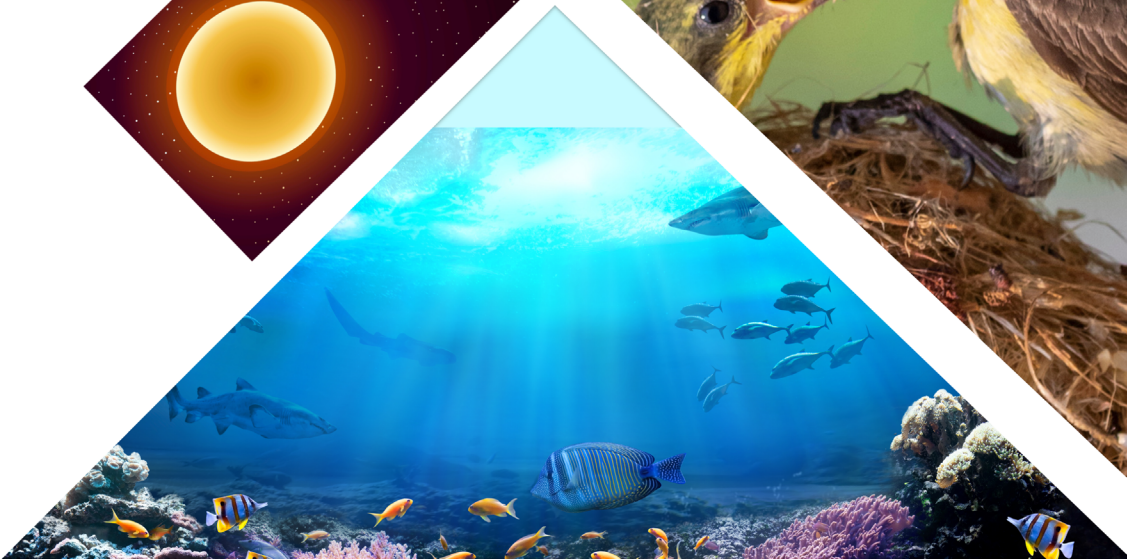
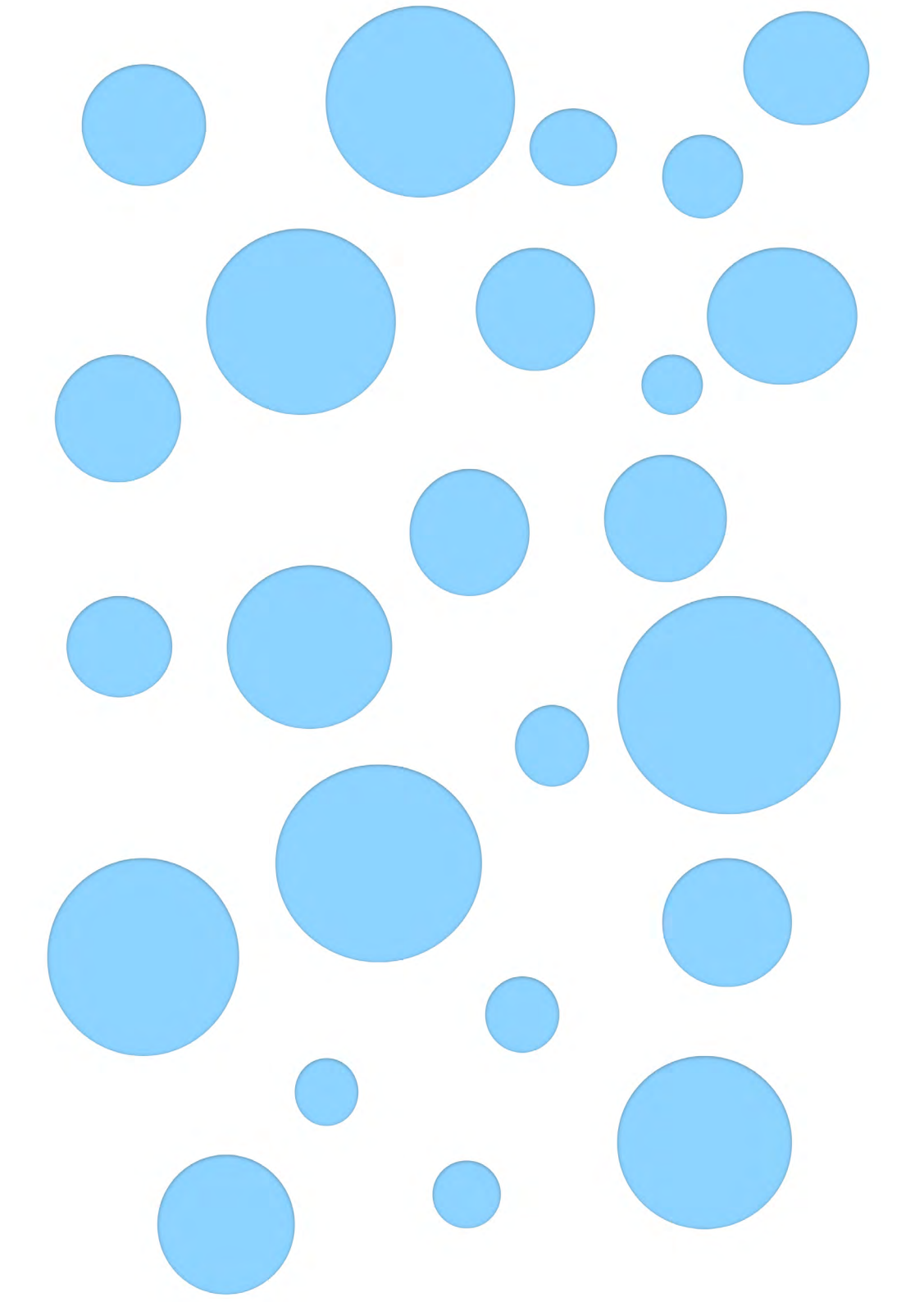


# The Qur'an and Science

*An Analysis of the Revelation in the light of  
Modern Knowledge*

Compiled By  
Dr. Abood Hamed Al Sawafi





# The Qur'an & Science

*An Analysis of the Revelation in the Light  
of Modern Knowledge*

**1st. Publication**

Rajab 1446 H / January 2025

**Published by**



**Islamic Information Center**

Sultan Qaboos Grand Mosque  
Sultanate of Oman

Website: [www.iicomman.om](http://www.iicomman.om)

Email: [info@iicomman.om](mailto:info@iicomman.om)

# The enduring marvel of the Qur'an

The Qur'an, revered by Muslims as the literal word of God (Allah), is not intended to serve as a scientific textbook but rather as a comprehensive guide for all aspects of human life, primarily offering spiritual and moral direction. Nevertheless, embedded within its verses are numerous signs and symbols that invite deep reflection and contemplation. In the Qur'an, God (Allah) promises to reveal His signs to humanity, so that people may recognize its divine origin without doubt.

Throughout history, the Qur'an has been associated with various types of miracles, each reflecting the context of the era in which they were revealed, and their resonance continues to this day. These miracles can be categorized as follows:

1. **Linguistic Miracles:** The Qur'an's unparalleled eloquence and linguistic perfection were awe-inspiring in 7th-century Arabia, a time when poetry and oratory were highly valued. Its language astonished even the most accomplished poets and orators, leading many to embrace Islam, recognizing the Qur'an's inimitable nature.
2. **Tangible Miracles:** These are physical phenomena witnessed by the Prophet Muhammad's contemporaries, such as the splitting of the moon, the springing of water from unexpected sources, and other extraordinary events, which served as visible signs of divine power.
3. **Scientific Miracles:** In the modern era, numerous scientific discoveries align with descriptions found in the Qur'an, which was revealed over 1,400 years ago. This book focuses on such scientific miracles, demonstrating how these ancient revelations resonate with contemporary scientific understanding. While this is not an exhaustive list, the examples presented offer a glimpse into some of the most remarkable alignments



between Qur’anic verses and modern science. The content is structured simply, identifying each scientific discovery or theory, the corresponding Qur’anic verse, and a brief explanation.

4. Historical Miracles: The Qur’an has made prophecies that have been fulfilled with remarkable precision, such as the preservation of Pharaoh’s body and the defeat and subsequent victory of the Romans, showcasing the Qur’an’s insight into historical events.
5. Psychological and Social Miracles: The Qur’an has had a profound impact on moral and societal values, shaping communities and guiding individuals toward ethical and righteous conduct, transforming societies throughout history.
6. Mathematical and Numerical Miracles: The Qur’an contains intricate numerical patterns, such as the mention of the word “day” (yawm) exactly 365 times, reflecting the number of days in a year, further illustrating its profound precision.



This book specifically explores the scientific miracles embedded within the Qur’an, illustrating how these ancient insights continue to hold relevance in light of modern scientific discoveries. By focusing on these aspects, we

aim to demonstrate the harmonious relationship between faith and reason, highlighting the Qur’an’s timeless wisdom and confirming its divine origin as the true word of Allah, the Creator and All-Knowing.

*Qualification Statement:* This effort to identify scientific facts in relation to Qur’anic revelations reflects the current stage of human understanding and discovery. While scientific knowledge continues to evolve, the Qur’an remains the eternal truth, the word of the Creator. As new scientific findings emerge that may differ from current interpretations, this should not be seen as undermining the credibility of the Qur’an, but rather as a reflection of the limitations in our present understanding of how these facts are conveyed in the holy scripture. The Qur’an will continue to reveal signs of the Creator’s existence and power to humanity until the end of time.

# CONTENTS

<b>I.</b>	<b>Introduction</b> .....	1
<b>II.</b>	<b>Astronomy</b> .....	3
	1. Creation of the Universe .....	4
	2. Elliptical Shape of the Earth .....	9
	3. Phases of the Moon and the Sun's Path .....	11
	4. The Expanding Universe .....	14
	5. The Moon's Reflected Light .....	16
<b>III.</b>	<b>Oceanography</b> .....	18
	6. Darkness in Deep Seas .....	19
	7. Barrier Between Two Seas .....	22
<b>IV.</b>	<b>Meteorology</b> .....	25
	8. The Water Cycle & the Formation of Rain .....	26
<b>V.</b>	<b>Geology</b> .....	29
	9. Mountains and the Stability of the Earth's Crust..	30
	10. The Earth's Protective Shield .....	33
	11. The Origin of Iron .....	36
<b>VI.</b>	<b>Zoology</b> .....	38
	12. The Bee .....	39

13. Animal Communities .....	42
14. The Production of Milk .....	45
15. Communication of Ants .....	47
<b>VII. Medicine/Pharmacology .....</b>	<b>49</b>
16. Healing Properties of Honey .....	50
<b>VIII. Physiology .....</b>	<b>53</b>
17. Heart's Intrinsic Brain .....	54
18. Pain Receptors in the Skin .....	57
19. Individual Fingerprints .....	59
<b>IX. Physics .....</b>	<b>62</b>
20. Subatomic Particles .....	63
<b>X. Embryology .....</b>	<b>66</b>
21. Embryology .....	67
<b>XI. Conclusion .....</b>	<b>72</b>
<b>XII. References .....</b>	<b>75</b>

## Introduction

In a world where science and faith are often perceived as two incompatible entities, this book seeks to explore the harmonious relationship between the Qur'an and modern scientific discoveries. The Qur'an, revealed over 1,400 years ago, is not a book of science, yet it contains profound insights into numerous natural phenomena that have only recently been understood by contemporary science. Through careful analysis of key Qur'anic verses alongside scientific discoveries, this book illustrates how the revelations in the Qur'an remain relevant and resonate with modern knowledge.

A key insight from Hafidh Saif Al-Rawahy's *Discovery Journey to Faith: Islamic Insights on Atheism, Agnosticism, and Truth-Seeking* highlights an essential distinction: scientific explanations are based on models that do not claim to represent "absolute truth." These models, rooted in empirical data and scholarly interpretations, evolve as new observations emerge. Al-Rawahy asserts, "Truth is not set in stone," emphasizing that scientific truths are always subject to change as they are derived from limited empirical evidence. Science, by its nature, is a continuous journey of discovery rather than a final destination of absolute certainty.

This concept is pivotal in understanding the relationship between science and religion, particularly within the framework of Islam. While scientific theories may shift over time, the Qur'an remains a constant source of truth. What science uncovers today may align with Qur'anic revelations, but when scientific models evolve or change, it is not the Qur'an that is called into question, but rather the limitations of our current understanding. As Al-Rawahy points out, "science can only provide a partial understanding of reality," and rather than refuting the Creator, a deeper objective study of the natural world through science can lead to the acknowledgment of a Necessary Being and therefore his revelation.

This book presents the scientific signs embedded in the Qur'an and as an invitation to reflect on the profound alignment between revelation and discovery. It underscores the beauty of both science and faith—each contributing to our quest for understanding, one through empirical investigation and the other through divine revelation. While science offers a framework for explaining the natural world, it is the Qur'an that provides the eternal truth, guiding humanity with insights that transcend time.



By bridging the gap between ancient scripture and modern inquiry, this book demonstrates how the timeless wisdom of the Qur'an continues to reveal the Creator's signs in a world where scientific knowledge is ever-evolving. In doing so, it invites readers to explore how faith and reason coexist, each contributing to a greater understanding of existence.



*The **astrolabe** is described by Dr. Herold Williams, an American Astrophysicist, as “the most important astronomical calculating device before the invention of digital computers .....”. It is known that the instrument was in use in one form or another as early as the 4th century C.E., but the instrument was fully developed and its uses expanded by Muslim astronomers in the 8th century because they needed to determine prayer times and the direction of Makkah.*

# *Astronomy*



# Creation of the Universe

Before modern scientific understanding, the origins of the universe were explained through various philosophical and religious perspectives. Many ancient cultures believed in a static universe that had always existed, while others proposed creation stories involving gods or supernatural forces. The concept of a singular event that initiated the universe was largely absent until the development of modern cosmology.

## Development of the Big Bang Theory

### 1. Early 20th Century Foundations:

In the early 20th century, scientists began to challenge the notion of a static universe. Albert Einstein's theory of relativity (1915) introduced the idea that the universe is dynamic. The mathematical implications of his equations suggested that the universe could either be expanding or contracting.

### 2. Hubble's Discovery (1929):

In 1929, astronomer Edwin Hubble provided observational evidence for an expanding universe. He discovered that distant galaxies are moving away from us, and the farther they are, the faster they recede. This observation supported the idea that the universe is not static but is, in fact, expanding.

### 3. Georges Lemaître (1927):

Belgian priest and physicist Georges Lemaître independently proposed a theory that the universe began from a "primeval atom" or a "cosmic egg" that exploded, resulting in the expansion of the universe. His ideas laid the groundwork for what would later be known as the Big Bang theory.

### 4. Cosmic Microwave Background Radiation (1965):

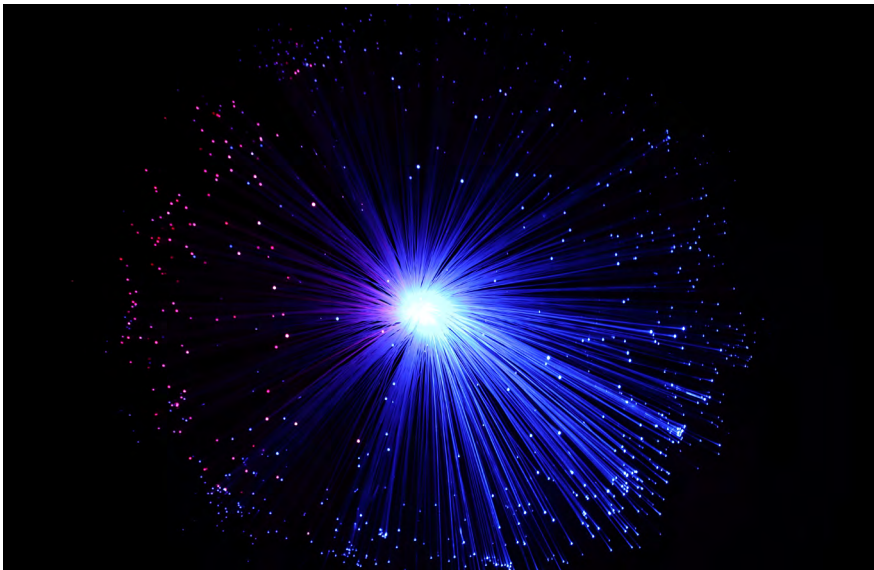
A significant piece of evidence for the Big Bang theory came with the discovery of cosmic microwave background radiation (CMB) by Arno Penzias and Robert Wilson. The CMB is a faint glow left over from the hot, dense state of the early universe and serves as a critical piece of evidence supporting the Big Bang theory.

## 5. Advancements in Cosmology:

Over the decades, further observations and technological advancements have refined our understanding of the Big Bang, including the detection of gravitational waves and insights from satellite missions like the Wilkinson Microwave Anisotropy Probe (WMAP) and the Planck spacecraft, which have provided precise measurements of the universe's age, composition, and expansion rate.

### Scientific Facts Relating to the Big Bang Theory

- ❁ **Initial Singularity:** The Big Bang theory posits that the universe began approximately 13.8 billion years ago from an extremely hot and dense singularity.
- ❁ **Expansion of Space:** Following the initial explosion, space itself began to expand, causing matter and energy to spread out and cool, leading to the formation of fundamental particles and eventually atoms.
- ❁ **Formation of Cosmic Structures:** Over billions of years, these atoms coalesced under the force of gravity to form stars, galaxies, and larger cosmic structures we observe today.



## Quranic Perspective on the Creation of the Universe

The stages of creation and the origins of the universe are referenced in several verses in the Quran. Notably, **Chapter 21, Verse 30**, **Chapter 51 verse 47** and **(Chapter 41, Verses 9-12)** describe aspects of cosmic creation that resonate with the Big Bang theory.

### 1. Chapter 21: verse 30 (Surah Al-Anbiya):

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَاوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا

*Do not the Unbelievers see that the heavens and the earth were joined together (as one unit of creation), before we clove them asunder?*

This verse suggests that Allah's creation of the Universe began as a single unit of creation which then exploded and expanded, aligning with the Big Bang theory's description of the origin of the universe ( the initial singularity).

### 2. Chapter 51, Verse 47 (Surah Adh-Dhariyat):

وَالسَّمَاءَ بَنَيْنَاهَا بِأَيْدٍ وَإِنَّا لَمُوسِعُونَ

*And it is We who have built the universe with [Our creative] power; and, verily, it is We who are steadily expanding it.*

This verse explicitly refers to the expansion of the universe, aligning with Hubble's discovery that space itself is expanding—a central tenet of the Big Bang theory.

### 3. Chapter 41: verses 9-12 ( Surah Fussilat)

قُلْ أَنْتُمْ لَكُمْ أَنْدَادًا ۚ ذَٰلِكَ رَبُّ الْعَالَمِينَ (٩) وَجَعَلَ فِيهَا رَوَاسِيَ مِنْ فَوْقِهَا وَبَارَكَ فِيهَا وَقَدَّرَ فِيهَا أَقْوَاتَهَا فِي أَرْبَعَةِ أَيَّامٍ سَوَاءً لِّلسَّائِلِينَ (١٠) ثُمَّ اسْتَوَىٰ إِلَى السَّمَاءِ وَهِيَ دُخَانٌ فَقَالَ لَهَا وَلِلْأَرْضِ ائْتِيَا طَوْعًا أَوْ كَرْهًا قَالَتَا أَتَيْنَا طَائِعِينَ (١١) فَفَضَّاهُنَّ سَبْعَ سَمَاوَاتٍ فِي يَوْمَيْنِ وَأَوْحَىٰ فِي كُلِّ سَمَاءٍ أَمْرَهَا ۗ وَزَيَّنَّا السَّمَاءَ الدُّنْيَا بِمَصَابِيحَ وَحِفْظًا ۗ ذَٰلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ (١٢)

*Say, 'Is it that you disbelieve in Him who created the earth in two days and set upon it firm mountains and blessed it, and measured therein its sustenance in four days, equally for those who ask? Then He turned to the heaven while it was smoke and said to it and to the earth, 'Come into being, willingly or by compulsion.' They said, 'We have come willingly. And He completed them as seven heavens within two days and inspired in each heaven its command. And We adorned the nearest heaven with lamps and as protection. That is the determination of the Exalted in Might, the Knowing.'*

This passage discusses the creation of the heavens and the earth, indicating a process that parallels scientific understandings of cosmic formation.

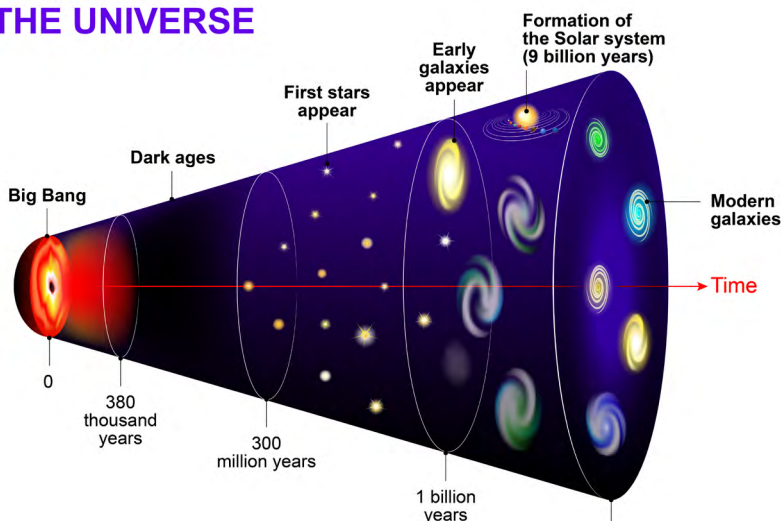
#### Conformity with Modern Science

1. **Initial Singularity:** The Quranic description of a closed mass of heaven and earth aligns with the concept of an initial singularity in the Big Bang theory. The initial singularity is a concept in the Big Bang theory that refers to a point in time when the universe was thought to have been infinitely dense and hot, containing all the mass and energy of the current

universe within an infinitesimal volume. This singularity is considered the starting point of the universe, marking the moment before the Big Bang itself.

2. **Expansion of the Universe:** The verses describing the opening of the heavens and the earth resonate with the idea of an expanding universe.
3. **Creation Process:** The Quran presents a structured approach to creation, emphasizing the stages that reflect the gradual formation of cosmic structures observed in modern cosmology.

## EVOLUTION OF THE UNIVERSE



### Scientific Fact and Quranic Description

The descriptions in the Quran concerning the creation of the universe parallel the Big Bang theory in many aspects. The chronological order of creation and the transformation from a singularity to an expanding universe reflect a remarkable correspondence between ancient scripture and modern scientific understanding.

The Quran's references to the stages of creation offer an extraordinary level of detail and accuracy that harmonizes with the scientific discoveries surrounding the origins of the universe. While ancient civilizations had limited knowledge of cosmology, these verses present insights that align with contemporary scientific findings regarding the formation and evolution of the universe.

# Elliptical Shape of the Earth

## Scientific Discovery

In the 16th and 17th centuries, scientific advancements confirmed that the Earth is not a perfect sphere but an oblate spheroid, meaning it is slightly flattened at the poles and bulging at the equator. This elliptical shape was mathematically described by Isaac Newton's work on gravity, explaining how the Earth's rotation affects its shape. The Earth's equatorial diameter is approximately 43 km larger than its polar diameter.<sup>1</sup>

## Scientific Facts Relating to Earth's Shape

**Oblate Spheroid:** The Earth is not a perfect sphere; it is slightly flattened at the poles and bulges at the equator due to its rotation. The term "oblate spheroid" accurately describes this shape.

## Quranic perspective on the Shape of the Earth

In the Qur'an chapter 79, verse 30 (Surah An-Nazi'at) it is stated:

وَالْأَرْضَ بَعْدَ ذَلِكَ دَحَاهَا

*And after that, He made the (planet) Earth egg-shaped.*

## Explanation of the Verse

The key word in the verse is "dahāhā" ( دَحَاهَا ), which many scholars interpret as meaning "spread out" or "expanded." However, when explored further, the word also relates to an "egg-shaped" object, particularly the shape of an ostrich egg, which bears a resemblance to the Earth's oblate spheroid form. The comparison to an egg is significant because it points to

---

1. **Scientists in the Field include Isaac Newton (1642–1727):** His law of universal gravitation helped explain the Earth's elliptical shape, which results from the centrifugal force due to Earth's rotation and **Jean Richer (1630–1696):** A French astronomer whose observations confirmed the Earth's equatorial bulge, further supporting the idea of an elliptical Earth.



the Earth's elliptical shape, with a slight flattening at the poles and bulging at the equator—an understanding consistent with modern scientific findings.

## Relation to the Scientific Fact

- 1. Elliptical Shape of the Earth:** The Quranic term “dahāhā” in chapter 79 (Surah An-Nazi'at) suggests the Earth's shape is not a perfect sphere but rather more elliptical, a revelation that corresponds with modern scientific understanding. The verse's use of imagery related to an egg adds precision to the description of Earth's oblate spheroid form.
- 2. Oblate Spheroid and Earth's Rotation:** While scientific discovery confirmed the Earth's shape centuries after the Quranic revelation, the verse alludes to this shape in a subtle yet accurate manner. This alignment between the Quran and scientific fact is remarkable, considering the information was unknown in the 7th century.

The Quran's subtle reference to the Earth's shape in in chapter 79 (Surah An-Nazi'at) aligns with modern scientific discoveries, which confirm that the Earth is not a perfect sphere but an oblate spheroid. The description of Earth's shape as resembling that of an egg predates scientific understanding by over 1,000 years, showcasing a fascinating connection between Quranic revelations and modern science. This verse is another instance where the Quran touches upon complex physical truths long before they were scientifically proven.



*The Earth's equatorial diameter is approximately 43 kilometers longer than the polar diameter.*

# Phases of the Moon and the Sun's Path

## Scientific Discovery

The **phases of the moon** result from its orbit around the Earth, reflecting sunlight at different angles as seen from Earth. The moon goes through several stages, from new moon to full moon and back, over a 29.5-day lunar cycle. The apparent path of the sun, due to the Earth's rotation and orbit, also follows predictable patterns, which have been studied since ancient times by astronomers like Hipparchus and Ptolemy. Recent observations of the moon's path have shown that its orbit resembles the curved shape of an old **date stalk**, particularly when viewed in its crescent phases.

## Scientific Facts Related to the Moon's Phases and the Sun's Path

1. **Lunar Phases:** As the moon orbits the Earth, different portions of it become illuminated by the sun, creating phases such as the crescent, half-moon, and full moon. These phases have been scientifically understood for centuries but are described in surprisingly vivid detail in the Quran.
2. **The Moon's Orbit:** Recent scientific imagery of the moon's path shows that its elliptical orbit resembles the curved shape of an old date stalk, an analogy made in the Quran long before modern science could confirm it.

## Quranic Verse Describing the Moon's Phases and the Sun's Path

In the Qur'an chapter 36, verse 39-40 (Surah Ya Sin) it is stated:

وَالْقَمَرَ قَدَرْنَا مَنَازِلَ حَتَّىٰ عَادَ كَالْعُرْجُونِ الْقَدِيمِ  
(٣٩) لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَلَا  
اللَّيْلُ سَابِقُ النَّهَارِ ۚ وَكُلٌّ فِي فَلَكٍ يَسْبَحُونَ (٤٠)

*And the moon, We have measured for it phases, until it returns [appearing] like the old date stalk. It is not allowable for the sun to reach the moon, nor does the night overtake the day, but each, in an orbit, is swimming.*

## Explanation of the Verse

This verse from the Quran illustrates the **phases of the moon** and its movement through various “stations” or stages. The verse draws an analogy between the moon’s shape in its waning phase and an **old date stalk**, which is a highly accurate description of the crescent shape. Furthermore, it states that **the sun and moon follow distinct orbits** and do not interfere with each other’s paths. This describes the independent nature of the celestial bodies, which swim in their respective orbits.



*The picture of the elliptical orbit of the moon (above), made possible only by modern photographic equipment, bears striking resemblance to an old date stalk referred in the Qur'an.*



## Relation to the Scientific Fact

- 1. Lunar Phases:** The Quran's analogy of the moon's phases being like an old date stalk precisely mirrors the crescent shape that the moon takes during certain phases of its orbit. Modern astronomy has confirmed that the moon goes through distinct phases as it orbits the Earth, which this verse describes vividly.
- 2. Distinct Celestial Paths:** The reference to the sun and moon following their own orbits aligns with modern astronomy. The Quran's clear indication that the sun and moon do not overlap in their paths ("It is not allowable for the sun to reach the moon") is an accurate description of the separate and distinct orbits of these celestial bodies.
- 3. Remarkable Alignment:** The fact that this description was presented over 1,400 years ago in the Quran, long before modern scientific equipment and knowledge, underscores its alignment with scientific facts, particularly the description of the **moon's phases and orbit**.

The Quran's description of the **phases of the moon** and the **distinct paths of the sun and moon** in chapter 36 (Surah Ya-Sin) is a profound example of its alignment with modern scientific discoveries. The reference to the moon's crescent phase resembling an old **date stalk** matches what we now understand about its elliptical orbit, while the distinct orbits of the sun and moon further illustrate the Quran's accurate reflection of celestial phenomena.



# The Expanding Universe

## Scientific Discovery

In 1929, the astronomer **Edwin Hubble** made a groundbreaking discovery that distant galaxies are moving away from us, indicating that the universe is expanding. This led to the formulation of **Hubble's Law**, which confirmed that the universe is not static but continually growing larger. This finding was foundational to the development of modern cosmology and the Big Bang theory.

## Quranic Perspective on the Expanding Universe

Surah Adh-Dhariyat (51:47): In the Qur'an chapter 51, verse 47 (Surah Adh-Dhariyat) it is stated:

وَالسَّمَاءَ بَنَيْنَاهَا بِأَيْدٍ وَإِنَّا لَمُوسِعُونَ

*And the firmament, We constructed with power and skill, and verily We are expanding it."*

## Explanation of the Verse

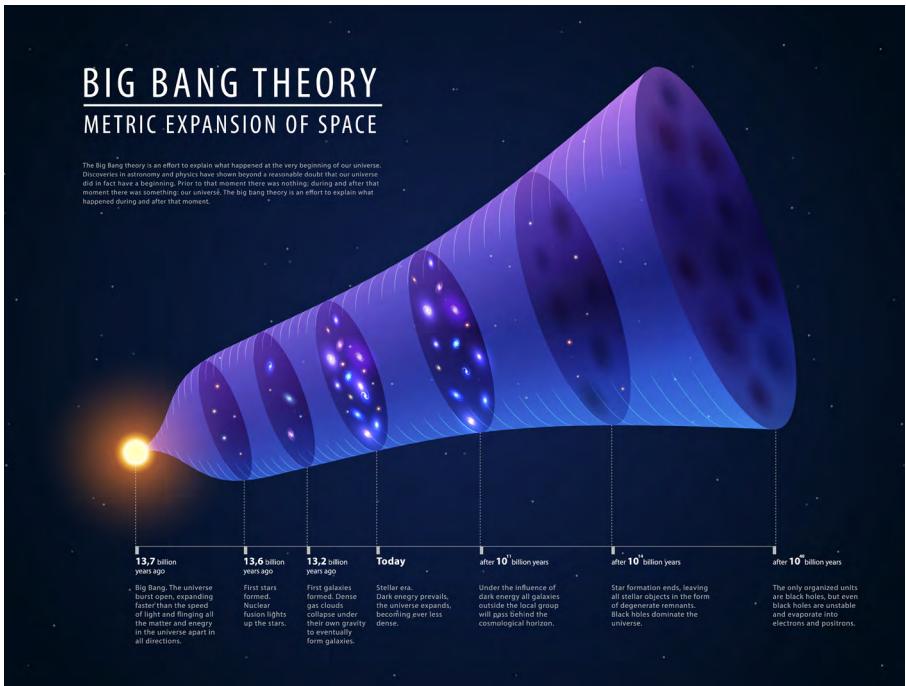
This verse from the Quran speaks about the **creation of the heavens** (firmament) with divine power and mentions that the Creator is "expanding it." This description indicates that the **heavens** - interpreted by Islamic scholars as the universe - are continuously expanding, aligning remarkably with modern scientific understanding.

## Relation to the Scientific Fact

- 1. Expansion of the Universe:** The Quranic verse refers to the expansion of the heavens, which aligns with modern discoveries about the expanding universe. While this concept was scientifically confirmed in the 20th century by Edwin Hubble, the verse in the Quran had hinted at this cosmic expansion over 1,400 years ago.

2. **Alignment with Modern Astronomy:** The Quran’s description mirrors what has been confirmed by astronomers—that the universe has been expanding since the Big Bang, with galaxies moving further apart. This expansion was unknown in the early 7th century, making the Quran’s reference to this phenomenon particularly noteworthy in the context of its time.
3. **Power and Precision:** The Quran emphasizes that this expansion is carried out with **power and precision**, which reflects the intricate and vast nature of the universe’s expansion as understood in modern cosmology. This further solidifies the verse’s relevance to the findings of modern science regarding the scale and complexity of the universe.

The Quran’s mention of the **expanding universe** in **chapter 51 (Surah Adh-Dhariyat)** aligns with the scientific discovery made by Edwin Hubble in 1929. This verse, revealed over a millennium before the development of modern cosmology, accurately reflects the phenomenon of **cosmic expansion**, providing a striking example of the Quran’s consistency with scientific knowledge.



# The Moon's Reflected Light

## Scientific Discovery

The moon does not emit its own light but instead **reflects light from the sun**. This was scientifically confirmed through astronomical observations. In modern times, we understand that the moon's visibility is due to the **reflection of sunlight**, which gives it the appearance of glowing, even though it produces no light of its own.

## Quranic Verse Describing the Moon's Reflected Light

In the Qur'an chapter 71, verses 15-16 (Surah Nuh) it is stated:

أَلَمْ تَرَوْا كَيْفَ خَلَقَ اللَّهُ سَبْعَ سَمَاوَاتٍ طِبَاقًا (١٥)  
وَجَعَلَ الْقَمَرَ فِيهِنَّ نُورًا وَجَعَلَ الشَّمْسَ سِرَاجًا (١٦)

*Do you not see how Allah has created the seven heavens one above another, and made the moon a light (Nūr) in their midst, and made the sun a lamp (Sirāj)?*

## Explanation of the Verse

This verse distinguishes between the **moon's light (Nūr)** and the **sun's light (Sirāj)**. The word **Nūr** in Arabic refers to a **reflected or borrowed light**, while **Sirāj** implies a **source of light or a lamp**. The distinction suggests that the moon shines with a **reflected light**, while the sun is the actual source of light.

## Relation to the Scientific Fact

1. **Reflected Light of the Moon:** The Quran's description of the moon as "Nūr," meaning reflected light, aligns with modern astronomical discoveries that the moon does not produce light of its own, but instead **reflects the light of the sun**. This distinction, presented in the Quran, accurately describes the **nature of the moon's luminosity**.

2. **Contrast with the Sun's Light:** By referring to the sun as a **lamp (Sirāj)**, the Quran differentiates the sun's role as a source of light, a fact now confirmed through our understanding of the sun's nuclear fusion processes, which generate light and heat. This scientific fact, while commonly known today, was not established until modern times, making the Quran's clarity on this matter remarkable for the time it was revealed.
3. **Historical Context:** At the time the Quran was revealed (over 1,400 years ago), it was generally believed that the moon emitted its own light. The Quran's use of language that correctly identifies the **moon's light as reflected light** is noteworthy, especially when compared with the prevailing beliefs of that era.

The Quran's mention of the moon as a light that **reflects** the sun's brightness is scientifically consistent with modern astronomy's understanding of the moon's illumination. The distinction between the **moon's reflected light** and the **sun's direct light** in chapter 71 (Surah Nuh) aligns with discoveries about the nature of celestial bodies made centuries after the Quran's revelation.



*The moon close to the planet Earth with the Sun on the background*



# *Oceanography*



## Darkness in Deep Seas

Pre-modern scientific advancements, people had little knowledge of the conditions in the depths of the oceans. The understanding of the sea was limited to its surface or shallow depths, where sailors and fishermen observed waves, storms, and currents. The deep sea, however, remained a mystery due to its inaccessibility.

It wasn't until modern oceanographic explorations began that scientists discovered the profound darkness that exists in the depths of the oceans. With advancements in underwater exploration technologies, scientists could study these extreme environments, revealing that beyond a certain depth—about 200 meters—sunlight can no longer penetrate the water, creating absolute darkness. Below this level, light is almost non-existent, and deep-sea creatures rely on bioluminescence to navigate and survive.

Oceanographers identified the layers of darkness in the deep sea as follows:

- ☼ **Euphotic Zone (0-200 meters):** This is the surface layer where sunlight can still penetrate, allowing photosynthesis.
- ☼ **Disphotic Zone (200-1,000 meters):** Light becomes minimal, and photosynthesis is no longer possible.
- ☼ **Aphotic Zone (1,000 meters and deeper):** The deep sea is completely dark, with no sunlight penetrating these depths. It is in this zone that absolute darkness prevails, coupled with extreme pressure and cold.

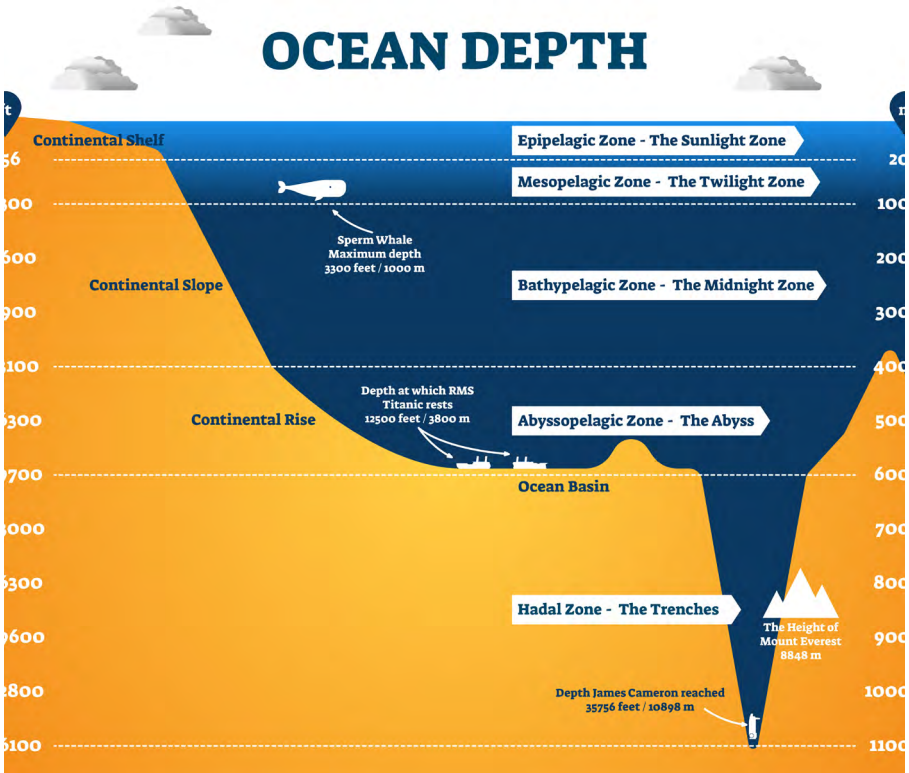
**Scientific Discoveries in Deep-Sea Darkness:** Researchers have confirmed that the ocean depths are not only dark but also structured in layers of increasing darkness, depending on the amount of sunlight that can penetrate. Additionally, the presence of multiple layers of waves, known as internal waves, further contributes to the complex movement of water in the deep ocean. These waves move beneath the surface, undetectable from above, and can span hundreds of meters high, further contributing to the darkness.

**Quranic Perspective:** The Quran, in Chapter 24, Verse 40 ( Surah An-Nur), vividly describes the intense darkness of the deep seas:

أَوْ كَظُلُمَاتٍ فِي بَحْرٍ لَّجِيٍّ يَغْشَاهُ مَوْجٌ مِّنْ فَوْقِهِ مَوْجٌ  
مِّنْ فَوْقِهِ سَحَابٌ ۗ ظُلُمَاتٌ بَعْضُهَا فَوْقَ بَعْضٍ

*Or (the state of unbelievers) is like the darkness in a deep sea. It is covered by waves, upon which are waves, above which are clouds, layers of darkness, one above another.*

This verse remarkably describes the layered nature of darkness in the deep ocean. It refers to the depth of the sea, the waves that cover the sea, and the clouds above—all contributing to the multilayered darkness.



## Relation to the Scientific Fact:

- ❁ **Deep Sea (Bahr Lujji):** The Quran refers to the “deep sea” (Bahr Lujji), signifying the vast and inaccessible depths of the ocean, which modern oceanography has shown to be devoid of sunlight.
- ❁ **Layers of Waves:** The verse refers to waves above waves, which modern scientists have identified as both surface waves and internal waves in the ocean. These internal waves occur in the deep sea and contribute to the layered structure of the ocean’s darkness.
- ❁ **Darkness upon Darkness:** The Quran’s description of “darkness upon darkness” is scientifically accurate. Beyond the reach of sunlight, the ocean becomes progressively darker, with the deepest layers being completely devoid of light.

**Conformity with Modern Science:** The Quran’s description of the layers of darkness in the deep sea aligns closely with modern oceanographic discoveries. The concept of internal waves and the complete absence of light at great depths were unknown during the time of revelation but are now well-understood phenomena. This demonstrates the Quran’s profound foresight in describing natural phenomena that were only fully explained by modern science centuries later.

The correspondence between the Quranic description of deep-sea darkness and modern oceanography reveals a remarkable alignment. The detailed reference to “darkness upon darkness” in the Quran not only highlights the limitations of human understanding at the time of revelation but also serves as a testament to the timeless wisdom embedded in these verses. Modern science continues to uncover and validate the profound knowledge described in the Quran over 1,400 years ago.



## Barrier between two seas

Before the advancements of oceanography, the idea that two bodies of water could meet but remain distinct was not well understood. Mankind observed natural water boundaries, such as rivers flowing into the sea, but the scientific mechanisms behind why some waters do not mix remained unexplained.

In the 20th century, oceanographers discovered that when two seas or bodies of water meet, they often remain separate due to differences in salinity, temperature, and density. This phenomenon is referred to as a “halocline,” a term used to describe a distinct boundary layer between bodies of water with different properties. These boundaries prevent the waters from mixing freely, creating what scientists call “barriers” or “interfaces” between the two seas.

### Scientific Discoveries in Oceanography:

- ❁ **Haloclines:** A halocline is a layer in the ocean where there is a rapid change in salinity compared to the surrounding water. This difference in salinity creates a barrier that prevents waters from mixing.
- ❁ **Thermoclines:** Similar to haloclines, thermoclines are layers where there is a sudden change in water temperature. Differences in temperature also create distinct layers in the ocean.
- ❁ **Density Differences:** The variation in density between two bodies of water—often caused by differences in salt concentration—also creates a physical barrier, preventing them from freely mixing.

These discoveries have shown that, even when two seas meet, such as the Mediterranean Sea and the Atlantic Ocean, they maintain their own distinct characteristics without completely merging. The density and salinity differences create a natural partition that holds the waters apart, even though they are physically adjacent.

## Quranic Perspective in Oceans and the Separation of the Seas:

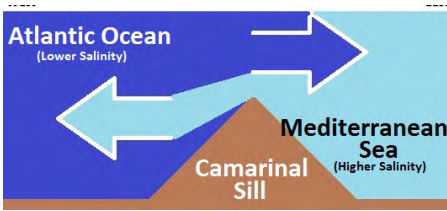
In Chapter 55, Verses 19-20 (Surah Ar-Rahman) , the Quran describes the phenomenon of two bodies of water meeting but not mixing:

مَرَجَ الْبَحْرَيْنِ يَلْتَقِيَانِ ﴿٥٥﴾ بَيْنَهُمَا بَرْزَخٌ لَّا يَبْغِيَانِ

*He has let free the two bodies of flowing water, meeting together:  
Between them is a barrier which they do not transgress*

These verses describe the meeting of two bodies of water and indicate that, despite their proximity, they do not overtake or merge with each other because of a barrier (barzakh) that prevents them from mixing.

*There is a dynamic boundary that restricts mixing of the waters at the strait of Gibraltar. The Mediterranean waters are saltier than the Atlantic waters that they*



*sink below the incoming water and form a highly saline layer of bottom water. This layer of bottom-water works its way out into the Atlantic as the Mediterranean outflow. On the Atlantic side, a density boundary separates the Mediterranean outflow waters from the rest at about 100*

*m depth. These waters flow out and down the continental slope, losing salinity, until they begin to mix and equilibrate more much farther out at a depth of about 1,000 m*



*This is where the Baltic Sea meets the North Sea, coming from the opposite direction. The two seas, of different density, meet but do not mix.*

## Relation to the Scientific Fact:

- ❁ **Meeting of Two Bodies of Water:** The verse mentions that the seas meet but do not transgress the barrier between them, which correlates with modern oceanography's discovery that bodies of water remain distinct due to haloclines, thermoclines, and density differences.
- ❁ **Barrier (Barzakh):** The Quran's use of the word "barzakh" (barrier) aligns perfectly with the scientific understanding of how these invisible yet powerful boundaries exist in the ocean. While the water bodies are next to each other, their different properties (salinity, temperature, and density) prevent them from fully mixing.

Oceanographers have found such phenomena where seas meet, including notable examples such as the Mediterranean Sea and the Atlantic Ocean, where the Mediterranean's higher salinity and temperature prevent it from mixing freely with the colder, less saline Atlantic waters. This confirms the Quran's description of the two bodies of water being separated by a barrier.

## Conformity with Modern Science:

The Quran's description of two bodies of water meeting but not mixing aligns with the discoveries of modern oceanography. The haloclines and other physical barriers described by scientists today provide an exact match for the Quran's mention of a "barrier" that prevents the seas from transgressing into one another. Despite being revealed over 1,400 years ago, these verses encapsulate a concept that was only fully understood in the 20th century, demonstrating the depth of the Quran's insights into the natural world.

The conformity between the Quranic description of oceans and seas not mixing and modern scientific discoveries highlights a profound harmony between revelation and contemporary knowledge. The verses in chapter 30 of the Qur'an accurately describe the natural barriers that prevent seas from blending, reflecting an understanding of complex oceanic processes long before they were discovered by modern science. This remarkable alignment continues to inspire awe, showing how ancient scripture can be in agreement with scientific discovery, further emphasizing the timeless wisdom found in the Quran.

# *Meteorology*





# The Water Cycle & the Formation of Rain

Prior to modern scientific advancements, rain was often viewed as a mysterious or divine process, with ancient cultures attributing it to supernatural forces. Various civilizations had their own myths and theories about how rain was formed, with little scientific understanding of the underlying mechanisms.

It wasn't until the 19th century, with the advent of modern meteorology, that the complete water cycle was scientifically explained. Meteorologists discovered how water evaporates from the Earth's surface, forms clouds through condensation, and then returns to the Earth as precipitation in the form of rain, snow, or hail. This continuous cycle—known as the hydrological cycle—ensures that water circulates between the oceans, atmosphere, and land, sustaining life on Earth.

## Scientific Discoveries in Rain Formation:

- ☼ **Evaporation:** Water from oceans, rivers, and lakes heats up due to the sun's energy and evaporates into the atmosphere as water vapor.
- ☼ **Cloud Formation:** As the water vapor rises, it cools and condenses into tiny droplets, forming clouds. These droplets gather around dust particles or other small airborne particles, becoming visible as clouds.
- ☼ **Precipitation:** When these droplets grow large enough, gravity pulls them down as rain or other forms of precipitation.
- ☼ **Role of Winds:** Winds play a crucial role in transporting water vapor and clouds across different regions, facilitating rain in distant places.

Meteorologists confirmed that rain is a key part of the water cycle, a self-regulating process that ensures water distribution across the planet.



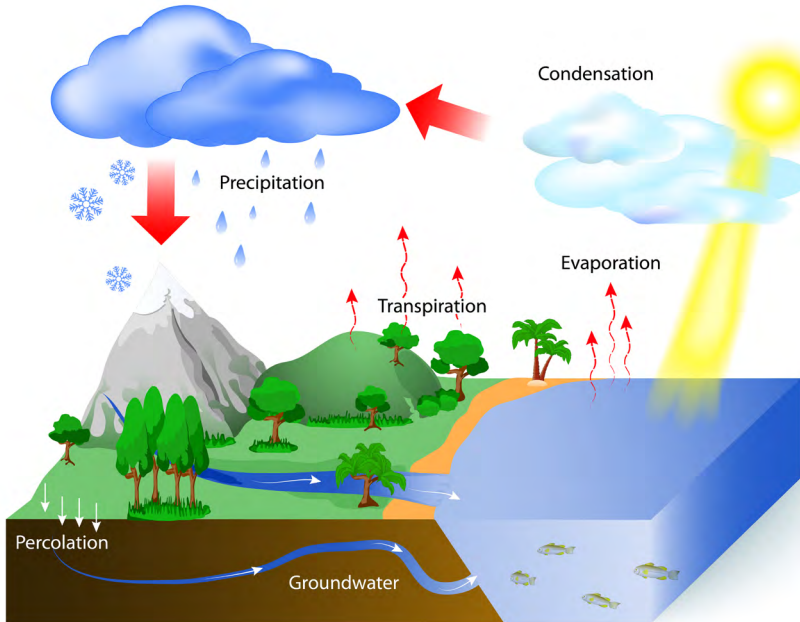
## Quranic Perspective in Rain Formation:

In Chapter 30, Verse 48 (Surah Ar-Rum), the Quran describes the process of rain formation:

اللَّهُ الَّذِي يُرْسِلُ الرِّيَّاحَ فَتُثِيرُ سَحَابًا فَيَبْسُطُهُ فِي  
السَّمَاءِ كَيْفَ يَشَاءُ وَيَجْعَلُهُ كِسْفًا فَتَرَى الْوَدْقَ  
يَخْرُجُ مِنْ خِلَالِهِ طَّيِّفًا إِذَا أَصَابَ بِهِ مَنْ يَشَاءُ مِنْ  
عِبَادِهِ إِذَا هُمْ يَسْتَبْشِرُونَ

*It is Allah Who sends the winds, and they raise the clouds: then does He spread them in the sky as He wills, and break them into fragments, until thou seest rain-drops issue from the midst thereof.*

This verse offers an explanation of the natural process of rainfall, from the role of winds in gathering clouds to the eventual release of rain from these clouds.



## Relation to the Scientific Fact:

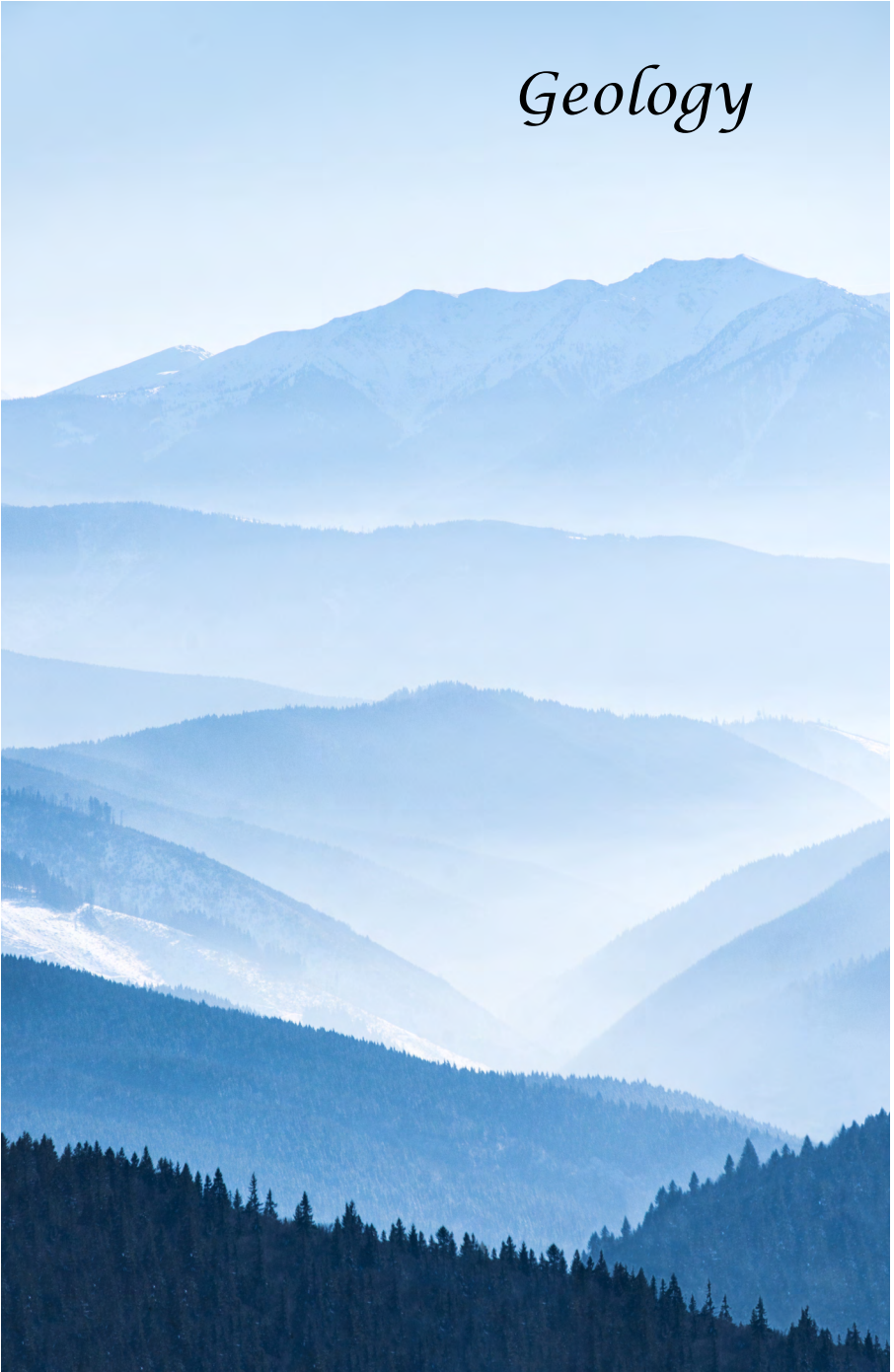
- ❁ **Role of Winds:** The verse mentions how “Allah sends the winds,” which correlates with modern meteorology’s understanding that winds are essential in transporting moisture and driving the movement of clouds across the atmosphere.
- ❁ **Cloud Formation:** The verse continues to describe how winds “raise the clouds,” reflecting the scientific fact that winds help in lifting water vapor, which cools and condenses into clouds. These clouds are then spread across the sky, just as modern science explains the dispersion of clouds by atmospheric currents.
- ❁ **Rain-Drops Issuing from Clouds:** The Quran describes how rain emerges from the clouds, perfectly aligning with the scientific explanation that once cloud droplets grow large enough, they fall as precipitation. The phrase “break them into fragments” may refer to the process by which clouds release rain in varying intensities, as confirmed by modern meteorological studies.

## Conformity with Modern Science:

The Quran’s description of rain formation remarkably mirrors the modern scientific understanding of the water cycle. Despite being revealed over 1,400 years ago, the verse in chapter 30 quoted above captures the essential elements of this process—winds transporting clouds, condensation, and the subsequent precipitation of rain—highlighting an understanding of natural processes that were only fully explained by modern science centuries later.

The correspondence between the Quranic description of rain formation and modern meteorology underscores the deep harmony between the revelation and contemporary scientific discovery. The Quran’s detailed reference to the role of winds, cloud formation, and the release of rain not only matches modern meteorological knowledge but also reflects a profound insight into the natural world.

# *Geology*



# Mountains and the Stability of the Earth's Crust

## Scientific Development in the Subject

Before the advent of modern geology, mountains were often thought of merely as towering structures without a deeper understanding of their formation or their purpose in the stability of the Earth. It wasn't until the development of the field of geology that scientists began to understand that mountains are not just visible formations but also have roots that extend deep into the Earth. These roots, often referred to as the "roots of mountains," act as stabilizers, holding the Earth's crust in place and providing stability to prevent excessive movement or displacement.

The concept of isostasy, developed in the 19th century by George B. Airy and John Henry Pratt, provided a clearer understanding of how mountains function. According to isostasy, mountains are like icebergs: while their peaks are visible above ground, the larger bulk of their mass is below the Earth's surface, acting as a stabilizing force.

This deep-rooted structure of mountains helps to balance the Earth's crust, distributing weight evenly and preventing drastic shifts in the tectonic plates. This concept is also crucial in understanding the role of mountains in maintaining the balance of the Earth's surface, particularly in relation to tectonic activities.<sup>2</sup>

## Scientific Facts Relating to Mountains

❁ **Roots of Mountains:** Geology confirms that mountains have deep roots, which penetrate the Earth's crust and extend into the mantle. These roots act like pegs or stakes, stabilizing the Earth's surface.

❁ **Role of Mountains in Stability:** Mountains help to maintain the balance

---

2. The Scientists in this field include, (1) **George B. Airy (1801–1892):** An English mathematician and astronomer who contributed to the theory of isostasy, explaining how mountains have roots beneath the Earth's surface. (2) **John Henry Pratt (1809–1871):** A British geophysicist who proposed an alternative model to Airy's theory, explaining how mountains achieve equilibrium based on their density.

of the Earth's crust, preventing excessive tectonic movements and serving as stabilizers during earthquakes.

- ✿ **Isostasy:** This theory explains that mountains, like icebergs, have a visible portion above the surface but are anchored by deep roots beneath the Earth.

### **Quranic perspective:**

In the Qur'an chapter 78, verses 6-7 it is stated:

أَلَمْ نَجْعَلِ الْأَرْضَ مِهَادًا (٦) وَالْجِبَالَ أَوْتَادًا (٧)

*Have We not made the earth as a wide expanse, and the mountains as pegs?*

And in chapter 21, verse 31,

وَجَعَلْنَا فِي الْأَرْضِ رَوَاسِيَ أَنْ تَمِيدَ بِهِمْ

*And We have set on the earth mountains standing firm, lest it should shake with them*

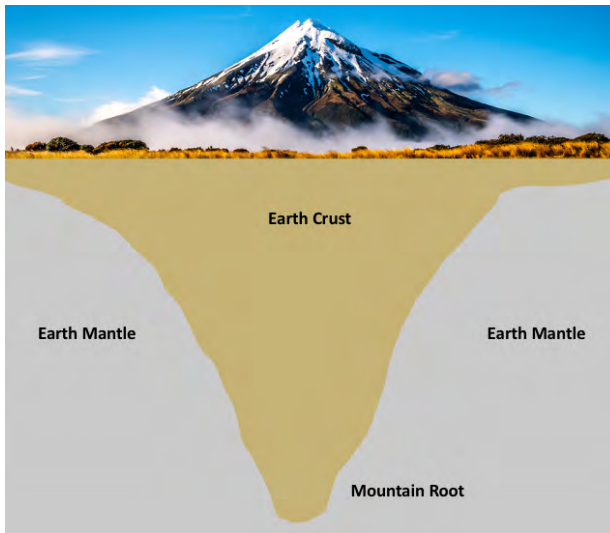
These verses from Surah An-Naba compares mountains to “pegs” or “stakes,” suggesting that mountains play a role in stabilizing the Earth. Just as stakes anchor a tent into the ground, keeping it stable, mountains anchor the Earth's crust, preventing it from shifting excessively. This metaphor aligns remarkably with modern geological discoveries about the function of mountains. The term “awtaad” used in the verse can be translated as “pegs,” which is an accurate description of how mountains function.

This is further highlighted in verse 31 of Surah Al-Anbiya, which states that the mountains stand firm to prevent the earth from shaking. The comparison is not merely symbolic but reflects the actual role mountains play in Earth's geophysical stability.

## Relation to the Scientific Fact

Modern geological findings confirm that mountains act as stabilizing structures, with deep roots extending into the Earth's crust. This supports the metaphor used in the Quran, which likens mountains to pegs. The concept of mountains having deep roots and stabilizing the Earth's crust aligns closely with the description provided in Surah An-Naba.

- 1. Mountains as Pegs:** The Quran's metaphor of mountains as stakes or pegs corresponds to the understanding that mountains extend far beneath the Earth's surface and act as stabilizers.
- 2. Role of Mountains in Stability:** Modern geology confirms that mountains play a crucial role in maintaining the stability of the Earth's crust, preventing drastic shifts in tectonic plates. This function directly corresponds to the meaning of pegs as stabilizers.



The Quran's description of mountains as pegs (awtaad) in chapter 78 (Surah An-Naba) aligns closely with modern geological findings about the role of mountains in stabilizing the Earth. The concept of deep-rooted mountains, acting like stakes that anchor the Earth's crust, reflects a profound understanding of geology that was only discovered centuries after the Quran was revealed. This demonstrates a remarkable harmony between the Holy revelation and contemporary science, showcasing the alignment of revelation and modern scientific discoveries.

# The Earth's Protective Shield

## Scientific Discovery

Modern scientific understanding of the Earth's atmosphere shows that it acts as a protective shield for life on Earth. It blocks harmful ultraviolet (UV) radiation from the sun, filters solar radiation, and prevents most meteoroids from reaching the Earth's surface by burning them up as they enter the atmosphere. These protective roles were only fully understood in the 20th century, with advancements in atmospheric sciences.

## Scientific Facts Related to the Atmosphere's Protective Role

- 1. UV Radiation Protection:** The ozone layer in the Earth's atmosphere absorbs the majority of the sun's harmful ultraviolet rays, which could cause severe harm to living organisms, including skin cancer in humans, if they were allowed to penetrate the surface.
- 2. Meteor Protection:** Meteors, which are small fragments of space debris, burn up upon entering the Earth's atmosphere due to friction, preventing catastrophic impacts.
- 3. Temperature Regulation:** The atmosphere helps regulate the Earth's temperature, making it habitable by trapping heat through the greenhouse effect, protecting life from extreme fluctuations in temperature.

## Quranic Verse Describing the Sky's Protective Role

In the Qur'an chapter 21, verse 32 (Surah Al-Anbiya) it is stated:

وَجَعَلْنَا السَّمَاءَ سَقْفًا مَّحْفُوظًا

*And We made the sky a protected canopy, and yet they turn away from its signs.*



## Explanation of the Verse

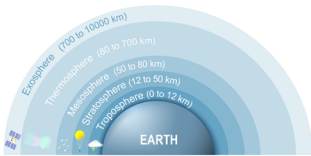
This verse from the Quran describes the sky as a “**protected canopy**”, suggesting that:

(a) it serves as a shield over the Earth. The Quranic phrase “protected canopy” or “safeguarded roof” emphasizes that the sky is not just an empty expanse but plays an active role in protecting life on Earth. The word “protected” points to its function as a defense mechanism against external harm, such as radiation and meteors.

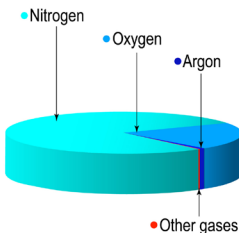
(b) The Earth’s atmosphere with its several distinct layers, each performing a specific function, is ever stable because it is protected from disintegrating due to space gravitational and magnetic forces.

# ATMOSPHERE OF EARTH

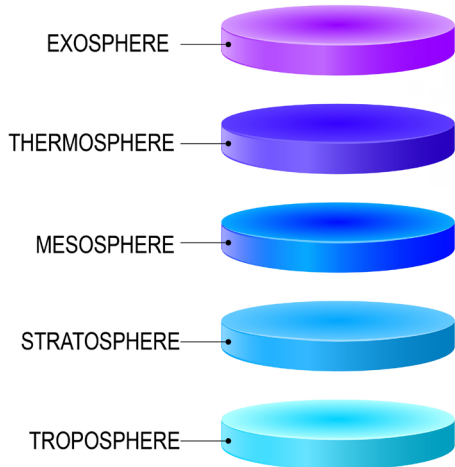
## Structure of the atmosphere



## Composition of the atmosphere



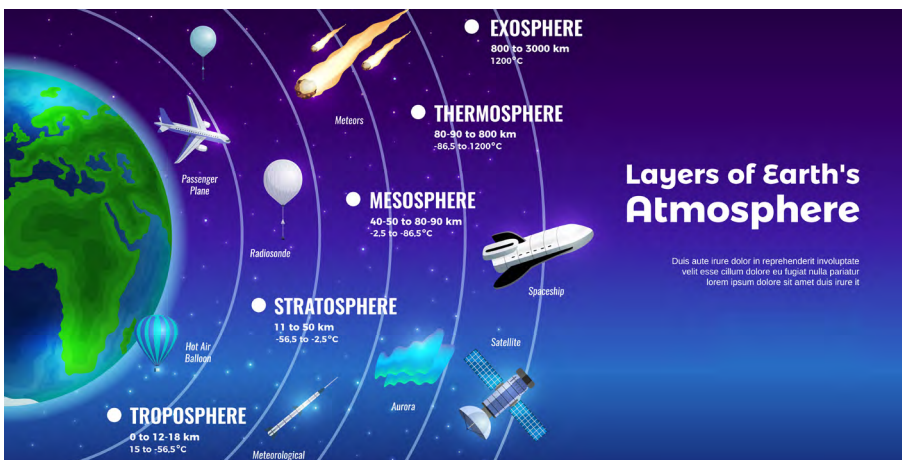
## Layers of the atmosphere



## Relation to the Scientific Fact

- 1. Blocking Harmful Radiation:** The Quran’s reference to the sky as a protective canopy closely mirrors the role of the Earth’s atmosphere, particularly the ozone layer, which blocks dangerous UV radiation from the sun. Without this protection, life as we know it could not survive on Earth.
- 2. Shielding from Space Debris:** The atmosphere’s ability to burn up meteoroids before they strike the Earth aligns with the description of the sky as a “protected canopy.” The idea of the sky acting as a shield is incredibly accurate when compared to what modern science has uncovered about the Earth’s defense against space debris and radiation.
- 3. A Remarkable Alignment:** The fact that this verse was revealed over 1,400 years ago makes the Quran’s description of the sky’s protective functions even more remarkable. It predates the scientific discovery of these atmospheric functions by centuries, highlighting the alignment between the Quranic text and modern scientific understanding.

The Quranic description of the sky as a **protected canopy** in chapter 21 (Surah Al-Anbiya) resonates with modern discoveries about the Earth’s atmosphere. It acts as a shield against harmful solar radiation, space debris, and extreme temperatures, thus playing a crucial role in preserving life on Earth. This alignment between Quranic revelation and scientific facts is yet another example of how the Quran speaks to both spiritual and scientific realities.



# The Origin of Iron

The origin of iron and its significance in various applications has fascinated scientists and theologians alike. The Quran references iron's creation in a way that aligns with contemporary scientific understanding of its cosmic origins.

## Scientific Understanding of Iron's Origin

### 1. Cosmic Formation:

Iron is formed in the cores of massive stars during nuclear fusion. When these stars reach the end of their life cycle, they explode in supernova events, dispersing iron and other elements into space. Renowned astrophysicist **Carl Sagan** highlighted the importance of supernovae in distributing elements throughout the universe.

### 2. Stellar Nucleosynthesis:

Iron is produced through stellar nucleosynthesis, a process that occurs during a star's life and explosive death. Scientists like **J. W. Truran** have contributed to understanding how elements are synthesized in stars.

### 3. Terrestrial Sources:

On Earth, iron is primarily obtained from iron ore. It is a critical component in construction, manufacturing, and various industries, underscoring its importance in human civilization.

## Quranic Perspective on Iron's Origin

### 1. In Chapter 57, Verse 25 (Surah Al-Hadid) it is stated:

وَأَنْزَلْنَا الْحَدِيدَ فِيهِ بَأْسٌ شَدِيدٌ وَمَنَافِعُ لِلنَّاسِ

*And We sent down iron, wherein is strong material, as well as many benefits for mankind.*

## 2. Significance of Iron:

The Quran indicates that iron has strong material properties and many benefits for humanity, alluding to its versatility and importance in various applications, including construction and tools.

### Conformity with Modern Science

#### 1. Creation in Stars:

The Quran's mention of iron being 'sent down' is a clear reference to its cosmic origin from supernovae. This aligns with the scientific understanding that elements heavier than carbon, including iron, are produced in the extreme conditions of stellar explosions.

#### 2. Utility for Humanity:

The description of iron as having "strong material" properties aligns with modern applications in construction, infrastructure, and technology, reinforcing its essential role in human progress.

### Scientific Fact and Quranic Description

The alignment between the Quranic reference to iron and modern scientific understanding of its origins and utility highlights a remarkable correspondence between the Quran and contemporary knowledge. The recognition of iron's significance in both contexts reflects an understanding of its role in the natural world and human society, emphasizing the profound wisdom inherent in the Quran's teachings.





Zoology

*Wildebeests crossing Mara river. The Great Migration in Kenya & Tanzania*

# The Bee in the Quran

## Scientific Development in the Subject

Before modern research into animal behavior, the intricacies of how bees communicated, navigated, and constructed their hives remained largely unknown. It was only with the development of ethology (the study of animal behavior) and the work of renowned scientists that these mysteries began to be understood.

One of the most significant discoveries in bee behavior came in 1945, when **Karl von Frisch**, an Austrian ethologist, discovered the “waggle dance” of bees. This form of communication allows bees to convey critical information about the location, distance, and direction of food sources to other members of the hive. Von Frisch’s discovery revealed that bees have an advanced social structure and an innate ability to navigate and communicate.

Further studies in entomology also revealed that in a bee colony, the worker bees responsible for collecting nectar and building the hive are female, an essential fact in understanding the gender roles in bee societies. These discoveries, which emerged in the 20th century, shed light on the sophisticated and organized nature of bee life.<sup>3</sup>

## Scientific Facts Relating to Bees

- ❁ **Waggle Dance:** Bees communicate the distance and direction of food sources through a sophisticated dance known as the “waggle dance.” This dance provides other bees with exact coordinates of where to find nectar.
- ❁ **Female Worker Bees:** The worker bees in a hive are all female. They are responsible for gathering food, protecting the hive, and building honeycombs.

---

3. **Other Scientists in the Field include Karl von Frisch** (1886–1982): Discovered the “waggle dance,” a communication method used by bees to relay the location of food sources, **Maurice Maeterlinck** (1862–1949): Belgian playwright and essayist who wrote extensively on the behavior of bees in his book *The Life of the Bee*

- ❁ **Instinctual Behavior:** Bees exhibit highly instinctual behavior, including the construction of hexagonal hives and the coordination of hive activities, which are necessary for the survival of the colony.

### **Quranic perspective:**

In the Qur'an chapter 16, verses 68-69 it is stated:

وَأَوْحَىٰ رَبُّكَ إِلَى النَّحْلِ أَنِ اتَّخِذِي مِنَ الْجِبَالِ  
بُيُوتًا وَمِنَ الشَّجَرِ وَمِمَّا يَعْرِشُونَ (٦٨) ثُمَّ كُلِّي مِن  
كُلِّ الثَّمَرَاتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلُلًا ۗ

*And thy Lord taught the bee to build its cells in hills, on trees, and in (men's) habitations; Then to eat of all the produce (of the earth), and follow the ways of thy Lord made smooth.*

### **Explanation of the Verses**

These verses highlight the behavior and instinctual actions of bees, which are divinely inspired. The bees are described as building their hives in mountains, trees, and human constructions, and are instructed to gather their sustenance from various fruits and plants. The phrase “follow the ways of thy Lord made smooth” suggests that bees are guided by an innate sense, or divine inspiration, which allows them to navigate and find food effortlessly.

The Quran uses the feminine form of the verb when addressing the bees, which is significant. In Arabic, gendered verbs are used depending on the subject, and the use of the feminine form here is a clear indication that the worker bees being referred to are female - an observation that modern science has confirmed, as it is the female worker bees who perform these tasks in a hive.



## Relation to the Scientific Fact

- 1. Bee Communication (Waggle Dance):** The Quran’s mention of bees following specific pathways aligns with the discovery of the “waggle dance.” Bees use this dance to communicate directions and distances to food sources, reflecting the Quran’s statement about bees following a divinely guided path.
- 2. Female Worker Bees:** The Quran’s use of the feminine form when describing bees corresponds with the modern discovery that the worker bees, who build the hive, gather nectar, and protect the colony, are all female.
- 3. Instinctual Behavior:** The Quranic verses speak of an inherent inspiration guiding bees to construct hives and collect food. This parallels the modern understanding of instinctual behavior in animals, particularly in bees, who follow complex patterns of hive construction and social organization without prior learning, as if divinely programmed.

The Quran’s description of bee behavior in the Qur’an chapter 16 (Surah An-Nahl) presents a profound insight into the natural world, centuries before modern science uncovered the details. The verses describe the worker bees, their gender, and their instinctual navigation and hive-building behaviors. These descriptions, revealed over 1,400 years ago, are in remarkable alignment with what scientists like Karl von Frisch discovered in the 20th century. Once again, the harmony between ancient scripture and modern science is evident, showing that divine revelation has anticipated scientific discoveries by centuries.



*Life of a bee colony. The queen (apis mellifera) marked with dot and bee workers around her.*



# Animal Communities

## Scientific Discovery

Modern zoology has revealed that many animal species live in structured communities and exhibit **social behaviors** and **hierarchies**. Research into the social lives of animals shows that ants, bees, birds, mammals, and many other creatures organize themselves into societies, each with specific roles and complex social systems. This includes communication methods, division of labor, hierarchical structures, and cooperative behaviors for survival. Such findings have confirmed the structured nature of animal communities.

## Scientific Facts Related to Animal Communities

- ❁ **Ants and Bees:** Insect communities, like ants and bees, have complex social structures, including a division of labor where each member has a specific role, such as foraging, defending, or caring for the young.
- ❁ **Birds:** Many bird species demonstrate hierarchical structures, where dominant individuals lead flocks, and these communities work together for tasks like migration, hunting, and raising offspring.
- ❁ **Mammals:** Mammalian species such as wolves, elephants, and primates live in highly organized groups, with social bonds, cooperation, and even emotional connections among members.

## Quranic Perspectives on Animal Communities

In the Qur'an chapter 6, verse 38 (Surah Al-An'am) it is stated:

وَمَا مِنْ دَابَّةٍ فِي الْأَرْضِ وَلَا طَائِرٍ يَطِيرُ بِجَنَاحَيْهِ  
إِلَّا أُمَّةٌ أَمْثَلُكُمْ ۗ

*There is not an animal that lives on the earth, nor a being that flies on its wings, but forms communities like you.*

## Explanation of the Verse

This verse from the Quran explains that animals, like humans, form communities and live within structured social systems. The Quranic reference to “communities like you” suggests a similarity between human and animal social structures, acknowledging that all creatures are part of their own unique societies. The verse emphasizes the organized nature of animal life, with animals living in groups, interacting, and cooperating to survive, much like human societies.

## Relation to the Scientific Fact

- 1. Animal Social Structures:** The Quran’s description of animals forming communities aligns with **modern zoological discoveries**. Animals, from tiny insects like ants to large mammals like elephants, exhibit structured behavior within groups. The sophisticated social systems seen in these creatures include communication, mutual cooperation, role assignment, and care for the young. The Quran’s recognition of these structured animal societies parallels what modern zoology has uncovered about the intricate social life of animals.
- 2. Communication and Hierarchies:** Animal communities demonstrate behaviors that reflect levels of communication and hierarchies, which are essential for survival. For example, bees use the “**waggle dance**” to communicate food sources, and wolves have pack leaders who guide their hunts and social interactions. These behaviors mirror what the Quran mentions about animals having organized, purposeful lives within their communities.
- 3. Equality in Existence:** The verse highlights that animals, though different from humans in many ways, share the experience of living in **communities**. This idea, which is over 1,400 years old, is a profound reflection of what science today has confirmed through observation and research, showcasing the Quran’s remarkable alignment with modern understanding of animal behavior.

The Quranic description of animal communities in chapter 6 (Surah Al-An'am) aligns with contemporary scientific findings in zoology, which confirm that animals live in organized and structured societies with roles, hierarchies, and cooperative behaviors. The verse provides an insightful look into the nature of animal life, which parallels human social structures, and highlights the deep connection between Quranic wisdom and modern scientific discoveries.



*The core of elephant society is the family unit, which mostly comprises several adult cows, their daughters and their sons. The family unit is led by a matriarch who at times also leads the kinship group. Groups cooperate in locating food and water, in self-defense, and in caring for offspring. Elephants communicate via touching, visual displays, vocalizations, seismic vibrations, and via secretion of semiochemicals such as feces and urine.*

# The Production of Milk

## Scientific Discovery

The process by which milk is produced in mammals involves the **digestive system**. Food is digested in the stomach, absorbed by the intestines, and from there, nutrients are transferred into the bloodstream. The mammary glands then extract nutrients like **water, fat, and proteins** from the bloodstream to produce milk.

## Quranic Verses Describing Milk Production

In the Qur'an chapter 16, verse 66 (Surah An-Nahl) it is stated:

وَإِنَّ لَكُمْ فِي الْأَنْعَامِ لَعِبْرَةً ۖ تَسْقِيكُم مِّمَّا فِي بُطُونِهِ  
مِنْ بَيْنِ فَرْثٍ وَدَمٍ لَبَنًا خَالِصًا سَائِغًا لِلشَّارِبِينَ

*And indeed, for you in grazing livestock is a lesson. We give you drink from what is in their bellies, between excretions and blood—pure milk, palatable to drinkers.*

And in chapter 23, verse 21 it is further stated:

وَإِنَّ لَكُمْ فِي الْأَنْعَامِ لَعِبْرَةً ۖ تَسْقِيكُم مِّمَّا فِي بُطُونِهَا  
وَلَكُمْ فِيهَا مَنَافِعُ كَثِيرَةٌ وَمِنْهَا تَأْكُلُونَ

*And indeed, for you in livestock is a lesson. We give you drink from what is in their bellies, and for you in them are numerous benefits, and from them you eat.*

## Explanation of the Verses

The Quran mentions that milk is produced from the belly of livestock, originating **between excretions (intestines) and blood**. The verses precisely describe the scientific process of milk production, involving the digestive system and the bloodstream, from which nutrients are absorbed and used to produce milk.

## Relation to the Scientific Fact

- 1. Role of Digestion and Blood in Milk Production:** Modern science confirms that milk production occurs through the extraction of nutrients from the blood, which itself absorbs these nutrients after food is digested. The Quran’s description of milk being produced between **excretions** (digested food) and **blood** directly correlates with this scientific understanding of how nutrients from digested food are transported via the bloodstream to produce milk.
- 2. Purity of Milk:** The verses highlight the **purity** of milk, stating it is “wholesome” and “palatable.” This aligns with the fact that **milk**, while produced from a complex biological process involving blood and digested food, is a **pure, uncontaminated** liquid, safe for human consumption.
- 3. Historical Context:** At the time of the Quran’s revelation, the biological details of milk production were unknown. The precision of these verses, describing milk being produced between **digestion** and **blood**, highlights the Quran’s alignment with scientific facts that were discovered only many centuries later through modern biology.

The Quran’s description of milk production in chapter 16 (Surah An-Nahl) and chapter 23 (Surah Al-Mu’minun) remarkably corresponds with modern scientific knowledge. These verses highlight the process of extracting nutrients from digested food via blood and producing pure milk, a fact unknown to humanity at the time of the Quran’s revelation, confirming its divine insight.



*From a humble beginning in the belly of a cow, the milk sustains a huge dairy industry that produces a variety of dairy products.*

# Communication of Ants

## Scientific Discovery

In 1974, the phenomenon of **ant communication** was observed and confirmed through research by entomologist E.O. Wilson. Ants use a sophisticated system of **chemical signals (pheromones)** and **auditory signals** to convey information about food sources, danger, and colony tasks. More recently, scientists have also observed ants engaging in complex **social behaviors**, including warning other members of their group and **collaborating** to overcome obstacles.

## Quranic statement on the subject

In the Qur'an chapter 27, verse 18 (Surah An-Naml) it is stated:

حَتَّىٰ إِذَا أَتَوْا عَلَىٰ وَادِ النَّمْلِ قَالَتْ نَمْلَةٌ يَا أَيُّهَا  
النَّمْلُ ادْخُلُوا مَسَاكِنَكُمْ لَا يَحْطِمَنَّكُمْ سُلَيْمَانُ وَجُنُودُهُ  
وَهُمْ لَا يَشْعُرُونَ

*Until, when they came upon the valley of the ants, an ant said, 'O ants, enter your dwellings that you may not be crushed by Solomon and his soldiers while they perceive not.'*

## Explanation of the Verse

This verse describes a detailed account of **communication among ants** when **Prophet Solomon's** army was approaching. One ant acts as a **sentinel**, warning its colony to retreat into their homes to avoid being crushed by the soldiers unintentionally. The verse not only indicates that ants communicate, but it also describes **warning behavior** and **social cooperation**, which is consistent with **modern findings**.



## Relation to the Scientific Fact

1. **Complex Communication System:** Recent studies have confirmed that ants use **vocal and chemical signals** to communicate intricate information. The Quran's description of one ant calling out to others, urging them to retreat, mirrors scientific observations of **alarm calls** and **group signaling** in ant communities.
2. **Social Organization:** Ants exhibit a high degree of **social organization** with clear roles, such as foragers, soldiers, and sentinels, as suggested in the verse. The presence of a **warning system** in the verse aligns with what scientists have found about the **division of labor** and **responsiveness** in ant societies.
3. **Perception of Danger:** The verse highlights the ant's ability to **perceive danger** and respond accordingly. This reflects the findings in behavioral ecology, which show that ants possess an advanced **social intelligence** that guides their actions and ensures the survival of the colony.

The Quran's reference to **ant communication** in chapter 27 (Surah An-Naml) aligns with the modern understanding of ant behavior and communication. The intricate social organization, warning signals, and cooperative behaviors observed by entomologists echo the **precise description** found in the Quran, revealed over 1,400 years ago. This provides yet another instance of the **Quran's alignment** with scientific realities that were only discovered centuries later.



*Ant bridge unity team*

# Medicine

## Pharmacology



*Herbal medicine or traditional medicine, also called botanical medicine or phytomedicine, refers to using a plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. Herbalism has a long tradition of use outside conventional medicine. Written evidence of herbal remedies dates back over 5,000 years to the Sumerians who compiled lists of plants. In ancient Egypt, herbs were mentioned in Egyptian medical papyri depicted in tomb illustrations, or on rare occasions found in medical jars containing trace amounts of herbs.*



# Healing Properties of Honey

## Scientific Development in the Subject

Honey has been used as a natural remedy for centuries, but modern research has confirmed its medicinal properties through extensive studies. Scientific investigations have highlighted honey's antibacterial, anti-inflammatory, and antioxidant effects, making it an effective treatment for wounds, infections, and various health issues. The healing properties of honey stem from its ability to promote tissue regeneration, kill harmful bacteria, and reduce inflammation, particularly due to its components like hydrogen peroxide, methylglyoxal, and bee-derived peptides.

In modern medicine, honey has been applied to treat burns, ulcers, infections, and respiratory conditions. **Manuka honey**, a specific type known for its high medicinal potency, has gained particular recognition for its superior antibacterial properties.<sup>4</sup>

## Scientific Facts Relating to Honey

- ⚙️ **Antibacterial Effects:** Honey has been shown to inhibit the growth of bacteria like *Staphylococcus aureus* and *Escherichia coli*, thanks to its natural hydrogen peroxide content.
- ⚙️ **Wound Healing:** Honey promotes healing by maintaining a moist environment and acting as a barrier against infections. It also accelerates the regeneration of tissue.
- ⚙️ **Anti-inflammatory and Antioxidant Properties:** Honey helps reduce inflammation and oxidative stress, which are linked to various chronic diseases.

## Quranic perspective in the Healing Properties of Honey:

In the Qur'an chapter 16, verse 69 it is stated:

4. **Scientists in the Field include Peter Molan** (1943–2015): A biochemist known for his work on Manuka honey and its powerful healing properties and **David W. Nahrwold, M.D.:** His research highlighted the antibacterial properties of honey in wound care.

ثُمَّ كُلِي مِنْ كُلِّ الثَّمَرَاتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلُلًا ۗ  
يَخْرُجُ مِنْ بُطُونِهَا شَرَابٌ مُخْتَلِفٌ أَلْوَانُهُ فِيهِ شِفَاءٌ  
لِلنَّاسِ ۗ إِنَّ فِي ذَلِكَ لَآيَةً لِقَوْمٍ يَتَفَكَّرُونَ

*Then eat from all the fruits and follow the ways of your Lord laid down. There emerges from their bellies a drink, varying in colors, in which there is healing for people. Indeed, in that is a sign for a people who give thought.*

### **Explanation of the Verse**

This verse from chapter 16 of the Qur'an (Surah An-Nahl) highlights the medicinal and healing properties of honey, calling attention to its divine creation. The phrase “drink, varying in colors” refers to the diversity of honey, as its color and properties can differ depending on the source of nectar. More importantly, the verse explicitly mentions that honey contains healing properties for humans, aligning perfectly with the modern understanding of honey's antibacterial, anti-inflammatory, and antioxidant effects.

### **Relation to the Scientific Fact**

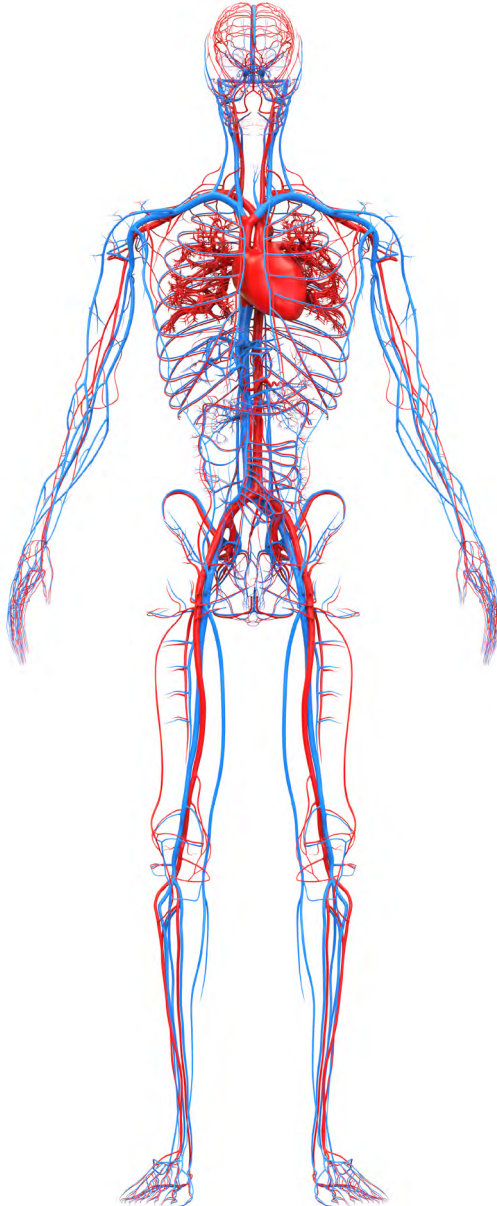
- 1. Healing and Antibacterial Properties and Anti-inflammatory Effects:** The Quranic verse speaks of honey as having healing powers, which modern science confirms. Honey's antibacterial effects make it useful in treating wounds and infections. It kills bacteria and promotes faster healing, which directly supports the claim of “healing for people” mentioned in the verse. The Quran's recognition of honey's healing properties also aligns with modern findings that honey reduces inflammation and soothes various conditions, including burns and ulcers.
- 2. Wound Healing and Tissue Regeneration:** Honey's ability to heal and regenerate tissue is one of its most significant medicinal benefits. The Quran's description of honey containing healing properties prefigures this modern discovery, showing that its medicinal benefits were acknowledged long before scientific validation.

The Quran's reference to the healing properties of honey in chapter 16 (Surah An-Nahl) is a remarkable instance of ancient wisdom aligning with modern scientific discoveries. Honey's antibacterial, anti-inflammatory, and healing properties, which have been extensively studied in modern medicine, were revealed in the Quran over 1,400 years ago. This correlation between Quranic revelation and contemporary science once again demonstrates the timeless relevance of the scripture and its alignment with the natural world.



*Jars of different honey varieties, each variety has a different medicinal characteristic. These varieties are determined by the type of flowers from which the bees collect the nectar. For example, Manuka honey comes from the nectar of the mānuka tree, *Leptospermum scoparium*.*

# *Physiology*



*Human Circulatory System and Heart Anatomy*

## Hearts Intrinsic Brain

### Scientific Discovery

In 1991, **Dr. J. Andrew Armour** discovered that the heart contains its own independent nervous system, often referred to as the **intrinsic cardiac nervous system** or the heart's "little brain." This system consists of approximately 40,000 neurons that are capable of complex processes like those found in the brain. The discovery revealed that the heart can independently process information, learn, remember, and communicate with the brain, influencing emotions and cognitive functions.

### Scientific Facts Relating to the Heart's Intrinsic Brain

- ❁ **Heart-Brain Connection:** The intrinsic cardiac nervous system can operate independently of the brain and is capable of transmitting emotional and intuitive signals to the central nervous system, affecting decision-making, emotional regulation, and even reasoning.
- ❁ **Neural Network in the Heart:** This neural network acts as a relay system, capable of receiving and interpreting signals from the brain, as well as sending information back to it.

### Quranic Verse Describing the Cognitive Functions of the Heart

In the Qur'an chapter 22, verse 46 (Surah Al-Hajj) it is stated:

أَفَلَمْ يَسِيرُوا فِي الْأَرْضِ فَتَكُونَ لَهُمْ قُلُوبٌ يَعْقِلُونَ  
بِهَا أَوْ آذَانٌ يَسْمَعُونَ بِهَا ۗ فَإِنَّهَا لَا تَعْمَى الْأَبْصَارُ  
وَلَكِن تَعْمَى الْقُلُوبُ الَّتِي فِي الصُّدُورِ

*Do they not travel through the land, so that their hearts may thus learn wisdom, and their ears may thus learn to hear? Truly it is not their eyes that are blind, but their hearts which are in their breasts.*

## Explanation of the Verse

This verse emphasizes the **cognitive and emotional roles** of the heart, which seems to suggest that the heart plays a role in reasoning, wisdom, and understanding - functions traditionally attributed to the brain. The Quran's description of the heart as being capable of "reason" ( **يَعْقِلُونَ** ) aligns with the scientific discovery that the heart has its own neural system capable of processing and communicating information. The verse underscores that blindness is not of the eyes, but of the **heart's capacity for understanding**, hinting at a deeper connection between the heart and consciousness.

## Relation to the Scientific Fact

- 1. Cognitive Functions of the Heart:** The Quran's depiction of the heart as a center for wisdom and reasoning aligns with **modern neurocardiology**, which has uncovered the heart's intrinsic brain and its influence on emotions, cognitive functions, and decision-making. This neural network allows the heart to process information and communicate with the brain, lending scientific credibility to the Quran's description of the heart's non-physical roles.
- 2. Emotional and Intuitive Signals:** The Quranic verse resonates with the discovery that the heart is involved in **emotional intelligence**, not just as a metaphorical or spiritual concept but as a physical reality, with the heart sending intuitive signals to the brain. The heart's independent communication system reveals a profound connection between the heart and human consciousness, aligning with the Quran's emphasis on the heart as an instrument of moral and spiritual perception.
- 3. Blindness of the Heart:** The Quran's metaphor that the **heart** can be "blinded" refers to a lack of understanding and wisdom. In light of modern findings, this can be interpreted not just as spiritual blindness but also as the heart's neural system being disconnected from higher cognitive and emotional reasoning, reinforcing the Quran's profound message about the heart's role in human comprehension.

The Quran's depiction of the heart as having cognitive and emotional functions finds a striking correlation with the modern scientific discovery of the heart's intrinsic brain. This neural system allows the heart to independently process information, which aligns with the Quran's view of the heart as central to reasoning and understanding. The fact that such a complex relationship between the heart and mind was alluded to over 1,400 years ago is a remarkable example of the alignment between Quranic revelation and contemporary science.



*The brain and the heart are two parallel minds in the human body. Though they are each a unique organ, they complement each other in human reasoning, wisdom, understanding and decision making.*

# Pain Receptors in the Skin

## Scientific Discovery

In the 20th century, scientists discovered that **pain receptors** are located in the skin. These nerve endings, known as **nociceptors**, detect harmful stimuli such as heat, cold, and mechanical damage, sending signals to the brain to perceive pain. If these receptors are destroyed or damaged, an individual may lose the ability to feel pain.

**Professor Dr. Tagatat Tejasen** is a professor at the University of Chiang Mai in Thailand who is specialized in **anatomy** and **pain receptors**. After researching the Quran's verses about pain receptors, he acknowledged the accuracy of the Quran in describing how the skin functions in pain perception. Tejasen stated that this knowledge could not have been known at the time of the Quran's revelation unless it came from divine knowledge. His reflections have been widely cited as an example of modern scientists acknowledging the **scientific accuracy** found in the Quran.

## Quranic Statement on the subject

In the Qur'an chapter 4, verse 56 (Surah An-Nisa'a) it is stated:

إِنَّ الَّذِينَ كَفَرُوا بِآيَاتِنَا سَوْفَ نُصَلِّيهِمْ نَارًا كَلَّمًا  
نُضِجَتْ جُلُودُهُمْ بَدَلْنَاهُمْ جُلُودًا غَيْرَهَا لِيَذُوقُوا  
الْعَذَابَ ۗ إِنَّ اللَّهَ كَانَ عَزِيزًا حَكِيمًا

*Those who reject Our signs, We shall soon cast them into the Fire. As often as their skins are roasted through, We shall change them for fresh skins, so that they may taste the penalty: for Allah is Exalted in Power, Wise,*

## Explanation of the Verse

This verse describes the punishment of those who reject divine signs. It indicates that when the **skin is burned**, new skin is replaced so that the **sensation of pain** can continue. The verse's emphasis on the role of skin in perceiving pain is a concept that modern science has only lately uncovered



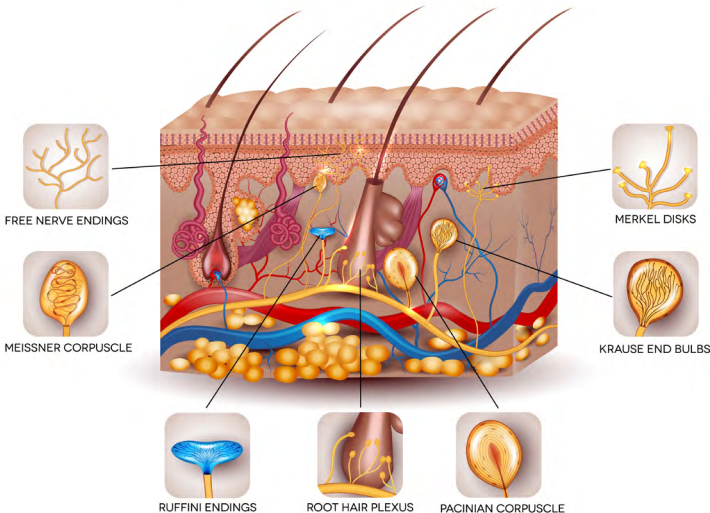
with the discovery of pain receptors in the skin.

## Relation to the Scientific Fact

- 1. Role of Skin in Feeling Pain:** Modern science explains that the skin contains specific **pain receptors (nociceptors)** that are essential for perceiving pain. When these receptors are damaged or destroyed, pain sensation is lost. The Quran’s reference to skin being replaced so that the person may “taste the penalty” directly aligns with this understanding of pain receptors in the skin.
- 2. Alignment with Modern Science:** The Quran’s insight into the relationship between **skin and pain perception** was revealed over 1,400 years ago, long before this was understood scientifically. It demonstrates an understanding of the physiological role of the skin in transmitting sensations like pain, discovered by scientists only in recent times.

The Quran’s mention of skin being central to feeling pain in chapter 4 (Surah An-Nisa) corresponds with the discovery of pain receptors in modern science. Professor Tagatat Tejasen’s research into this matter highlights the Quran’s remarkable accuracy in describing aspects of human physiology that were unknown to humans at the time of its revelation, further supporting the argument of its divine origin.

### SENSORY RECEPTORS IN SKIN



# Individual Fingerprints

The concept of individual fingerprints has significant implications in both forensic science and the understanding of human identity. The Quran mentions the uniqueness of individuals in a manner that aligns remarkably with contemporary scientific findings about fingerprinting.

## Scientific Understanding of Fingerprints

### 1. Unique Identifiers:

Fingerprints are unique to each individual, formed in the womb and influenced by genetic and environmental factors. No two fingerprints are alike, making them an essential tool in forensic science for identification and criminal investigations.

### 2. Dermatoglyphics:

The study of fingerprints, known as dermatoglyphics, examines the patterns on the skin, including loops, whorls, and arches. These patterns are established early in fetal development and remain unchanged throughout a person's life.

### 3. Forensic Applications:

Fingerprint analysis is widely used in law enforcement and security. The uniqueness of fingerprints allows for accurate identification, making them a reliable method for confirming identities in various legal contexts.

### 4. Technological Advances:

Modern technology has enhanced fingerprint recognition systems, including biometric scanners used in smartphones, security systems, and border control.

## Quranic Perspective on Individual Fingerprints

### 1. Chapter 75, Verses 3-4 (Surah Al-Qiyamah):

أَيُّحْسَبُ الْإِنْسَانُ أَنْ نَجْمَعَ عِظَامَهُ (٣) بَلَىٰ قَادِرِينَ  
عَلَىٰ أَنْ نُسَوِّيَ بَنَانَهُ (٤)

*Does man think that We will not assemble his bones? Yes. We are Able to proportion even his fingertips*

This verse suggests a profound understanding of individual identity, emphasizing that God (Allah) can not only resurrect humans but also restore their unique features, including their fingertips.

### 2. Significance of Fingerprints:

The mention of “fingertips” highlights the uniqueness of individuals, aligning with the modern scientific understanding that each person has distinct fingerprints that serve as identifiers. This reflects an early recognition of human individuality and the complexity of identity.

## Conformity with Modern Science

### 1. Uniqueness and Identity:

The Quran’s reference to fingertips resonates with the scientific knowledge that no two fingerprints are identical. This parallel emphasizes the significance of individual identity both in a spiritual and scientific context.

### 2. Biological Basis:

Just as modern science explains the formation of fingerprints through biological processes, the Quran acknowledges the importance of these unique identifiers, linking the physical attributes of individuals to divine creation.

### 3. Implications for Resurrection:

The verse underscores the belief in resurrection, where the restoration of an individual's physical form - including unique features like fingerprints - reinforces the concept of personal identity in the afterlife.

### Scientific Fact and Quranic Description

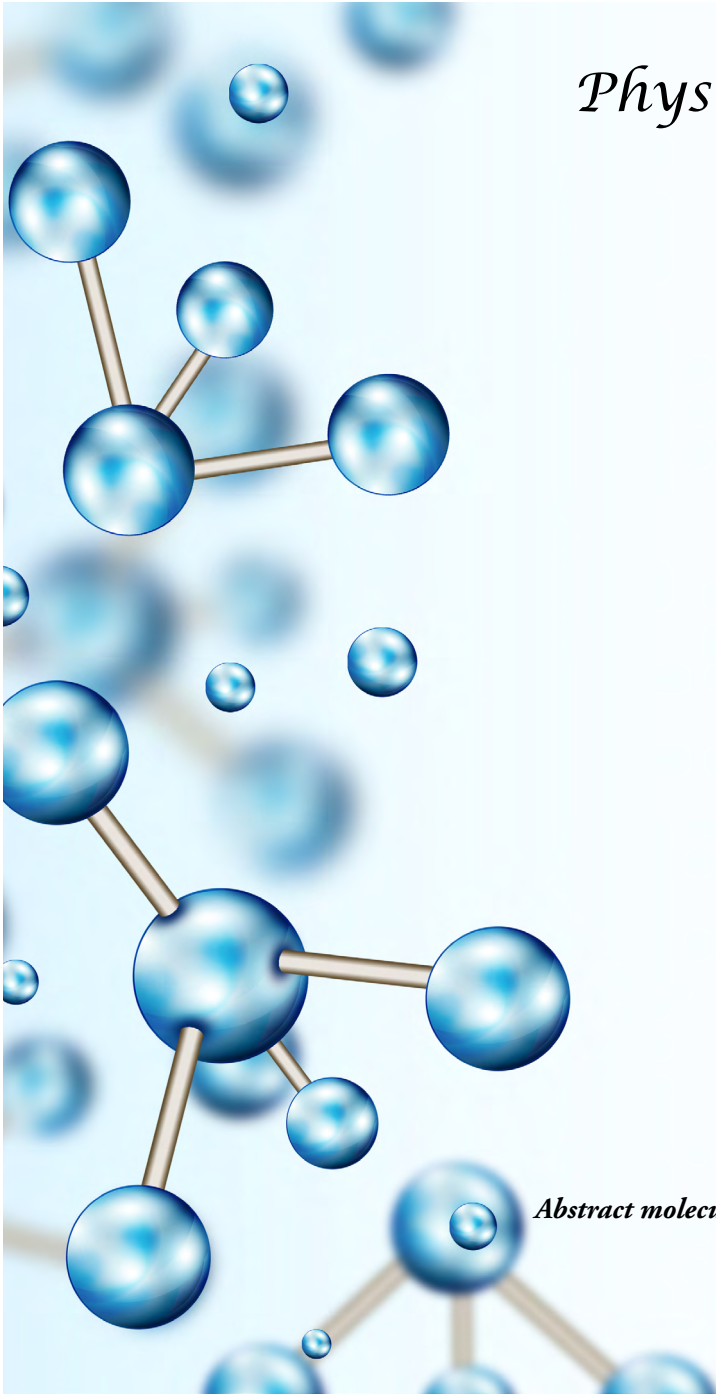
The Quranic description of individual fingerprints aligns closely with contemporary scientific findings regarding their uniqueness and the role they play in identifying individuals. This intersection of spiritual belief and scientific understanding provides profound insights into the nature of human identity and the intricacies of creation.

By recognizing the significance of individual fingerprints, the Quran presents a remarkable connection to modern science, reinforcing the idea that divine knowledge encompasses all aspects of human existence, including the minutiae that make each person unique.



*Digital fingerprint identification and binary code. Fingerprints now provide security and access in many applications, e.g. in mobile devices and equipment.*

# *Physics*



*Abstract molecules illustration*

## Subatomic Particles

The discovery and study of subatomic particles have greatly expanded our understanding of the universe. These fundamental particles make up all matter and are a cornerstone of modern physics. The Quran contains verses that allude to the complexity of creation, resonating with concepts explored in particle physics.

### Scientific Understanding of Subatomic Particles

#### Basics of Particle Physics:

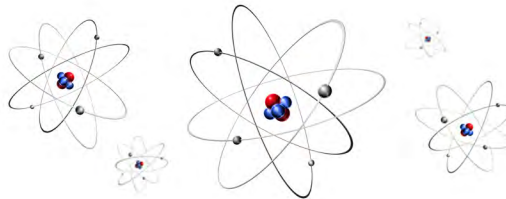
Subatomic particles, including protons, neutrons, and electrons, are the fundamental components of atoms. Scientists such as Niels Bohr and Richard Feynman have significantly contributed to our understanding of these particles' structure and behavior.

### Quranic Perspective on Subatomic Particles

1. Chapter 10, Verse 61 (Surah Yunus):

وَمَا يَعْزُبُ عَنْ رَبِّكَ مِنْ مِّنْقَالٍ ذَرَّةٍ فِي الْأَرْضِ  
وَلَا فِي السَّمَاءِ وَلَا أَصْغَرَ مِنْ ذَلِكَ وَلَا أَكْبَرَ إِلَّا  
فِي كِتَابٍ مُّبِينٍ

*Not absent from your Lord is anything even as small as an atom,  
within the earth or in the heavens, nor smaller nor greater than that  
but it is (written) in a clear record.*



2. Chapter 34, Verse 3 (Surah Saba):

وَقَالَ الَّذِينَ كَفَرُوا لَا تَأْتِينَا السَّاعَةُ<sup>ط</sup> قُلْ بَلَىٰ وَرَبِّي  
لَأَتِيَنَّكُمْ عَالِمِ الْغَيْبِ<sup>ط</sup> لَا يَعْرُبُ عَنْهُ مِثْقَالُ ذَرَّةٍ فِي  
السَّمَاوَاتِ وَلَا فِي الْأَرْضِ وَلَا أَصْغَرُ مِنْ ذَلِكَ وَلَا  
أَكْبَرُ إِلَّا فِي كِتَابٍ مُبِينٍ

*But those who disbelieve say, 'The Hour will not come to us.' Say, 'Yes, by my Lord, it will surely come to you. [He is] the Knower of the unseen.' Not absent from Him is an atom's weight within the heavens or within the earth or [what is] smaller than that or greater, but it is in a clear register.*

## Conformity with Modern Science

### 1. Recognition of Subatomic Structure:

These Quranic verses emphasize that nothing, not even something as small as an atom (and even smaller), escapes divine knowledge. This reflects the concept in modern science of how subatomic particles, which were not known during the time of the Quran's revelation, form the smallest building blocks of matter.

### 2. Understanding Beyond Physical Observation:

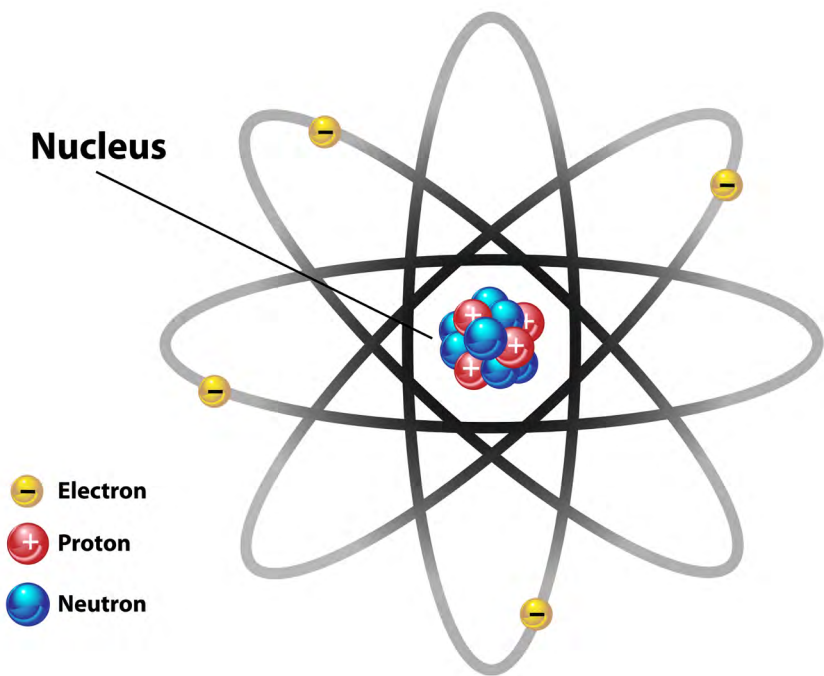
The Quran's emphasis on the knowledge of the smallest entities, including those smaller than atoms, aligns with modern discoveries about subatomic particles and quantum mechanics, showing a striking resonance between scripture and science.

## Scientific Fact and Quranic Description

The alignment of Quranic references with modern scientific discoveries regarding subatomic particles illustrates a profound connection between spiritual insight and empirical knowledge. The exploration of these fundamental components of matter not only deepens our understanding of the

universe but also underscores the wisdom expressed in the Quran, affirming the interconnectedness of all things in creation.

In summary, both scientific exploration and Quranic teachings highlight the significance of subatomic particles as essential components of matter, reflecting a shared acknowledgment of the complexity and unity within creation.





A microscopic image of several chromosomes, appearing as thick, intertwined, blue-tinted structures. The chromosomes are arranged in a complex, branching pattern, with some showing distinct centromeres. The background is a soft, out-of-focus blue, creating a sense of depth and highlighting the intricate structure of the genetic material.

# *Embryology*

*Chromosomes carry genetic information in the form of genes. In humans, chromosomes include the two sex chromosomes (two X chromosomes in females, one X and one Y in males). The combination of sex chromosomes plays a key role in determining the sex and other characteristics of the offspring.*

# Embryology

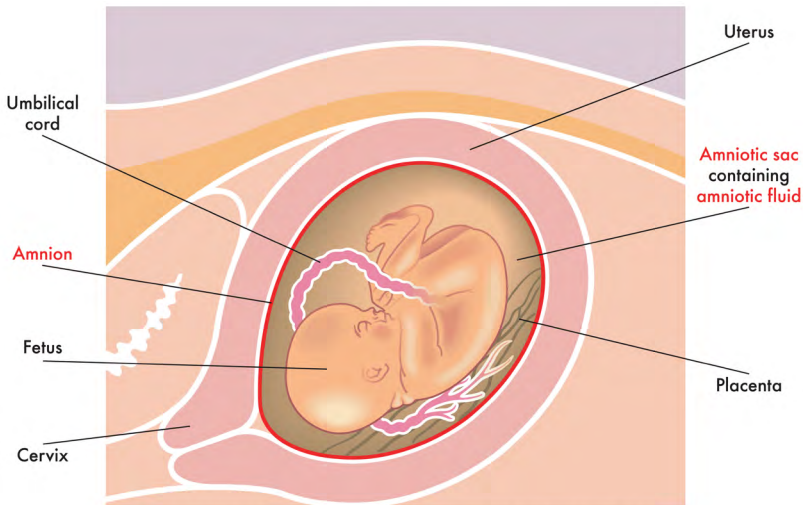
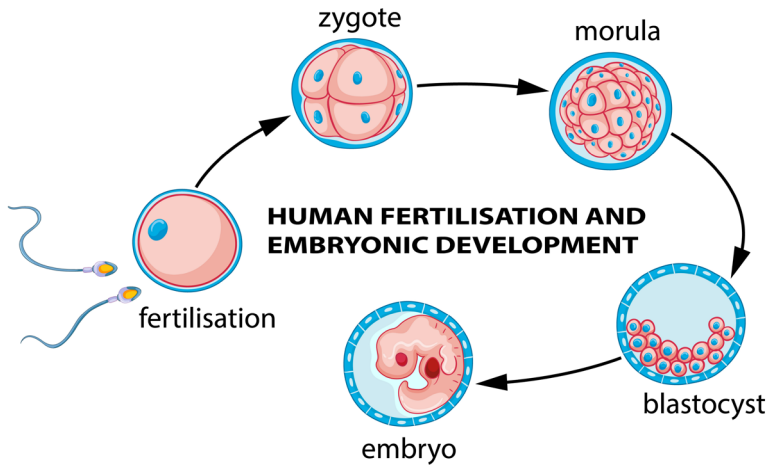
Before modern science, the understanding of “human development” was based on various theories, ranging from vague ideas of gradual formation to beliefs in preformation. Ancient Greek thinkers, like Aristotle, believed that life was created through a combination of male and female fluids. For centuries, the preformation theory dominated embryology, suggesting that a fully formed miniature human (homunculus) existed in either the sperm (spermists) or the egg (ovists), and that development was merely the enlargement of this preformed being. This idea prevailed until the 18th century when it began to shift with the introduction of the epigenesis theory, first proposed by William Harvey and further developed by Caspar Friedrich Wolff. Epigenesis argued that organisms gradually develop from simple materials into complex beings. A significant breakthrough came in 1827 when Karl Ernst von Baer discovered the mammalian egg, showing that development occurs through distinct stages. His work laid the foundation for modern embryology, which was further advanced by scientists like Wilhelm His, who mapped the development of organs in embryos.

In the mid-20th century, the creation of the **Carnegie Stages** provided a standardized and detailed method for identifying the stages of human development, from fertilization to the formation of a fetus. Later, in 1978, the invention of in **vitro fertilization (IVF)** by Robert G. Edwards and Patrick Steptoe revolutionized the study of human development, providing unprecedented insights into the early stages of embryonic growth.

## Stages of Human Development:

1. **Zygote (Fertilization):** Human development begins when a sperm fertilizes an egg, forming a zygote, which contains all the genetic material necessary for human development.
2. **Cleavage and Blastocyst Formation:** The zygote undergoes rapid cell division (cleavage) and becomes a blastocyst, containing an outer layer (the placenta) and an inner cell mass (the embryo).
3. **Implantation :** The blastocyst attaches to the uterine wall, where it implants and begins receiving nutrients.

4. **Gastrulation:** The inner cell mass differentiates into three layers (ectoderm, mesoderm, endoderm), which form different organs and tissues.
5. **Organogenesis:** Major organs like the heart, brain, and spinal cord begin forming.
6. **Fetus:** The embryo develops into a fetus, growing in size and maturing until it is capable of sustaining life outside the womb.



The **AMNION** is a membrane that closely covers the embryo when first formed. It fills with the **amniotic fluid** which causes the **amnion** to expand and become the **amniotic sac** which serves to provide a protective environment for the developing embryo or fetus.

## Qur'anic Perspective

The stages of human development, as outlined in modern embryology, are remarkably detailed in the Quran, especially in Chapter 23, Verses 12-14 and Chapter 22, Verse 5. These verses closely align with scientific facts about embryological development, showing a correspondence between the revelation and modern science.

### Quranic Verses Describing Human Development:

1. Chapter 23, verses 12-14 (Sura Al-Mu'minun)

#### ☀ Verse 12:

وَلَقَدْ خَلَقْنَا الْإِنْسَانَ مِنْ سَلَالَةٍ مِّنْ طِينٍ

*“We created man from an extract of clay (Sulalah min Teen).”*

This verse signifies the origin of human life from the earth, reflecting the idea that life is composed of elements found in nature.

#### ☀ Verse 13:

ثُمَّ جَعَلْنَاهُ نُطْفَةً فِي قَرَارٍ مَّكِينٍ

*“Then We placed him as a sperm-drop in a firm lodging.”*

This refers to the zygote stage of human development after fertilization, where the sperm (nutfah) meets and fertilizes the egg. The “firm lodging” (the uterus) is where the embryo implants and grows.

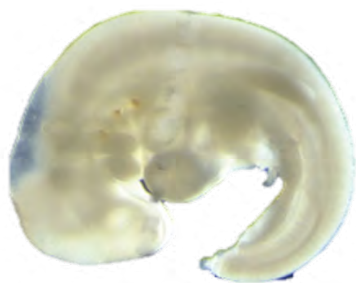
#### ☀ Verse 14:

ثُمَّ خَلَقْنَا النُّطْفَةَ عَلَقَةً فَخَلَقْنَا الْعَلَقَةَ مُضْغَةً فَخَلَقْنَا  
الْمُضْغَةَ عِظَامًا فَكَسَوْنَا الْعِظَامَ لَحْمًا ثُمَّ أَنْشَأْنَاهُ  
خَلْقًا آخَرَ ۚ فَتَبَارَكَ اللَّهُ أَحْسَنُ الْخَالِقِينَ

*“Then We made the drop (nutfah) into a clinging clot (alaqah), then We made the clot into a lump (mudghah), and We made (out of) the lump bones, and We clothed the bones with flesh; then We developed him into another creation. So blessed is Allah, the best of creators.”*

This verse describes the sequential development of the embryo:

- ✿ **Alaqah:** A clinging clot, corresponding to the embryo during implantation. The word also means “leech-like,” and early embryos resemble leeches.
- ✿ **Mudghah:** A chewed-like lump, resembling the somite stage of embryonic development ( the stage when different parts or segments of the body begin to develop).
- ✿ The verse then mentions the formation of **bones** and the growth of **flesh** around them, a process confirmed by modern embryology.



*On the left is the embryo at “Alaqah” stage (about 4 weeks of pregnancy), on the right is a leech. The similarity in shape as described in the Qur’an is striking.*



*The embryo at the “mudgha” stage which looks like a ‘chewed-like lump’ as described in the Qur’an.*

2. Chapter 22, verse 5 (Sura Al-Hajj)

يَا أَيُّهَا النَّاسُ إِن كُنْتُمْ فِي رَيْبٍ مِّنَ الْبَعْثِ فَإِنَّا  
خَلَقْنَاكُمْ مِّن تُّرَابٍ ثُمَّ مِّن نُّطْفَةٍ ثُمَّ مِّن عَلَقَةٍ ثُمَّ مِّن  
مُّضْغَةٍ مُّخَلَّقَةٍ وَغَيْرِ مُّخَلَّقَةٍ لِّنُبَيِّنَ لَكُمْ

*O people, if you are in doubt about the Resurrection, then (consider that) We created you from dust, then from a sperm-drop (nutfah), then from a clinging clot (alaqah), then from a lump (mudghah), formed and unformed, that We may show you (Our power)...*

This verse reinforces the sequential stages of development from a sperm-drop to a clinging clot, and finally to a lump of flesh.

### Conformity with Modern Science:

1. **Zygote (Nutfah):** The Quran’s reference to “nutfah” aligns with modern knowledge that human development starts from a drop of fluid containing sperm, which fertilizes the egg and forms a zygote.
2. **Alaqah (Clinging Clot):** The term “alaqah” accurately describes both the clinging nature of the embryo during implantation and its leech-like appearance.
3. **Mudghah (Chewed-like Lump):** This stage corresponds to the somite phase in embryonic development when the embryo begins to form body segments.
4. **Formation of Bones and Muscles:** The Quran states that bones form before being “clothed with flesh,” which matches modern embryological findings.

### Scientific Fact and Quranic Description:

The Quran describes the stages of human development in a chronological order that parallels modern embryology. Despite being revealed over 1,400 years ago, these descriptions align closely with discoveries made in the 20th century, demonstrating a remarkable harmony between ancient scripture and modern science.

## Conclusion

Throughout this book, we have journeyed through the remarkable intersection between the Qur'an and modern science, exploring how divine revelations align with contemporary scientific discoveries. The Qur'an, while primarily a book of spiritual and moral guidance, provides profound insights into natural phenomena that have been scientifically verified centuries after they were revealed. This enduring compatibility highlights the Qur'an's timeless wisdom and the intricate relationship between faith and reason.

The Qur'an presents truths that are constant and unchanging, yet astonishingly, they remain relevant and validated by modern scientific exploration. The revelations in the Qur'an, especially in relation to natural phenomena, were given to humanity over 1,400 years ago, at a time when much of what we now understand scientifically was beyond human comprehension. This enduring relevance is not a coincidence but a testament to the divine origin of the Qur'an - the true word of the Creator, who possesses infinite knowledge.

One of the key messages of this book is that science and faith are not opposing forces but complementary ones. Where science offers explanations based on observable data, the Qur'an provides eternal truths that transcend human knowledge. The alignment between science and the Qur'an serves as a powerful sign of the Creator's existence and wisdom. The Qur'an's descriptions of the natural world - whether in the form of the creation of the universe, the development of the human embryo, or the intricate balance of ecosystems - invite humanity to reflect deeply on the magnificence of Allah's creation. The more we uncover through science, the more we are reminded of the Qur'an's foresight, and the deeper our understanding of the divine becomes.

In conclusion, this book is not meant to exhaustively catalog all scientific miracles in the Qur'an, nor does it claim to prove the Qur'an through science. Instead, it serves as a platform to demonstrate that the Qur'an's verses contain signs that resonate with the findings of modern science, illustrating that these revelations are far more than mere coincidence. They point to the Creator's omniscience and the seamless connection between the seen and unseen worlds.

As science continues its discovery journey, we must approach both realms—science and faith—with humility. Scientific findings will evolve, but the Qur'an will continue to reveal its signs to those who seek knowledge with an open mind. By acknowledging the limitations of human understanding and the boundless wisdom of Allah, we are reminded that faith and reason, when brought together, can deepen our appreciation of both the natural world and the divine.

The Qur'an will remain a guiding light for humanity, revealing signs of the Creator's existence and power until the end of time. It is up to us, as seekers of truth, to recognize these signs and draw closer to understanding the infinite wisdom embedded within its verses.





*We send down in the Quran that which is healing and a mercy to those who believe; as for the evil-doers, it only increases their loss.  
(Qur'an, Surah 17, verse 82)*

*In God's revelation there is healing for our broken spirits, hope for our spiritual future, and joy in the forgiveness of our shortcomings. The Qur'an shows the way to all that is upright, conformable to ethical rectitude and beneficial to man's individual and social life.*

# References

## Books

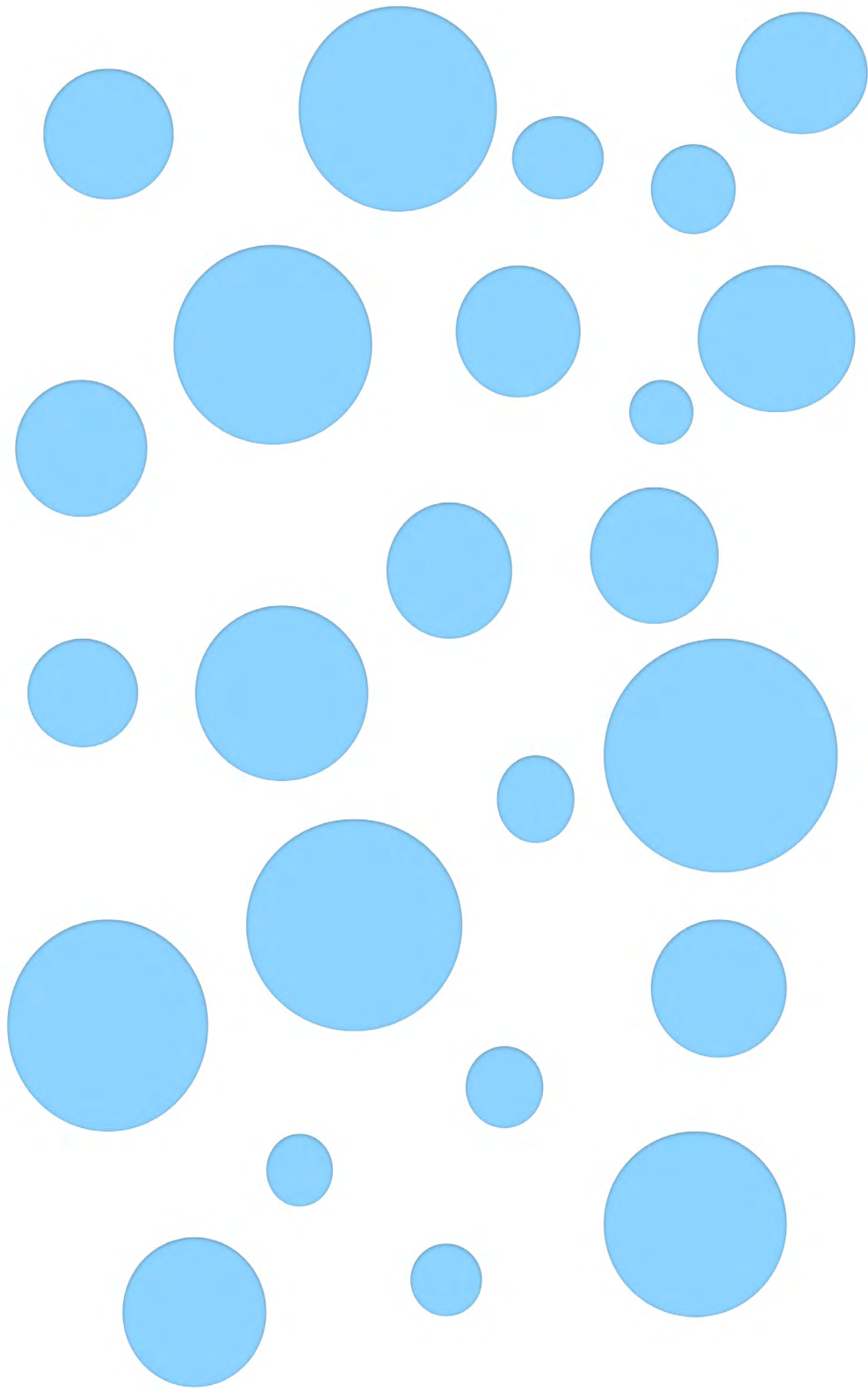
1. Bucaille, Maurice. The Bible, The Qur'an, and Science. 1976. Seghers Publishing.
2. Naik, Zakir. The Qur'an and Modern Science. Islamic Research Foundation, 2008.
3. Qadhi, Yasir. Science in the Qur'an. Al-Kauthar Institute, 2012.

## Academic Papers and Research

4. Tejasen, Tagatat. "The Pain Receptors in the Skin and Qur'anic References." Proceedings of the 8th Saudi Medical Conference, 1982.

## General Encyclopedic Sources

5. Sha'ban, Marwan Ahaheed. Encyclopedia of Inimitability of the Noble Quran. Translated by Shahdeh Fareh, University of Sharjah, UAE. Dar Al Maarifah, 2022
6. Various reputed online resources



القرآن والعلم  
باللغة الإنجليزية



**Islamic Information Center**

**Sultan Qaboos Grand Mosque**

**Muscat, Sultanate of Oman**

**[www.iicomman.om](http://www.iicomman.om)**

**[info@iicomman.om](mailto:info@iicomman.om)**