



PEOPLE

## Top 20 Greatest Muslim Scientists and Their Inventions

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Today, we will look through Top 20 Muslim Scientists of Islamic Golden Age; those behind the scientific revolution in Islamic traditions.

In Islam, every follower is obligated to seek knowledge.

For that,

Muslims are always in the quest of knowledge. In Quran it is mentioned that "Seek knowledge from cradle to grave". Hence, seeking knowledge is mandatory in Islam for every men and women. Prophet Muhammad once said, seek knowledge even you have to travel to China.

Must Read: [121 Influential People of All Time \(No.1 is a Muslim\)](#)

Many caliphs of Islamic empires supported scientists and encouraged them to invent and research in science.

That's why,

In medieval age, Baghdad was the center of education. Treatises and inventions that shaped in Baghdad, influenced western world for ages.

In this compilation, we don't list Islamic Golden Age scientist only. Rather we list every Muslim scientists ever born. These are the Muslim scientists and their inventions that truly changed the world.

So...

**Without any ado, here is the “Top 20 Muslim Scientists and Their Inventions”.**

## 20) Ali Javan



Source: [www.news.mit.edu](http://www.news.mit.edu)

An MIT inventor and physicist from Iran. Mr Javan was ranked 12 on “Top 100 Living Geniuses” by The Daily Telegraph. He contributes in the fields of quantum physics and spectroscopy.

**Inventions:** *Co-invented Gas Laser in 1960.*

## 19) Aziz Sancar



Source: By Holger Motzkau, via Wikimedia Commons

Another Muslim Nobel laureate from Turkey that won Nobel Prize in 2015 on his work on DNA repair. Only three Muslim scientists have won Nobel Prize.

## 18) Ibn al-Baitar



Source: By Keke999 , Via Wikimedia Commons

In old times the manufacturing of medicines was largely depends upon the herbs and plants. However, in Islamic Golden Age many Muslim botanist invented new kinds of medicines for treatment. Among them the most credited botanist was Ibn al-Baitar. His work in the field of medicines was acknowledged and followed for centuries even after his death.

One of his famous text, which was widely used was *Compendium on Simple Medicaments and Foods*. In this pharmaceutical encyclopedia, al-Baitar lists 1,400 plants, herbs, and foods. Among 1,400 plants, 200 were discovered by him and he gave the proper guidelines for their usage in medicine.

After his services, he was appointed as chief herbalist in Damascus in 1224 AD. He died in 1248 AD in Damascus at the age of 21.

**Discover:** *Al-Baitar discovered 200 plants for medicine usage.*

## 17) Ibn al-Nafis



Source: WikiCommons

Blood circulations is probably a topic of doctors or medical students, if you are one. You might know his name. [Ibn al-Nafis was a doctor and physician of Islamic Golden Age.](#)

Born in Damascus, Syria, in 1213 AD. He is famously known for his work on blood circulations. He was the first who fully describe the pulmonary circulation of the blood. He describe the right sided circulation, while William Harvey, after 400 years, describe right sided circulation.

**Invention:** *Describe right sided pulmonary circulation.*

## 16) Abu al-Wafa Buzjani



Source: WikiCommons

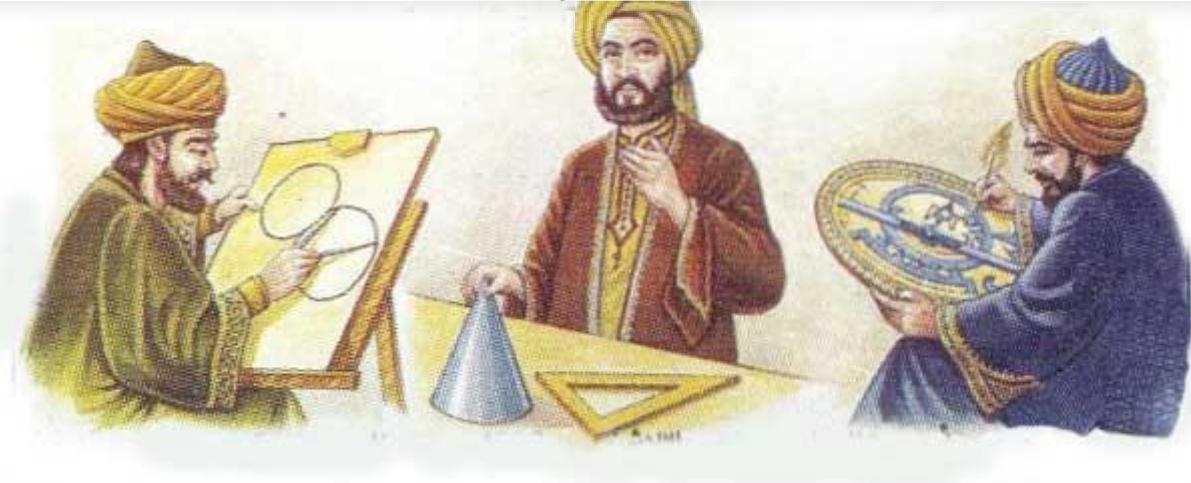
Abu al-Wafa was a Persian, mathematician, and astronomer of medieval age. He was born in 940 AD in Buzhgan, Iran. His work on trigonometry and arithmetic opened the gate of knowledge for the scientists of medieval age. Many renowned Muslim scientists were Persians.

Abu al-Wafa contribute in trigonometry by introducing secant and cosecant functions. He also compiled a table of sines and tangents at the angel of 15 degree. Additionally, Abu al-Wafa was the first person invented and used wall-quadrant to observe the sky. For this inventions his name “Abu Wafa” was kept on one of the moon’s crater. Google changed their doodle in 2015 to honor Abu al-Wafa.

#### Inventions:

- *Introduced secant and cosecant functions.*
- *Gave values of sine and tangent at 15 degree.*
- *Build a quadrant (astronomical instrument).*

## 15) Banu Musa Brothers



Source: www.CNN86.com

Unlike Muslim scientists in this list, Banu Musa is not just one person but it is the group of 3 brothers – Abu Jafar, Abu al-Qasim, and Ahmad. Their work on mathematics and mechanics was frequently quoted by scientists of that time. Their treatise on mathematics (The Book of the Measurement of Plane and Spherical Figures) gave the numerical value of area and volume. Their famous treatise was (The Tricks Book) on mechanics consists of 100 mechanical devices. While in astronomy they measured the length of a year – 365 days 6 hours.

#### Inventions:

- *First to give numerical values of area and volume.*
- *100 mechanical devices.*
- *Measured the length of a year.*

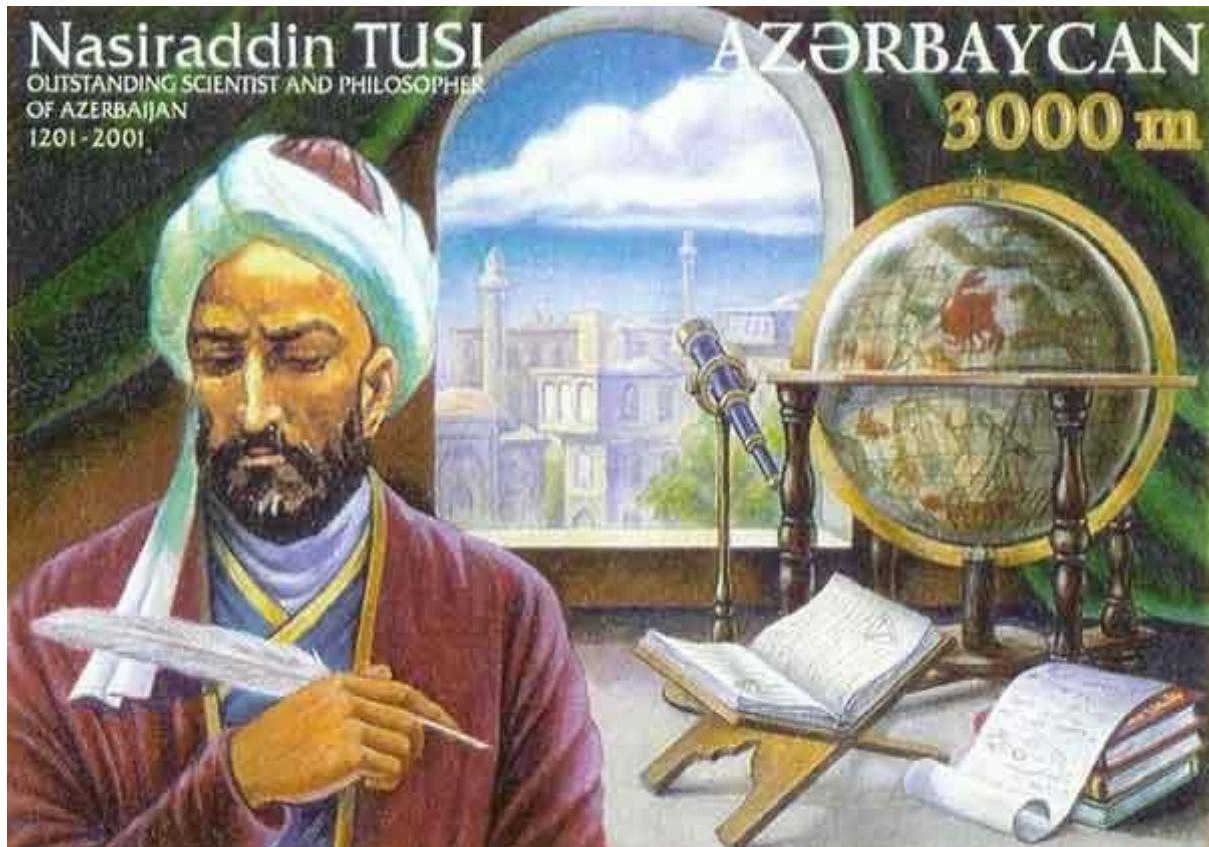
#### 14) Abdus Salam



By Molendijk, Bart, via Wikimedia Commons

[Abdus Salam, a well-known theoretical physicist from Pakistan](#), was born in 1929. His work on theoretical and particle physics still influenced many. His contribution in electroweak unification theory honored him with a Nobel Prize. He was first Pakistani and first Muslim to receive a Nobel Prize in science.

### 13) Nasir al-Din al-Tusi



Source: : By Kh. Mirsoyev, via Wikimedia Commons

C.E. He was among the scientist that were kidnaped by Hassan bin Sabah's agents. When Mongol conquer Almut (Hassan's stronghold) al-Tusi joined Halagu Khan's reign, where he was appointed as minister due to his knowledge.

In Astronomy, he contributed in astronomical tables by developing his own table – Al-Zij-Iikhan. The tables was followed by many astronomers till 15<sup>th</sup> century. Additionally, he invented instruments like, turquet.

In Mathematics, he wrote a book of complete quadrilateral with 5 volume summary of trigonometry.

**Invention:** *Al-Zij-Iikhan, an astronomical table.*

## 12) Al-Battani



Source: WikiCommons

He was among few Golden Age Muslim scientists and astronomers that featured by many European medieval age scientists. Al-Battani was born in c. 858 AD in Harran, Turkey. He was famous mathematician and astronomer. His treatise on astronomy – Kitab az-Zij – he calculated a year as being 365 days, 5 hours, 46 minutes and 24 seconds which is 99% accurate. Among his best-known works, the use of sines and tangents (trigonometry) in calculation got much fame.

### Inventions:

## 11) Ahmed Zewail



Source: Chemical Heritage Foundation, via Wikimedia Commons

He was an Egyptino-American scientist from Egypt to receive Nobel Prize and became first Egyptian to earn Nobel Prize in science. Zewail invented and introduced "femtochemistry". He is called "father of femtochemistry".

**Invention:** *Found femtochemistry, a branch of chemistry.*

## 10) Omar Khayyam



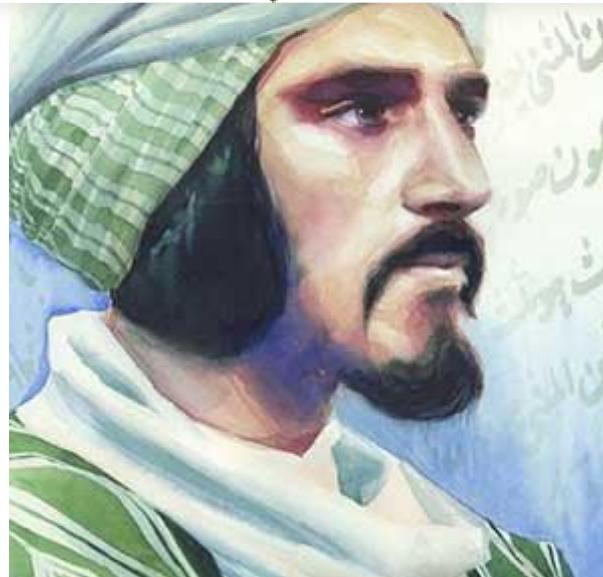
Source: By Atilin, via Wikimedia Commons

Omar Khayyam was medieval age Muslim scientist, mathematician, astronomer, and poet. Born in 1048, Nishapur, Iran. Among his contributions, the most notable work is in mathematics. He solved and classified cubic equation. His method was largely based on geometric solution. Khayyam recognized 13 form of cubic equation and solve with same geometrical method. In astronomy, he was assigned a task by ruler Malikshah Jalal al-Din to reform a solar calendar. Later, he successfully combined a calendar which proved to be more accurate than that of Gregorian calendar. However, in poetry his text – Rubáiyát of Omar Khayyám – gained fame in Europe, after English translation by Edward FitzGerald.

#### Inventions:

- *Classified and solve cubic equation, first time in the world.*
- *Solar calendar, one of the most accurate.*

## 9) AL-KINDI



You know most humans can't read 200 books in their lifetime but Al-Kindi wrote 260 books on various subjects. His books influence the work of prominent scientist and mathematicians like, Roger Bacon and Al-Khawarzami.

[\*\*Yaqub ibn Ishaq al-kindī\*\*](#) was born in Kufa, Iraq in 801 AD. Al-kindī was a true genius as he was expert in several subjects like, physics, math, astronomy, geography, music, and specially philosophy. His philosophy drove a new wave of knowledge across middle-east and honored with the title of "Philosopher of Arabs".

Furthermore, in chemistry he opposed the concept of changing base metals into gold, given by alchemists. In Mathematics, he laid the foundation of number system by giving 4 books on numbers. For such genius, Italian scholar Geralomo Cardano wrote "Al-Kindi is among the twelve greatest mind of medieval age".

**Discoveries:** *He was the first to discover sound waves.*

## 8) Al-Biruni



Source: David Stanley, Via Flickr

[\*\*Al-Biruni\*\*](#) was born in Khawarazm, modern day western Uzbekistan and northern Turkmenistan. The village name's, where he was born, named after him and now called "Birun". He was a Muslim scientist, mathematician, physicist, astronomer, and natural scientist. While taking about his early age, he was a keen learner and studied under famous mathematician Abu Nasr Mansur. At the age of 17 he calculate the latitude of his village. Furthermore, in his book al-Athar al-baqia he measured longitude and latitude of many places, which in future proved right.

While traveling to India with Sultan Mahmood Gaznawi, the conqueror of Khawarazm, he devised and measure the radius of Earth by his own method. Additionally, he wrote extensive encyclopedia on astronomy, engineering, and geography which he named Masudi Canon after the son of Mahmood Gaznawi. After serving science for decades, he died in 1048 at the age of 74.

**Inventions:** *Calculated radius of Earth.*

## 7) Thabit Ibn Qurra



Ibn Qurra was born in 836 AD in Haran, present day Turkey. He contributed in many branches of science, notably mechanics, mathematics, and astronomy. At young age, he travelled to Baghdad to join scientific group, where he studied under famous Banu Musa Brother. He wrote many text in which the text on mathematics, mechanics and astronomy survived. In mathematics he discovered the extension of real number system – positive real numbers. In mechanics he is known as “the father of statics”. And in astronomy, he is the early reformer of Ptolemaic system. Ibn Qurra truly deserved to be in greatest Muslims scientists.

#### Inventions:

- *Extension in real number system.*
- *Probably, the first reformer of Ptolemaic system.*

## 6) Ibn al-Haytham



How our eyes can show us the world around us and how light is involved into this? This was the question scientists tried to answer from the time of Aristotle. First Aristotle put his theory on visual perception and then Euclid put his. However, both were proved wrong when al-Haytham published a book on optics titled "Kitāb al-Manāzir" (book of optics). In this book he proved that vision first bounce on an object and then directed into the eyes, which make an object visible. Not only he gave hypothesis on this, but has proved this by experiments.

During the experiments, he invented PinHole camera, world's first ever camera.

Ibn al-Haytham was astronomer, mathematician, and physicist, born in a small village of Basra in 965 AD, present day Iraq. He was tutor of nobilities in Basra and also given an administrative post, which he left later. He left Basra and settled in Cairo where he wrote his famous book on optics, Kitab al-Manazir, which gained enormous success. Beside Kitab al-Manazir, al-Haytham wrote approximately 200 treatises on science in which only 50 survived, rest lost in history ([you can find all his 50 treatises here](#)). After serving science for whole lifetime, he died in 1040 AD in Cairo, Egypt.

#### Invention:

- *Author of Kitab al-Manazir.*
- *Invented PinHole Camera.*

## 5) Al-Zahrawi



Source: [www.wellcomeimages.org](http://www.wellcomeimages.org)

Medical students, especially surgeons, may have heard his name before because of his contribution in the field of medical.

Al-Zahrawi was a Muslim surgeon born in Medina Azahara, modern day Spain. At that time it was the part of Islamic State. He was famous surgeon of medieval age in Europe and also physician to King of Spain, Hakim-II.

He is best known for his original work on Surgical Encyclopedia Al-Tasrif, which was consider as standard reference in medicine for 500 years. Al-Tasrif is comprise of thirty volumes covers various aspects of medical science. The encyclopedia is based on Zahrawi's operations that he performed for decades. Additionally, Al-Zahrawi is also an inventor of several surgical instruments like, instrument for inspecting urethra and others. After serving medical for decades, he died in 1013 C.E.

**Invention:** *Al-Tasrif, an Encyclopedia on medical and surgery.*

**Title:** [The Father of Modern Surgery.](#)

#### 4) Ibn-Sina (Avicenna)



Source: [www.famousphilosophers.org](http://www.famousphilosophers.org)

Ibn-Sina (Latinized, **Avicenna**) born in Bukhara, present day Uzbekistan, in 980 AD. He is remembered as most significant philosopher of Islamic culture and in philosophy's pre-modern era. His predominance over various subjects can be seen in corpus of writings. He wrote about almost everything like, physics, mathematics, geology and geography, astronomy, alchemy, Islamic theology, logic, and poetry. He wrote 450 texts over 240 survived, most of them were in philosophy.

Like Philosophy, Ibn-Sina contributed medicine in the best way possible. He wrote many books on medicines, in which 40 survived. His medical encyclopedia – [The Canon of Medicine](#) – became standard medical book in universities. His another encyclopedia (The Book of Healing) on philosophy gained fame in medieval time. Muslim scientists were admired highly in Europe.

In Chemistry he invented and performed steam distillation and produce essential oil like, rose essence. After serving enormously in science, Ibn-Sina died at the age of 56 in Hamadan, Iran.

#### Inventions:

- *The Canon of Medicine*
- *The Book of Healing*
- *Steam Distillation*

### 3) Jabir ibn Hayyan



Source: GettyImages

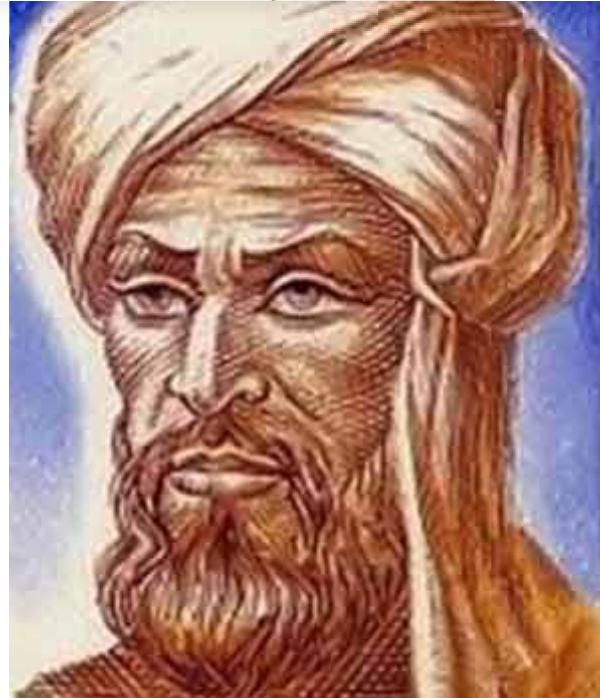
The alchemist, or I say the most influential alchemist of all time, [Jabir ibn Hayyan was born in c. 721 CE in Tus](#), present day Iran. In his early life, it is believed that he studied under Imam Jafar Sadiq, a prominent figure in Islam. Ibn Hayyan was a Muslim scientist polymath. He wrote many text in various fields of science like, chemistry, alchemy, philosophy, geography, astronomy, physics, and engineering. His text on chemistry and alchemy laid the foundation of modern chemistry, that's why he is called "Father of Chemistry".

He took experimental chemistry into new level by perfecting several experiments: calcination, crystallization, distillation, sublimation, and evaporation.

As I said, he wrote many books on various subjects. 2,000 treatises and articles have credited to him but it worth to mention that most of them are written by his followers not by him. In his later life, Hayyan was given house arrest by caliph Haroon-Rasheed, where he died in 803 C.E.

**Title:** *The Father of Modern Chemistry (not modern chemistry).*

## 2) Al-Khwarizmi



You may not be familiar with this mathematician. Yet, I'm sure you have faced his invention many times – Algebra. Yes, Al-Khwarizmi is the mathematician who first gave the concept of Algebra. He is best known as “the father of algebra”.

He was born in Baghdad in 780 AD. Like many other Muslim scientists and polymaths, he also had strong grip on several subjects like, mathematics, astronomy, and geography.

During Abbasid Caliphate, he worked in “House of Wisdom” in Baghdad where he translated Greek philosophical and scientific works. This is where he published his most renowned book titled, *Al-Kitāb al-mukhtaṣar fī ḥisāb al-jabr wal-muqābala*, from which the title “algebra” derived. Al-Khwarizmi published this book for teaching purpose, as it was the first time when a book can define algebraic linear and quadratic equations in systematic way.

Not only algebra, he also introduced Hindu-Arabic numerals (whole numbers). Furthermore, his work on geography and astronomy holds prominent value as well.

#### Inventions:

- *Introduced Algebra.*
- *Introduced Hindu-Arabic numerals.*

Title: [The Father of Algebra](#)

## 1) Muhammad ibn Zakariya al-Razi



Source: [www.storyofmathematics.com](http://www.storyofmathematics.com)

When it's about medical, it's about al-Razi. He is a very renowned doctor of medieval age. Beside medical, his contributions in chemistry are also remarkable. He has got many titles, like the world's first best doctor, father of phycology (not modern phycology), father of psychotherapy, and father of pediatrics. Furthermore, he wrote 200 books on various sciences in which half of them were on medical. His work and treatises were the part of Western University curriculum. His book on medical – Kitab al-Mansouri – is among the only two most influential medical books of medieval age, and interesting fact, both of them were written by him. Al-Razi's another book – Kitāb al-Hāwī fī al-Tibb – is a comprehensive encyclopedia on medical, which gained success under the Latin name Liber Continents.

Have you ever been through smallpox and measles? Most probably, you have. Thanks to al-Razi, the first person who identity the disease and gave most trustworthy treatment of that time. For his enormous contribution in medical field, he was honoured the title "Doctor's Doctor". Indeed, he was greatest Muslim scientist.

While talking about chemistry, he was the person who classified minerals into 6 categories and found chemicals like, alcohol and kerosene.

His end was not justified, in later life al-Razi became blind because of the tortured. He was tortured to not successfully convert base metals into precious metals like silver and gold. Finally, he died in 925 or 935 in Ray, Iran.

### **Titles:**



- *The Father of Psychotherapy.*
- *The Father of Pediatrics.*

So, these are the 20 greatest Muslim scientists and their inventions. If you have any question, let us know by commenting below. We love to hear from you!



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