

## Life is just an accident

One explanation for the development of the universe is that life on Earth is just an accident. From this angle, life didn't originate from a conscious plan or purpose; rather, it developed as a consequence of a sequence of probabilistic events and natural processes. This opinion is supported by several ideas.

### Chemical Evolution of life

One theory holds that life emerged from non-living elements via a process known as abiogenesis. This process entails the progressive transformation of simpler chemical compounds found in the early Earth's environment into complex organic molecules. Although scientists are currently investigating the precise processes that led to abiogenesis, there is evidence that shows natural chemical reactions and environmental factors may have had a role.

### Biological Evolution

Following its emergence, life experienced biological evolution, giving rise to the wide variety of species that exist today. The evolution theory of natural selection postulates that features better adapted to an organism's surroundings increase its chances of survival and procreation, which in turn transfers those traits to offspring. This process has resulted in the extraordinary diversity of life on Earth over millions of years.



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## Cosmic and Planetary Conditions

There is a limited set of physical factors that are required for life as we know it, including liquid water, a stable climate, and a protective atmosphere. Earth just happens to have these attributes. We go into further depth about these requirements below.

### The tilt of the Earth's axis

We know that the Earth's axis is tilted at an angle of 23.5 degrees to the vertical. This is a phenomenon that makes Earth a favorable place to harbor life. A little disturbance here and there and the whole balance gets destroyed. This will result in a doomsday for living organisms including us.

### Why is it so important?

Seasonal variations that we experience throughout the year are a result of this precise angular tilt of the axis. If the axial tilt changes to some different value due to some reasons then we will experience strange phenomena on Earth. It would be a totally new place to live in.

Some places will be shrouded in darkness for six months while others will be roasted in the sun's heat for the same amount of time. The known picture of ice-capped poles and hot equatorial regions will no longer be



a reality. We may even get the opposite scenario depending on the angular tilt.

The familiar patterns of the ocean currents will cease to exist and we will be left with no mechanism for temperature control. Daytime temperatures will rise up beyond expectations and may be as high as 90-100 degrees centigrade. Similarly, nights will be unbearably cold.

### **What are the chances that life forms will survive?**

It is quite obvious that complex life forms like humans and other animals will cease to exist in such unfavourable conditions. The reason is the lack of oxygen. Quite obviously green plants will have a tough time surviving such harsh conditions. This will result in a drop in oxygen levels in the Earth's atmosphere.

### **Then who will be around?**

It is only a few bacteria (which are relatively simpler forms of life) that may stick around, with a very bleak chance of developing into complex organisms that need greater quantity of oxygen to develop.

### **How did Earth's axis get this precise tilt?**

Now that we know what will happen without the tilt, the vital question that arises is what created it. The answer can be found in the idea of the *Giant-impact hypothesis*. This is the theory that explains the formation of the moon.

According to this theory, around **4.5**

**billion** years ago our Earth collided with an astronomical body of the size of Mars which is known by the name of **Theia**. An enormous amount of debris was projected in the space due to the collision. With the passage of time, this debris collected around the Earth due to gravity to form the Moon.

This collision is not only responsible for the precise angular tilt that sustains life on Earth but also for the extra large core of Earth compared to its size. It is believed that Theia's core and mantle mixed with Earth's during the collision to give it a larger core than expected.

### **Placed in the Goldilocks Zone**

The area surrounding a star that could support liquid water on an orbiting planet and, thus, potentially support life is known as the habitable zone.

The planets orbiting at that "just right" distance from a star are neither too hot nor too cold to support liquid water, hence the term "Goldilocks zone" for the habitable zone. When a planet gets closer to its star, the water turns into steam; when it gets farther away, it freezes.

Earth is blessed to be in the Goldilocks zone of the Sun and so are humans. When Earth was formed 4.5 billion years ago, there was some fine-tuning in the dynamics of the solar system that resulted in its position in this perfect place that supports life.

### **Magnetic field of Earth**

Earth's magnetic field plays a crucial role in supporting life by providing several key functions:



It acts as a shield, deflecting the solar wind—a stream of charged particles emitted by the Sun—away from the planet. Without this protective magnetic field, solar wind particles could strip away Earth's atmosphere over time, making it inhospitable for life as we know it. The magnetic field also helps protect Earth from harmful cosmic radiation, such as high-energy particles from outer space. These particles can be damaging to living organisms and DNA, so the magnetic field helps reduce their impact on the planet's surface.

Earth's magnetic field is used by many animals, such as birds and certain marine species, for navigation during migration.

Additionally, humans have used Earth's magnetic field for navigation for centuries, with compasses being one of the earliest tools to utilize this feature.

Overall, Earth's magnetic field is an essential component of the planet's habitability, protecting it from the harsh environment of space and helping to create the conditions necessary for life to thrive.

### **Is there a supernatural influence or just a mere coincidence?**

Since the collision produced the precise axial tilt, it would naturally lead us to the question **who or what did the fine-tuning?** A different impact would have resulted in a completely different scenario. A little alteration in speed or point of impact may have resulted in a different angular tilt. The same argument goes for the position of the Earth in the habitable zone of the Sun

and also for the existence of the magnetic field of Earth.

We may have never come into existence. I may not have been around to write this story, you may not have been there to read it. ***Then why did we get the precise impact that supported life!!!***

Is everything planned!! Are we being monitored by something or someone!!! Is it 'God'!! Or is it just a mere coincidence!!

Doubts and speculations will always be there. But of now it seems that ***we are really lucky to be living.*** The odds are heavily loaded in favour of our non-existence.

Think about how big the cosmos is and how many circumstances had to come together perfectly for life to emerge on Earth: the correct combination of components in the appropriate amounts, the right kind of climate, and a series of random events spread over billions of years. In this way, one may contend that life as we know it is a result of pure coincidence. Probably it's just an accident, that we live.

But that doesn't lessen the importance or worth of life itself—even though it may have arisen from what appears to be a series of accidents. The fact that we are here and can think about ourselves and the cosmos around us in spite of all odds is a source of awe and significance for a lot of individuals.

Whether one believes that life is the product of chance or that it is a part of a greater cosmic plan, the fact that we are here and have the capacity to experience and enjoy the world around us does not change. In the end, the philosophical topic of why life exists and what its potential purpose may be is a very personal one that frequently reflects personal opinions and ideas.

