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Original Synthesis Article

The miraculous dynamism of the Qur'an: An example of a modern reading reveals a DNA designation

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Abstract – The major miracle of the Qur'an would reside in its ability to be virtuous, valid and worthwhile for all humans living at all times and everywhere. Here, I propose three major processes which would provide the basis for this dynamism peculiar to the Qur'an. A detailed example of one of these processes related to the scientific signs is presented. It starts from a verse that can represent a metaphor whereby DNA is designated *Salsal* (Arabic word refers to the swelling-expanding clay minerals). I have supported this metaphor showing that DNA and swelling-expanding clay minerals have really evident features in common. Moreover I have demonstrated the marvelous analogy that, coupled to this metaphor, permits to test its suitability by specifying that some DNA forms are similar to some potteries. Hence, according to my interpretation, this verse represents a wonderful painting that, elevated to an unusual pinnacle of creation, outlines information at the highest degree of scientific accuracy wearing a dress of superb Arabic rhetorical modes that only the light of knowledge and wisdom can penetrate it. The different research stages on this verse and other related ones show that the dynamic processes in question is not merely a dynamic progressive revelation of scientific signs during successive modern epochs, but also, if deeply analyzed, a dynamic grounding constructive for the scientific research. The present modern reading provides original interpretations based, among other things, on the making and the application of a modern approach that would permit to reach a rigorous academic level in the interpretation of the Qur'an text in general, and the allegorical verses related to scientific subjects in particular. In conclusion, the present research will advance our understanding on the dynamism of the Qur'an that should be shaped and implemented by re-reading Qur'an at all times and everywhere and trying continually to correct previous erroneous interpretations due mainly to a personal and socio-cultural-political influence and/or a limited scientific knowledge of the exegetes at a given epoch.

Keywords: Qur'an and science, Qur'an exegesis, Qur'an dynamism, Rereading the Qur'an, Thematic interpretation, Metaphor, Marriage organizations, DNA, Clay minerals, Montmorillonite, Features in common, Origin of life, RNA World, Potteries.

Introduction

In opposition to the ancient debate between religion and philosophy, the great philosopher Averroes "Ibn Rushd" (1179) showed that there is no conflict between religion and philosophy, believing rather that they are just different ways of reaching the same truth, and consequently, there is no incompatibility between religion and philosophy when both are properly understood. When science fields began to be more developed and completely separated from the philosophy, the debate turned out to be between science and religion. Regarding the Islam religion, although this debate somewhat persisted until the mid-20th century, it becomes weak or almost absent nowadays. I believe that this ancient debate represents a false problem and the real problem is in a misunderstanding of this religion particularly by the narrow-minded men of religion: First, the exegesis of the Qur'an verses includes innumerable misinterpretations. Second a lot of lies and narrations were falsely attributed to this religion and their accumulation during the past 14 centuries have given some distorted pictures more and less different from the real essence of Islam (Chaabani 2017).

In fact, there is no discordance between science and Holy Qur'an wherein Allah encourages all peoples to seek knowledge and look for the mysteries of His universe and creatures including humankind. Moreover, He evokes several major scientific subjects providing signs compatible with scientific facts unknown in the area (7th century) of Qur'an emergence and have only been discovered in modern times (Moore 1982; Chaabani 2006, 2011; 2013; 2015; 2018; Bucaille 2011; Guessoum 2015).

Here I will present a detailed example of a re-reading of some verses related to the same scientific theme "the human creation". The principal verse of this example concerns a DNA designation, which implies that DNA and the swelling-expanding clay minerals should have evident features in common, and DNA should have forms similar to those of potteries. This designation is only used in another verse that would give some details on the cradle where the primal DNA molecule of the first organism had been formed. All stages of the demonstration of this interpretation will be detailed in depth taking into account the most recent state of scientific knowledge.

To put this example in its overall context, it is required to present it within the following specific objectives: (1) presenting the approach that I have followed in my

present re-reading of some Qur'an verses, (2) defining the dynamism of Qur'an, proposing some of its processes and showing the need for re-readings the Qur'an at any time, (3) focusing on the dynamic process regarding the verses where scientific signs lie and presenting the stated above example, and (4) going deeper into the demonstration of this example of interpretation within a basic research in order to provide, for the first time, a detailed comparative analysis between DNA and the swelling-expanding clay minerals and to propose new insights into the origin of life.

Modern approach for interpreting the Qur'an text

Before presenting this approach I prefer to begin by presenting what already evoked in the Qur'an itself about this subject of interpreting (in Arabic *Tafssir* or *Ijtihad*) Qur'an. In fact, Allah invites all world peoples (Muslim and non Muslim) to understand the Qur'an and reveal its major significances (this can strengthen the Muslims' faith and open the hearts of some non-Muslims to Islam). For example He said in an interrogative expression what means: "Do they not try to reveal the significances of Qur'an? Or are there locks on (their) hearts" (*Sourat Mohamed*, verse n° 24). So all peoples, who know the Qur'an language (Arabic), are invited to try to understand and explain the Qur'an text. However Allah informs us that this text is composed of two major kinds of verses, decisive verses (easy to explain) and allegorical verses (too complex and very difficult to explain):

- Decisive verses (in Arabic *Muhkamet*), each has often only one clear meaning. These verses would be comprehended by all peoples who master Arabic. They represent together the basis of the Qur'an.
- Allegorical ones (in Arabic *Mutashabihet*), it is very difficult to find for each of them a convinced explanation: only the real great minds, who are firmly rooted in knowledge, can try to approach or reach the corresponding true intended interpretation that only Allah know it. I consider the verses having scientific signs as among these allegorical verses.

Underlining these two kinds of verses Allah said what means " It is He Who has revealed the Book (Qur'an) to you; some of its verses are decisive, they are the basis of the Book, and the others are allegorical; then as for those in whose hearts there is perversity they follow the part of it which is allegorical, seeking to mislead and seeking to give it (their own) interpretation, but none knows its interpretation except Allah and those who are firmly rooted in knowledge (they) say: We believe in it, it is all from our Lord; and none remembers except the real great minds" (*Sourat Eli-Omran*, verse n° 7).

Features required for being a suitable Qur'an exegete

As I will explain below, I believe that although Qur'an remains a religious book par excellence, it is also the eternal book of signs related to what we call nowadays sciences. Therefore, any person can explain correctly the entire Qur'an text whatever his level of knowledge. Thus, for interpreting the allegorical verses, the exegete, in addition of his mastery of the Arabic language, (1) should be, as demanded by Allah, a real great mind who, for example at our modern epoch, would be an eminent academician expert at least in two fields either scientific fields (such as Human Biology, Astrology, Geology and Physics) and/or social science and humanities fields (such as History, Theology, Philosophy and Anthropology), and (2) would interpret only verse related to the theme of his deep academic expertise. For example in my book (Chaabani 2006) I have only interpreted the verses belonged to the theme "Human creation" owing to the fact that I am expert in "Human Biology" and "Anthropology".

Unfortunately many previous and contemporary men of religion (Imams, Sheikhs including exegetes) consider themselves as scholars[1] "*Olama*"; while often they were not specialists in any field except their knowledge of the Arabic language and their familiarization with questionable narrations related to Islam and its history. However, only scarce real scholars wrote real academic writings and books on exegesis of Qur'an and/or on the essence of Islam under the significant scientific philosophic thoughts of their epoch. Among these real scholars I can quote: * the great Imam Al-Ghazali (1058- 1111), although he is mainly a theologian, jurist and philosopher, he is familiar with sciences of his era; * the great Imam Fakhr al-Din al-Razi (1149 – 1209) who is an eminent theologian, philosopher and scientist of his era; and * the great Scholar Ibn Rochd (or Averroès 1126- 1196), who is a great philosopher and thinker who wrote about many subjects, including philosophy, theology, medicine, astronomy, physics, Islamic jurisprudence and law.

[1] In fact the majority of men of religion (Imams, Sheikhs and exegetes) are far from to be considered as scholars or even theologians, they are only specialists in reciting and repeating some narratives allocated to the Prophet Mohamed, his followers and the first most known Imams. But these narrations, transmitted at the start verbally through several generations include innumerable warp and fibs. Moreover during successive periods some narrow minded Sheikhs and Imams have continued to add other alterations and stupid considerations that have nothing to do with the real essence of Islam. All these stupidities have been accumulated during the past 14 Centuries for given some distorted images falsely linked to Islam.

Rigorous methodological considerations to follow

For interpreting Qur'an verses, I have established and followed an approach where I avoid using all uncertain sources[2] and disappointing tools[3] classically used for interpreting the Qur'an text. However I have taken into account only the principle of some classic correct ones together with new methodological considerations and advices within a modern approach that would go with the knowledge progress in the current twenty-first century and would permit to reach a rigorous academic level in the interpretation of the Qur'an text in general, and the allegorical verses related to scientific subjects in particular. Through this approach I have tried to give answer to the question: Under what conditions will it be wise to interpret Qur'an text? I can summarize these conditions by presenting six major ones as follows.

[2] Among uncertain sources used, is the consideration of traditions and sayings of the Prophet Muhammad (*Sala Allaho Alaihi ouia Sallim*) called "*Ahadith*" plural of "*Hadith*". But unfortunately, although Muslims should follow the appropriate meanings of these *Ahadith*, they cannot be sure if these *Ahadith* are really said by the Prophet or they are altered ones or never said by him. In fact the Prophet ordered to do not register his proper *Ahadith*, but after more than 100 years of his death some listings of *Ahadith* appeared. At the beginning Imam Malik had registered about 1000 *Ahadith*, but after a second century the number of *Ahadith* increased for reaching more than 100 000 *Ahadith*, the majority of which are, very likely, untrue (not said by the Prophet or modified intentionally or by mistake during the verbal diffusion). Thus some known Imams such as "El Boukhary" and "Muslim" had tried to select those which could be considered as true "*Hadith sahih*" but the numbers of selected ones differ from one Imam to another (they vary from about 4000 to 6000 *Hadith Sahih*) and only about 2000 among *Ahadith sahih* were adopted by consensus. If we take into account this complex history of *Ahadith*, the number of which is reduced from more than 100 0000 to only 2000, we must be very forethought even if we want to consider one of these 2000 *Hadith Sahih* as true, because the selection was done by humans (any human work cannot be completely perfect) and therefore the "*Hadith Sahih*" (about 2000) could include at least few altered ones. So the exegete should not use even a "*Hadith Sahih*" if it is in disagreement with the Qur'an. Unfortunately, some exegetes consider any *Hadith* which go with their stupid desire or ideology. This would be in the origin of the spread of several distorts falsely linked to Islam.

[3] Among unacceptable tools (or methodical considerations) used in the exegesis, I can quote what is called "the abrogating and abrogated (*nasikh* and *mansukh)* verses". According to the Qur'an, this tool concerns only in the three successive monotheistic religions: the second had repealed (or replaced) the first; while the last one, Islam, has replaced (or completed) the two previous ones very likely because its book (Qur'an) is evidently more developed and more detailed and exceptionally protected by Allah against any attempt of human modifications as it was done with those of the two precedent religions. But, the inability of exegetes to understand the deep appropriate meanings of several Qur'an verses, has led to the fact that some of these verses seem for them somewhat contradictory. So they have used this tool to resolve such problem: if two verses seem somewhat contradictory the later verse abrogates the earlier one. The use of this tool within the Qur'an text should not be accepted because 1) the Qur'an is the most perfect text that in any case it can never includes contradictions, and 2) If some first Imams are proposed in good faith only two or four exceptional verses that could deal with this tool, some next ones, very likely in bad faith, have expanded the number of such verses to more than one hundred of verses. In other words, when they want to repeal a verse that is in disagreement with their stupid desire or their political ideology they deal it using this tool. The extremists sheikhs and political-religious terrorists have mainly used this tool to obtain a religious support to their smutty political aims. Thus, the use of such tool or other questionable ones could open the door to grave and dangerous considerations that have nothing to do with the essence of Islam.

1. *Follow a thematic interpretation*

Several exegetes, particularly the earlier ones, have interpreted the entire Qur'an. Therefore, if their explanations of the decisive verses seem more and less satisfactory, those of the allegorical ones were often very questionable and paradoxical. Moreover, they explain Qur'an text verse by verse separately and in order from the first one to the last one; while verses concerned the same theme are dispersed in several parts of the large Qur'an text. Thus, such classic method could lead to more incorrect, unclear or contradictory separate explanations of verses on the same subject, because the real meanings of verses on the same subject complete each other and one verse can explain the other (s). Hence, for reaching a suitable explanation the exegete would follow a "thematic interpretation" by selecting a group of verses related to a single theme (belonging to his expertise). This method permits him to do a deep synthesis of the most suitable related meanings of each of these verses leading to a conclusion in harmony with all verses meanings. Only some contemporary exegetes have more and less applied this method (e. g., Chaabani 2006).

2. *Revert to the Qur'an text itself in the case of linguistic difficulties*

Qur'an is a great incomparable text, which includes, among other exceptional things, superb modes of eloquence that reach the highest creativity unknown in the Arabic language world. Moreover, Arabic is a very vast and rich language: e.g., some words could be used in several meanings. So the revelation of several possible meanings of some words or unusual modes of eloquence could be done correctly only by reverting to the Qur'an itself: namely the word or the eloquence mode in question present in a given unclear verse could be present in another verse having a clear unique meaning.

In other words, the Qur'an text, composed of 6236 verses, forms a whole that represents the most right reference among Arabic glossaries and the most complete book of Arabic eloquence "*El balagha*" including usual and outstanding (unknown) modes. Therefore, even at the linguistic level, the exegete would often do analyses, syntheses and feedbacks through particular networks between verses. The principle of this precious methodological consideration was firstly proposed by the Prophet Mohamed Himself (*Sala Allaho Alaihi oua Salem*): when someone asks him about the meaning of a word in an incomprehensible verse he is advised to revert to another understandable verse (s) where the same word is used.

3. *Dispel from the mind all moot narrations*

For a given subject, the exegete should dispel from his mind all related narrations and questionable previous interpretations that could influence negatively his proper explanation. For example, the majority of the previous explanations of verses concerned the man creation are often include imaginary and questionable events not reported in any Qur'an verse.

4. *Use fittingly your scientific knowledge*

In the case of verses related to a scientific subject, the exegete would not impose since the beginning any scientific idea: he must begin by a deep linguistic analysis than he can use his scientific knowledge and try to find a scientific explanation on condition that is doing well with the linguistic structure.

5. *Try to be free from the usual due to our limited sensory capacities*

As noted above, Qur'an text is an exceptional text far from being similar to what write even great scholars, because it is the speech of Allah the creator of all universes. Completely different from us and any being or anything at all, Allah has unlimited capacities at a point that we cannot imagine them. Thus for revealing the real meaning of some allegorical verses, we would free our minds from our habits linked to the limited capacity of our sense organs such as:

- The habit to describe things according to what we see with the naked eye (macroscopic aspect), while Allah see all aspects at macroscopic, microscopic, molecular, atomic levels. This is evident through the excellent example that I go to present it in the following pages: it concerns a verse that shows a superb unusual analogy between DNA saw at a sophisticated microscopic-molecular level and pottery saw ordinary with the naked eye.
- The habit to name things mainly on the basis of their apparent aspects

This habit let us far from thinking to possible other names to the same things based on what they contain inside, namely other names concerned their unseen essence. For example we name the egg in Arabic "*Baidha*" reflecting that it has an oval form. But if we want to name it on the basis of the essence that it contains, we can name it, if it is a fertilized egg of a bird, "bird-self" because it is a zygote, the DNA of which brings all features and ability to develop a new bird. In other words in the fertilized egg a bird-self

is potentially present. In a future paper I will present an example of such naming in Qur'an that, although seems to be unusual for us, is scientifically more meaningful.

- The time in its concept and measure, as we estimate it, is limited to the condition of our living on Earth and influenced by our relative short lifespan. However the time is relative and our time considerations and measurement is surely different to those related to the largest scale of all global universes created and supervised by Allah. This would be taken into account when we explain verses concerned time. Generally what we consider a relatively long time would be evidently shorter for Allah and vice versa.

6. *Do not take Allah place by promulgating eternal laws and do not ignore the dynamic processes peculiar to the Qur'an*

If an exegete deduces legal annotations from Qur'an he must know that, how much his knowledge is, he cannot consider them as real laws of Allah (so-called *Shari'a*[4]). These annotations, although inspired from Qur'an, could serve only as suggestions of jurisprudence that could be adopted by his community at his epoch if they are evidently in the interests of the humankind at the individual and society levels. Therefore, exegete lived in another country and/or another epoch can deduce other suggestions of jurisprudence more suitable to his community. This comes as part of one of the Qur'an dynamic processes that I will present and discuss with two other possible ones in the following pages.

The miraculous dynamism of the Qur'an

The Qur'an, unique Holly book of Islam, represents the great miracle of this religion owing to its superb particular features. For example, at the general linguistic level, it represents an incomparable form of Arabic literature that, including known and unfamiliar marvelous modes of eloquence, shows an exceptional symphony between words, expressions and their meanings that could make hearts of readers and listeners quiver.

[4] The term "Shari'a" is mentioned only one time in the Qur'an, as being the path marked out by Allah, in what means "Then we put you on the path of an order (a clear and perfect religion)- Follow it so and don't follow the passions of those who do not know" (Qur'an, 45: 18). Thus Shari'a is the eternal, perfect path of truth and justice that any human being can establish. However, humans, particularly real scholars and Jurists, in a given period and place could strive to establish rules and laws as close as possible to the Path of God or Law of Allah or Schari'a, but without reaching it. So what the great majority of Sheikhs and Imams called Shari'a, although more and less inspired from the Qur'an, is the product of a human work and never represent the real eternal Shari'a of Allah. This is evident on the basis of the presence of several falsely called Shari'a (s) at a point that each dogmatic Sheikh or Imam has his own one (for more details see Chaabani 2017).

Here I focus on its dynamism that unfortunately is often ignored. To avoid possible confusion of what I intend by "dynamism of Qur'an" with other considerations for the same terms or close ones (such as the so-called dynamism of Islam or dynamism of the Muslims civilization), I define the dynamism of the Qur'an as the fact that its content has the ability to be virtuous, valid and worthwhile for all humans living at all times and everywhere. As I will explain below, this dynamism peculiar to the Qur'an text should be shaped and implemented by re-reading it during each epoch and trying continually to correct previous erroneous interpretations which reflect an individual and socio-cultural-political influence, and/or a limited scientific knowledge of the exegetes at a given epoch.

Unfortunately, most, if not all men of religion (Sheikhs and Imams including archaic exegetes) have not studied this future, but they have replaced it by a stupid contradictory consideration: they have continuously urged all Muslims living in any epoch and any country to follow blindly the archaic questionable narrations and interpretations that are suspected of allocating mainly to the first three known Imams lived during the 8th and the 9th centuries. In other words they have tried continuously to fossilize the Qur'an text through an indirect request for an abstaining of any innovative re-reading of the Qur'an; while, as I have explained above, Allah requests all Muslims (at all time and everywhere) particularly the great minds to re-read the Qur'an text (*Ijtihad*).

In fact the three first known Imams (Abu Hanifa, CE 699-767, Malik CE 711-795, and Ash Shafei CE 767-820) could be considered as Muslim scholars of their time (when the majority of sciences are yet absent or in slight archaic development). Moreover, they were often right and modest particularly Malik who refused the registration of his Qur'an explanations and deduced judicial rules because 1) he declared that his explanations and conclusions as any human work can include mistakes, and 2) as a judge of his time, he had only tried to complete some details and invent some Judicial rules and laws, although more and less inspired from Qur'an, could go only with the socio-political conditions of his period (early middle ages) and the population of his country.

But just after the death of these three first Imams, the majority of men of religion (*Sheikhs* and *Imams*), more and less recognized by their low level of knowledge and very limited intellectual ability, their stupidity and their nasty profiteers, had registered all the explanations and the proposed complementary details and rules of these first Imams very likely after doing some alterations and additions by mistake or intentionally according to their stupid desire and/or to political recommendations in exchange for. For example, after the death of Imam Malik, contrary to his recommendation, one of his students wrote stupidly on behalf of Malek a book titled "*al-Mudawwana*", where he gathered what supposedly said by Malik such as opinions and propositions of rules and legislative details. This book quickly became an essential reference source for the Malki School (Malki *Math-heb*). First it is stupid to believe that all what was registered in this book really belong to Malik. Second, even if we want to ignore this stupidity, this book should be considered only a patrimonial book that represents a stage in the history of the verdict and the jurisprudence of the Muslim society; while narrow minded Sheikhs consider it as the book where, among other things, the eternal laws of Allah called "*shari'a*" has been presented. Namely, by such stupid and wrong considerations, they have continually tried to fossilize the Qur'an text by ignoring and denying its miraculous dynamic processes.

Dynamic processes of the Qur'an

How the Qur'an text, which has remained intact since its original revelation during the 7th century, could be dynamic? It is difficult to reveal all possible dynamic processes of this extraordinary text. However my re-reading of some parts of this text and after a long reflection I have arrived to propose three possible ones:

1. The first lies in the fact that for each critical social issue presented in the Qur'an Allah does not provide an absolute legislative rule that Muslims must implement blindly as much as He would intend to familiarize Muslims to evaluate and compare advantages and disadvantages between different approaches of a given issue; and therefore Muslims preserve the flexibility to choose what is good at both the personal and the societal levels in the context of their epoch. Taking the marriage organizations as example of such social issues, I can present and discuss it as follows:

In pre-Islamic epoch men can marry an unlimited number of women who were often treated unkindly and unjustly, moreover they can possess slaves including female ones who are obliged to accept doing love with their possessors without marriage pact. Thus, opposite this situation Qur'an represents, through several verses, a real revolution aiming to emancipate women and to preserve their dignity. He orders to marry only one with possibility of divorce if really there is a great necessity to do it and if assuring a dignified separation and providing entitlement to the divorced women. In addition of this principal model of marriage, correct serial monogamy, a limited polygamy only possible in exceptional situations that contribute to the protection of widows and orphans and/or to given freedom to slave women.

The unique verse where Allah speak about the polygamy was just preceded by a related one where Allah said what means: "Specify the rights and money of orphans (*Minors who have lost their fathers*), **do not evolve evil from good**, and do not join their material goods to yours, this has been a great wrongdoing" (Chapter "women", *Sourat Ennissa*, verse n° 2). This verse would be intended for all male protectors of orphans who although generally they try to do not seize the orphans' material goods, they often marry orphan girl (s) among orphans under their management. In fact, such marriage although it seems as a good act in appearance, when in fact, it would be a wrong one because the protector does not provide the dowry to the orphan girl in question and often use such marriage as a pretext for acquiring her material goods. Thus in such situation the protector **evolved evil from good** and such type of marriage represents a wrongdoing. However, the correct comportment would be to marry the orphans' mothers who as widows in need of protection and in this situation their children (orphans) ensure their rights and benefit from a complete family protection. As these protectors of orphans are often already married, Allah has given them the possibility to marry a second or a third or a fourth among mothers of orphans if they feel afraid to do not provide justice to orphans. This could be deduced from the interpretation of the next verse (verse n°3) where Allah said what means: "And if you feel afraid to not provide justice to orphans (in your charge) you may do love, within a correct suitable marriage, with two or three or four women (mothers of orphans), but if you feel afraid to be unable to treat all of them equally, you should marry only one and/or others (second, third or fourth) among those you rightfully have (female slave rightfully obtained after battles), this will be more suitable, to prevent you from doing injustice".

As shows the last part of this verse Allah points out a second social situation that could allow polygamy, it is the issue of female slaves. The possession of these female slaves "*Aama*" occurs correctly when women surrendered after the losses of their male family members during battles. But Allah is against of all kind of slavery, and encourages Muslims to give freedom to their slaves in return to be pardoned of some of their sin. Accordingly in this verse Allah encourage to marry slave women because the pact of marriage implicates their freedom from slavery.

However, Allah knows that although men could arrive to give to all their wives equal necessities of life, they cannot arrive to treat them equally at the love (including sexual acts) level as He confirms in another verse (n° 129). Thus Allah would forgive these men for the mistake of do not arrive, how much they do, to give the same degree of love at each wife as compensation of their contribution to the protection of orphans by marring their mothers (widows) and/or by freeing female slaves by marrying them. In the latter case the polygamy is the most permitted because given the freedom to a slave represent a great virtue in comparison of the slight evil of do not arrive to give equal love to here as a wife in a context of polygamy.

As shows this example of a quite complicated social issue, Allah have not given an absolute legislative rule on the marriage organizations but rather He given a foundation where advantages and disadvantages are deeply discussed, and on which Muslims can establish rules the most suitable to their communities at a given epoch. Accordingly, "Habib Bourguiba" the first eminent president of the first Tunisian republic (1957-1987) had established new rules on marriage organizations by which only a correct serial monogamy was permitted; while polygamy was completely prohibited. This agrees strongly with the objectives of Qur'an owing to the fact that 1) in the Tunisian society at this epoch has already laws that abolish the slavery and 2) the establishment of new rules and social structures assuring the protection of widows and orphans and several other rules that defend women such as: - after divorce the husband is strictly obliged to pay maintenance for the former spouse and children; - enabled women to ask for divorce; - enacted a minimum age for marriage and ordered the consent of both spouses before marriage. All these modern rules are in full conformity with the real essence of Islam came within the stated above dynamic process of Qur'an.

Another social issue, the drinking, could be also within the same dynamic process. Regarding this question Allah said what means: "They ask you of wine and gambling tell that in them a great sin and benefits to people, and their offense is greater than their advantages" (*Sourat*

El bakara, verse n° 219). Such comparative analysis between advantages and disadvantages should be at the base of any decision concerning any social issue even not presented in the Qur'an such as the smoking of tobacco and the use of drugs: in view of the degree of harm, the drinking could be classed the second after the smoking of tobacco.

. **2.** A second dynamic process of Qur'an involves the cases of verses having two (or more) right meanings, which complement each other. To this second dynamic process I give a simple example that concerns a ritual issue presented in the first part of the verse n°6 of *Sourat El-Maida*, which shows two possible right meaning:

- "O believers, when you stand up for the service of prayer wash your faces and hands up to elbows (elbows are included), wipe your heads, and (wash) your feet up to the ankles……" or:

- "O believers, when you stand up for the service of prayer wash your faces and hands up to elbows (elbows are not included), and wipe your heads and your feet up to the ankles……"

The first meaning is addressed to all Muslims in suitable situations; while the second one is addressed to Muslims under difficult situations. For example: - when a Muslim has a health problem such as osteoarthritis, he can (particularly during cold weather) wash his hands up to just before elbows, or - when a Muslim is out of his house and it is cold and he is in a situation that it is always impossible to wash his feet correctly, he can only wipe them. This becomes constantly valid for old persons who can't bend over to wash correctly their feet several times each day. Unfortunately, narrow minded men of religion, even if they see these two meanings they select stupidly one meaning as the right one and ignore the other.

This example of a possible second dynamic process of Qur'an shows that the dynamism of Qur'an has not responded only to the conditions that change from an epoch to another, as in the cases of the first proposed one, but it could be responded to conditions that change during stages of each human life particularly at the old age. Moreover, this dynamic process, quite spread in the Qur'an text, could also contribute in the transmission of more than scientific information from the same expression (see an example in page 50). This appears in some verses having scientific signs that, in the same time, lie in the following third possible process.

3. A third dynamic process is specific to verses where scientific signs lie. Each of these verses would have two major meanings: a simple apparent meaning (or more) not accurate even at the linguistic level and an appropriate scientific meaning. The first one could stay during many centuries as the possible meaning until the discovery of the

corresponding scientific fact. I call the expressions of the reveled scientific information "the hidden scientific metaphors" because the scientific information is inherent within superb Arabic rhetorical modes hardly detectable. Moreover, as I have previously shown, from some verses having scientific signs (Chaabani 2006; 2013; 2018) it would be possible to deduce assumptions related to some unknown scientific details (not yet revealed by scientists). Thus, this dynamic process of Qur'an is not merely a dynamic progressive revelation of scientific signs during successive modern epochs, but also, if deeply analyzed, would permit a dynamic constructive grounding for the scientific research. This observation will be demonstrated again in the example already quoted in the beginning of this article. In this example, among several verses on the subject of the human creation, the principal one shows a possible DNA designation, which implies that DNA and the swelling-expanding clay minerals should have evident features in common, and DNA should have forms similar to those of potteries. For a best comprehension, it would be better to begin by an overview on these two fundamental elements: DNA and clay minerals.

The structures of DNA and clay minerals were both revealed mainly thanks to X-ray diffraction principle applied according to X-ray crystallography techniques developed particularly from about 1920 to 1953 (e.g., see Watson and Crick 1953; Larson and Wherry 1925; Endell et al. 1933). Researchers have continued to investigate the different proprieties of these two elements and their utility until nowadays (e.g., Khazaeinezhad, R. et al. 2017, Schakenraad et al. 2017; Schoonheydt and Johnston 2011; Krupskaya et al. 2017).

Basic structure and composition of DNA

According to Watson and Crick's model (Watson et al. 1953), the DNA structure represents a double helix made of two anti-parallel strands of nucleotides linked by hydrogen bounding between complementary bases. This brief definition could be explained as follows:

- At the primary and secondary structure level, DNA molecule is composed of two identical chains (sugar-phosphate chains) composed of an alternation of deoxyribose sugar and phosphate groups linked by covalent bonds (Fig. 1). Between these two chains a nitrogen base is linked to each sugar phosphate group forming a nucleotide and the two opposing bases are linked by hydrogen bonds. In other words, between the two

identical sugar-phosphate chains are sandwiched successive pairs of nitrogenous bases that lie flat, forming the rungs of a ladder composed of two strands of successive nucleotides. Four types of nitrogen bases are determined: adenine (A), thymine (T), guanine (G) and cytosine (C). 'A' must be paired with a 'T' (and vice versa). Similarly, 'G' must be paired with a 'C' (and vice versa). These A-T and G-C associations are known as complementary base pairs (Fig. 1). Thus, the secondary structure of DNA leads to the hybridization of two complementary and anti-parallel strands of DNA. The stacking interaction between consecutive base-pairs is what stabilizes the hybridized structure (Fig. 1). The order of these bases is what determines DNA's information translated via a genetic code. Moreover, thanks to the complementarily of base pairs, DNA can replicate by making copies of itself. Each strand of DNA in the double helix can serve as a pattern for duplicating the sequence of bases.

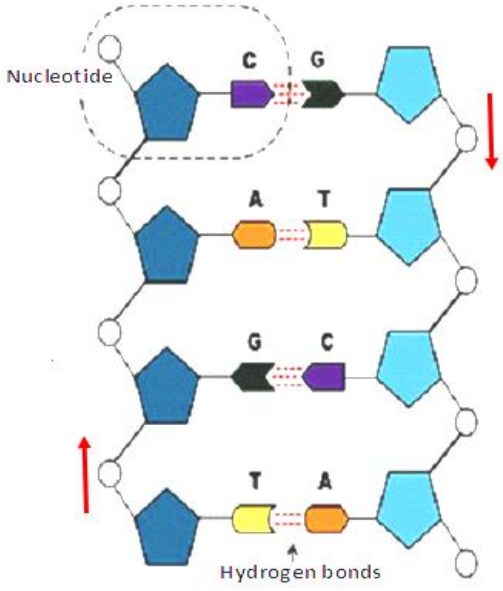

Fig. 1 Primary and secondary structure of DNA (each sugar-phosphate group linked to a nitrogen base form a nucleotide): Hybridization of two complementary and anti-parallel nucleotide strands of DNA.

- At the 3D level, the tertiary DNA structure (Fig. 2) shows that the two strands twist around each other to form a right-handed helix. The two sugar-phosphate chains make up the outside of the helix, while the nitrogenous bases are found on the inside and form hydrogen-bonded pairs that hold the two strands together. Moreover, in the helix these two strands run in opposite (anti-parallel) directions (at each end of the double helix, one strand is 5' and the other is 3') (Fig. 2). The twisting of the DNA double helix and

the geometry of the bases creates a wider gap (called the major groove) and a narrower gap (called the minor groove) that run along the length of the molecule. As a result, the proteins that bind to DNA tend to interact with the major groove, since the base-pairs are more accessible, and regulate gene activity. There are different conformations of the DNA double helix characterized by their geometric properties such as the tilt angle of the bases or the inter-phosphate distance. The known common ones are the * A-DNA is a short, wide, right-handed helix. * B-DNA, the structure proposed by Watson and Crick, is the most common conformation in most living cells. * Z-DNA, unlike A- and B-DNA, is a left-handed helix.

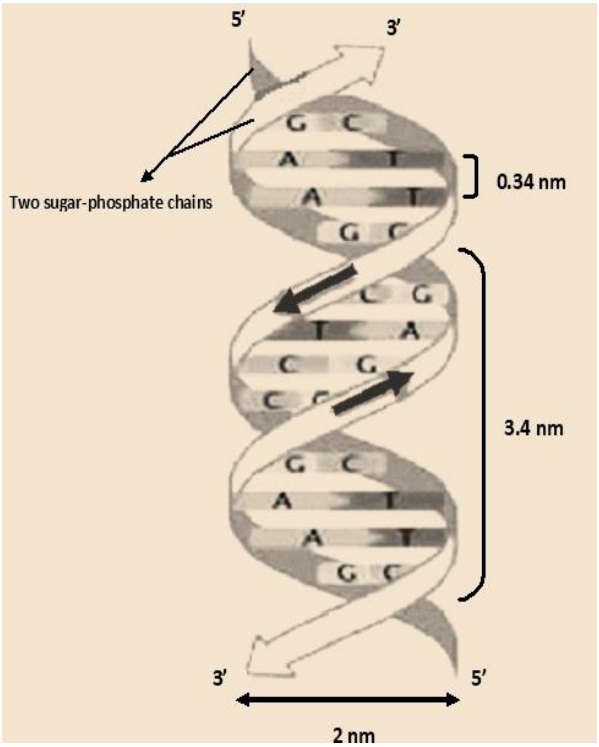

Fig. 2 Tertiary DNA structure as represented in Watson and Crick's model, is a double-stranded, antiparallel, right-handed helix (B-form DNA)
In normally hydrated DNA, the distance between two base pairs, or "rungs," is 0.34 nanometers. The length of one turn of the double-helix is 3.4 nanometers. The width (diameter) of the DNA molecule is 2 nanometers
Base pairs, almost perpendicular to the helix axis, are symbolized: A: adenine, T: thymine, G: guanine, C: cytosine.

Basic structures and composition of clay minerals

Clay has been known and used since the early history and defined as a natural earthy material that is soft and plastic when it is wet and hard when it is dry. It is shaped and baked to make things such as pottery and bricks. However, after the discovery of its

major physical and chemical properties that goes back only about one century, several details were added to its ancient definition such as the very fine size of its particles, which contain mainly minerals, clay minerals, composed mostly of hydrous-layer silicates of aluminum.

In the earth surface, clay minerals are the most abundant sedimentary mineral group. They are formed as a result of volcanic activity subjected to environmental influences. Whatever their origin they are always of small particles of very fine size (smaller than two micrometers). They differ in structure and composition, depending upon the source. Chemically, they are composed essentially of silica, alumina or magnesia or both, and water, but iron substitutes for aluminum and magnesium in varying degrees, and appreciable quantities of potassium, sodium, and calcium are frequently present (for review see Guggenheim and Martin 1995, Bergaya et al. 2006, Meunier 2006).

Structurally, Clay minerals are phyllosilicates or layered materials. Each layer (called silicate layer) consists of two different types of sheets:

- A tetrahedral sheet (T): it is an array of silicon-oxygen tetrahedra
- An Octahedral sheet (O): it is an array of aluminium (or magnesium)-oxygen-hydroxyl octahedral (octahedral sheets with an Al-octahedral are called dioctahedral; those with an Mg-octahedral, trioctahedral).

In some clay minerals, each layer is formed by aligning one tetrahedral sheet (T) to one octahedral sheet (O) and is termed 1:1 (or TO) silicate layer; while in the others each layer is composed of one octahedral sheet sandwiched by two tetrahedral sheets (oriented in opposite directions) and is called 2:1 (or TOT) silicate layer (Fig. 3). However, an additional octahedral sheet could be sandwiched between each TOT layer for given a 2:1:1 layered silicate (or TOTO) (it is the case of the Chlorite group, see classification bellow).

The clay minerals are characterized by isomorphic substitutions (the substitution of a cation by another of similar size is referred to as isomorphous substitution). These substitutions concern lower-valence cations in either the tetrahedral or octahedral sheets or both. For example, in the tetrahedral sheets Si^{4+} may be replaced by Al^{3+} without changing the basic structure of the crystal; while, cations such as $Fe^{3+/2+}$ and Zn^{2+} (or other divalent cations with approximately the same diameter) may replace Al^{3+} and Mg^{2+} in the octahedral sheets. Other scarce substitutions could occur such as that of Mg^{2+} by Li^{+} in the Mg-octahedral sheets.

Such substitutions lead to negatively charged layers. Exchangeable cations present in the interlayer materiel (which do not belong to the crystalline structure), try to compensate the negative charge. A balance of electron loss and gain within the structure determines the net charge of the mineral. Another source of negative charge on clays is the ionization of hydroxyl groups at the edge of crystal (called broken edge charge) (for more details see e.g., Barton and Karathanasis 2002, Bergaya et al. 2006).

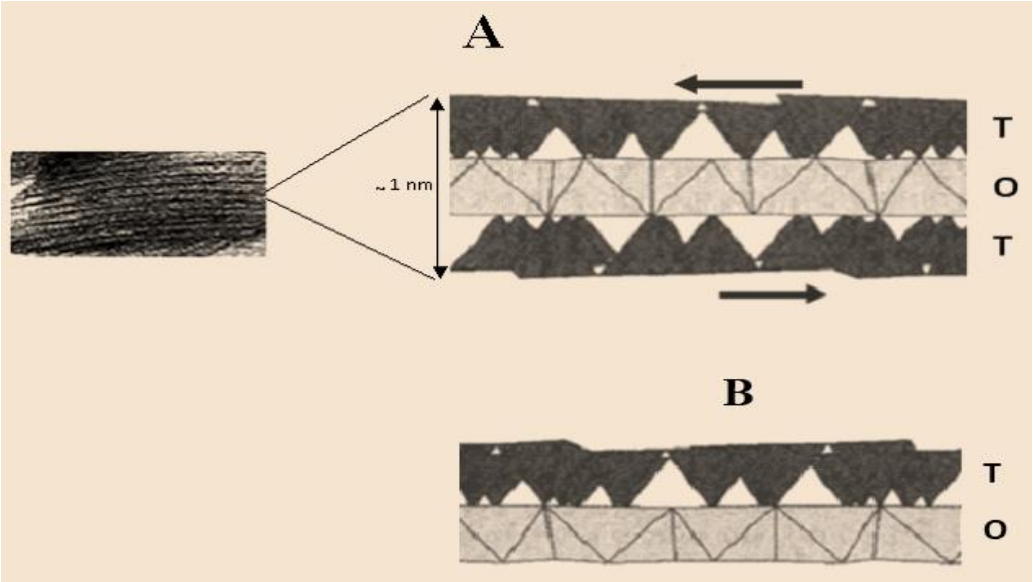

Fig. 3 **A.** Schematic structure of one of the stacking layers of the 2:1 clay mineral type: O: Octahedral sheet, T: tetrahedral sheet. Arrows indicate that the two tetrahedral sheets are oriented in opposite directions. **B.** Schematic **s**tructure in the case of 1:1 clay mineral type

The classification of the clay minerals is based on structural and chemical criteria:

* Structural characteristics concern mainly the layer type (1:1 or 2:1), and the dioctahedral or trioctahedral character of the octahedral sheets.

* Chemical characteristics concern mainly the magnitude of net layer charge due to atomic substitutions (varies from 0 to 1 per formula unit), and the type of interlayer material.

According to this classification, approved by the International Mineralogical Association, clay minerals are classed in groups include those of kaolin and serpentine, those of talc and pyrophyllite, those of the expandable smectite and vermiculite, that of

illite, that of chlorite, and that of sepiolite-palygorskite. Each group contains sub-groups. Each sub-group in turn is divided into species (some dozen mineral species have been described) (for more details see e.g., Bailey 1980). For example I can quote two species: Kaolinite (1:1 type) belonged to the kaolin group and Montmorillonite (2:1 type) belonged to the smectite group, which are abundant and relatively the more widespread and used. Hence, they could be considered as representative of the two major types of clay minerals (1:1 and 2:1).

However, the interlayer in clay minerals belonged to smectite group (2:1 type) particularly the montmorillonite species is not only hydrated, but it is also expansible; that is, the separation between individual smectite sheets varies with the amount of water present in the soil. Because of this, they are often referred to as swelling-expanding clay minerals. In fact Montmorillonite has a layer charge ~0.3-0.6 (Charge per formula unit) and has hydrated exchangeable cations as interlayer material. The isomorphous substitution in it occurs in the octahedral sheet (Mg^{2+} substitutions in the place of Al^{3+}) rather than in the tetrahedral sheet (Emmerich et al. 2009; Wolters et al. 2009). Moreover, cations such as $Fe^{3+/2+}$ and Zn^{2+} (or other divalent cations with approximately the same diameter) may replace these Al^{3+} and Mg^{2+} in the octahedral sheets. Montmorillonite has a high swelling capacity in the presence of water. This extraordinary swelling behaviour is based on its layer charge, which is just high enough to attract hydratable cations, such as Na^{+} and Ca^{2+}, into the interlayer space and to render the interlayer surfaces hydrophilic (Brigatti et al. 2006).

Interpretation of the Qur'an verse that concerns the DNA designation

According to my interpretations of Qur'an verses related to the human creation subject, one of these verses would concern a DNA scientific designation (Chaabani 2006). In this verse Allah said what means "He created mankind from a *Salsa*/similar to potteries" (verse n° 14 of Sourat *Arrahman*). In Arabic, the term 'clay' has a general corresponding term '*Taiin'* and a particular term '*Salsal*' for assigning the pure substance of clays having the greatest degree of viscoelasticity when wet: scientifically speaking, it would refer to the swelling (expanding) clay minerals that mainly belong to the smectite group (2:1 type) such as the Montmorillonite species.

The apparent simple meaning of this verse seems represent an enigma: In fact an analogy is usually done between a thing and another, but here it is between clay and

itself after its fabrication in potteries. After a long deep thought taking together the linguistic and scientific knowledge into account, I have arrived to solve this enigma by concluding that the intended meaning of the term *Salsal* is what we call nowadays DNA. Namely, this verse shows a wonderful metaphor whereby DNA is designated *Salsal* on the basis of the fact that DNA and swelling-expanding clay minerals should have evident features in common. Accordingly, the analogy coupled to this metaphor becomes clear: it is a marvelous unusual analogy showing that, as I will illustrate, some DNA forms should be similar to some pottery shapes. It seems that this analogy comes to make the revelation of the metaphor somewhat easier and simultaneously permits to test its suitability.

Thus this verse, composed of a concealed unusual metaphor strengthened by an outstanding analogy, represents a real wonderful painting that, elevated to an unusual pinnacle of creation, outlines information at the highest degree of scientific accuracy wearing a dress of superb Arabic rhetorical modes that only the light of knowledge and wisdom can penetrate it. Hence, the verse "He created mankind from a *Salsal* similar to potteries" (verse n° 14 of Sourat *Arrahman*) could mean: "Allah created mankind from DNA, some forms of which are similar to some pottery shapes". This implies that A) DNA and welling-expanding clay minerals should have evident features in common, and B) some forms of DNA should be similar to some pottery shapes.

A) Features in common between DNA and swelling clay minerals

Six major features in common between DNA and the swelling-expanding clay minerals could be presented as follows:

1. Similarity at the level of the general structure

In figure 3, I demonstrate an evident similarity between the general structures of the DNA molecule and that of the swelling-expanding clay minerals (smectites, 2:1 type). As stated above each layer of these mineral clays (2:1 type) is composed of one octahedral sheet sandwiched between two tetrahedral sheets oriented in opposite directions. Similarly, at its secondary general structure, each DNA molecule is composed of a succession of base pairs sandwiched between two sugar-phosphate chains oriented in opposite directions (even at the 3 D structure, the sugar-phosphate chains make up the outside, while the base pairs succession stays on the inside).

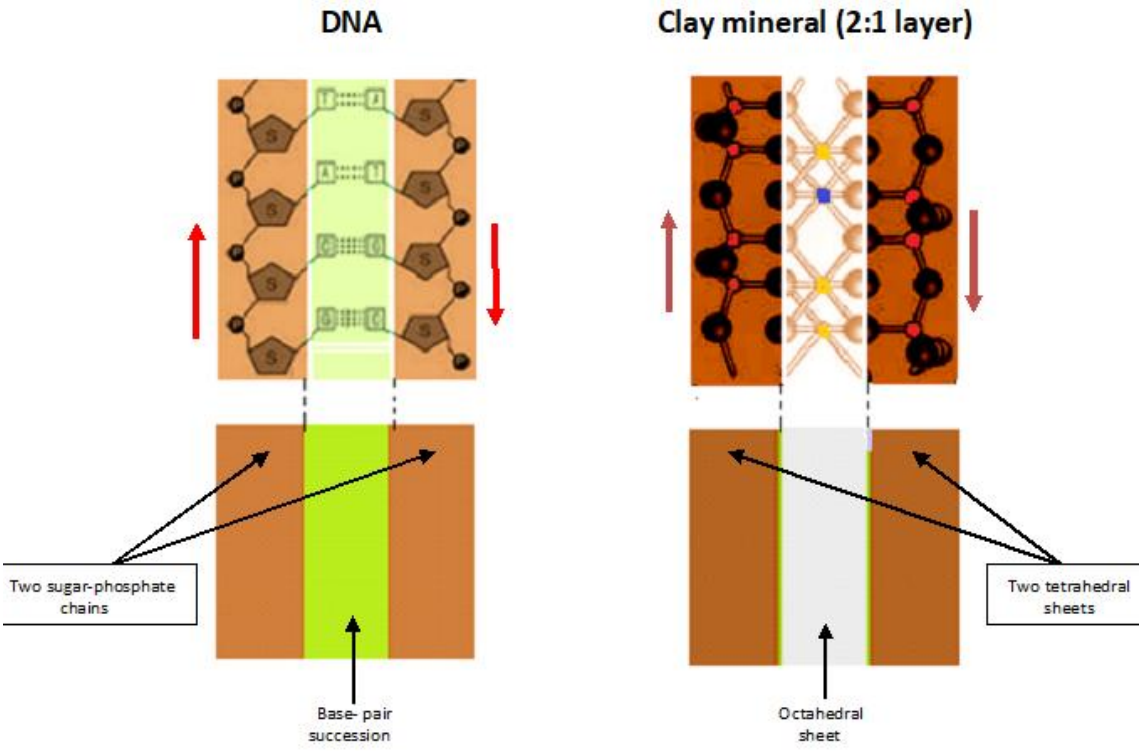

Fig. 4 Schematic representation demonstrates an evident similarity between the general structure of the swelling-expanding (2:1 type) clay minerals and that of the DNA molecule. In the clay mineral 2:1 layer, each tetrahedral sheet is an array of silicon (●)-oxygen tetrahedral; while the octahedral sheet is an array of aluminium (●) or magnesium (●)-oxygen-hydroxyl octahedral.

2. Uniqueness

DNA uniqueness

DNA is the hereditary material in humans and almost all other living creatures. Among several characteristics related to its basic structure and function, the DNA of each living being is unique. In fact, although the basic structure of DNA with its possible three different conformations (A, B, and Z) is the same in all living creatures, DNA materiel differs quantitatively and qualitatively from one species to another, and even in the same species it differs mainly qualitatively from one person to another. For example in humankind, DNA materiel quantitatively is almost the same in all peoples (except a minimal difference between the two sexes or in the scarce cases of individuals having some chromosomal aberrations). In fact human DNA it consists of about 3 billion bases. It brings all information necessary to develop, live and reproduce. This information, determined from the order (or sequence) of DNA bases, passes down from parents, via their gametes, to their children thanks to the union of two gametes (♂

and ♀) in a unique cell "Zygote". Although that about 99 percent of Human DNA is the same in all people, each individual has its unique DNA at the level of the total order of bases (detected by DNA sequencing). In other words, except for rare cases of identical twins, no two people can share qualitatively the same exact DNA.

Clay minerals uniqueness

This feature is relevant not only to the swelling-expanding clay minerals, belonged to the 2:1 type, but also to the entire clay minerals. In fact, the two basic structural types (1:1 and 2:1) represent a first level of clay minerals differentiation. Although all along layers the numbers of anions is quite constant in each type (the anion basis of $O_{10}(OH)_2$ for 2:1 clays and $O_5(OH)_4$ for 1:1 clays), the nature, the number and the position of cations vary all along layers (in tetrahedral and octahedral sheets). This represents a second level of clay mineral differentiation, which concerns mainly the structural composition of 2:1 type that varies greatly in nature. As stated above, this variation is due mainly to substitutions within the mineral structure. For example, differences in the number of cations in octahedral sites lead to the division of smectites into di- and trioctahedral groups, montmorillonite falling into the first group and saponite into the second. These substitutions are responsible for the variation of the layer charge magnitude, which contribute to the interlayer material variation.

In addition of these major variations, secondary particular variations are noted such as a fibrous morphology observed in sepiolite and palygorskite (2:1 phyllosilicates). A special case of polymorphism "the polytype" was also noted: it concerns the stacking sequence and relative orientations of the individual layer types within a unit cell (unit cell is a repeat-unit of multiple layers). Moreover, at the particle level although all the particles are small-size (generally less than 2 microns) the differences between the different types of phyllosilicates are clear (for more details see Bailey 1988; Moore and Reynolds 1989; Lopez-Galindo and Viseras 2004).

All these major and minor variations in structure and composition would be due mainly to the fact that clay minerals come from different sources (different nature of the parent material) and they were formed depending on different mechanisms under different environmental conditions. Therefore it would be impossible to find two clay minerals completely identical even in the same species such as that of Montmorillonite belonged to the smectite group.

Similarity of the major causes of the uniqueness in both DNAs and clays

The uniqueness in both DNAs and clay minerals in general are the results of two similar major causes:

* First cause: For example in the case of humankind, the DNA composition (based mainly on the order of base-pairs sequence) of each person at his first cell (zygote) level is the result of a mixture of DNAs of two parents gametes randomly selected from innumerable ones with different DNA materials. Thus, since the beginning each individual DNA represents a new unique composition.

This should also be the case for the composition of each clay mineral that, inherited from different parent materials randomly selected (pre-existing parent rocks and the resulting weathered materials), represents since the beginning a new unique one.

* Second cause: Influenced by known and unknown particular environmental factors, the first DNA composition of each human individual, from the zygote level, could receive some variations during his lifespan including his pre-natal period. For example some scarce ones could happen accidently since the beginning at the gametogenesis and zygote stages leading to chimeras or mosaics states (one organism with two or more distinct cell populations with distinct DNAs); while other usual ones such as the different types of mutations and the epigenetic modifications could happen at any time during the lifespan. Therefore each human being has qualitatively a unique DNA composition state at a given time.

This should also be the case for the clay minerals. In fact, after its first formation each clay mineral goes through different environmental conditions that have an effect on its primal composition, particularly during its moving from its place of origin: it could show scarce particular processes such as weathering involving the removal or uptake of cations (e.g., K), or hydrothermal alteration, which could lead to the formation of Mixed-layer clay minerals composed of two or more different kinds of clay layers alternate with each other (Sawhney, 1989). Under environmental conditions clay mineral could go also through usual variations such as substitutions of a cation by another. All these changes and variations at the first formation and during continuous development of each clay mineral give it a unique composition state at a given time.

3. Harmony between stacking distance of DNA triplets and that of each of layer thickness and interlayer space of swelling clay minerals

DNA bases are planar so they have the ability to stack all along the DNA molecule: one base is "on-top" of the other base. The Interaction between stacked bases is mainly hydrophobic and electrostatic (Van der Waals attraction) in nature. These base-stacking interactions increase with increasing salt concentration and contribute to the stability of the DNA double Helix (Yakovchuk et al. 2006). In normally hydrated DNA the distance between base pairs is ~0.34 nm, thus the length of a trimer (three consecutive base-pairs) is about 1nm (Fig. 5).

The commonly known clay minerals are planar phyllosilicates. The particles of planar phyllosilicates are formed by stacking mineral layers. The layer thickness of the 2:1 mineral clay type (TOT) is about 1 nm. To this type belong the swelling- expanding clay minerals the layers of which may be separated from one another by various interlayer materials, including water molecules, cations, hydrated cations, and organic molecules. Namely, in presence of water, the resulting interlayer space could easily reach 1nm or even plus. Hence, the total assembly of a layer plus interlayer materials (considered as a unit structure) reaches easily 2nm (or more) (Fig. 5) (for review see e.g., van Olphen 1977, Nemecz 1981, Bergaya et al. 2006). These TOT structures are either held together by weak Van der Waanals forces if they are neutral without interlayer space (e.g. as in talc), or may have cations between them (among interlayer material) for charge balance if substitutions in either sheet result in a residual layer charge.

In the Figure 5, we can see that:

- The schematic representation of a small portion of normally hydrated DNA molecule shows a succession of nucleotides that functionally represent a succession of triplets: each triplet is composed of three successive nucleotides reflecting three consecutive base-pairs (trimer). It also called “codon” because it codes for an amino acid (a gene is made up of a sequence of codons).
- The length of each of these normally hydrated DNA triplets, about 1nm, is simultaneously equal to the 2:1 layer thickness of swelling-expanding clay minerals on the one hand, and on the other, to the corresponding interlayer space in presence of water. This demonstrates the harmony between stacking distance of normally hydrated

DNA triplets and that of each of layer thickness and interlayer space in the case of swelling-expanding (2:1) clay minerals in presence of water (Fig. 5).

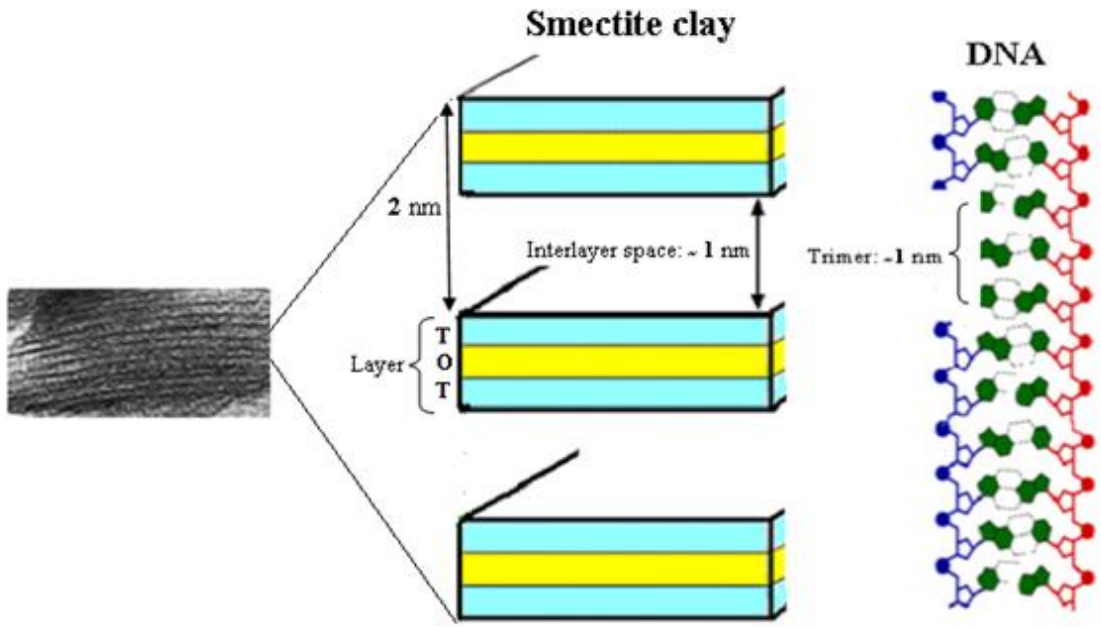

Fig. 5 Stacking distance of normally hydrated DNA triplets (about 1nm) in agreement with that of each of layer thickness (about 1nm) and interlayer space (about 1nm) of the swelling-expanding 2:1 clay minerals (smectites) in presence of water.

4. Involvement in the origin of life

The two elements DNA and the swelling-expanding clay minerals (particularly Montmorillonite) would be strongly involved in the process of emergence of life : in my previous synthesis study (Chaabani 2015) I have presented a set of proposals for the origin of life: 1) I have supported the principle of the RNA World hypothesis assuming that the first biological molecule formed is an RNA like, and a DNA like evolved from it, 2) I have considered that early life evolution would be happened rather within Earth's surfaces, and 3) I have presented a convincing scenario showing that the primal RNA molecule would be created above impermeable clay bedrock and in interlayer spaces of Montmorillonite clay elements. In a following section (Origin of life signs in the only other verse that includes the *Salsal* term), I will outline briefly these considerations bringing it up to date and adding some information deduced from the interpretation of the only other verse where the term *Salsal* is used

5. Ability to stretch and viscoelasticity property

Viscoelasticity is the property of materials that exhibit both viscous and elastic characteristics when undergoing deformation.

Clay minerals (particularly the swelling-expanding ones)

It is generally accepted that saturated clay soil exhibit both viscous and elastic response (Schmid and Kitago 1965). However the degree of its viscoelasticity depends of the richness in mineral clays and of the structure type of these mineral clays. For example among the most widespread 2:1 type clay minerals, the smectites, particularly the Montmorillonite, could be considered as the most swelling-expanding ones. They have a high swelling capacity in the presence of water. This extraordinary swelling behavior is based on its layer charge, which is just high enough to attract hydratable cations, such as Na^{+} and Ca^{2+}, into the interlayer space and to render the interlayer surfaces hydrophilic (Brigatti et al. 2006). When they are saturated with water, the interlayer space can reach easily more than 1 nm, while under dry conditions, it may be enormously reduced. This variability of the interlayer spaces as well as weak connections between particles of these clay minerals may be the major source of their relatively high plasticity index (PI) and their high degree of viscoelasticity. This micro-structural propriety is also taken shape at the macro-structural level permitting the common use of clay material since the early history: it seems soft and plastic when it is wet and hard when it is dry, it is shaped and baked to make things such as pottery showing one of the magical properties of clay: its ability to stretch and change shape under pressure.

The linear viscosity-elasticity range (LVE-range) of the montmorillonite (smectite 2:1 type clay mineral) extends to 0.5% of deformation; while it is only 0.01% in the case of kaolin (1:1 type clay mineral). The crossover of elastic modulus G’ and viscous modulus G" or deformation limit (γL) for the montmorillonite occurs at 11.4% of deformation; while in kaolin case it occurs at only 5.35% (Khaydapova et al. 2015).

DNA

The double helical structure of DNA is a semi-flexible polymer that can be stretched, bended and twisted. It is highly susceptible to changes by mechanical and biochemical signals in vivo and in vitro. These elastic properties have an impact on many biological processes such as 1) the replication and the transcription carried out

without damaging the original molecule, and 2) Long DNA double helices, crumpled up inside nucleus, undergo deformation and opening at a determined sequence where and when the corresponding genetic information needs to be read.

The interplay between DNA mechanics and structure is particularly evident in stretching experiments (Cluzel et al. 1986; Smith et al. 1996). In particular, large increases in base pair spacing compared to regular B-DNA are affected by mechanical (over) stretching and by intercalation of compounds that are widely used in biophysical/chemical assays and drug treatments. While the bond lengths in the two DNA strands permit a maximum extension of 0.7 nm per base pair, the native helical B-form of DNA has a length of only 0.34 nm per base pair (Saenger 1984). Although it was thought that DNA could only be extended by a maximum of 1.7 times its normal length, a new theoretical model predicted another, quite unfamiliar form of DNA, a full two times longer than normal (Schakenraad et al. 2017).

At a sufficiently high concentration, DNA molecules become entangled and they form a transient dynamic network. As a result of these entanglements, concentrated solutions of DNA have a complex viscoelasticity (Musti et al., 1995; Mason et al. 1998).

6. Clay minerals and DNA have been used in similar industrial fields

Clay minerals (particularly the swelling-expanding ones)

It has been shown that clay minerals play an important role in the occurrence of specific photophysical phenomena such as resonance energy transfer and luminescence quenching, and may influence various reactions, such as conformational changes in dye molecules, photochromism, photoisomerization, photosensitization and other photochemical processes (for review see Bujdak 2015).

In fact, Clay minerals have been adapted to the field of nanocomposites because of their small particle size and intercalation property, especially in the application of reinforcement materials with polymers **(**Agag & Takeichi 2000). For example, when natural bentonite (also called Montmorillonite) is in contact with aqueous solutions of quaternary ammonium salts, the exchange cations of the clay are substituted by organic cations that are adsorbed on the negative surfaces of the clay. This reaction increases the basal spacing of montmorillonite clays after treatment with organic cations and according to this principle the Sodium Alginate/bentonite clay nanocomposites have been developed and found application as conducting material, optoelectrical material

and biosensors (Sultan et al. 2010). Several other aspects of the interactions between organic dyes and clay minerals and some interesting properties of hybrid materials based on these components were noted, such as the case of Hybrid systems based on layered silicate and organic dyes for cascade energy transfer (Belušáková et al. 2015); or the case of the hybridization of cationic dyes with a clay mineral that represents an effective design strategy for two-photon absorption (TPA) materials (Suzuki et al. 2011).

DNA

DNA as a biopolymer material exhibits a new organic alternatives to current inorganic functional materials for electronics and optoelectronics applications (Kwon et al. 2012; Bauer 2014; Khazaeinezhad et al. 2017). I can summarize some of these applications as follows. DNA thin solid films have recently been found to have unique optoelectronic applications, including organic light emitting diodes, solar cells, optical amplifiers, optical modulators, and nonlinear saturable absorbers (e.g., Kawabe et al. 2000; Ogata et al. 2010). Enhanced electroluminescent efficiency using a DNA complex as an electron blocking (EB) material has been demonstrated in both green-and blue-emitting organic light-emitting diodes (OLEDs) (Hagen et al. 2006). DNA solid film has been employed as a conductive cladding layer for polymeric electro-optic waveguide modulators (Heckman 2011).

The self-assembly property of DNA has transformed nanotechnology by offering a potentially disruptive route to manufacturing of tailored nanomaterials (Seeman 2010). Mechanical properties and ionic conductivity of DNA brick and DNA origami structures can respond differently to external perturbations, such as mechanical deformation or applied electric field, with the DNA brick structures being more compliant (Slone et al. 2016). In nanotechnology, DNA was also used with special emphasis on the design of functional nanodevices such as biosensors, catalytic platforms, or novel biohybrid materials (for review see Bauer 2014; Khazaeinezhad et al. 2017).

B) Similarity between forms of DNA and potteries

After verifying that the two elements, DNA and swelling-expanding clay minerals, have really several features in common and consequently proving my proposed metaphor, I

will verify the second point of my interpretation by showing if the analogy coupled to this metaphor is compatible with it or not.

Generally pottery forms have an axial symmetry (symmetry around an axis) with possible slight modifications or additions (Fig. 7, A). In a similar way, the general shape taken by the DNA molecule consists of two helixes intertwined around the same axis (Fig. 7, B).

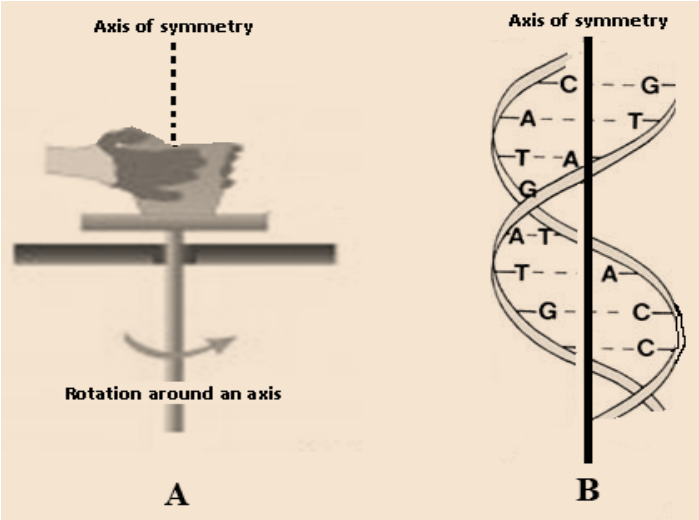

Fig. 7

A. Schematic potter's wheel: In a process called "throwing", a ball of clay is placed in the centre of a turntable, which the potter rotates. The potter begins by pressing the rough ball of clay downward and inward into perfect rotational symmetry. After making a centered hollow into the solid ball "opening", he arrives to obtain several axial symmetric forms with some possible slight modifications or additions done deliberately by him.

B. Schematic portion of DNA molecule showing that the shape taken by the DNA molecule consists of two helixes intertwined around the same axis.

This presence of an axis of symmetry in both DNA and potteries would be the major cause of a possible similarity between some forms of these two elements. Effectively, an evident similarity is shown in the figure 8, where a pottery (photo) is adjacent to a schematic representation of DNA molecule sequence during the first stage of its replication. In fact when a double-stranded DNA molecule needs to be replicated, it begins to show a progressive separation along a short stretch, creating a bubble-like structure, and then new nucleotides appear and begin to pair with one of the old strand.

This superb unusual analogy between things (such as DNA) saw thanks to the application of sophisticated microscopic-molecular techniques and others (such as potteries) saw with the naked yes, at my knowledge, is not used in the literature of any

language, and therefore represents one of the innumerable cases of extraordinary unusual summits of the Qur'an text eloquence.

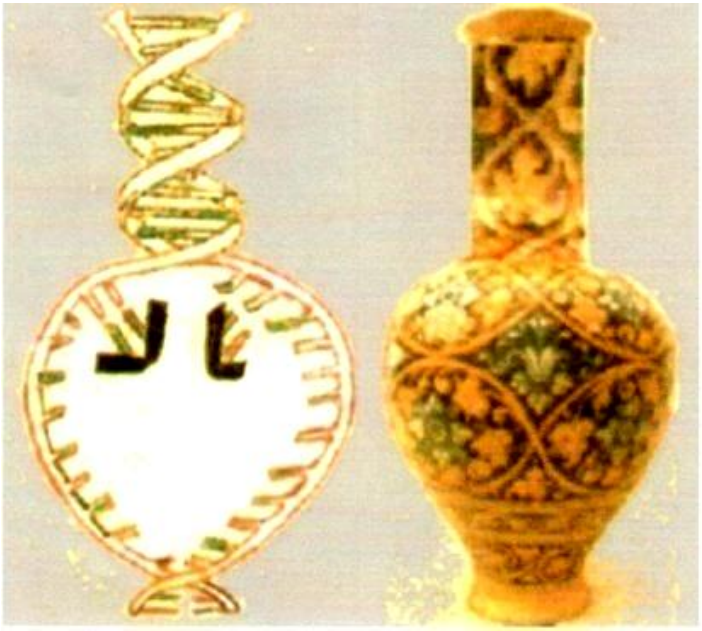

Fig. 8 Diagram of a DNA sequence at the beginning of its replication adjacent to a pottery photo: One can note the high similarity of these two forms. It is a superb unusual analogy between a DNA form saw thanks to the application of sophisticated microscopic-molecular techniques and a pottery saw with the naked eye.

A second expressive figure (Fig. 9) shows another shape of pottery similar to another DNA form, which would appear during the process of transcription. In fact transcription is the first step of gene expression leading to the production of RNA or a protein (via messenger RNA) molecule: At the beginning, the DNA double helix must unwind near the gene that is getting transcribed (the region of opened-up DNA is called a transcription bubble). Only one of the two strands of DNA is involved in transcription and acts as the template for the polymerization of a complementary polynucleotide mRNA molecule. This transcription process is catalyzed by the enzyme RNA polymerase, which attaches and moves along the concerned DNA sequence. The progress and the action of this enzyme are coupled to the "opened-up" DNA where ribonucleotides appear to be added in the growing mRNA. This is marvelously similar to the progress and the action of the potter hands coupled to the form change of clay during the pottery fabrication particularly at the making a centered hollow into the solid ball "opening" followed by giving the wanted form to the final product (Fig. 9).

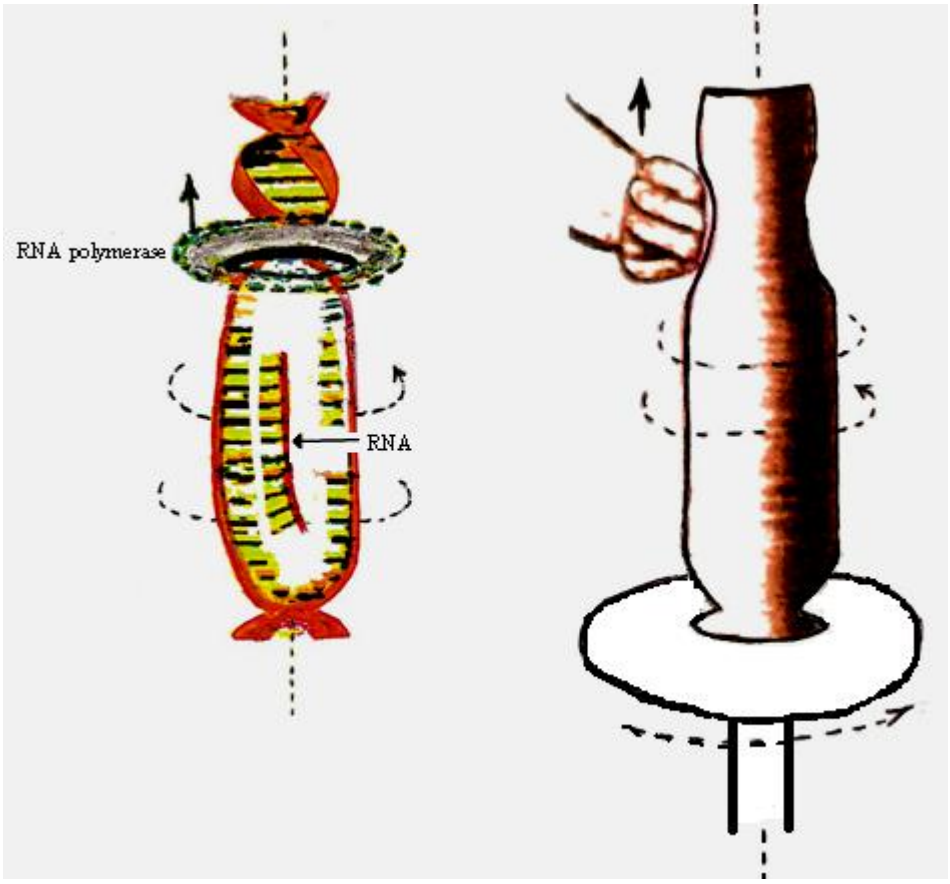

Fig. 9
A second example of similarity between a pottery and a DNA form at one of the transcription process phases
In this example in addition of viewing this similarity, I show how the progress and the action of the enzyme RNA polymerase were marvelously similar to the progress and the action of the potter hands.

Origin of life signs in the only other verse that includes the *Salsal* word

In addition of the verse, presented above, where DNA would be designated *Salsal* through a metaphor reinforced by an analogy, only other verse includes the same term *Salsal* is present in the Qur'an text. It supports this designation and according to my interpretation would give some details on the cradle where the first primary DNA molecule (RNA like) had been formed. In this verse (verse n° 26 of Sourat *El-Hajr*) Allah said what means: "And we had already created humankind from *Salsal* from (and/or in) black clay soil (with possible stinky odor) susceptible to modifications during long periods". As I have stated above I follow a thematic interpretation, thus for reaching a suitable explanation of this verse I would explain simultaneously all the other verses on the same subject (included the first principal one).

In addition of the first information provided by the justified interpretation of the first verse where DNA is designated *Salsal*, the other verses regarding the human creation show, according to my interpretations (Chaabani 2006, 2015), that when Allah speaks about the creation of humankind He would intend the beginning of the creation of the first organism, because the main objective of the creation of living beings is to reach that of humankind through the biological evolution supervised by Him.

Thus, on the basis of these two considerations a first interpretation of this verse would be: "Allah had already created humankind from a first primal DNA molecule (involved in the creation of the first being and evolved through more complex beings for reaching that of humankind) **from (and/or in) black clay soil (with possible stinky odor) susceptible to modifications during long periods** ". Although this interpretation seems quite clear for the first part of this verse, the second part (in bold type) needs more explanations that could be deduced from a confrontation with the current scientific knowledge. Before doing this, I prefer, for a better understanding, present a brief overview on the period and the environmental conditions of the life emergence and what I have already proposed previously on the origin of life (Chaabani 2015).

Period and environmental conditions of the life emergence

Earth formed at about 4.54 billion years ago. From this date, during the first period of its history called "Hadean", earth would have extremely hot climate, very intense volcanism and hydrothermal activity, heavy bombardment of extraterrestrial objects, large tides because of the Moon orbit much closer to the Earth, and a reducing composition of the atmosphere and ocean (Witze 2006). Studies of oxygen isotopic composition of the zircons provide information on the existence of continental crust and oceans since this earliest period of the Earth (e. g., Wide et al. 2001). From 3.8 billion years ago begun a second period called "Archean" and marked by the emergence of life: although the ancient discovered rock including simple beings is about 3.5 billion years ago, the early life evolution surely started well before this date, probably between 3.6 - 3.8 billion years ago (Rosing 1999; Hofmann *et al*. 1999; Pearce 2018).

It is generally accepted that during Archean particularly at its beginning the atmospheric composition is relatively rich in CO2. On the other hand, many observations suggest very low levels of atmospheric oxygen (e.g., Rosing 1999; Tajika 2008). Oxygen isotope data from ancient sedimentary rocks would suggest that surface temperatures of the early Earth would be estimated between 45 and 85°C. But several

authors argue that this interpretation is incorrect showing that by 3.3 Ga, at least, the climate was moderate. It could be also somewhat moderate earlier at the time when life arose (for review see Kasting and Howards 2006).

Although scientific researchers have established several different hypotheses concerned the origin of life a lot of related questions and problems are still far from being resolved. In my previous paper (Chaabani 2015) I have established a synthesis scenario, started from the principle of "RNA World hypothesis", considers the clay as the principal component of the cradle where the first life had been formed. This scenario could be summarized and up to date as follows:

The first molecule of life: Primal DNA (RNA like)

I have accepted the principle of the RNA World hypothesis that at present seems the most convincing. The starting point of this hypothesis should be the demonstration that several small RNAs are able to catalyze certain reactions of protein matrix synthesis and because of their enzymatic activity they are called ribozymes (Cech 1986). This has encouraged researchers to think that a primordial RNA like (RNA World) would be the most probable potential genetic polymer formed since the beginning of the early life evolution well before the formation of proteins. Thus, an "RNA World" hypothesis was advanced and developed (e. g., Gilbert 1986; Joyce 2002; Orgel 2004). Several more recent discoveries provide further support to this hypothesis by showing that RNA possesses a remarkable diversity of structural and metabolic functions (e. g., Nahvi et al. 2002; Lagos-Quintana et al. 2004, Serganov and Nudler 2013). Moreover, in 2016 Horning and Joyce artificially evolved a ribozyme that is capable of copying complex RNAs and amplifying short RNA templates. However, Samanta and Joyce (2017) demonstrate that this ribozyme is also a reverse transcriptase.

Although these findings have well supported the RNA World hypothesis, the origin of molecules including in the composition of the World RNA itself stayed unclear until a recent convincing work of Stairs et al. (2017) who provide a new perspective on how the World RNA molecules were made and suggest a simple chemical solution for delivering both purine and pyrimidine nucleotides: they demonstrated how purines and pyrimidine nucleotides can both be assembled on the same sugar scaffold to form molecules called ribonucleotides which are used to construct a World RNA.

On the basis of all research findings stated above, it is reasonable to note that now there is evidence indicating that an RNA World certainly existed before DNA. Namely an RNA like was the foundation of all life in earth and probably it had stored and expressing preliminary genetic information. As its single-strand is rather unstable (easily damaged by enzymes) RNA like had been doubled in DNA like evolved as a much more stable form to keep and transmit accurately genetic information. This evolution led to the present DNA in double stands with its several known and probably unknown properties. In parallel, other primordial RNA kept their single strand structure and had improved it according to specific functions: - in a messenger RNA having the ability to store genetic information, and – in transfer and ribosomal RNAs having the ability to translate genetic information into proteins.

Clay would be the central component of the cradle of life emergence

As stated above, I have considered that the first molecule of life had been created **on** and **in** clay: **on** impermeable clay bedrock and **in** interlayer spaces of clay. The latter would be mainly Montmorillonite clay (considered as the most swelling-expanding clay mineral) because, as I will show in the following, it has some particularities that make easier the RNA polymerization. Moreover it is the most common Smectite, which is the main constituent of bentonite derived by weathering of volcanic ash, and it is very likely to have been present on the early Earth known by high levels of volcanic activity.

- Why above impermeable clay bedrock?

As the water is indispensable to any aspect of life from its first emergence until now and as the formation of the first bio-molecules need a very long period, the cradle of this formation must be characterized by a continual presence of water even in very slight amounts. This major condition could be offered if the cradle represents at its base a quite impermeable bedrock such as saturated bedrock made up by layers of soil rich in clay (particularly montmorillonite). Therefore, such saturated clay bedrock (see Fig. 6, A) in harmony with particular environmental conditions can keep at least a minimum amount of water during periods when no new water arrives at this cradle.

- Why in interlayer spaces of Montmorillonite clay elements?

It was shown that montmorillonite clay-catalyzed reactions of nucleotides generate oligomers as long as 50-mers. The extent of catalysis depends on the magnitude of the negative charge on the montmorillonite lattice and the number of cations associated with it (e. g., Joshi et al. 2009). From these findings and my observation concerning the wonderful harmony between stacking distance (about 1nm) of trimers (RNA or DNA triplets) and that (about 1nm) of each of layer thickness and interlayer space of Montmorillonite clay mineral in quite presence of water, I consider that the formation of the key component of primordial life, RNA like, would be accomplished in the interlayer spaces of montmorillonite clay. In fact, during a relatively weak humid period, these interlayer spaces represent the ideal place for the formation of oligomerization of RNA nucleotides by favoring their binding as they found in its 2-dimensional crowded parallel to the layer sheets and by favoring the protection of formed RNA oligomers from severe prebiotic environment conditions (Fig. 6 B). In addition, during a quite humid period the interlayer space become more important and reach easily 1 nm and consequently the formed RNA oligomers can leave the interlayer space and during their exit some trimers (having about 1nm of length) can change their position perpendicularly to surfaces sheets and bind each of their two extremities with the edges of sheets (Edge attachment) (Fig. 6, C). Thus, Montmorillonite clay would serve simultaneously as protector and as catalysts of the formation of the first molecule of life (RNA like).

But after their exit from the interlayer space, RNA trimers and oligomers need a protection from some severe prebiotic conditions such as the relatively high temperature and the high amounts of UV and gamma ray radiations. For such protection, it was experimentally proved that montmorillionite clay can also catalyzed the formation of closed vesicles from micelles composed of simple aliphatic carboxylic acids already present in the prebiotic environment (Hanczyc et al. 2003, 2007). Thus, I have proposed that just at their exit from the interlayer space, in particular prebiotic conditions, RNA oligomers could be immediately encapsulated within micelles of fatty acid vesicles which provide protection and compartmented environments for further biochemical reactions (see Fig. 6).

Once formed, such vesicles can grow by incorporating fatty acid supplied as micelles and can divide without dilution of their contents by extrusion through small pores (Hanczyc et al. 2003). In addition these cell-like vesicles composed of fatty acids

show enough permeability to nucleotides (Mansy et al. 2008). Thus the latter can enter inside allowing nucleic acid elongation. They are also extremely thermostable and retain internal RNA oligonucleotides at temperatures ranging from 0°C to 100°C (Mansy and Szostak 2008). The possible encapsulation of each fixed trimer with the nearer attracted oligomer in a protecting vesicle would represent the start point of the emergence of a preliminary background of a triplet code (for more details see Chaabani 2015).

Did clay minerals were involved alone during the emergence of life process?

Certainly not! In fact, the formation of some simple organic molecules indispensable to the RNA like formation had certainly happened firstly. Then innumerable others reactions happened for assuring the complex creation of a first unicellular organism. These reactions surely need the involvement of several other elements. For example (1) the sunlight photochemistry would have facilitated the coevolution of clay minerals and early metabolites (e.g., Guzman & Martin 2010), and (2) other minerals would be involved the most important of which could be deduced from the interpretation of the last part (in bold type) of the Qur'an verse quoted above: "Allah had already created humankind from a primal DNA molecule (involved in the creation of the first being and evolved through more complex beings for reaching that of humankind) **from (or/and in) black clay soil (with possible stinky odor) liable to changes during long periods**". In this verse the Arabic word "*min*" that mainly means 'from' could have some other meanings as 'in'. Here I consider that it refers simultaneously to the two meanings (from & in) for given two complementary meanings to the entire phrase. This comes within what I can call the "complementarity between two (or several) meanings for the same expression (or word)" and which generates the second dynamic process of Qur'an that I have presented above.

In addition, in this verse Allah gives us some particularity of the clay-rich soil where life was created for the first time: it is black. At present, black clays or rather black clay-rich soil generally contain a large amount of iron (manganese and other minerals) and / or high amounts of carbon based organic compounds (for review see Zanelli et al. 2006). Taking the black coloration into account, I propose that the iron was combined rather with sulfur in iron sulfide particularly iron (II) sulfide (FeS) having a black color. Namely the particles of Montmorillonite clay, where RNA polymers like were formed, would be present in a black clay-rich soil, which among

possible simple organic molecules and other minerals it contains Iron sulfide (particularly FeS) (see Fig. 6, A).

The prebiotic environmental conditions would be in accordance with this proposal: in fact extensive sulfide deposits were associated with volcanism in the earliest stages of the Earth's history as result of abundance of sulfur with its chemical versatility as reduced sulfide (H_2S). The latter, slightly soluble in water and acts as a weak acid, could be released in gas having a stinky smell. This possibility is already pointed out in the Qur'an verse through the information "*with possible stinky odor"*, which comes to sustain else my proposal.

In addition, my proposal agrees strongly with experimental results (Rickard 1975; Butler and Rickard 2000) suggesting that in strictly anoxic systems pyrite (FeS_2, quite present on early Earth) can form very fast by the hydrogen sulfure (H_2S) oxidation of iron (II) monosulfide (FeS) in aqueous solutions at relatively low temperatures (between 20 and 50°C) very likely similar to those of the beginning of Archean period marked by the emergence of life. Moreover, more recent experimental results show that UV light can drive the synthesis of [2Fe-2S] and [4Fe-4S] clusters and suggest that iron–sulfur clusters may have formed easily on early Earth, facilitating the emergence of an iron–sulfur-cluster-dependent metabolism (Bonfio et al. 2017).

Finally, all these explanations relating to this verse (verse n° 26 of Sourat *El-Hajr*) show the high degree of compatibility between Qur'an verses including scientific signs and the most recent state of scientific knowledge. They could be summarized in a complete interpretation with extended scientific explanations as follows:

"Allah had already created humankind from a primal DNA molecule involved in the creation of the first being and evolved through more complex beings for reaching that of humankind. During a long period, this primal DNA (RNA like) is formed **from** elements present in a black clay soil and **in** the interlayer spaces of the clay particles (very likely Monmorillonite). The black color of this soil would be due to its richness in organic material (very likely basic simple molecules) and particularly in iron and sulfide in the state of iron sulfide (mainly the black FeS). This involves the presence of the hydrogen sulfide (H_2S) that the polar nature of its molecule makes it soluble in water; however it could leave the aqueous phase to exist as a free gas having a stinky smell. The iron-sulfur clusters would contribute, mainly after the formation of the RNA like, to the simple metabolism of the first unicellular organism than in the more complex metabolisms during the biological evolution.

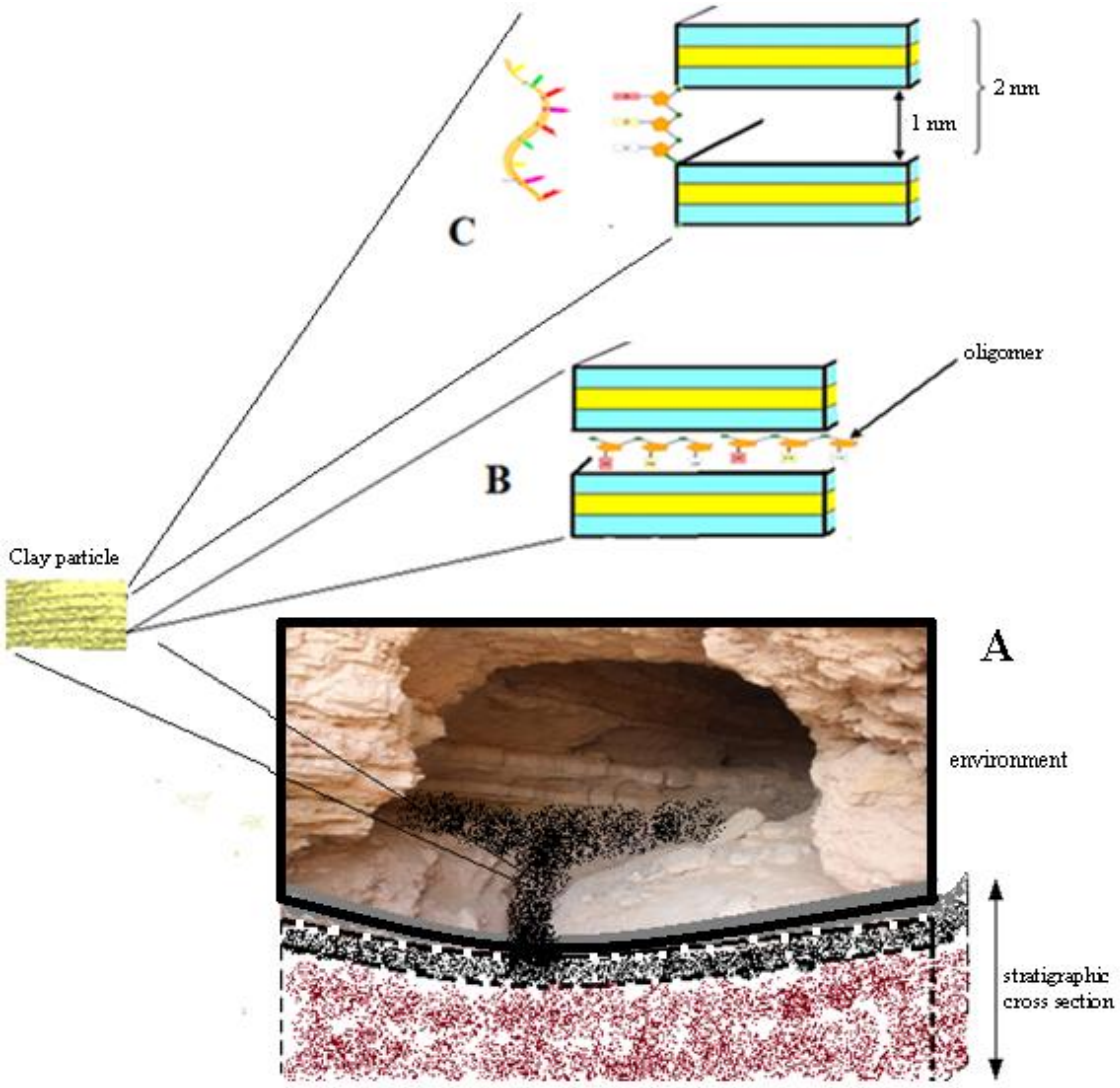

Fig. 6 Diagram of a hypothetic cradle where the first molecule of life would be formed

A. hypothetic topography of the cradle made up mainly of a topsoil ( ) that for keeping some water it could present some dipped place in continuity with the next stratum undermeath, which is composed of a black clay-rich soil particularly rich in particles of Montmorillonite clay, simple organic molecules and Iron sulfide ( ). In interlayer spaces of the Montmorillonite particles, the first primal molecule of life would be synthesized in presence of a minimum of water that would have been maintained thanks to the next clay stratum: clay bedrock like ( ).

B. During a weak humid period, the interlayer spaces are quite limited and permit the installation of the formed polymers in only a smooth horizontal position.

C. During a quite humid period interlayer spaces reach easily 1 nm permitting the formed RNA oligomers to leave the interlayer space (during this exit some trimers can change their position perpendicularly to surfaces sheets and bind each of their two extremities with the edges of sheets). Formed RNA oligomers could be immediately encapsulated within micelles of fatty acid vesicles which provide protection and compartmented environments for further biochemical reactions.

Conclusion

In the present paper I define the dynamism of the Qur'an as the fact that its content has the ability to be virtuous, valid and worthwhile for all humans living at all times and everywhere. Among eventual dynamic processes peculiar to Qur'an, I have proposed three major ones. The first lies in the fact that for each critical social issue presented in the Qur'an, Allah does not provide an absolute legislative rule that Muslims must implement blindly as much as He would intend to familiarize Muslims to evaluate and compare advantages and disadvantages between different approaches of a given issue; and therefore Muslims preserve the flexibility to choose what is good at both the personal and the societal levels at a given epoch.

A second dynamic process of Qur'an involves the cases of verses having two (or more) right meanings that complement each other. Some examples belonged to this process would show that the dynamism of Qur'an has not responded only to the conditions that change from an epoch to another but it could be responded to conditions that change during stages of each human life particularly at the old age. Moreover, this dynamic process, quite spread in the Qur'an text, could also contribute in the transmission of more than scientific information from the same expression. This appears in some verses having scientific signs that, in the same time, lie in the following third possible process.

A third dynamic process is specific to verses where scientific signs lie. Each of these verses would have two major meanings: a simple apparent meaning (or more) not accurate even at the linguistic level, and an appropriate scientific meaning. I have called the expressions of the reveled scientific information "the hidden scientific metaphors" because the scientific information is inherent within superb Arabic rhetorical modes hardly detectable. Here I have shown all particularity of this dynamic process through the presentation of a detailed example based on a principal verse, among other related ones, that remained about 14 centuries without a convincing meaning. According to my interpretation, this verse could represent a metaphor whereby DNA is designated *Salsal* (Arabic word that refers to the swelling- expanding clay minerals). I have supported this metaphor showing that DNA and swelling-expandable clay minerals have really evident features in common. Moreover I have demonstrated the marvelous analogy that, coupled to this metaphor, permits to test its suitability by specifying that some DNA

forms are similar to some potteries. Namely, according to this interpretation, this verse represents, among other ones, a wonderful painting that, elevated to an unusual pinnacle of creation, outlines information at the highest degree of scientific accuracy wearing a dress of superb Arabic rhetorical modes that only the light of knowledge and wisdom can penetrate it.

The same DNA designation, *Salsal*, is only used in another verse that would give some details on the origin of life. The different research stages of this example of one of the dynamic processes of Qur'an show that this process is not merely a dynamic progressive revelation of scientific signs during successive modern epochs, but also, if deeply analyzed, a dynamic grounding constructive for the scientific research. This is proved by my presentation, for the first time, a detailed comparative analysis between DNA and swelling-expanding clay minerals and my proposition of new insights into the origin of life.

The present modern reading of some Quran verses related to the same theme provides original interpretations deduced after a long thought and deep research analyses, and after the making and the application of a rigorous approach in which I avoid using all uncertain sources and disappointing tools classically used for interpreting the Qur'an text. However I have taken into account only the principle of some classic correct ones together with new methodological considerations and advices within a modern approach that would go with the knowledge progress in the current twenty-first century and would permit to reach a rigorous academic level in the interpretation of the Qur'an text in general, and the allegorical verses related to scientific subjects in particular.

Finally all findings and conclusions presented in this study insist on a vital need to shape and implement the dynamism of Qur'an by re-reading it at all times and everywhere, and trying continually to correct previous erroneous interpretations, which reflect a personal and socio-cultural-political influence and/or a limited scientific knowledge of exegetes at a given epoch.

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References

Agag T. & Takeichi T., 2000. Polybenzoxizine-Montmorillonite Hybrid Nanocomposites Synthesis and Characterization.
Polymer 41(19): 7083-7090. DOI: http://dx.doi.org/10.1016/S0032-3861(00)00064-1

Averroès (Ibn Rochd). 1179. Incohérence de l'Incohérence (Tahafut al-Tahafut) Le Caire, Al-Matbaa Al-Ilamiya.

Bailey S.W. 1980. Summary of recommendations of AIPEA nomenclature committee on clay minerals. *American Mineralogist* 65: 1-7.

Bailey S.W. 1988. Introduction: Chap.1 in Hydrous Phyllosilicates, in *MSA Reviews in Mineralogy* 19: 1-8.

Barton C.D. & and Karathanasis A.D. 2002. Clay Minerals.
Encyclopedia of Soil Science (Copyright © 2002 by Marcel Dekker, Inc).

Bauer D.M., Kendziora D.M., Ahmed I., Hung Y-C., Fruk L. 2014. DNA as Nanostructuring Element for Design of Functional Devices. In *Novel Approaches for Single Molecule Activation and Detection*. Chap. 7. Benfenati F., Di Fabrizio E., Torre V., Eds. Springer Berlin Heidelberg.
DOI: http://dx.doi.org/10.1007/978-3-662-43367-6_6

Belušáková S., Lang K., Bujdák J. 2015. Hybrid systems based on layered silicate and organic dyes for cascade energy transfer.
The Journal of Physical Chemistry 119: 21784–21794.

Bergaya F., Theng B.K.G., Lagaly G. 2006. *Handbook of Clay Science* 1: 1-1224. Elsevier Science. ISBN: 9780080441832.

Bonfio C., Valer L., Scintilla S. , Shah S. , Evans D.J. , Jin L. ,Szostak J.W., Sasselov D.D. , Sutherland J.D., Mansy S.S. 2017. UV-light-driven prebiotic synthesis of iron–sulfur clusters. *Nature Chemistry* 9: 1229–1234.
DOI: http://dx.doi.org/10.1038/nchem.2817

Brigatti M.F., Galán E., Theng B.K.G. 2006. In *Developments in clay science*; Bergaya F., Theng B. K. G. and Lagaly G., Eds.; Elsevier Ltd: Oxford, UK. 1: 19-48.

Bucaille M. 2011. Le Coran la Bible et la science, Paris, Pocket, coll. Evolution. ISBN: 978-2266131032.

Bujdak J. 2015. Hybrid systems based on organic dyes and clay minerals: Fundamentals and potential applications. *Clay Minerals* 50 (5): 549-571.
https://doi.org/10.1180/claymin.2015.050.5.01

Butler I.B. & Rickard D. 2000. Framboidal pyrite formation via the oxidation of iron (II) monosulfide byhydrogen sulphide. *Geochimica et Cosmochimica Acta* 64(15): 2665–2672.

Cech, T.R. (1986). A model for the RNA-catalyzed replication of RNA. *Proc. Nat. Acad. Sci.* USA 83: 4360-4363

Chaabani H. 2006. Facts of the Human Creation under the lights of Sciences and holy Qur'an " (in Arabic: *Sounanou khalq al-Inssan tahta adhoua'i al-Ilm oua nour al-Qur'an*). Les Imprimeries Reunies, Tunis, Tunisia. ISBN: 978-9973-61-201-4.

Chaabani H. 2011. Compatibility of the holy Qur'an with sciences: anthropological concepts as an example. *International Journal of Modern Anthropology*. 1(4): 78 – 84. DOI: http://dx.doi.org/10.4314/ijma.v1i4.5

Chaabani H. 2013. A theoretical ovary position in link with the global anatomical structure of each human female body. *International Journal of Modern Anthropology* 1(6): 78 – 84. DOI: http://dx.doi.org/10.4314/ijma.v1i6.4

Chaabani H. 2015. Man creation had begun since the creation of the first biological material very likely in Clay. *International Journal of Modern Anthropology*. 1(8): 49 – 65. DOI: http://dx.doi.org/10.4314/ijma.v1i8.3

Chaabani H. 2017. The Tunisian Revolution "The Free, Youth Revolution" from an Anthropological Perspective. *International Journal of Modern Anthropology* 10: 14 – 48. DOI: http://dx.doi.org/10.4314/ijma.v1i10.1

Chaabani H. 2018. New insights into human early embryonic development: a particular theoretical study. *International Journal of Modern Anthropology* 2(11): 14 – 46. DOI: http://dx.doi.org/10.4314/ijma.v2i11.1

Cluzel P., Lebrun A., Heller C., Lavery R., Viovy J-L., Chatenay D., Caron F. 1996. DNA: an extensible molecule. *Science* 271(5250): 792–794. DOI: http://dx.doi.org/10.1126/science.271.5250.792

Emmerich K., Wolters F., Kahr G., Lagaly G. 2009. Clay profiling: the classification of montmorillonites. *Clays and Clay Minerals* 57(1): 104-114. DOI: http://dx.doi.org/10.1346/CCMN.2009.0570110

Endell K., Hofmann U., Wilm D. 1933. Über die Natur der keramischen Tone. *Ber Dtsch Keram Ges* 14: 407-438.

Gilbert W. 1986. Origin of life: The RNA world. *Nature* 319 : 618 DOI: https://doi.org/10.1038/319618a0

Guessoum N. 2015. Islam, Big Bang et Darwin. Ed. Dervy. Paris. ISBN : 979-1-02-420089-7

Guggenheim S. & Martin R.T. 1995. Definition of clay and clay mineral: joint report of the AIPEA nomenclature and CMS nomenclature committees.
Clays and Clay Minerals 43(2): 255-256.

Guzman, M. I. & Martin, S.T. 2010. Photo-production of lactate from glyoxylate: How minerals can facilitate energy storage in a prebiotic world. *Chem. Commun* 46: 2265–2267. DOI: https://doi.org/10.1039/b924179e

Hagen J. A., Li W., Steckl A.J., Grote J.G. 2006. Enhanced emission efficiency in organic light-emitting diodes using deoxyribonucleic acid complex as an electron blocking layer. *Appl Phys Lett* 88: 171109. DOI: https://doi.org/10.1063/1.2197973

Hanczyc M.M., Fujikawa S.M., Szostak J.W. 2003. Experimental Models of Primitive Cellular Compartments: Encapsulation, Growth, and Division.
Science 302 (5645), 618- 622. DOI: https://doi.org/10.1126/science.1089904

Hanczyc M.M., Mansy S.S., Szostak J.W. 2007. Mineral Surface Directed Membrane Assembly. *Orig Life Evol Biosph* 37 (1): 67-82.
DOI: https://doi.org/10.1007/s11084-006-9018-5

Heckman E.M., Aga R.S., Rossbach A.T., Telek B.A., Bartsch C.M. 2011. DNA biopolymer conductive cladding for polymer electro-optic waveguide modulators *Applied Physics Letters* 98(10):103304-103304-3
DOI: https://doi.org/10.1063/1.3562953

Hofmann, H.J., Grey K., Hickman A.H., Thorpe R.I. 1999. Origin of 3.45 Ga coniform stromatolitesin Warrawoona Group, Western Australia. *Geological Society of America Bulletin* 111: 1256–1262.

Horning and Joyce (2016) Amplification of RNA by an RNA polymerase ribozyme *PNAS* 113(35): 9786–9791. DOI: https://doi.org/10.1073/pnas.1610103113

Lagos-Quintana M., Rauhut R., Lendecked W., Tuschl T. 2001. Identification of novel genes coding for small expressed RNAs. *Science* 294(5543):853-858.
DOI: https://doi.org/10.1126/science.1064921

Larson E.S., , E. T. Wherry E.T. 1925. Beidellite - a new mineral name.
J Wash Acad Sci 15: 465-466.

Lopez-Galindo A., Viseras C. 2004. Clay Surfaces. In *Interface Science and Technology*. Elsevier B.V., ISSN: 1573-4285

Kasting J.F. & Tazewell Howard M. 2006. Atmospheric composition and climate on the early Earth. *Phil Trans R Soc B* 361: 1733–1742.
DOI: https://doi.org/10.1098/rstb.2006.1902

Kawabe Y., Wang L., Koyama T., Horinouchi S., Ogata N. 2000. Light amplification in dye-doped DNA-surfactant complex films. *Proc SPIE* 4106 : 369-376. DOI : https://doi.org/10.1117/12.408526

Khaydapova D., Milanovskiy E., Shein E. 2015. Rheological properties of different minerals and clay soils. *Eurasian J Soil Sci* 4 (3): 198 – 202. DOI: http://dx.doi.org/10.18393/ejss.2015.3.198-202

Khazaeinezhad R., Kassani S.H., Paulson B., Jeong H., Gwak J., Rotermund F., Yeom D-I., Oh K. 2017. Ultrafast nonlinear optical properties of thin-solid DNA film and their application as a saturable absorber in femtosecond mode-locked fiber laser. *Sci Rep* 7: 41480. DOI: http://dx.doi.org/10.1038/srep41480

Krupskaya V.V., Zakusin S.V., Tyupina E.A., Dorzhieva O.V., Zhukhlistov A.P., Belousov P.E., Timofeeva M.N. 2017. Experimental Study of Montmorillonite Structure and Transformation of Its Properties under Treatment with Inorganic Acid Solutions. *Minerals* 7(4): 49. DOI: https://doi.org/10.3390/min7040049

Kwon Y.W., Choi D.H., Jin J.I. 2012. Optical, electro-optic and optoelectronic properties of natural and chemically modified DNAs. *Polym J* 44: 1191–1208. DOI: https://doi.org/10.1038/pj.2012.165

Joshi P., Aldersley M., Delano J. Ferris J.P. 2009. Mechanism of Montmorillonite Catalysis in the Formation of RNA Oligomers. *Journal of the American Chemical Society* 131(37):13369-13374. DOI: https://doi.org/10.1021/ja9036516

Joyce G.F. 2002. The antiquity of RNA-based evolution. *Nature* 418, 214–221. DOI: https://doi.org/10.1038/418214a

Mansy, S.S., Schrum, J.P., Krishnamurthy, M., Tobé, S., Treco, D.A., Szostak J.W. 2008. Template-directed synthesis of a genetic polymer in a model protocell. *Nature* 454: 122–125. DOI: https://doi.org/10.1038/nature07018

Mansy S.S. & Szostak J.W. 2008. Thermostability of model protocell membranes. *Proc. Natl. Acad. Sci. USA* 105(36): 13351–13355. DOI: https://doi.org/10.1073/pnas.0805086105

Mason T.G., Dhople A., Wirtz D. 1998. Linear viscoelastic moduli of concentrated DNA solutions. *Macromolecules* 31: 3600–3603.

Meunier A. 2006. Why are clay minerals small? *Clay Minerals* 41(2): 551–566. DOI: https://doi.org/10.1180/0009855064120205

Moore K.L. 1986. A Scientist's Interpretation of References to Embryology in the Qur'an. *Journal of the Islamic Medical Association of North America* v.18.

Moore D.M. & Reynolds Jr. R.C. 1989. X-Ray Diffraction and the Identification and Analysis of Clay Minerals. Oxford University Press. Oxford.

Musti R., J.-L. Sikorav J.-L., Adam M. 1995. Viscoelastic properties of entangled DNA solutions. *C R Acad Sci IIb Mech Phys Chim Astron* 320:599–605.

Nahvi A., Sudarsan N., Ebert M.S., Zou X., Brown K.L., Breaker R.R. 2002. Genetic control by a metabolite binding Mrna. *Chem Biol* 9(9):1043.
DOI: https://doi.org/10.1016/S1074-5521(02)00224-7

Nemecz E. 1981. Clay Minerals. Akade´miai Kiado, Budapest, 547 pp.

Ogata N., Yamaoka K., Yoshida J. 2010. Progress of DNA biotronics and other applications. In *SPIE NanoScience + Engineering* 776508.

Orgel L.E. 2004. Prebiotic chemistry and the origin of the RNA world.
Crit Rev Biochem Mol Biol 39: 99–123.
DOI: https://doi.org/10.1080/10409230490460765

Pearce Ben K.D., Tupper R.E., Pudritz R.E., Higgs P.L. 2018. Constraining the Time Interval for the Origin of Life on Earth. *Astrobiology* 18(3):343-364.
DOI: https://doi.org/10.1089/ast.2017.1674

Rickard D. 1975. Kinetics and Mechanism of Pyrite Formation at Low Temperatures. American Journal of Science 275(6): 636-652.
DOI: https://doi.org/10.2475/ajs.275.6.636

Rosing M.T. 1999. 13C-Depleted Carbon Microparticles in >3700-Ma Sea-Floor Sedimentary Rocks from West Greenland. *Science* 283: 674-676.

Samanta B. & Joyce G.F. 2017. A reverse transcriptase ribozyme.
eLife 6: e31153. DOI: https://doi.org/10.7554/eLife.31153.001

Saenger W. 1984. Metal Ion Binding to Nucleic Acids. In: *Principles of Nucleic Acid Structure*. Springer Advanced Texts in Chemistry. Springer, New York, NY
DOI: https://doi.org/10.1007/978-1-4612-5190-3_8 . Print ISBN 978-0-387-90761-1.

Sawhney B.L. 1989. Interstratification in Layer Silicates. Pp. 789-828 in: *Minerals in Soil Environments* (Dixon, J.B. & Weed, S.B., editors). Soil Sci. Soc. America, Madison, Wisconsin.

Schakenraad K., Biebricher A.S., Sebregts M., Bense B.T., Peterman E.J.G., Wuite G.J.L., Heller I., Storm C. & Schoot P. van der. 2017. Hyperstretching DNA. *Nature Communications*. 8 : 2197.
DOI: https://doi.org/10.1038/s41467-017-02396-1

Schmid W. E. & Kitago S. 1965. Shear strength of clays and safety factors as a function of time : Proc. Sixth Internat. Conf. Soil Mechanics and Foundation Engineering, 2, Montreal, 345-9.

Schoonheydt R.A. & Johnston C.T. 2011. The surface properties of clay minerals. *EMU Notes in Mineralogy* Vol. 11, Chapter 10: 337–373
DOI: https://doi.org/10.1180/EMU-notes.11.10

Seeman N.C. 2010. Nanomaterials based on DNA. *Annu Rev Biochem* 79: 65–87.
DOI: https://doi.org/10.1146/annurev-biochem-060308-102244

Serganov A. & Nudler E. 2013. A decade of riboswitches. *Cell* 152: 17–24.
DOI: https://doi.org/10.1016/j.cell.2012.12.024

Slone S.M., Li C.-Y., Yoo J., Aksimentiev A. 2016. Molecular mechanics of DNA bricks: in situ structure, mechanical properties and ionic conductivity.
New J. Phys. 18: 055012. DOI: https://doi.org/10.1088/1367-2630/18/5/055012

Smith S., Cui Y., Bustamante C. 1996. Overstretching B-DNA: the elastic response of individual double-stranded and single-stranded DNA molecules.
Science 271(5250): 795–799. DOI: https://doi.org/10.1126/science.271.5250.795

Sultan M.T., Rahman M.A., Islam J.M.M. , Khan M.A., Rahman N. et al. 2010. Preparation and Characterization of an Alginate/Clay Nanocomposite for Optoelectronic Application. Advanced Materials Research Vols. 123-125 pp 751-754
DOI: https://doi.org/10.4028/www.scientific.net/AMR.123-125.751

Suzutaka Y., Tenma Y., Nishioka Y., Kamada K., Ohta K., Kawamata J. 2011. Efficient Two-Photon Absorption Materials Consisting of Cationic Dyes and Clay Minerals.
J Phys Chem C 115 (42): 20653–20661. DOI: https://doi.org/10.1021/jp203809b

Stairs S., Nikmal A., Bucˇar D.-K., Zheng S-L., Szostak J.W., Powner M.W. 2017. Divergent prebiotic synthesis of pyrimidine and 8-oxo-purine ribonucleotides
Nature Communications 8: 15270. DOI: https://doi.org/10.1038/ncomms15270

Tajika E. 2008. Theoretical constraints on early Earth's environment. *Viva Origino* 36 : 55 – 60.

Van Olphen H. 1977. An Introduction to Clay Colloid Chemistry: For Clay Technologists, Geologists and Soil Scientists. 2nd Edition, Wiley, New York.

Watson J. D. & Crick F.H.C. 1953. A structure for deoxyribose nucleic acid. *Nature* 171(4356): 737-738. Retrieved from http://www.nature.com/nature/dna50/watsoncrick.pdf.

Wilde S.A., Valley J.W., Peck W.H., Graham C.M. 2001. Evidence from detrital zircons for the existence of continental crust and oceans on the Earth 4.4 Gyr ago.
Nature 409: 175-178. DOI: https://doi.org/10.1038/35051550

Witze A. 2006. The start of the world as we know it. Nature 442(7099): 128-131.
DOI: https://doi.org/10.1038/442128a

Wolters F., Lagaly G., Kahr G., Nueesch R., Emmerich K. 2009. A comprehensive characterization of dioctahedral smectites. *Clays Clay Minerals* 57(1): 115-133. DOI: http://dx.doi.org/10.1346/CCMN.2009.0570111

Yakovchuk P., Protozanova E., Maxim D. Frank-Kamenetskii M.D. 2006. Base-stacking and base-pairing contributions into thermal stability of the DNA double helix *Nucleic Acids Res* 34(2): 564–574. DOI: http://dx.doi.org/10.1093/nar/gkj454

Zaneli R., Egli M., Mirabella A., Abdelmoula M. Plotze M., Notzli M. 2006. Black'soils in the southern Alps : Clay mineral formation and transformation, X-Ray amorphous A1 phases and Fe forms. *Clays and Clay Minerals* 54(6): 703-720. DOI: https://doi.org/10.1346/CCMN.2006.0540606.

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