



**SCIENCE**

Vol. 01 Issue 01  
Feb 2024

**MAGAZINE**

**Bal Bharati**  
**PUBLIC SCHOOL**  
**NISHATPURA, BHOPAL**

**e-SAGARIKA**

A 32 page exclusive feature on Mission Mangalyaan



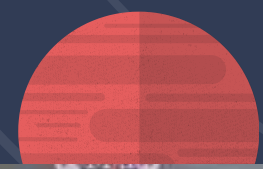
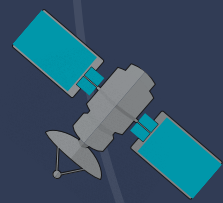
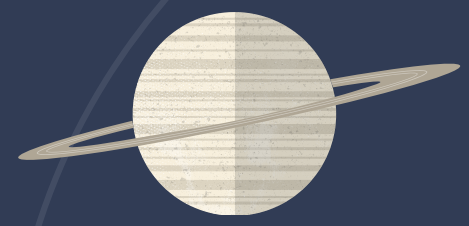
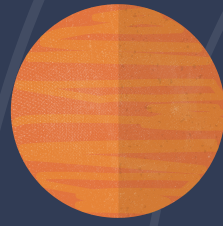
**Kuldeep Singh**

Principal,  
BBPS, Nishatpura

**S**wami Vivekananda once said, “We want that education, by which character is formed, strength of mind is increased, intellect is expanded and by which one can stand on one's own feet.” Education must build up the character and manifest our real nature. Personality is the influence, the impression, one creates on the others.

It gives me immense pleasure to know that school science department is publishing e-sagarika science edition. The institution is trying its best to provide quality education to our students and in this context our science faculty is trying their best to explore all the field of science. This magazine shows their Hardwork, Dedication and Exploration into the field of science.

I wish them all the best for this edition & for the future endeavours.



**“Wisdom is not a product of schooling but of the lifelong attempt to acquire it.”**



The first unmanned Gaganyaan-1 mission, a test flight to check the technology readiness for the final mission, is scheduled to take off by the end of 2024. The manned mission, which will fly a three-membered crew into a low earth orbit at an altitude of 400 km for a period of three days, is scheduled later.

Group Captain Prasanth Balakrishnan Nair, Group Captain Ajit Krishnan, Group Captain Angad Pratap, and Wing Commander Shubhanshu Shukla are India's astronauts-designated for Gaganyaan, India's first crewed space mission.



# FROM THE CO-ORDINATOR'S DESK



**Mradulata Singh**

**“The evolution of science through applied innovation”.**

The evolution of science is a dynamic process shaped by curiosity. This evolution is marked by technological advancements and the contributions of Countless Scientists throughout .

"As science is not just a subject, it's a journey of exploration into the wonders of the universe. Here students are the future scientists and innovators who will shape tomorrow's world science is not about memorising facts, but about asking questions and seeking answers. Our teachers are guiding lights who inspire and empower the next generation of thinkers.

Remember, only the Teachers whose dedication and enthusiasm make science alive in the classroom. If we navigate the complexities of the world let science be our compass guiding us towards a brighter and more sustainable future .

In the pages of this magazine all the diversities and depth of scientific endeavours taking place within our esteemed institution are showcased by different departments.

Definitely, together we can unlock the secrets of the universe and pave the way for a brighter tomorrow.



# FROM THE HOD'S DESK

Greetings to all,

We live in a world that involves science in all aspects. In order to live a peaceful and purposeful life we have to explore more into science. It has been our continuous endeavour to explain more to our students the science behind every happening on earth. This edition of science magazine is also a small step towards these expeditions. I hope that it will awaken the tiny minds of our young readers and also will find appreciations from all.

I acknowledge all the contributions made towards bringing out this edition, and also wish all the best for the upcoming versions.

Regards,



**Johnson Varghese.**



The RNA virus named as hot spring RNA virus (HsRV) and is presumed to infect thermoacidophilic bacteria. This study shows that RNA viruses can inhabit high-temperature environments, where life is believed to have originated. Furthermore, HsRV considerably differs from all other RNA viruses belonging to the two established RNA virus kingdoms, indicating the existence of a previously overlooked third RNA virus kingdom. Future studies will attempt to culture host strains that harbor HsRV and elucidate the virological properties and ecology of HsRV. In addition, the same method used in this study will be applied to various microorganisms, animals, and plants to explore possible undiscovered RNA viruses. It will be a breakthrough in the field of understanding the origin of life and its evolution on Earth.

**Advancement in Virology**



# THE EDITORIAL BOARD



Vaseem ul Rahaman



Johnson Varghese



Mradulata Singh



Leena Shandilya



Shilpi Dubey



Iram Khan



Debjani Sarkar



Seema Nanda



Vijaya Chaudhary



Niyati Yadav



Pragati Sengar



Adarsh Prasad



Mehwish Rizwi



Ashish Meena



Ashwini Kumar

This science magazine is to be viewed as a launch pad for the student's creative urges to blossom naturally. As the saying goes, mind is like a parachute that works best when opened. This humble initiative is to set the budding minds, allowing them to roam free in the realm of imagination and experience to create a world of science, in words.

The enthusiastic write ups of our young writers are indubitably sufficient to hold the interest and admiration of the readers. This souvenir is indeed a pious attempt to make our budding talents give shape to their creativity and learn the art of being aware, because we believe that our success depends upon our power to perceive, the power to observe and the power to explore. We are sure that the positive attitude, hard work, sustained efforts and innovative ideas exhibited by our young minds, will surely stir the imagination of the readers and take them to the surreal world of science, its joys and pleasures. We have put in relentless efforts to bring excellence to this treasure trove.

The Editorial Board.

E-Sagarika-2023

# UNDER THE SCOPE

SCI BUZZ >

## BEYOND THE DARK MATTER

**A** Dark matter is a placeholder term for the observed phenomenon that there seems to be about 5 times more invisible matter than visible matter. It is called "dark matter" because it interacts through gravity like matter, and it only interacts through gravity, meaning that we can't see it.

The universe is expanding, with each point moving away from each other over time. This expansion is accelerated over time, similar to the surface of a partially inflated balloon. As the balloon is inflated, the distance between all the dots increases, creating galaxies. As the balloon reaches its full inflated state, the expansion slows down, but the rate of inflation increases faster. This acceleration requires an additional energy source that is not yet detected, leading to the concept of "Dark Energy." The acceleration of the expansion is accelerating, but the exact cause remains unknown.

Matter, including coffee mugs, air, black holes, water, planets, and paper-clips, has mass and responds to gravity and electromagnetic force. Dark matter, which is invisible due to light's oscillating nature, is a different type of matter that outnumbers everyday stuff by a factor of four but cannot clump together to form atoms or planets. This type of matter is not strange, but it is a different type of matter that cannot clump together to form atoms or planets.



INDUSTRY >

## MEDICINE BREAKTHROUGH

**A** Alzheimer's is a progressive mental disease that destroys memory and other important brain functions. A first in-human study, featured in the latest issue of the New England Journal of Medicine, demonstrates that focused ultrasound in combination with anti-amyloid-beta monoclonal antibody treatment that can accelerate the clearance of amyloid-beta plaques in the brains of patients with this disease. It is indeed a big breakthrough for the patients suffering from this dreaded disease.




DETAIL >

## MEET THE SCIENCE SKEPTICS

**S**cience skepticism, the tendency to question or doubt scientific findings, theories, or methods, has become a prevalent aspect of contemporary discourse. While skepticism can be a healthy component of the scientific process, fostering critical thinking and driving inquiry, unchecked skepticism can impede progress and undermine public trust in science. This article explores the origins, manifestations, and consequences of science skepticism, as well as strategies for addressing and mitigating its negative effects.

Addressing science skepticism requires a multifaceted approach that addresses its root causes while promoting scientific literacy and critical thinking skills. Education plays a crucial role in

combating skepticism by equipping individuals with the knowledge and tools needed to critically evaluate scientific information and distinguish between credible sources and misinformation. Promoting transparency and open communication within the scientific community can also help build trust and credibility, as transparency fosters accountability and allows for scrutiny of scientific processes and findings. Additionally, fostering dialogue and engagement between scientists and the public can help bridge the gap between expertise and lay understanding, fostering a more nuanced appreciation of scientific complexities and uncertainties.



**WHEN I FIRST  
LOOKED BACK  
AT THE EARTH,  
STANDING ON  
THE MOON,  
I CRIED.**

Alan Shepard talking about his time on the lunar surface during the Apollo 14 mission in February 1971.



# UNDER THE SCOPE

SCI BUZZ &gt;

## mRNA Lets learn

**M**essenger RNA (mRNA) is a single-stranded ribonucleic acid that contains instructions for cells to make proteins. It is transcribed from a strand of DNA and carries the coding information for protein synthesis. In-vitro transcription (IVT) mRNA was successfully transcribed and expressed in mouse skeletal muscle cells, establishing the feasibility of mRNA therapy. mRNA-based therapeutics can produce any protein/peptide via the protein synthesis machine in vitro or in vivo. Unlike DNA-based drugs, mRNA transcripts have a relatively high transfection efficiency and low toxicity. mRNA has broad potential for treating diseases requiring protein expression and higher therapeutic efficacy due to its continuous translation into encoded proteins/peptides. The rapid entry of mRNA-based technology and products into various biomedical fields benefits all aspects of human life, especially millions of patients suffering from incurable diseases.



VIRTUAL REALITY &gt;

## LATEST IN SCIENCE

**V**irtual reality (VR) and augmented reality (AR), first popularized by the gaming industry, have made their way into healthcare. Now, VR and AR tools can display interactive 2D and 3D images of physical procedures or anatomy, helping surgeons to maximize efficiency and minimize risk in the operating room.

### WHAT IS VR AND AR SURGERY?

Virtual reality (VR) and augmented reality (AR) are simulated imaging tools used in surgery. Using 2D and 3D image rendering from VR/AR tools, surgeons can mimic real surgical procedures and anatomy, boosting preparedness and efficiency in the operating room.

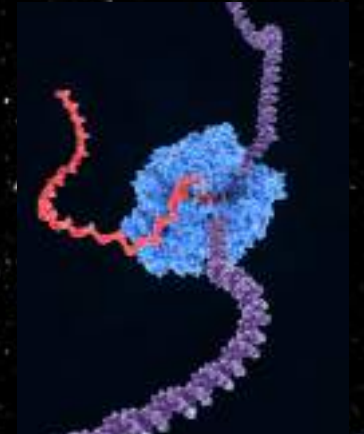
### Benefits of VR and AR in Surgery

- Access to 3D anatomical images and models.
- Access to real-time medical references and information.
- Accelerates surgical operation prep times.
- Provides low-risk surgical testing environments.
- Reduces surgical equipment and staff costs.

With VR and AR in surgery, surgeons have pre-operation access to 3D renderings of hearts, eyes, knee joints and lots else. In some cases, surgeons even use AR-enabled haptic feedback gloves to mimic the buzzing of saws and drills. All of these resources help to prep for operations, study realistic models of patients and information.

Besides being a boon to surgical preparation, these extended reality (XR) tools also help hospitals save time and money. The ability to study 3D scans before an operation helps surgeons thoroughly prep for each case and implement proactive, time-saving procedures.

Another plus: storing images and patient data on one AR/VR platform reduces the need for expensive screens and unnecessary staff.







**TINY-TOTS**



## Health & Hygiene





# HEALTH AND HYGIENE IS AN ESSENTIAL LESSON FOR WELL-BEING.

As a science teacher, advocating for health and hygiene is paramount in fostering a conducive learning environment. Educating students about the importance of maintaining cleanliness not only promotes physical well-being but also prevents the spread of diseases. Simple habits such as regular handwashing, proper disposal of waste, and personal grooming can significantly reduce the risk of illnesses. Moreover, teaching students about nutrition, exercise, and adequate sleep empowers them to make informed choices for a healthy lifestyle. Integrating practical demonstrations and interactive sessions enhances comprehension and encourages active participation. By instilling these habits early on, we equip our students with lifelong skills to safeguard their health and well-being. Let's continue to prioritize health and hygiene education to nurture a generation of responsible and healthy individuals.



*Vijaya Chaudhary*

In today's fast-paced world, children can still prioritize their health despite busy schedules. Parents can encourage them to:

**Prioritize Sleep:** Establish a consistent sleep schedule to ensure adequate rest, as it is crucial for physical and mental well-being.

**Balanced Nutrition:** Opt for nutritious snacks and meals, emphasizing fruits, vegetables, whole grains, and lean proteins while minimizing processed foods and sugary drinks.

**Stay Active:** Incorporate physical activity into daily routines, whether through sports, outdoor play, or simple exercises at home.

**Hydration:** Drink plenty of water throughout the day to stay hydrated, especially during physical activities and in warmer weather.

**Personal Hygiene:** Maintain good hygiene habits, such as regular handwashing, bathing, and oral care to prevent the spread of germs and maintain overall health.

**Screen Time Management:** Limit screen time on electronic devices and encourage outdoor play or engaging in hobbies to promote mental and physical well-being.

**Mindfulness and Relaxation:** Teaching techniques like deep breathing, mindfulness exercises, or yoga to manage stress and promote relaxation. By incorporating these habits into their daily lives, children can effectively manage their health and well-being, even in today's busy world.

So everyone must follow the above and live a happy and healthy life.



# NOBEL PRIZE

2023

## About the Prize

The Nobel Prize is an international award administered by the Nobel Foundation in Stockholm, Sweden, and based on the fortune of Alfred Nobel, Swedish inventor and entrepreneur. In 1968, Sveriges Riksbank established The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, founder of the Nobel Prize. Each prize consists of a medal, a personal diploma, and a cash award.

A person is awarded Nobel Prize for "the greatest benefit to humankind." A person or organisation awarded the Nobel Prize is called Nobel Prize laureate. The word "laureate" refers to being signified by the laurel wreath. In ancient Greece, laurel wreaths were awarded to victors as a sign of honour.

## PHYSICS

- Pierre Agostini
  - Ferenc Krausz
  - Anne L'Hullilier
- "for experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter"



## PSYCHOLOGY/ MEDICINE

- Katalin Kariko
  - Drew Weissman
- "for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19"



## CHEMISTRY

- Mounji G. Bawendi
  - Louis E. Brush
  - Aleksey Yekimov
- "for the discovery and synthesis of quantum dots"



# INQUISITIVE

# MINDS

PRIMARY WING



Seeds Germination

Air has Weight



EVS-Class 1



Types of Plants



Class-1 'EVS' 'Water & Air'

Fruits Value



The story of plants, their food, and seed germination is not just a tale of botanical wonder; it is a narrative of profound interconnectedness between plants and humanity. From the food on our plates to the air we breathe, plants are the silent benefactors of our existence, providing sustenance, shelter, and solace in equal measure.



# Medicinal Plants

**1 Brahmi- Bacopa monnieri** is cultivated in southern and eastern parts of India and Australia and Hawaii. The plant possesses nootropic properties, helping improve cognitive performance, including memory and learning.



*Seema Nanda*

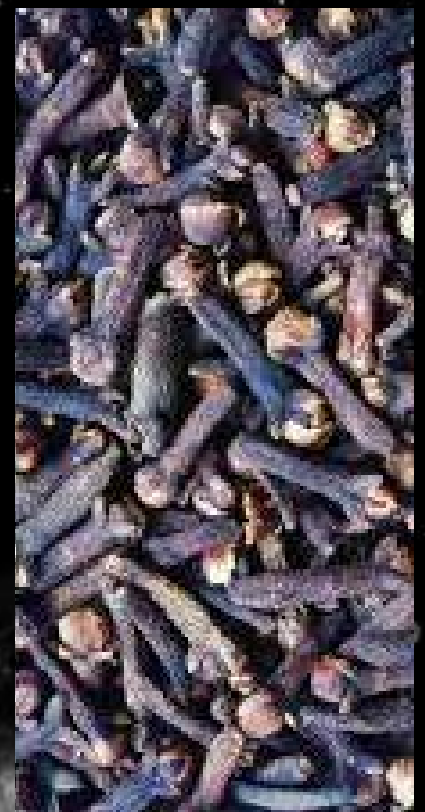
**2 Olive - Olea europaea** L. Widely cultivated in Europe and Mediterranean countries, Olive fruit oil in a healthy diet supports balanced lipid levels by helping lower LDL cholesterol and improve HDL cholesterol levels.



**3 Saffron - Crocus sativus** L. Widely cultivated in Iran, India and Greece, the style and stigma of saffron are used to treat skin blemishes, supporting a healthy glow.



**5 Clove- Syzygium aromaticum** (L.) Merr. & L.M. Perry Widely cultivated in Indonesia, Madagascar, and Sri Lanka, the oil from clove flower buds helps numb pain in toothache and is commonly used in oral care.



**4 Pomegranate - Punica granatum.** Found in India, the United States, France, and Australia, Pomegranate fruit has antimicrobial properties, beneficial in oral care.





## The war between Artificial Intelligence and Human Intelligence



*Debjani Sarkar*

The development in science and technology is considered to be beneficial for us and one such development of science and technology is the artificial intelligence. The term AI is becoming popular day by day. It is something which the human brain has developed to decrease the load on itself. Today this technology has made our life very easy but it has developed a sense of fear as well. The fear is that if machine start doing all the work what will the humans do? And what if these machines take up all the work and we humans are left with nothing to do at all and over powered by technology. This fear is real. Today we have machines which are doing almost all the work. Right from cleaning our cars to making food everything is possible just at a push of a button. Among many one of the recent AI developments that we have seen is a news anchor. India Today group introduced first AI anchor Sana. So now will the work of the anchors be in danger after this? We also have so many tools which can be used to write content. So does that means the job of the content

writer is in danger? Well if we think it might look that all these professions are at danger but if we look at a deeper level this might not be the case. Human brains created these machines and they can do only what the human brains have trained them to do. The robots work on command and the tools such as chat gpt compiles content from what the humans have already created. These machines cannot create anything on their own. The human brain is capable of doing things that we cannot even imagine, even though we have AI anchors but they cannot give spontaneous answers as a human anchor can. And no tool can match the level of creativity that human content writers can create. Thus no matter how much these technologies develop and no matter how many new tools come up, nothing can match what the humans can do and therefore the jobs of people can never be in danger because of these tools. They can definitely be used to make our work easy and we can use them to improve our content but a machine which has been made by the humans cannot over power them unless and until a human plans to make these machine do something like that.

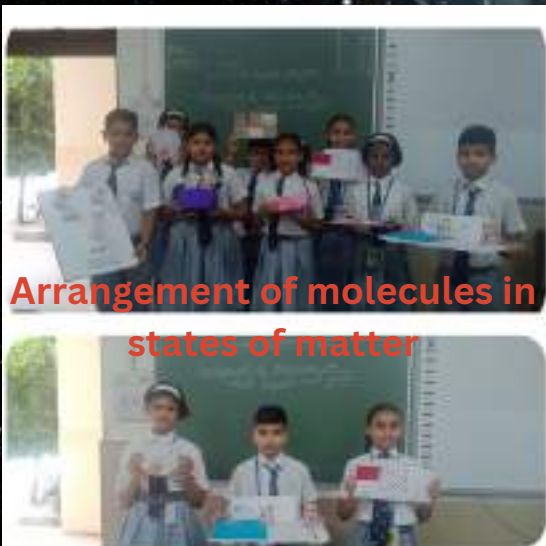


# Creativity meets Curiosity



**Types of Levers**

**Types of Joints**



**Arrangement of molecules in states of matter**



**Visit to Nursery**



**Best out of Waste**



**Air has Weight**



# Let food be thy Medicine







*Pranav Dubey*

# Save water

**Water is a precious resource,  
It's time to conserve, it's time to enforce.**

**From the mountains to the sea,  
Water is vital for you and me.**

**Don't waste it, don't let it run,  
Save every drop, one by one.**

**Turn off the tap while brushing your teeth,  
It's a small step, but it's a big relief.**

**Fix the leaks, mend the pipes,  
Save water, and save your life.**

**Plant a tree, it will help,  
It's time to act and not just yelp.**

**Water is life, and life is water,  
Let's save it for our sons and daughters.  
Let's pledge to conserve, let's pledge to save,  
For a better future, for a better wave.**



# Imagination to Innovation

Test for Nutrients



Reflection of light



Fun with Shadows



Pinhole Camera



Measurement of Length



# Memory to Relish



## STRESS *Aanvika Kushwah*

### ANXIETY

January and February are like imprisoned periods for children, because of their finals. They have to concentrate on their studies but sometimes, they forget about their body & themselves, resulting in sickness or illness further more than that they cannot concentrate on their studies, and get bad results. Sometimes, children are physically okay, but mentally, they are so stressed, anxious or maybe even depressed because of low self-confidence or the previous results...So, not only physically, but we also need to be prepared mentally for the important exams, for that I am going to give some awesome tips to be mentally prepared for your exams.

The first thing we do during exams is be whole-nighters (studying all night), which is wrong, our brain needs at least 8 hrs of sleep, which is very important, as it affects our brain function.

Research has found that the brain with 8 hours of sleep functions better and recalls memory faster than the brain with the sleep of only 2-3 hrs so, so make sure you sleep for 8 hours before the exam. The next thing is, when we are bored or lose our motivation for studies, we watch motivational videos and end up being distracted, so, you need to understand that you don't need motivation, you need discipline.

Even if you don't feel like studying, you have to, and believe just start studying for 5 minutes you will feel like studying, and if you don't take a 2-minute break and study again. Last and the most important thing is a good & positive mindset, let's make it simple for you to understand, mindset means a complex mental state involving beliefs feelings values and dispositions to act in certain ways.

So, your mindset should be that - I will do my best, I will give my best, I will always follow my passion, and I will become my best version and that's how, you will prepare yourself mentally for finals...and I know, you'll do your best and you will surely get successful, so with this, I Aanvika Kushwah wish you all the best and look forward to seeing you catching your dreams, hoping this helped, thank you.

Reflection of light



Finding magnetic materials from field





# Hands on learning

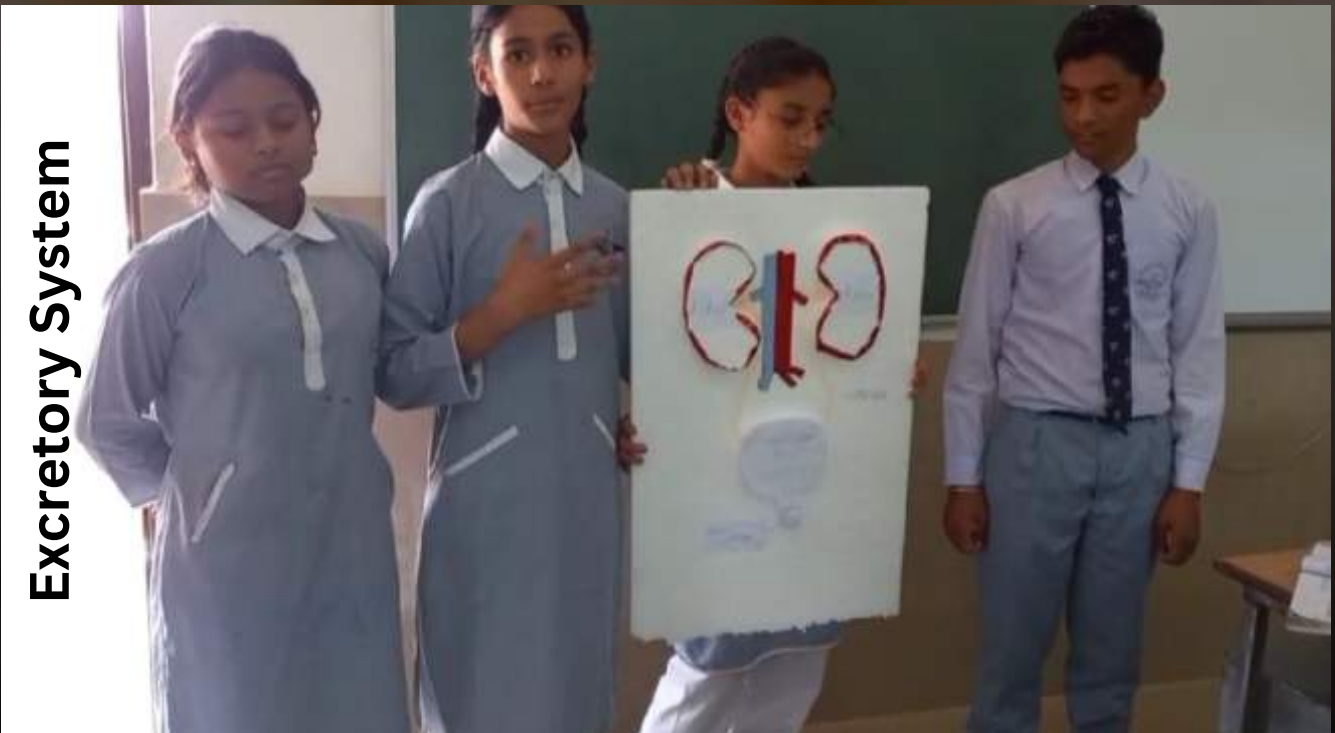
Sunlight made up of 7 colours



Electric Circuits



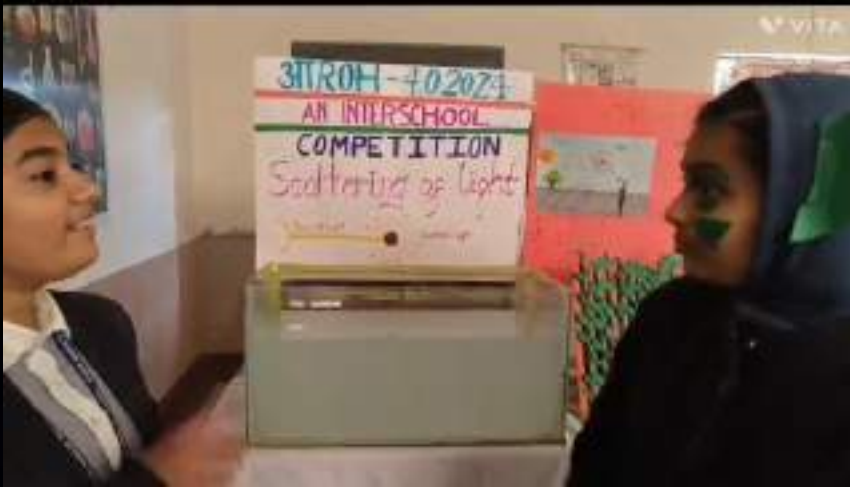
Excretory System





# Artistic Expressions

Scattering of light



Aaroh



Aaroh



# Learning by doing



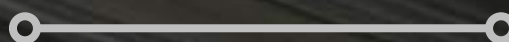


# **R**ecycle, **R**educe **R**euse



*Anika Shandilya*

A mountain made of plastic, where once stood fields of green,  
A river choked with bottles, a future grim, obscene.  
But wait! A tiny seed of hope, takes root within the soul,  
Three words to guide our actions, to make the future whole.  
Reduce, oh, mighty mantra, a shield against the waste,  
Think twice before you purchase, a mindful, measured pace.  
Do you need that extra trinket, that fleeting plastic toy?  
Or can you mend and make do, and find a different joy?  
Reuse, a magic spell, to breathe new life anew,  
Transform a tattered jacket, to cozy garden shoe.  
Turn empty jars to planters, let seedlings sprout and climb,  
Give gently used possessions, a second chance of time.  
Recycle, sing the chorus, when all is worn and torn,  
Paper, plastic, metal, reborn, a lesson to be born.  
From soda cans to bicycles, from newspapers to walls,  
The circle of creation, where nothing truly falls.  
So let us raise our voices, with every choice we make,  
Reduce, reuse, recycle, for Earth and goodness' sake.  
Together we can heal the land, mend the polluted stream,  
And weave a tapestry of green, in every act, a dream.  
With mindful steps and hearts alight, we'll walk a greener path,  
And leave a world of wonder, for laughter, love, and aftermath.  
Remember, every action counts, no matter how it seems,  
A single seed of change can grow, to rivers, mountains, dreams.





# LAUGH WITH SCIENCE

In the future of getting around what a chuckling sight

No more traffic queues, it's all pure delight.

Skimmers and jetpacks, they zoom to and fro

AutoPilot vehicles, like birds in a row.

Teleporting's like a magic, in the blinking of an eye

No more waiting in lines, no more saying goodbye.

Flying roadsters and spacecrafts, what are goofy scene.

Rognish jets and aliens, crash landing is what I mean.

F1 racing, it's a cosmic delight.

Cars zipping around like shooting stars in the night.

But when they need to pit, it's a comical affair,

With no fiction on tyres, they are floating in the air.

Finish line in the depths of space.

The racetrack's an adventure, like a wild goose chase,

But no matter the challenges they must face,

These space racers compete with humour and grace

In the future kitchen, what a comical scene!

Delivered by drones, even soup's not routine.

From the sky, burgers rain down

with a Sizzle and a crown.

After feasting on future food, full to the brim.

He donned his space suit, it was time for a spin

A spacewalk adventure, in the celestial expanse.

Floating weightless, with the cosmic grin's chance.

In a world full of gizmos, gadgets and strange AI  
Smartphone with personalities, they might just say "Hi"

So here's to science, both wacky and true

A world of wonder and laughter for me and you

In this tech sensation, we'll adapt with giggles and glue  
Laughing at glitches, dancing with AI how fuming it will be

As we navigate the future, full of comedy and elation

Let's enjoy the ride with laughter as our foundation.



*Arjush Meena*



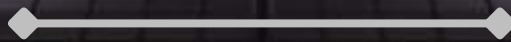


*Chemistry is fun*



*Tram Khan*

Years have passed people started with a mystery  
And turned a new page that was chemistry  
They worked out day and night  
To get a metal which is very bright  
The story is too old  
They were trying to convert it into gold  
With a storm of thoughts, researches and  
philosophy  
They started a new journey, alchemy  
There were a lot of trials With numerous doubts  
Accidentally, unknowingly new things  
discovered out  
With all the efforts and full of will  
Adding new Brains With new skills  
The journey continues but is not over  
There are a number of things yet to discover.....



# Exploring the Wonders of Natural Science



*Shilpi Dubey*

Natural science, the systematic study of the natural world, encompasses a vast array of disciplines ranging from biology to physics, chemistry to geology. This article delves into the marvels of natural science, shedding light on its significance, key disciplines, and remarkable discoveries.

**Significance:** Natural science plays a pivotal role in our understanding of the universe and the phenomena within it. By employing empirical observation, experimentation, and logical reasoning, scientists unravel the mysteries of nature, enabling technological advancements, medical breakthroughs, and environmental conservation efforts.

**Key Disciplines of Natural Science:**

**Biology:** The study of living organisms and their interactions with each other and their environment. From genetics to ecology, biology encompasses diverse subfields that elucidate the complexities of life.

**Chemistry:** Investigating the composition, structure, properties, and reactions of matter. Chemistry underpins various industries, from pharmaceuticals to materials science, driving innovation and technological progress.

**Physics:** Exploring the fundamental principles governing the behavior of matter and energy in the universe. Physics encompasses disciplines such as mechanics, electromagnetism, thermodynamics, and quantum mechanics, shaping our understanding of the cosmos.

**Geology:** Examining the Earth's structure, composition, and processes that have shaped its surface over billions of years. Geology informs our understanding of natural hazards, mineral resources, and environmental sustainability.

**Astronomy:** Studying celestial objects and phenomena beyond Earth's atmosphere. Astronomy probes the origins, evolution, and dynamics of the universe, offering insights into cosmic phenomena such as black holes, galaxies, and the Big Bang.

**Theory of Evolution:** Charles Darwin's theory of evolution by natural selection revolutionized biology, providing a unifying framework for understanding the diversity of life on Earth.

**Discovery of DNA:** The elucidation of the structure of DNA by James Watson and Francis Crick laid the foundation for modern genetics and molecular biology, unlocking the secrets of heredity and genetic inheritance.

**Quantum Mechanics:** The development of quantum mechanics in the early 20th century revolutionized physics, challenging classical notions of reality and paving the way for technologies such as semiconductors, lasers, and quantum computing.

**Plate Tectonics:** The theory of plate tectonics transformed our understanding of Earth's geology, explaining the movement of continents, the formation of mountains and ocean basins, and the occurrence of earthquakes and volcanic eruptions.

**Exoplanet Exploration:** The discovery of exoplanets orbiting distant stars has expanded our conception of planetary systems and the potential for life beyond our solar system, fueling speculation about extraterrestrial habitats.

**Conclusion:**

Natural science continues to inspire awe and wonder as scientists unravel the mysteries of the cosmos and elucidate the intricacies of life on Earth. Through curiosity, inquiry, and rigorous investigation, humanity embarks on a journey of discovery, enriching our understanding of the natural world and shaping the course of our collective future.



# Science then vs now

Science and Technology have been integral to Indian culture since ancient times, with the Indian Renaissance and Indian independence in the 1900s. The Department of Science and Technology plays a pivotal role in promoting science and technology in the country. The history of science covers the development of natural, social and formal branches. Ancient Egypt and Mesopotamia contributed to mathematics, astronomy and medicine, influencing Greek natural philosophy. The Scientific Revolution in 16th-17th-century Europe transformed natural philosophy, leading to a more mechanistic, integrated and open scientific approach. Other "revolutions" followed, such as the chemical revolution in the 18th century, the 19th century's perspectives on energy conservation, and the 20th century's discoveries in genetics and physics. Industrial and military concerns and the increasing complexity of research endeavors led to the era of "big science," particularly after World War II.



Babylonian astronomy was the first attempt at providing a refined mathematical description of astronomical phenomena, with records of the motions of stars, planets, and the moon left on clay tablets. Mesopotamian proto-scientists identified astronomical periods and developed mathematical methods to compute the changing length of daylight, predict the appearances and disappearances of the Moon and planets, and eclipses. Only a few astronomers' names are known, but Kidinnu's value for the solar year is still used in today's calendars. Babylonian astrology also revealed messages from gods or omens concealed in natural phenomena. Technology in the ancient world was transmitted through traders and craftsmen, paving the way for multi-functional devices like smartwatches and smartphones.



*Mehwish*





**There's real poetry in the real world.**

**Science is the poetry of reality.**



*Nisjati Yadav*

**Although some may snipe and others carp, there can be no denying the proposition that science is the best procedure yet discovered for exposing fundamental truths about the world.**

**By its combination of careful experimentation guided by theory, and its elaboration and improvement of theory based on the experiments it has inspired, it has shown itself to be of enormous power for the elucidation and control of nature. There appear to be no bounds to its competence: it can comment on the origin and end of the world, on the emergence, evolution and activities of life, and it can even, presumably, account for the activities and beliefs of sociologists.**

**“Science is a way of life. It is a perspective. Science is the process that takes us from confusion to understanding in a manner that’s precise, predictive, and reliable - a transformation, for those lucky enough to experience it, that is empowering and emotional.” Science is the greatest collective endeavor. It contributes to ensuring a longer and healthier life. It generates solutions for everyday life and helps us to answer the great mysteries of the universe. In other words, science is one of the most important channels of knowledge.**

**Learning, experimentation, feedback, and refinement are the backbone of both the sciences and the arts. Decades of painstaking analysis and observation were critical in the development of Darwin’s grand theory of evolution. The dissection of corpses and countless sketches polished and unleashed Michelangelo’s genius in capturing the human spirit in exquisite detail. Sweat and toil nurture the fertile imagination and fine tune the ability to peer through nature’s veil and uncover eternal truths that lead to Eureka moments of exhilarating discovery. Spectacular gifts await us as we work to unravel the DNA of equality, faith, love, and compassion, and thereby usher in a world saturated with meaning, surrounded by creative rapturous forces. True research has a soul of an artist**



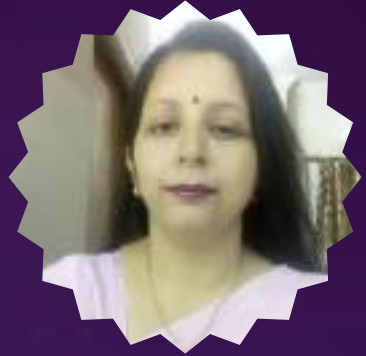
# THE UNIVERSE

"The universe is full of magical things patiently waiting for our wits to grow sharper."

The Universe is a vast and mysterious entity that includes everything we can touch, feel, sense, measure, or detect. It includes living things, planets, stars, galaxies, dust clouds, light, and time. The Universe is incredibly huge, with billions of galaxies and scattered particles of dust. Its exact size is unknown, but it is at least 93 billion light years across. The Universe began in a Big Bang around 14 billion years ago, and since then, it has expanded outward at a high speed, resulting in a billion-fold larger area of space. As the Universe expanded and cooled, energy changed into matter and antimatter particles, with protons and neutrons forming when the Universe was one second old. After 300,000 years, the Universe cooled to about 3000 degrees, allowing atomic nuclei to capture electrons and form atoms.

Black holes are strange objects in the Universe that collapse into a region of space, causing a massive amount of mass to be concentrated in an incredibly small area. They are known to exist due to their impact on nearby dust, stars, and galaxies. Most galaxies, including the Milky Way, have supermassive black holes at their centers, which can be millions or billions of times heavier than our Sun.

The Solar System consists of the Sun, eight major planets, and the asteroid belt, which is populated by millions of rocky objects. The furthest known planet is Pluto, which is dwarfed by Earth's Moon. Eris, a large, icy world, was discovered far from the Sun in 2005. More than 1,000 icy worlds, known as Kuiper Belt Objects, have been discovered beyond Pluto.



*Leena Shandilya*



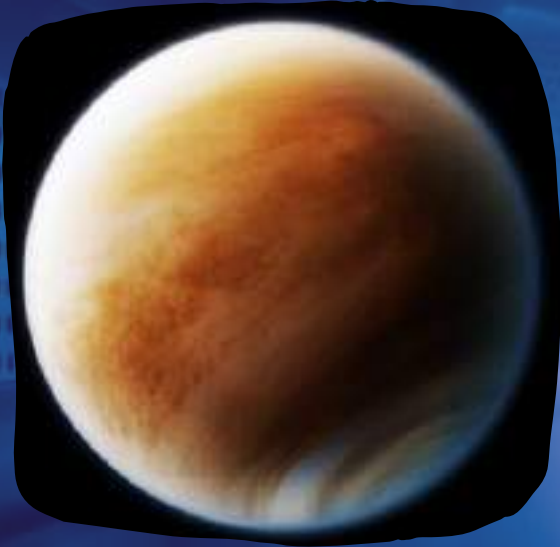
## Mercury

Mercury is the first planet from the Sun and is close to the horizon, with a small, rocky surface covered with impact craters. Venus is the second planet from the Sun and appears as a brilliant morning or evening "star" in the night sky.



## Venus

Venus, the second planet from the Sun, is the brightest object in the night sky and is covered by yellowish clouds made of sulphur and sulphuric acid. It is also known as Earth's twin, as it is about the same size and made of the same rocky materials. However, Venus is blanketed with a thick atmosphere of carbon dioxide, which traps most of the heat from the Sun and causes its temperature to soar to 465°C.



## Earth

Earth orbits the Sun at a speed of 30 km/s and takes 365 days to complete one orbit. The tilt of the axis that joins the north and south poles means that people living at the equator travel at a speed of 1670 km per hour. The seasons are the exact opposite to the south of the equator.



## Mars

Mars, often called the 'Red Planet', appears in the sky as an orange-red star. It orbits the Sun at an average distance of 228 million km, half as far again as the Earth, making it very cold.

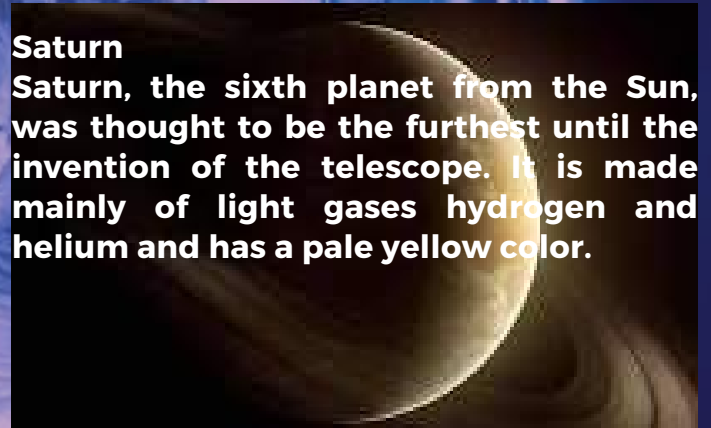


## Jupiter

Jupiter, the fifth planet from the Sun, is the fastest-spinning planet and is made mainly of light gases, hydrogen and helium. Telescopes show a cloudy atmosphere with colorful belts and spots, with the largest feature being the Great Red Spot, a giant storm several times the size of Earth.

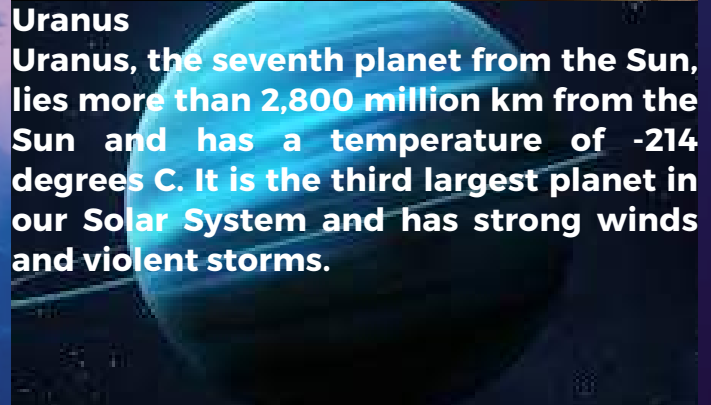
## Saturn

Saturn, the sixth planet from the Sun, was thought to be the furthest until the invention of the telescope. It is made mainly of light gases hydrogen and helium and has a pale yellow color.



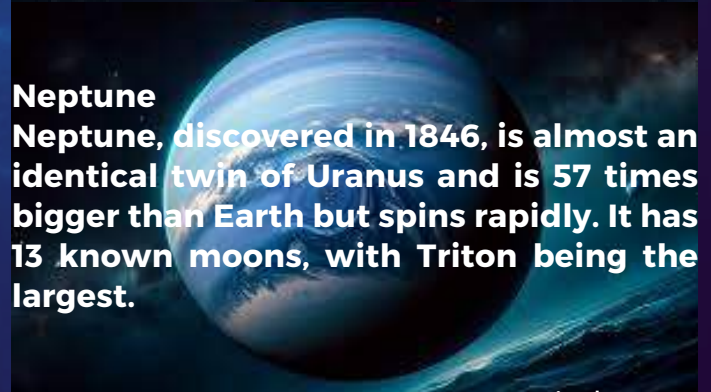
## Uranus

Uranus, the seventh planet from the Sun, lies more than 2,800 million km from the Sun and has a temperature of -214 degrees C. It is the third largest planet in our Solar System and has strong winds and violent storms.



## Neptune

Neptune, discovered in 1846, is almost an identical twin of Uranus and is 57 times bigger than Earth but spins rapidly. It has 13 known moons, with Triton being the largest.



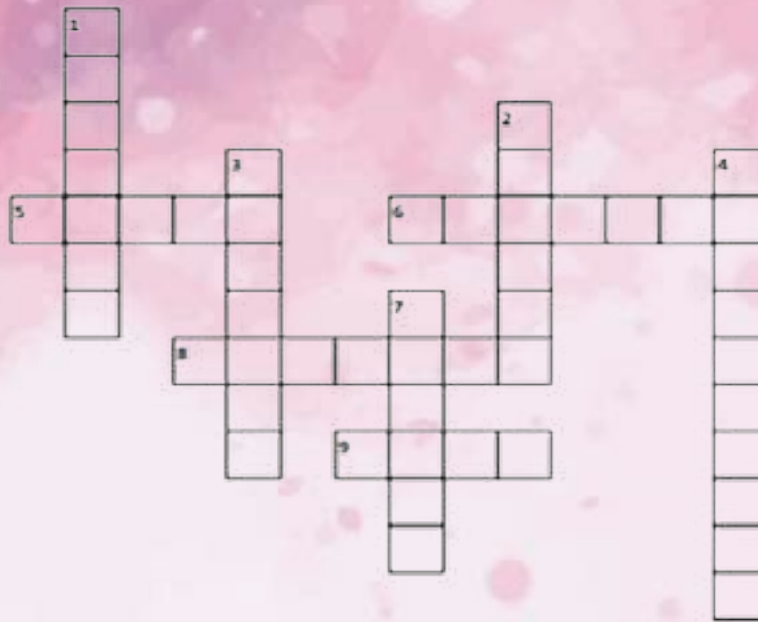


# BOOST

# YOUR BRAIN



*Pragati Sengar*



### Across

- 5. LONGEST BONE OF HUMAN BODY
- 6. CHEMISTRY IN ANCIENT TIME
- 8. HARDEST KNOWN SUBSTANCE
- 9. RED PLANET

### Down

- 1. THE CENTRE OF ATOM
- 2. UNIT OF MEASUREMENT OF TIME
- 3. NON METAL THAT IS LIQUID AT ROOM TEMPERATURE
- 4. AN ASSUMPTION MADE FOR THE SAKE OF ARGUMENT
- 7. THE STUDY OF PLANTS

# DO YOU KNOW

# RIDDLES

**Q1-** When the son of the water returns to the parent, it dies. What is it?

**Q2-** I can be hot, I can be cold, I can run and I can be still, I can be hard and I can be soft. What am I?

**Q3-** Your mom and dad each gave you 23 of these threadlike strands and they helped to make you who you are today.

**Q4-** Many have heard it, but nobody has ever seen it. It will not speak back until spoken to. What is it?

**Q5-** I am under your face and outside your mind. What am I?

**Q6-** I'm black when you get it, Red when you burn it, Gray when you're done with it. What am I?

**Q7-** What can eat a lot of iron without getting sick?

**Q8-** How do we know Saturn was married more than once?

**Q9-** What can go up and down without moving?

**Q10-** Which is heavier: a ton of feathers or a ton of rocks?

**Q11-** Why did Carbon marry Hydrogen?

**Q12-** I'm pronounced as one letter, written with three, I come in blue, brown, black or gray, Reverse me, and I read the same way. What am I?

- Answers**
- 1- Ice 2- Water
  - 3- Your skull 3- Chromosomes
  - 4- An Echo
  - 5- Rust. 10- They both weigh the same (a ton).
  - 6- Charcoal.
  - 7- The temperature. 4- An Echo
  - 8- She has a lot of rings! 6- Charcoal.
  - 9- The temperature. 4- An Echo
  - 10- They both weigh the same (a ton).
  - 11- They bonded well from the moment they met. 12- An eye

# Human

**body emit light?**

**Yes! human bodies do emit light but it is infrared light. It is 1,000 times less intense than the levels to which our naked eyes are sensitive. In simple terms, human bioluminescence in visible light exists, it's just too dim for our weak eyes to pick up on.**

**Virtually all living creatures emit very weak light, which is thought to be a byproduct of biochemical reactions involving free radicals.**



*Ashish Meena*



**What causes human bioluminescence?**

**In scientific terms, the glow comes from chemical reactions within our bodies. These chemical reactions besides generating energy and producing heat also produce free radicals – atoms or molecules that have a lone, isolated electron. That makes these radicals highly reactive setting off a series of energetic chemical reactions as they interact with various fats and proteins in our cells. The glow is produced when these reactions involve fluorophores- molecules that give off photons (elementary particles of light).**

**Source:**

<https://htschool.hindustantimes.com>