



KNOW BEL

ENLIGHTENING THE NOBLES!



VOLUME II : JUNE 2021 . ISSUE NO. 6



5 June

WORLD
ENVIRONMENT
DAY

Image: Unsplash.com
freepik.com



Enlightening the nobles !

WELCOME !

Knowbel is back with a pool of mind-boggling articles filled with rare facts and famous personalities from all over the world brought to you in yet another edition! Through the journey of reading don't forget to pause and feel the whiff of brainstorming quizzes and contests that'll create an adrenaline chill within you! Cool prizes await the winners with the chance of being featured in our next issue!

We also provide you the golden opportunity to showcase your quirky talents at some point. Spread the message among friends and family members. Just as ripples spread out when a single pebble is dropped into water, your actions can illuminate the dark room of knowledge!

Turn on the page to discover more!
Something magical can happen when you read! So,
keep calm and read on....
Thank You!

Stay home & Stay safe !

SPECIAL THANKS TO

DR. APARNA DESHPANDE
Faculty Advisor

CONTACT US

Email:- knowbel.science@gmail.com

Website:- knowbel.wordpress.com

PEOPLE WHO MADE THIS VISION A REALITY

AVADHOOT JADHAV
Editor-In-Chief

SUYOG SANKHE
Contents Head

PRADEEP TRIMBAKE
Design editor

RITESH CHAWARE
Technical Head

VALUABLE TEAM MEMBERS :

Aditya Bhattacharyya, Aishwarya Juneja,
Atharva Valanju, Anish Mulchandani,
Anuradha Meena, Asmi Gaikwad,
Avadhoot Jadhav, Darshini Poola,
Jhanvee, Manas Raikar, Mrunal Pazare,
Nakul Wewhare, Prajwal Jadhav,
Pradeep Trimbake, Ritesh Chaware,
Ritu Dhaulakhandi, Shreya Kulkarni,
Siddharth Nayak, Sumant, Suyog Sankhe

SUBSCRIPTIONS

**SUBSCRIBE ONLINE OR CLICK
ON THE QR CODE:**

<http://eepurl.com/gX7gtD>



TABLE OF CONTENTS



01

INTRODUCTION

All about us and our journey

WONDERELLA

Discover the latest happenings around the globe

03



10

FACTASTIC

A small dose of fun filled facts

QUIZOPEDIA

Get ready to fight for the no. 1 spot in brainstorming quiz

14



17

PLOTTWIST

A comic with a twist

INSPIRON

A brief biopic of an inspiring figure.
In this issue : Sundar Pichai

19



22

POETICA

Dissolve yourself in the melody of words by poets.



Welcome to the most inquisitive section of the magazine where interesting answers can be discovered to some of the silliest questions in the world! So, join in to know more . . .



Alexander Stein\Pixabay

Is Dark Chocolate Healthy

While considering a variety of healthy foods, we often regard chocolate as unhealthy. But studies show that dark chocolate (when not loaded with sugar and saturated fat) is indeed a bar of heart-healthy chocolate!

Dark chocolate is rich in disease-fighting antioxidants. Studies show it can help reduce blood pressure as well as lower your risk of heart diseases! A 2017 study found that eating raw almonds, dark chocolate, and cocoa may help reduce the risk of Coronary Artery disease. It also showed that this combination significantly reduced the number of Low-Density Lipoproteins (LDL), which are often called “bad cholesterol” due to their role in clogging the arteries.

Other benefits of dark chocolate include:

- Making platelets in the less sticky blood that aids to create clots, which can cause a heart attack or stroke
- Processing nitric oxide helps in improving blood flow in the entire body
- Lowering the risk of insulin resistance which in turn reduces the risk of diabetes
- Controlling chronic inflammation, which can lead to heart disease

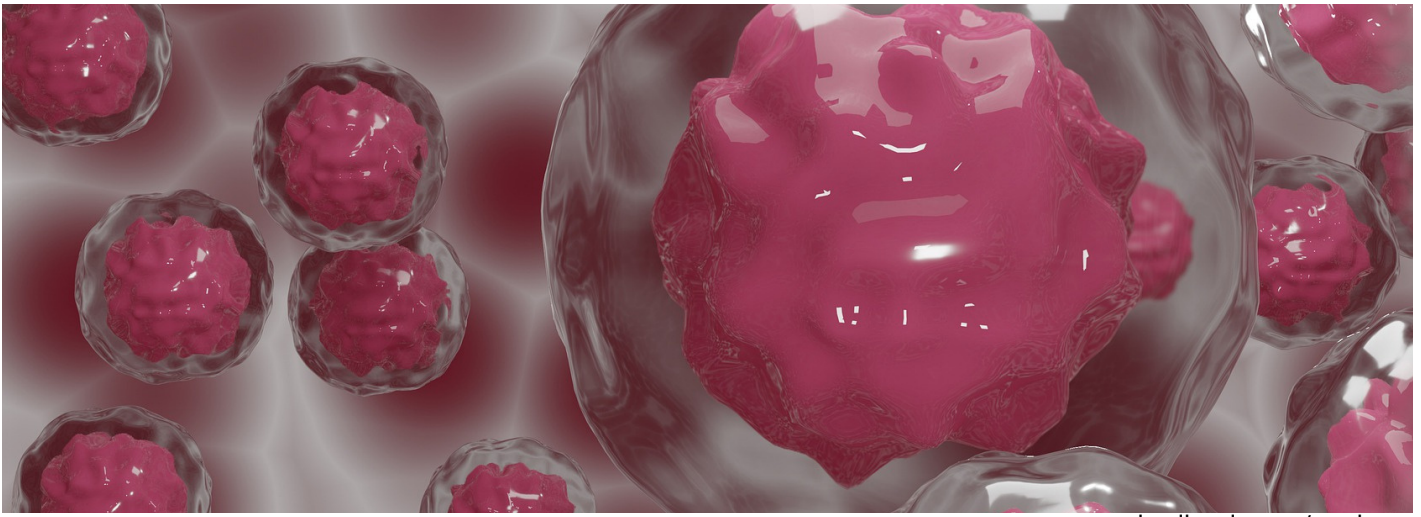
Moreover, dark chocolate contains about 600 calories and 24g of sugar, which is negligible as compared to milk chocolate which has almost the same number of calories but twice the amount of sugar.

So, next time be vigilant while choosing between milk chocolate and dark chocolate!

References: [7 Proven Health Benefits of Dark Chocolate](#)



clker\Pixabay



doodlartdotcom/pixabay

Peto's Paradox

Have you ever heard of the term cancer? Well, you may know that it is the uncontrolled rapid division of cells that may be benign or malignant. But do you know what trend is followed in these cancer cells while they develop in various organisms - right from a tiny mouse to a humongous whale?

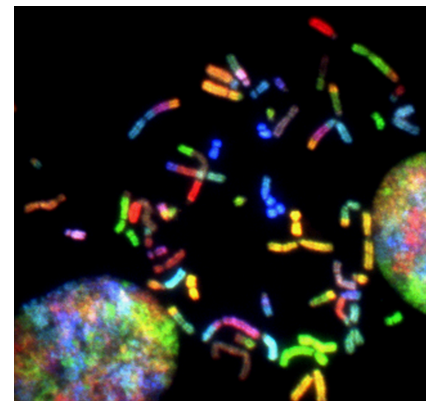
What is Peto's Paradox?

The term "Peto's Paradox" was coined after an epidemiologist, Richard Peto, who noted the relationship between time and cancer when studying how tumours develop in mice. He observed that the probability of cancer progression was related to the duration of exposure to the carcinogen 'benzpyrene'. He later correlated it with body mass. He wondered why humans contain 1000 times more cell lines which are 30 times longer than mice. Yet, the two species do suffer incredibly with the same probabilities of developing cancer. Further, cancer was not a significant cause of mortality for large and long-lived wild animals, despite increased theoretical risks!

Why is it a paradox?

Every time a human cell divides, copy six billion base pairs of DNA and inevitably makes some mistakes. These are called somatic mutations. Therefore, large-bodied and long-lived organisms should face a higher lifetime risk of cancer simply because their bodies contain a higher number of cells, thereby leading to more cell divisions!

However, recent studies conducted in the year 2015 shows that a higher risk of cancer does not correlate with increased body mass or lifespan. In fact, the evidence suggests that in larger mammals, the probability of getting cancer is actually less than in tiny animals. The reason could be evolution, as believed by scientists. Also, large-sized mammals like the blue whale also contain tumour suppressing genes which play a significant role in suppressing the cancer cells.



Thomas Reid\Spectral karyotyping



ulleo\pixabay

Why do onions make you cry?

Ever wondered why your mother sheds tears while chopping onions in the kitchen? Or have you tried cutting onions without causing a jerk in your eyelids? If no, don't worry! It's quite natural, and scientists have discovered the biochemistry behind this.

Onions produce the chemical irritant known as syn-Propanethial-S-Oxide. It stimulates the lacrimal glands present in our eyes to release tears. Earlier, scientists thought that the enzyme alliinase is responsible for the tear in our eyes. But recent studies from Japan have proved that lachrymatory factor synthase (a previously undiscovered enzyme) is the culprit.

The process goes as follows:

1. When we cut an onion, Lachrymatory factor synthase is released into the air and converts the sulfoxide amino acid into sulfenic acid.
2. The unstable sulfenic acid rearranges itself into syn-Propanethial-S- Oxide.
3. Syn- Propanethial-S- Oxide gets into the air and comes in contact with our eyes. Finally, the lacrimal glands become irritated and produce tears.

How safe is it? Don't worry. It's pretty safe. You will be left with red eyes and tear-stained cheeks. It's just a temporary sensation and will soon go off once your eyes are away from the chemical irritant.

References: [Why does chopping onions make one cry?](#)





geralt\pixabay

How trustworthy is your Artificial Intelligence?

Artificial intelligence is taking an important place in our busy modern lives. We are utterly dependent on them more and more every day. Many questions come with all these developments. Although it can perform some remarkable tasks, some gaps do arise when it comes to teaching human emotions.

AI has conquered most of the major sectors like health, transportation, communication and so on. Some scientists say that it is not possible to confer complete authority to artificial intelligence, especially in sensitive matters like ethics, to gain people's trust. For example, in 2018, a Tesla vehicle had an accident while on autopilot, causing the driver to die. According to the statement from the company, the driver was found guilty, and "the driver did not heed the warning that could have prevented the accident" had been called. Such news is enough to scare people.

Apart from this, AI is also being used for diagnosing severe illness.

AI is making important decisions in our lives based on personal data. Then we have the supreme right to usage. AI, especially machine learning, is often described as a "black box" because it's too complicated to understand, or sometimes algorithms are deliberately kept out of view.

Cyber Crime officials rely on the data and insights provided by AI for targeting criminals. Beyond this, society at large has to trust that AI systems are running. For example, automated vehicles or defence infrastructure can't be taken over by parties with malicious intentions. Lastly, privacy - which means that consumers should trust that insight derived from their data won't be disclosed to or shared with anyone who hasn't been given explicit permission for it to be shared with.



Janson_G\pixabay



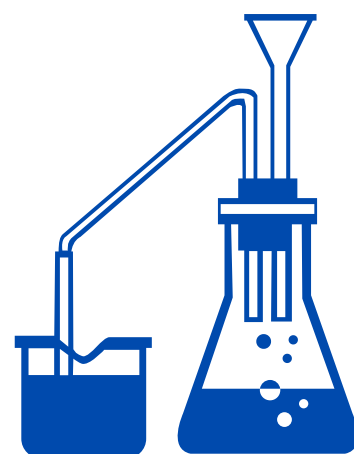
©UNICEF Ethiopia/2015/Mersha/flickr

How does 99% pure oxygen become possible?

You all know that the second wave of covid 19 is hitting terribly bad compared to the first one. People have been gasping for breath everywhere! There is a dearth of oxygen cylinders and hospital beds for patients suffering from the biological attacks of the SARS-Cov2- virus. In view of this heartbreaking situation, a group of scientists at the Indian Institute of Science Education and Research (IISER), Pune, joined hands to contribute toward the welfare of society. They successfully synthesised 99% pure oxygen using raw materials that were affordable and readily available.

They first studied how the aircraft oxygen mask technology works and found that it used Sodium Chlorate. But unfortunately, it was a banned item and could not be procured without authorisation and permits. After a few days, a paper in a medical journal caught their attention that featured the name of a chemical found in plenty in laundry detergents and was readily available. They started with about 25 kg of the material and another chemical present in their laboratory. This is how the hunt for pure oxygen began. In a small pilot experiment, they could produce about 1000 litres of gas!

Next, they confirmed that the produced gas is oxygen by measuring the flow rate and quantity. Fortunately, the experiment turned out to be successful, and they able to produce about 99% of pure oxygen! Subsequently, this value was then scaled to 600L in the next 36 hours and so on.



Chemistry Glass Illustration - pixabay



ThisIsEngineering/Pexels

What was this wonder chemical?

Hydrogen Peroxide can be easily decomposed into oxygen. The solid form of H_2O_2 is a hazardous compound that can blast, and the liquid state has skin irritation problems at higher concentrations. However, a stable adduct of hydrogen peroxide is available in the form of Hydrogen Peroxide Sodium Percarbonate ($2Na_2CO_3 \cdot 3H_2O_2$) that is used as in laundry detergents. It produces Sodium carbonate and Hydrogen Peroxide when exposed to water. In pure form, Sodium Percarbonate can deliver approximately 15 weight per cent of oxygen. This rate of oxygen production can be increased by adding a catalyst like catalase(enzyme) or MnO_2 (chemical).

What are the advantages of using Sodium Percarbonate?

Sodium Percarbonate is resistant to auto-oxidation and degradation, thus offers the advantage of being easily stored and used. Lastly, this article would be incomplete without acknowledging the efforts of each and every member of the team who made this mission possible.

Team leaders:

- Dr. Srinivas Hotha
- Dr. Umakant Rapol
- Dr. Sunil Nair

Team Members:

- Chemical Glycosylation lab- Dr.Srinivas Hotha, Pratim Das, Sumit Sen
- Atomic Physics and Quantum Optics Lab- Dr. Umakant Rapol, Kushal Patel, Pranab Dutta, Shivasagar Maurya, Korak Biswas, Anurag Badhane
- Nilesh Dumbre(Technical Officer- Physics)
- S Karthikeyan (Technical Assistant- Physics)

References: <https://youtu.be/lvH2RQnVPqo>

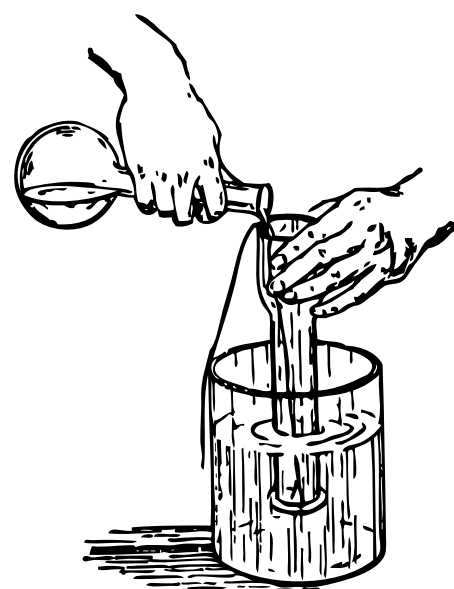


Illustration of an Experiment: pixabay



FACTASTIC!

Get ready to lose yourself into the ocean of unbelievable truths with a deep breath. We promise to excite you with some of the breathtaking drops with each one. Turn on to know more....

ACACIA TREES

Acacia trees, which can be found throughout the African savannah, have an unusual defence system. When animals such as antelopes eat the tree's leaves, tannin production increases to toxic levels for the animals. That's not all, though. The tree then emits a cloud of ethylene gas, which travels through the air and reaches other trees, causing them to produce more tannins.

Image by gardeningknowhow.com

DEMOCRACY

Democracy, it appears, is not limited to humanity. African buffalo herds, for example, are known to vote on which direction they will travel. Adult females in the herd will stand up one by one, look in a specific direction, and then lay back down. The herd almost always travels in the direction that attracts the most attention. When there is a lot of disagreement about how to vote, the herd will often split up.



Image by Manoj Shah / Getty Images

CAFFEINE

Caffeine is a natural pesticide that can be found in tea leaves and, of course, coffee beans. It overwhelms the nervous systems of insects that try to eat caffeine-containing plants, paralyzing or even killing them before they can cause too much harm. It affects the central nervous systems of humans as well, but it is merely a stimulant for us.



Image by Shutterstock

CROWS

Cows wreak havoc on the environment. Each cow can produce 200 to 300 pounds of methane gas per year through burps and farts. These levels are extremely high, twenty times stronger than carbon dioxide gas. It prompted Valorex SAS, a French company, to try to persuade farmers to feed their cows alfalfa and flax seeds, which resulted in 25% less methane gas being released into the atmosphere.



Image by Edwin Butter / Shutterstock

ALUMINIUM

Aluminum can be recycled indefinitely! In contrast to paper, which can be recycled only a limited number of times, metal may be recycled indefinitely. Recycling aluminium can generate enough energy to power a television for three hours. Given that we consume 80 trillion cans every year, how many hours of television can be broadcast?



Image by Science Picture Co / Getty Images

GARBAGE ISLAND

Garbage Island is a real place. The Pacific Garbage Patch is a tornado of garbage that twists and turns. It runs from the West Coast of North America to Japan along the Pacific Ocean, and it is twice the area of continental America, containing roughly 100 million tonnes of rubbish.

Image from Google Earth

A FRIEND INDEED

Jellyfish help giant squid hunt. It is said that your adversary's enemy is your buddy. Certain jellyfish are bioluminescent, which means they can light up and illuminate the ocean's dark depths. Many of the fish that chase jellyfish are eaten by predators such as giant squid. If a bioluminescent jelly is attacked, it can scream for aid by flashing a distress signal in the hope that it may scare off the attacker.

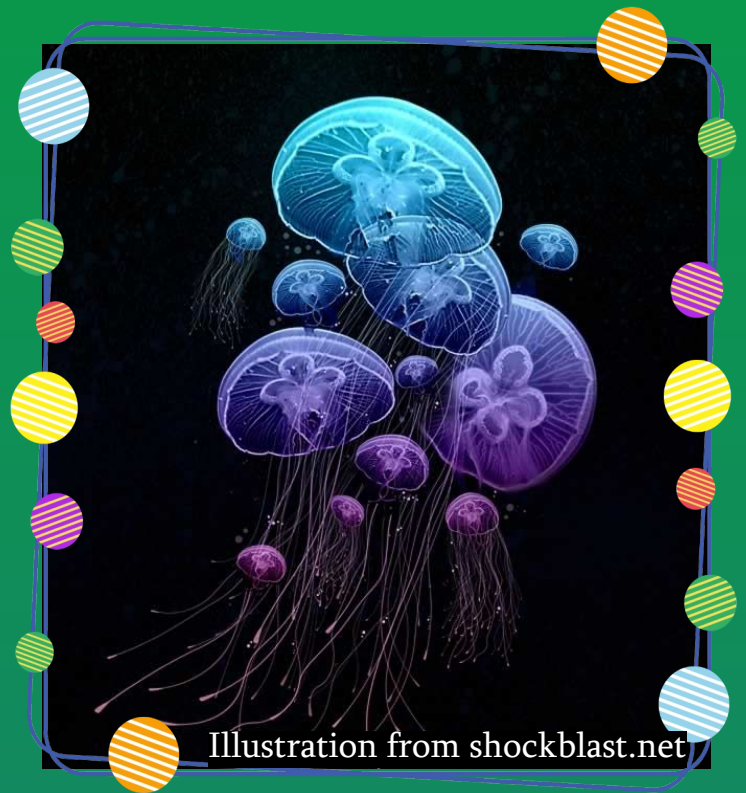


Illustration from shockblast.net

Fact Finder

MRUNAL AND JHANVEE

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 10 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 [June 25, 2021](#).

The winners would be chosen based upon:

1. Number of Correct Answers
2. Time of Submission

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

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



17th Quizzo winner

Pushendra Pandey
IISER, Pune

Scan or click on the QR code below:



1. Which of these awards was designed by Eva Savitribai Khanolkar?

- a) Jnanpith Award
- b) Param Vir Chakra
- c) Bharat Ratna
- d) Miss India Crown



2. Who was the first woman to be appointed Chief Justice of a High Court in India ?

- a) Noor Fatima Bibi
- b) Leila Seth
- c) Lata Patel
- d) Anna Chandy



3. Which of these forts were not built by European colonial powers in India ?

- a) Fort Naarden
- b) Corjuem Fort
- c) Fort Chambray
- d) Fort Dansborg



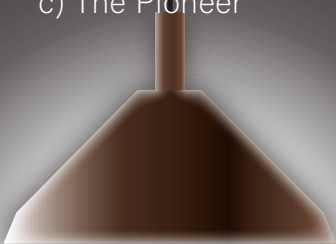
4. Which actor captained England in his only appearance in Test Cricket ?

- a) C Aubrey Smith
- b) Alan Ladd
- c) William Holden
- d) WC Fields



5. Winston Churchill and Rudyard Kipling have both written for which Indian newspaper ?

- a) The Times of India
- b) The Chronicle
- c) The Pioneer
- d) The Statesman



6. Which of these is not an official language of the United Nations?

- a) German
- b) Portuguese
- c) Spanish
- d) Italian



7. In Indian history, by what name is Fateh Ali Khan better known ?

- a) Tipu Sultan
- b) Tantiya Tope
- c) Nana Saheb
- d) Hyder Ali



8. Which was the first country to make Christianity the official religion?

- a) Austria
- b) Italy
- c) Greece
- d) Armenia



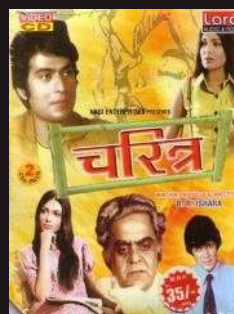
9. Which musical instrument is played using a wooden stick called danka ?

- a) Dumrooo
- b) Nagara
- c) Mridangam
- d) Bongo



10. Which of these cricketers acted in the 1973 Hindi film 'Charitra' ?

- a) Sandeep Patil
- b) Sunil Gavaskar
- c) Salim Durrani
- d) Syed Abid Ali



PLOT-TWIST



I can swim faster than you

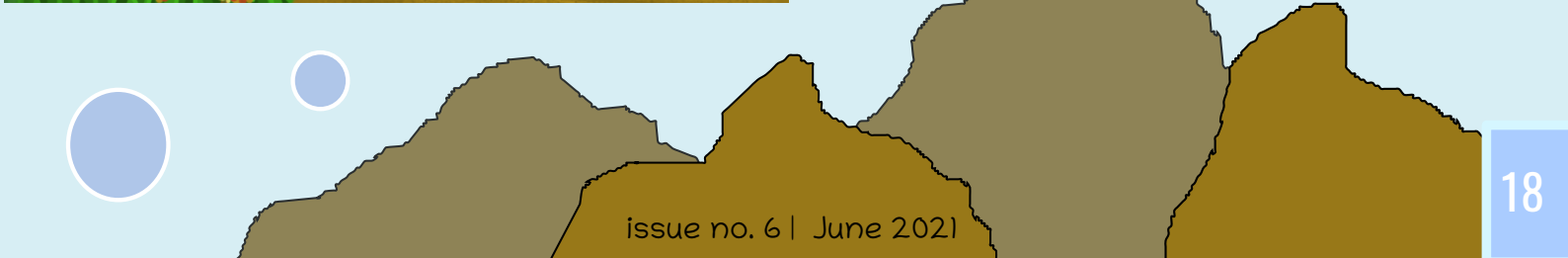
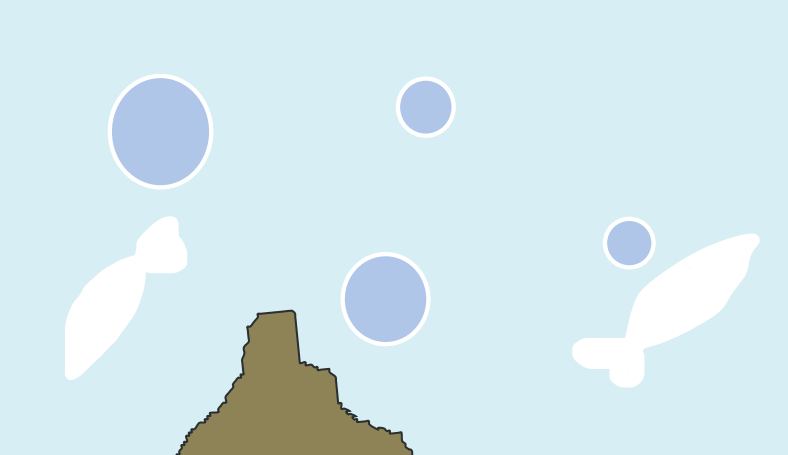
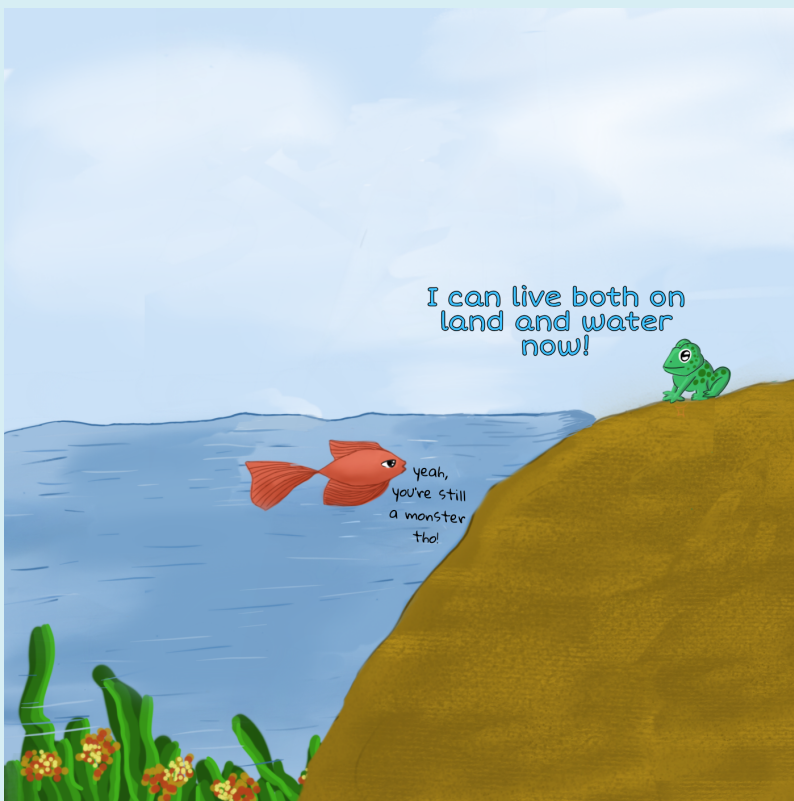
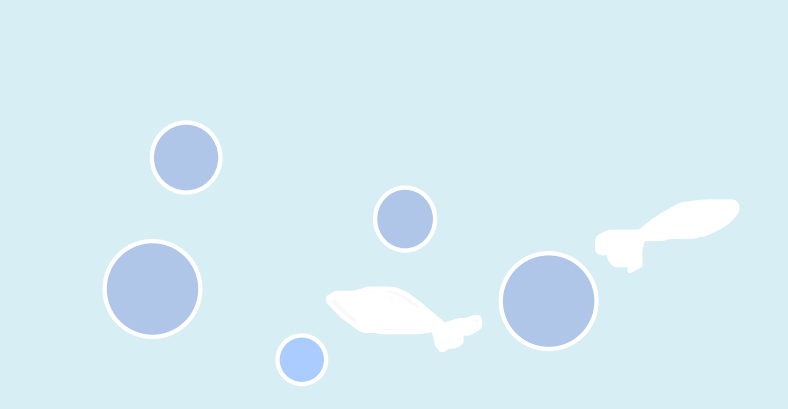
I can do a back-flip perfectly. Can you?

Oh I went too high!
WHAT'S HAPPENING!?

oops

whoa!

PLOT-TWIST



INSPIRON



Image credit: Maurizio Pesce on flickr

SUNDAR PICHAI

The current Chief Executive Officer (CEO) of Alphabet Inc. and Google LLC, is an Indian-born American business executive and one of the greatest tech tycoons of the 21st century.

“

**IN LIFE DON'T
REACT, ALWAYS
RESPOND**

”



Image credit: Aishwaryakv97, via Wikimedia Commons

Early Life

Pichai Sundararajan, more commonly known as Sundar Pichai, was born on 10th June 1972 in Madurai, Tamil Nadu. Born in a middle-class Tamil family, he spent his childhood in a modest two-room apartment in Ashok Nagar, Madras (now, Chennai), Tamil Nadu. His father, Reghunatha Pichai, was an electrical engineer at the General Electric Company (GEC), a British multinational conglomerate. His mother, Lakshmi Pichai, worked as a stenographer before Sundar and his younger brother Shrinivasan were born. Due to his humble beginnings, Sundar grew up without much access to technology. As he often remembers, his family did not have a telephone before he was ten years old.

As a child, Sundar was fascinated by technology. His father used to tell Sundar about his workday, the challenges he faced, etc., which was instrumental in attracting him to technology. Another unique fact about Sundar was his exceptional numerical memory. From recalling phone numbers of relatives as a kid to remembering statistical figures at a company meeting, his ability of numerical recall has proved to be helpful on various occasions.

Education

Sundar did his schooling till Class 10th in Jawahar Navodaya Vidyalaya, a CBSE school in Chennai, followed by Vana Vani School, Chennai, where he

completed his Chennai, where he completed his Class 12th. He excelled in academics at the school level, which paved his way into the Indian Institute of Technology (IIT), Kharagpur. He earned his BTech degree in Metallurgy in 1993 and was awarded the institute's silver medal. He further moved to the US to pursue an MS degree in Material Sciences and Engineering at Stanford University, which granted him a scholarship. Following his MS, Sundar originally planned to get a PhD in Material Sciences and Semiconductor Physics from Stanford and become an academician. However, fate took its turn, and Sundar decided to drop out of the PhD program. After working briefly as an Engineer and Product Manager at a Silicon Valley firm, he enrolled himself at Wharton School of the University of Pennsylvania to earn his MBA. At Wharton, he was also named a Siebel Scholar and a Palmer Scholar, respectively, which are only given to the top graduate students across the US. Later, he joined McKinsey and Co., where he worked as a Management Consultant for a few years before joining Google in 2004.

Story of Chrome

Sundar's entry into Google concurred with the launch of Google's free mail service 'Gmail' on 1st April 2004. Sundar misunderstood it as Google's prank since the launch was on April Fool's day! He joined a small team in Product Management working on Google's search toolbar, a feature aimed at increasing user accessibility, later added to Google Chrome.

“

WEAR YOUR FAILURE AS A BADGE OF HONOUR”



Image credit: Manuel Lopez on flickr

His work primarily focused on the innovation efforts for Google's client software products, which led him to oversee several applications. These include Gmail, Google Maps, Google Chrome, Chrome OS, Google Drive, Android, etc.

Following the Google search toolbar's notable success, Sundar had a revolutionary idea of developing Google's own browser. He pitched the idea to Eric Schmidt, the then Executive Chairman. However, his proposal met some resistance since Internet Explorer and Mozilla Firefox were already dominating the market share. Hence, the idea seemed to be an expensive distraction. But Sundar was adamant about it. He insisted and convinced the co-founders of Google, Larry Page and Sergey Brin. After being given the responsibility of the project, he left no stone unturned, improving on all possible aspects of the browser.

And in 2008, Google launched its first-ever browser - Google Chrome. As we all know, it has turned out to be a colossal success since Chrome controls more than 45% of the market share and is the most widely used web browser! Subsequently, Sundar got promoted to Vice President and then to Senior Vice President of Chrome and Apps.

In addition, he also headed the development of 'Android One', an operating system designed to offer affordable smartphones across the globe. Android One, launched in 2013, has been successful in serving its purpose since then.

These achievements caused him to attract a lot of attention from other tech companies. Sundar was a strong contender for the CEO of both Twitter and Microsoft. Yet, Google managed to make him stay by offering substantial pay hikes. Ultimately, Sundar Pichai became the CEO of Google on 10th August 2015 after the formation of Alphabet Inc., the parent company of Google. In 2019, he was also appointed as the CEO of Alphabet Inc. and to the Board of Directors.

Today, at the age of 48, Sundar has an annual package of 2 million USD (approx. 14.5 crore rupees). His net worth is estimated to be a whopping 600 million USD (approx. 4372 crore rupees)! Besides being one of the highest-paid CEOs on the planet, Sundar is also a family man. He is happily married to Anjali Pichai, his batchmate at IIT Kharagpur, and has two children named Kiran and Kavya.

Through his work, he has managed to make a lasting impact on humanity by causing significant technological breakthroughs in his career. It's because of him that we all have access to a massive amount of information at the tip of our fingers!

Poetica

Environment gifts

Every drop of water, raining from the clouds
Every speck of soil, that the forest shrouds.
From the air we breathe, to our food
It gives us in plenty, all that is good.

For these invaluable gifts, we are indebted
With so much of wealth, we have been greeted!
Our environment and its boundless beauty
To protect these resources, is our prime duty.

Let's appreciate the nature, of which are a part,
Give it a special place, in our dear heart!
Oath to conserve, and cherish it thus,
Nurture it the way, it nurtures us!

This poem is contributed by Kaustubh Kulkarni - first year
BS-MS student at IISER Pune to commemorate the world
environment day which falls on 5th of June.



~click by Asmi Gaikwad

"There is something infinitely healing in the repeated refrains of nature—the assurance that dawn comes after night, and spring after winter."

~Rachel Carson

Send in the amazing photos clicked by you and we'll be happy to feature them in our magazine and on social media.



KNOWBEL

Connect with us on:

