# The Youth Science Journal Of Iraq

Issue #1 October 2025

# The Youth Science Journal Of Iraq

## YSJOI ISSUE #1



**First Edition – October 28th 2025**

**Table of Contents:**

## A Short Editorial:

### YSJOI - by the youth, for the youth of Iraq!

In the great land that was once Mesopotamia, and the home of the hanging gardens of Babylon, progress in science has slowed.

Why?

Because the youth of Iraq have no platform to build upon! Opportunities to learn about science, technology, engineering, and mathematics are rare, and students trying to learn about them are even actively discouraged – I speak from experience.

But instead of surrendering to that silence, I have chosen to rally the youth of Iraq. If we do not have a base to stand on, we will build one!

And the first step to that is this Youth Science Journal Of Iraq, YSJOI, where we aim to provide that very base – an opportunity to teach, learn and explore through different articles – be it inspiring them, writing them, or reading them!

Thank you for being part of this beginning.
Now, dive in – into the weird, the beautiful, and the wonderful.

– Satvik M. Bhure, Founder of YSJOI

## Question I: If time stops in a black hole, does that mean that the black hole is frozen in time?

*– Zakaria Ahmed, 13*

Black holes! Maybe the scariest parts of space – no wonder there are so many movies and stories that revolve around their time-dilation, and supposed ability to stop time! But here's the thing: time doesn't stop in a black hole! If you were falling into a black hole, everything would be going at normal speed for you. It's for observers that things get weird.

As you fall to the black hole, you would *appear* to slow down till you reached the event horizon, and there you would appear to freeze! This doesn't, however, mean that you're frozen – as a matter of fact, you'll probably have passed into the event horizon *long* before we even see you freeze. This is because, as you fall into the event horizon, the light reflecting from you that would normally permit us to see you is stretched by the black hole. Specifically, as the photons that compose the light appear to lose energy as they climb out of the black hole.

This lost energy must have an effect on them. The photons cannot slow down to balance this loss of energy, so they *stretch* instead! Their wavelengths get larger – redder, as they shift to the radio-wave end of the electromagnetic spectrum – and are thus *redshifted*.

Thus, as light stretches infinitely, it stretches past the wavelengths of visible light, then the infrared wavelengths, then the microwave wavelength, and lastly the radio-wave end of the spectrum. To an observer, the light gets dimmer, and dimmer, until it just fades away entirely!

This is why black holes seem to be frozen in time, even though everything inside them is moving at an entirely normal speed! The object falling into the black hole is reflecting light and photons at the normal rate – it's just that space-time itself is being distorted between the observer and the black hole!

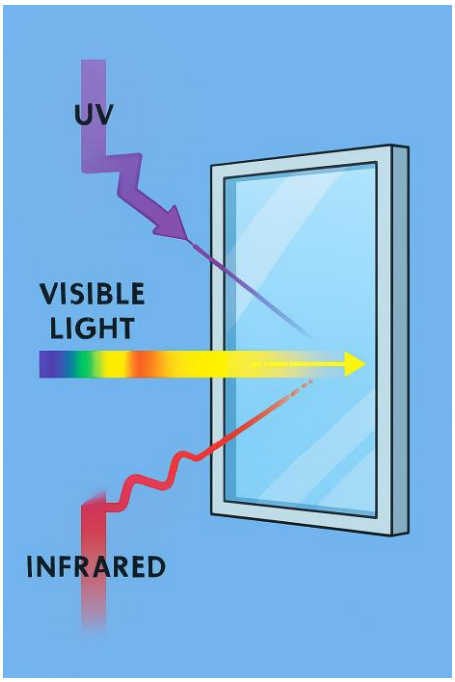
So to conclude – no, time is not frozen in a black hole, and black holes are not frozen in time – it's time itself that is warped by the black holes!

## Question II: How does light pass through glass, which is solid?

*– Rozho Michael, 16*

Glass! One of the most famous transparent solids – but *why* is it transparent? Why is it not opaque like wood, seeing as they're both solids? Well, the answer lies in a bit of chemistry and a bit of physics! You see, light is made of photons – tiny packets of energy. The atoms in glass have electrons that can absorb photons *only* if those photons have the exactly right amount of energy. If the photon's energy is not equal to the energy that would allow an electron to "jump" between energy levels, the electron just ignores it – it doesn't absorb it, block it or deflect it. Here's the fun part - visible light – the light that we can see, that is needed for photosynthesis, and that is composed of the ROYGBIV spectrum – doesn't have the right energy to allow the electrons in glass to make that 'jump'; and so the electron lets the visible light pass through! Here's the part that we can't see, however – the reason that glass does get warm when light hits it, even though the light looks like it just passes through – Ultraviolet light gets completely absorbed by the glass' electrons, causing it to warm up; and infrared waves, having too little energy, are blocked or reflected. So glass is also a typical solid – it just doesn't absorb the *visible* light around it because it simply doesn't provide it with the energy it needs! The electrons in glass are extremely choosy – they only take in what enriches them, and push away all else, ignored! And that's a good thing, because without that choosiness, how would we have our windows?

Below is a diagram illustrating this:



# Question III: Can humans change our own genes? Or add new ones?

*– Ismail Salah, 15*

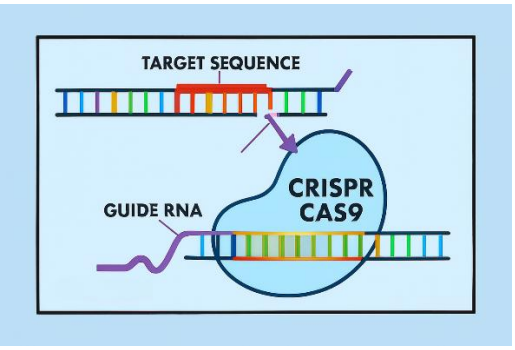
Genes! The little files in every one of our cells – which also hold the coding of every single bit of our bodies. Can we change them or add new ones?

Up until *very* recently, this would have earned a straight *no*! After all, genes are the files of our bodies, containing the crucial code that keeps us alive – DNA! To play with them would be to play with nature itself – with unforeseen consequences.

But today? Today, scientists have been able to do both! To edit malformed genes in the human body and add in new ones to help save peoples' lives, we use genetic engineering – most famously, CRISPR-Cas9, which can cut out tiny pieces of DNA in the genes to permit scientists to replace damaged sections with untainted DNA – thus potentially saving the lives of many victims of genetic disease, such as sickle cell anemia.

In 2020, for example, scientists used CRISPR to successfully treat patients with genetic blood disorders by editing their cells. In agriculture, it's used to create plants that resist pests or grow in harsh conditions. Unfortunately, there is a catch - the fact that we can edit genes is established. However, debates are still occurring over whether we *should* edit genes. Editing reproductive cells could pass on edited genes to future generations, which raises many ethical issues. From a purely scientific view, however, we can, and are editing people's genes to great, positive effects!

Here is a small diagram showing how CRISPR works:



# Question IV: Is Cancer Genetic?

– M*aryam, 14*

Cancer and genetics: two almost irrevocably linked parts of our vocabulary. Are they, however, so truly linked in reality?

The answer is both yes and no. Cancer is in fact always genetic – because it is linked to malformations in the genes that cause cancer. However, it is not always hereditary – while there are some genes that your parents can pass onto you, that could later cause cancer, this is not always the case; in fact, this applies for only a minor percentage of cancer cases – approximately 5-10%. The rest come from somatic genetic mutations, which are acquired during the course of your life! These can be caused by environmental factors or random replication errors causing DNA damage.

Now, more specifically, this is what happens during development of cancer, which explains why it is genetic: when there is a mistake in the DNA's 'code', the genes that promote growth (oncogenes), the genes that prevent it (tumor suppressant genes) and the genes that repair DNA (providing stability to the genome, and helping repair any errors in the DNA) can become dysfunctional. As these errors pile up, the odds of a cancerous growth grow. This is why age is a major risk factor: the longer we live, the more opportunities there are for DNA errors to pile up.

This is also why a 'cure' to cancer is almost impossible to find – the sheer number of cells that *could* undergo a dangerous mutation simply cannot be targeted and killed, for that is most of the human body.

These mutations can also be expedited by exposure to certain environmental factors – prolonged exposure to UV light, frequent exposure to tobacco smoke, and exposure to certain chemicals. This does not, however, make cancer environmental – these factors can damage DNA and simply *increase* the probability of someone developing cancer.

Because these processes all involve changes in the DNA, cancer is fundamentally a genetic disease, even if the genetic changes are not inherited.

# Question V: Why do we live near volcanoes even though they are so dangerous?

*– Sorashi B, 11*

Volcanoes – the terrifying mountains that tend to explode and spew lava and ash and gas everywhere. It would make the most sense to flee as far as possible from these 'Mounts Of Doom', right? And yet many people – entire cities, even – flourish right at the base of many volcanoes, along with the native flora and fauna. Why do all these people live near such dangerous hotspots? Well, the answer lies in the geography, geology and chemistry of the land around volcanoes! While the lava that explodes out of volcanoes is dangerous – both at first sight, and for a while after that - the lava, upon cooling, actually provides extremely fertile soil for plants to grow, animals to eat said plants, and humans to grow their crops! Volcanic lava and volcanic ash settle on the soil around the volcano and imbibe the soil with many different elements, all useful in the growth of plants – such as iron, calcium, magnesium, sodium, potassium, phosphorous, sulfur and silicon, along with many other trace elements. All of this, combined with the lack of predators around volcanic sites for a period of time, encourages plants to grow in abundance. This effect can be seen all over the world – the slopes of the infamous Mount Vesuvius, famed for destroying Pompeii, are rich and fertile and contains a thriving human community; the fertility of volcanic soil is a major reason why civilizations have long settled near volcanoes despite their danger. Similar patterns can be found in Japan, Italy, Java in Indonesia. But the benefits of living near volcanoes don't end with soil fertility. Volcanic regions also offer **geothermal energy**, which can be harnessed for heating, electricity, and even hot spring tourism, and last, but not least, the elevated landscapes around volcanoes often provide natural protection from floods and can create unique microclimates that are favorable for both humans and wildlife. The reward that volcanic soil offers is far greater than the risk that comes with it – and so from ancient times, humanity has found refuge around the slopes of volcanoes!

Acknowledgements

We thank all the scientists who have worked thus far to find all about the world so we can learn about it, and everyone who has supported any member of the YSJOI team in furthering our mission.

Special thanks to:

Zakaria Ahmed

Rozho Michael

Ismail Salah

Maryam

Sorashi B.

For these incredible questions and giving us a chance to answer them in the October 2025 issue of YSJOI!

And we thank you, reader, for supporting our mission to help the Iraqi youth where there has been no help as yet!

# CONCLUSION

We hope to further YSJOI's mission to empower the youth of Iraq in STEM fields by our monthly magazine, and sincerely hope we were able to start it with this, our first issue! We are always open to feedback and questions, and everyone is of course welcome to learn in their own way; after all, we are all different, and we all belong.

Make sure to visit our website at ww1.YSJOI.is-great.org

You can email us at YSJOIofficial@gmail.com

Or DM us at www.instagram.com/ysjoi_official