disorder involves a failure to secrete protective mucus for one reason or another. Acid and enzymes begin damaging the stomach wall and blood begins leaking from the blood vessels beneath. The stomach wall now has an open sore. Until treated, the stomach's own secretions will continue to kill the stomach cells, and foodstuffs will not be digested.

Following the release of protective mucus in the stomach, food reaches the upper portion of the stomach for digestion. No enzymes are

secreted here. Raw food goes into this section of the stomach. After swallowing, digestion continues here with these food's own enzymes for half an hour to an hour. After that, pepsin, the stomach enzyme, takes over.

If the food has been cooked, it waits in this section of the stomach for half an hour to an hour, with no enzymes breaking it down. Salivary enzyme breaks down carbohydrates, but protein and fat have to wait. These foods are subjected to a different process in the stomach than raw foods which already contain enzymes, because the body's metabolism must devote its attention to supplying more metabolic enzymes for the organs and tissues. In other words, another conscious choice is made inside the body. After being kept in this stomach region for a while, the food will start being broken down by gastric enzymes.[59]

The process of acid secretion in the stomach is controlled by the presence of food. In response to food's presence in the stomach, specific cells go into action, secreting a hormone known as gastrin into the bloodstream. It then emits a signal to the glands that secrete hydrochloric acid and thus stimulates secretion of gastric juice.

The nervous system also has a role in the secretion of gastric juice, because the glands responsible are under the control of the nervous system. So, the release of digestive fluids is controlled by both hormones and by the nervous system, which is why increased stress and high blood pressure may lead to the formation of ulcers. Indeed, that it is enough that we smell, taste or even think of food for the brain to send messages to the secretory glands in the stomach demonstrates the efficiency of the nervous system in the digestive process.[60]

Pepsin is the active enzyme that breaks down proteins in the stomach. The stomach wall cells produce this enzyme in an inactive form, known as pepsinogen. As already mentioned, hydrochloric acid converts pepsinogen into pepsin. The secretion of pepsinogen by the gastric secretory glands is at the same time controlled by the activities of

the hormone gastrin. The presence of food in the stomach, the secretion of gastrin, the production of hydrochloric acid and the conversion of pepsinogen into pepsin are all interconnected. Therefore, the entry of food into the stomach initiates a chain of highly complex stages.

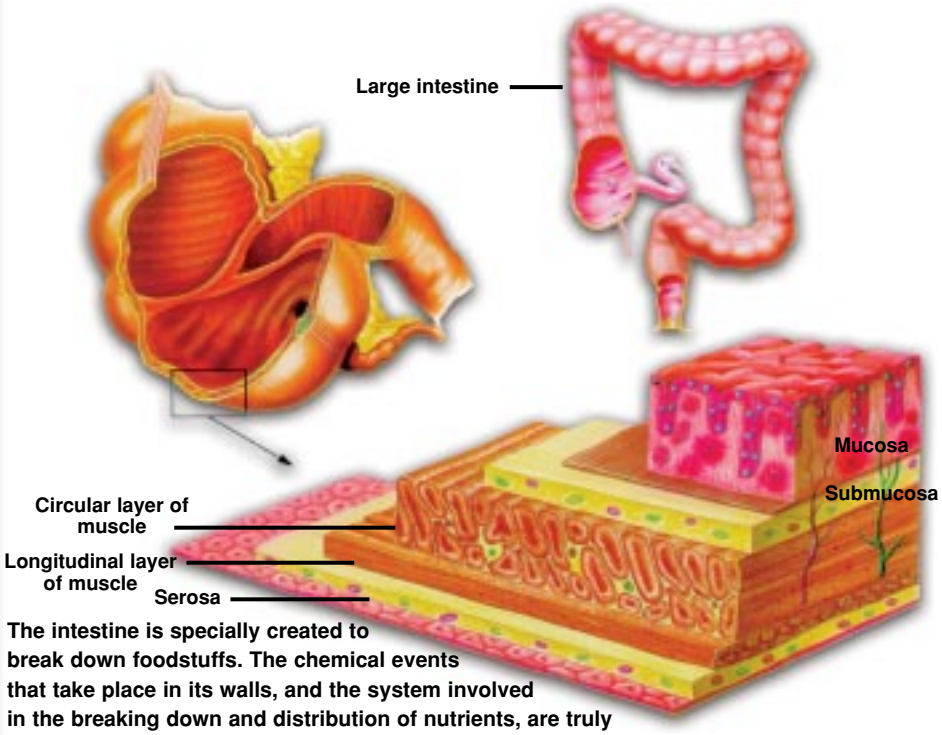
Pepsin converts large protein molecules into small polypeptides, but each polypeptide molecule contains a large number of interconnected amino acids. The breaking down of these continues in the small intestine.[61]

There is a gate where the stomach opens into the intestine, whose presence is of great importance, because if the stomach were not separated from the intestine, it would entail the possibility of foods in the intestine being returned to the stomach, which would have a damaging impact on the stomach's own acidic environment. Enzymes in the intestine operate in a more neutral and alkaline environment, and these special enzymes would be impaired by the stomach's acidity and give rise to dangerous consequences.[62]

Digestive enzymes have similar structures and functions, yet those that function in the intestine cannot adapt to the gastric environment, nor vice versa. This shows that every region, every tissue and every organ in the body is created with different properties; and that enzymes have also been equipped with features appropriate to the conditions in these separate environments.

Special Enzymes in the Intestine

The intestine has been specially created for the breaking down of foodstuffs. The chemical events that take place in the walls—and the flawless system involved in breaking foodstuffs down into their smallest components and their subsequent distribution—are truly amazing. Just about every square millimeter of the intestinal wall produces countless enzymes that separate proteins into different peptides and break these down into amino acids, carbohydrates into glucose and fats into fatty acids and glycerol. These enzymes are of very different kinds,



The intestine is specially created to break down foodstuffs. The chemical events that take place in its walls, and the system involved in the breaking down and distribution of nutrients, are truly astonishing.

with different functions and work at different speeds. An enzyme that breaks down fruit sugar, or fructose, is very different from one that breaks down sugar in dairy products, or lactose, and yet another enzyme breaks down starch. Because, as we have already seen, enzymes have very sensitive working conditions, the temperature and pH here are maintained at the ideal levels for these enzymes to be manufactured and perform their separate functions.

Since the structure and mode of operation of the stomach and the intestine are completely different, enzymes able to function in an acidic environment must be present in the stomach, while ones able to work in an alkaline one in the intestines. Foods leaving the harsh conditions of the stomach encounter gentler ones in the small intestine. The partly digested food and gastric juices passing from the stomach must do no harm to the intestine. This is where the pancreatic juice comes into play.

As you shall shortly see in some detail, pancreatic juice and its special enzymes enter the duodenum by way of the pancreatic duct and make the pH level more alkaline. In the duodenum, enzymes enable fats to be broken down. The fat-dissolvers manufactured in the pancreas accelerate the digestion of foods by accumulating here. Pancreatic juice contains trypsin, a particularly powerful enzyme, which enters the duodenum in an inactive form, trypsinogen. This is activated by an intestinal enzyme which is triggered solely in the presence of food, and turns into trypsin, which breaks down the peptide bonds of polypeptides into smaller peptide fragments. Trypsin also breaks down large protein molecules that have not been affected by the pepsin in the stomach.

Secretory glands in the duodenum walls also release other enzymes that separate peptide bonds. The bonds that form molecules are torn apart and the final products that emerge as the result of protein digestion are amino acids, the fundamental building blocks of all proteins.

Fats ingested with food are also digested in the small intestine. However, they arrive in the form of small fat droplets. The enzyme lipase involved in fat digestion cannot act on fats when they remain in that state. This is where bile juice enters the equation. Bile is secreted by the liver and stored in the gall bladder, and contains no digestive enzymes. Bile salt present in the bile juice breaks down fats into smaller globules and prepare them to be digested by the enzyme lipase. Up to 90% of bile salt is absorbed as it passes through the lower region of the small intestine, and is then routed back to the liver to be used again for digestion.

Once the bile juice has done its job, fat-digesting enzymes then have their turn. The enzyme lipase in the pancreatic juice acts on fats and converts them into fatty acids and glycerol.

Throughout this process, hundreds of precautionary steps are tak-

en. Foods arriving from the stomach must not carry the stomach's acidity with them into the small intestine. Specific enzymes for digesting still-undigested foodstuffs also need to be present; and the environment needs to be regulated so as to make all this possible. Chemical messengers need to act accordingly, and helper molecules need to be on hand. It is the pancreas, a very special organ, that secretes the particular juice for all of these tasks.

The Pancreas: The Factory That Produces Digestive Enzymes

The pancreas is a small organ, six inches in size and three ounces in weight. It is named the body's "hidden organ" because of its location concealed behind the stomach. It contains fine, interconnected tubes or vessels that come together in the form of a doorway opening into the duodenum, where pancreatic juice passes through, to play a life-saving role for the intestine.

Despite its small size, the pancreas performs a very important function in secreting digestive enzymes, which are transported to the digestive system in what is known as pancreatic juice. There are other moderating factors in this fluid, of which the pancreas produces up to 5 liters a day[63]—very high level of production for a organ weighing just 3 ounces.

The production of pancreatic juice is triggered when the duodenum encounters gastric juice. After leaving the stomach, foodstuffs have assumed a rather pulpy consistency and they first arrive at the duodenum. This mixture arriving from the stomach is powerfully acidic enough to dissolve the thin, delicate interior of the duodenum. Yet this does not happen, because pancreatic juice is alkaline, neutralizing the acidity in question. Foodstuffs are thus able to pass into the small intestine without endangering it...

The production of pancreatic juice is a controlled process. When you sit down at the dinner table, thousands of tiny saclike cavities, or

acini, in the pancreas receive stimuli from the nervous system and begin producing pancreatic juice. However, the pancreas does not start working at full capacity until your food actually passes through the duodenum doorway. The more food arrives, the more enzyme that is secreted.

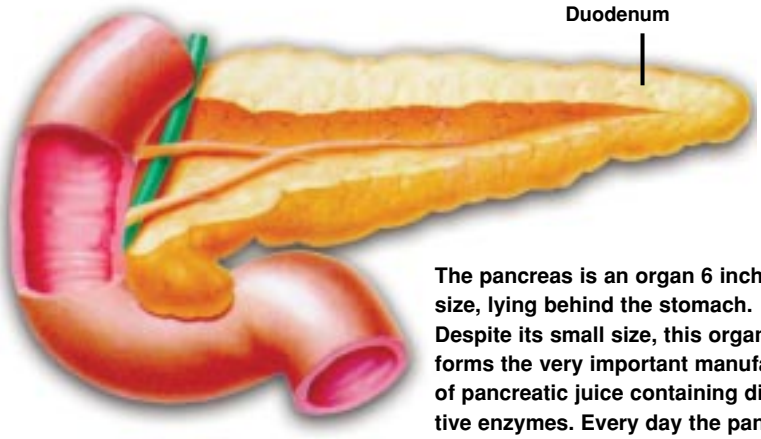
The pancreas can also distinguish between the kinds of food we consume, and secretes different enzymes accordingly. For example, when you eat foods such as pasta or bread that are rich in carbohydrates, the pancreas secretes mainly a carbohydrate-digesting enzyme called amylase.[64]

This mechanism is exceedingly sensitive, because enzymes must not be wasted, and at the same time, the intestine must not accidentally digest its own walls. This entire system must produce adequate enzymes to keep a living body alive. Were this process under our conscious control, we would spend all our time calculating when, which, and how many enzymes needed to be produced and pondering about to make use of them. However, their production and operation are actually beyond our control and knowledge. Other structures—again consisting of fat and proteins—are charged with controlling enzyme production. Hormones specially manufactured in the intestinal wall, secretin and pancreozymin, take on the job of stimulating enzyme production. The hormone secretin stimulates the pancreas into secreting pancreatic juice, rich in the sodium bicarbonate that neutralizes acid. The hormone pancreozymin stimulates the production of enzymes by the pancreas.

When food passes from the stomach to the duodenum, secretin and pancreozymin are released into the bloodstream. Thanks to these hormones, the duodenum is protected from the destructive effects of hydrochloric acid. By way of the bloodstream, secretin and pancreozymin reach the pancreas and signal it to produce sufficient quantities of fluid rich in water, bicarbonate and digestive enzymes, which will

protect the duodenum. These secretions, as already mentioned, reach the duodenum through the pancreatic duct.

The organ that sets the hormones in motion is the stomach—another organ consisting of fats and proteins. As its digestion continues, the stomach sends a message to the duodenum, as if it knew that the potentially dangerous foodstuffs are headed there next. It immediately begins secreting the needed hormones in question and releasing them into the bloodstream. At first glance, this would seem to be a risky business, because the blood travels through the entire body. Therefore, these hormones need to know where they must carry their signal. But in fact, they transmit their message to the pancreas alone, without stopping off at any other cells. As evidence of the infinite detail within His creative artistry, Allah has created the molecular structure of these hormones to interact only with receptor molecules on the membrane of the pancreatic cells.



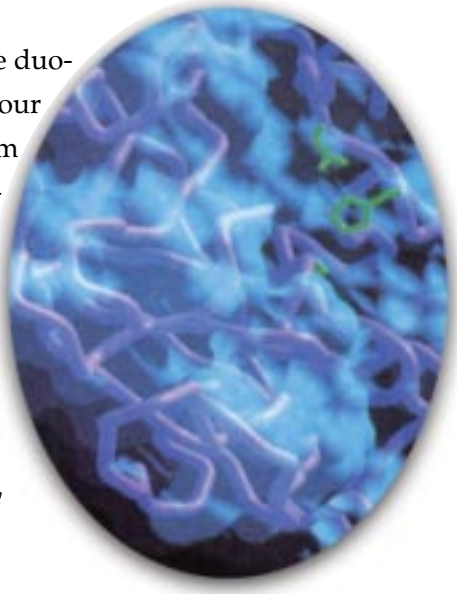
The pancreas is an organ 6 inches in size, lying behind the stomach. Despite its small size, this organ performs the very important manufacture of pancreatic juice containing digestive enzymes. Every day the pancreas produces some 5 liters of this fluid, which contains countless factors essential for life.

Two small molecules, quite unaware of one another's existence in the human body, communicate with each other, knowing what purpose they serve, their objectives, properties and duties. They never see one another, and have no idea what the human anatomy looks like or how large it may be. They need to have great intelligence and consciousness in order to communicate this way, to achieve a common objective. Of course, there is no point in looking for intelligence and consciousness in molecules with no eyes, ears or brain. The intelligence and consciousness apparent in the miraculous tasks performed by these substances belong to Allah, Who created the human body from nothing. One of the reasons in creating this miraculous detail is for people to perceive and reflect on this great truth, reported in these terms in the Qur'an:

> **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. (Surat at-Talaq: 12)**

The pancreas's ability to manufacture enzymes according to the nature and quantity of incoming foodstuffs is another miracle all its own. The pancreas must know chemical formulae, establish what enzymes will digest which kinds of food, and engage in production accordingly. As a result of this controlled process, the pancreas sends to the duodenum its enzyme-rich fluid, containing four enzymes of vital importance to the body: trypsin, chymotrypsin, lipase and amylase. The first two, trypsin and chymotrypsin, break down protein into amino acids that later travel the whole body through the bloodstream and are used in tissue manufacture. Amylase converts starch into simple sugars. Lipase breaks down fat droplets, converting them into fatty acids and glycerol. Thanks to enzymes' enormous speed, this is all completed in a very short time. Whether you consume a special meal ordered from a four-star restaurant or just a simple slice of bread, it all as-

sumes the same appearance in the duodenum. The state of the food on your plate is completely different from how it winds up in the duodenum. Enzymes break it down, reduce its particles in size, eliminate wastes and separate the rest for the purpose of keeping your body alive.



A computer image of the enzyme trypsin. The green parts indicate the enzyme's active site.

Digestive Enzymes and Their Perfect Organization

When synthesized in the pancreatic cells, some enzymes are not yet in an active state. These become active only after passing through the intestinal tract. The chemical trypsin, one of the enzymes already mentioned, represents a potential danger to the body's cells. For that reason, it is secreted in an inactive form known as trypsinogen. The moment trypsinogen makes contact with the intestinal mucosa, the enzyme enterokinase secreted by the mucosa converts it into its active state. Trypsinogen is also activated by the trypsin that already exists.

It is most important that these enzymes in pancreatic juice should not be active before they progress to the intestine, or else trypsin and other enzymes might digest the pancreas itself. Thus the cells that secrete the enzymes in question also release a substance known as a *trypsin inhibitor*, which prevents trypsin from going into action inside the cells that secrete it and in the pancreatic duct. Since trypsin can activate other enzymes, the trypsin inhibitor thus also prevents their activation.

These two enzymes—trypsin and its inhibitor—have no effect when secreted together. But once they reach the duodenum, they sepa-

rate from one another just as if they had been ordered to do so. This division is very important to the digestive process, since the trypsin, suddenly released, starts breaking down proteins in the food reaching the duodenum. The moment and site these two substances separate is very exact. Were they to part company too early, trypsin would break down the pancreas itself. If they never separated, then food entering the body would not get digested. Yet they never fall into such errors. Every meal you consume is digested as a result of these two molecules knowing just when to separate from one another. This happens in exactly the right place and at exactly the right time.

It is of course impossible for enzymes to be able to establish such timing by chance or under their own volition. An enzyme, another protein that inhibits it, the pancreas that manufactures them, the hormones that travel between them as messengers—plus all the molecules, other proteins and enzymes involved in these phenomena—cannot all be in the same place at the same time or act together in complete harmony by chance. It is impossible for even a single one of these to have formed by coincidence. Allah creates them all, and they are all in a constant state of obedience to Him.

What would happen if there were no trypsin inhibitor? Any failure of this mechanism to function could result in death. For example, when the pancreas suffers severe injury, or when a passage is blocked, a large amount of pancreatic secretions accumulates in the damaged area. That might make the trypsin inhibitor being insufficient to keep the enzymes, working together at very high speed, from digesting the whole pancreas in a matter of a few hours. The result would be shock, usually ending in death, or a lifetime of pancreatic deficiency.[65]

If the pancreas can't secrete enough fluid to ensure digestion, this of course presents a major problem. However, the body has taken a precautionary measure against this. In such an eventuality, the pancreas sends messages everywhere in the body in order to locate metabolic en-

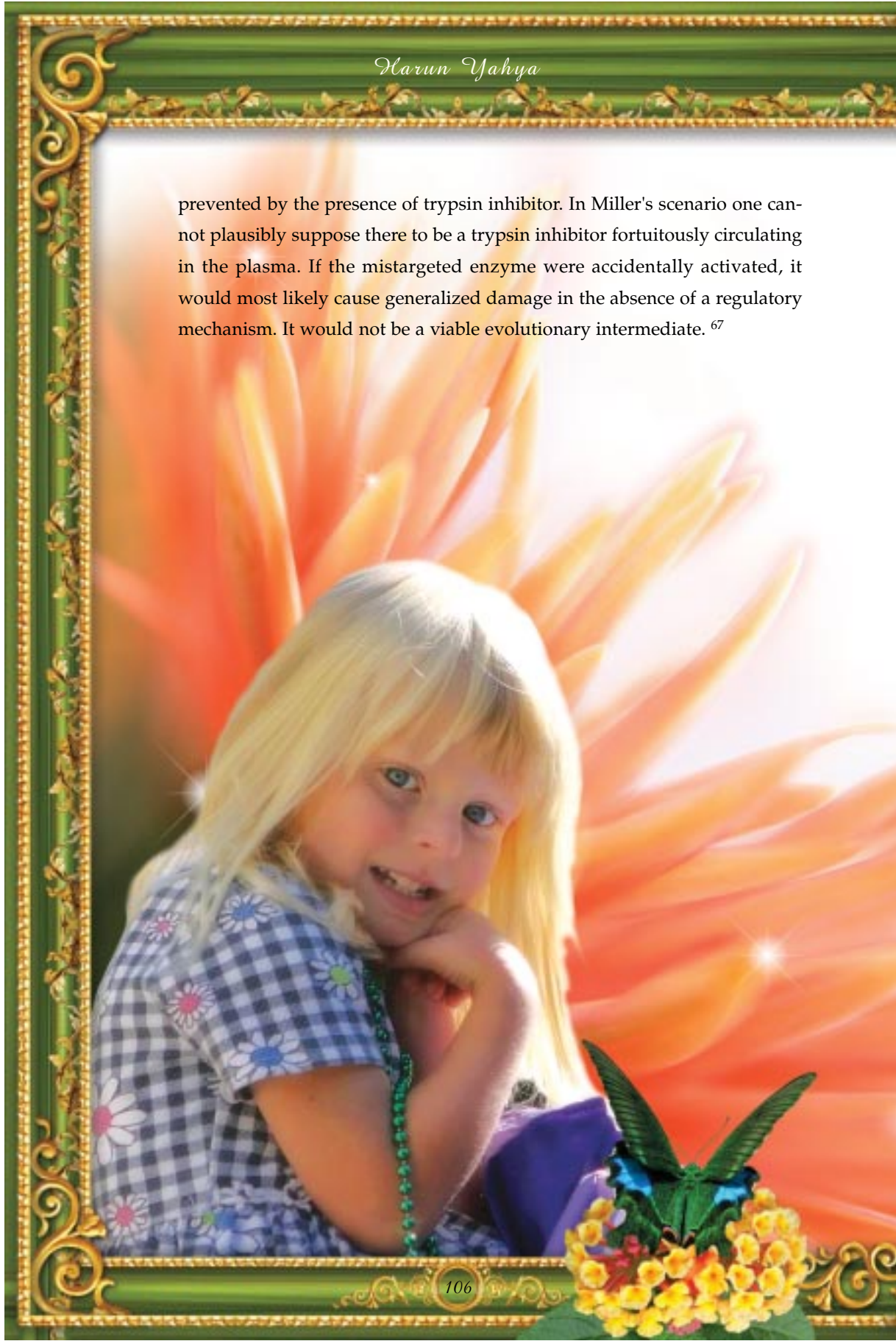
zymes which, when it receives them from other regions of the body, it can convert into digestive enzymes. For the pancreas, this task is very different and more difficult, and since it must work harder, it enlarges. This enlargement does the pancreas no harm, though it does cause pain to the body, and the use of the body's metabolic enzymes for digestive purposes does mean a reduction in the functions of other organs. Dr. Edward Howell explains:

> The pancreas must send message to all parts of the body looking for enzymes it can reprocess into digestive enzymes. It may even invade the warehouse of the precursors. In a pinch it will beg, borrow, or steal them. When it finds them it has work to do. Changing metabolic enzymes into digestive enzymes means extra work for the pancreas. It must get bigger, just as a muscle grows from more exercise. This enlargement may not harm the pancreas, but when it confiscates metabolic enzymes it punishes the whole body by depriving it of mechanics every organ and cell needs to carry on their process and functions. [66]

Michael Behe is a professor of biochemistry at Lehigh University. In his book *Darwin's Black Box*, he described in full detail the complexity involved in the blood-clotting process and the systematic way that enzymes function, pointing to the complex and interconnected details in the clotting system as evidence of what he announced as "irreducible complexity." In the following passage, Behe describes another example of the human body's irreducible complexity: the importance of the pancreatic enzymes, one of the most valuable components of the digestive system:

> Pancreatic enzymes, which have to digest a wide variety of protein foodstuffs, are among the most nonspecific of enzymes. Now, that would pose a severe health threat to the organism even greater than just an unregulated clotting cascade. For example, if the digestive enzyme precursor trypsinogen were mistargeted to the bloodstream, the potential for disaster would be very large. In the pancreas, misactivation of trypsinogen is

prevented by the presence of trypsin inhibitor. In Miller's scenario one cannot plausibly suppose there to be a trypsin inhibitor fortuitously circulating in the plasma. If the mistargeted enzyme were accidentally activated, it would most likely cause generalized damage in the absence of a regulatory mechanism. It would not be a viable evolutionary intermediate. [67]



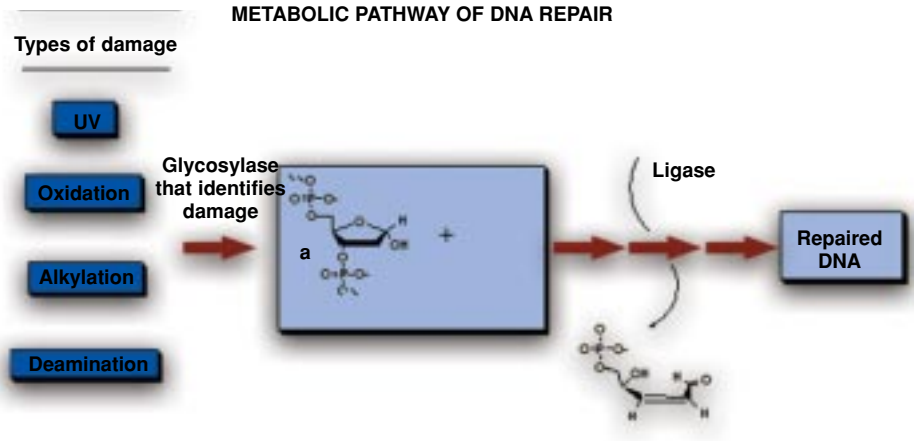
Such a miraculous system, in which no error ever occurs and which functions so perfectly with its enzymes and the organs that manufacture them, is a blessing to constantly remind us of the existence of Almighty Allah. These reminders tell us that humans were not brought into being for no reason and that once they die, they will inevitably be confronted with the life of the Hereafter. If people have the wisdom and understanding necessary to draw conclusions from all this, then all the enzymes and other structures in their bodies will become means whereby they take a step closer to the mercy of Allah, and thus to Paradise. Allah has created all His works toward that end, and every miracle of creation will be a means whereby the person who understands it will attain the true path to the beauties in the Hereafter. People are tested in this way, as Allah tells us in the Qur'an:

> **We created man from a mingled drop to test him, and We made him hearing and seeing. We guided him on the Way, whether he is thankful or unthankful. (Surat al-Insan: 2-3)**

Enzymes That Work for DNA

Enzymes are very special proteins that unfailingly identify which reaction they need to act on and where; and seemingly know how much they need to accelerate it. But perhaps the most interesting of all the enzymes that work in the body are those that work for DNA—and which also represent a major predicament for the proponents of the theory of evolution. Because these enzymes' existence totally does away with the theory's claims regarding chance, as we shall see in due course.

One of the most interesting aspects of DNA enzymes is that they receive all their operational knowledge from DNA, but can also determine and repair any errors in that same DNA. As we know, the DNA molecule is capable of copying itself, but it does not perform this replication process on its own. Enzymes also become involved. The replication takes place, at Allah's choosing, by way of enzymes.



DNA is a giant molecule containing a data bank of 3 billion "letters." Every stage during the replication of this molecule is supervised by enzymes. If any error arises during the process, it is immediately corrected and the chain is checked again. It is scientifically obvious that such a conscious system could not come into being by chance.

DNA is a giant molecule consisting of a data bank of 3 billion "letters." This molecule resembles a spiral staircase twisted into a helix shape. When replication first begins, the enzyme known as DNA helicase separates the two DNA strands like a zipper, at a rate of up to 1,000 nucleotide pairs a second.

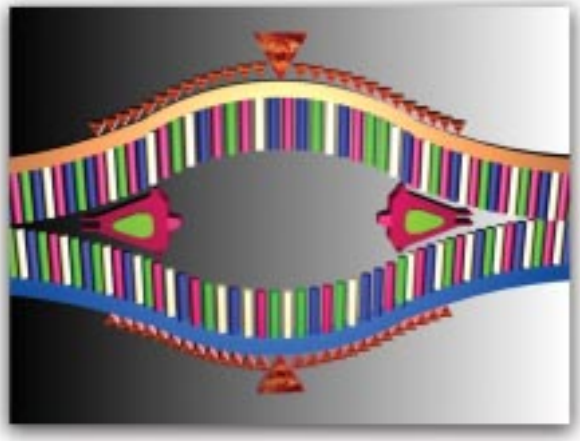
As it opens the zipper, DNA helicase suddenly stops at the points that represent the limits of the information required. (When a process is to be carried out in the cell, only that part of the DNA code concerning that process is copied.) The enzymes know how far the information extends and how far the DNA helix needs to be pried apart.

In principle, the unwinding of the DNA helix is made possible by two DNA helicase enzymes acting together. One runs along the leading strand template, while the other runs along the lagging strand template. Since the two strands have opposite polarities, these helicases must move in opposite directions on the DNA strand, for which reason

they are "different" enzymes. Both types of DNA helicase are present within the cell.[68]

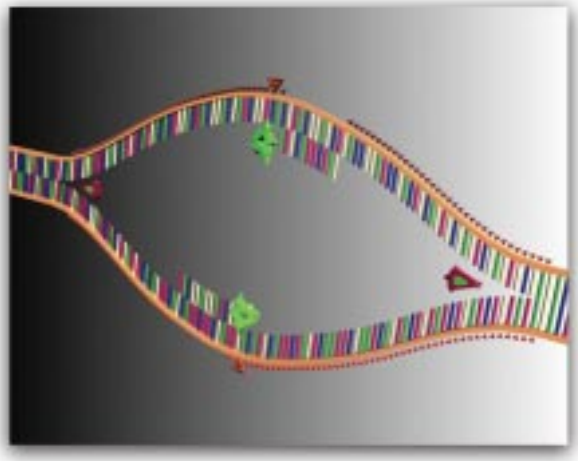
Once the appropriate DNA region has been found, other enzymes that attach to that region begin reading the nucleotides three by three. The reason for this is that the information is encoded in triple nucleotide strings. (Nucleotides are the constituent

During replication, the unwinding of the DNA helix is made possible principally by the harmonious acting of two DNA helicase enzymes. Each of these individual helicase enzymes runs along one strand of the helix to unravel it.

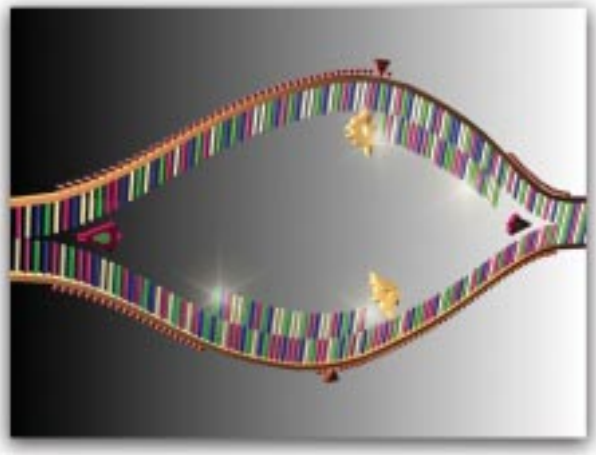


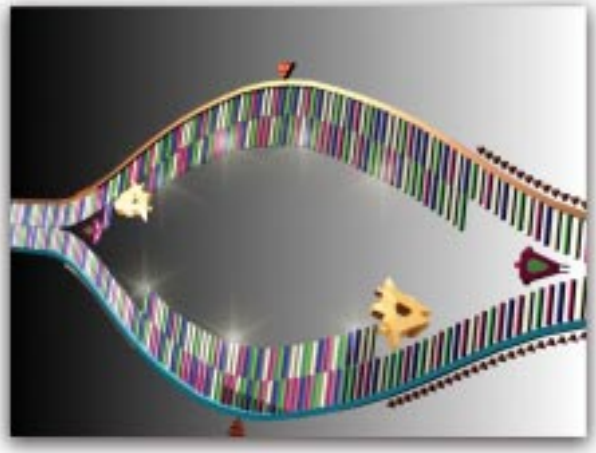
After the unwinding of the DNA helix, other enzymes begin reading the nucleotides three by three.

Other enzymes that become involved with the reading of the nucleotides head for the two strands of the helix and determine whether there are any errors. Any flawed section they identify is broken off by the enzyme known as DNA nuclease. This break is then repaired by the enzyme ligase.

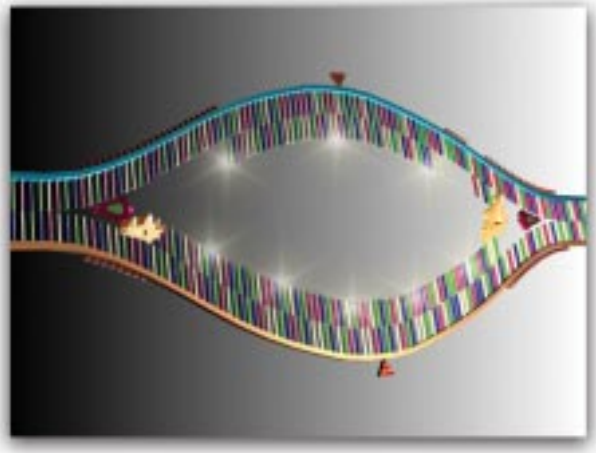


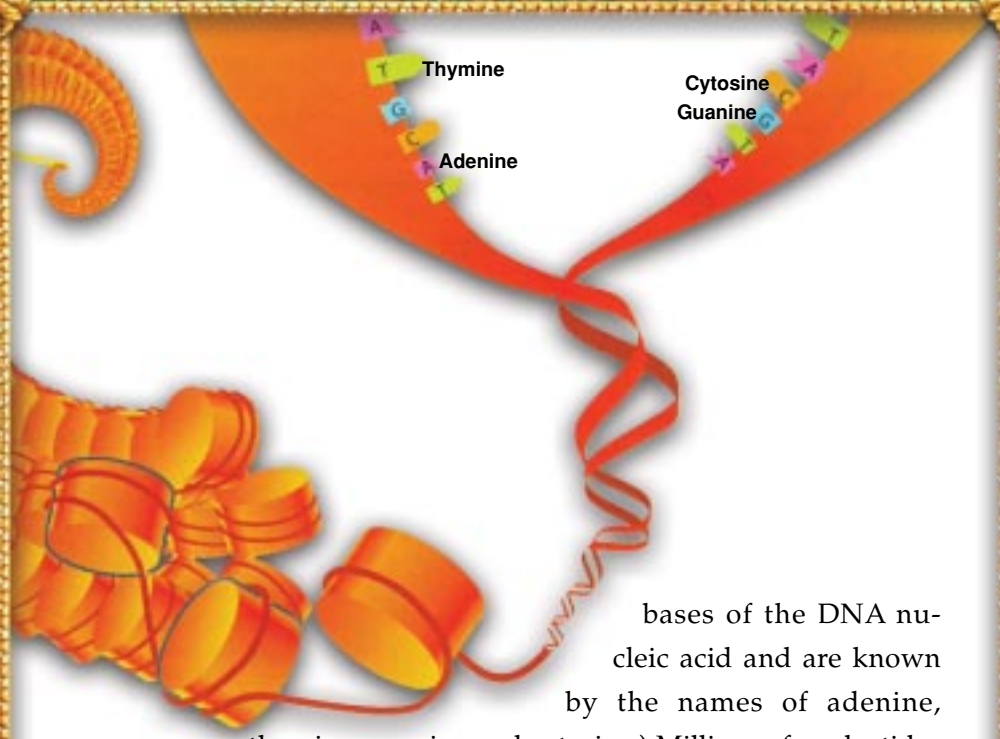
Once the error has been corrected, DNA polymerase completes both strands of the helix with a second strand, and thus enables two separate DNA helixes to form. To do so, it finds and collects the data corresponding to that constituting each strand of the DNA. When copying is completed, DNA polymerase again checks the chain from start to finish.





During all these stages, helix-stabilizing enzymes keep the DNA stable. The newly formed strands are tracked along by the enzyme editase to assure that the nucleotides have been correctly paired. By the end of that checking process, a second brand-new DNA chain has emerged.





bases of the DNA nucleic acid and are known by the names of adenine, thymine, guanine and cytosine.) Millions of nucleotides all joined to one another are constantly read by the enzymes, and this whole process takes less than a second.

However, the enzymes that will read and copy the four kinds of nucleotides in DNA—adenine, thymine, guanine and cytosine—are made up of amino acids. Therefore, how an enzyme communicates with the DNA helix, and how the nucleotides and amino acids understand one another, is something truly extraordinary, since we are looking at two totally different structures. There is no molecular similarity here to permit a lock-and-key type of compatibility. In molecular terms, therefore, it would seem very hard for them to establish a connection. However, a solution to this has also been created within the body. The enzymes are easily able to read the codons on the DNA and understand what these codons express. (A codon is a tri-nucleotide sequence of the code written from the DNA to the mRNA, or messenger RNA. Codons are found in the mRNA molecule.)

This can mean only one thing, of course—that the amino acids and nucleic acids were all created by a single Creator at exactly the same time. The way that the amino acids constituting the enzymes recognize the nucleotides, can resolve the codes they contain and use this to perform the vital function of DNA replication can only be explained by their all being under the control of a single Will. Like everything else that exists, they too are the works of Allah.

Leslie E. Orgel is one of the most dyed-in-the-wool modern evolutionists. Yet even he had to admit that these two structures could not have evolved by chance:

> 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.[69]

Following the unwinding of the DNA strands, other enzymes immediately flock to the DNA and begin scanning it. If during this scanning process, they detect any "error" in the DNA they immediately correct it. The faulty part of the damaged DNA strand is identified and torn out by an enzyme known as DNA nuclease. A gap thus appears in the DNA helix.

When the flawed section has been done away with, DNA polymerase enters the equation. This enzyme completes each of the two separated DNA strands with a second strand, so that two separate DNA helixes are formed. In stages it checks whether or not they match the bases on the other side. In order to do so, it brings in data corresponding to those data that comprise the original DNA strand. It separates flawed base molecules and replaces them with new ones. To put it another way, it copies 3 billion separate letters in a completely flawless manner. In addition, DNA polymerase checks all these different

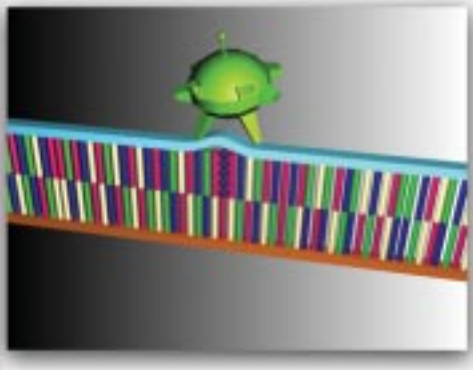
stages twice, never departing before the second checking process has been carried out. At the same time, another polymerase enzyme completes the other half of the DNA. As all this goes on, helix stabilizing enzymes cling on to the ends to prevent the two strands of the DNA helix from winding round one another again. Yet another enzyme intervenes in the renewed section to ensure that the correct, newly installed base is firmly in place.

The enzyme editase, which enters the scene in the wake of all these stages, again checks the separated part and checks the revisions that have been made. Once that has been performed, an identical copy of the original DNA is complete.

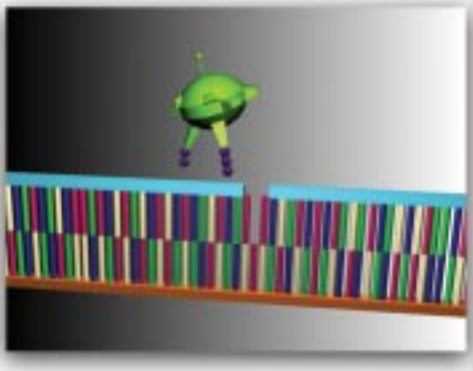
The correction process does not end here, however. You'll recall that there was a break in the DNA strand where the correction was performed. This break is repaired by the enzyme DNA ligase.

This repair is exceedingly important, since if any error occurs during such a vital process as DNA replication, the codons in the new nucleotide sequences will be disordered. With one missing nucleotide, all the codons read in triplicate will change, and as a result, molecules will be produced that mean nothing to the organism and the living body in question will start to die.

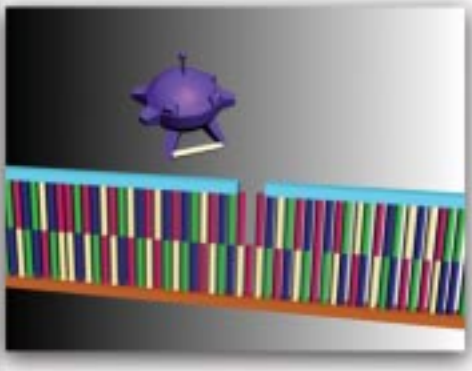
Another important enzyme works inside this extraordinary system during the synthesis of RNA from DNA. Instead of checking for incorrect and wrongly copied bases in RNA and extracting them one by one, this enzyme cuts base sequences out from the region like a pair of scissors, by identifying regions in which bases have been set out incorrectly. If this cutting process takes place in several regions simultaneously, instead of in one only, the DNA strand will begin to fall apart. To prevent this, the cell dispatches another enzyme to the region. This enzyme brings the divided DNA strands back together again and joins them up.[70]



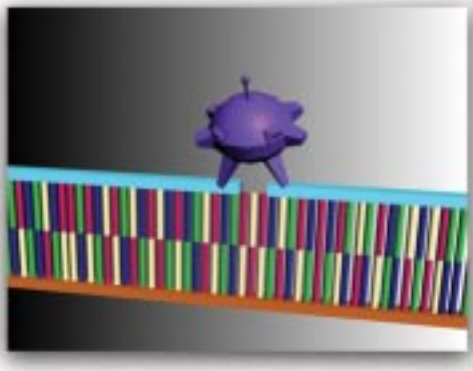
1. The enzyme DNA nuclease checks all the pairs in the DNA chain for any mistakes.



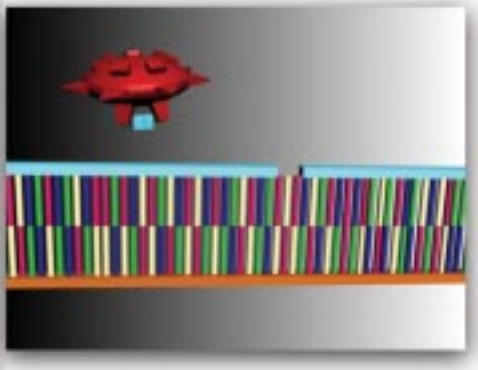
2. Upon detecting a mistake, it immediately removes the incorrect chemical.



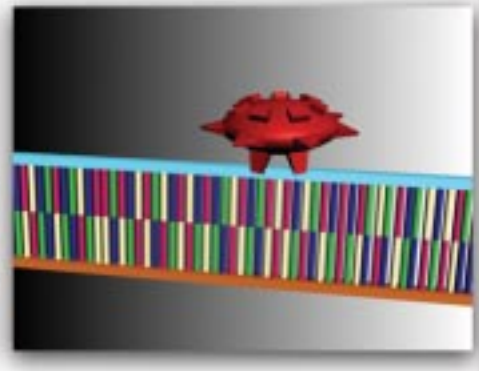
3. A third enzyme, DNA ligase, detects the broken strand and arrives at the site.



4. Using the appropriate materials, it repairs the detached part.



5. At this point, the enzyme DNA polymerase completes both strands of the helix with a second one.



6. It checks the helix one last time and thus form two helices.

Enzymes, with their enormous working capacity, result in perfect replication of DNA. This phenomenon is constantly taking place at great speed in every cell in the human body. Each and every day, in fact, some 20,000 repair processes are carried out in every one of the human body's 100 trillion cells.[71]

The enzymes that work to replicate DNA operate as quickly as permitted by the great care they take. In a striking way, enzymes working on DNA determine their speed according to the reactions they must perform. For example, DNA polymerase completes only some 10 or so bases a second. This rate is fairly slow, compared to enzymes such as catalase, which breaks down 5 million hydrogen peroxide molecules a second. This speed is determined by the quantity of copy DNA required by the body. The cell establishes its requirement, and the enzymes work in line with that production rate. At some places in the body, enzymes literally have to work approaching the speed of light, because where they operate, what counts is speed. The faster they complete their reactions, the better the body will be able to remain healthy.

Production of the enzymes that work for DNA is another controlled process. A large number of enzymes are involved in DNA replication, but their use and production are carried out economically. Again, the DNA itself controls this. An on/off switch on the DNA (repressor gene) keeps production under control. The switch is kept normally in an "off" position, until the need for an enzyme arises.[72]

Even a small electron exchange taking place in the body is important, and the results are very great. Every reaction must take place in a controlled manner. Every reaction requires a division of labor, and the involvement of countless enzymes all acting together. The duties and speed of each one, and the molecules they will act upon, must all be predetermined. Each enzyme must constantly strive to keep the cell healthy and never make a mistake. So who makes all these determinations? Who controls these and ensures that they are free of error? Who

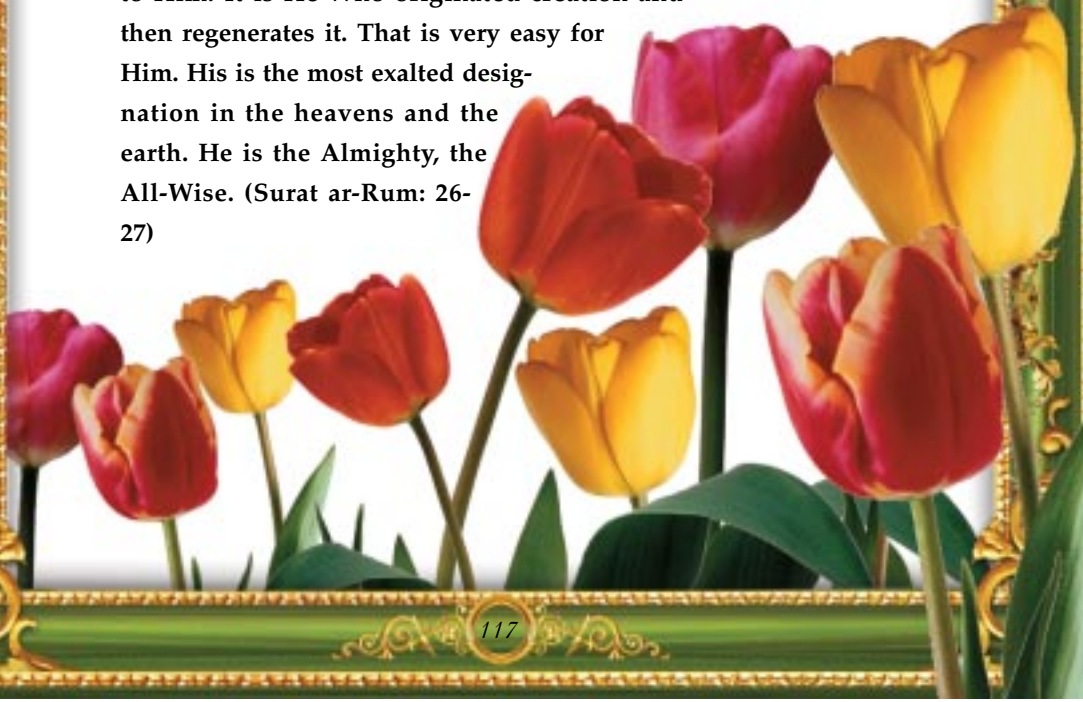
can program them in such a way as to keep such a complex mechanism as the human body alive and healthy? Who can maintain the interdependency in this giant system consisting entirely of tiny molecules?

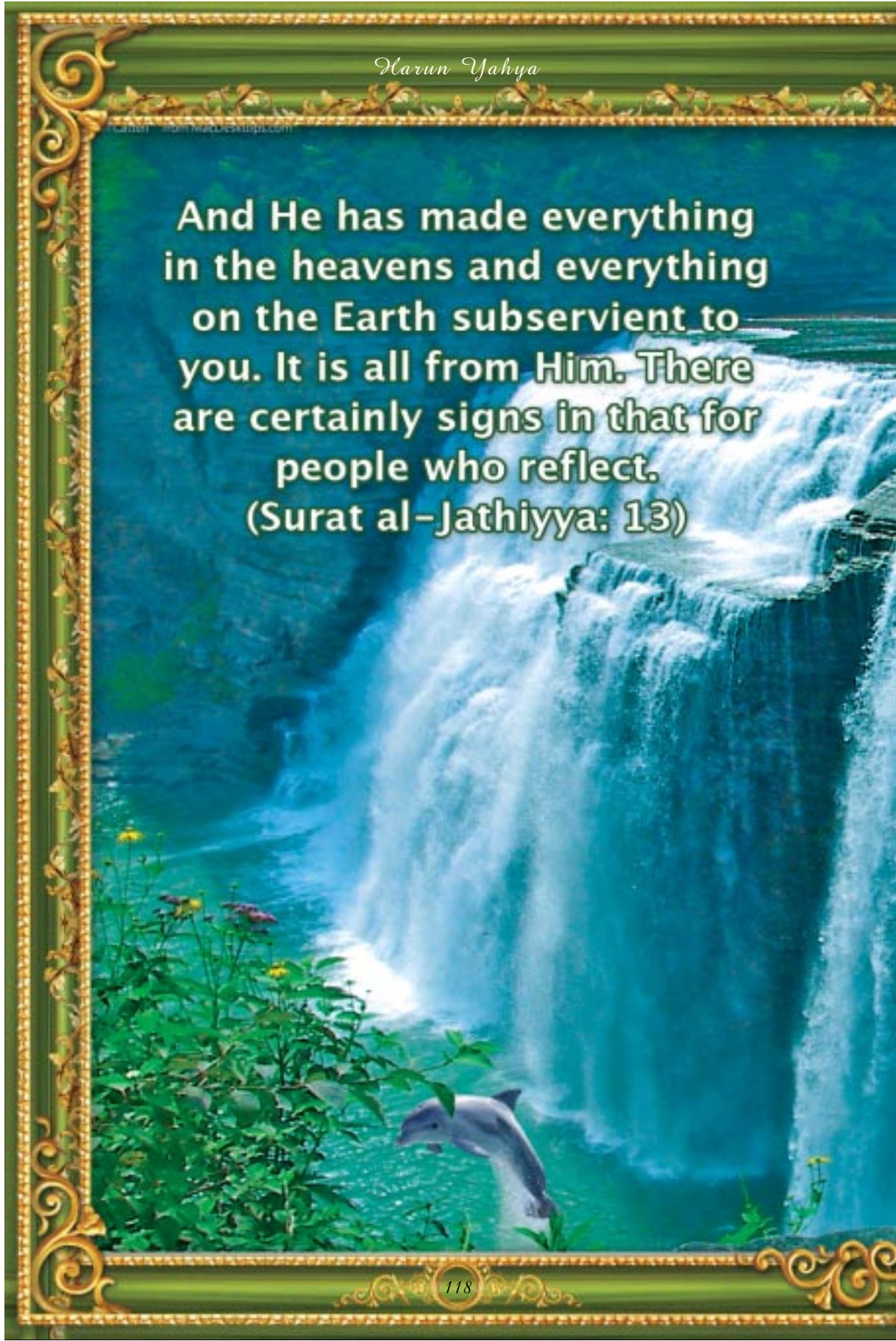
It is Almighty Allah Who does and creates all this.

If a person can realize all this perfection in his own body and has the ability to comprehend it, then he will clearly see the existence of Almighty Allah, our Creator. It is He Who creates us, everything we have, and all entities on the Earth and heavens. Nothing is independent of Allah. Every living cell we examine is flawless because it acts under the direction of Allah. And because they are under His control, they demonstrate such abilities and extraordinary properties. It is a grave error and terrible ingratitude for anyone to ignore all this and imagine himself an independent entity, a miracle of coincidence, while in reality his entire being is in complete obedience to Allah. Even if some insist on ascribing this sublime creation to chance, every enzyme in their bodies, every protein and every electron exhibit harmony with the system determined for them by Allah and constantly take their inspiration from Him.

This fact is also imparted in verses from the Qur'an:

Everyone in the heavens and Earth belongs to Him. All are submissive to Him. It is He Who originated creation and then regenerates it. That is very easy for Him. His is the most exalted designation in the heavens and the earth. He is the Almighty, the All-Wise. (Surat ar-Rum: 26-27)



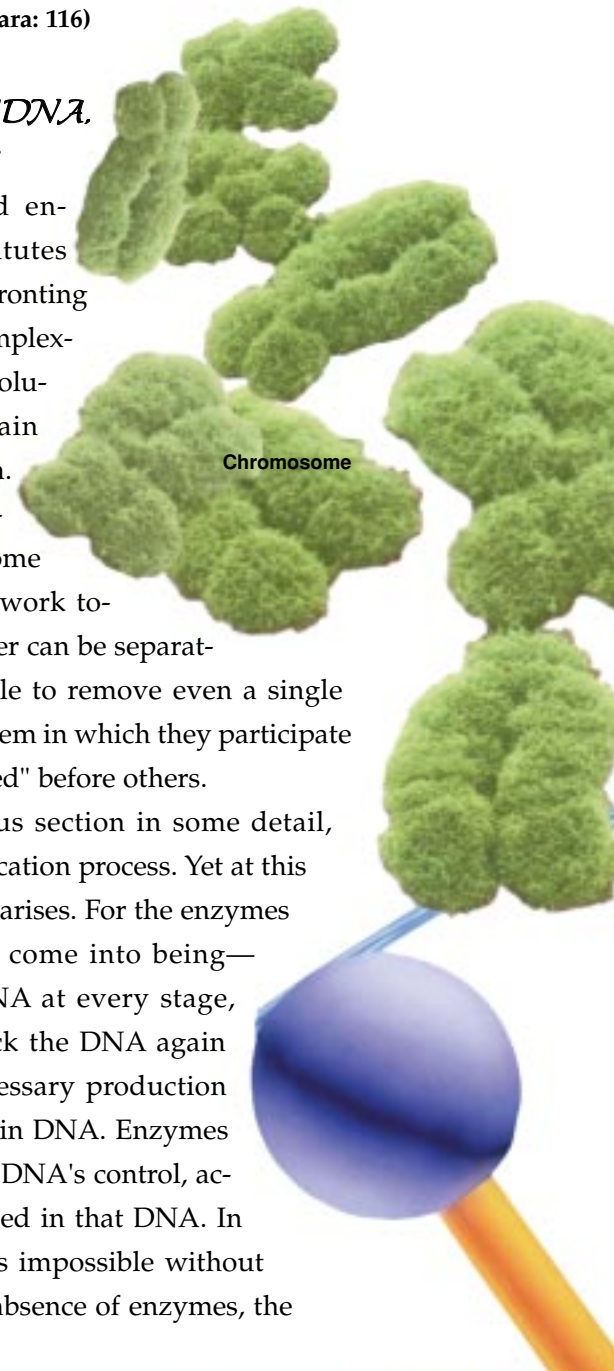

And He has made everything
in the heavens and everything
on the Earth subservient to
you. It is all from Him. There
are certainly signs in that for
people who reflect.
(Surat al-Jathiyya: 13)


Allah is He Who splits the seed
and kernel. He brings forth the
living from the dead, and
produces the dead out of the
living. That is Allah, so how are
you perverted?
(Surat al-An'am: 95)

... everything in the heavens and Earth belongs to Him. Everything is obedient to Him. (Surat al-Baqara: 116)

Are Enzymes the Source of DNA, or the Other Way Around?

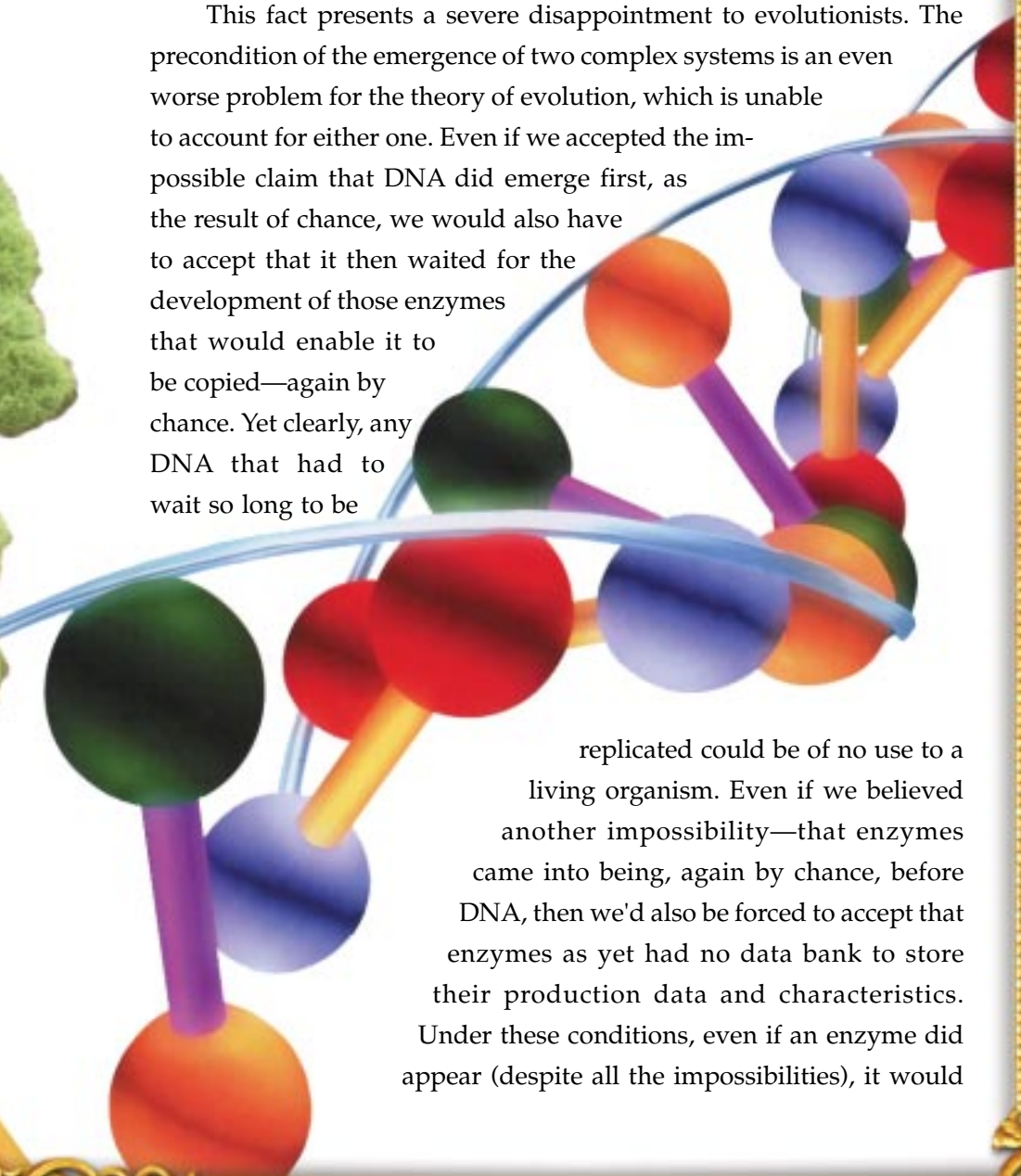
The question of DNA and enzymes working for DNA constitutes one of the greatest impasses confronting evolutionists. The "irreducible complexity" posing such a dilemma for evolutionists will be encountered again during the course of this section. DNA, one of the cell's most complex structures, and enzymes, some of the body's complex proteins, work together in a system in which neither can be separated from the other. It is impossible to remove even a single component from the complex system in which they participate and claim that some parts "evolved" before others.



As described in the previous section in some detail, DNA needs enzymes for the replication process. Yet at this stage, something very interesting arises. For the enzymes that enable DNA replication to come into being—which enzymes monitor the DNA at every stage, then correct any errors and check the DNA again from beginning to end—the necessary production information should already exist in DNA. Enzymes are proteins manufactured under DNA's control, according to the information encoded in that DNA. In other words, enzyme synthesis is impossible without DNA. On the other hand, in the absence of enzymes, the

chemical reactions to produce the sugar ribose, the "backbone" of DNA and RNA, cannot take place. To put that another way, DNA synthesis in turn is impossible in the absence of enzymes.[73] DNA is essential for enzymes to exist, and vice-versa.

This fact presents a severe disappointment to evolutionists. The precondition of the emergence of two complex systems is an even worse problem for the theory of evolution, which is unable to account for either one. Even if we accepted the impossible claim that DNA did emerge first, as the result of chance, we would also have to accept that it then waited for the development of those enzymes that would enable it to be copied—again by chance. Yet clearly, any DNA that had to wait so long to be replicated could be of no use to a living organism. Even if we believed another impossibility—that enzymes came into being, again by chance, before DNA, then we'd also be forced to accept that enzymes as yet had no data bank to store their production data and characteristics. Under these conditions, even if an enzyme did appear (despite all the impossibilities), it would



still be impossible for any more to be produced. Therefore, the DNA-enzyme relationship constitutes an inseparable whole: The two have to co-exist together.

Evolutionists cannot offer any explanation as to what came into existence and how in our DNA-based life. These fundamental components display a truly irreducible complexity that must have existed ever since their beginning.

Charles McCombs, an organic chemist from California University, states that there can be no evolutionary history behind DNA and DNA enzymes:

> If the repair mechanism evolved first, what use is a repair mechanism if DNA has not evolved yet? If DNA evolved first, how would the DNA even know it would be better off with a repair mechanism? Can molecules think? DNA is not a stable chemical molecule, and without a repair mechanism, it would easily deteriorate by chemical oxidation and other processes. There is no mechanism to explain how DNA could exist for millions of years while the repair mechanism evolved. DNA would just decompose back into pond scum before the alleged billions of random chance mutations could ever form the repair mechanism. [74]

It's of course out of question that two molecules might evolve together. Yet recall that evolutionists still can't explain the emergence of even a single DNA molecule or a single enzyme. Evolutionists will never be able to explain this because a chance emergence of an enzyme independently of DNA, or of DNA independently of enzymes, or even of a single enzyme or protein constituting DNA, is impossible.

The DNA-and-enzyme dilemma, which makes all claims regarding evolution totally irrelevant, is greeted with great astonishment by evolutionists. The American evolutionist biologist Frank B. Salisbury, whose articles appear in the *American Biology Teacher* magazine, admits the impossibility of any evolutionary explanation:

> Surely our ideas about the origin of life will have to change radically with

the passage of time. Not only is the gene itself a problem: think of the system that would have to come into being to produce a living cell! It's nice to talk about replicating DNA molecules arising in a soupy sea, but in modern cells this replication requires the presence of suitable enzymes. Furthermore, DNA by itself accomplishes nothing. Its only reason for existence is the information that it carries and that is used in the production of a protein enzyme. At the moment, the link between DNA and the enzyme is a highly complex one, involving RNA and an enzyme for its synthesis on a DNA template; ribosomes; enzymes to activate the amino acids; and transfer-RNA molecules… It's as though everything must happen at once: the entire system must come into being as one unit, or it is worthless. There may well be ways out of this dilemma, but I don't see them at the moment. [75]

Duane T. Gish, president of the Institute of Creation Research, also states that there can be no evolutionary history when it comes to the subject of DNA and DNA enzymes:

As a matter of fact, even though the many metabolic activities found within a living cell are absolutely indispensable for its existence, and these activities are in turn almost totally dependent upon enzymes, the existence of enzymes before living things existed would have been disastrous. Let us suppose that a proteolytic enzyme [protease], that is, an enzyme that catalyzes the hydrolysis or breakdown of protein, somehow arose in the hypothetical "primordial soup" of the primeval world. Its origin would have been totally disastrous, for it would have happily set about catalyzing the rapid destruction of all protein in sight, and soon there would be no protein left. Similarly, RNases [ribonuclease] would destroy all the RNA, DNases would breakdown all the DNA, deaminases would deaminate all amines, decarboxylases would decarboxylate all carboxylic acids, etc. How could such substances be "selected for" when their presence outside of the regulated environment of a living cell would have been destructive?

By no stretch of the imagination, then, could natural selection have had

anything to do with the origin of life. ... the origin of life by naturalistic, mechanistic process is totally impossible. [76]

Despite his being an evolutionist, Caryl P. Haskins, director of the Washington Carnegie Institute, openly admits that it is impossible for these two interdependent complex systems to have evolved by chance:

> But the most sweeping evolutionary questions at the level of biochemical genetics are still unanswered. How the genetic code first appeared and then evolved and, earlier than that, how life itself originated on earth remain for the future to resolve . . . The fact that in all organisms living today the processes both of replication of the DNA and of the effective translation of its code require highly precise enzymes and that, at the same time the molecular structures of those same enzymes are precisely specified by the DNA itself, poses a remarkable evolutionary mystery . . . Did the code and the means of translating it appear simultaneously in evolution? It seems almost incredible that any such coincidence could have occurred, given the extraordinary complexities of both sides and the requirement that they be coordinated accurately for survival. By a pre-Darwinian this puzzle would surely have been interpreted as the most powerful sort of evidence for special creation.[77]

Two complex structures are under discussion here. Evolutionists have not been able to explain the formation of enzymes, much less how the amino acids comprising an enzyme combined in the correct sequence to produce a protein. They have not even attempted to address the issue of DNA's origin. The fact that these two complex structures behave in such a way as to remind us of the question of the chicken and the egg—the way the one is responsible for the production of the other—represents a major difficulty placed at evolutionists' door by scientific progress.

This is actually one of the finest lessons that the science of microbiology can give evolutionists, who seek to offer an explanation other than creation for all the complex systems they encounter, and who pro-

pose exceedingly illogical and inconsistent claims on the subject. Evolutionists have no theory to suggest regarding the formation of both DNA and enzymes, nor any fictitious mechanisms to propose. They are dealing with an incomparable, astonishing and literally extraordinary miracle of creation. Clearly, both DNA and enzymes have been sited in just the right place in the cell for their separate functions and interdependent attributes. There can be no other explanation for this than creation.

Allah sees a single nucleotide in a DNA helix, a single atom it contains and every electron moving at a speed of thousands of miles a second, at every moment, and monitors and controls them all. Everything acquires a perfect complexity by Allah's choosing. Systems operate because that is Allah's will. Human beings remain alive because Allah so wishes. It is Allah Who knows every process taking place in every cell of every human being who has ever lived. It is Allah Who controls and creates out of nothing the thousands of processes taking place in the cell, the molecules involved in these processes and all the minute components that comprise them. That is why those who look for an explanation other than creation are constantly in a hopeless position. They themselves are also aware that they can offer no other explanation for all the things that Allah has created by commanding them to "Be!" Allah tells us of His boundless might in a verse:

> **The Originator of the heavens and Earth. When He decides on something, He just says to it, "Be!" and it is. (Surat al-Baqara: 117)**

The Enzymes That Control RNA

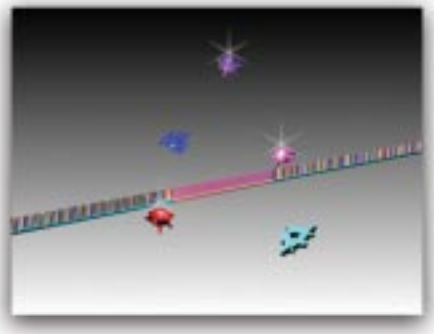
RNA, or ribonucleic acid, is a large molecule that, like DNA, consists of consecutive nucleotides. However, different from DNA, it is single stranded and uses uracil instead of thymine present in DNA. By working together with DNA, RNA plays a role in the synthesis of enzymes.

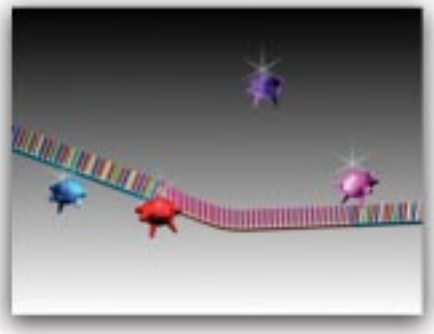
For any process in our bodies—all the chemical reactions for the formation of a single growing hair, for example—the requisite enzymes have to be produced. Messages are therefore transmitted to that part of the DNA where enzymes are to be produced. Since DNA and RNA perform enzyme production together, RNA synthesis must also take place in that site where the message goes.

In order for that to happen, it's essential that the DNA should assume an active state, that the RNA should be exported from the nucleus into the cytoplasm, and that enzymes should be synthesized. Again, all the different stages in the synthesis of RNA are controlled by other enzymes. One of those manufactured, adenosine triphosphatase (or ATPase) establishes the use of ATPs, while another directs the ATPases to the proper location. Meanwhile, thousands of other enzymes carry out thousands of other reactions through similar stages in order to keep the cell alive. Yet one very important point needs to be emphasized: RNA is synthesized for enzyme production, yet it is enzymes that synthesize RNA!

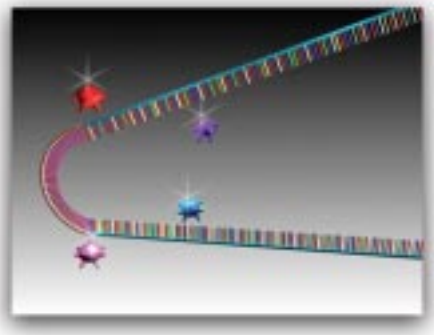
RNA molecules brought into being by genes in the cell nucleus act as templates upon which enzymes are formed. If a living organism is born with a defective gene or if one of its genes is missing, that means the RNA molecule is incomplete, and that some enzymes have not formed in the cell. Therefore, those reactions dependent on the enzyme that's not been manufactured fail to occur, and the organism is defective. If the enzymes and reactions they perform are vital, the organism will inevitably die.[78]

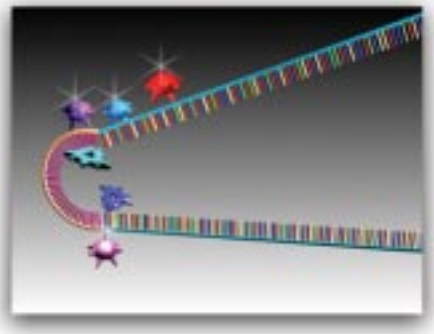
Enzymes are manufactured by RNA, but RNA needs the enzymes themselves in order to be able to manufacture enzymes and correct errors in them. In other words, the same thing applies to RNA as applies to DNA; this system works just as with DNA. When a protein needs to be manufactured in the cell, an enzyme known as RNA polymerase travels to the DNA, the cell's data bank. It finds the data concerning the



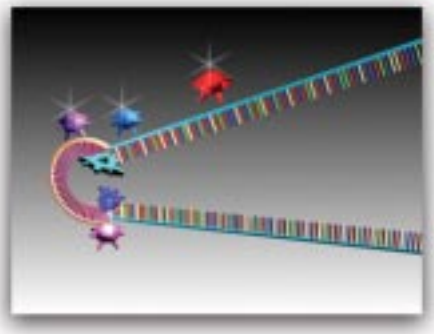


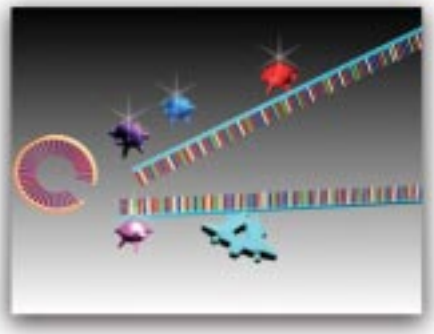
For protein synthesis in the cell, the relevant DNA sequences coding for that specific protein are copied from the DNA. However, these sequences may sometimes lie in several distinct segments along the DNA, and unwanted intervening parts may also be copied. The region shown in red above is a DNA region of such unwanted data. In order for the correct protein to be manufactured, it needs to be removed from the sequence.





At this point enzymes known as "spliceosomes" become involved and start bending the chain being copied in such a way that the intervening sequences are looped out.





By the end of this process, the looped out region has been excised. The coding data are added on to one another, and taken to the cell factory for manufacture.

protein to be manufactured and makes a copy of them. Sometimes, however, the data regarding the protein to be produced may be dispersed in different regions. Under such circumstances, the RNA polymerase copies the entire region—from where the data begin to where they come to an end. In doing so, the enzyme also copies sequences that serve no immediate purpose.

The presence of unnecessary data will lead to the production of a different, useless protein. In order to prevent this, a new enzyme known as spliceosome enters the equation and removes the non-coding intervening sequences from among hundreds of thousands of pieces of data, then joins together the chains necessary for the manufacture of the protein.

At this point, the tRNA codon (transfer RNA: a small RNA chain that transports amino acids to the ribosome for protein synthesis) must be attached to the correct amino acid. There is at least one kind of tRNA for each of the 20 amino acids.[79] If this vital stage in DNA replication does not function properly, then the DNA sequence will be damaged and be functionless. A special enzyme, aminoacyl tRNA synthetase, is responsible for attaching the proper amino acid to the tRNA. During this process it has to be ensured that every tRNA carries the correct amino acid, and that none of the other 19 amino acids are affected. Since the enzyme in question works without error, these risks in the copying of DNA are totally eliminated.[80]

The dilemma in DNA replication also emerges in RNA replication. The proteins that permit RNA copying are, again, enzymes produced by RNA. It is therefore impossible to speak of enzymes in the absence of RNA, and vice-versa. Accordingly, evolutionists face insoluble problems regarding how RNA polymers can replicate in the absence of proteins.[81] RNA's particular enzymes must be working at full capacity, and with all their functions, from the moment that RNA comes into being. Yet at the same time, those enzymes have to be manufactured by RNA.

Eyesight cannot perceive Him but He perceives eyesight. He is the All-Penetrating, the All-Aware. (Surat al-An'am: 103)

Evolutionists are unable to account for this contradiction, or to explain how even one of these structures might have come into being by chance.

Will they suggest that two basically different molecules that cannot operate independently of one another came into being accidently and for no reason, at exactly the same moment, and that they located one another and began working together—again by chance? Can any scientist who spent years training in laboratories and who knows this system down to the finest details make such a claim? To make such an unscientific, irrational claim solely in order to be able to deny the fact of Allah's creation would thoroughly discredit any such scientist.

For that reason, adherents of the theory of evolution are unwilling to advance such claims openly. Rather, they seek to disguise everything under a scientific mask, but also fail in that. The evolutionist Leslie E. Orgel is one of those who have had to admit this manifest impossibility:

> We proposed that RNA might well have come first and established what is now called the RNA world... This scenario could have occurred, we noted, if prebiotic RNA had two properties not evident today: a capacity to replicate without the help of proteins and an ability to catalyze every step of protein synthesis.[82]

Here, Orgel is referring to an imaginary process such as evolution producing RNA, together with enzymes. In that fictitious process, however, it is impossible for even one of the components of these complex structures, let alone the structures themselves, to come into being by chance.

So perfect is Allah's creation that even if all the humans in the world joined forces, they still could not produce a single cell. They can propose no alternative explanation to Allah's creation. A system in which RNA cannot exist without enzymes, and enzymes cannot exist without RNA, is one of the indisputably finest examples of this perfection.

In the Qur'an, Allah tells us that He is the Creator of all things:

> **Among His signs is the creation of the heavens and Earth and all the creatures He has spread about in them. And He has the power to gather them together whenever He wills. (Surat ash-Shura: 29)**

Some Special Enzymes

Every detail concerning enzymes is quite astonishing, and every one of the tasks enzymes perform is of the greatest importance. Therefore, each enzyme is special. The aim of this section is to demonstrate that every enzyme in the body has perfect features. As a reminder of enzymes' vital importance, we'll introduce in general terms, those enzymes that cause the blood to clot and which also provide necessary mechanisms for thought. If someone can know how enzymes enable him to talk with a friend, eat a favorite fruit, enjoy a landscape or to laugh and smile and work, then he can also grasp the fine detail in these blessings. He will realize that there is a purpose behind all the blessings bestowed on him, and that in every cell there is something extraordinary and specially created for mankind.

He may recall that all these things continue to function by Allah's leave and that if He so chose, Allah could bring them all to a halt in a moment. He will realize

that if such a moment ever came, there would be nothing to do, no solution. He will see that the enzymes created as a blessing by Allah cannot go into operation by any other means. This will bring him to a proper appreciation of the Creator and faith in His existence, which will be of the greatest benefit to him both in this world and in the Hereafter. Look at the details regarding enzymes from that perspective, and never forget that they are all blessings bestowed on you.

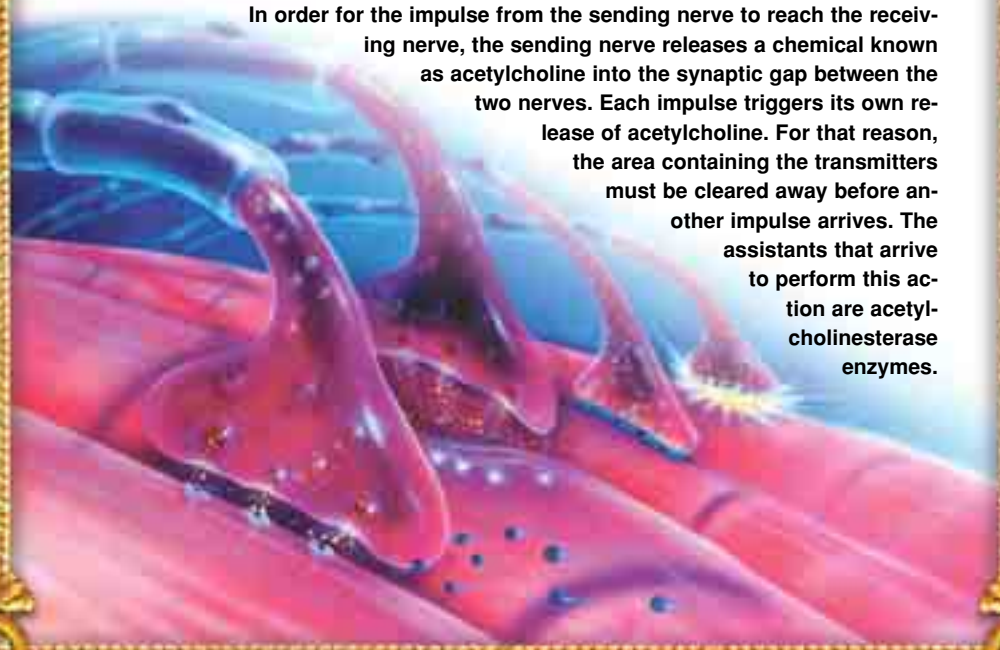
Enzymes That Transmit Messages in the Body

The network of nerves in your body maintains constant activity. The nerves permit coordination between your brain and organs, by which reason commands and stimuli are constantly dispatched along the nerves. When you go to wave your hand at someone, that movement begins with a command from the brain, via an electrical current transmitted along nerves. Nerves encounter one another at specific junctions or gaps separating two nerve cells known as synapses. An impulse continues on its way until it comes to a synapse, then it stops. The synapse's gap might seem to represent a problem for the impulse: Transmission should stop and the

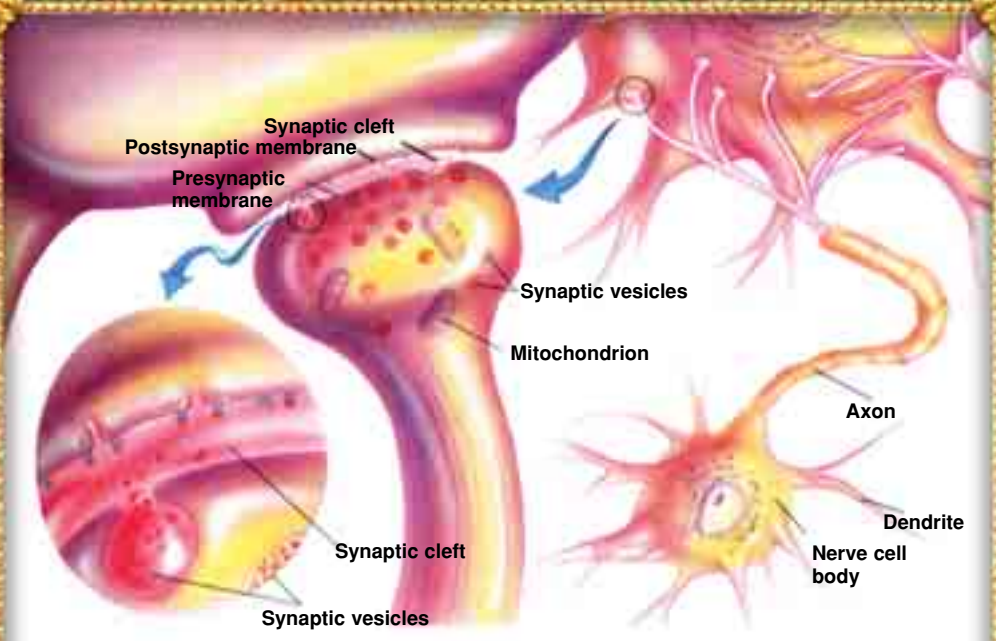
signal fail to reach the next nerve. Yet no such difficulty ever actually takes place, because the nerve sending the signal releases a chemical compound known as acetylcholine into the synapse to permit the impulse to pass from the dispatching nerve to the receiving one. When the nerve impulse reaches the synapse, a collection of acetylcholine molecules washes across that gap. They attach to the receptors on the other side of the gap and trigger the other cell into action. At this, the muscles contract because the message from the brain has reached the arm.

You can now lift your hand and wave.

Nerves use a system similar to Morse code for communication. But this system consists of dots only. The more important the message, the greater the dot density. Every dot—every nerve impulse, in other words—triggers its own release of acetylcholine. Put another way, the impulse that lets you wave your hand runs along the same nerves that enable you to walk, but each one releases different acetylcholine molecules. For that reason, the region where these transmitters are found



In order for the impulse from the sending nerve to reach the receiving nerve, the sending nerve releases a chemical known as acetylcholine into the synaptic gap between the two nerves. Each impulse triggers its own release of acetylcholine. For that reason, the area containing the transmitters must be cleared away before another impulse arrives. The assistants that arrive to perform this action are acetylcholinesterase enzymes.



Acetylcholinesterase enzymes tear into the acetylcholine molecules at great speed, and have been calculated to destroy some 25,000 molecules a second. In other words, an enzyme esterase breaks down an acetylcholine molecule in approximately 40 milliseconds.

has to be cleared before another signal arrives, or otherwise, the messages will become mixed up. For nerves that must sometimes transmit 500 signals a second, this means that numerous acetylcholine transmitters have to be wiped every millisecond.

Acetylcholinesterase enzymes have been created in such a manner that they can do this. These catalysts tear into the acetylcholine molecules at enormous speed. Biochemists have calculated that they destroy 25,000 molecules every second. Viewed from another perspective, each esterase enzyme breaks down an acetylcholine molecule in around 40 milliseconds.[83]

Many times here, it has been repeated that if even a single enzyme loses its important function, the living organism will start to die, because our lives depend upon these peerless entities so many billions of times smaller than us and their constant activity in our bodies. By itself,

acetylcholinesterase is proof of this. Of all the enzymes in the body, if only this enzyme were missing, we could not possibly live, since in a sense, all the electricity in our bodies would be shut off.

Disorders such as Alzheimer's disease are the result of this enzyme in question failing to function systematically. In that disease, acetylcholine is destroyed more quickly than normal, and thus nerve impulses are either too weak to be received or else not transmitted completely along the nerve cells.[84]

The intercommunication between 100 billion nerve cells and the nervous network stretching thousands of miles among them is a most marvelous work of Allah. If He so chose, He could of course have created an uninterrupted field with no gaps anywhere on it. The electrical signal could have flowed along the nerves without the need for any chemicals. But this is not how the body works. There is a need for gaps between the nerves, for the chemicals to ensure the transmission between them, and for other chemicals to inhibit these same chemicals. One of the wisest aspects of this is how human beings investigating all this in the laboratory constantly find perfections, miracles and complexities. Allah creates details within details of an extraordinary complexity, and brings them into being dependent on one another.

Here, we are examining the activities of one single component of the system. However, if you remove this small component from the equation, the system will be deprived of all its functions. In other words, only a single enzyme is a critical part of the nervous system. You cannot reduce this mechanism or simplify it. Were it not for this enzyme, the message from your brain would not reach your arm, but become lost in your body. You would be unable even to move your finger, let alone wave at a friend.

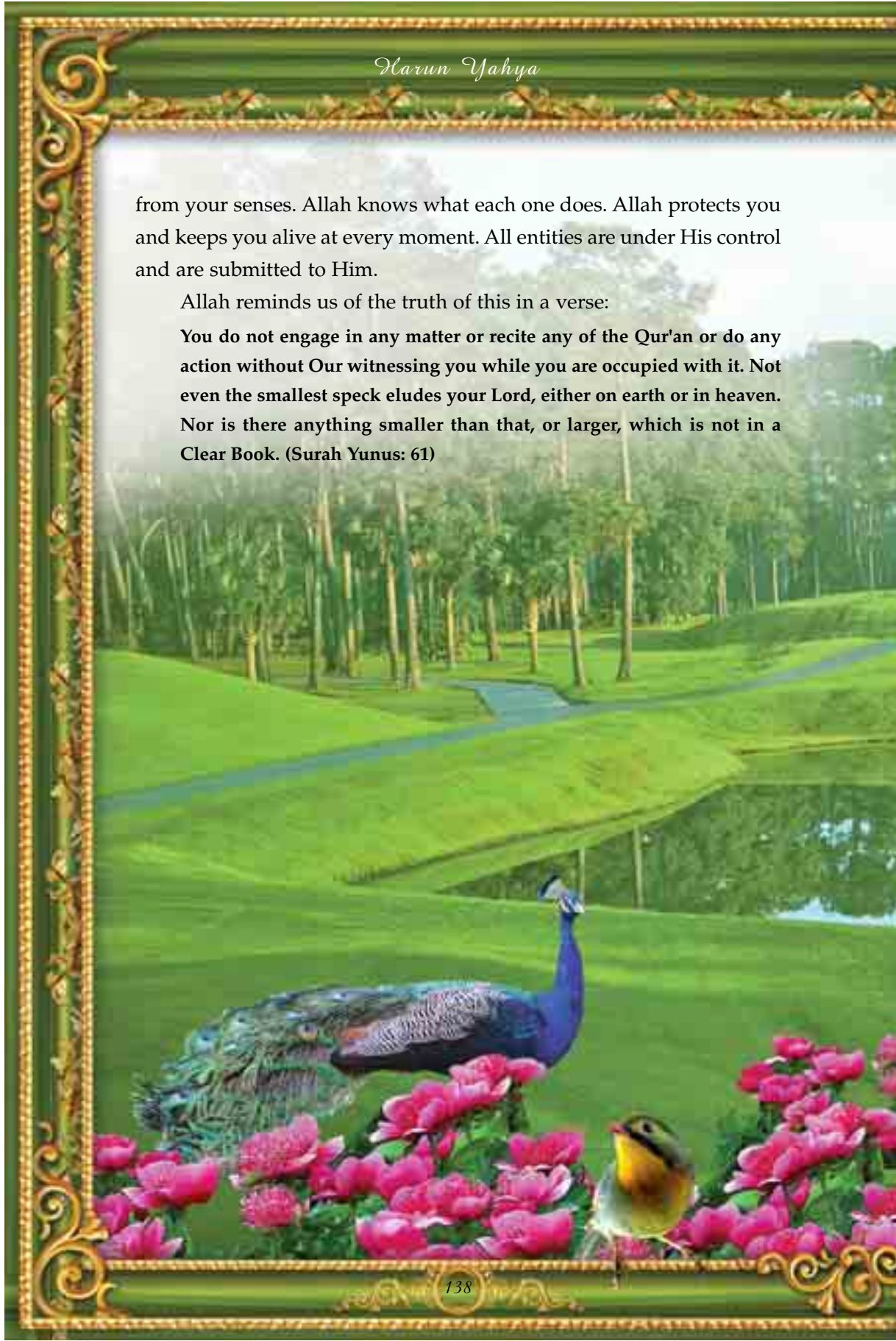
These amazing systems you possess are created by Allah. This process is constantly repeated in all your 100 billion nerve cells for the millions of movements you make every day and the countless stimuli


It is We Who give life and
cause to die and We are
the Inheritor.
(Surat al-Hijr: 23)

from your senses. Allah knows what each one does. Allah protects you and keeps you alive at every moment. All entities are under His control and are submitted to Him.

Allah reminds us of the truth of this in a verse:

You do not engage in any matter or recite any of the Qur'an or do any action without Our witnessing you while you are occupied with it. 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)



The Perfect Enzyme Chain in Blood Clotting

The blood-clotting system is an extraordinary phenomenon that operates so flawlessly that when you cut yourself, you can be sure that the flow of blood will soon stop and the injury will seal itself up. That certainty stems from the way the enzymes in your body work in a flawless, systematic manner.

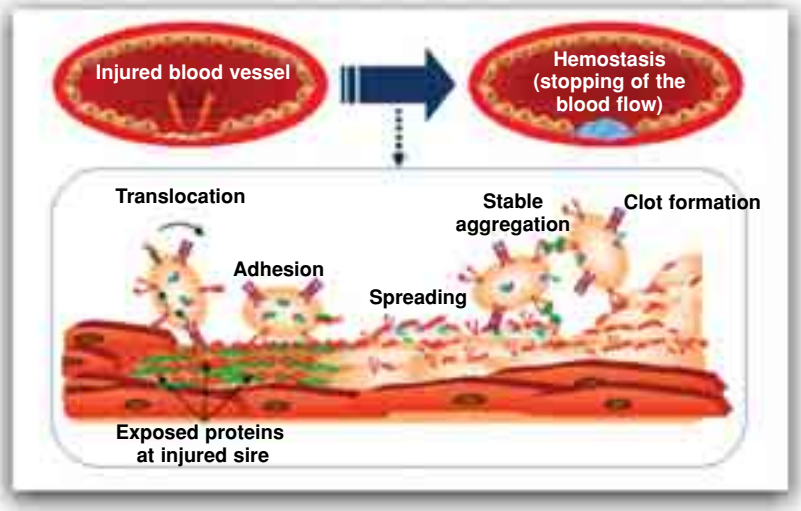
A wound sends the entire body into alarm. The intervention will take place at the site of the cut. When bleeding starts anywhere in the body, all available means are mobilized and flow in the direction of the injury. At this point, certain molecules traveling through the bloodstream suddenly become active, at enormous speed.

First aid is delivered by blood platelets known as thrombocytes. These travel dispersed throughout the bloodstream, so that wherever bleeding may occur, a thrombocyte will always be patrolling nearby.

A protein known as von Willebrand factor works like a policeman calling for backup assistance by indicating the site of an accident. It halts thrombocytes when it detects them and ensures that they remain at the site. The first thrombocyte to arrive signals others by releasing a special substance, just as if it were summoning assistance over the radio.

Once the first intervention has occurred, enzymes take over the work. Up to this point, in fact, a large number of enzymes have already become involved, but we shall concentrate on those that complete the coagulation process. The body always stores inactive enzymes for later use, coding them to go into action only when they receive the signal that their presence is required.

Fibrinogen is a non-active enzyme that travels freely through the body and is found dissolved in blood plasma. It circulates at random until the body suffers a cut anywhere, and then it suddenly goes into action. This protein that serves no function in the plasma heads towards the region of the injury. When a state of alarm develops, anoth-



The blood clotting system is an extraordinary phenomenon that occurs through the activity of a series of enzymes. Each enzyme must be in the right place and go into action at the right time. Countless enzymes work just as if they knew where they had to be, and when. This perfect cooperation and flawless operation is a blessing created by Allah, and every detail is a manifestation of His might and greatness.

er enzyme called thrombin cuts two of the three links in fibrinogen's protein chain, thus converting fibrinogen into fibrin. In other words, a previously non-active enzyme assumes an active role. Small, adhesive parts have now appeared on the injured surface. These allow fibrin to bond to other fibrin molecules. The result is a long chain, and the proteins quickly combine and interlace with one another. This is the primary clot that forms. Subsequently, this fibrin mesh will continue to cover the wound just like a tightly-woven fishing net.

At the same time, thrombin turns the enzyme factor XIII into factor XIIIa, which strengthens the fibrin clot.[85]

The thrombin that activates fibrinogen also exists in the blood in an inactive state known as prothrombin. This is vital, because if thrombin constantly coursed through the bloodstream, it would sever all the fibrinogens. Uncontrolled clotting would occur in the body constantly. In order to avoid any such danger, prothrombin too must be activated by another enzyme.

That enzyme, called the Stuart factor, cleaves and activates prothrombin. But what applies to thrombin also applies to Stuart factor. Were it to be moving actively in the blood right from the outset, then in that case, the Stuart factor would constantly initiate the clotting mechanism and uncontrolled clotting would also begin. For that reason, Stuart factor also exists in an active state while circulating in the blood.

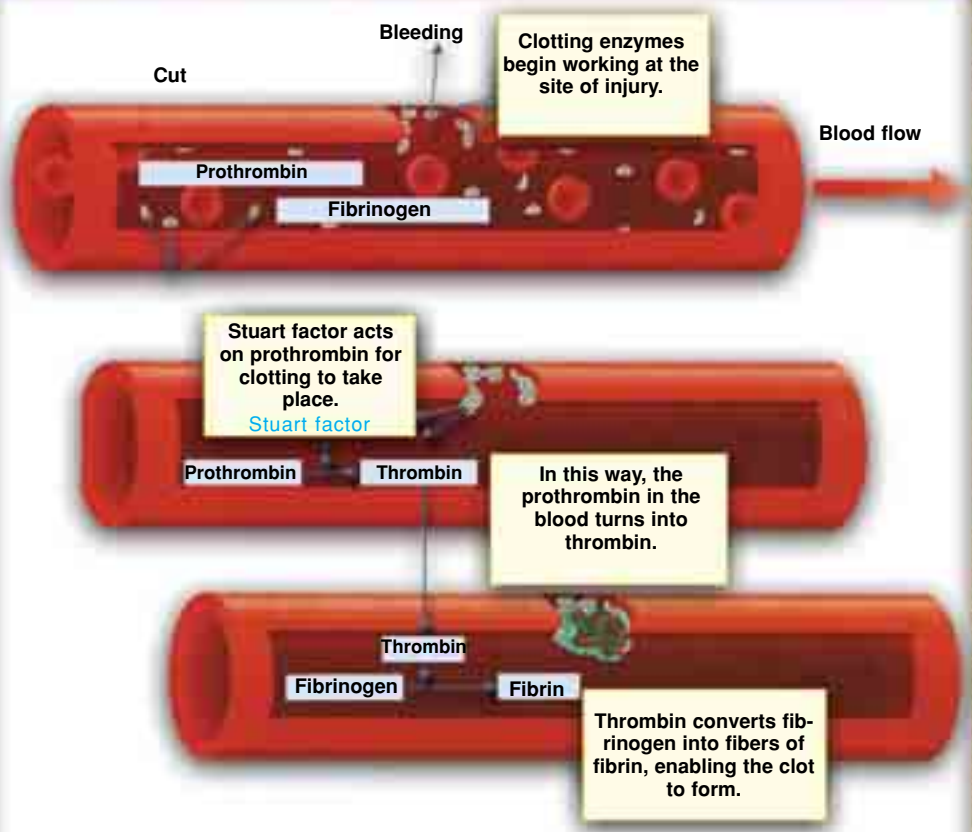
However, Stuart factor by itself is not enough for prothrombin to be set into action. Still another enzyme, accelerin, works with it to convert prothrombin into thrombin.

We might therefore assume that accelerin is also initially not in an active state. However, its activation system involves a puzzle reminiscent of the riddle of "the chicken and the egg"—because it is thrombin that activates accelerin! How do we explain the fact that accelerin is activated by the very enzyme that it itself activates?

The reason is that Stuart factor cleaves the prothrombin at a very low rate. The result is that as a precautionary measure, a certain amount of thrombin is always ready in the body. The whole phenomenon begins with this significant precaution and as the Stuart factor goes into action, the clotting system also goes into action at high speed.

This system of various factors enables blood clotting to take place. The enzymes must know which have to go into action when, where they need to concentrate, and what gap in the body they have to cover over. They also need to know when to stop their work. If the clotting process that begins over a wound does not stop at the proper stage, this will constitute a serious danger for the body. Uncontrolled clotting will mean blood vessel congestion, and vital organs will fail to function. It is therefore essential to halt the activities of these enzymes that consecutively activate one another. Yet other enzymes inform them of this.

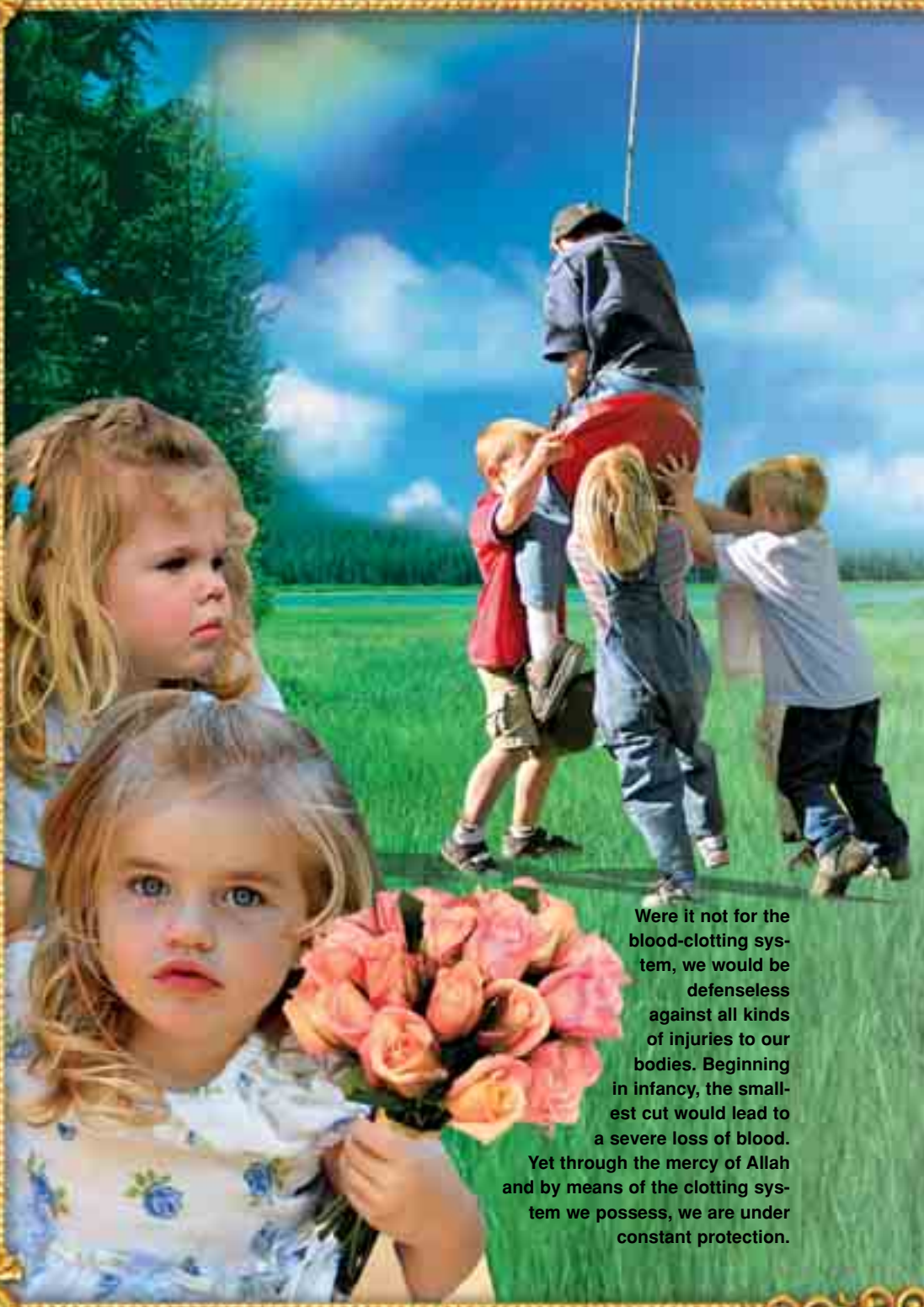
Once the wound has healed, the blood clot also needs to be removed. The molecules that arrive on the scene for this task are, again, enzymes. The one known as plasmin works like a pair of scissors to cut



The enzymes that enable blood clotting literally know what needs to happen when, where they must concentrate, which gap in the body they need to close, and what sequence they need to follow. This immaculate system is too complex for any of its stages to have come about by chance.

the fibrin clots. Plasmin works on fibrin, but not on fibrinogen, the latter's inactive state. Were that not so, it would cause a serious difficulty for future clotting. Plasmin cannot act too quickly, which is actually an advantage: Otherwise, the wound would not heal before plasmin, which is activated when the wound appears, had severed the fibrin, breaking down clots as soon as they formed.

There are numerous other enzymes involved in the blood clotting system. Each is necessary to carry out or complete a particular process, and all are parts of an irreducibly complex system from which not a single component can be removed.



Were it not for the blood-clotting system, we would be defenseless against all kinds of injuries to our bodies. Beginning in infancy, the smallest cut would lead to a severe loss of blood. Yet through the mercy of Allah and by means of the clotting system we possess, we are under constant protection.

The author James Perloff was once a dyedin-the-wool atheist, but now advocates the fact of creation against evolution. He adds to Michael Behe's comments regarding the dilemma facing evolutionists with regard to the blood-clotting system:

> The formation of a blood clot is a complex, multi-step process that utilizes numerous proteins, many with no other function besides clotting. Each protein depends on an enzyme to activate it. So to paraphrase Behe very simply: What evolved first—the protein or enzyme? Not the protein; it cannot function without the enzyme to switch it on. But why would nature evolve the activating enzyme first? Without the protein, it serves no purpose. Furthermore, if blood clotting had evolved step-by-step over eons, creatures would have bled to death before it was ever perfected. The system is irreducibly complex.[86]

Could any system that consists of hundreds of stages, not one of which can be simplified or removed, have formed as the result of unconscious molecules joining together by chance? Can unconscious atoms accidently give rise to one enzyme belonging to the blood-clotting system? Can coincidences work miracles? Can chance create something out of nothing?

None of these are possible, of course. Evolutionists maintain that blind coincidences created out of unconscious atoms a clotting system that behaves in a literally conscious manner. Chance is the false deity of Darwinism, that supposedly works miracles. That is why evolutionists seek to convince others that chance produces new species, works miracles and creates something out of nothing.

The fact is, however, that it is impossible for perfect, regular systems to emerge as a result of random, uncontrolled and unconscious phenomena. Any random event in a mechanism as complex and detailed as the blood-clotting system, so sensitive at the molecular level and requiring a complex division of tasks, will turn that whole procedure upside down. Like all the other systems in the human body, this

system demonstrates the might and greatness of Allah.

Allah is the Creator of all things and all things are obedient to Him:

> **That is Allah, your Lord. There is no deity 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: 102-103)**

Lysosomal Enzymes

One of the organelles that exhibit intense activity within the cell is the lysosome. Each lysosome is about 0.5 microns in diameter (1 micron = 1/1,000 millimeters). They contain various degradative enzymes. Thanks to these enzymes, a great many eliminatory processes are performed in the body.

The lysosome is the cells' grinder. Lysosome enzymes tear apart, break down and destroy cells no longer of any use in the body. Bacteria, virus and cell fragments, dead tissues and large, harmful particles are all eliminated as the result of the activities of these enzymes, leaving behind useful parts that the body can recycle. For example, the dark area that occurs when you bruise your skin is the remains of the dead cells in that area. The region soon heals and returns to its former state, thanks to the lysosomal enzymes breaking down and getting rid of dead tissues.

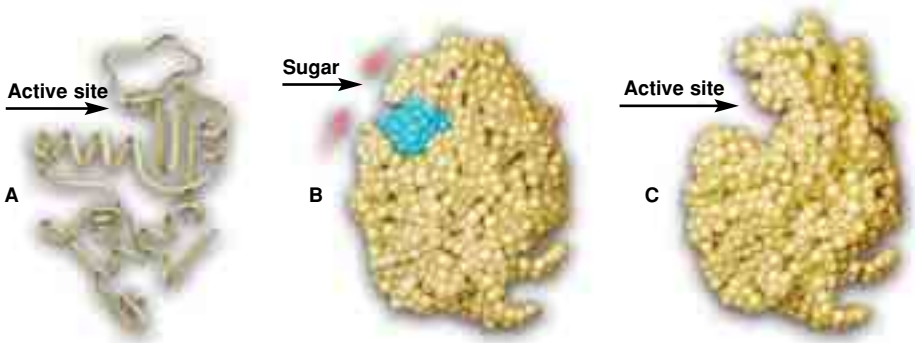
Thirty-six different enzymes serve in the lysosome. These enzymes open a hole in the membrane surrounding a structure and halt the body's constantly multiplying cells by breaking them down. This is exceedingly important, because if this process did not take place, cells in the body would keep on multiplying, leading to organ growth and the constant formation of tumors throughout the body.

Since these degradative duties are vital to the body's defense system, these enzymes are generally found in leukocytes and

macrophages, which are able to ingest bacteria and other foreign materials they encounter within the body by way of phagocytosis. (For more on phagocytosis, see Harun Yahya, *The Miracle of the Immune System*, [New Delhi: Goodword Books, 2001].)

Lysosomal enzymes are highly efficient at breaking down substances. Inside the lysosome, however, they are in an inactive state. If the lysosome membrane is pierced or torn, the enzymes begin destroying the cell they are in, a process known as autolysis. This destruction generally takes place on old or damaged organelles or ones that are no longer functioning. The lysosome inside every cell performs this process through the enzymes it releases, eliminates dead organelles, and sometimes completely destroys the cell itself.

For example, a large number of bacteria enter your body along with the food you eat. The duty of destroying these while they are still in the mouth lies with the lysosomal enzymes. At the same time, these enzymes ingest and clear up food wastes remaining in the mouth, thus eliminating the food that can support bacteria. In this way, bacteria are



The breaking down of the bacterial cell membrane by the active site of the lysosomal enzyme
A shows the tertiary structure of the lysosomal enzyme. B and C designate the active site in the protein. The sugar substrate binds to the active site together with the bacterial cell membrane. Lysosomal enzymes break the bonds between the two sugar molecules, letting the bacterial cell membrane to be torn apart. Thus the bacterium dies.

condemned to death by starvation.

Lysosomal enzymes serve again and again at different times in very different regions of the body. During pregnancy, the growth of the womb is a result of cell multiplication. This ability while the baby is still developing is a life-saving and miraculous development. However, this cell multiplication needs to come to an end after birth, and the body must return to its former state—which is where lysosomal enzymes come in. The lysosomes of specific cells are alerted and start manufacturing enzymes, as if they literally knew what they need to do. Then over the next 10 days, they carry out a large process of destruction, resulting in a 40-fold reduction in the size of the mother's womb.

The destructive effects of lysosomal enzymes are also required for fertilization. When the sperm cell reaches the ovum, it employs the destructive lysosomal enzymes it carries with it to pierce the sheath surrounding the egg. Thanks to these enzymes, the sperm can enter and fertilize the egg.

Since all the processes in the body occur at the molecular level, perhaps you may never have imagined that the body could also contain waste products. In fact, however, cells are constantly dying as the human body renews itself and in its constant fight against bacteria and viruses—and waste products are constantly emerging. If allowed to accumulate, these might cause poisoning of cells, congestion in the bloodstream, and organs to cease operation. The lysosomal enzymes in the body serve as a precaution against this.

Like all the other parts of the human body they behave very rationally, never intervening against healthy structures. They immediately identify the wastes that need to be eliminated and act to keep the body alive. They act as to the command and will of Allah. Unless Allah so wishes, no other power can do what they do or produce anything like them.

Allah is Magnificent and Almighty, and His artistry enfolds all

places. This is revealed in a verse:

> **Allah, there is no deity but Him, the Living, the Self-Sustaining. He is not subject to drowsiness or sleep. Everything in the heavens and the earth belongs to Him. Who can intercede with Him except by His permission? He knows what is before them and what is behind them, but they cannot grasp any of His knowledge save what He wills. His Footstool encompasses the heavens and the earth and their preservation does not tire Him. He is the Most High, the Magnificent. (Surat al-Baqara: 255)**

Enzyme Inhibitors

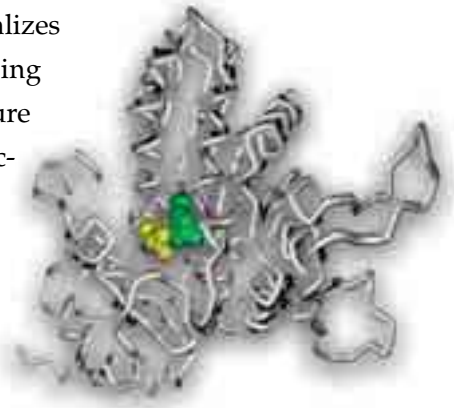
Enzymes are constantly active within the body. As a result of communication between organelles, these proteins know when they must go into action and operate non-stop. Sometimes, however, their activities must be halted or prevented. When the reactions in progress reach a sufficient level to meet the cell's requirements—in other words, when the intervention performed by enzymes is completed—the body has a system to bring all their activities to an end. This really magnificent control system is carried out by other proteins known as enzyme inhibitors.

Inhibitors inactivate an enzyme by binding to it. The binding of an inhibitor is either reversible or irreversible. Irreversible inhibitors bind covalently and change the enzyme chemically. Reversible inhibitors, however, bind to enzymes non-covalently. There are two types of reversible inhibitors: competitive and non-competitive inhibitors.

A competitive inhibitor blocks the active site of an enzyme. The inhibitor is similar in structure to the real substrate and the enzyme binds to the inhibitor rather than to its intended substrate. The enzyme's active site is thus closed off in such a way as to prevent its binding to the substrate at the same time.

A non-competitive inhibitor binds to a different site on an enzyme,

other than the active site. This neutralizes the enzyme because inhibitor binding changes the enzyme's tertiary structure and the substrate's affinity for the active site is reduced. However, non-competitive inhibitors do not eliminate all of an enzyme's activity; they only decrease it.



Inhibitors inactivate enzymes by binding to them. Reactions that need to be halted, and drugs that inhibit enzymes that cause diseases, both act by way of enzyme inhibitors.

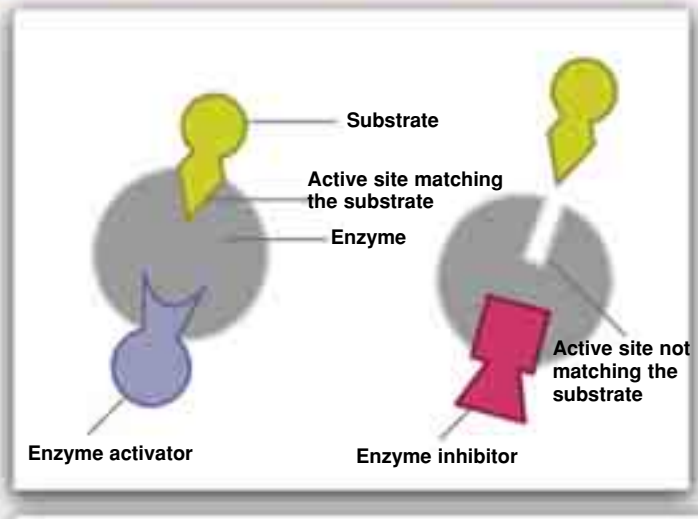
Penicillin is an excellent example of this. By inhibiting the enzymes that bacteria need to make their cell walls, it causes the bacteria to burst.[87]

Various drugs have been manufactured according to the enzyme-inhibition system. These drugs work by inhibiting the action of enzymes that bacteria or viruses need, prevent them from spreading, and thus prevent many diseases from becoming any worse. In treatments for HIV, the most successful developments to date are the result of the use of enzyme inhibitors.[88] Some cancers can also be prevented by identifying the enzymes that benefit them and developing the appropriate inhibitors.

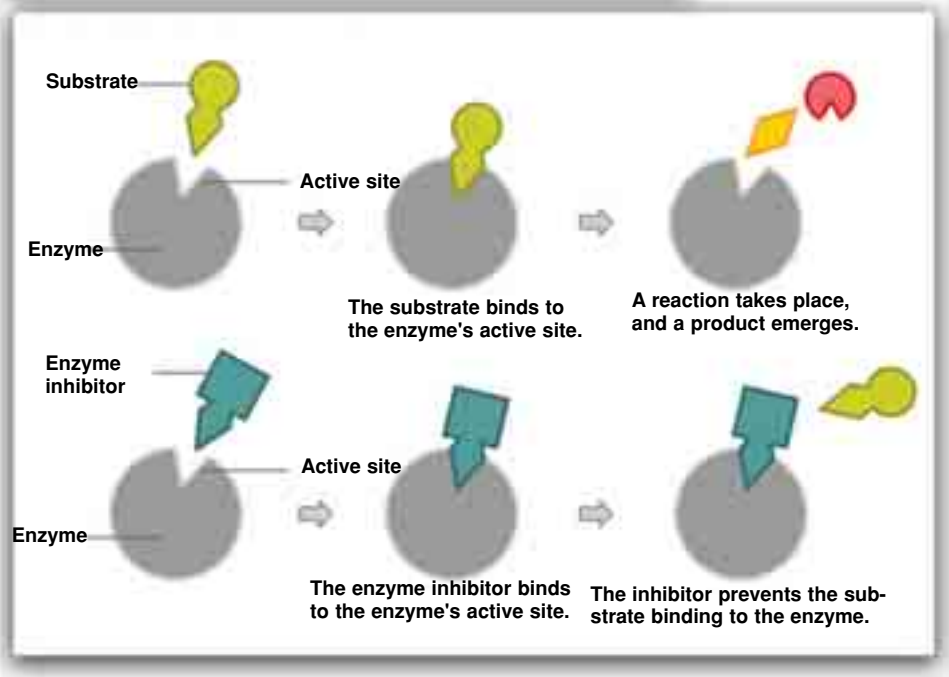
Apart from surgery, all fields of medicine are in some way related to enzymes. Dr. Joseph Kraut, who works on models of enzymes magnified 200 million times, summarizes this:

> Did you take an aspirin? You may bet that aspirin molecules will go and stimulate an enzyme. This will accelerate or slow down the work of an enzyme and guess what happens next. How quickly! Your headache has already gone.[89]

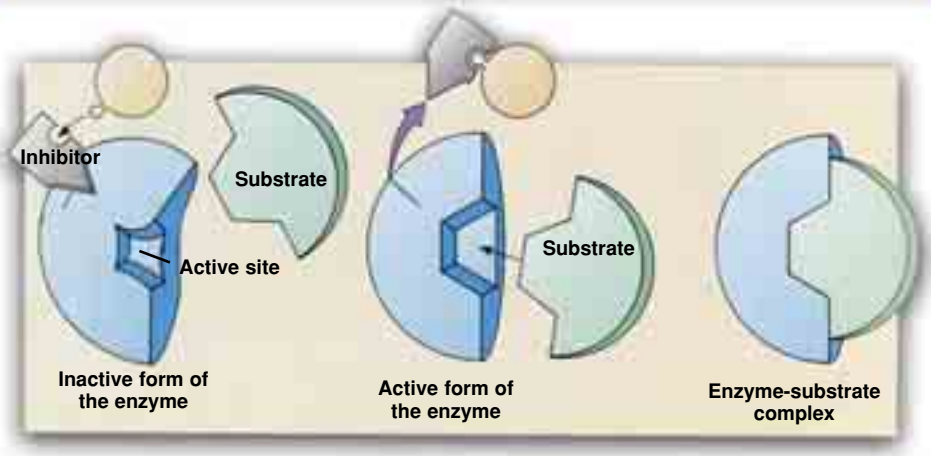
Enzyme-inhibitor molecules must exist in the same environment as enzymes, because under certain circumstances, the way they put a

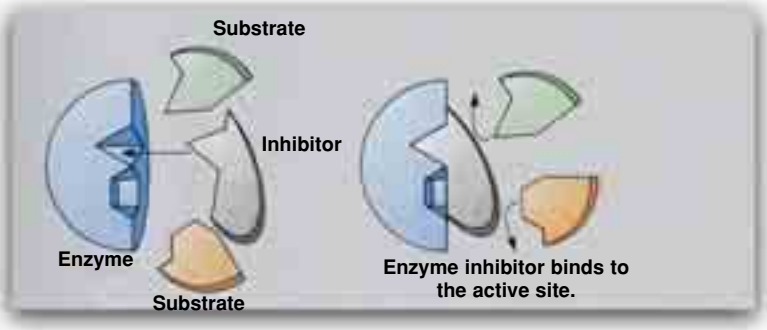


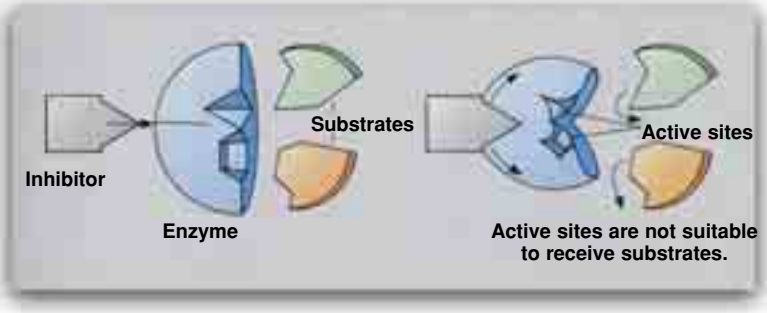
Enzyme inhibitors seem to know when to put a halt to which reactions. They imitate the shape of the substrate necessary for the particular reaction and bind to the enzyme's active site. The binding of the substrate to the enzyme is thus prevented.



halt to enzymatic activity can be vital. For example, the activity of enzymes must be brought to an end at a certain point in such processes as DNA replication or blood clotting. If an enzyme is always setting the blood-clotting system in motion, this will lead to clots constantly. Then







Blood clotting, as with many other reactions such as DNA replication, needs to be halted once the process is complete. Enzyme inhibitors proceed to the site and inactivate the enzymes.

blood flow will be impeded, and the organism will die—if not for enzyme inhibitors.

So how do evolutionists, who are not even able to account for the enzymes' existence, account for this? Even if we do assume that a single enzyme did come into being by chance, then enzyme inhibitors

must absolutely have come into existence by chance at that same moment. It's absurd for an enzyme to form, then to wait millions of years for a substance that will inhibit it to come into being by chance. In such a scenario, the enzyme would keep on working actively, and the organism would soon die. It is impossible for an organism with enzymes to stay alive in the absence of enzyme inhibitors—and of course, enzyme inhibitors have no significance in the absence of enzymes. Moreover, even if enzymes exist, there must still be some control mechanism to let the inhibitors reduce their activity. Without it, enzyme inhibitors would immediately block all enzymes, and there would be no point in enzymes emerging at all.

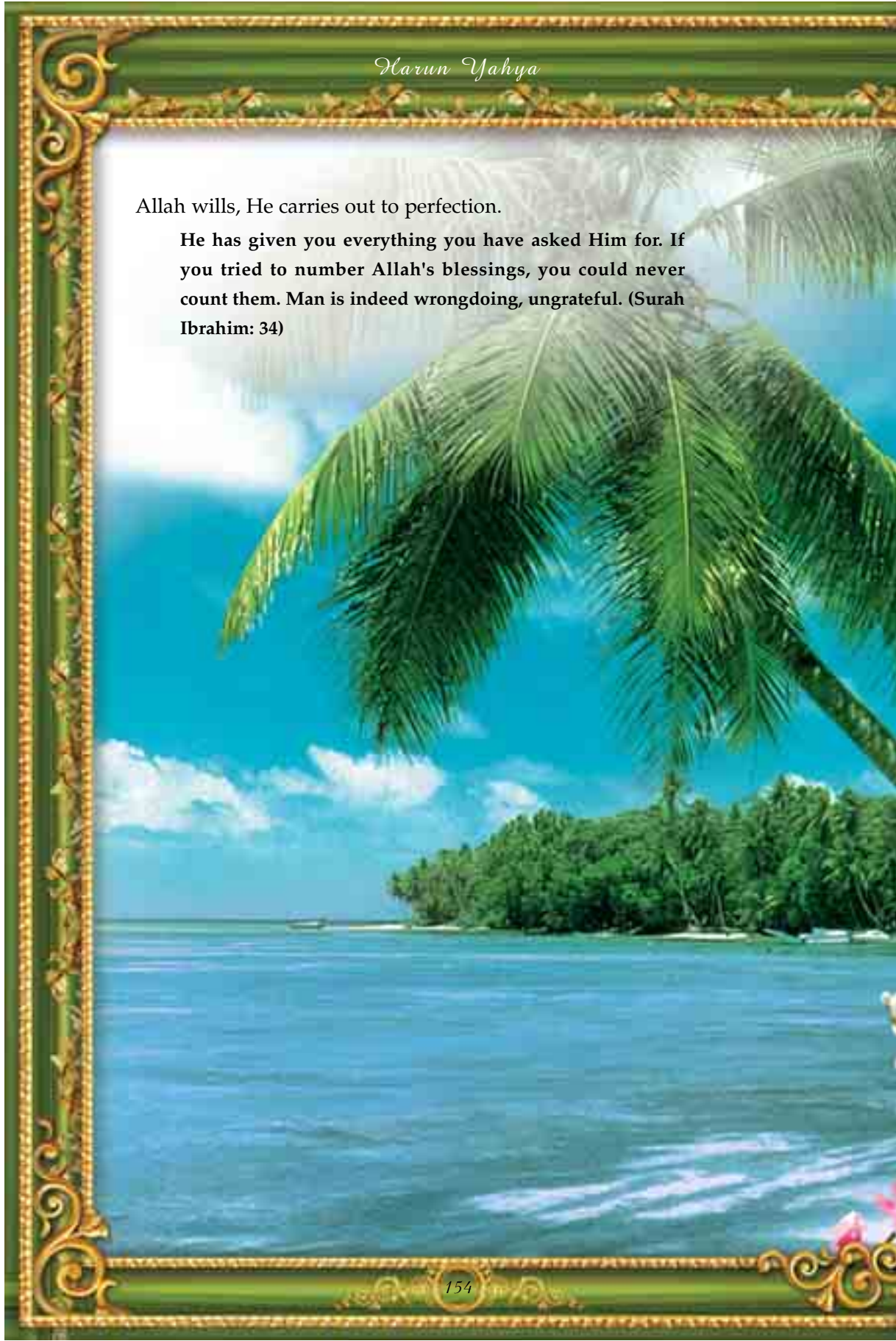
David and Kenneth Rodabaugh from the Creation Research Society make the following statement:

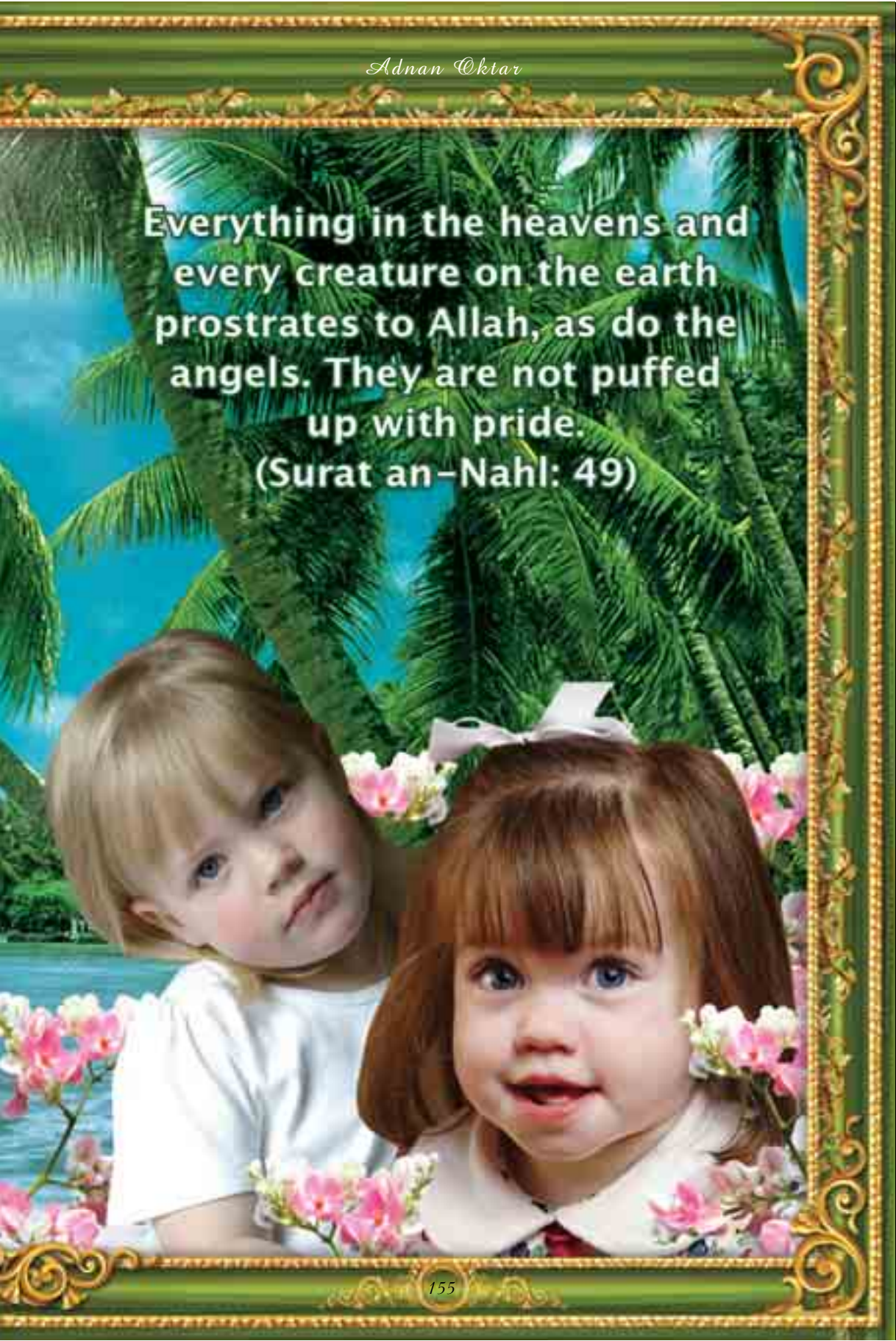
> It is clear that enzymes were not present in the primordial soup. Even if they were formed, they would not have lasted long since the primeval soup was, by definition, a conglomeration of nearly every conceivable chemical substance. There would have been innumerable enzyme inhibitors present to inhibit an enzyme as soon as it appeared. Thus, such molecules could not have formed; however, even with the assumption that they had formed, they could not have remained.[90]

Our bodies' control mechanism ensures a sufficient number of enzymes and of enzyme inhibitors responsible for inhibiting them, and regulates their production and operation. None of these ever goes beyond its own duties. Inhibitors never decide to halt the activity of enzymes on their own; and enzymes never ignore them and thus have an unbalancing effect on the production and operation. The reason is that all the supervision that goes on in the body belongs to Allah. Every enzyme is a miracle created by Allah; every enzyme inhibitor is a blessing created by Him. Each of these molecules, the mechanisms that control them, the structures they work alongside, and the special three-dimensional shapes they possess all exist because Allah so wills it—and what

Allah wills, He carries out to perfection.

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




Everything in the heavens and
every creature on the earth
prostrates to Allah, as do the
angels. They are not puffed
up with pride.
(Surat an-Nahl: 49)

Enzyme Technology

Many technologies have been inspired by structures in nature. Cameras and lenses have been developed by mimicking the features of the eyeball, and helicopters have been designed based on features of the dragonfly. There are many things in nature that continue to inspire technology on a chemical level.

Yet there are also natural substances that we make direct use of in our daily lives. One example is enzymes. Enzymes have been prepared for us in a ready-made form in nature and are directly used in industry. The detergents we use in our homes every day are an industrial product developed as the result of the existence of enzymes. Proteases head the list of enzymes used in laundry powders. Their presence is important because, as you now know, proteases are enzymes that break down proteins during digestion. Therefore, they can easily remove protein stains—stains such as grass, blood and egg—from your clothing. The protein in these substances generally make these stains adhere tightly among clothing fibers. But these enzymes degrade the pro-

teins causing the stain.

The enzyme lipase, which breaks down fats, also works in detergents, helping dissolve fat or grease stains. Attaching to the fat molecules on clothing, they break them down and convert them into amino acid components.

Enzymes are also used in the manufacture of textiles. During the weaving of cotton and cotton-mix fabrics, the long fibers that comprise the cloth are coated with an adhesive substance to prevent them from breaking during weaving. The substances employed are starch and starch by-products. Yet once the weaving has been completed, the fabric has to be freed from that starch for subsequent stages.

This can be performed using such harsh chemicals as acids, alkalines and oxidants, but today this is an easy matter with enzymes. Amylase breaks down the starch without damaging the fabric. One advantage of this procedure is that it is eco-friendly. The waste water that results is less toxic.

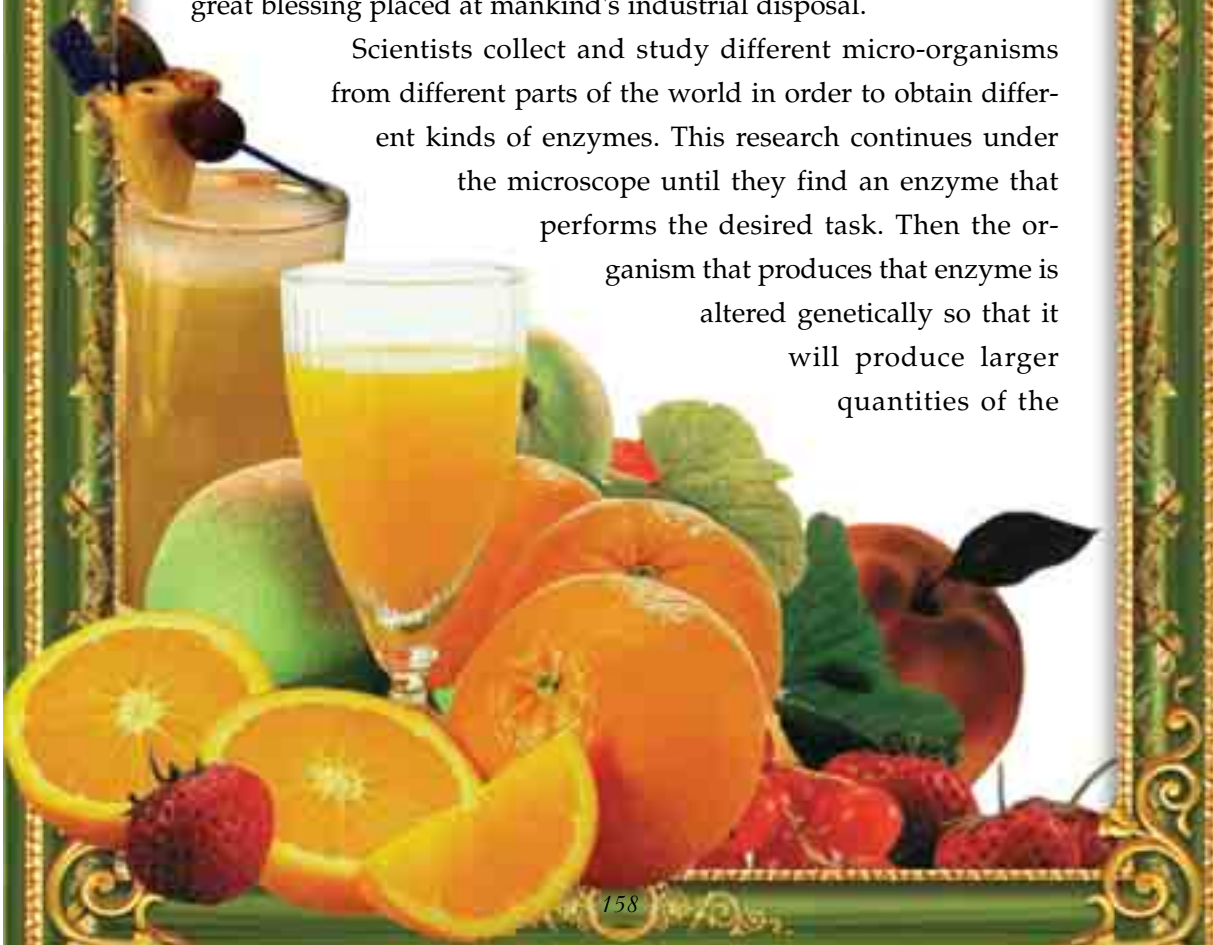
Use is also made of enzymes in improving color quality of fabric. The hairs, or fibrins, that form on the threads are broken down and minimized by enzymes. The enzyme catalase is used for fabrics that are bleached with hydrogen peroxide as pretreatment before dying. As you'll remember,

catalase is a fast-working enzyme, and so even a small amount of it is sufficient to eliminate the hydrogen peroxide.

In addition, enzymes are also employed intensively in processing sugar, animal feed, and fruit juice and manufacturing paper and leather. For example, various problems arising during the production of fruit juices, particularly apple juice, can be resolved with the help of enzymes. Apple juice contains huge quantities of starch, and is cloudy in its fresh-pressed state. If transparent apple juice is desired, that starch has to be broken down—which is effected by introducing starch-dissolving enzymes.

But how are enzymes obtained from the natural world? Allah has created a great means of doing so: micro-organisms. Any single micro-organism possesses more than 1,000 different kinds of enzymes—a great blessing placed at mankind's industrial disposal.

Scientists collect and study different micro-organisms from different parts of the world in order to obtain different kinds of enzymes. This research continues under the microscope until they find an enzyme that performs the desired task. Then the organism that produces that enzyme is altered genetically so that it will produce larger quantities of the



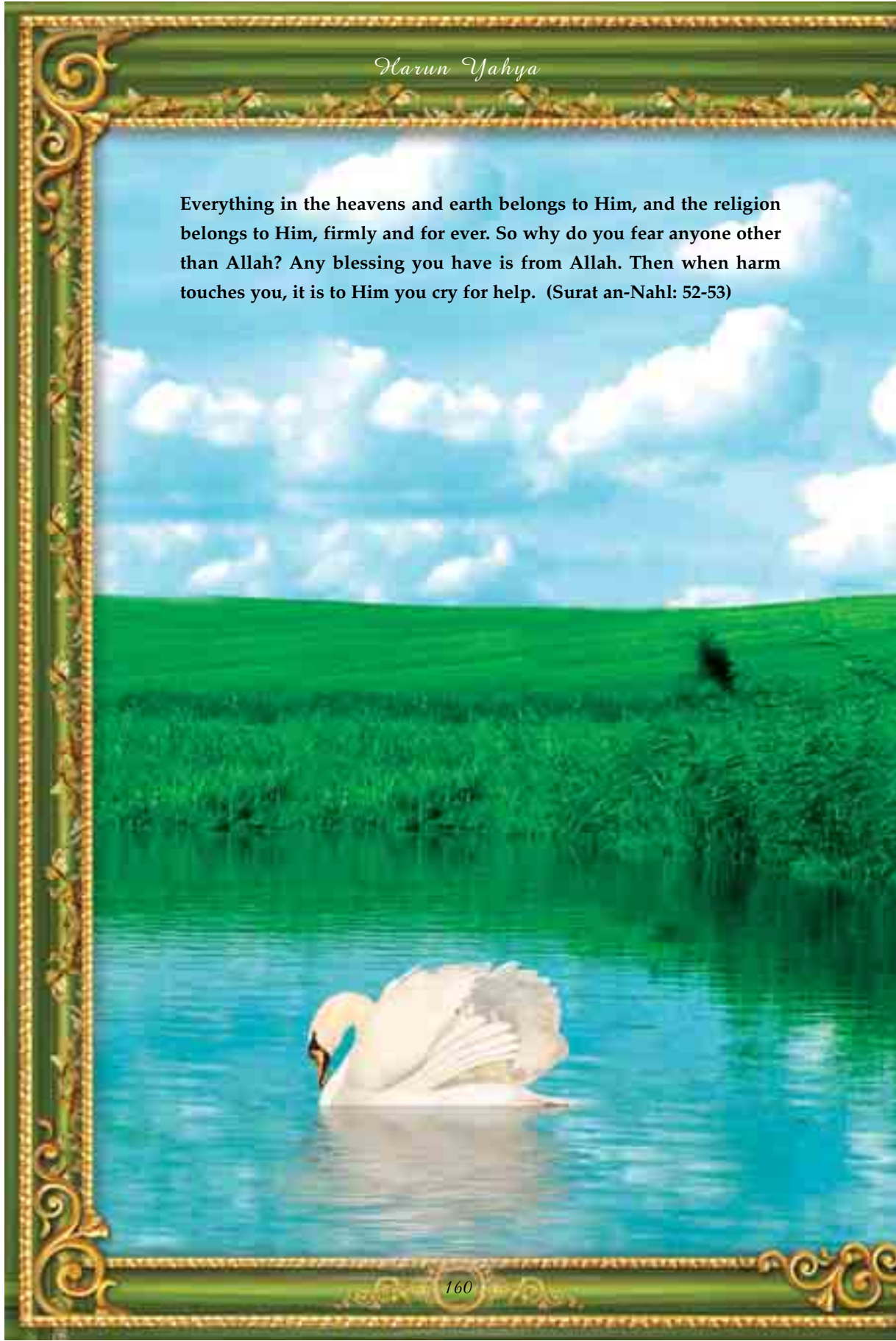
enzyme. Subsequently, enzymes are extracted by fermenting the micro-organism. The wastes that emerge as a result are used as fertilizer.[91] In addition, enzymes can also be obtained from plants, the pancreases of large livestock, and the digestive organs of chickens and oxen.

Utilizing knowledge and technology, humans have expended enormous efforts to find ways of carrying out these processes. For dissolving starch, for example, rather harsh conditions were formerly necessary. A large number of chemicals were employed, but the resulting industrial products were not wholly what was desired, and the resulting waste products were generally toxic. However, enzymes work just as if tailor-made for the task. Acting at the site, they locate the relevant starch and entirely do away with it, leaving behind the amino acids and other constituents, all of which can be safely returned to the natural environment. No human technology can endow a protein with the ability to attack a specific substance and break it down. They cannot teach it to attack a single fat molecule on a piece of cloth, nor cause it to act in a certain temperature range in such a way as to fulfill people's needs. They cannot make the resulting waste products assume a form that can be recycled and reused.

Human beings cannot even produce the correct sequence of the amino acids that make up a protein. Therefore, to perform all these tasks they use ready-made natural enzymes which have been placed at mankind's disposal. The more research is performed, the more enzymes are discovered, literally gift-wrapped inside micro-organisms as major labor-saving devices, easily located where any scientist can obtain them.

This blessing is bestowed by Allah. It has been given to make life easier, as a beauty and a blessing. It is Allah Who creates them in micro-organisms, Who gives them their own particular characteristics, Who permits them to be discovered, and Who gives us the ability, knowledge and means with which to study them.

Everything in the heavens and earth belongs to Him, and the religion belongs to Him, firmly and for ever. So why do you fear anyone other than Allah? Any blessing you have is from Allah. Then when harm touches you, it is to Him you cry for help. (Surat an-Nahl: 52-53)



Enzymes are All Miracles of Creation

> Do we, therefore, ever see mutations going about the business of producing new structures for selection to work on? No nascent organ has ever been observed emerging… Some should be visible today, occurring in organisms at various stages up to integration of a functional new system, but we don't see them: there is no sign at all of this kind of radical novelty. Neither observation nor controlled experiment has shown natural selection manipulating mutations so as to produce a new gene, hormone, enzyme system or organ.[92]

These words, by the evolutionist Michael Pitman, summarize the facts that other evolutionists see clearly, but are unwilling to admit openly. The theory of evolution is based upon two fundamental mechanisms: mutations and natural selection. But as Pitman admits, neither of these mechanisms has ever bestowed a useful, functional organ or structure on any organism, and has never produced one where it did not already exist.

Leaving aside human organs or anatomical structure, Darwinists have to explain how the human body as a whole came into existence. The human body is such a complete structure that its entirety is essential for the functioning of even a single molecule. Enzymes, for example, work in tandem with the reactions they carry out, the genes that encode them, the DNA that constitutes those codes, the cells wherein they work, the substrates they will bind to, the bloodstream through which they move, the heart that keeps the blood flowing, and the brain that supplies coordination. A specific body temperature and specific pH level and countless other factors bind all these together. You cannot remove any of these factors from the equation, nor simplify the system, nor make any changes in the sequences involved. Every component makes up a structure that, as a whole, is extraordinarily complex. Evolutionists have no way of accounting for this.

That being so, let's return to a single molecule: Do evolutionists have any explanation for enzymes? Is an enzyme—with the particular amino acids it contains; the special sequence in which these are arranged; its special three-dimensional shape and its three-dimensional fit with

the substrate to which it binds; the way it is able to carry out such a miraculous process as catalysis; its ability to regulate timing; and the way it never ages, makes a mistake or takes a rest—is this a structure that can be explained in terms of any Darwinian mechanism? All these observations are certainly inexplicable for evolutionists.

Jon Covey of the Creation Research Society reports an admission on this subject by Richard Dawkins, one of the present day's most passionate advocates of the theory of evolution:

> The automobile designer anticipated the need for a carburetor, just as ... God saw the need for the enzyme hexokinase in glycolysis (sugar splitting). How is it, incidentally, that we acknowledge an intelligent designer and skilled work-man when we find a simple arrowhead amid similarly shaped pebbles, but some of us find it impossible to admit a master architect when we examine complex living creatures? There was a time evolutionists denied that the analogy between designed machinery and biological structures with machine-like functions was invalid. However, this has changed. In *The Blind Watchmaker*, Richard Dawkins admits that such biological structures do seem to have apparent design. He adamantly denies that they were designed, but at least he admits that they look like they were designed.
>
> ... There is no way for blind chance to know that sugar could be a source of energy if properly tapped. It also would not know what had to be done to take advantage of that energy. How could evolution turn down a pathway and evolve a complicated series of enzymes ... that would give no survival advantage for most of that evolutionary process? Further, until the entire set of glycolytic enzymes was developed, the organism evolving the enzyme system would make useless enzymes, which would drain energy and material resources. None of it works until all of it works, not only the glycolytic pathway but in all other enzyme systems found in living cells. [93]

In fact, the emergence of an enzyme as a result of supposed coin-

cidences conflicts with the theory of evolution's own claims since its existence by itself would be meaningless. According to the imaginary process of evolution, in order for an enzyme to be able to come into existence out of nothing, there had to be a pre-existing living body in which it can circulate and function. Yet it is also impossible for a living organism to survive in the absence of enzymes. Therefore, enzymes, the living body in which they will live (and which they themselves keep alive), the enzyme inhibitors that control them, the substrates and all the other attendant molecules must all have evolved at exactly the same time. And that is impossible, according to evolutionists, who propose scenarios regarding a single original molecule evolving over the course of millions of years. If enzymes emerged first—and it is absolutely out of the question for an enzyme to form itself by chance—it would disappear in the absence of a complete organism in which to function.

On the other hand, if the living organism emerged first—in which case, all its systems and molecules would have to have evolved separately, which is completely impossible—then it could not have survived in the absence of enzymes. If the enzyme inhibitors emerged first—and again, it is totally impossible for these complex molecules to have formed by chance—then they would impede all the enzymatic functions we assume to have emerged.

This is just a brief summary to demonstrate the irreducible complexity inherent in the system. The theory of evolution has no explanation, nor any evidence to offer as to how even a single one of these complex molecules came into being.

As we have seen, evolutionists have no explanation to offer concerning the origin of enzymes. Furthermore, they are also far from being able to explain how the amino acids that constitute an enzyme could have assumed their correct sequence by chance. Probability calculations show the impossibility of any such correct sequence emerging by chance, even if all the desired conditions are met. As Jon Covey asks:

What are the chances of getting just one simple enzyme only 100 amino acid residues long? There are 20 different amino acids which could be arranged in any combination of ways... The amino acids in this simple enzyme could be arranged 10^{130} different ways—that is 10 with 130 zeros. Most of these arrangements would not make good enzymes. Most of them would work very poorly or not at all. Sir Arthur Eddington, a British astronomer, calculated there are no more than 10^{80} particles in the universe. Astronomers believe 90 to 99% of the universe is made of invisible particles called Dark Matter. This might increase the total number to 10^{82}. This includes all the electrons, protons, and neutrons, and many other less familiar subatomic particles. That should give you some idea of how large 10^{130} is.

It would take a very long time to find by chance the right combination of amino acids to make some-thing as efficient as the enzymes in our bodies. If we let everything in the universe combine and recombine to make these protein chains of 100 amino acid residues at the rate of one trillion times per second, it would take more than 30 trillion years before all the combinations would have been tried. After these trials we would have just one protein one hundred amino acids long with limited function and no ability to reproduce, for protein does not code for itself, nor is it able to effect its own replication.[94]

The probability of obtaining a simple enzyme consisting of 100 amino acids at random are 1 in 10^{130}. However, we also need to remember that this protein must consist of left-handed amino acids only. (In nature, there are two kinds of amino acids: left and right-handed, but only left-handed ones play any role in the living cell.) This means that the probability declines still further:

What are the chances of a million-dollar laboratory correctly synthesizing left-hand amino acids for one small protein molecule? It is 1 in 10^{210}. That is 1 with 210 zeros after it.

To properly understand the immense size of these impossible chances,

Everything in the heavens and everything in the Earth belongs to Him. Allah is the Rich Beyond Need, the Praiseworthy.
(Surat al-Hajj: 64)

consider this:

> Ten billion years is 10^{18} seconds. The earth weighs 10^{26} ounces. The entire universe has a diameter of only 10^{28} inches. There are 10^{80} elementary (subatomic) particles in the universe.[95]

When compared with the largest numbers in the universe, the impossibility of a single enzyme emerging by chance can clearly be seen.

No matter how impossible it may be, let us assume that amino acids were able to assume the correct sequence and form an enzyme. The possibility of that enzyme accelerating a reaction by becoming involved in it—in other words, the probability of it being functional—represents an even greater difficulty for evolutionists. Dr. Jonathan D. Sarfati of the Creation Science Foundation has calculated that probability as follows:

> Even the simplest self-reproducing organism has 482 genes coding for enzymes about 400 amino acids long on average. Each enzyme must have a precise sequence to function properly. There are 20 different types of amino acid used in enzymes. Even if only 10 units had to be exactly right in each enzyme, the chance of getting the full set by ordinary random polymerisation reactions is one in 10^{6271} (one followed by 6271 zeroes). This is indeed effectively nil when one realizes that the number of atoms in the universe is only about 10^{80}.[96]

The probability of a single reaction coming about by chance is zero. Even if, despite all the impossibilities, we assume, that a single enzyme did come into existence by chance and happened to carry out a reaction—no matter how impossible that is—the same impossibility still applies to the genes needed to transmit the information coding for that enzyme to subsequent generations. The impossibility of that happening by chance has been calculated too:

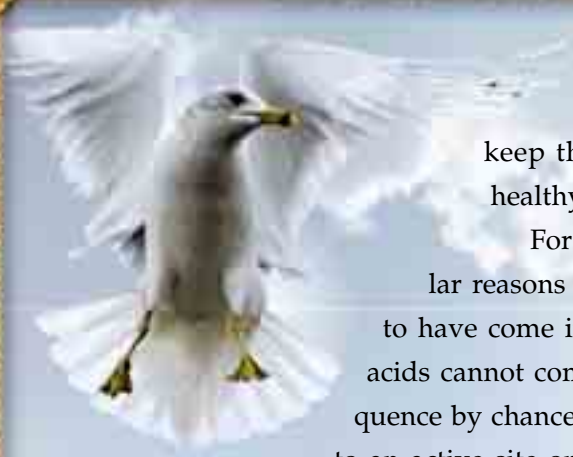
> Evolutionists say that man evolved from a one-celled organism, purely by chance. Yet it has been calculated that the probability of forming a single protein molecule by chance is one in 10^{243} (10 with 242 zeroes behind

it.) Furthermore, even if the world were covered by an ocean a mile deep containing 10^{33} bacteria, scientists say it would take more than 100 billion years for them to produce a single new enzyme. And even if they produced a gene to manufacture this new enzyme, six million generations would have to elapse for the gene to spread throughout the species by the process of survival of the fittest. The above is the time needed to develop a typical non-useful enzyme. For a single useful enzyme to appear, it would take three hundred million years! This points out the improbability that even one-celled fully functional organisms developed by pure chance. If so many chance occurrences and so much time were needed to form just a single useful enzyme, imagine how many coincidences and how many eons would be required for the one cell to evolve into billion-celled man! No one could possibly calculate the odds against this happening by chance. Yet, the evolutionists ask us to swallow this whole.[97]

The probabilities show the impossibility of claims regarding chance formation. Moreover, countless reactions take place in microseconds in the very bodies of those who carry out such research and maintain that all these things happened coincidentally! Thousands of reactions one second, thousands the next . . . this continues on in every living body, without pause or error.

Every second, reactions takes place and at specific speed and in a specific order inside every living body. No enzyme is ever confused with another, or acts on any other structure, or seeks to match the reaction rate of another enzyme. Enzymes never head in the wrong direction, but act at the right time and stop acting at the right time. The amino acids contained in every enzyme have been determined, are all in the proper order and in the right place. All the enzymes in the living body have the correct three-dimensional shape, never bind to the wrong substrates, and never become involved in the wrong reaction.

The enzymes in any living body behave as if they were conscious and intelligent, just like cautious human beings. They do all they can to



keep their body metabolizing and healthy.

For these and many other similar reasons it is impossible for enzymes to have come into being by chance. Amino acids cannot combine to form the correct sequence by chance, nor coincidentally give rise to an active site on the enzyme with a tertiary structure. Chance cannot give rise to substrates that match the active sites, nor direct these towards specific reactions. Chance cannot endow an enzyme with any ability, nor bestow on it the capacity to perform in a tenth of a second a reaction that normally would take tens of millions of years. Chance cannot make an enzyme ideally suited to the organism, nor endow it with the ability to keep that organism alive. Chance is no explanation for the literally conscious behavior that enzymes exhibit in the living body.

The fact that molecules do behave in a conscious manner in the body shows that it is the work of a sublime Creator. Every structure and every molecule in the living body is the work of Allah, Creator of all things. That is why all structures are so compatible and mutually dependent. It is Allah, Lord of the worlds, Who creates organisms in their finest possible form, gives them their characteristics, bestows an astonishing complexity on even the smallest components within them, and creates them in a very wide variety. No created entity can bring into being any thing of beauty to compare with the miracles created by Him, nor produce the flawless order and harmony produced by Him. No intelligence on Earth, no technology, no power can produce the living systems created by Allah with their perfect mechanisms. That is because every perfection we see is the artistry of Allah, His creation and His glorious might.

Everyone in heaven and Earth prostrates to Allah willingly or unwillingly, as do their shadows in the morning and the evening. Say: "Who is the Lord of the heavens and the earth?" Say: "Allah." Say: "So why have you taken protectors apart from Him who possess no power to help or harm themselves?" Say: "Are the blind and seeing equal? Or are darkness and light the same? Or have they assigned partners to Allah who create as He creates, so that all creating seems the same to them?" Say: "Allah is the Creator of everything. He is the One, the All-Conquering." (Surat ar-Ra'd: 15-16)

Conclusion

Unconscious atoms cannot combine together to produce eyeballs that provide a sharper image than even the most highly advanced television screens. Unconscious atoms cannot join together by chance to make an auditory system better than even the highest-quality tape deck or stereo set. Unconscious atoms cannot feel or taste a delicious meal. Unconscious atoms cannot perceive the scent of a rose. Unconscious atoms have no power to make one another do anything.

Unconscious atoms cannot bring about human beings who run, laugh, think and examine their own cells under the microscope. They cannot develop a circulatory system that nourishes their every cell, a digestive system that converts everything they eat into new cells, nor a brain that issues instructions to the entire body. Unconscious atoms cannot give rise to enzymes that work faster than the best equipment in laboratories, which break down foodstuffs and converts them into smaller components, which are capable of copying DNA, which eliminate

waste products, which transmit messages and carry out hundreds of thousands of reactions in each of the body's 100 trillion cells, each and every second.

But Darwinists are reluctant to accept this evident truth. They regard the way that an enzyme possesses an exceedingly complex and superior structure, how it reduces processes that should take millions of years to fractions of a second, as supposed miracles of chance. They maintain that unseeing, unhearing, unfeeling and unconscious atoms somehow communicate when they join together, recognize other molecules and are capable of working together with them. They claim that chance represents the supposed origins of the seeing, hearing, feeling human beings that emerged as a result of these biological structures. Darwinists believe that this power brought mountains, seas and all life forms into being. The force in question, chance, is a false deity that Darwinists imagine brings about complex entities and works miracles. That is the spell under which Darwinists have put themselves.

This false system of belief lies at the heart of the worst mass deception of the last two centuries.

This book has provided a single example in order to lift that spell and put an

end to this terrible deception. This book you are reading has offered many pages of detail about this single example—enzymes. Even a single enzyme is enough to totally dispel the dark spell of Darwinism. Even a single detail of how enzymes operate evidently reveals the infinite might, intelligence, creative artistry and Divine Power of Almighty Allah. There is intelligence in everything that enzymes do. Every ability possessed by enzymes is distinguished and unique, declaring that Allah, Lord of the worlds, created them. The fact of creation is revealed in the most glorious manner.

Allah is Magnificent and Almighty. He has the power to create from nothing. All entities are obedient to Him. He creates unbounded beauty and detail in all He so chooses. It is He Who manifests per-

fection in all He desires. It is an easy matter for Almighty Allah, Creator of all the worlds, to create an enzyme system that exhibits such perfection. Allah is the Lord of all things. We are told this in a verse:

He is Allah—there is no deity but Him. He is the Knower of the Unseen and the Visible. He is the All-Merciful, the Most Merciful. He is Allah—there is no deity but Him. He is the King, the Most Pure, the Perfect Peace, the Trustworthy, the Safeguarder, the Almighty, the Compeller, the Supremely Great. Glory be to Allah above all they associate with Him. 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: 22-24)

They (the angels) 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)

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