

QUARK

QUARK | EDITION 5 | 2024 | ISSUE 1 | APRIL | BSAIKHI

Abdul Kalam

The Indian Science Prodigy

pg. 13

Product
War

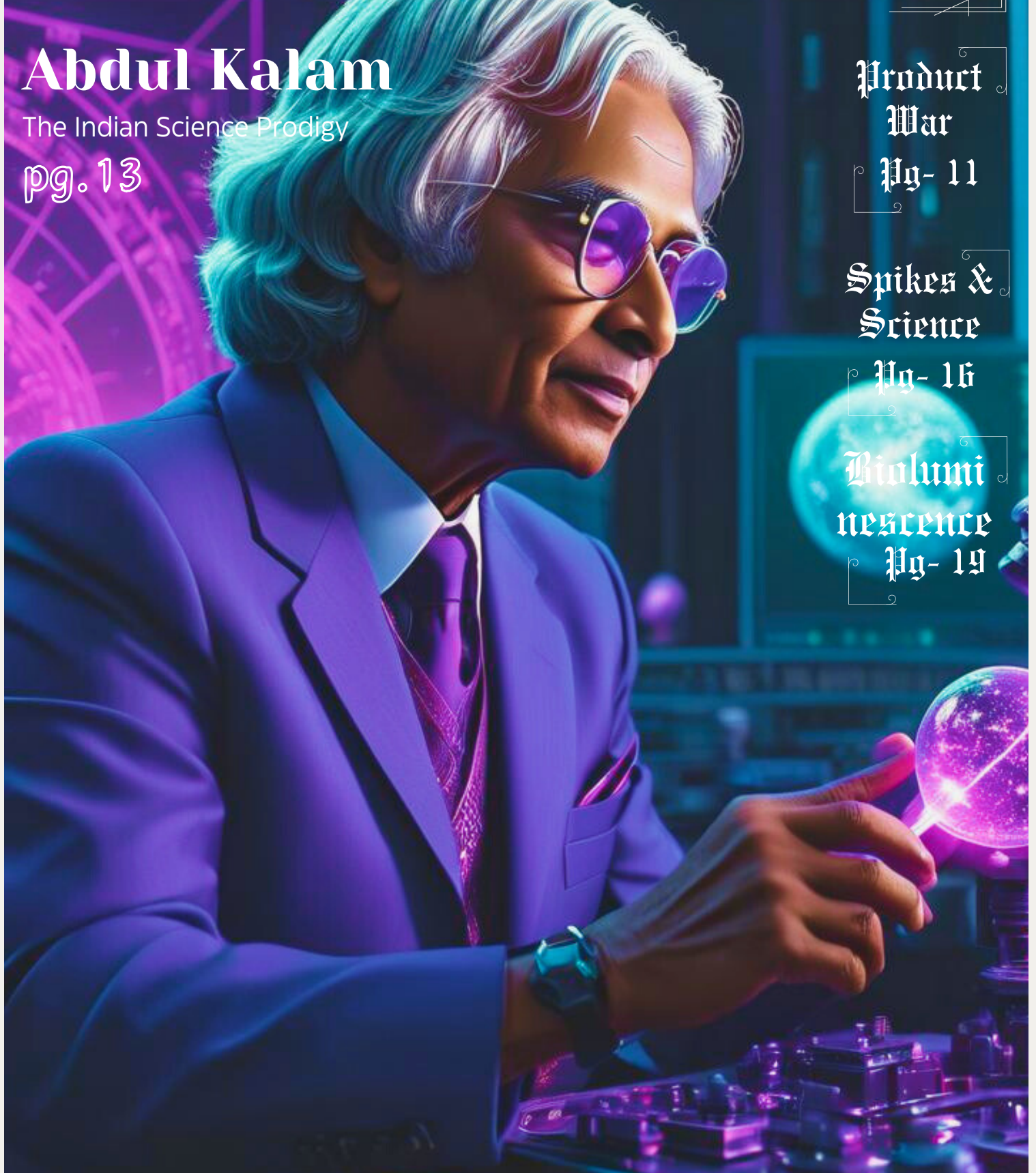
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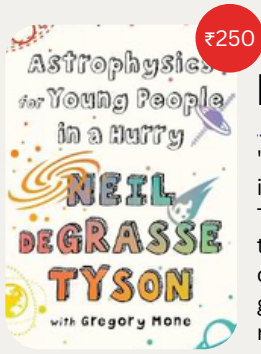
Spikes &
Science

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Biolumi
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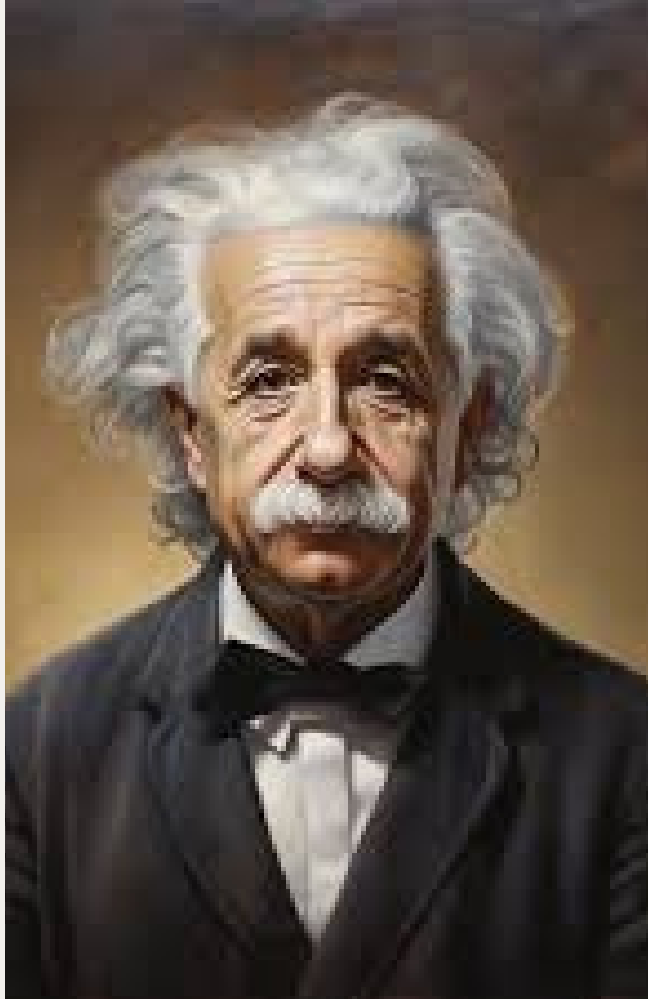




Book Of The Year-

"Astrophysics for Young People in a Hurry by Neil deGrasse Tyson is a riveting voyage through cosmic affairs, distilling obscure ideas with lucidity and gusto, rendering it an essential read among young thinkers."

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NO MORE YOUNG

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I JUST GOT MY DOCTOR'S TEST RESULTS AND I'M REALLY UPSET. TURNS OUT, I'M NOT GONNA BE A DOCTOR.

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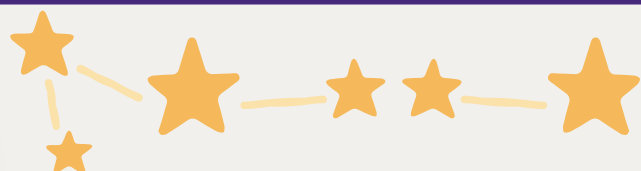
TEACHER-IN-CHARGE
DR. ANKUR AGARWAL

“Solitary trees, if they grow at all, grow strong.”



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Bioluminescence





ARHAM RIZWAN

EDITORIAL

Editor-in-Chief

I experience a whole gamut of emotions when I sit down to write my last editorial for The Quark magazine. It's intimidating and captivating at the same time, much like gazing out into the wide sky. This journal has been my lighthouse for years, revealing the secrets of space and the marvels of science. With a mind full of memories and a heart full of appreciation, I pass the mantle today. Every issue of The Quark has taken our readers on a voyage through supernovae and black holes, as well as the genesis of stars and the development of galaxies. Uncovering the complexities of the universe and our place in it has been a unique journey of discovery. Every piece of writing, every conversation, every image has deepened my comprehension and kindled a passion that grows stronger every day.

However, there have been difficulties along the way. Like life itself, the cosmos is immense and unpredictable. Technical difficulties and impending deadlines have arisen, posing a threat to our progress similar to far-off asteroids. But like brave adventurers, we have made our way through the cosmic rubble, discovering beauty even in the middle of mayhem. We have learned perseverance from every obstacle and resilience from every setback.

And there have been times of utter beauty amid these difficulties. The exhilaration of seeing a rocket launch, the breathtaking view of a solar eclipse, and the thrill of speaking with prominent astronomers and scientists are experiences that will always be etched into my soul. They serve as a constant reminder of the reasons we set out on this cosmic adventure in the first place: to learn, to pique curiosity, and to reach for the stars.

I am reminded of a quote that has come to represent my life as I say goodbye to my position as Editor-in-Chief: "Every tear is a waterfall." It illustrates the spectrum of human emotions and the highs and lows that contribute to the profundity of life and our cosmic journey. Let every cry, whether it be of joy or frustration, serve as a reminder of our shared humanity, passion, and unwavering quest for knowledge.

But in the midst of all of this thinking, there is still uncertainty—not about what I have done, but about what I have not. For the reason that the cosmos is so large, there are always more stars to discover and secrets to solve. However, this uncertainty propels me towards the unknown and wanting to carry on with this cosmic voyage.

My sincere appreciation goes out to the staff involved with The Quark. Your passion, inventiveness, and relentless quest for quality have made our odyssey truly remarkable. I hand over the mantle of space enthusiasts' domain to the next generation with complete faith in the promising future that lies ahead.

Dear Readers, keep searching upwards. The universe, with all of its mysteries and delights, splendour and complexities, is waiting for you. As Carl Sagan once said, "Somewhere, something incredible is waiting to be known." Keep that in mind.

Having stardust in my bloodstream, I sign off.
 Mohammad Arham Rizwan
 Former Editor-in-Chief, The Quark Magazine

EDITORIAL

Teacher-in-Charge

Dear readers,

I am really happy and excited to write my first editorial in my new role as The Quark magazine's Teacher-in-Charge. I've had the honour of partaking in this amazing trip for the past two years, and I've personally seen the commitment and enthusiasm of our team as we explore the fields of science and space.

I have a place reserved in my heart for The Quark thanks to my love of space and my enduring quest for knowledge. It is a place where knowledge and curiosity collide to ultimately blend seamlessly as we investigate the mysteries of the cosmos and tell you, our readers, about what we discover.

I am excited and full of optimism as I embark on this new journey. I see countless opportunities for development and creativity, as well as for introducing our readership to fresh viewpoints and concepts.

Together, we shall never stop igniting enthusiasm, piquing curiosity, and cultivating a love of discovery and science. Even though this is my debut editorial, my involvement with The Quark has already seen some wear and age. Our team and readers have taught me so much, and I can't wait to keep learning and developing with you all.

The Quark has been a part of our trip, a tapestry of wonder and discovery. Every issue has brought us one step closer to comprehending the complexities of the universe and deeper into the cosmos— from solving the riddles of black holes to admiring the beauty of far-off galaxies.

I ask you to join us as we explore the universe together. Together, let's explore the mysteries of the cosmos, pose questions, look for solutions, and be amazed by its beauty and complexity.

We appreciate you joining us on this adventure.

Warm regards,

Dr. Ankur Agarwal,

Teacher-in-Charge, The Quark Magazine



CELLS AT WORK

BY AARAV JAISWAL



Anime Review



"Cells at Work" is an excellent illustration of the lovely manner that anime blends education with fun. I'm an anonymous fan who is excited to introduce anime to a younger audience. Because of its intelligent science and engrossing storytelling, I highly suggest this series.

"Cells at Work" transports us to the human body's microscopic interior, where anthropomorphized cells stand in for various immune system functions. Each character, from the enthusiastic Red Blood Cell AE3803 to the conscientious White Blood Cell U-1146, represents the commitment and cooperation required for our bodies to operate at their best.

The anime's fidelity to the biological processes it depicts is among its best qualities. The authors have done their research, giving viewers a clear-cut but realistic picture of how cells co-operate to fight off infections, mend injuries, and preserve homeostasis.

In addition to being highly instructive, "Cells at Work" is a superb storyteller. With each episode concentrating on a different health concern or threat, such as bacterial infections or allergic reactions, the episodic approach keeps the story interesting. This method not only informs the audience, but it also keeps them excited about what our cellular heroes will encounter next.

Humour

I was Reading A Book on Helium; I couldn't Put it Down

How do you cut the sea in half?
With a sea-saw

What do computers like to eat?
Chips.



To sum up, "Cells at Work" is an anime that everyone interested in biology, medicine, or just plain fun with a different approach should not miss. It's a great addition to the anime scene because of its unique amalgam of pleasure and education, and I hope it continues to inspire a new generation of science enthusiasts.



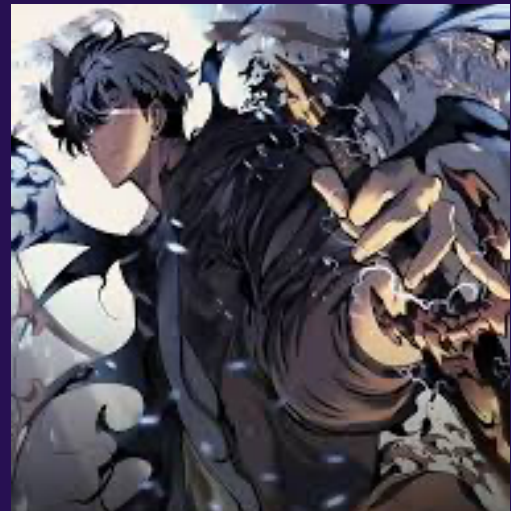
Our protagonist, Sung Jin-Woo, stands at the crossroads of this narrative, his journey intertwined with the very fabric of the world he inhabits. His transformation from an ordinary hunter to a figure of unparalleled strength and significance is not merely a chance occurrence but the culmination of a carefully orchestrated plan. The revelation that his encounter with the Double Dungeon was not a twist of fate but a deliberate manipulation by a shadowy mastermind known as 'The Architect' adds layers of intrigue to an already compelling storyline.

What sets "Solo Leveling" apart, however, is not just its gripping plot or stunning visuals but its origin. Contrary to popular belief, this anime is not an adaptation of a Japanese manga but a Korean manhwa—an oversight that has led many to reassess their assumptions about the source of their favorite series. It's a testament to the growing influence of Korean storytelling in the global entertainment landscape, challenging preconceived notions and broadening the horizons of anime enthusiasts worldwide.

SOLO LEVELING

The winter of 2024 has been graced with the arrival of what can only be described as a phenomenon in the anime world: "Solo Leveling." Bursting onto the scene with unprecedented fervour, it has swiftly risen to claim the title of the season's biggest anime sensation. Its impact, however, transcends mere popularity; many speculate that it could herald a significant shift within the entire anime industry.

At the heart of this sensation lies the adaptation of Chugong's web novel, originally serialized on Kakao's digital platform, Kakao Page, back in July 2016. The narrative is as captivating as it is unique, drawing viewers into a world where power is not merely a commodity but a rare and coveted essence. Central to this universe is the enigmatic concept of hunters and dungeons, intricately intertwined in a complex tapestry of fate and destiny.



As a fan, experiencing the magic of "Solo Leveling" first hand has been nothing short of a revelation. Its seemingly simple premise belies the depth of emotion and complexity of its characters, each layer peeled back to reveal hidden depths and unexpected twists. From the adrenaline-pumping action sequences to the quieter moments of introspection, every frame is infused with a sense of purpose and artistry that leaves a lasting impression.

TIME TRAVEL

FACT OR FICTION

BY PRIYANSH BALUNI



The idea of time travel has long captivated the interest of scientists, authors, and dreamers alike. Science fiction has always featured the notion of traveling through time and seeing the past or future. But may time travel actually happen in the future, or is it just a figment of our imagination?

Physics, especially ideas like Einstein's theory of relativity, is a major source of inspiration for the concept of time travel. These theories contend that time is a flexible and dynamic dimension as opposed to a fixed and unchangeable one. Gravity, velocity, and other variables can affect time, giving rise to the idea of time dilation, which states that time can appear to move at varying speeds to various observers.

Einstein's theory of special relativity, which states that time slows down for an object in relation to a stationary observer as it approaches the speed of light, is responsible for one of the most well-known instances of time dilation. This phenomenon is a basic feature of contemporary Physics and has been empirically confirmed using high-speed particles.

The concept of time travel, however, is fraught with difficulties and contradictions.

The most well-known of these is the 'grandfather paradox', which suggests that a time traveller could be able to change the course of history in order to stop themselves from being born in the first place. This paradox draws attention to the difficulties and possible inconsistencies that come with time travel theories.

Notwithstanding these obstacles, a few physicists have put out theoretical constructs that, in some circumstances, may permit time travel.



Wormholes, for instance, are theoretical tunnels in spacetime that have been studied as a possible means of travelling across great distances or even through time. But for now, wormhole stability and existence are only theoretical concepts.

Time travel is a common concept in popular culture, appearing in books, films, and television shows and frequently depicted in creative and captivating ways. From the beloved book "The Time Machine" by H.G. Wells to the latest blockbusters like "Back to the Future" and "Doctor Who," time travel has always captivated readers and sparked intriguing narratives.



THE QUARTZ MOVEMENT

By Shrey Gupta



The many benefits of quartz timepieces contribute to their broad acceptance and appeal. First and foremost, their precision is a noteworthy quality that makes them dependable partners for routine timekeeping duties. In addition, quartz watches are now more reasonably priced and available to a wider range of consumers, thanks to mass production techniques and optimized manufacturing procedures. Another noteworthy quality of theirs is their durability, which is ensured by the lack of sensitive mechanical parts, which lowers the possibility of wear and tear and increases dependability.

Quartz technology has also made it possible to create a wide variety of watch designs, from sophisticated digital displays and multipurpose chronographs to traditional analog types.



The quartz movement, which is known for its accuracy and inventiveness in horology, has fundamentally changed how humans view and calculate time. Its inception dates to the 1960s, a decade characterized by revolutionary developments in electronics and miniaturization. The first quartz wristwatch was developed at this time by Swiss engineer Max Hezel and a team at CEH (Centre Electronic Horologer). With this invention, conventional mechanical timepieces came to an end and a new age of precise and trustworthy timekeeping began.

A tiny piece of quartz crystal, frequently fashioned like a tuning fork, is at the center of every quartz watch. This crystal experiences mechanical stress when an electrical current is supplied, vibrating at a very precise frequency, usually about 32,768 Hz. The basic component of the timekeeping system is this high-frequency vibration, which is far more accurate than mechanical motions.



Due to its adaptability and minimal maintenance needs, which mostly consist of changing the batteries once in a while, quartz watches have established themselves as useful and trustworthy timepieces.

Although enthusiasts for mechanical watches may value their beauty and workmanship, quartz technology's usefulness and accuracy cannot be understated. The quartz movement's lasting impact may be attributed to its capacity to unite technological innovation with human creativity, closing the gap between accessibility and accuracy in the field of horology. Whether used as treasured timepieces or daily necessities, quartz watches continue to personify the timeless appeal of technological advancements in timekeeping.

BIOMIMICRY

—GURKEERAT KAUR



NATURE'S GENIUS: BIOMIMICRY'S POWER

Biomimicry stands as a testament to the brilliance of nature and human ingenuity. This discipline, rooted in observing and imitating nature's solutions, has yielded remarkable innovations across various fields. From solar panels inspired by butterfly wings to materials mimicking the strength of spider silk, biomimicry not only addresses human challenges but also promotes sustainability by emulating nature's efficient use of resources. It has sparked advancements in robotics, with biomimetic robots mirroring the agility and effectiveness of animals like cheetahs and birds, paving the way for transformative applications in space exploration and rescue missions.

INNOVATION AND NATURE: BIOMIMICRY'S ETHOS

Beyond technological marvels, biomimicry fosters a profound connection with the natural world, emphasizing the importance of coexisting harmoniously with our environment. By learning from nature's resilience, flexibility and interconnectedness, we can envision a future where innovation aligns with ecological balance. Janine Benyus' words, "Life creates conditions conducive to life," encapsulate the ethos of biomimicry—collaborating with nature to create sustainable solutions that benefit both humanity and the planet.



D E C O D E | G A M E | Q U A R K



ARNAV VIRMANI/
SANIDHYA AGARWAL

DECODE WINNER

Two eighth-grade kids, Arnav Virmani and Sandhya, have won the prestigious title of Best Decoder in The Quark Magazine competition. Arnav and Sandhya, two of their classmates in the eighth grade class, demonstrated exceptional critical thinking and problem-solving skills by decoding a challenging cipher in the allotted time. Their successes highlight not just their unique abilities but also the school's dedication to encouraging tenacity and intellectual curiosity.

The accomplishments of Arnav and Sandhya inspire their fellow pupils and show what can be achieved with commitment and diligence. The Quark Magazine would like to congratulate Arnav Virmani and Sandhya on their well-earned successes. We look forward to seeing them continue to thrive in their future undertakings.

BIOFILM DIVERSITY

Biofilms are structured communities of microorganisms adhering to surfaces in a range of different environments. The diversity within these biofilms, encompassing a multitude of different species, plays a vital role in shaping ecosystem functions, microbial interactions, and human health. Understanding biofilm diversity is essential for numerous fields, including environmental science, medicine, and biotechnology. In environmental contexts, their diversity contributes to the resilience and adaptability of ecosystems facing environmental changes and disturbances. In medicine, studying biofilm diversity may help develop more effective strategies for combating biofilm-associated infections. In biotechnology, harnessing the diverse metabolic capabilities of biofilm communities holds promise for applications in wastewater treatment, bioremediation, and bioenergy production.

This Collection welcomes submissions of original research articles that focus on characterising biofilm diversity and the range of functions this conveys. Submissions from the fields of microbiology, genetics and biotechnology are encouraged.

-Scientific Reports



MOHAMMAD ARHAM

EDITOR-IN-CHIEF, QUARK NEWS - INDIA



I feel obliged to address the climate problem, one of the most important concerns of our day, in my capacity as Editor-in-Chief of Quark News. This dilemma confronts us on a daily basis and calls for immediate action as well as shared accountability. It is not a far-off menace.

The use of fossil fuels, industrial pollution, deforestation, and other human activities are causing the Earth's climate to change at a rate that has never been seen before. These behaviors have far-reaching and catastrophic effects on biodiversity, ecosystems, and human life.

We are seeing the effects of climate change up close in India. Communities are being uprooted and enduring great hardship as a result of increasingly frequent and severe extreme weather events including cyclones, floods, and droughts. Rising temperatures and irregular rainfall patterns are putting millions of people's livelihoods in jeopardy, particularly in the agricultural sector.



It's much too late to be content. To lessen the consequences of climate change and prepare for the new realities it brings, we must take immediate action. This calls for a multifaceted strategy that incorporates human acts, government regulations, and technical innovation.

At Quark News, we're dedicated to promoting sustainable solutions and increasing public awareness of the climate catastrophe. Our goal is to provide our readers with knowledge and motivate them to take significant action through our reporting and analysis.

Our current decisions, which range from waste management to energy use, have an impact on the future of the earth. We need to take aggressive steps to protect the environment; we cannot afford to remain obliging spectators.

Finally, I implore everyone to work together to combat climate change. Together, let's safeguard a brighter future for future generations and preserve our planet. I am committed to this cause as the Editor-in-Chief of Quark News, and I cordially ask you to accompany me on this vital journey.

Sincerely,

Quark News

13.04.2024

Breaking News

SANTA SPOTTED LAST NIGHT!

-Vihaan Harlalka



A HOLIDAY MIRACLE

As the holiday season nears, many wonder about the science behind Santa Claus. While Santa's existence is rooted in tradition and folklore, exploring the scientific possibilities behind his feats adds a touch of wonder to the festivities.

One theory suggests Santa could employ advanced technology like quantum teleportation or wormholes for speedy deliveries worldwide. Imagine the magic of gifts appearing instantly, thanks to cutting-edge concepts in physics!

Santa's workshop at the North Pole sparks curiosity about futuristic manufacturing techniques. Could Santa use AI and 3D printing for efficient toy production? It's a modern twist on the age-old craft of toy-making.

HOW DOES SANTA DO IT ALL IN ONE NIGHT?

HO HO HO!

The sleigh and reindeer team prompt thoughts on sustainable travel. Could Santa harness renewable energy like solar power or magnetic propulsion for his airborne journey? It's a green and innovative way to travel the globe.

And let's not forget Santa's "naughty or nice" list. Could data analytics and psychology play a role in Santa's gift-giving decisions? It's a fun way to blend technology and holiday traditions.

While Santa's existence remains a joyful mystery, exploring the science behind his legend adds a dash of wonder to the season. Happy holidays from Quark News!





PRODUCT

The iPhone 15 Pro Max is poised to become the market leader in the fierce competition of smartphones, where each new release is a weapon in the struggle against technology. This masterpiece, the result of Apple's unwavering pursuit of perfection, raises the bar for what a smartphone is capable of.

With its cutting-edge A17 Bionic processor, the iPhone 15 Pro Max offers performance that's unmatched. Pushing the limits of what's possible on a mobile device, the A17 microprocessor provides flawless operation whether you're gaming, multitasking, or editing high-resolution films.

Thanks to the iPhone 15 Pro Max's innovative camera technology, you can capture life's moments with astounding clarity and detail. Every picture is better thanks to increased low-light performance, better stabilization, and cutting-edge AI capabilities.

With its breathtaking ProMotion OLED display, the iPhone 15 Pro Max offers a glimpse into the future of display technology. A 120Hz refresh rate, HDR compatibility, and True Tone technology bring vivid colors and sharp details to life in every picture and video.

Enjoy lightning-fast internet connections thanks to the iPhone 15 Pro Max's 5G capabilities. You'll never have lightning-fast internet again, whether you're video chatting, downloading files, or streaming media.

The iPhone 15 Pro Max is a sophisticated device with an exquisite design that was made with meticulous care. In addition to adding to the overall design, the sturdy glass back, aerospace-grade aluminum frame, and ceramic shield front provide lifespan and durability.

Because your privacy and data are so important to you, the iPhone 15 Pro Max has cutting-edge security features like Face ID, encrypted storage, and control over app permissions. You can use your smartphone with confidence knowing that your information is protected thanks to Apple's dedication to privacy.


With its innovative appearance, outstanding performance, and state-of-the-art technology, the iPhone 15 Pro Max stands out as a real champion in the rapidly changing smartphone market. It is more than simply a smartphone; it represents brilliance and creativity. With the iPhone 15 Pro Max, you can experience the future and join the revolution.

-Aarav Bhimsaria



Apple iPhone 15 Pro Max

T WARR



Within the intensely competitive smartphone market, where each new development is a calculated manoeuvre in the struggle for supremacy, the Samsung Galaxy S24 Ultra proves to be a formidable rival to the iPhone 15 Pro Max. With the S24 Ultra, Samsung's commitment to pushing technological frontiers has paid off, raising the bar for what a smartphone can provide.

With the most recent Exynos 9 processor powering it, the Samsung Galaxy S24 Ultra offers remarkable performance. The Exynos 9 processor guarantees a flawless user experience whether you're gaming, streaming, or multitasking. It assures smooth and efficient functioning.

With the sophisticated camera system of the Samsung Galaxy S24 Ultra, capture the world in breathtaking detail. Every image and video produced by this camera, which has many lenses including a telephoto, ultra-wide, and high-resolution primary sensor, is a piece of art. The camera's performance is further improved by the upgraded AI capabilities, which guarantee flawless results under all lighting circumstances.

Savor vivid visuals on the Dynamic AMOLED display of the Samsung Galaxy S24 Ultra. Every picture and video is vivid and lifelike thanks to TrueColor technology, a fast refresh rate, and support for HDR, making for an engrossing viewing experience.

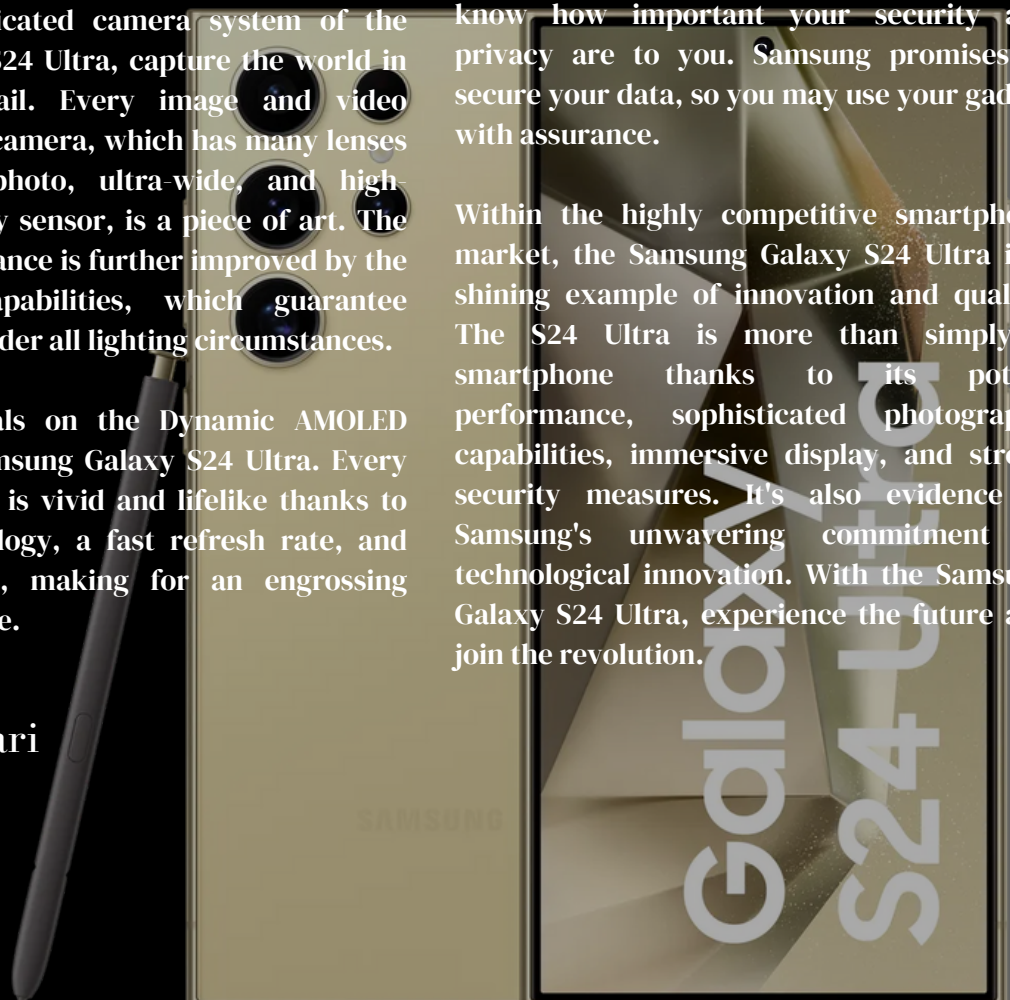
-Eshaan Tiwari

With 5G connection available on the Samsung Galaxy S24 Ultra, stay connected at blazingly fast rates. You will be able to browse the internet, stream media, and conduct video conferences with ease thanks to the fast and stable service.

Sleek and ergonomic, the Samsung Galaxy S24 Ultra is made of high-quality materials that are elegant and long-lasting. Its compact design and curved edges make it easy to grip, while its sturdy construction guarantees durability.

The Samsung Galaxy S24 Ultra has sophisticated biometric authentication, safe storage, and privacy controls because we know how important your security and privacy are to you. Samsung promises to secure your data, so you may use your gadget with assurance.

Within the highly competitive smartphone market, the Samsung Galaxy S24 Ultra is a shining example of innovation and quality. The S24 Ultra is more than simply a smartphone thanks to its potent performance, sophisticated photography capabilities, immersive display, and strong security measures. It's also evidence of Samsung's unwavering commitment to technological innovation. With the Samsung Galaxy S24 Ultra, experience the future and join the revolution.



DR. KALAM



VOYAGE

"IF YOU WANT TO SHINE
LIKE A SUN, FIRST BURN
LIKE A SUN."

SUCCESS

"TO SUCCEED IN YOUR
MISSION, YOU MUST
HAVE SINGLE-MINDED
DEVOTION TO YOUR
GOAL."

TRIUMPH

"DON'T TAKE REST AFTER YOUR FIRST VICTORY
BECAUSE IF YOU FAIL IN SECOND, MORE LIPS
ARE WAITING TO SAY THAT YOUR FIRST
VICTORY WAS JUST LUCK."



FATHER OF A NEW CULTURE!

"Look at the sky. We are not alone. The whole universe is friendly to us and conspires only to give the best to those who dream and work."

BIOGRAPHY

From 2002 until 2007, Dr. Avul Pakir Jainulabdeen Abdul Kalam, sometimes referred to as APJ Abdul Kalam, was India's eleventh president. He was a distinguished scientist, engineer, and statesman. Born in Rameswaram, Tamil Nadu, on October 15, 1931, Kalam's life story is an inspiration to tenacity, commitment, and love of science.

Kalam came from modest origins in his early years. He was raised in a middle-class home and had financial difficulties as a young child. Despite these challenges, he had a natural curiosity and passion of science from an early age. He demonstrated academic excellence and a strong interest in physics and mathematics.

Following his graduation from the Madras Institute of Technology with a degree in aeronautical engineering, Kalam became a scientist with the Defense Research and Development Organization (DRDO).

When he joined the Indian Space Research Organization (ISRO) in 1969, his career took a dramatic turn. Kalam made a substantial contribution to the advancement of ballistic missile technology and was a pivotal figure in India's space program.

When India successfully conducted nuclear tests in 1998 when Kalam was serving as the Prime Minister's Chief Scientific Advisor and the Secretary of the Defense Research and Development Organization, it was one of his most noteworthy accomplishments. This incident cemented India's standing as a nuclear power in the international arena.

In addition to his contributions to technology and science, Kalam was a well-known author and educator. He frequently engaged with kids to urge them to pursue jobs in science and innovation since he was enthusiastic about motivating young brains. His best-selling novels, "Wings of Fire" and "Ignited Minds," have inspired millions of people all over the world and are still in print today.

After being elected President of India in 2002, Kalam became the nation's first scientist and bachelor to occupy the top job. Throughout his administration, he pushed for the use of technology for the advancement of the country and concentrated on advancing education, particularly in rural regions.

The impact of Dr. APJ Abdul Kalam goes beyond his contributions to science and politics. He is known as the "People's President" because of his integrity, modesty, and dedication to public service. Generations after generation are still motivated by his vision of an innovative and empowered youth-driven India. Even though Kalam died away on July 27, 2015, his principles and teachings are still deeply ingrained in the hearts of people in India and throughout the world.

-Quark Board,
A Commemoration

HUMAN CLONING

CLONING

-Shrey Gupta

Clone, a term first coined by Herbert J. Webber. An ancient greek word describing the process of making a new plant from a twig

Cloning, an idea which was a science fiction few centuries back has now become reality, with the help of AI tech, since modern science nowadays doesnt have barriers. Cloning (producing an organism with the genomes and exact features as the parent cell) was discovered by Ian Wilmut, an english professor with mastery in genetic engineering. After many failed attempts, he succeeded to clone a lamb named "dolly".

Cloning can be divided into 3 categories: gene cloning, reproductive cloning, therapeuatic cloning of which the most common is gene cloning. At its most basic, gene cloning is a biochemical reaction. It's the creation of a copy of genetic material from an existing strand of genetic material. This natural reaction can be recreated in the lab and is an essential tool for many aspects of biological research.

The process sounds rather simple but performing it is definitely not a walk in the park. Lets digest bite by bite. We first begin with cell selection. A somatic cell(which is any cell other than reproductive cells)of the organism that is to be cloned is needed. This "somatic cell" contains the whole set of genetic information of the organism. Next in line is preparing a female egg cell, in this a female of the same species as the organism from whom the somatic cell was obtained,has the nucleus of her egg cell removed,leaving the cytoplsm behind which contains all the various organelles necessary for development. The somatic cell nucleus is then extracted commonly using a glass needle, and then injected inside the enucleated egg using another glass needle, known as nuclear transfer. The nucleus of the somatic cell and the uncleated egg cell are then fused together using electrical or chemical stimuli. This fusion combines the genetic material of the donor organism(from whom we obtained the somatic cell) with the egg cell's cytoplasm, creating a reconstructed embryo. As you must have figured, this process is termed fusion. Fifthly, the fused cell is treated with chemicals and electrical pulses to fasten cell division and mimick the natural process of fertilization. Lastly, the developing embryo is planted in the uterus of a female who is mature enough for birth and most importantly is of the same species. If the cloning process is successful, the surrogate mother carrying the embryo will give birth to a clone of the donor organism.

Concluding, scientists use cloning to create genetic copies of an organism, this can be used for further research, experiments and even agriculture, but not everything is actually what it seems, with all these fancy, exciting benefits, there are a few downfalls to cloning such as -it can seriously limit genetic diversity, the uncertaintiest that lie within the process is also a factor. Cloning can be unethical and dangerous it it were to be misused by people. At Last, summarizing the last bit into 4 words- "A double edged sword"-cloning



WHY WEAR SPIKES?

By Aarav Singh

>>> GRIP

Have you ever wondered why we wear special shoes while running? You see, when you run with spikes, your contact with the track gets better as the shoes have small spikes on the bottom that firmly hold the ground providing a better grip. In athletics, the better grip you have, the better you run. You all might be wondering how our stamina increases when we run a lot. When you run a lot you start to get tired but you need to push yourself to the limits and your stamina increases day by day and one day you will notice a huge change in your stamina.

HUMOUR

Why did the long-distance runner bring a pillow to the race?

Because they wanted to have a running dream!

>>> STRONG MENTAL STRENGTH

Athletics is for strong-minded people. When you run a long race you get tired but you need to be mentally prepared and try not to give up. With this, you'll become a good athlete in no days. You always have to fight with your pain while practicing because hard work will give you pain every day.

The most important thing for athletes is stretching. Before you run you need to warm up and after running you need to cool down by stretching if you don't, you might get cramps. Cramps occur when our body forms too much lactic acid due to anaerobic respiration (respiration without using oxygen).

Overall for me, athletics in different words are:

"no pain, no gain"





Anime Review - Cowboy Bebop

It's more than just about space cowboys and futuristic settings which render "Cowboy Bebop" is an exquisite jewel in the realm of anime; it's a compelling configure that helped usher in a new age of fantasy anime.

The series follows a band of bounty hunters known as "cowboys" in the year 2071, when mankind has colonised a number of planets in an effort to preserve order. They include the comical lead character Spike, his sidekick Jet Black (not Jet Black), Welsh Corgi Ein, and deceitful Faye Valentine. These characters are part of a diverse crew aboard the starship Bebop, and they make a living by completing missions set by the interstellar police.



-PRIYANSH BALUNI

When they stumble upon a genetically engineered dog with a sizeable bounty on its owner, the adventure really gets going, spurring Jet's good nature. Along the way, they come into contact with the infamous trickster, Faye Valentine, who is involved in a casino operation to settle a debt, and Edward, an odd but clever hacker who manages to survive on Earth after the moon is broken into pieces.

The show, however, takes a dark turn as it probes into Spike's expertise as a freelancer for a powerful organisation, which results in the death of its head and the rise of a vicious new leader who pursues Spike and Julie relentlessly as they attempt to flee their grasp and begin afresh. Spike's characters, from the adorable yet eccentric Edward to the captivating plot that unveils their layers of complexity, are a diverse and interesting group. Even the opposition has their heart broken by the majority, giving the narrative depth and relatability.

The opening and closing tunes of the program are an absolute match for its stylish and aesthetically appealing animation. Particularly the music gives the series an additional layer of mood and ambiance.

To sum up, Cowboy Bebop is an essential film for any fan of anime. It has well-developed characters, beautiful writing, and themes that are emotionally powerful, making it a great anime work that will never date. To everyone seeking an engaging and amazing anime experience, I wholeheartedly suggest it.



What causes Dandruff

Since the day we are born, our skin has been residence to hundreds of millions of unicellular and multicellular life forms, including Malassezia on our scalp and tapeworms in our stomachs.

Since the day we were born, hundreds of millions of unicellular and multicellular living forms have called our skin home, notably tapeworms in our stomachs and Malassezia on our scalps.

Malassezia feeds on our scalp as it develops by ingesting the protein, lipids, and oil from our skin. Both saturated and unsaturated fatty acids are found in our sebum; although saturated fatty acids are neatly packed, unsaturated fatty acids have double bonds that cause uneven bends in their structure. By secreting an enzyme that releases all the oils and fats while leaving the unsaturated ones behind, Malassezia consumes sebum. These residual, atypically formed lipids penetrate the skin, breaking down its defenses and allowing moisture to escape. The body notices these breaches and reacts defensively by inflaming the scalp, which results in dandruff.

-SATVIK SAMEER



MR. ABHILASH
SHARMA

2024-2025

SCIENCEE OF THE YEAR

Imagine sitting under the night sky, wondering how time slips by. That's me. I'm just like you, curious about the mystery of time. It's like I'm a tiny dot in this big timeline, but I'm fascinated by how humans measure something so vast.

Think back to ancient Egypt. They looked up at the moon's changing shape to figure out when the months began and ended. It's like how we use calendars today, but back then, it was all about watching the sky.

Different places had different ways of keeping track. In India, they had the Samvat calendar. It's cool how cultures found their own ways to understand time. And across Asia, from busy markets to peaceful temples, they used sundials. These were like the first clocks, using shadows to tell time.

Then came a big moment in the 1600s. Picture Galileo, a scientist, watching a pendulum swing and measuring the oscillations with the help of his pulse. He thought it was fascinating! This led to the first pendulum clock by Christiaan Huygens. It was like the heartbeat of time, ticking away with each swing.

Fast forward to the 1900s. A guy named Warren A. Marrison made a special clock using quartz. Quartz is a stone that vibrates when you zap it with electricity. It's pretty cool because we use it in our daily lives without even knowing. Like in our kitchen lighters, they generate electricity when you press them. But if you pass electricity through these crystals, they vibrate back and forth due to the same mechanical stress.

These quartz clocks became really popular because they were so accurate. But scientists wanted to go even further. They started playing with atoms, those tiny building blocks of everything. They made something amazing called the atomic clock. It's like a super-precise timekeeper, using vibrations from cesium atoms. It's so good that it's used for things like GPS and phone signals.

From ancient moon watchers to today's atomic scientists, humans have always been curious about time. Every tick of the clock tells the story of our journey through the ages. So, next time you check the time, remember the incredible journey that brought us to this moment.



NATURE'S LIGHT

SHOW - *Bioluminescence*

-Eshaan Tiwari

Gazing in the night sky or enjoying the depths of the deep ocean, we take immense pleasure in the staggered dark silence. A place where nature is pretty much unable to convey its bright lights, the darkness of the planet Earth. Still, there is something that is enough to get a viewer to crave it, nature uses its trump card and soothes us with a light show which is orchestrated by the magnificent glowing organisms. This has become a magnet for both nature lovers and scientists. These organisms dip deep into the science of Bioluminescence while displaying an unwavering joy that enchants our eyes.

We often stroll out in the forests or enjoy a deep dive in the depths of the oceans, searching for a place to find 'glowing' animals. Whether it is the jellyfish or the rarer, anchor fish; humans love witnessing extraordinary sites, and shiny animals which attract them instantly. The prepossessing fireflies in the forest harpoon the stress out of our souls and fit in as a symphony.



Many people saw an apple fall on the ground, but unlike Sir Isaac Newton were unable to identify curiosity, in this case, E. Newton Harvey ended up becoming the person who gave up the largest knowledge regarding the science of Bioluminescence. He too wondered and asked why. According to him, Bioluminescence is just a reaction of chemicals inside the abdomen of special bugs that is successful in turning the chemical energy into light energy.



Now, before blabbering or blotching, in this case, out the complicated science behind this wonder, we shall first examine the core of this phenomenon. These 'glowing' organisms carry special characteristics in their cells. Have you ever seen a picture of fireflies, if not a live one zoom in front of your eyes? They have something shiny in their abdomen.

Just picture how tiny insects, use the art of bioluminescence countless times in its life span. A molecule called luciferin, which is a light-emitting molecule involves in a reaction with oxygen to produce light. All this takes place under the watch of luciferase, which is an enzyme that helps in bringing out the whole operation smoothly. One question that arises in the minds of many nature lovers as well as scientists, is whether these organisms emit light throughout their lives. A pretty straightforward answer to this would be just no.



Many glow to fight away with their predators scaring them, and others use it to peacefully find or attract their people. Thus, during the nights of the mating seasons, the thick forests have a lit-up party inside their cores, where glowing flies move in a special regular motion. The renowned decomposers, mushrooms also join the party, while they glow during they glow during the nights and beautifully light up the forest floor. This celestial glow does not limit its reach to the leafy realms, it spans down beneath the surface to the depths of the oceans.

Aquatic animals harness the powers of bioluminescence for various purposes. From the picture-perfect lights of the jellyfish to the strategic illumination of various fish and sharks, the dark water is still lit up. These animals use this phenomenon to communicate, find food and even to hide from their predators.

Take an example of an octopus, it is well beyond successful while emitting light to camouflage in its surroundings which makes it pretty impossible to detect its presence. Now after all this, let's also quickly take a look at what is going on in the minds of scientists regarding this awe-spining phenomenon. Many scientists throughout the world, have been extensively researching and have come up with the idea to use the art of bioluminescence to make a device consisting of a flashlight that is capable of lighting the inner cells of our body.

You might ask what would that do? The thing is, this would allow doctors to peek inside the bodies of the patients without having to make a cut or slice on their body. This technology is way to advance, and according me to me, it will definitely take numerous years to bring it out on its full caliber. The bioluminescent proteins, like luciferin or luciferase can be easily put into cells, this allows the biological scientists to study cellular movements. Bioluminescence has been also used in the form of defence and security appliances many times.

Again, the most asked question, How? See, incorporating bioluminescent cells or markers inside different materials like binoculars, becomes a source of low-level energy. This works as a natural illumination in the dark environments, cutting out the need to use traditional high level lighting systems which are both expensive and somewhere or the other harmful for the nature. Ok, now we have witnessed a fantastic sight throughout, but there is one thing we missed, what is that you may ask, it is the 'modern generation'. Yes, bioluminescence has become a fashion for the genzees (people born 2010 onwards), Tattoos are made using bioluminescent ink, which gives it a unique glow taking body art to different level of heights, this becomes the centre of attraction. Many people keep bioluminescent fish as their pet, for decorations. The lights made by using this phenomena is used in various dance performances as well as other stage appearances.

The art of bioluminescence leaves behind a footprint of tapestry whether in the leafy realms of the forests or the watery worlds of the deep ocean. As we've journeyed through various aspects relating this natural phenomenon distinguishing from intelligent uses to medical needs, we stand here at the top of the peak where the journey is coming to a joyful end. This art, consists of uncountable wonders, both discovered and yet to discover, it is pretty difficult for you to register everything as well as for me to express it in words. With this encouraging note, this is me signing off.

“ Science is a beautiful gift to humanity, we should not distort it. Science does not differentiate between multiple races.”

-Dr. Kalam

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