

TSHWANE MUSLIM SCHOOL



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السلام عليكم و رحمة الله و بركاته

“An important function of Muslim schools is to provide an Islamic perspective on the curriculum of the non-revealed learning areas. Much needs to be done to provide resource materials for the integration of Islamic knowledge with the current DoE curriculum”. (MI, Dr Ashraf Dockrat)

Al-Humdu-Lillah, in this regard a meeting was convened by the Association of Muslim Schools in conjunction with the International Institute of Islamic Thought (IIIT) at the Tshwane Muslim School in April of 2016 with the express purpose of integrating (Islamising) the school curricula.

We, at the Tshwane Muslim School, undertook the responsibility to do the integrating (Islamising) of the Life Sciences curriculum for Grade Ten.

In this venture, we were very fortunate to have partnered and worked very closely with the Darul-Iftaa department of Madrasa Arabia Islamiyyah Azaadville and Br Azhar Rajah of the Ahmed Timol Secondary School Azaadville.

We herewith present to you this “booklet” which is the culmination of months of dedication and hard work. Our plan for furthering this project is that we request all Grade Ten teachers to use the booklet as a pilot project, with an objective and critical eye and provide us with feedback.

Herewith is also a clause for the copyright.

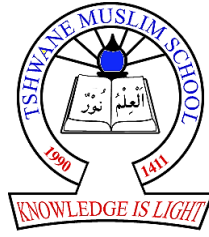
Jazakallah

M.I. Areff

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Tshwane Muslim School

LIFE SCIENCES INTEGRATED (ISLAMISED) CAPS SYLLABUS

Grade Ten

INTRODUCTION



“We shall show them Our signs in the Universe and within themselves, until it becomes clear to them that this is the Truth. Is it not enough that your Lord is the witness of all things?” (Quran 41:53)

Allah ﷻ commands us in various places in the Holy Qur’an, “... **Ponder, O people of understanding.**” The command of reflecting and pondering over the creation is not futile; rather it awakens direct recognition of the Creator.

“Allah has created these only as the truth (for a purpose) He openly explains the signs for the people of knowledge.” (Quran 10:5)

Science is but one of the studies for the betterment of humanity. To this end it is the study of the universe to imitate, employ, manipulate or rearrange manageable parts of it wherever possible for the objectives of the researcher. The Qur’an is a divine book whose primary objective is to introduce man to Allah via His Book and His Messengers; and to communicate to man that there is life after death. The Book has substantiated its claim to being divine in the majestic employment of the Arabic language humbling the unassailable before the Grandeur of the Great Originator. A language that has surpassed all other languages in its wide-ranging expression, clarity of meaning and preservation of usage. Fact, metaphor, phrases, idioms and abiding examples elucidate and expound the objectives of the Qur’an. These objectives of the Book are extremely clear then at times man dabbles into areas where he finds himself between metaphor and fact. In our paltry differentiation between fact-verse and metaphor-verse or idiomatic use, we sometimes see “fact” based on the point that we have reached in our study (called science) of the never ending road of Allah’s wonders and put it before you; then we turn out to be wrong when we reach another milestone. Then we realize that it was idiom not fact. Our slow progress at other times reveals that it was fact not metaphor. It follows then that neither is our interpretation in these explorations of ours conclusive; nor is there any standing obligation on the Qur’an that it has to coincide with every aspect of science... **“and you have not been given knowledge save a little...” (Quran 17:85)**

Surprised by a perfectly round rock in the middle of jungle, a man concludes that somebody had made it ... or could it have come about with no hidden hand? Years of rains, hail and the wind blasting tiny sand particles perfectly shaping its contours; and the many years of the Sun beating down on it making it malleable to the elements that worked with tireless precision to form it. “Hard to digest,” he thinks, “too perfect!” What would he have thought, if he found a bolt? The perfect hexagon of a head; the harmonious precision of the thread. What if he found a nut nearby, fitting perfectly on the bolt? Rain, hail, wind and Sun? “Impossible!” He would think.

What about the complex human body? Remember the bolt! What about the air, water, food and sunlight perfectly sustaining specific complexities in the human body? Remember the nut! Is evolution the answer? The complicated nerves of the brain with its unique surrounding tissue contained in a hard case of bone to protect its fragile contents. Those eyes with clear glossy substance different from the brain with its complicated diaphragm and other components fixed on firm bone separated by delicate bone dripping to cartilage giving perfection to the nose. The fine skin selection starting slender at the neck, going puffy at the cheeks then delicately covering the eyes. The selection of hair for the jaw to those beautiful curls at the eyelashes. Given a domain to reign over, the hair of the head doesn't surpass its boundaries with the exception of leaping to the area of the eyebrows with the order of that land. The complicated hearing system making its presence known by outer ear covered by skin of a different kind concealing cartilage, a matter different from the eyes and skin. Neatly arranged passages and wires; all of different substance, size and shape. The nerves at the brain, at the eyes, around the face and over the head. Various paths with distinctive features, they run around the jaw down to the neck, some discrete, hosting communications in the dark secure casing of the neck bones while others on the surface of the neck in the light of the sun. The passage in the throat expressing its divergence from the passage in the ear which in turn knows how different it is from the one in the nose. A neatly placed valve holding its door closed ushering the food down to the stomach while welcoming the air into its special lounge. Working our way back up observing the unique skin of the gullet into yet another composite of skin inside the cheeks down to the intricate changes in texture onto the tongue lounging within the gums below up to the cherry on the top, the lips. All these thoughts, a product of those unseen images in the complicated brain. Does this not have a hidden hand? Remember the nut and the bolt. Perfectly fitting into each other. The word "fitting" does not do justice to explain this human body "fitting" with its surrounding. More appropriately, it is the interface between those complicated organs and tissues and network of nerves then the interface between the various components of human sustenance then the dumbfounding interface when it meets his body. What about the other bodies, kingdoms, substances and existences? Just evolved? Remember the perfectly round rock. He doubted that it came about by chance.

Allah is the Being who had made for you the Earth a place of station, and the sky a canopy; and He fashioned you and very beautiful did He fashion you and He sustained you from the wholesome foods. That is Allah, your Sustainer; so full of blessing is Allah, the Sustainer of the worlds. (Quran 40:64)

Therefore, in the study of Life Sciences there are important lessons that can be learnt that will bring us closer to Allah ﷻ.

Objectives of this booklet are to:

1. Develop a recognition of the Greatness of Allah ﷻ through the study of Life Sciences
2. Reset the tone that the lofty vision of the religion of Islam is soaring above its small segment of creation called “sciences” meant to serve the humble day-to-day life of man.
3. Correlate present scientific discoveries with the information in the Quran and Sunnah.
4. Rebut, from a scientific perspective, any ideas or bias that may be promoting atheism or secularism within the syllabus.

Remember: The aim of the Qur’an is to introduce man to Allah and to give him correct recognition of Allah. Allah ﷻ is not only the Creator of religious minded Muslims and He is not confined to the Masjid. He is the Creator of the entire universe with the complex laws that go with it. Then He is the revealer of the knowledge about it. Knowledge is also a small element of Allah’s creation. In this belated age, a mere branch of this small element has been elevated as an adversary to the message propagated by the Qur’an. It is like a ruling party who part of their many achievements started a university and one faculty irrelevant to politics are elevated to challenge the government on issues that are unrelated to politics. Neither are they relevant to the work which the government is doing, nor are they significant for the escapade which they have embarked on. A lot of revision and reprogramming is necessary for rehabilitation of those who have suffered exposure to this misrepresentation; and the magnifying glass should be removed from over this branch of knowledge which had unnecessarily portrayed it as an adversary. If science qualified as an adversary to Islam and the Qur’an, and if it really held that threatening position which it is being instigated to hold these days; it would not have survived the many Islamic rulers that it had over it during the passage of time. Nay! It flourished. Constant doses of this realization will set the record straight.

STRAND 1: LIFE AT THE MOLECULAR, CELLULAR AND TISSUE LEVEL

TOPIC: The chemistry of life

We made every living thing from water. Will they not believe? (Quran 21:30)

Water makes life on Earth possible. Cells are made of 70-95% of water. The entire human body is made up of 60-75% water. The fact that living organisms consist mostly of water was discovered only after the invention of the microscope. In the deserts of Arabia, the last thing someone would have guessed is that all life came from water. However the verse above indicates the fact that water is a key ingredient in all living organisms.

All of organic compounds in our body, carbohydrates, proteins and fats, are obtained through the food that we eat. Ultimately it came from a plant or a herbivore that ate from a plant. These compounds are made within the plants. Water (H₂O) is split during photosynthesis and the O₂ is released, the H goes on to join with CO₂ to form carbohydrates. Excess carbohydrates can be converted and stored as lipids.

Thus all life is made of water, and all life is sustained by nutrients which require water to be formed.

ENZYMES-

It is sunnah that the food consumed should not be too hot. Nabi (S.A.W.) would wait for hot food to cool down before consuming it. Nabi ﷺ has said: “Cool down hot food for hot food has no barakah in it.” (Narrated by Hakim in al-Mustadrak vlm 4 pg 118.) Nabi ﷺ would never eat food when it was extremely hot because it is harmful and upsetting to the body (Prophetic medicine by Ibn Qayyim al-Jawziyyah pg 223). In grade 11 you will learn about the digestive enzymes. These breakdown complex carbohydrates into mono-saccharides, proteins into amino acids and lipids into fatty acids and glycerol, which are easy to absorb from the intestines. Enzymes are very sensitive to pH and temperature. High temperatures denature enzymes. Thus consuming very hot food, can damage the digestive enzymes and affect the nutritional benefits of meals. Alhamdulillah the sunnah method of eating assists us in ensuring that our bodies function perfectly.

TOPIC: Cells: the basic units of life

Consider the size of cells that make up all living organisms. Amongst the largest cells in the human body is the mature female ovum (egg cell). It has a diameter of approximately 120 um (micrometers). For conversion, 1 cm consists of 10 000 ums, so this large cell is about 1/8th of a mm. Just have a look at your ruler for better understanding. This makes it just visible to the human eye. Red blood cells are amongst the smallest and most abundant cells with a diameter of 7.5 um which is about 1/133 of a mm! now let us look at the other human reproductive cell known as sperm, this tiny cell measures approximately 50 um (micrometers), when converting it, it is roughly 0.05 mm (5% of a mm), which equals to about 0.002 inches, the tiniest object one can see with the unaided eye is about 0.1 mm. Now let us look at the amazing system of Allah ﷻ, that by the joining of two tiny cells a new life is created, and this new life in the form of an embryo then becomes a creation with trillions of cells, so just by the merging of two cells by the permission of Allah ﷻ trillions of new cells are created, when the smaller male reproductive cell is infused into the female reproductive cell a zygote is formed by the permission of Allah ﷻ, and in a process of approximately nine months, something which is many millions of times bigger than these two cells is created. Allah ﷻ mentions many verses with regards to this process in the holy Qur'an for e.g. he says:

It is only he (Allah) who gives death and life. Verily it is only he who created pairs of male and female. From the seed (the sperm) when it issues forth (Quran 53: 43-45)

In another place, Allah ﷻ mentions:

Have we not created you (man) from despised (unvalued) water (semen)? Then placed it (the sperm) in a safe place (the womb). For a specified (appointed) period (of approximately nine months). So We created with precision; We are certainly the best of those who create with precision. (Quran 77: 20-23)

In another place, he states:

Allah removed you from the wombs of your mothers when you knew nothing, and blessed you with ears, eyes, and hearts so that you may be grateful (Quran 16: 78)

In another place, Allah ﷻ mentions His greatness by explaining how the child is created by Him

We have certainly created man (Adam A.S.) from a product of (specific) clay. Thereafter (when mankind arrived on earth, the system of reproduction started and the development of a child began

when) we placed him in a safe lodging (the womb) as a drop of fluid (sperm)... thereafter, we made the drop of fluid into a clot of blood, then the clot of blood into a lump, then the lump into bones, after which we dressed the bones in flesh. Thereafter, (when we instilled the soul into the foetus) we made him into another type of creation (which is living and vibrant). So, blessed is Allah ﷻ, the best of all creators (no other being can make something from nothing or give life to anything they make) (Quran 23: 12-14)

Regarding this process, scientists say that the stage described as *Nutfah* (the drop) is the stage wherein is the formation of the DNA molecule which contains geometrical hexagonal shapes arranged in a specified pattern. After the above stage comes the *Alaqa* stage (clot of blood stage), this stage is concerned with the formation of cells, and cells are the factories that manufacture protein. After this creation of a large number of cells, Allah ﷻ distributes these cells in clusters, for example a cluster of cells in the chest, head and feet regions.

Another interesting fact about cells is the DNA molecule which stores genetic information, an incredible databank which is located in the nucleus of the cell. It is calculated that if the information coded in the DNA were written down, this would make a giant library consisting of 900 volumes of encyclopedias of 500 pages each.

In another verse, Allah ﷻ says:

He has created you (mankind) from a single soul (Adam A.S.), after which he made a spouse (Hawwa) from it, and He made eight pairs (male and female) for you from the livestock animals (camels, cows, sheep and goats). He (ﷻ) creates you in the wombs of your mothers, creation after creation (taking you through various stages of foetal development) in three (layers) of darkness (the abdomen, the womb, and the membrane in which the foetus develops) that is Allah, your Rabb, to whom all kingdoms belong. There is none worthy of worship besides Him, so where are you turning to (Quran 39: 6)

So, imagine this system in which trillions of cells are created, each containing so much of DNA, and each so perfect, carrying out its function accurately, Allah ﷻ says that He creates man in three layers of darkness. Let us think and ponder for a while, if anyone one of us had to fashion something, or make something take shape by putting two things together, firstly we would need the objects to be big enough so we can hold it and see it, then we would need a work room with ample space, and good lighting. Look at how great Allah ﷻ is, He created the most perfect of all creations, using two such objects which are not even visible to the unaided eye, He created it in a workshop where there is very little space i.e. the womb of the mother, then He created it in a place without any light at all, in fact like how Allah ﷻ mentions, he created it in three layers of darkness. We know how many experiments inventors have to carry out before they get an item to work properly, then too after the product is launched we find that it still has problems. Look at how Allah ﷻ has created us so perfectly with all the cells in the body functioning perfectly, not only in one person, but in the seven and a half billion or so people all living in this world at this very moment

Cells are definitely very small, however, within cells we find “mini organs” called organelles, mitochondria can be about 1/1000th of a mm, and ribosomes 1/50 000th of a mm! These microscopic cells and organelles each have a specific function that they fulfill perfectly. Should they stop

functioning, cells would not work, then tissue won't function, then organs won't function and ultimately the organism won't function. Therefore, let us ponder about our creation and our Creator. Millions of bio-chemical processes are happening as you read this booklet. We are not in control of these nor do most people have any knowledge about them, yet these are vital for our survival. Who is in control of all these microscopic structures? The answer is obviously ALLAH ﷻ

TOPIC: Cell division- mitosis

The Holy Quran continuously draws our attention to the fact that Allah is the Rabb (Sustainer) of the entire creation.

For example,

“All praises are for Allah, Sustainer of the Worlds.” (1:1)

“Read, in the name of your Sustainer who created.” (96:1)

“Say, I seek refuge in the Sustainer of Mankind.” (114:1)

The meaning of Rabb (Sustainer) is that being who is controlling the growth and development of living organisms. For instance, the gradual growth of an apple tree from a small seed or the growth of a human being from a zygote, to baby and eventually to an adult.

During the years of our life, as we use our bodies, limbs, etc., a natural process of ‘wear and tear’ takes place. In this topic of Mitosis we learnt about the amazing system that Allah has put in place to facilitate continuous growth and repair in our bodies as well as what happens if that system shows its other side, i.e. it results in tumors, some being cancerous. We also learnt about some ‘cancer causing agents’ such as exposure to radiation, smoking and an unhealthy diet. However, we see that these causes do not always hold true. Some people, who smoked regularly, for a long period of time, did not develop cancer. On the other hand, others who developed cancer had never touched a cigarette in their lives! Similarly, some people who have abided by a healthy diet for their entire lives, unfortunately developed cancer later on, while many who were careless in their eating habits never developed cancer.

A Muslim student can take many lessons from the topic of mitosis. Firstly, what a great favor of Allah ﷻ this is! Imagine that without mitosis a person would remain as tiny as the size of a human egg cell or his/her hands and feet would become worn out like the soles of old shoes. Our cuts and wounds would never be able to heal. Allah has created this magnificent system for the development and growth of our bodies. Therefore, we should use this body, its health and strength, in the obedience of Allah.

We see the great power of Almighty Allah, that in the face of ‘cancer causing agents’ Allah can prevent cancer and in the absence of these agents Allah can cause cancer. This teaches and reminds us that everything is in the control of Allah and our reliance should only be on Allah.

As the Quran says, **“Allah has power over everything” (2:284)**

“And unto Allah returns all matters” (57:5)

Nevertheless, we are taught as Muslims to adopt those means that are likely to preserve the gift of good health and avoid things that may pose a danger to it. Thereafter, we leave the results to Allah. Allah says in Quran **“Do not put yourselves into destruction” (2:195).**

TOPIC: Plant and animal tissues

Question: Is it permissible and desirable to be a blood donor?

Answer: The basic principle that governs the permissibility of blood transfusion and blood donation is that there must exist a real and extreme necessity before such transfusion and donation can be sanctioned. Extreme necessity entails that a patient would (in the view of a medical expert) lose his life if he were not given a blood transfusion and that there was no other alternative or substitute for treating his particular ailment. If there is another alternative or, in the absence of an alternative, there exists no extreme necessity for a transfusion, then it would not be permissible to either accept or donate blood or platelets. It has already been established that this necessity exists; hence, it is permissible.

Thus, when making such a blood donation, one should donate it with the intention and aspiration that one's blood should be utilised for saving someone's life.

One should however bear in mind that although donating blood would be allowed (as explained above), buying and selling of blood would not be permitted under any circumstances. Therefore, a donor should not take money for this. Also noteworthy is that it would not be permitted to donate such large amounts of blood that would subject the donor himself to undue and intolerable weakness [Ref: Nizaamul-Fatawaa Pg. 391].

Question: What is the ruling with regard to giving babies vaccinations?

Answer: It is permissible to vaccinate oneself and one's children. However, it should be borne in mind that merely by taking vaccinations it does not mean that a person will be protected from the illness. Illness comes from Allah ﷻ, if He so wishes, the medication will be beneficial and if He does not wish, the medication will not help in any way. Allah ﷻ can give ailment with means and without means. He can cure with means or without means.

Many a times a person who has not been vaccinated stays healthy and well; on the other hand, a person who is vaccinated contracts the very same disease against which he was vaccinated. In the end, the cure and ailment are in the Hands of Allah ﷻ. The main aspect here is that our focus and belief should be correct

To get one's child vaccinated in the recommended periods and the question of whether it will be beneficial or not is something that should be done in consultation with an Islamically upright Muslim doctor. If the doctor says that there is a need for it, it would be permissible to go ahead with it. In the end a person has a choice not to opt for it.

Question: What is the ruling with regard to cloning?

Answer: The Western World is continuously looking for ways and means to make strides in the field of Science and Technology. In their attempts to make strides in this field, they tend to conveniently turn a blind eye to the religious and cultural sentiments of the various nations of the world. In their euphoria of so-called scientific progress, they are wont to trample upon the honour and dignity of the Human race. At the same time, the Western World's machinery of propaganda and their control over the mass media is busy indoctrinating many Eastern Bloc countries into accepting their weird dogmas and ideals. It would thus not be an exaggeration to say that the devious ways of the West have not

remained restricted to the geographical boundaries of the West but that these ways have become an ideology permeating through every corner of the world.

Now comes the advent of "cloning." The successful cloning of Dolly the sheep by a Dr. Ian Wilmut of the Roslin Institute in Scotland has raised hopes in many Medical and Scientific circles of the possibility of successful human cloning.

The proponents of human cloning are already citing so-called "advantages" of human cloning. For instance, they claim that success in this field will be a great boon for those childless couples who have lost hope in acquiring children of their own. In fact, hopes have been raised to the extent that, according to some researchers, cloning may even succeed for those couples who have failed to acquire children through artificial insemination. Cloning could thus even be an alternative for couples who cannot bear children due to the husband having a low sperm count.

Many doctors however, have voiced their concern and disapproval of cloning if it was not kept within control; which is the exact concern of many governments that have suspended and banned research on cloning. Even Dr. Ian Wilmut, who pioneered cloning with his successful cloning of Dolly the sheep, has been quoted as saying that he has no desire of repeating the experiment on humans.

As far as the Shar'ie aspect is concerned, cloning should not be permitted and should be totally outlawed. In spite of the fact that it could be beneficial too (such as in the case of childless couples), the harms outweigh its benefits by far. Some of the factors that would render it prohibited would be the following: -

(1) Cloning would become nothing short of a commercial venture. Already plans are afoot in some Western Countries such as America to clone past superior race-horses so that the gambling and racing industry remains abuzz with these fast horses for decades to come and the Tattersalls continue to generate Haraam business. (Monthly Al-Haqq, Vol. 32, No. 7, Zhul-Hijjah, 1417/April, 1997 issue). As Western mentality is programmed to concoct weird ideas, one may see efforts directed next towards cloning film stars in order to draw packed houses to the box-office and thereby keep promiscuity and permissiveness fully ingrained in the passions of the gullible public. Similar attempts could be made with regard to cloning sports stars.

(2) Genetic Engineering, which is basically interfering with the creation of Allah ﷻ will be closely linked to cloning. One doctor explained that this would entail couples being able to make the decision of what type of children they would like to get. With Genetic Engineering, the Cell Tissue extracted from the couple could be manipulated in a way whereby the couple would be able to decide to have a light-complexioned or dark-complexioned child, a blue-eyed or green-eyed child, a blonde-haired or dark-haired child and so on. We can well imagine what chaos this would cause in that when the child will not resemble its parents, people would begin to accuse the child's mother of having perhaps committed adultery with a man having those features, simply because the child does not resemble its father.

(3) When cloning will become commonplace, cell-tissue banks will be established and people will begin to sell their tissues to these banks, which will result in the sale of human tissue, which is prohibited.

(4) People will buy cell tissue for infusing into women, not knowing whose tissue it is. This would create a great deal of confusion in establishing family lineage, siblings, etc. and even result in brothers getting married to sisters without realizing it.

In short, cloning could pose a great global threat to the very ideals of human society and cause mayhem and pandemonium in many respects. Practically all religious denominations have taken note of the evils inherent in this practice, which is why they have all condemned it. In a recent issue of "Al-Balaagh" (Darul Uloom, Karachi monthly), Hadhrat Mufti Taqi Saheb Uthmani (madda zillahu) has, in his report-back of the annual Fiqh Academy Conference written that the issue of cloning was also discussed at the Conference and all the delegates present had unanimously declared it to be prohibited.

As far as cloning of animals is concerned, superficially there may seem to be nothing wrong in it (due to the fact that the animal species is not subjected to the Laws and Restrictions of Shar'iah as humans are), but because it opens up doors to experimentation on humans, it should also be curbed and discouraged. We should allow nature to take its course in the procreation of the animal species and not interfere with that process. Just as some women in the human world may be too physically weak to carry a baby, so too could be the case with the animal species. Why should we then enforce a pregnancy upon a helpless animal that may be too weak to endure the pregnancy? The laboratory experimentation would also subject the animal to short-term captivity, pain and discomfort, when having its cell tissues removed and then injected into its womb. Islam teaches us to have mercy and compassion even on animals. Using animals as guinea pigs for experiments goes against the grain of the Ahaadeeth that advocate mercy and compassion for animals too.

TOPIC: Organs

Before addressing the topic of the organs, it is important to understand and remember that the creator and fashioner of mankind, plants and animals is Allah. Therefore, the design of each and every living organism is meticulously placed by Him, even if we cannot comprehend the wisdom behind their design.

Epidermal cells, palisade and spongy mesophyll, guard cells, xylem, phloem, etc. are all tissue that differentiated (specialized) from the meristematic tissue of the plant. The different types of tissue have cells that differ from each other and perform unique functions. There is a general trend in Life Sciences that you will observe through your studies. Structures within living organisms have particular functions and the specific structure is suited for that particular function e.g. the arrangement of palisade cells in the leaf enables maximum absorption of the light and the arrangement of spongy mesophyll cells ensures gaseous exchange. If the structure of these cells were different, then the efficiency of the leaf for photosynthesis would be compromised.

How does a plant which does not have a brain, change 'blank' meristomatic cells into the correct cell structure, then place these in exactly the correct position for it to function properly? The perfect arrangement of structure at the microscopic and macroscopic scale leaves us in awe. We find this relationship between the perfect structure for the optimum functioning in every cell and every organ of every organism. Indeed something as simple as a leaf which is as thin as this page has a superb

design to allow it to fulfill its functioning perfectly. How can such a perfect mini-factory of carbohydrates have come about by itself within this brainless plant? Surely a superb design is a testament to a perfect designer....Allah.

STRAND 2: LIFE PROCESSES IN PLANTS AND ANIMALS.

TOPIC: Support and transport systems in plants.

Do you not see (reflect upon) how Allah (ﷻ) gives the example of the pure word (the Kalimah) as a pure tree (such as the date palm), the roots of which are set firm and the branches of which reach into the sky (it is firm beneath and above the ground). It bears fruit every season by the command of its Rabb. Allah gives examples for people so that they may reflect (ponder and understand). And the example of the evil word is like that of a dreadful tree that is uprooted from the ground, having no stability. (14: 24-25)

In the abovementioned verses, the example of a good tree is given, reference is made to roots being firmly fixed, meaning that the plant will be stable. Indeed, we learn that roots play two primary functions, the absorption of water from the soil and the anchoring of the plant to provide stability. Furthermore, a good tree is described as one having branches high in the sky. We know that plants are in competition for light with each other. Those that grow taller capture more light and thus can do more photosynthesis and will survive better.

Allah is the light (the illuminator) of the heavens and the earth. The example of his light is like that of a niche in which there is a lamp, the lamp is within a glass, and the glass appears to be a shining star. The lamp is lit with (oil from) an olive tree, which is neither easterly nor westerly (the sunlight falling on the tree is neither obscured when the sun rises in the east nor when it sets in the west). (The tree therefore receives sunlight throughout the day, making the oil pure and easily combustible). (24: 35).

From the above verse, we see that the best of all trees is the one which is planted in such a way that it gets light throughout the day, the more light a tree gets the better fruit it produces, so we learn from here that for a tree to produce the best of fruit it should be planted in such a way where it will receive light throughout the day, and we know that through water, CO₂ and sunlight, through photosynthesis energy is created in the form of sugar and starch etc. which in turn provide energy for the plant, due to which it is able to survive, this energy after it is converted, travels through a unique transport system created by Allah ﷻ in the plant called the phloem. It is transported by this system from the leaves to the remaining portions of the plant.

“Allah is the one who sends rain for you from the sky, which provides (drinking) water and vegetation on which you graze your animals. With it (the rain) Allah grows for you plantations, olives, dates, grapes, and all types of fruit. Undoubtedly there is a sign (displaying Allah’s power) in this for those who reflect”. (16:10-11).

In the abovementioned verse, Allah ﷻ mentions that vegetation is made to grow through the water which is sent from the sky in the form of rain by Allah. We find that for a tree or plant to grow, it is necessary that it is in a place in which there is water present. We learn that certain trees require more water than others, so that tree which receives the correct amount of water will grow better in comparison to a tree planted in an area where it does not receive an adequate amount of water. If we look at areas which have a more tropical climate, where rain is found in abundance, we will find that those areas are generally more lush and green compared to areas with other climates, take for example south America where the climate is generally tropical, we will find that in countries like Brazil and Venezuela, vegetation and trees are very lush and green throughout the year. Then if we look on the other hand at places where water is scarce, like for example the desert, we will find that only certain plants that can survive with a minimal amount of water, like the cactus will be found. The area will not be lush and green, and generally fruit bearing trees will not be found. So basically, in areas where there is more water, vegetation tends to thrive. Allah ﷻ sends the rains from the skies which is then soaked up by the ground, which in turn is absorbed by the roots of the trees which are in the ground, then the water is transported from the roots of the tree to different sections of the tree, the trunk/stem, the branches, the leaves, and the fruit, all this is through a transport system created by Allah ﷻ on the inside of the tree known, in science, as the xylem. Just imagine how many trees there are in your school, and then imagine how many trees there are in your locality, in your province, in your country and in the whole world. Who is making all these trees grow through this complex system? It is definitely none other than Allah ﷻ.

With regards to this same topic we find that Allah ﷻ while mentioning the description of Jannat (paradise) says:

For them shall be gardens beneath which rivers flow.

This has been mentioned in many places in the Qur'an, and we know, what can be better than those things which will be attained in Jannat (Paradise), nothing of this world can compare to that which is in Jannat, Allah ﷻ however, gives us examples through which we can get a slight hint of what we will receive there, by mentioning such things which are found in this world, so that our minds can comprehend it. We find that here Allah ﷻ has mentioned that the best of gardens is those beneath which rivers flow. We learn in this world there are many places wherein beneath us there are rivers and streams flowing. That is why some people even dig boreholes and extract the water from under the ground. In those places where there is water flowing beneath the ground, those areas are lush and green, and vegetation grows easily in those areas, because the roots of plants which are fixed in the ground, are able to absorb the moisture from the soil, which is created due to that water running beneath it, and it in turn transports that water throughout the plant, so in such areas water for the plants is never scarce, which causes the vegetation to remain lush and green.

With regards to this Allah mentions in another verse:

Relate to them the example of two men (one a mu'min and one a Kafir). We had granted one of them (the Kafir) two orchards of grapes (two vineyards) surrounded by date palms and (in addition to this, we had) grown a plantation (of crops) between the two. Both orchards bore fruit and we did not withhold anything from him. We even caused a river to gush forth between the two (so that irrigation was easy for him). (18: 32-33).

From the abovementioned verse, we once again see that in a place where there is more water plants and trees grow better.

In another verse, Allah ﷻ mentions:

(According to our wisdom) We send stipulated quantities of water from the skies, settling it into the earth (storing it in the earth and quenching roots of plants), and We are also capable of withdrawing it (whenever we wish, after which no other being can retrieve it). With it (the rain water) we create for you orchards of date palms and grapes (and many other types of vegetation). In them (the orchards of date palms and grapes) is an abundance of fruit for you, from which you eat. (23: 18 – 19)

In yet another verse Allah ﷻ states:

It is He (Allah ﷻ) who sends rain (water) from the sky, then by it (by the rain) he extracts (from the ground) the sprout of everything (every plant), thereafter extracting greens (green stalks) from this (sprout). Then from these (green stalks) we bring forth grains that are stacked one on top of another. From this the spadix (a small stalk with little flowers enclosed in a leafy covering called a spathe) of the date palm, we extract branches that hang low (heavy because they are laden with dates) and (we also germinate) orchards of grapes, olives, and pomegranates, some of which are alike (in growth and looks) while others are not alike. Look at its fruits as it grows and ripens. Indeed, there are signs in this for the people who have Imaan. (6: 99)

In this verse we see that Allah ﷻ explains the process in which plants grow, firstly it is Allah ﷻ who gives water from the sky, which then is absorbed by the seed of the plant to be, from there Allah ﷻ extracts the sprout of the plant, through the ground which is such that if a heavy person walks on it he will never fall through, yet through something so hard Allah ﷻ causes something so weak as the sprout to break through, then after getting sufficient water and sunlight both provided by Allah ﷻ through his uniquely created transport system, he then extracts from that sprout fresh stalks. Thereafter when the plant is provided by Allah ﷻ with more sunlight and water it now produces grains stacked on top of one another, each grain is such that if it were to be taken out and planted separately it would have the ability to grow into a plant of its own, and produce a whole lot of seeds. Like this after more water and sunlight is provided by Allah ﷻ the small plant then grows into a strong and firm tree, which then produces flowers, which when fed with enough energy and water begins to blossom, thereafter this flower slowly turns into a fruit which slowly ripens. If we look at the fruit of just one tree, we will find that each and every single fruit, even though it is irrigated with the same water, it gets the same sunlight, and it is on the same branch of the same tree, yet we find that each and every single fruit tastes different, they are different in shape, colour, and texture.

Regarding this Allah ﷻ states in another verse:

On the earth, there are neighboring tracts of land (that have opposing characteristics despite being next to each other), orchards of grapes, plantations, and date palms, some of which grow in clusters while others do not. All (the grapes, plantations and date palms) are irrigated by one (type of) water (yet the results are so diverse) (in addition to the various types and appearances of these plants) We accord distinction (excellence) to one over the other in eating (in texture, taste, and nutritional value). Verily in this are signs for those who understand. (13: 3 – 4)

Plants have the ability to grow to huge heights. A Sydney blue gum tree (*Eucalyptus saligna*) is the tallest tree measured in Africa. A record breaking tree in Limpopo was measured at a height of 80 m! If an average human male is 1.77 m tall, then you have to put 45 of those men on top of each other to reach that height. These huge trees stand supported without any skeleton, no cement, foundation etc. furthermore, they are anchored in soil that is easily moved. They have to transport water from the soil up these colossal heights. Similarly, the food produced in the leaves needs to travel down to the roots. How is it that tiny cells of xylem and sclerenchyma with thickened cell walls provide such strength? Is this too not a wonder of creation?

Most fruits occur naturally during summer months (e.g. Watermelon and Mangos) others during winter (e.g. Oranges) and others throughout the year (e.g. Bananas). All of this is in the control of Allah ﷻ. Many dieticians recommend only eating fruits that are in their season. Amazingly, the fruit of the season provides for the needs of our bodies during that particular season. Watermelons and Cucumber in summer help to hydrate and cool our bodies down. While winter fruits such as citrus (including Oranges) are high in vitamin C which will boost the immune system to fight off colds and infections that are common during winter. Did these brainless plants decide to make fruits suited for our bodies at the appropriate timing? Could it just be a co-incidence? Surely a person with intellect will quickly realize the sign of Allah ﷻ.

Nabi ﷺ used to partake of the seasonal fruit of his country and he would not refrain from it. This is one the greatest means of preserving ones health because Allah ﷻ has in His divine wisdom has placed in every area fruit which benefits its people at a stipulated time. (Prophetic medicine by Ibn Qayyim pg 220)

When the fruit of the season was brought to Nabi ﷺ he would place it on his eyes and say, “O Allah just as you have blessed us to see the fruit in the beginning of the season, bless us to see it at the end of the season also”. He would then order that it be distributed amongst the children. (Narrated by al-Tabarani 11222)

TOPIC: Support systems in animals

“He is Allah, the Creator, the Originator, the Shaper. His are the Most Beautiful Names. His purity is proclaimed by all that is in the heavens and the earth, and He is the All-Mighty, the All-Wise.” (59:24).

“Then We turned the sperm-drop into a clot, then We turned the clot into a foetus-lump, then We turned the foetus-lump into bones, then We clothed the bones with flesh; thereafter We developed it into another creature. So, glorious is Allah, the Best of the creators.” (23:14).

As with every part of our bodies, our skeletal system is a masterpiece of design. The Creator, Inventor and Shaper of this system is none other than Allah. As we study the support systems in human beings and other animals we witness the infinite wisdom and power of Allah.

All the bones in our body are made from the same bone tissue, yet Allah has made them different shapes and sizes each suited to its particular functions. Some bones share the common role of protection, but they are designed differently. The bones of the cranium, for example, are flattened and joined by fixed joints to create a strong protective layer around the brain. On the other hand, the heart and lungs are also vital organs but they are not protected by a sheet of bone around them like the brain. Rather, they are protected by the ribs that have intercostal muscle between them. One would think that a complete layer of bone would provide more protection than ribs with muscle in between. However, it is clearly evident that there was a divine hand in the design of our bodies. They were not designed in a random manner. The wisdom behind their design is that the arrangement of ribs with muscles in-between allows the thoracic cavity (rib cage) to expand and shrink. This creates changes in the volume and pressure which are vital for the processes of inhalation and exhalation.

Other bones play a role of support and a point of attachment for muscles and soft tissue. They enable us to have an upright posture. The unique arrangement of bone tissue allows them to be strong and relatively light weight. Our bones also facilitate movement. Muscles push against bones and create movement. Joints allow for full range of motion. Even in the placement of different types of joints we see the divine wisdom of Allah. If we had hinge joints at our upper arms, instead of ball and socket joints, we would not have been able to touch our faces, etc.

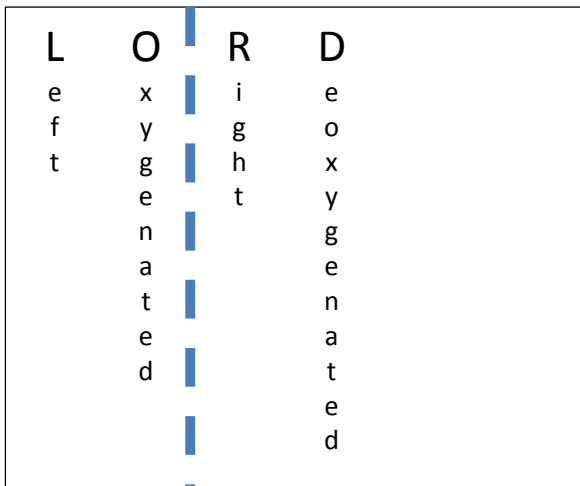
Since we see bones as hard matter it is easy to forget that bone is living tissue. Bones have blood vessels and nerves running through them. Within bones, the blood marrow is the part of our body that produces our blood cells. Many people would not have guessed but bones play an important role in hearing. The three smallest bones in our body, called ossicles, are attached to the inside of the eardrum within the middle ear. They transfer vibrations to the inner ear.

One simple tissue type (i.e. bone) is arranged in a variety of specialized manners. These arrangements allow them to fulfill many vital functions. Indeed we should be grateful to our Creator for perfecting our bodies.

Nabi ﷺ has thought us not to sleep on our stomachs. Modern sleep scientists agree that sleeping on the stomach is the worst sleeping position. It creates pressure on the vertebrae and leads to back and spine issues.

TOPIC: Transport systems in mammals (human)

The heart is a vital organ both physically and spiritually. The heart has a vertical septum which splits the heart into the left and right sides. This septum is crucial as it prevents the mixing of oxygenated and de-oxygenated blood within our hearts. As with all parts of our bodies and nature, when we look at our hearts structure and function, it should remind us of our Lord. This can also apply in the literal sense as far as the heart is concerned. The Left side of the heart contains Oxygenated blood, and the Right side contains Deoxygenated blood. Thus if we think of our Almighty LORD, it will also assist us to remember the functioning of the heart.



“And indeed We already created man, and We know whatever his self-whispers within him, and We are nearer to him than the jugular vein”. (50:16)

The ayah above mentions the jugular vein, which form part of the circulatory system. The jugular vein and carotid artery are collectively found in the carotid sheath within the neck. The carotid artery supplies blood to the brain and face and the jugular veins drain blood away from the brain and face. There are 4 jugular veins, an external and internal one on both the right and left sides of the neck. These are obviously very vital blood vessels in the body. If it is severed, it will most likely result in death.

Interestingly, this ayah describes our self-whispers and the closeness of Allah ﷻ to ourselves. Considering that the jugular vein in connected to our face and brain is really relevant to our sense of self. Our faces are our mostly unique identifying feature which we pay a lot of attention to maintaining its beauty. Our faces also express our emotions within. The brain is the center for nervous coordination in our body. All voluntary and involuntary actions occur under the control of our brain and spinal cord. Our deepest secret though occurs within the cerebrum of our brain which is connected to the jugular vein. Allah ﷻ is even nearer to us than our own jugular veins within our necks. Can there be any description of anything closer to an individual?

STRAND 3: ENVIRONMENTAL STUDIES

TOPIC: Biosphere to Ecosystems

Biosphere:

To Him belongs what is in the heavens and what is on the earth and what is between them and what is under the soil. (20:6)

The biosphere wherein all living organisms are found is divided into three subdivisions, the atmosphere, the lithosphere and the hydrosphere. The atmosphere of air around the earth and whatever extends beyond it, all belongs to Allah ﷻ and is under His control. The lithosphere (with the soil) and its contents including the hydrosphere (water bodies) and its contents all belong to Allah ﷻ.

Allah is the Creator and sustainer of all of the majestic creations mountains, deserts and oceans. As we ponder and contemplate, we realize that we, mere human beings (insaan), are a minute creation. We have to ponder about where we originate from. Allah clearly explains in the Quraan:

Did not a section of time pass until man when he was not even something mentioned? (76:1)

Yet in another place He says:

Are ye the harder to create, or is the heaven that He built? He raised the height thereof and ordered it; And He made dark the night thereof, and He brought forth the morn thereof. And after that He spread the earth, And produced therefrom the water thereof and the pasture thereof, And He pegged firm the Mountains, A provision for you and for your cattle. (79:27-33)

This verse forces us to compare our insignificance to the world and it indicates that are not worthy of having an atoms weight of pride in our hearts due to our beginning.

Biomes:

And within the land are neighboring plots and gardens of grapevines and crops and palm trees, [growing] several from a root or otherwise, watered with one water; but We make some of them exceed others in [quality of] fruit. Indeed in that are signs for a people who reason. (13:4)

Biomes are regions of distinct climate and vegetation. This ayah describes different neighboring plots of vegetation. This ayah gives us a wonderful example upon which we should ponder. The same transparent water rains from the sky causing growth of vegetation. The various colours of soil from golden, brown and red. However, from this soil of brown which is watered with transparent water we find green plants growing. Furthermore, from the same brown soil and transparent water, we derive fruits of many different sizes, shapes, colours and tastes. Imagine a sweet mango or date fruit, or a hot chilly or a sour lemon all from the exact same soil and exact same water. Then even within one

type of fruit, we have variation within the quality. Often farmers and retailers display this as A-grade produce etc. Also, the fruit on the same tree can vary season to season. Even fruit on the same branch of the same tree can differ in quality. May Allah ﷻ make us from among those of sound reasoning so that we may recognize his greatness and favors.

Food chains:

Every single organism that exists in the universe from the minutest of bacteria to the largest of mammals were created with a purpose by Allah ﷻ.

"We have not created the heavens and the earth for idle amusement [without a purpose.] Every creation of Allah ﷻ has a purpose, one of these purposes being that each creation is an example of Allah ﷻ might and great power.] [21:15]

The incredible system of the food chain is a phenomenal sign of the greatness of Allah ﷻ.

"Allah is the one who sends rains for you from the sky, which provides (drinking) water and vegetation on which you graze your animals" [16:10]

The importance of water has been described in the chapter of the chemistry of life. This ayah then describes the foliage (leaves/plants) that grow as a result of the rains. We then feed our livestock. This is an example of a biological food chain. The energy transfers are mentioned in the same order as they occur, from producers to primary consumer (herbivore), to secondary consumer (carnivore/omnivore)

This ayah (verse) and a few verses more following it point out Divine blessings and mention the creation of the universe with unprecedented wisdom. In them, those who ponder find significant indicators and proofs which leads them to perceive the truth of the oneness of Allah ﷻ. At the end of the next verse it is mentioned: **"Indeed, in that, there is a sign for people who ponder" [16:11]**

The reason is that the linkage of pastures, crops, trees with their flowers and fruits with the creativity and wisdom of Allah ﷻ needs some reflection. If one ponders over a grain or pit (seed), one will come to the conclusion that simply putting it inside the land and watering it cannot automatically cause it to grow into a huge tree with flowers of many colours blooming all over it. No tiller, farmer or land owner can make this happen. Their role in this process is negligible. All this is linked to the creativity, wisdom and supreme control of the Absolute Master. [Ma'ariful Quraan]

In another verse Allah ﷻ says:

"And we have spread out the earth and placed therein mountains and caused to grow therein everything in balance, and created therein sustenance for you, and those for whom you are not the sustainers."

Mufti Muhammed Shafee has mentioned under the commentary of this verse in Ma'aariful Quraan that the expression (everything in balance) refers to infinite wisdom of Allah ﷻ that He caused everything that grows to grow in a determined measure, not less than that which would have made life difficult, and not too much which would have also brought difficulties of a different nature (hardship of storing it.)

We learn about food pyramids. If there was no balance e.g. more predators than prey, the entire ecosystem would be unstable and collapse. So we can understand that by creating everything in measure Allah ﷻ causes a balance in the ecosystem. Let us imagine if there were no decomposers (like worms, bacteria and fungi) which normally we have an aversion towards, how would the decomposition of the dead organic matter be taken care of? So in the divine system of Allah ﷻ, unmatched in its uniqueness, mindboggling in its wisdom are signs for human beings to recognise the magnificent Being of Allah ﷻ ultimately leading us to His obedience then eternal success.

Water cycle:

As we know, water is a vital component in the existence of all living beings from plants to humans. In His infinite wisdom, Allah ﷻ has created a system whereby water would reach every nook and corner of this world. As you may be learning, this system is known as the water cycle. From the Quraan, there are many aayaat which indicate towards this system. However, an important point to note from an Islamic perspective, is that this water cycle along with all its components are merely a means whereby Allah ﷻ provides water. Furthermore "Allah ﷻ can do with means, without means, and against means." In the Qur'an (2:60 and 7:160), the incident of Moosa 'Alaihis salam is mentioned when his nation needed water and they were 12 tribes. Allah ﷻ instructed him to strike a rock and from there 12 rivers flowed.

Do you not see that Allah ﷻ wafts (gently drives) the clouds (towards the place where He intends the rain to fall), then condenses (gathers) them (causes the water vapour to form into water droplets) and stacks them into layers, after which (when Allah ﷻ decides) you will see rain falling from between them? Then from the mountainous clouds in the sky, Allah ﷻ showers down (abundantly) some ice (hail/snow), by which He strikes whoever (and whatever) He wills (thereby causing harm to whoever He wills) and averts from whoever (or whatever) He wills. The flash of His lightning (is so bright that it) can almost snatch away eyesight (however, Allah ﷻ protects the people's eyesight) [24:43]

We send the winds that fill the clouds with water, and then send water from the sky which we give you to drink. You do not have the ability to store it (man cannot store rain water in as large quantities as Allah ﷻ does when the rain is stored in lakes, dams, rivers and in underground reservoirs of groundwater where massive quantities of water are stored for people to use whenever they need to) [15:22]

Regarding the above verse, Mufti Shafi Saheb in his commentary on the Quraan, *Ma'ariful Quraan*, has mentioned a lengthy commentary, the summary of which is that Allah ﷻ has created water vapour from the sea and on top of it made winds and made it blow which in turn transform the vapour into clouds. These clouds then move in the sky transporting the water to different parts of the Earth. He also mentions how the water is originally taken from the sea which is salty and brackish and how Allah ﷻ has placed this desalination plant in the clouds. Thereafter we experience the sweet water which we drink. He also mentions the system placed and created to store the water. Allah ﷻ creates ponds and lakes by means of which we irrigate our land. Also a large portion of this water is placed upon the top of mountains as ice which is free from dust, filth and pollution of man. A great portion also goes into the ground which we retrieve digging wells and boreholes.

We send stipulated quantities of water from the skies, settling it into the earth (irrigating the roots of plants and storing underground water), and we are also capable of withdrawing it (whenever we wish, after which no other being can retrieve it) [23:18]

The ayah above describes the water cycle. Allah ﷻ revealed these aayaat in the barren deserts of Arabia. At the time of revelation the knowledge that we take for granted as being common understanding was not commonly known. Most explanations of natural phenomena were based on superstitious beliefs even for many years after (as recent as less than 900 years ago). However, the ayaat of the Quraan accurately states various parts of the water cycle.

First precipitation, then some water soaks into the earth, forming the soil water table and underground water in permeable rock called aquifers. Water returns to the atmosphere via evaporation and transpiration, etc.

Under this ayah Mufti Shafi Saheb mentions that by mentioning "stipulated qualities", the weakness and feebleness of man is shown. How feeble and utterly powerless man is. If the very things which he is dependent upon exceed their limit, they become the cause of death and destruction. Despite having knowledge of the water cycle and the chemical formation of water (H₂O) for many years, we find ourselves helpless in times of drought. No scientist with any technology has created water for people during droughts. We rely on Allah ﷻ for providing us with water.

Therefore, it has been narrated from our beloved Nabi ﷺ that when it begins to rain we should recite

“O Allah! (Make this rain) abundant and beneficial.”

And when there is fear of too much rain causing disaster:

“O Allah! Let it rain in our surroundings and not upon us. O Allah! Let it rain on the mountains, in the wild, in the rivers, dams and valleys and places where trees grow.”

Subhaan-Allah! How beautiful is our religion! From everything, there is something to turn our attention to the One who does everything. What else can be the purpose of our lives besides recognizing our Creator in everything around us?

STRAND 4: DIVERSITY, CHANGE AND CONTINUITY

TOPIC: Biodiversity and classification

Classification schemes a way of organizing biodiversity

Scientifically, organisms are grouped together based on similarities and they are separated based on differences. Islamically, the criteria for grouping together or apart is based on actions and not on physical appearance. Humans are given superiority in the Quraan as being “the best of creations”. However, some humans are described as being even worse than animals based on their evil actions.

O people! We have certainly created you from a single male and female (Adam and Hawwa A.S.) and made you into various families (nations) and tribes so that you may recognise each other (so that each person may know where he belongs and who the others are). Your differences in lineage and race do not make any of you superior to others because verily the most honoured of you according to Allah are those with the most taqwa (Piety, purity, righteousness). Allah is certainly All Knowing and All Aware (only He knows the level of taqwa in every person) [49:13]

And from His signs is the creation of the heavens and the earth, and the differences of your languages and colours (of your skin, despite the fact that you all come from Adam and Hawwa (AS)). There are certainly signs in this for those who have knowledge. [30:22]

Do they (the kufaar) not see that (the powers of) Allah (are so great that He) sends rain from the sky (which is colourless) asking it to bring forth many fruits of varying colours (each having unique tastes, textures and characteristics)? From the mountains (you will find that there are different ridges varying from white to red of different shades and some which are extremely black (even though the mountains are similar in composition). [35:27] There is a similar variation of colours among people, creatures and animals. From Allah’s servants it is only the learned ones (those who recognise him and possess understanding) who fear him (because they appreciate his power and greatness). Verily Allah is Mighty and Most Forgiving. [35:28]

The magnificent variation of creation from the heterogeneous landscape to the great variety of living creation is indeed a sign of a supreme Creator. Kingdoms Animalia, Plantae, Fungi, Monera and Protista, all show a great degree of diversity within each group.

TOPIC: History of Life on Earth Life's History

Mass extinctions and our destiny:

Based on the fossil record, scientists believe that there have been 5 mass extinctions that have occurred during different time periods. A mass extinction occurs when 50%-90% of species become extinct in a short period of time. The scale of these events is enormous as (each species to become extinct) there are many thousands (or millions) of individuals within that species. If that interpretation of the fossil record is correct, there is a lesson to be learnt. If Allah ﷻ can almost instantaneously destroy strong powerful creatures such as dinosaurs, then we too can be destroyed instantly. Verily a day of Qiyaamah will come where the ultimate extinction of all creation will occur. We should make a serious effort to prepare for this eventuality.

"They say: "What! when we are reduced to bones and dust, will we really be raised up (to be) a new creation?" Say: "be ye STONES or IRON, or some created matter which, in your hearts, is (of) greater (impossibility that it can be raised up), - (Yet shall ye be raised up)!" then will they say: "Who will cause us to return?" Say: "He who created you first!" Then will they shake their heads towards thee, and say, "When will that be?" Say, "Maybe it will be quite soon! (Quran, 17:49-51)"

When an organism dies, generally its soft tissue (e.g. skin and meat etc.) will decompose quicker. Hard structures of the body, such as bones and shells take a longer time, but these too will decompose eventually. However if the organism's body was left in certain conditions, it might fossilize. Fossils are the preserved remains or traces of organisms that lived in pre-historic times. Fossils are not simply bones, but rather they have gone through a process of re-mineralization, wherein certain minerals within the bones are replaced with another.

In the aayah quoted above, the disbelievers were questioning resurrection from being in the state of bones (i.e. after being dead and decomposing). The reply to them was that even if they had been stones or iron and not bones, they would still be resurrected. Very interestingly these words **stone** and **iron** are particularly relevant to fossils. Many a time the bones are replaced by minerals such as silica and they become part of the rock. We refer to this process as petrification (turning to **stone**). In other fossils a process of pyritization occurs where the minerals sulphur and **iron** replace the existing minerals within the organism to create a fossil.

Of all the hard objects known about at that time period, e.g. gold and silver, is it not remarkable that the Holy Quran chose to mention **stones** and **iron**, two of the methods of fossilization of bones. Fossilized bones are often estimated to be millions of years old by scientists. Despite being dead for any duration, it is within the power and might of Allah ﷻ to re-create any creature just as He had created us all from non-existence initially.

Geological time scale and evolution:

Most of the knowledge in Life Sciences is based on clear evidence visible to all. However, the evidence in this section is primarily based on fossils of organisms that lived thousands to millions of years ago (the prehistoric era). No one was alive at that time to have recorded exactly what occurred. The evidence that is available might be interpreted differently by different scientists. Some scientists say that these fossils are evidence of 'evolution'. The theory of evolution states that organisms were not created, but rather formed on their own by random chance mutation etc. This evolution is actually EVILution and is a form of Kufr. This booklet has given sufficient examples of the greatness of our Creator and proofs for our creation. How can any logical person believe that a human, an ant, an elephant, a tree and a fungus with all their different components, each intriguing on its own, all originated from the same organism that changed by itself to form these creatures? The use of some logical argument is sufficient to destroy that thinking pattern, if you simply keep asking what came before. Keep asking an evolutionist what came before and the answer you get will probably be something similar to these provided below:

What came before humans (millions of years ago)? An ape-like and human like ancestor.

Before that? Ape/primate ancestor

Before that? Small mammal ancestor.

Before that? Probably mammal-like part reptile-like organism

Before that? Aquatic vertebrate

Before that? Invertebrate

Before that? A multicellular organism

Before that? A single celled organism (such as blue-green algae)

Before that? Just organic compounds such as proteins and carbohydrates which joined to form cells

Before that? Elements that combined because of lightening and volcanos erupting

Before that????? At this point most of their wild imaginations even cannot think of.

How can it be that complex structures such as our body tissue, circulatory system, skeletal system, brains, eyes, etc. all arose by themselves when they didn't exist before? Living, thinking organisms simply arose of dead molecules over a few million years? These statements are indeed very illogical and they are an insult to mankind's cognitive abilities. The purpose of our creation is to recognize our Creator. If we fail to recognize the open signs, then indeed we are unfortunate.

The Life Sciences provides countless signs of the greatness of Allah ﷻ, However, some are blinded by their disbelief and they try to use the same creation as proof to disprove the existence of the Creator? May Allah ﷻ safeguard us from the ploys of Shaytaan.