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Embryology through the Lens of the Holy Quran

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DECLARATION_____

We hereby declare that the substance of this dissertation is entirely the result of our investigation and that due reference or acknowledgement is made, whenever necessary, to the work of other researchers.

Date: ……

Signed: ……

DEDICATION_____

Every challenging work needs self efforts as well as guidance of elders especially those who are very close to our hearts.

I dedicate my humble effort to my sweet and loving family especially my father and mother whose affection, love, constant encouragement and prayers make me able to reach such success and honor.

To the memory of my grandmother, Saadia Azzouzi, who inspired me with her determination and affection. May Allah grant her soul Jannat el-Firduas.

To my partner Houfa and all my dearest friends.

Aouatef GASMI

DEDICATION_____

I dedicate this work with much affection to my beloved parents, Sliman and Khadem Telidja whom gave me all the love, care and support in my whole life

I would also give special thanks to my brothers AEK, Belgacem, Mouaz, and especially to my eldest brother Mokhtar for standing with me in every step in my life

This work is also dedicated to my sisters Saida and Nassima and three sisters-in-law without forgetting their children, my lovely nephews and gorgeous nieces

I would not forget my second family, my sisters in the campus whom made my life easier and happier, thank you all for all the good times and the joyful moments you made me live

To all dear friends and colleagues especially my partner Aouatef and to all who know and love Houfa Telidja

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ABSTRACT

Ever since the down of mankind, we have sought to understand nature and our existence. For many people, science is the only legitimate source and perfect presentation of real knowledge whereas others find religion as another authentic source. This paradoxical view created a sense of conflict between science and religion. Forward with that, this study examines this hyped-conflict within the framework of the Quran, the fundamental scripture of Islamic faith. It mainly highlights the question of the relation between human-obtained scientific truth and Quranic scientific revealed truth, and to a large extent the study stands as a commentary of scientism "the philosophy that takes for granted the idea of science being the nonpareil font for real lore", which is in fact the crux of the matter. The research is carried out with the aim of mapping people's perception towards conductivity of the Quran as an authentic, accurate and reliable source to investigate complex questions of modern world and maintaining its coexistence with science in a scientific age. To ensure a comprehensive understanding, the research provides a scientific-linguistic analysis of some selected Quranic verses dealing with embryology in addition to a data gathered out of a questionnaire for Muslim doctors. The findings of the study reveal that the view of discord is highly rejected from an Islamic perspective and prove that the Quran constructs a view of the scientific mind. In addition, it shows the great potential of harmony between both, Quran and science, regardless to their different domains.

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Religion and science are two fundamental historical and cultural sources for man's guidance, and both of them have the most influence on all aspects of man's life. In fact there exist a variety of views about their ways of interaction. Some hold the conflicting view whereas others claim that they are in harmony, and yet others claim that they are completely independent from each other, having no point of connection. However, it is crucial to clarify 'which religion?', because there are distinct interpretations of religions in general on one hand and within each particular religion on the other. Thus, clarifying which religion is vital for meaningful discussion of religion-science relation.

Since each religion brings about a new challenging discussion with science, Islam and its scriptures are not exception in this case. Therefore, this research will examine the mentioned dichotomy within the framework of the Quran, the fundamental scripture of Islamic faith. The phrase "science–Quran relationship" is often associated with the evaluation of the Quran's content or validations of its authority through scientific theories (this is called *ijaz*). For instance, some hold that the theory of evolution can be evaluated with respect to Quranic discourse. Others argue that the Quran affirms the universe expansion and the description of the stages of the embryo in mother's womb in ways remarkably consonant with recent scientific discoveries i.e. the Quran has a direct relation with scientific matters.

The main question that is always asked at first place is why discussing this topic? The importance of the debate lies upon the fact that both Quran and science construct a mindset and offer an intellectual or cognitive understanding to approach a rational truth. The research interest in such topic was not a spur-of-moment. The Quran relation to science has always drawn people's attention.

However, what mostly triggered the interest to investigate Quran-science relation in-depth is the originality of the topic compared to English students' field of research, in addition to the lack of such research in English version which this point itself brings a kind of novelty and originality, as being tackled by English learners having no relation neither to medicine nor to Islamic sciences. The thing that gave us more motivation to pursue with the research is the fact that both of us enrolled in

scientific streams at high school level which made it easier to understand such scientific chosen field.

Withal, the existence of the dominant claim assumes the rise of science as a triumph of reason over faith, and that westerns are the cradle superior form of knowledge, pushed us to dig more and contribute to such hyped-conflict as a defense for Islamic identity.

A great range of scholars and researchers have contributed to the question of how Quran and science relate to each other. This research paper also attempts to draw an overview about this subject of ongoing debate, with a special focus on contemporary approaches to it. As there are previous studies in the field, it is inevitable to mention that the paper discussion will be highly selective. Thus, this research challenges the claims and influence of scientism, which hold that science has the answer to every question about reality and that it is the only bona fide way of attaining any real knowledge. To the best of our knowledge, very few shed the light on this issue from a scientism point of view which suggests the novelty of this work.

Based on that, although it is known that the Quran presents principles that can be viewed as a 'philosophy of science", the question that imposes itself is *to what extent can Quran refute scientism claims and coexist with science in a scientific age*? In order to reach this point and answer this main question, a set of sub-questions are raised to discuss the final results properly:

- What are Islamic views about religion and science relationship?

- Do Muslim scientists believe that science is the perfect presentation of reality?

- To what extent can scientific-oriented minds be in accordance with the Quran's ability to justify complex scientific matters in a rational way?

- Is the Quranic scientific foreknowledge obsolete compared to modern scientific discoveries?

Not long ago, many scholars and researchers attempted (Naik, 2013; Irfan, 2013; Bucaille, 2014) to answer the question of the relationship between both Quran and science, some advocate the Quran as a source of scientific knowledge whereas others reject this view. Based on that, it is hypothesized that:

- Today, to a significant section of Muslims, science and religion do share some points of interaction based on the fact that Islam was built upon the foundation of learning and knowledge.

- Scientists today would claim that they know the absolute truth in their field of research

- Those who have faith in religion would certainly believe in this view regardless to the fact that they are highly influenced by science.

- Faithful people believe that God's word is not bound to time, but it's eternal, timeless and always suitable for instruction and teaching in life.

To ensure a comprehensive understanding of this research, an overview and a linguistic-scientific analysis of a Quranic data related to one of the hard core sciences (embryology) are provided. The analysis provides a linguistic break down mainly of chapter 23 verses12-14 and some other selected verses, which present the embryonic developmental stages, with their scientific interpretation in addition to a questionnaire which serves as a data-collection tool for this research project. It aims at collecting personal points of view and own thoughts of members of the scientific community, specialist doctors of medicine about the relationship between science and the Quran, whether they are compatible and can coexist or they do not overlap and each have magisterium or domain of teaching authority.

Hence, the research is carried out with the objective of mapping people's perception about the conductivity of the Quran as an authentic, accurate and reliable source to investigate complex questions of modern world by demonstrating that its content constructs a view of the scientific mind with the necessary presuppositions. In addition, the present work aims at determining the nature of the relations that it maintains for rational understanding and its coexistence with science in a scientific age.

Through many readings, some sources are chronologically ordered from the most recent to the most preceded. According to Thomas Burnett (2017), the extent of the scientific revolution has brought about a new philosophy known as scientism; though it is a broad term, but basically for many scientists it can be simply summed up as the belief that science is the only source of real knowledge. Once one believes

that science is the only source of human knowledge, he will certainly adopt a philosophical position 'scientism'. Based on scientists' statements, this philosophy is still alive.

In the Muslim world, Zakir Naik (2013) examined the main source of Islamic faith, the Quran, in the light of established scientific discoveries .He presented some challenges of the Quran concerning astronomy, physics, hydrology, geology, botany and embryology. Based on his analysis of some Quranic verses in relation to these fields, he believed that the holy Quran is a book of a divine origin regarding its strong compatibility with scientific facts.

Dr. Maurice Bucaille (2014), the French surgeon, was the first western who indulged in this issue .He examined different religious scriptures in the light of scientific discoveries highlighting their similarities while giving a great insight into the Quran's revelations and how they are tested to be more accurate.

In the field of Embryology, in which the holy Quran in many verses talks about, Moore, et al. (1991) emphasized the strong compatibility between the Quranic and scientific data that describe the embryo developmental process.

To conclude, scholars, scientists and researchers are splintered between two different views about the Quran's claims for providing scientific data. However, from an Islamic view, it highly trusted that the Quran undoubtedly constructs a mindset for its followers through its message, and that it has more dimensions than its religious purpose. And, it is necessary to understand that in order to comprehend the Quran, a deep study is required rather that a superficial reading of its verses. Regarding the possible relations between Quran and science is that one can and should find a terrain of dialog and cooperation between the two. Hence, while the fundamental mechanisms of science should not be corrupted or negotiated, a fruitful exchange and mutual enrichment are possible at the 'metaphysical level'.

So based on all what has been presented, this paper introduces a new view of Quran-science interaction and presents fresh perspectives of this subject of ongoing debate. To reach and achieve this aim, the paper will be divided in three main chapters: The first chapter tackles the clash debate about science and Quran. It provides some conceptual analysis of some basic points. As a historical background, it

presents the conflict-thesis of the debate with some major contemporary trends related to the problem. The second chapter deals with the analysis of the Quranic verses related to embryology with their scientific interpretation. Finally, the last chapter is devoted for empirical study and data analysis and discussion. It mainly focuses on solving the problematic through working out the proposed hypotheses, discussing the results, attempting an overall evaluation, and designing a general conclusion about the nature of Quranic discourse in relation to science.

Chapter One

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1.1 Introduction

Religion and science are two historical, cultural and powerful forces that are considered as sources of men's guidance. Both have the most influence on all aspects of humans' life. There seem to be clashes between them that draw people's attention, because of the popular belief that is still upraised which hold on the fact that they are fundamentally conflicting viewpoints. The debate about their intersection dates back centuries; and it is still a regular part of contemporary discourses. This view of opposition can be seen as an inheritance of positivism. This hyped conflict between religion and science over time turns out to be largely a conflict between scientists and men of religion rather than religion and science themselves. However, the conflict differs from religion to another.

Islam and its scriptures are not exception in this case. Like any other religion, Islam has his own allegations and beliefs concerning the topic of science. Quran as the main Islamic scripture has a direct relation with scientific matters according to many thinkers' declarations. Many scholars believe that the Quran calls for learning and that it contains knowledge that needs to be investigated which led them to argue about its authenticity.

1.2 Science and Religion

When discussing such dichotomy, religion and science, it seems appropriate and vital to have a clarification to these concepts '*religion*' and '*science*'. Thus, before delving deeply into this matter issue, some conceptual analysis are needed to be discussed regarding these two basic points in order to extract the historical information concerning their way of interaction as fundamental forms of life.

1.2.1 Science Identification

Science may seem self-evident and simple to identify. However, a deeper look beyond the general popular impression reveals the complexity and elusive matters of its nature and validity. In fact, the question about science identification itself is the theme of a number of works, yet there is no single unique accepted answer to the question. It is worth to mention that the notion of science in this general context shouldn't be understood according to its refined epistemological and methodological

characterization which has been elaborated at a more professional level. Instead; it should be understood in its commonsense meaning.

In its commonsensical meaning, Agazzi suggests that science is a systematic amount of knowledge that has been developed in the course of human history, and that is divided into fundamental sectors, for instance biology, mathematics, astronomy, physics, chemistry. Or simply, it can be referred to as a system which is produced by human beings that is attained within a particular form of life which it can be called the scientific research or scientific activity (nd).

From this regard, it might be appropriate to quote Bertrand Russell's (1935) identification in which he says:

> *Science is the attempt to discover, by means of observation and reasoning based upon it, first, particular facts about the world, and the laws connecting facts with one another and (in fortunate cases) making it possible to predict future occurrences*
>
> *(*In Bustami*, 2018:20)*.

Russel here suggests that science is about getting religious answers about the way in which the nature of the world works throughout the use of logical explanations of the observations of the phenomena happening in the world.

Another eminent author who has provided a significant identification of science is Lee Silver (2006). He starts by debating what Renee Descartes and Francis Bacon believed about it. Bacon's view lies on the fact that the scientific study is entirely empirical, and it involves gathering data via real experiments. Yet, Descartes' view is more philosophical. He sees that science is based on observation of natural processes and theories instead of using experiments (McGhee et al, 2008).

Regardless to this much back and forth between this two figures' ideas, Silver (2006) supposes that science is cycled currently through both experiment and observation. He highlights the fact that while the scientific study is done mostly in the empirical sense, there is some value in theory. According to him, the empirical gives us results about cause and effect for a specific certain experiment. Theory, on the other

hand, allows us to create predictions based on these results for future experiments that could not be ascertained from the empirical evidence itself (McGhee et al, 2008).

1.2.2 Religion Identification

There is no definitive way to identify religion. Thus, in an equally commonsensical way to science, religion is regarded as system of beliefs and practices not only allows a person to feel tin tune with what he/she considers divine, but also provides a set of moral and ethical guidelines for a peaceful existence.

Agazzi qualified religion as an attitude that admits the existence of the field of sacred reality (supernatural) which is superior to the visible reality which is usually called the sphere of the divine. This latter can be and has been understood in many ways in different cultures and times. For example, it has been articulated into a variety of gods whereas in other cases, it has been reduced into a unique god (nd).

William James (1902) offers his own identification of religion: "*The feelings, acts and experiences of individual men in their solitude, so far as they apprehend themselves to stand in relation to whatever they may consider divine*" (In McGhee et al,2008:13). William here considers religion as an individual believe and life style. He suggests that each one has his own right to have faith and believe in whatever makes him/her feel peaceful.

Regarding the source of knowledge, generally most of religions accept revelation as a warranty for their cognitive as well as practical doctrines. It is conceived as particular information from god to certain selected persons who have the task to defend and diffuse it (Agazzi,nd).

1.2.3 The Conflict-Thesis

According to many thinkers, such sketchy presentation or identification that is outlined above is sufficient to exhibit the disconnection between science and religion and to show how they are completely different as human forms of life and as intellectual attitudes.

Bruno Latour (2005), a contemporary author who is a sociologist of science, is one of the outstanding authors who argue this idea of opposition between science and religion. In his essay, *Thou Shall Not Freeze Frame*, he points that there is no

point of contact between the two and that they have completely different purposes, and that there could never be a way of interaction between them, simply for the reason that they seek completely different things. He even highlights the fact that calling them incommensurable would be a mistake, because they cannot be put in a relation to be deemed incommensurable.

Stephen Jay Gould (2011) is another thinker who supports Latour's ideas, and who offers approximately similar view regarding the relationship between science-religion dichotomy. In his book, *The Hedgehog, the Fox and the Magister's Pox*, he defines science as the study of the natural world and how it works. Conversely, he identifies religion as the study that is dealing with ethics and the way we live our lives. Furthermore, in his book (1999), *Rocks of the Ages*, he states that there is no overlap between science and religion, and equates them to oil and water. He even adds that regardless the fact that they cannot be separable, they are utterly different.

Latour and Gould's arguments suggest that religion obviously dictates our moral outlook whereas science deals with explaining the world around us. In other words, science deals with the physical and material world, while religion is more related to the heart and spirit. Thus if science might provide physical well-being, religion provides the inner and psychological peace.

From this regard, one could state that both views discussed suppose that there is no point of interaction between these two powerful forces; since they do not share a common ground on which such an interaction might be upon. Thereupon, they should be regarded as different human forms of life as well as different aspects of understanding regarding their distinct purposes and their various ways of treating them.

Actually, it is common known among historians and academic scientists that the view of regarding science and religion as antagonistic and at odds is known as '*the conflict thesis*' in the context of epistemology. In this vein, Ohler (2017) says:

> *The idea of inevitable and perpetual conflict between science and religion is known among historians as the conflict thesis. It exploded in popularity in the late nineteenth century… the idea that science and religion have engaged perpetually in conflict throughout history*

sometimes referred to as the 'idea that wouldn't die (Ohler, 2017:208,209).

This view suggests that though this idea dates back to the nineteenth century and though there were other views and suggestion about the kinds of interaction can be between science and religion; this common view had lived throughout history. Not only that, but also it was and still believed by great number of people.

1.2.3.1 Scientism

Most of the several issues that create the conflict paradigm in the field of theology-science have to deal with issues of epistemology –namely, the key underlying principles between revelation and reason, their spheres of influence, and their truth claims and validities. Throughout history, the real epistemological divide was between those who consider reason as their sole source of knowledge and those who take a theological position i.e. they see religion as the sole and predominant source of real knowledge (Usama and Athar, 2016).

As stated by Guessoum (2010), most of academic scientists, not only refute the conflict paradigm, they often assert that there is no need at all for religion. They prioritize science over religion and claim that is sufficient and capable of inducting and ultimately fully explaining any realm of natural or human activity. Generally this fanatical position is often known or referred to as 'Scientism'.

According to Thomas Burnett (2017), the philosophy of scientism dates back to the early beginning of the Scientific Revolution. During this period, many embraced an intellectual believe of a combination of the theological and the scientific data. However, with the renaissance they started converting towards the scientific side challenging the authority of the religious believes. This had led to the beginning of the end of this consensus. Francis Bacon and Rene Descartes were among the first to put the seeds of scientism. They succeeded through their attempt to proclaim a new method of gaining knowledge depending only on the study of the physical world without consulting the religious ancient scriptures. This was carried out during the Enlightenment. In which this philosophy started taking a more fanatical direction. However, it was until the next century (nineteenth) when scientism was clearly a position to follow and reached its peak with the coming of the 'system of Positivism'

in which there was a celebration of science to be the favorable source of knowledge and truth.

Smith Huston (2000) adds his voice when speaking about scientism to suggest:

> *Only three letters, 'ism', separate scientism from science, but that small slip twixt the cup and the lip is the cause of all our current problems to worldview and the human spirit…scientism adds to science tow corollaries. First, that the scientific method is, if not only reliable method of getting at truth, then at least the most reliable method; and second that the things science deals with – material interties- are the most fundamental things that exist (*Huston*,2000:233).*

Though it is a broad term, but basically for many scientists it can be simply summed up as the belief that science is the only source of real knowledge. Once one believes that science is the only source of human knowledge, he will certainly adopt a philosophical position 'scientism'. Based on scientists' statements, this philosophy is still alive.

In Stenmark's opinion, scientism comes in a variety of distinct forms. He assets that among its main versions is epistemic scientism which is the view that the only reality that we can know anything about is the one science has access to. Another version is rationalistic scientism that claims that we are rationally entitled to believe only on what can be proven scientifically or what is scientifically knowable. The ontological scientism is form that believes that what exists is the one science has access to. A further form is the redemptive scientism which holds the contention that science alone is sufficient for dealing with our existential questions or for creating a world view by which we could live (1997).

Therefore, one could state that this intellectual fanaticism called scientism with all its major forms can be referred to as the philosophy that prioritizes science as the only bona fide way of getting any true knowledge, and undermines all other forms of knowledge.

A great number of scientists have provided their views about this discussed philosophy. Ian Barbour defines it as the claim that the only reliable path of

knowledge is the scientific method. Roger Trigger, on the other hand, writes that it is the view that based on science as the only means of access of reality. Michael Petersan offers also his vision about scientism, and describes it as the idea that science dictates us everything about reality (Stenmark, 1997). Lehar is another notable thinker who described scientism as:

> *The belief that the methods of science are not only appropriate for discovering physical truth, but also for all truth, including those treated in philosophy, ethics, morality, political and cultural philosophy, and the rights and wrongs of human interaction* (In Ndubuisi,2016:2).

Hence, Science is deemed to have the ultimate and authoritative interpretation of reality. According to scientism claims, science is much superior over all other forms of knowledge, and that science is the only means that entails a systematic knowledge that it is attained through empirical procedures. Therefore; any other forms that cannot be empirically verified are deemed nonsensical, irrational and worthless of being regarded as sources of real knowledge.

According to Guessoum (2011), Scientism's frontal attack on religious field came from a famous historian of religion and devoted positivist of his time, Ernest Renan, on Islam who argued that Islam was inherently irrational, militantly intolerant, and essentially incapable of producing science and philosophy. In addition, he asserted that Islam lacks the 'scientific outlook' that makes the scientific revolution possible which; hence, it prevented the development of science and 'free thinking' that is independent of all metaphysics and religious notions. Ahmed Dallal, as stated by Irfan (2013), claims that when confronted with the realities of modernity, including not just highly complex technologies but also developed and complex ethical debates about science and technology, Muslims cannot formulate their views on science in isolation from the world around them, nor it is desirable to do so.

Ziauddin Sardar (2004) goes on the same lines to say that,

> *Modern science is distinctively Western. All over the globe all significant science is Western in style and method, whatever the*

> *pigmentation or language of the scientist… It is embodiment of Western ethos and has its formation in Western intellectual culture*
>
> *(In* Irfan, 2013:48*).*

This notion of euorocentrism of science and that is originated and to be considered the spring of the Western culture comes in favor of the position of the discord, especially if it is related to the Islamic religion. Being originated from the other bank, this leads Islam to be seen in the position of being counter to science. This is also can be reinforced with the fact that in any discussion of such a relation (science-religion) Islam is hardly to be brought up.

1.3 Science position in the Quran

Science is under pressure on a global scale and from each religion. Islam is no exception. Islam nowadays is more known for its exclusivist politics where a great range of Muslims are viewed disputing for an identity that is fed and inspired only by the Quran and hadith. This fact may be acceptable to a certain degree in the sphere of theological matters. However, if these arguments of exclusivity extended to other realms, like sciences, it stands debunked. As a matter of fact, early Islam never projected itself in the light of such matter. However, post-colonial vision of many Islamic scholars begins to focus on questioning the eurocenterism of sciences (Ndubuisi, 2016).

Thus, one of the major confrontations between science and mainstream Muslim is the debate about the problem of revelation and reason. In this respect, it is important to refer to Ibn Taymiyya's (1971) voluminous work *'Refutation of Any Contradiction between Revelation and Reason*' which is still proved to extensively cited up and influential to the current time in which he asserted that authentic revealed knowledge is in harmony with established rational evidence. There might be apparent incongruity, but it was not ultimate. In the case of any doubt, a careful rethinking of the authenticity and understanding of the revelation, as well as the claimed rational evidence, would ultimately resolve the incompatibility (Bustami, 2018).

1.3.1 Quran Philosophy of Knowledge

Contemporary readers of Islamic scriptures (Quran and Hadith) come to realize that Islam inserts a great value and emphasize on knowledge question. They have developed a spectrum of sciences' views within the Islamic context. According to many of their declarations, the Quran, as the fundamental Islamic sacred scripture, boosts Muslims to probe the truth. They often cite verse 239 from surat E-l Baqarah "He *has taught you what you did not know*" in support of their viewpoint that the Quran promotes new knowledge acquisition.

Gholshani (2002), an Iranian thinker, once notes that in the holy Quran, the word *'ilm* (knowledge) and its derivatives are used more than 780 times. Rhetorically, he was asked about the kind of knowledge that these prime Islamic scriptures contain; he responds:

> *We believe that the spectrum of knowledge recommended by Islam is very wide. It included both specifically religious teachings and those branches of knowledge that are beneficial to the welfare of individuals and human societies (In* Guessoum*, 2010:63).*

This Iranian thinker firmly insists on the fact that *'ilm* as described in the Quran is much wider than the religious fields, contrary to what many religious scholars have proclaimed about this question of knowledge.

According to the calculation of expert scientists around 1200 verses are about "scientific miracles" about 20% of the Qur'an (Alhinai, 2015). As claimed by Guessoum (2011) many other scholars have expressed in similar ways the extraordinary position that knowledge occupies in the Quran. He asserts that all kinds of knowledge are compromised within the Holy Quran, and he summed up them in the following major realms:

Literature: Qur'an is written in a musical rhythmic way which is an addendum to poetry. This brought about a significant contribution to literature adding to that it is composed of words imagery and metaphors which very often have more than just one meaning.

Theology: Quran describes God and His attributions and the way in which the believers should practice their faith.

*Linguistics***:** The richness vocabulary Quran shows and even its structure is the foundations on which many scholars started their studies on Arabic linguistics.

Ancient history: Quran recited many stories of old times and ancient nation lived in the past that recent archeologist have discovered.

Jurisprudence: This Holy book contains instructions and rules to His believers. Those rules and instructions are deduced from the various interpretations of the scripture.

Natural science: Quran speaks about the natural sciences because they are related to the daily actions of the Muslims and their daily life.

Rachid Rida (1954) adds his voice and says:

> *The Quran has contained numerous scientific and historical facts that have not been known at the time of its revelation and which have been discovered after that, when the investigations of researchers unfolded the nature of the universe, the history of the human race and the paterns (sunan) of God in creation* (In Bustami,2018:25).

Accordingly, it could be argued that the Quran is a book and a source of all distinct fields of knowledge. In this sense, a reference can be constantly made to the Quranic verse that says, '*we have neglected nothing in the Book'* (Q.6:38), by means that it gives an indication of every small thing. Nonetheless, it is undoubtedly a miracle that has opened a gate to the use of scientific knowledge as a proof of its truthfulness. It says, 'We *shall show them our signs across all corners of the world and within themselves, until they clearly see that it (the Quran) is the truth'* (Q.41:53).

1.3.2 Quran Scientific Exegesis

Considering the fundamental importance of the Quran in the Muslim world, the art and science of its interpretation is one of the central intellectual activities and areas of debate in the Islamic tradition.

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The Quran contains numerous verses dealing with natural phenomena. However they were not the subject of study for many years. This is due to the lack of its scientific interpretations. It was only with the development of the modern sciences, different scholars figure out their scientific meaning which made those verses' sense clear. Earlier, the interpretations, though they were by acquainted figures, they were only sketchy interpretations without fully understanding its deeper meaning. Even nowadays with the accessibility to the discoveries of modern science it is still hard to have a clear understanding of the Quranic verses. This needs a collection of '*encyclopedic knowledge*' in various branches all combined to contribute in a '*specialized research*' (Dupret et al, 2016).

Therefore, centuries ago, there was no intense debate about science and Islam and the way they relate to the interpretation of the Quran. Quranic scientific foreknowledge can be considered as a most widespread public understanding of the relationship between science and Islam in contemporary Muslim societies. One of its major proponents was the French physician Maurice Bucaille (2014) who claimed that the Qur'an does not contain a single statement which is assailable from a modern scientific point of view. This led him to the conclusion that the facts described in the Qur'an could not have been authored by any human. The belief that Qur'an prophesized scientific theories and findings is widely popular: expansion of the universe, planetary motion, greenhouse effect, continental drift, and relativity are some of the many examples of what is claimed to have been predicted in the Islamic revelation. This is generally known as the "scientific miracle" of the Qur'an. Among those prophecies, there are claims and predictions which are taken to have anticipated future events which actually took place or documented past events which remained ignored until modern archeological science excavated their material evidence (Dupret et al, 2016).

Thus, One of the central approaches to the understanding of the Quran was what called 'exegesis through reason'. Those who developed this approach claimed that the Quran presented itself as a rational book that encouraged the use of human intellect. Consequently, it was argued that it was necessary to broaden the scope of its understanding beyond the immediate meaning of its text, on condition of certain requirements were met. These conditions included an adequate application of the usage

of the Arabic language that was prevalent at the time of revelation, a full consideration of the tradition of the prophet and the first generations of Muslims who were most apt at explaining the Quran, and a firm compliance with general framework of Islam. Within this school of exegesis, the question of applying the scientific knowledge to the understanding of the Quran had arisen (Dupret et al, 2016).

The approach of the use of scientific knowledge in the interpretation of the Quran which aims to prove the miraculous nature of the Quran was met by fierce opposition, never gained full approval. Therefore, it has produced a profound debate among contemporary scholars. A great range of scholars expressed their dismay with the interpretation of the Quranic verses in the light of scientific knowledge. Some described such approach as a '*lunatic innovation*' that does not give fairness neither to science nor to the Quran whereas other great range of scholars greatly admired it and defend it in their ways. i.e., this ideology like any other had its own supporters and disbelievers. Thus, it is possible to classify tendencies within the debate in two groups: The advocates and the rejectionists (Dupret et al, 2016).

1.3.2.1 The Advocates

Among the first who advocate these claims was Al-Ghazali (1939). His view is based on the fact that Quran is the foundation of conceivable knowledge whether of past or future. He once quoted that, '*All ideas and theories that thinkers found ambiguous, and that people disagree on, are implied in signs and indications in the Quran that only specialized, knowledgeable people can apprehend'* (Bustami,2018:22).

As a clarification of his point view, he cited a number of verses. He pointed out the verses that speak about the moon and the sun, for instance '*The sun and the moon follow courses exactly computed'(*Q.*55:5); 'It is He who made the sun to be shining glory and the moon to be a light (of beauty), and measured out stages for it, that ye might know the number of years and the count (of time' (*Q.*10:5);* and *'The sun runs through its course for a period determined for it'(*Q.*36:38)(* Bustami,2018:22*).*

Al-Ghazali (1939) asserts that these mentioned verses and others that indicate a deep sense of the movement of the sun and the moon would be valid to a person with sound understanding of astronomy. A number of big-names of scholars of the Quran uphold Al-Ghazali's approach, as AL Sarkashi , Al-Suyuti, and Fakhr al-Din al-Razi (Bustami,2018).

Another influential contribution was made by the a French non-Muslim scientist, Maurice Bucaille (2008), in his famous book, *The Bible, the Quran and Science*, in which he claimed that the Quran is not only immune from scientific errors, but that it has stated facts that were unthinkable at the time of its advent. The meaning of those facts, according to him, can only be understood with the help of modern science. Bucaille (2008) raises the problem of translation here. He argues that translation of the Quran is the reason behind the neglecting and the misunderstanding of the knowledge provided in its verses. After reading the Quran in Arabic and understanding the verses about natural phenomena, Bucaille(2008) was astonished with the fact that they were '*in keeping with the present day ideas*'.

Zaki Naik (2013) in his well-known book, *The Quran and modern science: compatible or incompatible,* he examined the main source of Islamic faith, Quran, in the light of some established scientific discoveries. He started with the contention that Qur'an challenged in the past and still challenging the disbelievers. The fact that in the time of its revelation, literature was taking "pride position", Qur'an came to be considered as the best "Arabic literature par excellence". This was a challenge to them in the past. Nowadays, science is taking the "pride position". Thus, it is only appropriate to be challenging this knowledge.

Naik provided many interpretations of Quranic verses that have been claimed to be in agreement with sciences and even modern ones which had not been known in the past. The Quranic challenges that were provided concerns different scientific fields namely are Physic, astronomy, botany, biology, hydrology and geology. He brought the scientific discoveries and knowledge and attempted to prove the veracity and authenticity of the verses dealing with them.

Another advocate claims that there are 750 scientific verses in the Quran that briefly explain the material composition that God has embedded in the natural world with an accuracy that astounds reader, and that we are now approaching the end of the twentieth century which is claimed by scientists to have reached a high climax in obtaining knowledge; it is important that we persist in providing evidences of conformity of the Quranic verses with modern scientific discoveries, until science would be compelled to accept the greatness of the holy Quran (Bustami,2018).

1.3.2.2 The Rejectionists

The famous jurist, Al-Shatbi (1922), is one of the notable opponents of this approach. His arguments against the application of science in the Quranic interpretation are based on the fact that the Quran is basically a religious book that deals principally with the divine realization in human life. He quotes:

> *Many people had overstepped all bounds and made undue claims about the Quran when they assigned to it all types of knowledge of the past and the present such as natural sciences, mathematics and logic. It is impermissible to ascribe the Quran what it does not call for as it is not right to deny what it calls for (*In Bustami, 2018:23).

Mahmud Shaltut is another outstanding and well-known figure in the field of the Quranic studies who belongs to the list of the rejectionists of the Quranic scientific exegesis. He maintains the wrongness of the approach based on the argument that the Quran has not been revealed as a book where God tells people about various disciplines of knowledge, nor about scientific theories and matters, and that this approach incites its advocates to stretch the sense of the verses in a way that it is unacceptable to any sound mind (Bustami, 2018).

According to Bustami (2018), Qutb described such an approach as fundamentally flawed. He maintains that the Quran primary objective is to establish new values and rules to govern and shape human life, and that the attempt of reconciling it with science is itself a mistake simply for the reason that science is not its subject matter. He asserts that the Quran's principal objective was the creation and promotion of a new conception of life in a new social, political and economic order. It was never intended to be a book on astronomy, chemistry or medicine, as some of its admirers and detractors try, each for their own different purposes to demonstrate.

1.4 Conclusion

This chapter introduced the thesis with reference to its main problem and some necessary definitions. The subject is so vast, thus the work mainly focused on the relationship between science and religion with reference to philosophical and religious reactions to the question within the Islamic context. In this chapter definitions of the main key terms were provided. It presented the main considered belief about the

relation that ties science and religion, mainly the conflict-thesis and its core philosophy scientism. This chapter examined also how knowledge and science are presented in Quran. Adding to this, it tackled also the point of the Quranic scientific exegisis projecting its believers and the rejectionist.

Chapter Two

CHAPTER TWO

2.1 Introduction

Ever since the very beginning of mankind's existence on this planet, they essayed to understand every aspect of life. In this quest, much ink has been spit on the attempt of figuring out the human origins and roots. Thus, a new branch added to biology that is concerned with the studies of how the formation and early development of living organisms take place. This branch is known as embryology. However, attention has been drawn to its findings before about fourteen centuries ago. There exists certain information related to this field in the Quran.

In fact, various verses in many chapters in the Quran discuss the idea of the developmental stages of the embryo. However, due to their numerousness, only some of those verses and chapters are selected to be discussed and analyzed.

2.2 History of Embryology

The study of embryology has started long time ago. It was not a field standing on its own but rather a branch or a subfield from broader ones. For instance, for the ancient Greeks it was part of a field known as generation. Later it became part of biology and recently it became an independent field. The study of embryology can be traced back to the ancient Greeks and even the early Egyptians. They had numerous believes about how human beings came to life most of which were speculations based on superstitious beliefs.

Walner (2010) projected the developments that appeared within the field of embryology as the embryologist and historian Joseph Needham (1959) puts them. Needham approaches some of those believes and discusses the attempts of the early Egyptians, fourteen hundred years BC, to understand the process of the development and the creation. They had various explanations depending only on superstitious ideas and thoughts. They believe that placenta encompasses superpowers which are responsible for the creation of the soul was widely spread at that time. The Egyptians tried to investigate the development of the embryo throughout the study of the development of the check egg. The Greeks continue on this research to have answers of their own.

According to Needham (1959), the first true embryologist is Hippocrates whose assumptions and beliefs were the seeds that led to the conception of pre-formation. The

basic belief of this conception is that the organisms are already fully formed inside a miniature within the mother's egg or the father's semen. This had been the common belief for a long time. Aristotle is another prominent figure of ancient time to study embryology. His observations and experiments on the bird egg in different stages of development were exceptional and resulted in the theory of epigenesist or the neo-formation. This theory is used as reference to the recent studies. The theory presupposes that the embryo starts as an undifferentiated mass then it develops and other organs are added later.

Those ancient beliefs were the corner stone for many other beliefs and even the recent studies. Even though they were not entirely correct, they were the guide line and held the responsibility for the continuation and the growth of embryology. Nowadays science, embryology, being more accurate and based on empirical studies depending on the advanced technology; it would not have reached this phase without the inherited notes and the descriptions (Walner, 2010).

2.3 Quranic Data Analysis

There exist various verses in the Quran related to embryology. The most detailed verses are the ones of chapter 23 in which it is stated as follows:

> *We created man from an essence of clay, then We placed him as a drop of fluid in a safe place. Then We made that drop of fluid into a clinging form, and then We made that form into a lump of flesh, and We made that lump into bones, and We clothed those bones with flesh, and later We made him into other forms. Glory be to God the best of creators* (Q, 23:12-14).

وَلَقَدْ خَلَقْنَا الْاِنْسَانَ مِنْ سُلٰلَةٍ مِّنْ طِيْنٍ ۚ (23:12) ثُمَّ جَعَلْنٰهُ نُطْفَةً فِيْ قَرَارٍ مَّكِيْنٍ (23:13) ثُمَّ خَلَقْنَا النُّطْفَةَ عَلَقَةً فَخَلَقْنَا الْعَلَقَةَ مُضْغَةً فَخَلَقْنَا الْمُضْغَةَ عِظٰمًا فَكَسَوْنَا الْعِظٰمَ لَحْمًا ثُمَّ اَنْشَاْنٰهُ خَلْقًا اٰخَرَ ؕ فَتَبٰرَكَ اللّٰهُ اَحْسَنُ الْخٰلِقِيْنَ ؕ (23:14)

These verses give quiet detailed information about the creation and the formation of the human being. Another verse in the holly Quran states: ***"(Allah) creates you inside the bodies of your mothers, in stages, one after another" (Q, 39:6).*** Considering the fact that the verses above are dealing with the same topic

that would indicate the information given in the verses of chapter 23 are stages. Thus, if they were to be analysed and arranged, it might be suitable to follow the same arrangement provided by the Quran.

2.3.1 Essence or Extraction of Clay (Sulaalah Min Tin)

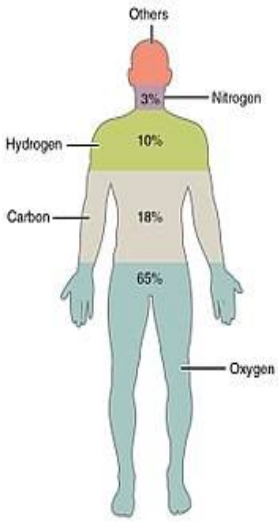
The first part of chapter 23, that is mentioned previously, deals with the description of the origins of human beings. It suggests that in this stage man has been formed from a *sulaalah* of clay. The word *sulaalah* means an extract, something drawn out or the most subtle, purest and essential constituent (Tzortzis, 2012).

The early commentators of the Quran suggest that the phrase *sulaalatin min tin* (an essence of clay) is meant to refer to the miraculous creation of Adam. This view was adopted by numerous well-known exegetes such as 13th century scholar from Cordoba, al-Qurtubi; the 9th Century Persian historian and scholar, al-Tabari; and the 12th century Iraqi physician and historian al-Baghdadi. However, there existed others who thought of another possibility of interpreting these words. They suggest that the meaning intended was the extraction of the essential chemical components of the clay "*tin",* which constitute the very essential elements of the human body (Tzortzis,2012).

In scientific terms, this part of the verse is pertaining to certain essential chemical constituents. These constituents are of the clay such as Oxygen, Carbon, Hydrogen, Nitrogen, Calcium, Phosphorus, Potassium, Sulfur, Chlorine, Sodium, Magnesium and Silicon. Interestingly, they are fundamentally required for the development and the life of the human. This is what the latest discoveries have shown. An examination of the human body would result in the fact that many elements on the earth or more specifically in the clay are to be found in the body. In his eight volume exegesis, the jurist and exegete Shafi Usmani treats this idea and cites: "*The word sulaalah means 'extract' and tin means 'wet earth' or 'clay' and the verse means that man was created from some special elements extracted from earth"* (In Tzortzis,2012:13).

The information provided in the beginning of the verse was criticized and denounced to be inaccurate in its description of the human origin and refused the idea that the human body is made out of clay. This claim is the result of the misunderstanding of the verse because of the confusion that comes out of not understanding the Arabic language. The word *sulaalah* is used in the verse to indicate an extraction or something drowns out.

This certainly show that the verse does not refer to the clay as being the component of the human body, but rather what is *extracted* of a clay constitute the exact components that are vital for the human life whereas if the verse is interpreted with the connotation of the creation of Adam, then it can be approached from Islamic perspective and the theological understanding of miracles. The supernatural creation of Adam from clay is regarded as an unexplainable event or a miracle (Tzortzis, 2012)



Element	Symbol	Percentage in Body
Oxygen	O	65.0
Carbon	C	18.5
Hydrogen	H	9.5
Nitrogen	N	3.2
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulfur	S	0.3
Sodium	Na	0.2
Chlorine	Cl	0.2
Magnesium	Mg	0.1
Trace elements include boron (B), chromium (Cr), cobalt (Co), copper (Cu), fluorine (F), iodine (I), iron (Fe), manganese (Mn), molybdenum (Mo), selenium (Se), silicon (Si), tin (Sn), vanadium (V), and zinc (Zn).		less than 1.0

Figure (2.1): The Components of the Human Body

2.3.2 Drop of Fluid (Nutfah)

The word *nutfah* is used to describe a stage of the development. This word can indicate various meanings and have different interpretations. In the Arabic dictionary *Lisan Al-Arab* the word *nutfah* means a 'single drop of water remaining in an emptied bucket'. It also can refer to a trickle, a drop or semen. In another context, Baucaille (2008) suggests that *nutfah* is used to describe the 'very small quantity' of the liquid which is needed to propagation.

The classical commentators of the Quran pointed out that it is the semen. However, other exegetes disagreed with this view and announced that there is a need to consult the other Quranic verses which refer to *nutfah.* In this vein verses of chapter 37 and 32 are brought to the discussion *"Had he not been a sperm (nutfah) from a semen (maniyyin) emitted"*(Q.37:75) and *"Then He made his posterity out of the extract (sulaalah) of a liquid disdained"*(Q, 32:8). Exegetes used this verse to confirm that the

nutfah is not the semen *(maniyyin)* itself but rather a part of the semen. This is what Tzortzis (2012) uses to support his definition in which he claims that *nutfah* is one object that is part of a larger group of the same kind.

The word *amshaj* accompanied *nutfah* in the second verse of chapter 76 "*We created man from a drop (nutfah) of mingled fluid (amshaj).*" *Amshaj* is interpreted by Ibn 'Abbas as the "*fluid of the man and women when they meet and mix"*. This pinpoint that *nutfah* has the implication of something mixed and an intermingled substances. Thus, its most considerable interpretation from an embryologist point of view is the zygote[1] rather than a sperm or spermatozoon. This brings to the light another prominent idea about the verse. It delivered the stages in a chronological order; the zygote or *nutfah* was mentioned at the start because it happens during the fertilization which is of the first stages of the fetal development (Tzortzis, 2012).

Nutfah, in a scientific context, has different connotations such as the male and female gametes[2], the morula[3] or the blastocyst[4] (Chohan and Tahir, 2016). It refers also to the first stage of the embryo's development. All and each meaning and interpretation can correspond in one way or another to the description of this stage of the embryonic development.

2.3.3 Safe Place (Qaraarin Makeen)

The Quranic words that stand for the next stage are *qaraarin makeen.* Those two words provide countless meaning since each has its own definitions meanings and interpretations and when they are joined together they present whole new meanings. The word *qaraar* means sedentariness, firmness, steadiness and settledness. Withal it is to decide and make a firm decision as it is used as the equivalence for residence and resting place. For the word *makeen*, it has the connotation of something firmly established which make it strong and solid plus it means to put and place in deep-rooted and deep-seated position (Wehr,1976).

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[1] Zygote: a cell results from the union of an oocyte and a sperm during fertilization. A zygote or embryo is the beginning of a new human being.
[2] Gametes : gametogenesis which are the spermatogenesis in male and oogenesis in female
[3] Morula : solid mass of 12 to approximately 32 blastomeres ;formed by cleavage of a zygote.
[4] Blastocyst: the hollow sphere of cells derived from the morula consisting of the inner cell mass and outer trophoblast.

The Quran uses precisely the combination of the two words together. This is because the coalition of both result a stronger and shapelier meaning. Their combination results in the connotation of safe and firm place of rest or lodging (Tzortzis, 2012). This phrase is perfectly the accurate description of the next phase of the development. It expresses exactly what happens to the fatal after the *nutfah* stage.

For scientists, this phase is known as implantation. From an embryologist view, it starts with the 6th to 7th day after fertilization in which the blastocyst is formed out of the transformation of the zygote into a ball of cells with an outer shell. Then, with the intervention of different enzymes, the blastocyst delves deeply in the uterine mucosa. The blastocyst is finally covered and shielded with operculum[5]. This operation takes about 4 to 6 days after its start. The blastocyst is eventually securely placed in the endometrium[6] (Tzortzis, 2012).

This process, the so-called implementation, allows the *nutfah* or the fatal to be securely placed in a firmly established shell inside the mother. The Quranic words are veracious in telling the exact process upon which the development operates. The scientific discoveries go along with this description.

2.3.4 Clinging Form (Alaqah)

The next stage according to the Quran is to become *alaqah*. This word has been a topic of interest for many researchers and scholars. The word *alaqah* was given a variety of interpretations by the classical commentators of the Quran. For instance 'Ikrima believes that it is blood in general, while Al-Shawkani suggests it to be a slice of dried blood and opposing to this view, Al-Qurtubi says that it is a wet slice of blood. Ibn Kathir goes on with the meaning of a long leech (Bazli et al, 2016).

Hence, *Alaqah* expresses different meanings. Analysing those meanings in relation to the embryonic study would result in those main denotations to the depiction of the scientific explanations of the embryo.

2.3.4.1 Hanging or Suspended

[5] Operculum: a covering membrane.

[6] Endometrium: the inner lining of the uterus in which implantation occurs.

One of the literal meanings of the word *alaqah* is to hang or to be suspended which are common words used by embryologists to describe the status of the embryo in its first stages with the appearance of the connecting stalk. The latter is an organ that is shaped as soon as the embryo starts to be formed. Allan and Kramer (2010) explain "*the connecting stalk ... [is] to suspend the developing embryo"* (In Tzortzis, 2012:21). The fact that the embryo is connected and hanged in the mother's womb, this clearly prove that the newly discoveries of science are along with the facts provided by the Quran.

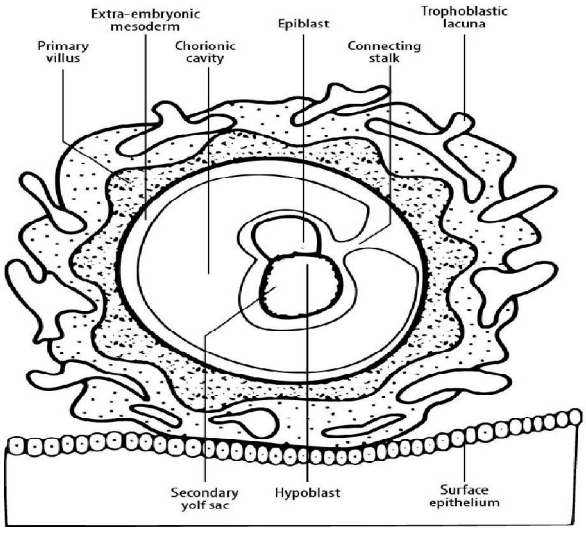

Figure (2.2): The Embryo Connected the Cytotrophoblast via a Connecting Stalk

2.3.4.2 Leech

'*Alaqah* in the Arabic language refers also to a worm exists in the water which is the leech. The interpretation of the Quranic word to be a description the embryo as a leech is verified with scientists' finding which denotes that the embryo has the main aspects of a leech which are suckling blood and the form and the shape of the leech. The former aspect is clearly shared by both since the leech is a creator feeds on sucking the blood of others. This characteristic is the reason behind its name '*alaqah*. Similarly the embryo nourishes from the mother's blood (Bazli et al, 2016).

Concerning the shape, recent scientific discoveries show that the embryo development starts from about the nineteenth day to be formed in a shape of a leech and even has its internal structure (Figure 2.3). This, scientifically, referred to as neurulation (figure 2.4). Sharma and Michel (2009) explain it:

At about 19 days, at the cranial end of the primitive streak, the underlying mesoderm and notochord induce the ectoderm to form the neural plate, which rounds up to form the neural folds. The neural plate enlarges initially at the cranial end. At 20 days, the neural plate in the mid-region of the embryo remains narrowed, but it expands at the caudal end. The plate deepens to form the neural groove from which the neural tube forms. The cranial and caudal ends of the tube are open and are known as the anterior and posterior neuropores; these eventually close. (In Tzortzis,2012:23).

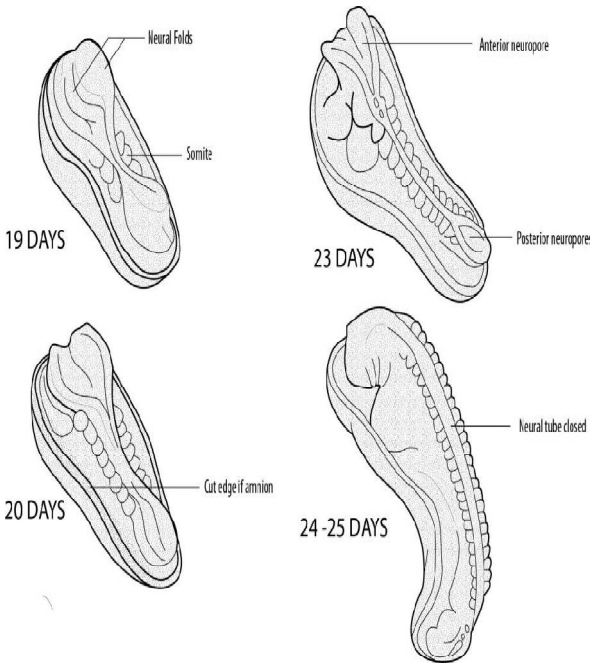

Figure (2.4): The Process of Neurulation

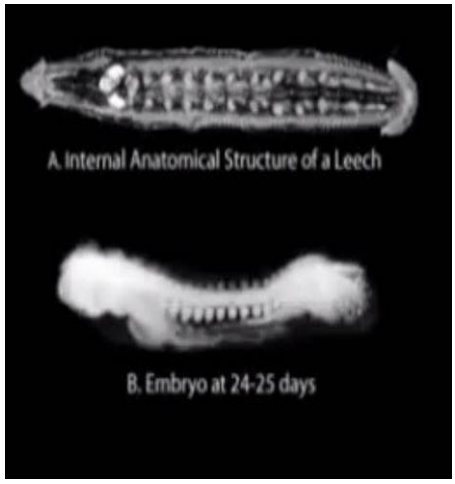

Figure (2.3): The Internal Structure of Leech and of Embryo

In addition to neurulation, the Folding of the embryo is another cause that results the leech shape. Embryologists suggest that this process happens due to the structure of the cylindric or tube-like. Embryologists Moore and Persaud (2008) assert that "... *the establishment of body form is the folding of the flat trilaminar embryonic disc into a somewhat cylindrical embryo.Folding results from the rapid growth of the embryo, particularly the brain and the spinal cord"* (In Tzortzis, 2012:24*).* The embryo taking the

structure of a leech, as it appears in figure 5, is for the reason that both the tail and the head come closer together (day 22 to 25). With the end of the folding the embryo takes the whole form of a leech (figure 2.5).

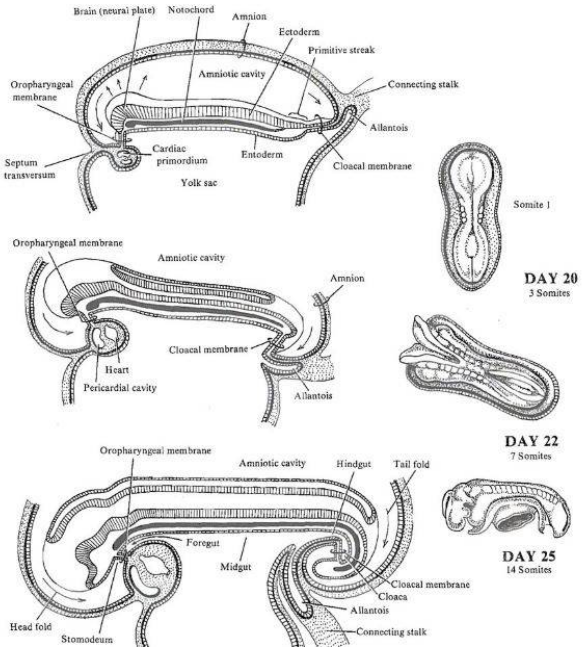

Figure (2.5): The Process of Folding

Many scientists came with the conclusion that the embryo truly develops resembling the physical and internal features of a leech (figure 2.6). This resulted in the fact that there exists no word better clarifying and describing the embryo in this stage then *'alagah.* Dal Layman described it using the words 'warm-like' and Moore declared it clearly "*The human embryo is truly leech like"*(In Tzortzis, 2012: 26)

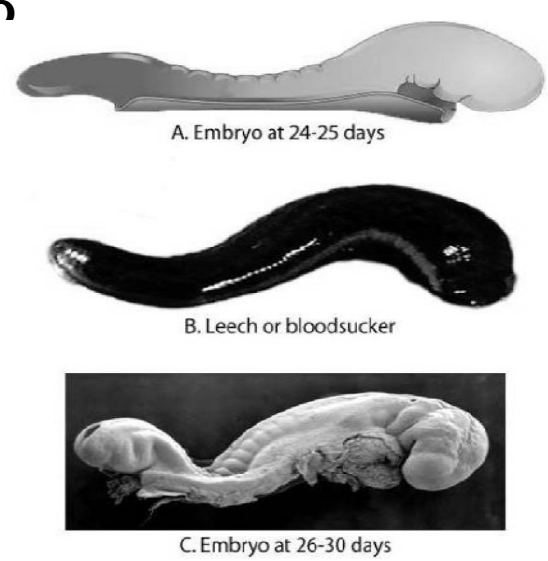

Figure (2.6)*: The Shape of the Leech and the One of Embryo*

2.3.4.3 Blood-Clot

As stated above many commentators referred to the '*alaqah* as a blood or slice of blood. This interpretation goes in accordance with what an embryo looks like before the third week which resembles the shape of a blood-clot. Scientists explain this phenomenon as the outcome of the development and the formation of the primary cardiovascular veins and system. The preliminary heart and the placenta start to be formed and come out. Another reason for the blood-clot similitude is the lack of blood circulation; quite a large amount blood is blocked within the embryo. This would come to an end by the end of the third week (Chohan and Tahir, 2016). Figure (2.7) shows how the embryo look like a blood-clot since it presents the development of the cardiovascular system.

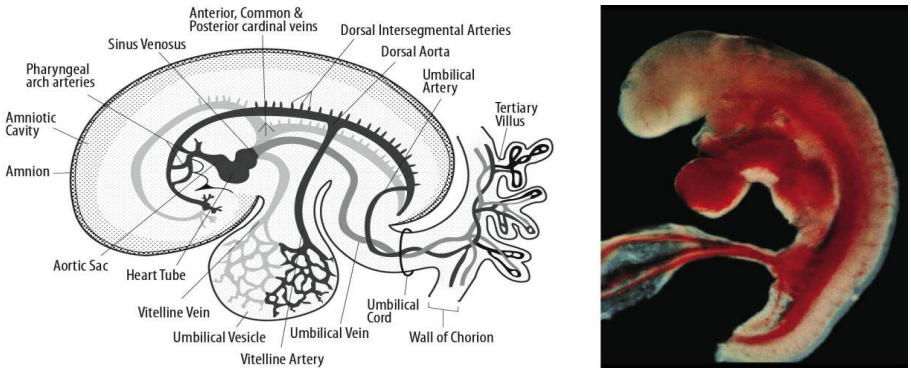

Figure (2.7): The Development of the Cardiovascular System Resembling a Blood Clot

The Quranic selection of the word '*alaqah* refers to the early stages of embryo's development is the perfect choice. The scientific descriptions of the embryo's appearances correspond exactly and accurately with the connotations of the word *'alaqah* holds.

2.3.5 Lump of Flesh (*Mudgah)*

Mudgah is the word used by the Quran to describe the stage after '*alaqah*. The word also encompasses various meanings. Interestingly, each has a great deal in describing this stage. The meaning provided by El-Naggar indicates that it refers to what remains in the mouth after chewing as it is used to describe something teeth chew and leave visible marks on, which change because of chewing. This definition is the description of the embryo's appearance in the fourth week. Scientifically, this appearance is due to the somites at its back which are the beginnings or primordial of the vertebrae. Figure (2.8) demonstrates how the embryo looks like a chewed gum.

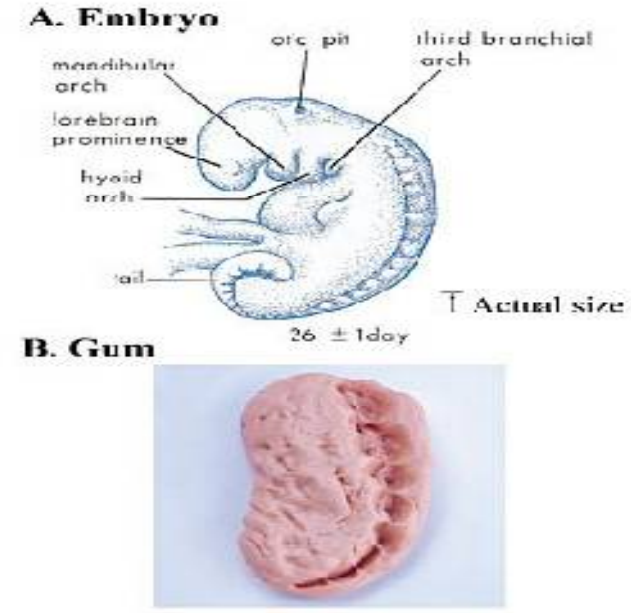

Figure (2.8): An Embryo Compared to a Chewed Gum

Mudgah is also interpreted as the small substance or the small seized piece (morsel or chunk) of meat which is the state of the embryo during his fourth week. According to embryologists, the embryo is of tiny size of barely 1.0 cm that looks like a morsel of flesh at this stage (Chohan and Tahir, 2016).

The Quran clarifies another meaning in the verse which states "*Then out of a morsel of flesh, partly formed and partly unformed" (*Q,22 :5). The commentators believed that this presents another meaning which is of something partially formed or shaped, or partially unformed. This can, scientifically, be linked to the shaping and forming of some organs in this period while others mold only in the upcoming stages (Chohan and Tahir, 2016).

2.3.6 Bones ('Idhaam)

The Quran continues in reciting the stages in a chronological order. The next stage is of the seventh week, and it is named *idhaam* (bones). During this stage the embryo starts shaping and taking humanistic form. On the grounds that the limb buds develop which lead to the development of the limbs (representing the first stages of ossification[7]) and then the appearance of the appendicular skeleton[8] and then the cartilaginous skeleton. The description of this stage in the Quran started with the conjunction "*fa"* which indicates a development without any delay. The use of this conjunction shows that the development occurs in a very short time (Bazli et al, 2016).

Some critics suggest inaccuracy of using the word *'idham*. It is claimed that a more apt Arabic word is *ghurdoof* since at this stage ossification is not complete and the "bones" are not really bones and only cartilage. The word *ghurdoof* do have the connotation of cartilage. However, it turns out that the more accurate word is *'idahaam* because it encompasses the meaning of the cartilage as it refers to the beginning of the ossification and the forming of the skeleton as it encompasses the meaning of the tendons and it is the apt description of limb bones covered with flesh (Tzortzis, 2012).

Another criticism based on the misinterpretation of the verse and misunderstanding of the basic Arabic grammar. The literature reading of the verse leads to the convention that the mass of bones (*'idham*) are formed out of the lump of flesh (*mudgah*). The correction of this fuzzy reading is that the verse is interpreted as the creation of the bones is either of, from, or out of the lump. And A. J. Arberry (1998) adds that can be translated that in the lump the bones are created (Tzortzis, 2012).

[7] Ossification : the prosses of bone formation which replaces another structure such as cartilage.
[8] Appendicular skeleton: the part of the skeleton attached to the vertebral column, i.e. the limbs or fins.

2.3.7 Flesh (Lahm)

The Quran uses the expression of clothing the bones with *"lahm"*(flesh or muscles) to detail the next stage. This indicates that the flesh and muscles (*lahm*) are created at the stage after the one of the bones. This was for a long time an argument for the inaccuracy of the Quran because of the assumption that the muscles and bones are of the same stage. Recent studies with the newly advanced technology prove the falsity of this assumption and the correctness of the Quranic words.

Quran do not only provides accurate description of the stages but also uses an exact and precise wording. The word *kasauna* is used to describe the physical development of the flesh and muscles. This word has the connotation of clothing as it indicates encasing and covering which is what happens in this stage. The developing skeleton is surrounded by muscle messes and by the end of this stage the muscles wrap around the bones as if it is clothing it (Tzortzis, 2012).

A contention is made upon the use of the word *lahm* and suggested to use of the word *adalah* instead because it is the equivalent for muscle. This filmy contention was refuted since at this stage muscles are not the only organs that appear; other forms such tissues and tendons appear as well. Thus, the use of *adalah* would be inaccurate. *Lahm,* on the other hand, encompasses the aspect of flesh and muscles that make it the correct expression to denote them (Tzortzis, 2012).

2.3.8 Another Form or Creation (Khalqan Akhara)

The end of the previous stage marks with it the end of the embryo and the start of the fetal stage. This stage is characterized by the development of the fetal to become more clearly of humanistic form. The Quran uses the expression "*ansha'naho khalqan akhar* "(made him into other form or creature). These words describe the processes that happen during this stage.

The first process is *nash'ah* which has the connotation of the initiation or the beginning to refer to beginning of the functioning of various organs and systems. *Nash'ah* can also mean the developing and rapid growth which is the case for the fetal which gets more distinguishable features of a human baby. The two meanings of *nash'ah* are clearly applied in this stage.

The second process is the *khalqan akhar*. This description goes along with the first process since the embryo stage ends and the fetal appears. A new and different form is created. This stage starts by the end of the eighth week and the beginning of the ninth. A time in which the fetus witnesses huge and rapid growth of the organs and tissues become fully formed. Before this stage the human fetus was not of any difference from any other animal fetus. Only in this stage it becomes distinguishable and by the third month the face becomes more human looking (Tzortzis, 2012).

When discussing this idea, another prominent verse is brought up ***"He creates you in the wombs of your mothers in stages, one after another, in three veils of darkness"*** (Q.39:6). This verse conforms that the developments do occur in stages and brings the attention to the point of the three veils. Embryologists confirm that the fetus is fenced in three membranes which are at first amniotic or the amniochorionic membrane. This veil allows the fetus to be in swimming state thanks to its watery fluid. The second veil is uterine wall or the chorionic membrane that surrounds the amnion membrane. It is component of the placenta. The last veil or membrane is the deciduous membrane or the anterior abdominal wall (Chohan and Tahir, 2016).

2.4 Conclusion

This chapter presented at first a historical trackback of some basic believes and ideas about embryological development. In addition, it tackled a Quranic analysis of selected verses related to embryology. The verses discussed recite the embryological development stages. The latter are presented according to their chronological order (An essence of a clay, drop of fluid, a safe place, clinging form, lump of flesh, bones and finally to be in another creation or form). A linguistic breakdown of the words, used to describe the stages, is presented along with the scientific explanation and description of each stage.

Chapter Three

CHAPTER THREE

3. 1 Introduction

This chapter tackles the presentation and discussion of both, the research methodology and the research results. It presents the results as emerged from the data collection tool, the questionnaire (Appendix 1), with members of the scientific community, doctors of medicine. The interpretation of the results is also included in this chapter; In fact, the researcher decided to keep the two parts together mainly in order to enable the reader to associate what has been found to their interpretation, relate the findings of the study to previous research works and enable the reader to compare both findings and their interpretation in an easy way.

3.2 Description of Research Methodology

Appropriate research methods are an essential component of a successful research study. While qualitative research methods are flexible and suitable for answering the research question at hand, quantitative methods are also needed for drawing a complete picture of the results (Cohen and Manion, 1994).

The present work is a multiple approach research, as it applies a mixture of approaches, both qualitative and quantitative. This study has a descriptive analytical nature, and it is based mainly on reviewed literature as a source for gathering data and providing back up. It provides a scientific-linguistic analysis of chapter 23 verses 12 to 14 of the Qur'an, and other selected relevant verses, in light of modern embryology. The analysis is based on a linguistic breakdown of these relevant verses and correlates these linguistic items to established facts in the field of embryology. Besides the review of previous studies in the field, a questionnaire was administered to a group of doctors of medicine to find answers to the research questions. Most participants are specialized in the field of Genecology.

The questionnaire was administered as a research tool to gather data from the participants. To simplify the task, a French version of the questionnaire was distributed, an introductory paragraph was drafted and a first section was devoted to the participants' age, gender and years of experience. The main focuses are divided into three sub-focuses: Personal information and background, science-religion relation within the framework of the Quran, and Embryology (Figure 3.1).

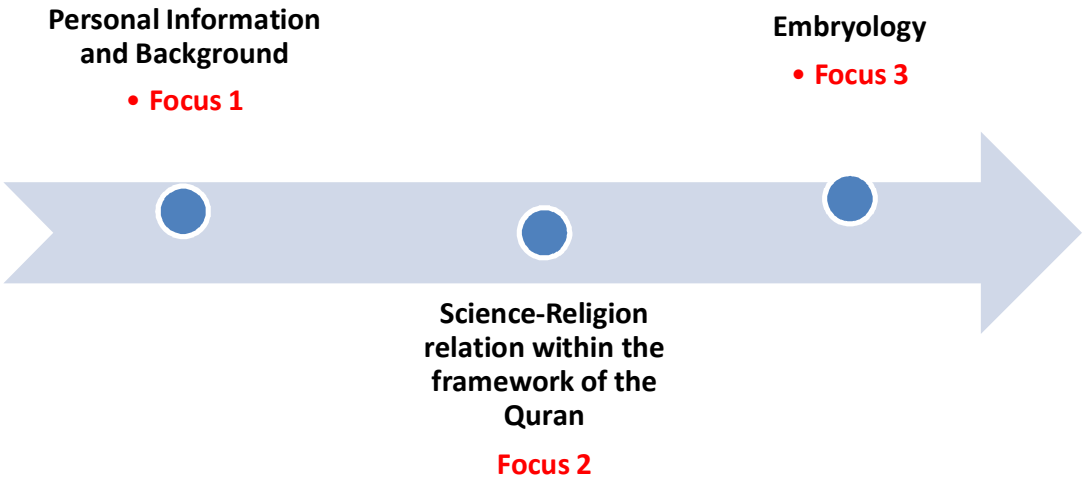

Figure (3.1): Main focuses of the questionnaire

The questionnaire was administered to 14 (10.6 %) respondents who form the sample of the present research, out of 132 who are the total number of the studied population (this statistic is taken from the Direction of Health and Population of Laghouat). They are males and females, obtained randomly from all over the city of Laghouat. Every respondent was given a questionnaire containing statements on the present work. The Questionnaire was varied in terms of questions. It consists of both, open-ended and close-ended questions. It encompasses Yes/No questions, some were provided with different options while other questions needed brief justifications. Also, the participants, in certain questions, were invited to choose out of a rating scale.

The questionnaire was administered directly; this enables the researcher to get personal discussions with the doctors. According to the doctors' responses, the participants enjoyed the experience, showed interest and seemed very glad and satisfied because their domain is being studied even by students other than those of medicine. Most of the doctors even get further, providing extra information, comments and explanations. Other doctors needed clarifications and explanations of certain questions.

The researcher used Excel to help analyze and process the data. This software helps obtain percentages, means, associations, and reliability values from a descriptive point of view.

CHAPTER THREE

3.3 Data presentation and Analysis (Questionnaire Responses)

The questionnaire questions are divided into three main sections. The first part of the questions is devoted for the first focus which tackles the participants' personal information and background whereas the second part of the questionnaire questions is devoted for the second and the third focuses.

3.3.1 FOCUS ONE: Personal information and Background

Question One: What is your age range?

Category	29-35	35-45	45-55	More
Rate	01	04	04	05

Table (3.1): Participants' Age Range.

Question 1 in the questionnaire is about participants' age. Out of 14, only one is aged 29-35. Half of them exceeded 55 in age, a thing that reflects maturity and experience. Four participants are 35-45; the other four are 45-55.

Question Two: What is your gender?

Gender	Male	Female
Rate	06	08

Table (3.2): Participants' Gender.

Question 2 in the questionnaire is about participants' gender. As mentioned in the above table, they are 8 females and 6 males.

Question Three: How long have you been exercising medicine?

Category	29-35	35-45	45-55	More
Rate	02	02	02	08

Table (3.3): Doctors' Years of Experience.

As for experience, answers to questions 3 in the questionnaire revealed that most of the participants have a long experience in their field. Eight of them have been exercising the job of medicine for more than 55 years (Figure 3.2).

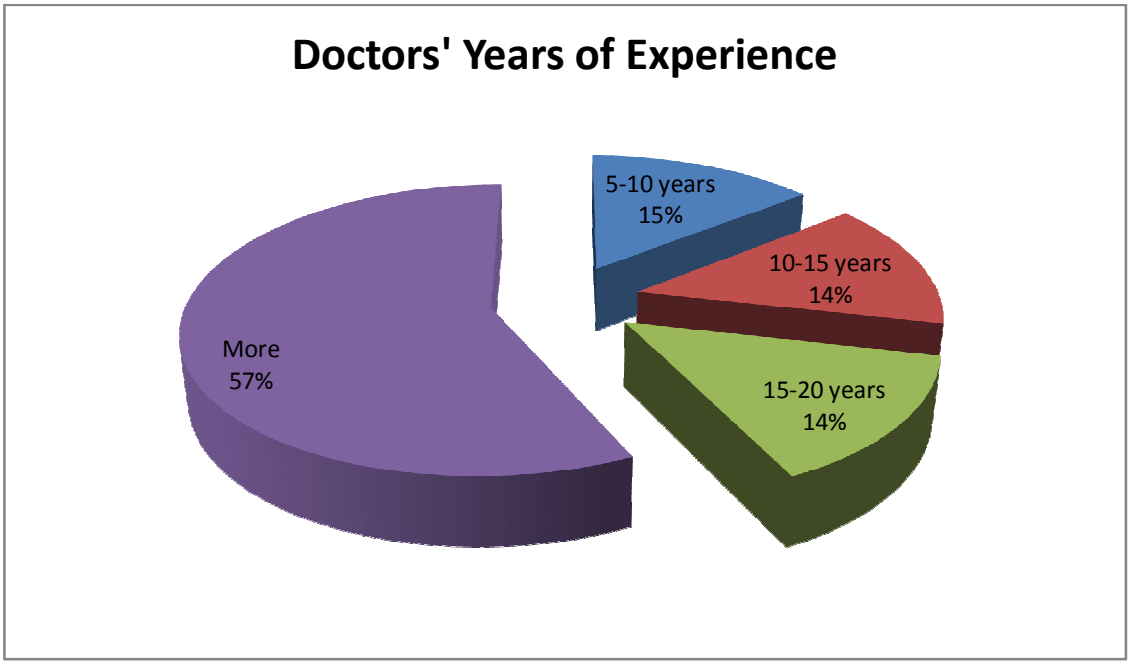

Figure (3.2): Doctors' Years of Experience

3.3.2 FOCUS TWO: Science-Religion relation within the framework of the Quran

This section addresses the opinions regarding the relation that ties religion to science within the framework of the Quran as perceived by our sample doctors. A semi-structured in-depth questionnaire was the research instrument used to answer this issue. Table (3.4) below clarifies the fact that our participants, to a great extent, do share same views. These findings support the reviewed literature (Guessoum, 2011).

Question One: Does religion answer only religious matters?

Answer	**Rate**
Yes	00
No	14

Table (3.4): Doctors' Views about Religion

This question is a core question to our research. All of the participants agreed that religion doesn't provide responses to only religious matters.

Question Two: What do you think about science and religion when it comes to understanding cosmology (the origin of the universe), biology (the origin of life and of human species), and other similar fields?

Statement	Rate
They do not overlap and each has magisterium or domain of teaching authority.	14
They coexist.	00

Table (3.5): Science-Religion Interrelation.

According to all participants, there exists a kind of coexistence between both religion and science. That is highly supported by participants' responses to question 2 in part two.

Question Three: It is said that when science and religion collide usually science wins.

Category	Strongly agree	Agree	Disagree	Strongly disagree
Rate	00	02	09	03

Table (3.6): Participants' Views about Science

As stated in the above table (3.6), there is a general disagreement among participants regarding superiority of science over religion.

Question Four: Does being scientific contradicts being religious?

Answer	**Rate**
Yes	00
No	14

Table (3.7): Science-Religion Contradiction.

Analysis of the data revealed that coexistence and harmony are the prevailing ties between science and religion. Analysis of this questionnaire item shows that all of the participants indicated that there exists no contradiction between fields, science and religion;

thing that highly supports the research standing point revealed by most reviewed studies. Participants were invited to justify their view. In this respect, most of them responded by providing answers, relating to discoveries and scientific facts stated in the Quran (Table 3.8).

Reason 1	Most of scientists are religious people. such as, Ibn Rochd, Farabi…ect
Reason 2	Simply because there is no overlap between the two.
Reason 3	I'm a Muslim participant before being scientist.
Reason 4	They are complementary aspects. Medically speaking, there are some spiritual illnesses overreach the scope of science; and need to be treated based on the Quran.

Table (3.8): Samples of participants' reasons

Question Five: Is there a place for Islamic faith in modern medical practice?

Answer	**Rate**
Yes	14
No	00

Table (3.9): Place of Islamic faith in modern medical practice.

This question in the questionnaire relates to participants' view whereby all doctors agreed that there is a place for Islamic faith in modern medical practice. Based on their responses, all of them used to provide their patients with explanations based on Quranic data.

Question Six: Do you believe in Quranic scientific foreknowledge?

Answer	**Rate**
Yes	14
No	00

Table (3.10): The belief in Quranic scientific foreknowledge.

This question was meant to find whether participants believe in Quranic scientific foreknowledge. In fact, all of them answered "yes". Participants were invited to further justify their answers whether Quranic foreknowledge is obsolete or not in a scientific age.

Statement	Rate
it Survives in a scientific age.	14
It was meant to suit the time it was revealed.	00

Table (3.11): Quranic Data Obsolescence.

According to all of them, Quranic foreknowledge survives in a scientific age .Data analysis yielded very important themes representing participants' deep belief in Quranic knowledge and its harmony with scientific knowledge surveyed in books. In sum, they seemed deeply believing in the coexistence between science and Quranic knowledge.

3.3.3 FOCUS THREE: Embryology

In this section, the researcher attempts to shed light on some major emerging themes that are directly related to the heart of the present research work: embryology.

Question Seven: Do you think that Quran will never be able to justify scientific complex matters in a rational way?

Answer	Rate
Yes	14
No	00

Table (3.12): Quran's Ability to Justify Scientific Complex Matters.

Data analysis revealed that all participants don't think that the Quran will never be able to justify scientific complex matters in a rational way. To justify their view, most participants argued in favor of the Quran, claiming that science discoveries and inventions are merely confirmations of the data stated in the Quranic verses (Table 3.13).

Reason 1	Simply because we do believe in the Quran.
Reason 2	It already did it.
Reason 3	Most of recent discoveries are mentioned in the Quran.
Reason 4	It is not a book of science, but it provides explanations for many scientific challenges provided to be considered as a miraculous purpose.

Table (3.13): Samples of participants' reasons

Question Eight: Are you aware about any Quranic data that describes hard core science?

Answer	**Rate**
Yes	13
No	01

Table (3.14): Doctors' awarness about Quranic data that describe hard core science.

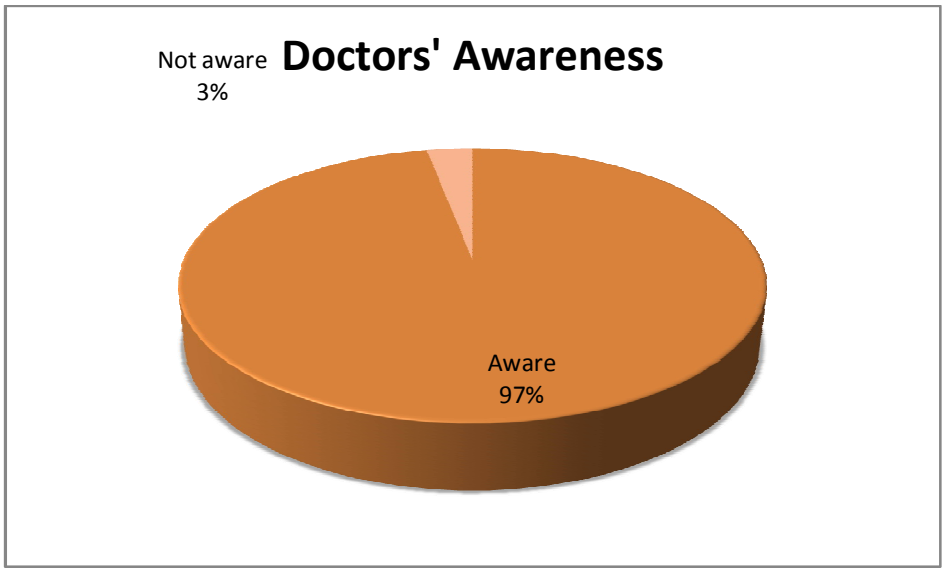

Figure (3.3): Doctors' Awareness

As shown in Figure (3.3) relating to whether participants are aware about any Quranic data that describe hard core science, data gathered went beyond researcher's expectations. 13 out of 14 doctors answered that they are aware of that, and showed a great deal of readiness to mention countless verses to back up. Participants' examples revealed scientific facts mentioned in the Quran such as the solar system, solar cycle.

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As indicated in the methodology chapter, the questionnaire instrument was considered central to the design of the study. The questionnaire was administered, accompanied by interviews that were conducted in order to obtain either supportive or supplementary information about the participants' attitudes towards and perceptions of the relation between science and the Quran. The interview was directed at participants to profit from their experience. All questions in the interviews were used to explore participants' attitudes towards particular points related mainly to the verses that dealt with embryology in the Quran.

Question Nine: How does Quran mentions the stages of embryonic development of a foetus?

Statement	Rate
Quran just talks about the early stages	00
Quran just mentions about the birth of children and not about the embryonic development	00
Quran does not talk about the foetus	00
Yes, Quran precisely describes the different stages of the embryonic development of the foetus	14

Table (3.15): The Stages of Embryonic Development of a Foetus as Mentioned in Quran.

To answer this question, participants were provided with four (4) choices, from which they were supposed to choose the option they think is the most suitable. The fourth choice was ticked by all participants. One participant added '*Yes, the Quran treated this issue with very deep details and precision. I have always said so whether to my patients or radio listeners.*"

Question Ten: What does the Quran say about the protection of a foetus in the mother's womb?

Statement	Rate
Foetus is protected by itself	00
Foetus is not protected by anything	00
Quran says that the foetus is protected by three veils / layers	14
There are no verses talking about the protection of a foetus.	00

Table (3.16): The Protection of a Foetus in the Mother's Womb as Mentioned in Quran.

Here also participants were provided with a set of choices. All interviewees responded positively and showed a very good understanding and knowledge of the Quran. Thus, the questionnaire and the interview gave positive results that confirmed the researchers' claims with regard to the compatibility prevailing between science and Quran. One participant said:"*I have always enjoyed reading those verses and tried many times to use them as convincing facts during discussions mainly with people other than Muslims*."

Question Eleven: Do the verses referring to embryology in Quran clash with modern medicine?

Answer	**Rate**
Yes	05
No	09

Table (3.17): Quran-Modern Medicine Clash

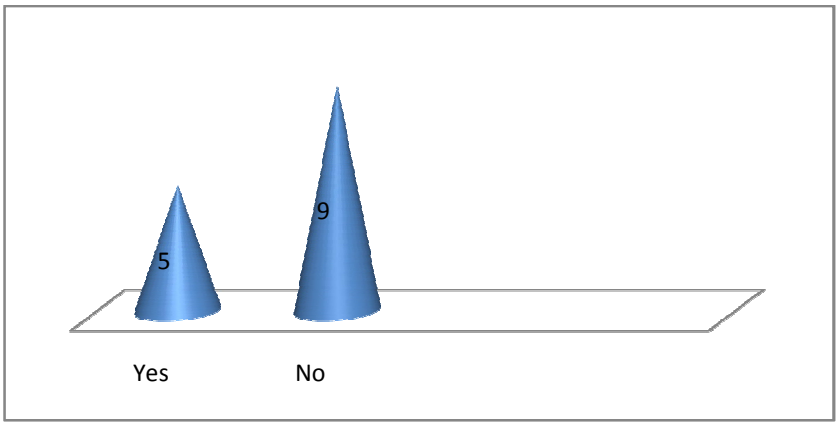

Figure (3.4): Quran-Modern medicine Clash

To answer this question, participants were expected to respond by providing arguments to justify their choice, whether yes or no. In fact, doctors who answered "yes" provided no arguments whereas those who answered "no", they tried to justify their choice. "The more science develops, the deeper our understanding of the Quran will be", wrote one participant. "A

great scientist converted to Islam after having read those details stated by the Quran", wrote another.

All in all, there was a general agreement upon the importance of the topic. To conclude, the findings of the interview as well as survey questions give support to the concept of harmony and compatibility found between science on one hand and Quran on the other. However, it is recommended that future research replicate this study to find out if another researcher would achieve similar results, in subfields other than embryology, that promote the generalization of its findings.

3.4 Overall Evaluation

In response to the analysis of chapter 23 (12-14) and the survey responses, the study analysis suggests that interactions between science and religion are varied and complex. However, from an Islamic perspective, it is concluded that a complementarily model is the most fruitful in the task of relating scientific and religious knowledge because science and Islam in terms of knowledge address the same reality from different perspectives, providing explanations that are not in any kind of rivalry to each other, rather they are complementary. It could thus be suggested that science and religion from and Islamic point of view do have points of contact which indicates their coexistence in some fields; thus hypothesis 1 (Today, to a significant section of Muslims, science and religion do share some points of interaction based on the fact that Islam was built upon the foundation of learning and knowledge) is confirmed.

As for scientism's claims, no one can deny the achievements of science and its remarkable ability to explain a wide variety of phenomena in the natural world. However, to claim that there is nothing knowable outside the scope of science, this would be similar to a successful fisherman saying that whatever he can't catch in his nets does not exist. And, those who adopt this philosophical position should broaden their minds and not be so parochial simply for the fact that science is not the only method or source to discover and investigate truths about man, life and universe. Instead, science should be regarded as the attempt to understand, explain, and predict the world we live in. In addition, the fact that science is constructed by humans, this signals the

possibility of error or bias, and that science is incomplete and often it is wrong. What scientists hold as a fact one day is often overturned the next (as suggested by one of the doctors). Therefore, science is not a body of knowledge; rather it is a useful method of study which has a limited scope which lies in the foundation of the modern technological world. In addition, it is provisional in nature, meaning that science is always updating and evolving as new facts are discovered. It could thus be suggested that science is not the perfect presentation of reality as many claim. This indicates that religious identity plays a vital role in such matter. Only those who lack a religious identity would claim that science is the bona fide source of knowledge. Thus, hypothesis 2 (Scientists today would claim that they know the absolute truth in their field of research) is not valid in all cases.

The holy Quran as the core matter of this research, on the other hand, is a miraculous book both for its eloquence and its content. It contains God's unchanged truth, meaning that it contains all knowledge within the compass of its verses. Thus, it is not a book of science, but rather a book of signs 'Ayat' that include different matters, i.e. the Quran is not only a book for the statement of Islamic law and for legislation; rather it has more dimensions than its religious purpose, and those who reject this fact are only avoiding the truth or simply lacking a religious identity. Hence, while the Quran, according to many, cannot be turned into an encyclopedia of any sort, least of all science, one should keep in mind that if the Quran is to be taken seriously and respectfully, one should uphold the principle of 'no conflict between the work of god and the word of god'. In practice, this principle can be turned into a 'no opposition' approach, whereby one can convince humans of a given scientific data, not by providing that it can be found in the Quran rather by showing that at least one intelligent reading and interpretation of its verses correctly is fully consistent with the scientific theory in question, and that although it doesn't present details, as many claim, it does provide the metaphysical framework to understand scientific matters. These findings are similar to earlier studies that have been investigated. In line with this, an analysis of the participants' responses indicate that the holy Quran is believed to be able to investigate and justify scientific matters by scientific-oriented minds; thus hypothesis 3 (Those who have faith in religion would certainly believe in this view regardless to the fact that they are highly influenced by science) is confirmed.

As for Embryology, based on the previous analysis and the Doctors' views , one can highlight the fact that the Quran undoubtedly contains a comprehensive description of human

development; no such distinct and complete record of human development, no such terminology and classification existed before because this knowledge came in an era when there were no technologies and above all narrated by a person who was illiterate, and the surprising thing is that great minds in the field of embryology confirmed the Quranic data word by word. Scientifically speaking, scientists came to know about these stages only around the 20th century with the invention of certain technologies, and before this period there was no such detailed mention. Generally, scientists in that period held the Aristotle's view, and some believed in other fanciful and imaginative theories without any scientific proof. Thus, in line with previous studies and participants' response, the findings reveal that the Quranic data is up-to-date with modern science. Therefore, hypothesis 4 (Faithful people believe that God's word is not bound to time, but it's eternal, timeless and always suitable for instruction and teaching in life) is confirmed.

3.5 Conclusion

Regarding the validity, authenticity, accuracy and reliability of the Quran which have been proved throughout the present work, one can conclude that the holy Quran is a conductive source to investigate complex questions of modern world, and that scientists should not dismiss it as meaningless nonsense because this in return displays an ignorance of how to read a symbolic divine narrative, and it is necessary to understand that in order to comprehend the Quran, a deep study is required rather that a superficial reading of its verses. The analogy of swimming on the surface will never give scientists' knowledge about its secrets. Similarly concerning the depth of the Quran, God makes this clear.

In summary, with regard to the findings for the research questions, the present study has provided additional insights to those of other studies that have investigated the Quran-Science interrelation with the hope of opening the door for nuanced, sincere and frank discussions concerning the Quranic discourse.

General Conclusion

General Conclusion_____

Science and religion are the essential foundations and the corner stone of which man refers to in his attempt of figuring out and understanding the surrounding phenomena. Their relation was and still being the topic of interests and theme for countless researchers. In fact, the widespread view on this issue puts them in the position of being at odds representing what is known as the conflict-thesis. One of the fundamental pillars of this view is the philosophy of scientism which considers science as the unique fountain of real knowledge.

Forward with that, this study presented a scrutinization of the commonly held view concerning the connection between the two within the framework of Quran, the fundamental Islamic scripture. In an effort to refute this philosophy, an examination of the way in which scientific knowledge is presented in the Quran is provided. This examination is shown throughout bringing to light the Quranic scientific exegesis with their scientific interpretations, and in attempt to provide an exhaustive understanding of this matter issue, the field of embryology is selected to be the booster.

The purpose of the study was to extend the dimension of Quran through determining the nature of the relation it maintains for rational understanding and to demonstrate its concurrence with science. Thus, Central to this present research work was the main question: *To what extent can Quran refute scientism claims and coexist with science in a scientific age*?

The study results were obtained from reviewed literature and participants' responses in questionnaire and interviews. In fact participants' responses to the questionnaire questions have revealed that doctors enjoyed the experience, showed interest in it and seemed very satisfied because their domain is being studied even by students other than those of Medicine, thing that is reflected by their responses.

The findings of the present research work informed that science is not a body of knowledge; rather it is a useful method of study which has a limited scope which lies on the foundation of the modern technological world. In addition, it can be claimed that it is provisional in nature, meaning that science is always updating and evolving as new facts are discovered; on the other hand, the holy Quran is a miraculous book both for its eloquence and its content. It contains all knowledge within the compass of its verses. In addition to that, it contains God's unchanged truth unlike science which is uncertain. It provides a deep

understanding of scientific matters providing rich vocabulary and linguistic diversity which require a deep study rather that a superficial reading of its verses in order to comprehend it. Regarding the possible relations between Quran and science, the study shows that one can and should find a terrain of dialog and cooperation between the two regardless to their different domains.

Recommendations and Pedagogical Implications

It is worthwhile to consider carrying out more extensive research that includes other possible factors likely to affect the final results of the present study. Such a study could be executed in environments different from the one it was carried out in. It is also possible μo have a wider range of participants involved in the project, doctors of different ages, levels, backgrounds and mainly religions. In geographical terms, participants can be drawn from a different context to help generalize the findings of the research. It could be equally important to make use of other different research tools which enable to lead deeper investigation.

The research advocates the implication of teaching Embryology to learners of scientific streams in English and linking it to its religious origins in public schooling (Middle and high schools) whereas at the level of university, it advocates its implication to learners of medicine and biology.

Limitations of the Study

The study is limited to show the following variables: Quran, Science and Embryology. Any further research can go beyond this and tackle other points, examining the authenticity of the Quran in relation to other religious scriptures like the Bible, or investigating the Quranic discourse in light of any other scientific streams because the Quranic scientific miracles are unlimited and varied.

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Appendices

Quran, Science and Scientific Knowledge quest: Embryology through the Lens of the Holy Quran.

Your participation is voluntary and will be kept private. Also, your data are anonymous and confidential

Dear doctors,

This questionnaire serves as a data-collection tool for a research project. You are kindly requested to answer the questions to help reaching the aim behind the study. In fact, the present research aims at collecting your personal point of view and your own thoughts about the relationship between science and the Quran, whether compatible or not. Please put a tick ✔ next to the right answer, or just write down the answer with brief sentences when it is needed. Thank you in advance for taking part in this questionnaire.

Part One:

1)- Age: 29-35 ☐ 35-45 ☐ 45-55 ☐ More ☐

2) - Gender: Male ☐ Female ☐

3) - How long have you been exercising medicine?

5-10 years ☐ 10-15 years ☐ 15-20 years ☐ More ☐

Part Two:

1) – Religion answers only religious matters. Yes ☐ No☐

2) - What do you think about science and religion when it comes to understanding cosmology (the origin of the universe), biology (the origin of life and of human species), and other similar fields?

They do not overlap and each have magisterium or domain of teaching authority. ☐

They coexist.. ☐

3) – It is said that when science and religion collide usually science wins.

Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree ☐

4) –Does being scientific contradicts being religious? Yes ☐ No☐

Justify.

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5) - Is there a place for Islamic faith in modern medical practice? Yes ☐ No☐

If yes, have you ever provided your patients with explanations based on Quranic data ?

Yes ☐ No☐

6) - Do you believe in Quranic scientific foreknowledge? Yes ☐ No☐

If yes:

a) it Survives in a scientific age. ☐

b) It was meant to suit the time it was revealed. ☐

7) - Do you think that Quran will never be able to justify scientific complex matters in a rational way ?
Yes ☐ No☐

Why? .....

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8) - Are you aware about any Quranic data that describe hard core science? Yes ☐ No☐

If yes, give an example of a verse to back up (if possible).

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9) – How does Quran mention the stages of embryonic development of a foetus? (tick the right option).

Quran just talks about the early stages	
Quran just mentions about the birth of children and not about the embryonic development	
Quran does not talk about the foetus	
Yes, Quran precisely describes the different stages of the embryonic development of the foetus	

10) - What does Quran say about the protection of a foetus in the mother's womb? (tick the right option).

Foetus is protected by itself	
Foetus is not protected by anything	
Quran says that the foetus is protected by three veils / layers	
There are no verses talking about the protection of a foetus.	

11) - Do the verses referring to embryology in Quran clash with modern medicine? Yes ☐ No☐
Justify.

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Thanks, your participation is highly appreciated.

Quran, Science and Scientific Knowledge Quest: Embryology through the Lens of the Holy Quran.

Votre participation est volontaire et restera confidentielle. De plus, vos données sont anonymes et confidentielles.

Bonjour chers docteurs

Tout d'abord, nous voudrions vous remercier d'avoir participé à ce questionnaire. Il s'agit en fait de recueillir votre point de vue personnel et vos propres réflexions sur la relation entre la science et le Coran, qu'elle soit compatible ou non. Veuillez répondre aux questions ci-dessous en cochant la case (✔) à côté de la bonne réponse, ou écrivez simplement la réponse en phrases brèves.

Première Partie:

1)- Age : 29-35 ☐ 35-45 ☐ 45-55 ☐ Plus ☐

2)- Sexe : Homme ☐ Femme ☐

3)- Depuis combien de temps exercez-vous la médecine?

5-10 ans ☐ 10-15 ans ☐ 15-20 ans ☐ Plus ☐

Deuxième Partie:

1) - Est-ce que la religion ne répond qu'aux questions religieuses ? Oui ☐ Non ☐

2)- Que pensez-vous de la science et de la religion pour comprendre la cosmologie (l'origine de l'univers), la biologie (l'origine de la vie et de l'espèce humaine) et d'autres domaines similaires?

a) Ils ne se chevauchent pas et ont chacun un magistère ou un domaine de pouvoir d'enseignement. ☐
b) Ils coexistent. ☐

3)-Il est dit que lorsque la science et la religion se rencontrent, c'est généralement la science qui l'emporte.

Tout à fait d'accord ☐ d'accord ☐ en désaccord ☐ tout à fait en désaccord ☐

4)- Est-ce que le fait d'être scientifique est contradictoire avec le fait d'être religieux? Oui ☐ Non ☐

Justifiez.

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5)- La foi islamique a-t-elle une place dans la pratique médicale moderne? Oui ☐ Non ☐
Si oui, avez-vous déjà conseillé vos patients en se référant au coran? Oui ☐ Non ☐
6) - Croyez-vous en la pre-science scientifique coranique? Oui ☐ Non ☐

Si oui:

a)- survit-il à l'ère scientifique? Oui ☐ Non ☐

b)- Cela devait correspondre au moment où il a été révélé. Oui ☐ Non ☐

7)- Pensez-vous que le Coran ne sera jamais capable de justifier de manière rationnelle des questions scientifiques complexes? Oui ☐ Non ☐

Pourquoi ?

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8) - Êtes-vous au courant de données coraniques décrivant la science fondamentale? Oui ☐ Non ☐

Si oui, donnez un exemple (si possible).

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9) - Comment le Coran mentionne-t-il les stades du développement embryonnaire du fœtus? (cochez la bonne option).

Le Coran ne parle que des premières étapes.	
Le Coran mentionne seulement la naissance d'enfants et non le développement embryonnaire.	
Le Coran ne parle pas du fœtus.	
Oui, le Coran décrit précisément les différentes étapes du développement embryonnaire du fœtus.	

10) - Que dit le Coran sur la protection du fœtus dans le ventre de la mère? (cochez la bonne option).

Le fœtus est protégé par lui-même	
Le fœtus n'est protégé par rien	
Le Coran dit que le fœtus est protégé par trois voiles / couches	
Il n'y a pas de vers qui parle de la protection du fœtus.	

11) - Les passages faisant référence à l'embryologie dans le Coran se heurtent-ils à la médecine moderne?

Oui ☐ Non ☐

Justifiez.

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Merci, votre participation est très appréciée.

Résumé On a toujours cherché à comprendre la nature et notre existence. Pour certains, la science est la seule source légitime et une présentation parfaite de la connaissance réelle, tandis que d'autres considèrent la religion comme une autre source authentique. Cette vision paradoxale a créé un sentiment de conflit entre la science et la religion. L'islam ne fait pas exception. Ce projet examine ce conflit animé dans le cadre du Coran, l'écriture fondamentale de la foi islamique. Il met principalement en évidence la question de la relation entre la vérité scientifique obtenue par l'homme et la vérité scientifique quia a révélée dans le Coran, et dans une large mesure, l'étude se présente comme un commentaire du scientisme «la philosophie qui prend pour acquis l'idée que la science est la police sans pareil de la réalité.», qui est en fait le noyau de la question. Ce travail de recherche est mené dans le but de cartographier la perception de la conductivité du Coran en tant que source authentique, précise et fiable pour enquêter sur des questions complexes du monde moderne et maintenir sa coexistence avec la science à l'ère scientifique. Pour assurer une compréhension complète, la recherche fournit une analyse scientifique et linguistique de certains versets coraniques traitant de l'embryologie, ainsi que des données recueillies à partir d'un questionnaire destiné aux médecins musulmans. Les résultats de l'étude révèlent que la vision de la discorde est fortement rejetée du point de vue islamique et prouvent que le Coran construit une vision de l'esprit scientifique. En outre, cela montre le grand potentiel d'harmonie entre le Coran et la science, quels que soient leurs domaines.

ملخص تسعى البشرية منذ القدم لفهم الطبيعة و وجودنا فيها. بالنسبة للكثير، العلم هو المصدر الشرعي الوحيد لعرض المعرفة الحقيقية بينما يجد الآخرون الدين كمصدر حقيقي آخر. هذه النظرة المتناقضة خلقت نوعا من الصراع بين العلم والدين، والإسلام ليس استثناء. يفحص البحث هذا الصراع المفرط في إطار القرآن و يسلط الضوء بشكل أساسي على مسألة العلاقة بين الحقيقة العلمية التي تعتبر نتاج تحصيل إنساني والحقيقة العلمية المنزلة في القرآن حيث يعتبر هذا البحث إلى حد كبير كتعليق و نقد لفلسفة المذهب العلمي القائمة على مبدأ أن العلم هو المصدر الوحيد لعرض و كشف القيم والمعرفة الحقيقية حيث هذه الفلسفة بدورها تعتبر نقطة جوهرية للتطرق لعرض النزاع القائم بين العلم و الدين. يتم إجراء البحث بهدف تحديد تصور الناس تجاه توصيلية القرآن كمصدر حقيقي ودقيق وموثوق للتحقيق في أسئلة العالم المعاصرة المعقدة والحفاظ على تعايشها مع العلم في عصر علمي. لضمان الفهم الشامل ، يقدم البحث تحليلًا علميًا ولغويًا لبعض الآيات القرآنية المختارة التي تتعامل مع علم الأجنة بالإضافة إلى بيانات تم جمعها من استبيان للأطباء المسلمين. تظهر نتائج الدراسة أن وجهة نظر التعارض مرفوضة بشدة من منظور إسلامي وتثبت أن القرآن يبني وجهة نظر للعقل العلمي. بالإضافة إلى ذلك، تظهر الإمكانات الكبيرة للتناغم بين القرآن والعلوم ، بغض النظر عن مجالاتهما المختلفة.