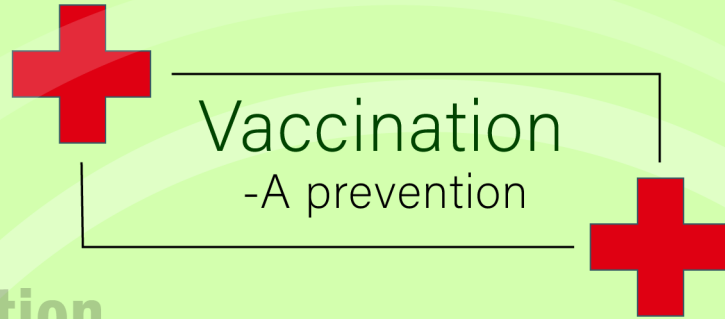




KNOWBEL

ENLIGHTENING THE NOBLES!



Communication

Safety?

Advocacy



Research

Priority

Efficacy?

Hesitancy

NATIONAL VACCINATION DAY
16 March, 2021

VOLUME II : MARCH 2021 . ISSUE NO. 3



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Enlightening the nobles !

WELCOME !

Here comes the latest edition of your favourite magazine, KNOWBEL. Dive into the world of fascinating articles, inspiring personalities, mind-blowing quizzes, adorable comics and a lot more. All it takes is the flip of a page.

We firmly believe that everyone must have access to information and hence, strive to include the choicest of material for you to dwell upon. Besides, we provide a wonderful platform for you to showcase your amazing talent.

You can send us your creative work at knowbel.science@gmail.com.

Moreover, don't forget to participate in the quizzes and contests we host because who knows, you may be the next star to win some exciting prizes and a feature in our next issue. Do share this with your friends and family. A candle loses nothing by lighting up another one.

Happy reading!

Stay home & Stay safe !

SPECIAL THANKS TO

DR. APARNA DESHPANDE
Faculty Advisor

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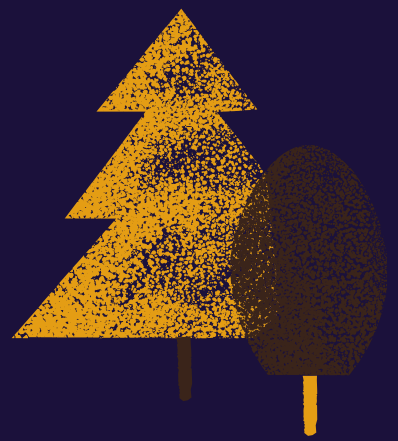
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Wonderella



The Journey continues

NEVER STOP QUESTIONING !



Image by PublicDomainPictures from Pixabay

01 - GOLDEN BLOOD

Golden Blood is one of the rarest blood types in the world. It is found in less than 50 people across the entire globe. It was first found in Aboriginal Australians.

What is unique about the Golden blood, and why is it so rare? Rhesus (Rh) is a blood antigen protein present on the surface of red blood cells. If the blood contains this protein, then it is called Rh-positive. If the blood lacks protein, then it is Rh-negative. Rh-null blood, so-called 'Golden Blood,' does not have Rh protein in them.

If the body with Rh-negative blood received blood from a 'positive' donor, the body's antibodies react with the incompatible donor blood cell and, further, triggers the body's immune system. Such transfusion reaction can be lethal for the person's life. Even one can also lose a life.

Because very few people have golden blood in them, it is tough to get a blood donor during the emergency; and a patient in crisis can become a desperate race against the clock. Indeed, it will involve a substantial convoluted international network of people. Hence, people with golden blood are at high risk due to their rarity in the world.

RIVETING READS IN THIS ISSUE:

02 - THE HOTTEST CHILI PEPPER IN THE WORLD IS SO HOT IT COULD KILL YOU

03 - WHY DO WE NEED SLEEP?

04 - WHAT COLOR ARE YOUR EYES EXACTLY ?

05 - HIGH-PERFORMANCE PLASTIC DERIVED FROM RENEWABLE OILS

06 - CLIMATE CHANGE AND THE PANDEMIC



References -

- <https://timesofindia.indiatimes.com/>
- <https://bigthink.com/>

02 - THE HOTTEST CHILI PEPPER IN THE WORLD IS SO HOT IT COULD KILL YOU.

Inadvertently, scientists have grown the world's hottest chilli pepper, so-called "Dragon's Breath," which is too spicy to kill anyone.

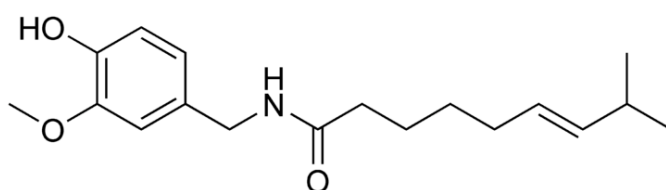
What exactly does hot chilli pepper? It produces a burning sensation because of the presence of capsaicin in it. Scoville heat scale is a measure of the pungency (spicy heat) in spicy foods. The scale measures capsaicin concentration in hot chilli pepper, and the value that comes out is 2.48 million. In otherways, a single drop of capsaicin oil is so powerful that its impact is readily detectable in 2.48 million water drops.

Researchers believe that oil extracted from the superhot chilli pepper is so potent that it could act as an alternative anaesthetic for those who are allergic to conventional drugs.

If anyone attempts to swallow one chilli pepper, even that could lead to death due to anaphylactic shock. Indeed, death due to chilli pepper is not a very common way to die, possibly the unluckiest person that should be adventurous enough to try Dragon's Breath because it may be the last thing a person ever tastes.



Asit K. Ghosh Thaumaturgist, CC BY-SA 3.0, via Wikimedia Commons



By cacycle Wikimedia Commons

Capsaicin



References -

- <https://www.livescience.com/>
- <https://www.thehindubusinessline.com>.

03 - WHY DO WE NEED SLEEP?

Just like oxygen, water, and food, sleep is also an essential requirement for survival. Sound sleep makes the body healthy and prepares it for the next days. Sleep affects the proper functioning of the brain.

Skipping one-night sleep makes a person cranky and clumsy; skipping two subsequent nights' sleep makes a person an overthinker. His/her brain does not function properly, and after missing five nights' sleep, a person starts hallucinating. It is about impossible for the brain to give direction without taking proper rest.

The adenosine hormone controls the circadian rhythm (body's internal clock), which further regulates the sleep cycle. As the day goes, the body becomes increasingly tired and raises the brain's adenosine levels; the body breaks down this compound during sleep.

Light also influences the sleep cycle of the body. The hypothalamus present in the brain processes the signal when the eyes are exposed to sunlight, which helps the brain to determine whether it is day or night. In the morning, the body releases cortisol hormone that promotes energy and alertness. As natural light goes down in the evening, the body releases melatonin hormone that induces drowsiness. The sleep cycle of the body is regulated by various hormones present in the body.



Image by Hatice EROL from Pixabay



References -

- <https://www.sleepfoundation.org/>
- <https://www.frontiersin.org/>

04 - WHAT COLOR ARE YOUR EYES EXACTLY ?

The **iris** is a colourful part that regulates the amount of light in the eyes. The structure of the iris provides colour to the eyes. The eye's colour depends on the melanin concentration in the stroma (the fibre that connects the iris to the rest of the eyes). Generally, it varies from light brown to black. When we say this person has blue eyes, it simply means that its iris colour is blue. Blue eyes are not actually blue. It's because of the lack of melanin in the stroma.

The highest level of concentration of melanin is found in brown-coloured eyes. Varied shades of eyes are due to the varying level of melanin. Green-coloured eyes are the rarest ones! And it is a blend of yellowish lipochrome pigment and Rayleigh scattering splash. On average, 86% of Ireland and Scotland's population either have blue or green coloured eyes. In albinos, melanin concentration is so low that one can see their blood vessels, which causes their eyes to look red or purple in a different light.

Emotions like love or anger can also change the colour of the eyes. As the muscles that control the pupil stretch in response to emotions, the pigment concentration changes and makes the eye change colour subtly. Most newborn babies have blue eyes because it takes time to develop melanin in them. Their eyes colour darken over their first three years.



Image by Sofie Zbořilová from Pixabay



References -

- <https://www.aao.org/>
- <https://www.eyesite.co.uk/>

05 - HIGH-PERFORMANCE PLASTIC DERIVED FROM RENEWABLE OILS

We are facing horrifying images of plastics mounting up in landfills and oceans. Not only most plastics are not effectively recycled and are environmental pollutants, but also plastic production consumes depleting crude-oil resources. As Bill Gates mentions in his recently released book “How to avoid a Climate Change”, we need major technological breakthroughs to address this problem.

Fundamentally, the polymer chemistry of plastics must be redesigned to improve their sustainability. Häußler et al. report plastics that have many of the critical properties of HDPE but that are also designed for complete closed-loop recycling. The process involves transforming oils derived from plants or microalgae into polymers with high molecular weights. The polymer chains contain a small fraction of regularly placed carbonate or ester linkages. This is followed by solvolysis, which gives the monomers. The monomers can be successfully re-polymerized to produce materials that retain the properties of the original plastic.

They also show that the new plastic's solvolysis occurs selectively when it is mixed with conventional plastics such as commercial polyethylene, widely used in drinks bottles and is also a candidate for chemical recycling by solvolysis. This proof-of-concept result hints that selective recycling of the new plastic might be possible in the future.



Chemist 4 U on flickr



References -

- <https://www.nature.com/>
- <https://www.gatesnotes.com/>

06 - CLIMATE CHANGE AND THE PANDEMIC

It is now well established that the SARS-CoV-2 virus responsible for the COVID-19 pandemic was first transferred to humans by bats. A new study published in the journal *Science of the Total Environment* provides the first evidence of a mechanism by which climate change could have played a direct role in the emergence of SARS-CoV-2 - the virus that caused the COVID-19 pandemic. Climate change has disturbed habitats. Organisms left some areas and moved into others -- taking their viruses with them. This allowed for new interactions between animals and viruses and causing more harmful viruses to be transmitted or evolve. The study has revealed large-scale changes in the type of vegetation in the southern Chinese Yunnan province over the last century. This is the “global hotspot”, the region where genetic data suggests SARS-CoV-2 may have arisen.

Climatic changes, including increases in temperature, sunlight, and atmospheric CO₂, which affect plants and trees' growth, have changed natural habitats from tropical shrubland to tropical savannah and deciduous woodland. This created a suitable environment for many bat species that mainly live in forests. The number of coronaviruses in an area is closely linked to the number of different bat species present. The study found that an additional 40 bat species have moved into the southern Chinese Yunnan province in the past century, harbouring around 100 more types of bat-borne coronavirus. COVID-19 was awful! But climate change could be worse.

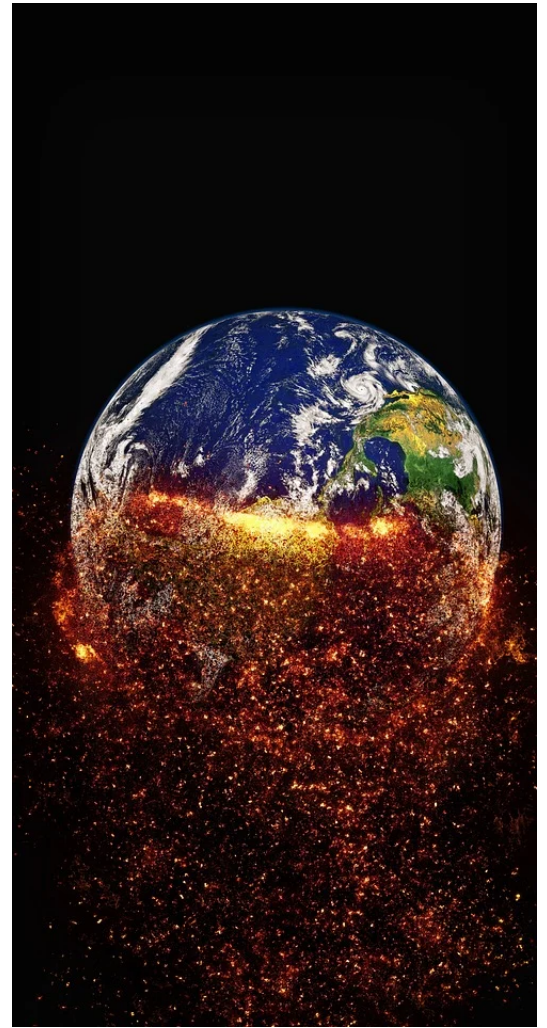


Image by Pete Linforth from Pixabay



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- <https://www.sciencedaily.com/>
- <https://www.who.int/>

FACTASTIC!

*Get ready to guzzle down
these interesting facts...*



Image by Sammy-Williams from Pixabay

WHY DO WE YAWN?

The theory has it that yawning helps cool the brain— and it turns out animals with bigger brains do indeed tend to yawn longer.

LETHOLOGICA

Lethologica is both the forgetting of a word, and the trace of that word we know is somewhere in our memory.

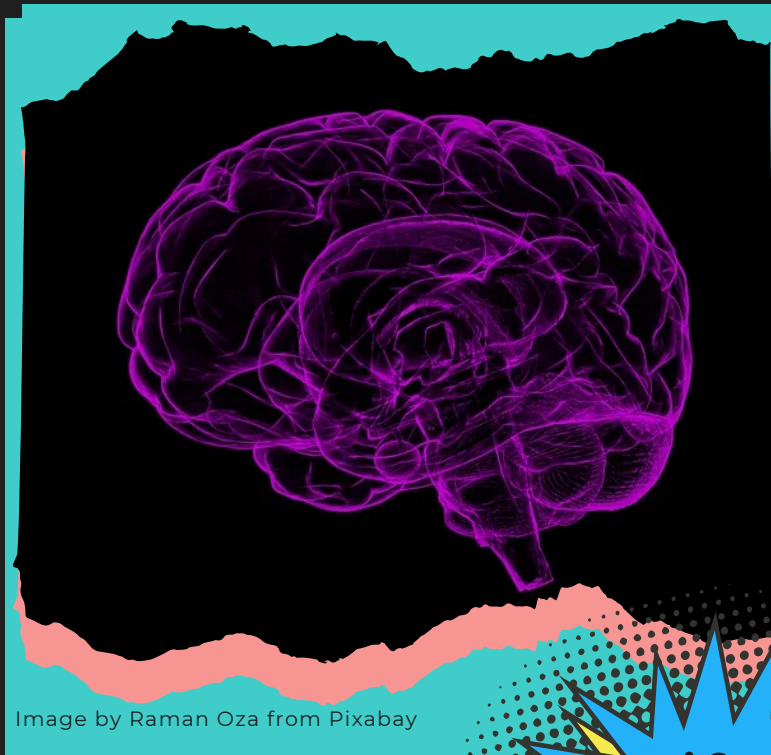
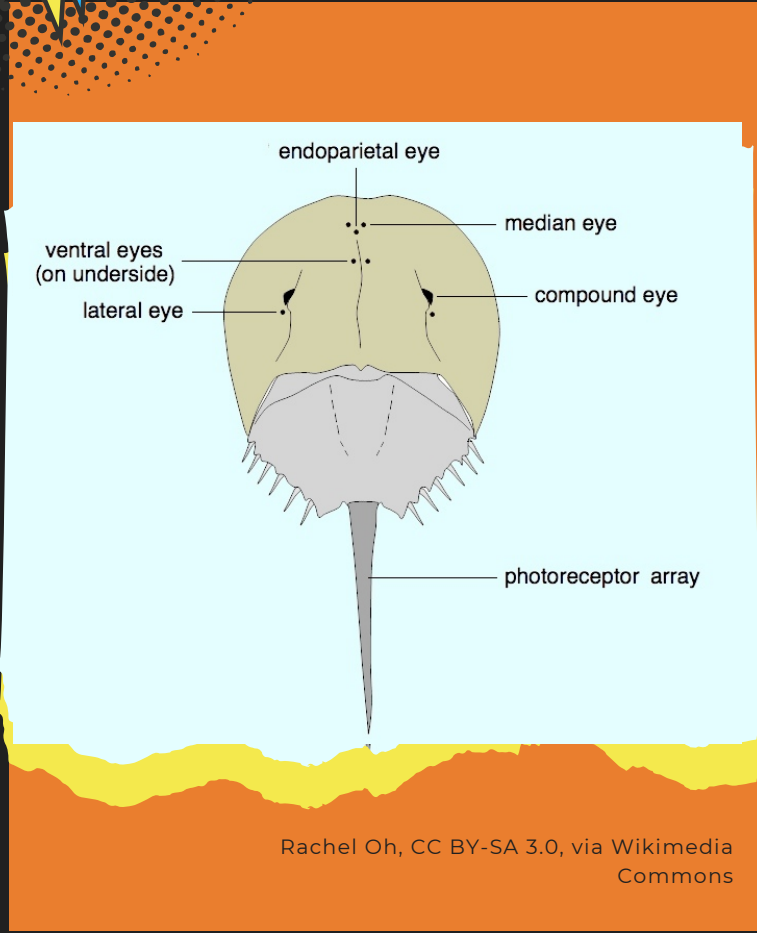


Image by Raman Oza from Pixabay

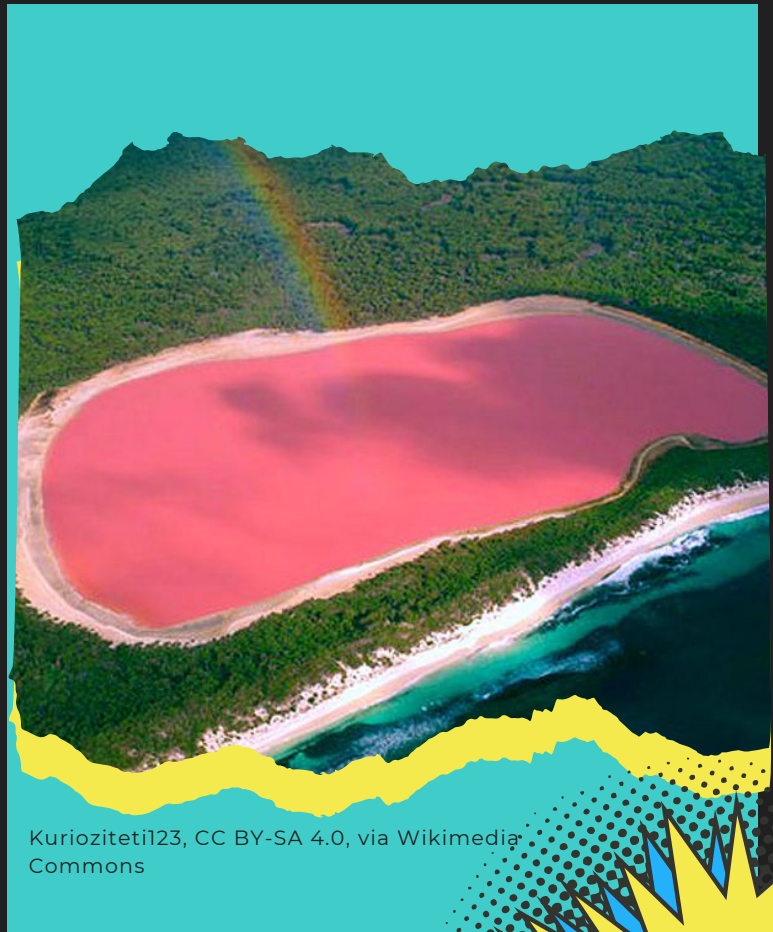


WATCH OUT !

A total of 10 eyes help the horseshoe crab get around. These eyes are distributed around the body, including on top of its shell, the tail, and near the mouth to help orient the animal when swimming. Two compound eyes are easily seen on each side of the animal's shell.

BUBBLE GUM LAKE

Lake Hillier on Middle Island, Australia, is the colour of bright-pink bubble gum. Researchers recently discovered that the lake's unique colour is caused by algae, halobacteria, and other microbes. Additionally, this body of water is too salty—just as salty as the Dead Sea.



LARGEST LIVING ORGANISM

Forget blue whales and giant redwood trees. The biggest living organism is over 2 miles across, and you'll hardly ever see it. A specific honey fungus, measuring 2.4 miles (3.8 km) across Oregon's Blue Mountains, is thought to be the largest living organism on Earth.



Charles de Mille-Isles on flickr

GROWTH SPURT

Pseudomonas natriegens, an ocean-dwelling bacterium, can go from birth to reproduction in 10 minutes flat. In five hours, a single cell could theoretically give rise to more than a billion offspring.



Centers for Disease Control and Prevention

References:

- www.scientificamerican.com
- www.bbc.com/
- www.pbs.org/
- www.atlasobscura.com/
- www.discovermagazine.com/
- www.bbc.com/

Fact Finder

MRUNAL

The Quizopedia



-ARE YOU READY FOR THE CHALLENGE?

Is your mind slowly going stale? Did you pride yourself on being the 'Know-it-all' in your class? Well, here's a chance to flex your grey cells and bring them back to tip-top shape. KNOWBEL presents to you 'Quizopedia'. I, Aditya, the quizmaster, have selected 11 of the most sizzling questions for you to crack. Note that these questions have an underlying connection.

Check out the instructions below:

The QR code below will take you to a Google Form, which contains a quiz consisting of 10 questions. You must answer all the questions and try to get them correct. You are free to make wild guesses as there is no negative marking! The names of the winners would be published in the upcoming issue, and the winner of the contest will receive prizes worth Rs. 250.

Answers shall be officially released via mail on [March 25, 2021](#).

The winners would be chosen based upon:

1. Number of Correct Answers
2. Time of Submission

Competition begins on: [March 2, 2021, at midnight](#)

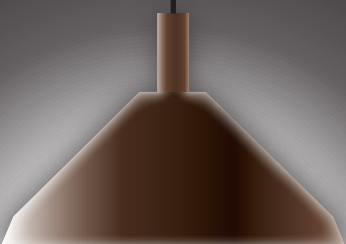
Last Date for Submission: [March 20, 2021](#)



14th Quizzo winner

Devarsh Patel
IISER, Pune

Scan or click on the QR code below:



1. X vibration syndrome or X ringing is the sensation and false belief that one can feel one's mobile phone vibrating or hear it ringing, when actually its not. In 2012, the term made its way to Australia as Macquarie Dictionary's "Word Of The Year". X was the first fictional superhero to wear the skintight costume that has now become a hallmark of comic book superheroes. Identify X.

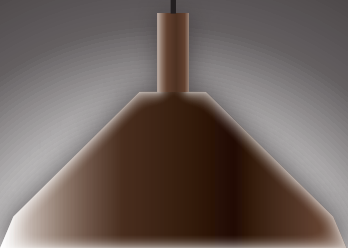
2. In 1886, US President Grover Cleveland ordered that X will serve as a lighthouse. After several failed attempts, the electrical lights were lit and those electric arc lights were able to be seen from a distance of 24 miles away. X functioned as a lighthouse for next 16 years, until March 1, 1902. Identify X.

3. Tamgha-e-Pakistan (Medal of Pakistan), stands fourth in hierarchy of civilian awards after the Nishan-e-Pakistan, Hilal- e-Pakistan and Sitara-e-Pakistan. Who is the only Indian recipient?



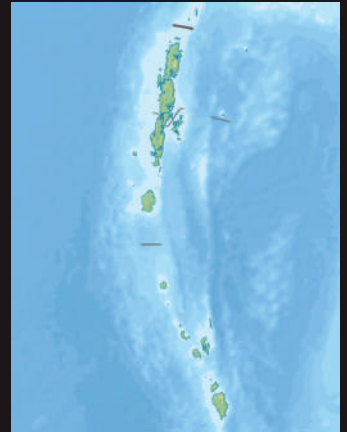
4. After being picked by Y in the inaugural IPL, X was asked to give his preference for a jersey number. He said "anything but 14" (14 was his roll number in college and he had a tough time there) but the guy who asked thought that his preference is 14. For two years, X sat out without a single game. Then X ask Parthiv Patel if he could exchange his number (that number is month of his birthday) but Parthiv refused. Then he decided to go with a number Z (multiple of number he wanted) Give only X.

5. In Sept 2010, the artist Jitesh Kallat unveiled an art installation at the Art Institute in Chicago, on the 9th anniversary of the 9/11 attacks. This consisted of some words in five colours. This is a reference to something that happened exactly 117 years ago. What?



6. The German physicist Johann Ritter called them "oxidising rays" and then "chemical rays". How do we know them today?

7. According to a theory, the name of the islands derives from the Sanskrit language as the Malay form of the monkey deity, Hanuman. The islands are prominently featured in Arthur Conan Doyle's Sherlock Holmes mystery, The Sign of the Four. Identify these islands ?

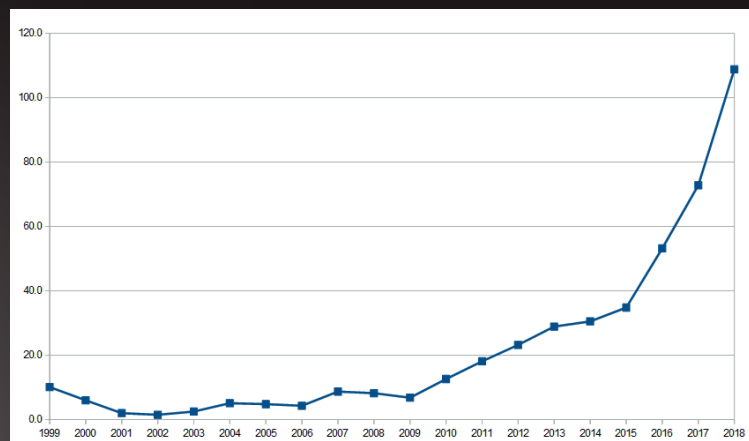


8. a) Gambler and other "lowlifes", also messengers
b) City guard or policeman
c) Innkeeper
d) Merchant/Money-changer
e) Doctor
f) Weaver/Clerk
g) Blacksmith
h) Worker/Farmer.

Where in the world of sports would you come across practitioners of the aforementioned occupations in that order?

9. On which famous scientist's tombstone is it written, 'He lies here, somewhere' ?

10. X famously never shows a Y axis on any graphs in his presentations. The internet famously calls it the "X Chart". The idea is, X shows only a relative projection over time and not a static number. X founded Blue Origin in 2000, a human spaceflight startup company, which included an early interest in developing "space hotels, amusement parks, colonies and small cities for 2 million or 3 million people orbiting the Earth." However we all know X for a slightly difference reason. Who is X?



< D/CODE >

THERE IS ONLY ONE TRUTH !
BRING OUT THE SHERLOCK IN YOU.

Are you rooting to challenge your brain in this seemingly endless lockdown? Well, we have just the right thing for you. KNOWBEL presents a revamped version of your favourite D-code. Gear up to send your neurons on a marathon.

To begin, click on the start button below. There are 5 documents, one leading to another with a clue to open it. You have to submit the final answer, a code given in the final document, at the submission link. Remember, don't give up midway because the solution is staring at you in the face.

Conquistadors will be **honoured** with fantastic **prizes** worth **Rs.250** and **certificates**. Besides, you will get a chance to be featured in our next issue.

The answers will be sent to you by **25/03/2021**. The enthralling **competition begins** on **02/03/2021**. **Hints** would be given out after **5 days** from the **start** of the competition on the official **KNOWBEL website**

here : **HINTS**

The final winners will be chosen on the following basis:

- 1) Your answers (obviously!)
- 2) Logic
- 3) Preference for early-bird submissions

The Deadline for entering your answers is 25/03/2021.

Now, are you ready to EODCD? 😜

Click on **START** to begin.

<D/code> - 14 :

Unbeaten

START

For clarification, please contact: knowbel.decode@gmail.com

PLOT TWIST



by Aishwarya Juneja

①



Hey! Climb up!
The view looks great!

②

I'm quite good here!
I can't climb anyway



③

I made steps for you it
should be easier now

hammered nails



Thank you, but I
really don't want to

Aw man, don't be like
that. I've put so much
efforts

Alright alright!
I'll try
gave up

After the trial

④

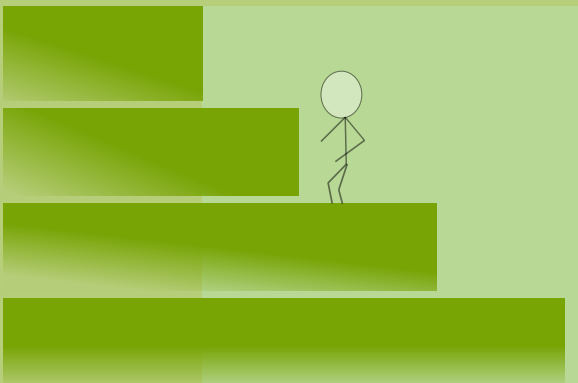
This is all my fault, I didn't
know you would get injured!

I'm really sorry!



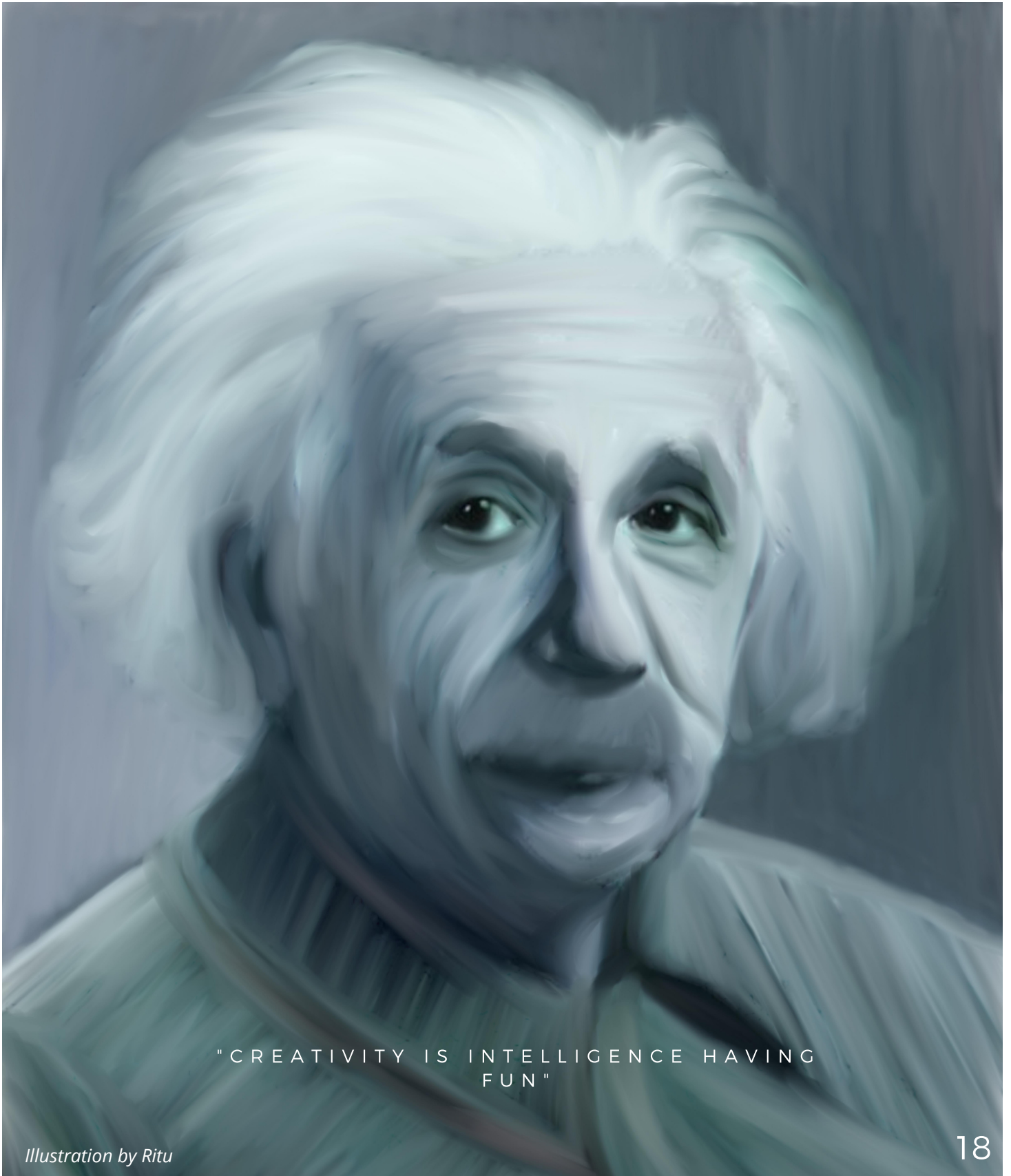
atleast you won't force
people now

sigh
It's alright! Crying over
spilled milk is useless
*I'll have to wash myself
thoroughly*



INSPIRON

ALBERT EINSTEIN



"CREATIVITY IS INTELLIGENCE HAVING FUN"

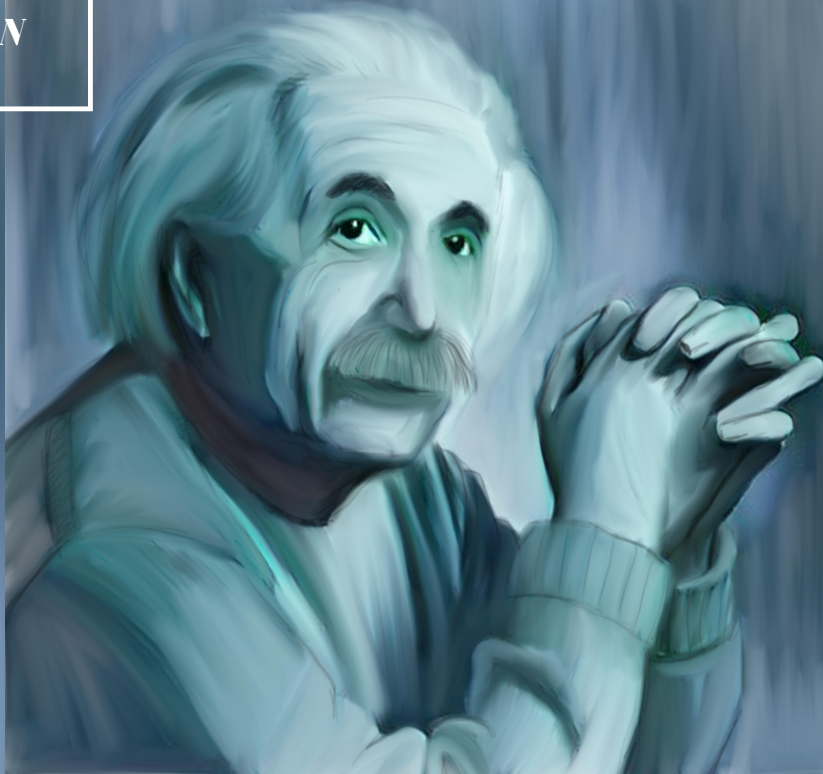


Illustration by Ritu

Albert Einstein was one of the most talented and influential mathematical physicists in human history. Even after years of his passing, he is still widely regarded as the prototypical genius.

Albert Einstein was born on March 14, 1879, in the German city of Ulm. From an early age, Einstein was fascinated by mathematics, science, and music. While he would eventually reveal the universe's inner workings, Einstein struggled as a student, failed exams, and had dust-ups with authority figures.

There's always something about children who don't speak much. Einstein showed a profound affinity towards nature very early in life and spent his time contemplating nature's invisible forces, often with a compass needle's movement. It captivated his young mind at the age of five. This was the beginning of his engrossment in the mysteries of nature's ways, which later evolved into scientific breakthroughs of quantum physics.

If there's one thing common among the most renowned personalities globally, it's the fact that society always struggled to contain their calibre within the tiny cages of narrow mindedness. So was the case with young Einstein, whose wit and subtle rebellion rubbed his teachers off in the wrong way. Annoyed by him, his teacher had declared that he would never amount to anything – a slight misprediction on the teacher's part.

“

If you can't explain it simply, you don't understand it well enough.

”

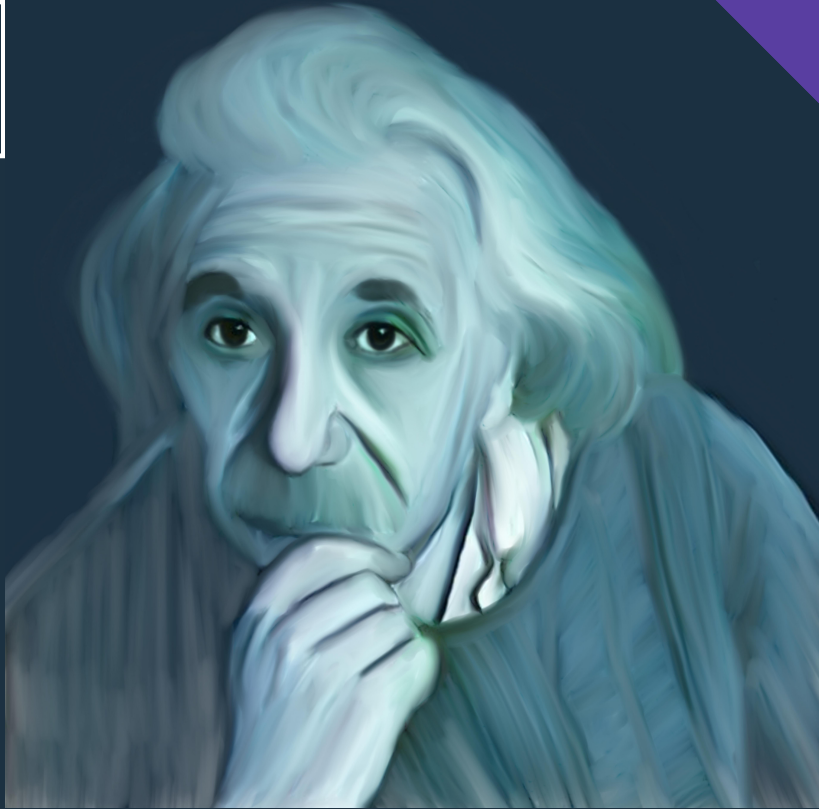


Illustration by Ritu

“

*Imagination
is
everything.
It is the
preview of
life's coming
attractions.*

”

Einstein's affair with his violin began at the tender age of five. Lina is what he named his violin. However, like most famous love stories, this one, too, started with a hassle. The boy didn't appreciate drills of violin exercise, and one fine day at violin class, frustrated by the routine, he threw his chair at the music teacher who left the house in tears. Later, Einstein's ears were introduced to Mozart's sonata when he was twelve and thus began his love for music that lasted forever.

The young rebel despised school and wanted to get over it as soon as possible. However, at the same time, Albert had to ensure that he did not ruin his chances of getting into University. Therefore, in 1895, 16-year-old Albert decided to test himself out of school, skip the part he felt redundant and get himself enrolled to ETH Zurich, the reputed Swiss University of Polytechnic. However, he failed.

It was 1893, and Albert's family moved to Pavia, Italy, leaving him behind in Munich to complete his studies. Albert wanted to be in Pavia by all means. After six more months of managing with taxing gym classes at Lutipold, clashes with the teachers and surviving noisy landlords, he finally managed to get away to Italy. He managed to convince a doctor to write a note that compelled the authorities to let him go because ostensibly, the sly young genius suffered from "neurasthenic exhaustion".

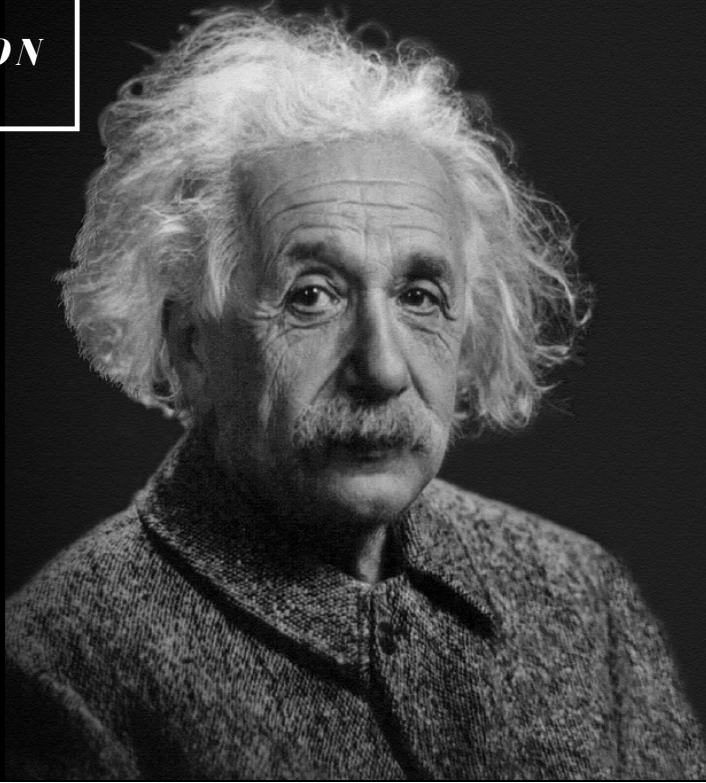


Image by Jackie Ramirez from Pixabay

In 1894, Einstein began his first paper ever – 'On the Investigation of the State of the Ether in a Magnetic Field'. Hardly 15, Albert sent the report to his uncle, Caesar Koch, for his expert opinion. He slipped in a letter along with it, which read as follows. "If you are not going to read this stuff, I will not be annoyed at all, but at least you have to recognize it as a shy attempt to fight against my being a bad letter writer, which I inherited from both my beloved parents."

Einstein would write that two "wonders" greatly affected his early years. The first was when he was five — the encounter with a compass. It mystified him that invisible forces could deflect the needle. The second wonder came at age twelve when he discovered a book of geometry, which he devoured. He called it his "sacred little geometry book."

Due to his exceptional math scores, he was allowed into a polytechnic in Zürich on the condition — that he first finish his formal schooling. Einstein would later recollect that his years in Zürich were some of the cheery years of his life. He met several students who would become loyal friends, such as Marcel Grossmann, a mathematician, and Besso, with whom he enjoyed long conversations about space and time. He also met his future wife, Mileva Marić, a fellow physics student from Serbia. In 1902 Einstein reached the lowest point in his life. Without a job, he could not marry Maric and support a family. Further, his father's business went bankrupt. Desperate and unemployed, Einstein took up tutoring children. But he was fired. In 1903, he married Marić, though his parents disapproved.

“

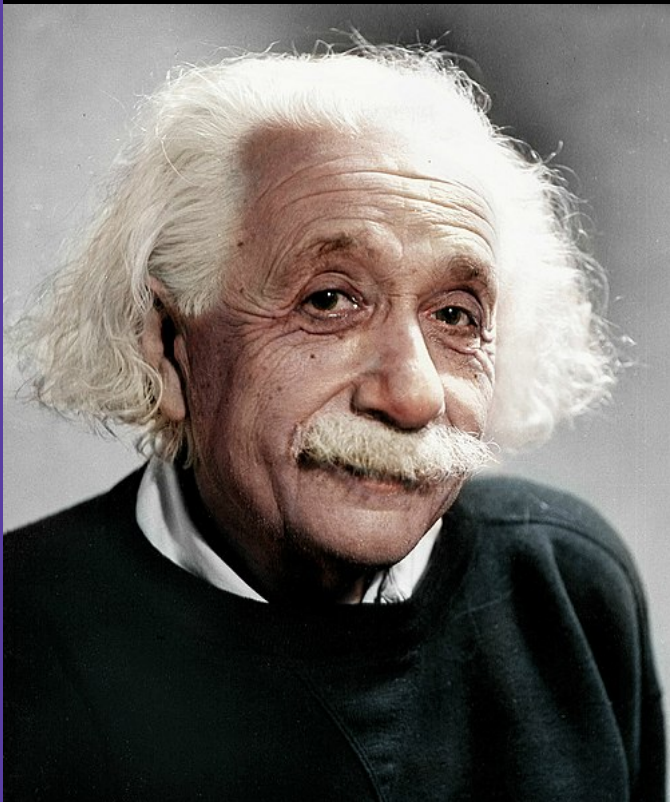
The important thing is not to stop questioning. Curiosity has its own reason for existing.

”

“

*Try not to
become a man
of success, but
rather try to
become a man
of value.*

”



Carl A. Gist, CC BY-SA 4.0, via Wikimedia Commons

In 1905, called Einstein's "miracle year," he published four papers in the journal 'Annalen der Physik', each of which would permanently alter modern physics. At first, Einstein's 1905 papers were brushed aside by the physics community. This changed after he received the attention of perhaps the most influential physicist of his generation, Max Planck.

Einstein's work was thwarted by World War I. A lifelong pacifist, he was only one of Germany's four intellectuals to sign a manifesto opposing Germany's entry into the war. Disgusted, he termed nationalism "the measles of mankind". He wrote, "At such a time as this, one realizes what a sorry species of animal one belongs to."

In the chaos unleashed after the war, radical students seized control of the University of Berlin and held the college's rector and several professors hostage. Many feared that bringing in the police to release the officials would result in a tragic confrontation. Einstein, because both students and faculty respected him, was the logical candidate to mediate this crisis. Along with Max Born, Einstein brokered a compromise that finally resolved it.

Einstein developed the special and general relativity theories and won the Nobel Prize for Physics in 1921 for explaining the photoelectric effect. In 1952, after the death of the first president of Israel, the Israeli government chose to offer the second president's position to Einstein. However, he refused. He found the offer an embarrassment as it was hard for him to refuse without causing animosity.

One week before his demise, Einstein signed his last letter to Bertrand Russell in which he agreed that his name would go on a manifesto urging all countries to give up nuclear weapons. It is apt that one of his last acts was to argue for international peace, as he had done all his life.

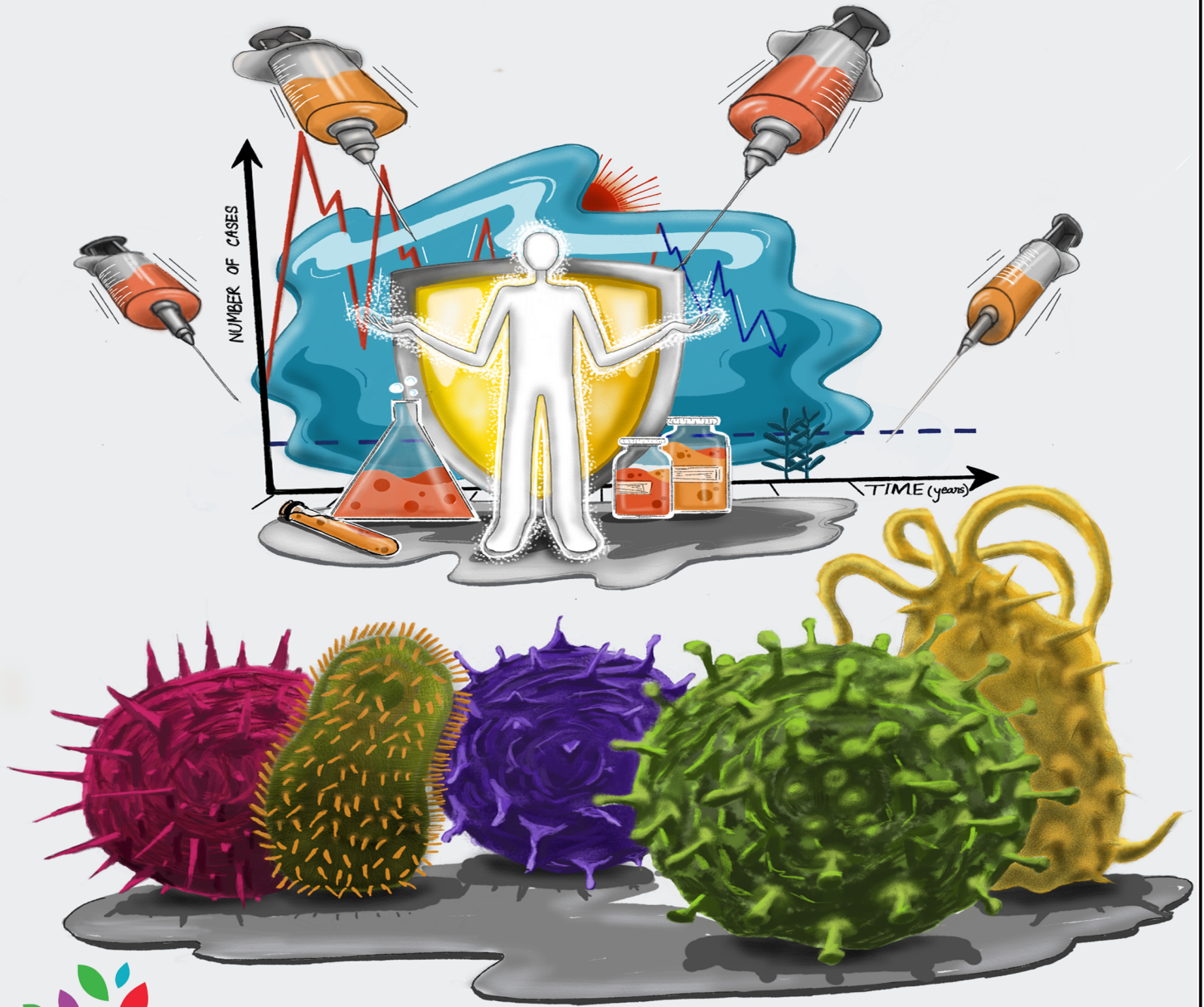


Illustration by Tumpa Mahato

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in the magazine as well*



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