



Bal Bharati
PUBLIC SCHOOL
Pitampura



Science Newsletter

The woeful smoke overcasts our future,
We still have the time to turn it around,
Give the planet it's long awaited suture.

From the Principal's Desk



"Science is the process that takes us from confusion to understanding in a manner that's precise, predictive and reliable!"
-Brian Greene

Science is the tool of the curious mind to find answers to its questions. As the recent times have taught us, science and scientific research show light to humanity in the darkest hours. Creating knowledge and understanding through science equips us to find solutions to today's acute economic, social and environmental challenges.

Igniting the young minds to think of the unthought of and to go beyond the boundaries of knowledge is actual scientific learning. It is a flame that can enlighten generations and nations.

We, at Bal Bharati Public School, Pitampura keep working towards inculcating the spirit of science and enquiry among our students. This e-newsletter is an endeavor to share with you the efforts made by the staff and the students to keep the lamp of curiosity burning among our learners. In this edition, we present to you an exciting collection of fun facts, science in the news, latest developments in science, Sci-buzz (an in house initiative to spread scientific information) and the beautiful work done by our students through art integration activities and projects.

Sci-Buzz

SCI-BUZZ
IX & X

WHAT PROMPTS AN AIR BAG TO INFLATE DURING ACCIDENT ?



Sensors in the front of the automobile detect a collision.

This happens only in 0.03 sec

Amazing...

The chemical involved in the reaction at the heart of the air bag is sodium azide.

When this substance is ignited by a spark it releases nitrogen gas which can instantly inflate an airbag.

SCI-BUZZ
CLASSES IV & V



Woolen or furry clothes easily keep us warm during winters....

Fur or wool traps air which acts as a heat insulator and does not allow our body heat to escape out. Hence, our body heat is conserved, and we keep warm!!!

SCI-BUZZ
CLASSES VI-VIII

Why Do Fresh Eggs Sink and Rotten Eggs Float?



This happens because upon aging, the eggs decompose and produce gases. As the gases escape with the passage of time, eggs become light and tend to float.

SCI-BUZZ
Presented to Class II

THE SUN



The Sun controls the seasons.

The Sun is actually white in color. When we see it through the Earth's atmosphere, it seems yellow, orange or red.

Some areas on the Sun's surface are cooler than the others. These are darker in color and are called **SUN SPOTS**.

We get Vitamin D from the sun which makes our bones strong.

SCI-BUZZ
XI-XII

You should never drink water after eating spicy food. Why ?



The substance in a chilli pepper that causes the burning sensation in your mouth is called **capsaicin**.

SCI-BUZZ
CLASSES VI-VIII

Have you ever wondered why skeleton is so important for our body?

Our skeletal system is to our body what wood and bricks are to a house. With a strong foundation, our body is designed to do a multitude of amazing tasks. Adults have 206 bones, but babies are born with almost 100 more, some of which fuse later as they grow up.



Congratulations!

Certificate BRIDGE INTELIA Knowledge Solutions

BI Young Scientists Talent Virtual Fair - June 2021

Most Creative Project

On this date 15 JUL 2021. This certificate is being proudly presented to ARNAV VERMA of Class - 6TH, Section - G, of BAL BHARATI PUBLIC SCHOOL, PITAMPURA. For participation in the Theme SCIENCE and Grade Category GRADE 6TH-8TH.

His / Her outstanding performance is well recognised and appreciated.

Gaurav Academic Head (Gaurav Ghosh) *Pankaj Aggarwal President & CEO (Pankaj Aggarwal)* *Ashish Jain Jury (Ashish Jain)*

Arnav Verma

Certificate BRIDGE INTELIA Knowledge Solutions

BI Young Scientists Talent Virtual Fair - June 2021

Best Digital Presentation

On this date 15 JUL 2021. This certificate is being proudly presented to ARYAN VERMA of Class - 6TH, Section - G, of BAL BHARATI PUBLIC SCHOOL, PITAMPURA. For participation in the Theme TECHNOLOGY and Grade Category GRADE 6TH-8T

His / Her outstanding performance is well recognised and appreciated.

Gaurav Academic Head (Gaurav Ghosh) *Pankaj Aggarwal President & CEO (Pankaj Aggarwal)* *Ashish Jain Jury (Ashish Jain)*

Aryan Verma



VISHWA BHARATI PUBLIC SCHOOL
SECTOR-6, DWARKA, NEW DELHI-110075

APPECIATION CERTIFICATE

Session 2021 - 2022

Awarded to Master AVYAY ARYA of Class VII School Bal Bharati Public School, Pitampura for securing **THIRD POSITION** in event VIGNANA-AASHON held on August 27, 2021.

Principal

Avyay Arya

ARMY PUBLIC SCHOOL SHANKAR VIHAR

EXPRESSIONS 2021-22

CERTIFICATE OF MERIT

This certificate is awarded to Master/Miss **NAVYA GUPTA** Class VIII of BAL BHARATI PUBLIC SCHOOL, PITAMPURA for securing II position in **PANTOMIME** held on 6 August 2021.

Mrs Malini Narayanan Principal

Navya Gupta

BRIDGE INTELIA Knowledge Solutions

BEST MENTOR AWARD

Young Scientists Talent Virtual Fair- July 2021

Tapasya Sehgal
Bal Bharati Public School, Pitampura, Delhi

We sincerely appreciate the endless efforts and contributions you made towards mentoring the students towards the various projects. It was really admirable how you always saw the projects through from conception to completion. Your continuous involvement and passion motivated not only the students and parents but our team members too. We truly appreciate your commitment and dedication.

Thank You for being a part of the event.

Pankaj Aggarwal Chief Executive Officer

Bal Bharati Public School

Certificate of Merit

Awarded to **SURBHI K GARELLA** school of **BAL BHARATI, PITAMPURA** for securing **FIRST POSITION** in **NEP 2020 IN ACTION (SR. SEC LEVEL)** held on **30 OCT. 2021**

Principal

Certificate of Recognition

Namrata Alwadi

has been awarded this Microsoft In Education certificate in recognition of being selected as a Microsoft Innovative Educator Expert for 2021-2022

September 7, 2021

Changemakers in education

Anthony Tait
Viz. Peppers Microsoft Worldwide Educator

Srinivasan
Jump Creative Strategy Lead, Educator Program

Going the extra mile...



BREAKFAST BROWSE

Many cosmetics contain hidden, potentially dangerous "forever chemicals"
Scientists found signs of long-lasting PFAS compounds in about half of tested makeup products

A new chemical analysis has revealed an ugly truth about beauty products: Man may contain highly persistent, potentially harmful & "forever chemicals" called PFAS. PFAS, short for per- and polyfluoroalkyl substances, include thousands of chemicals that are so sturdy they can linger in the body for years and the environment for centuries. The health effects of only a few PFAS are well known but those compounds have been linked to high cholesterol, thyroid diseases, and other problems. "There is no known good PFAS" says chemist and physicist Graham Peaslee of the University of Notre Dame in Indiana.



The human body contains enough carbon to provide "LEAD" (which is really graphite) for 8,000 pencils

Mars is red because of "IRON OXIDE"

The only letter not appearing on periodic table is "J"

3D model of respiratory tract

FROM APES TO THE AGE OF ROBOTS

From apes to the age of robots,
From breathing to types of pollution,
Science, always has a solution

Why do the stars shine at night?
Why does the sun burn so bright?
In this world full of illusions,
Science always has a solution



The states of matter, always a mystery to me,
What's the difference between nh_4 and $3?$
There isn't much room left for confusion,
Cause science always has a solution

What is speed and what is velocity?
How do particles conduct electricity?
A thousand experiments and their execution,
Dont worry, science always has a solution

For all the questions that remain unanswered,
About substances transparent or coloured
Or about addition and substitution,
Science, always has a solution

Even the sky isn't the limit for this subject so fascinating,
From condensing to evaporating,
This field works on facts and not delusions,
Science, always has a solution.
-Bhumi Goel



DID YOU KNOW
Soumya Bhatia
8F



During the Covid-19 pandemic we've learned more than we'd like about cleaning: how to clean your hands properly, for example, and which songs to sing while you do it. One message we've heard consistently is that when choosing a hand sanitizer, you need to pick one containing at least 60% alcohol. This advice comes from World Health Organization (WHO) standards based on the best scientific evidence available at the start of the pandemic. But now new research suggests that alcohol-free sanitizers containing other disinfectants may be just as effective against the virus.



Science in the News



III, Niklas Elmehed © Nobel Prize Outreach
Syukuro Manabe



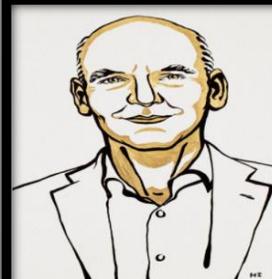
III, Niklas Elmehed © Nobel Prize Outreach
Klaus Hasselmann



III, Niklas Elmehed © Nobel Prize Outreach
Giorgio Parisi



The Nobel Prize in Physics 2021 was awarded "for groundbreaking contributions to our understanding of complex systems" with one half jointly to Syukuro Manabe and Klaus Hasselmann "for the physical modelling of Earth's climate, quantifying variability and reliably predicting global warming" and the other half to Giorgio Parisi "for the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales."



III, Niklas Elmehed © Nobel Prize Outreach
Benjamin List



III, Niklas Elmehed © Nobel Prize Outreach
David W.C. MacMillan



III, Niklas Elmehed © Nobel Prize Outreach
David Julius



III, Niklas Elmehed © Nobel Prize Outreach
Ardem Patapoutian

The Nobel Prize in Chemistry 2021 was awarded jointly to Benjamin List and David W.C. MacMillan "for the development of asymmetric organocatalysis."

The Nobel Prize in Physiology or Medicine 2021 was awarded jointly to David Julius and Ardem Patapoutian "for their discoveries of receptors for temperature and touch."

Nobel Prize
Winners -2021





Science in the News

Lucy In The Sky With Diamonds

V886 Centauri was discovered by scientists in 2004 and is a white dwarf wholly made up of diamonds! It is an astonishing 10 billion trillion trillion carat, making the largest natural diamonds on Earth seem invisible by comparison. To put that into perspective, the largest colorless diamond on Earth, Cullinan 1, is around 530 carats and is worth \$400 Million! Inspired by the Beatles, the scientists who discovered her, christened her Lucy, after The Beatles song Lucy In The Sky With Diamonds (quite literally in the sky with diamonds, don't you think?).



LITHIUM-ION BATTERIES MADE WITH RECYCLED MATERIALS- A BOON FOR FAST CHARGING CARS

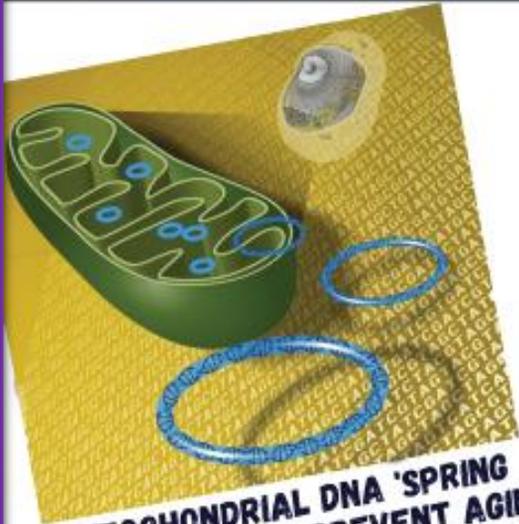
Fast-charging batteries could be a game changer for the mass adoption of electric cars. But this kind of rapid recharging poses some challenges to the designers of electric car batteries – challenges that battery designers are now racing to overcome.

Most electric cars use rechargeable lithium-ion batteries – bigger versions of the batteries in our phones and tablets. The current generation of lithium-ion batteries offers a compromise between charging time and battery life, taking hours to recharge, or half an hour at a 'rapid' charging point. Repeated fast charging can cause the batteries to degrade faster so they can't deliver power as quickly, impacting on acceleration. Now, lithium-ion batteries made with recycled cathodes outperformed batteries with cathodes lasting for thousands more charging cycles before their capacity is waned





LATEST DISCOVERIES IN THE FIELD OF BIOLOGY!



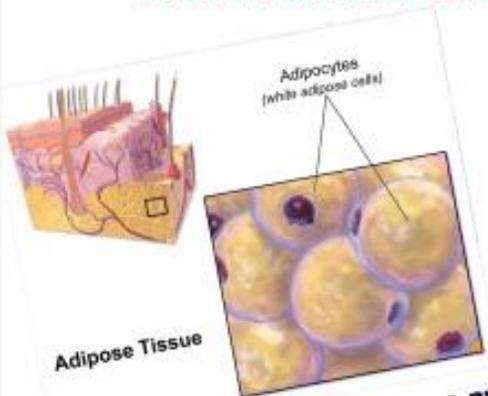
MITOCHONDRIAL DNA 'SPRING CLEANING' COULD PREVENT AGING

EARLIER THIS YEAR RESEARCHERS RELEASED A REPORT IN "CURRENT BIOLOGY" THAT THE HUMAN MEDIAL TEMPORAL LOBE (MTL) CONTAINS A NEW TYPE OF CELL NEVER SEEN BEFORE IN HUMANS - CALLED TARGET CELLS

THEIR FINDINGS SHOWED THAT THESE CELLS 'CARED' LITTLE FOR THE CONTENT OF THE TARGET. THEY ONLY SEEMED TO 'FOCUS' ON WHETHER THEY WERE A TARGET TO SEARCH FOR OR NOT.

"THIS TYPE OF RESPONSE IS FUNDAMENTALLY DIFFERENT FROM THAT OBSERVED IN UPSTREAM AREAS TO THE MTL, I.E. THE INFERIOR TEMPORAL CORTEX, WHERE CELLS ARE VISUALLY TUNED AND ARE ONLY MODULATED BY TARGET PRESENCE OR ABSENCE ON TOP OF THIS VISUAL TUNING," WANG SAID.

"THE DISCOVERY OF THIS NOVEL TYPE OF CELL IN THE MTL, IN HUMANS, SHOWS DIRECT EVIDENCE FOR A SPECIFIC TOP-DOWN GOAL-RELEVANCE SIGNAL IN THE MTL."



Adipose Tissue

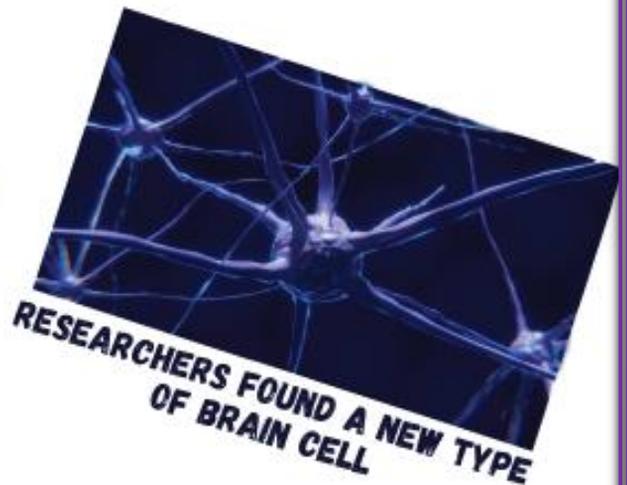
Adipocytes (white adipose cells)

SCARRING COULD BE PREVENTED BY CONVERTING CELLS FROM ONE FORM TO ANOTHER

EACH CELL CONTAINS HUNDREDS OF MITOCHONDRIA AND EACH MITOCHONDRION CARRIES THEIR OWN PACKET OF MTDNA. MTDNA WILL TEND TO BUILD UP IN THE CELL OVER TIME AND FALLS BROADLY INTO TWO TYPES; NORMAL MTDNA AND MUTANT MTDNA.

WHEN THE LATTER BUILDS UP TO A CERTAIN CONCENTRATION IN THE CELL, IT CEASES TO FUNCTION PROPERLY AND DIES.

"WE KNOW THAT INCREASED RATES OF MTDNA MUTATION CAUSE PREMATURE AGING," EXPLAINED BRUCE HAY, CALTECH PROFESSOR OF BIOLOGY AND BIOLOGICAL ENGINEERING. "THIS, COUPLED WITH THE FACT THAT MUTANT MTDNA ACCUMULATES IN KEY TISSUES SUCH AS NEURONS AND MUSCLE THAT LOSE FUNCTION AS WE AGE, SUGGESTS THAT IF WE COULD REDUCE THE AMOUNT OF MUTANT MTDNA, WE COULD SLOW OR REVERSE IMPORTANT ASPECTS OF AGING."



RESEARCHERS FOUND A NEW TYPE OF BRAIN CELL

EARLY LAST YEAR IT WAS ANNOUNCED THAT RESEARCHERS MAY HAVE MADE A HUGE BREAKTHROUGH IN HEALING WOUNDS. THEY MAY HAVE FOUND A WAY OF 'HACKING' TISSUE WITHIN THE WOUND TO REGENERATE SKIN WITHOUT LEAVING SCAR TISSUE.

SCARS ARE USUALLY FORMED, IN PART, DUE TO A LOSS OF SUBCUTANEOUS FAT CELLS CALLED ADIPOCYTES. IF THEN THE MYOFIBROBLASTS COULD IN SOME WAY BE CONVERTED INTO FAT CELLS, SCARRING WOULD BE LESS PRONOUNCED IF VISIBLE AT ALL.

GEORGE COTSARELIS, THE PRINCIPAL INVESTIGATOR OF THE PROJECT AND CHAIR OF THE DEPARTMENT OF DERMATOLOGY EXPLAINS - "ESSENTIALLY, WE CAN MANIPULATE WOUND HEALING SO THAT IT LEADS TO SKIN REGENERATION RATHER THAN SCARRING."

"THE SECRET IS TO REGENERATE HAIR FOLLICLES FIRST. AFTER THAT, THE FAT WILL REGENERATE IN RESPONSE TO THE SIGNALS FROM THOSE FOLLICLES."



Recent Discoveries In Biology!



New species of onion discovered in India



A new species of onion, *Allium negianum* (Amaryllidaceae), belonging to the genus *Allium* was discovered in India's Himalayan region of Uttarakhand. This taxon grows in Malari region of Niti valley in Chamoli district and Dharma valley.

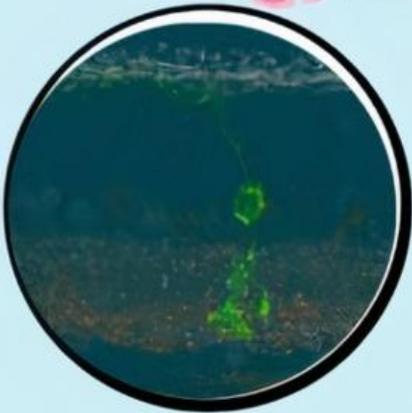
New Species of Bird Discovered in South America



A colorful and distinctive new species of tanager was discovered from the lower slopes of the Andes of southeastern Peru and western Bolivia. It has been named as Inti tanager. The name Inti is from Quechua — a language indigenous to the region — word that means 'Sun,' referring to the bright yellow color of the bird.



New Type of Neuron Discovered in Mammalian Retina



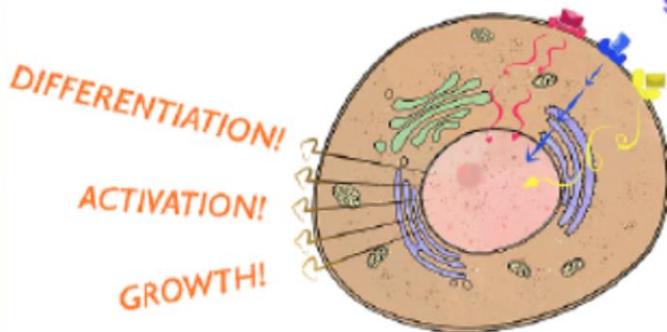
Cell classes are the building blocks for the central nervous system. It is widely believed that major classes of neurons have been identified in the retina, although some types have not been fully characterized. The newly-discovered retinal neurons don't fit into any existing mammalian retinal cell class. It shares fundamental morphological, physiological, and molecular features with bipolar cells.

Science in the News



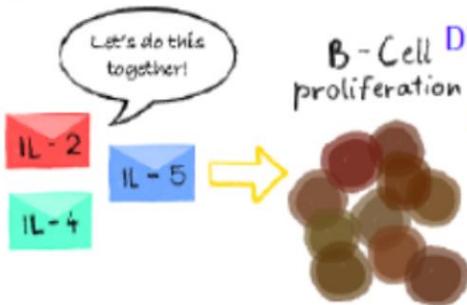
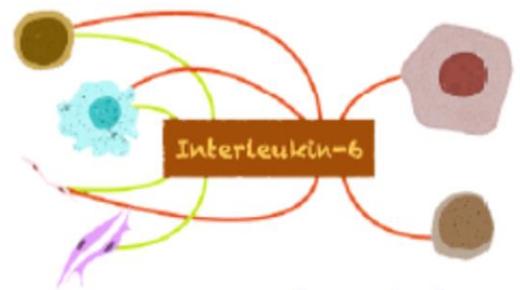
CYTOKINE STORM

An infographic by Ayushi Agrawal, 11B



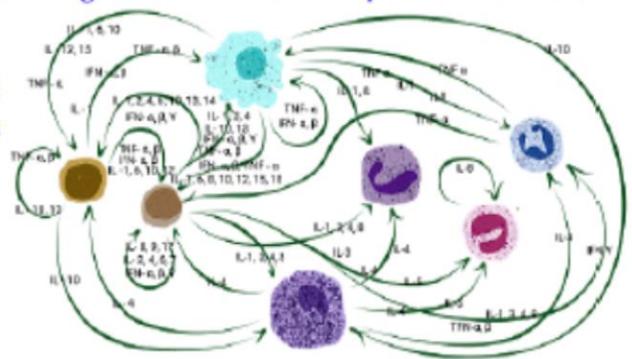
Cytokines are a family of numerous small, soluble **messenger proteins** produced by a wide variety of immune cells. They act by binding to specific receptors, causing gene activation through complex signaling pathways, which then results in various cell modifications. So, they coordinate and fine tune the immune response.

Most cytokines are produced by more than one type of cell and they act on multiple cell types as well. They can act on their cell of origin, on nearby cells, or on distant cells.



Different cytokines can have similar or different effects, or even opposite effects! They can also affect production of other cytokines and cytokine receptors. Most cytokines strengthen the immune response. However, a few are inhibitory in nature and keep it under control.

So cytokines create a complex network of signals, which usually allows invaders to be defeated with minimal tissue damage. But if the messaging is set off by a false alarm, is not controlled properly, or is simply too strong, far too many cytokines are secreted. Known as **cytokine storm**, this pushes the immune system into overdrive. More and more immune cells are recruited in a cascade fashion and in the resulting uncontrolled stampede, normal tissues get damaged. Severe injury to any of the major organ systems can be fatal.



Cytokine storms are often responsible for mortality in Covid patients, by damaging lungs and causing Acute Respiratory Distress Syndrome.

Equal emphasis on all subjects

Greater focus on experiential learning

NEP 2020

Reduction in curricular content

for a better tomorrow

Integration of vocational education

Holistic development of learners

Curtailing dropout rates



TEACHING: laying the foundation

Inquiry based learning

Competency based learning

Flexible assessment

Experiential learning

21st century skills

Interactive classrooms

Multidisciplinary study

WHY NEP?

EXPERIENTIAL LEARNING

Experiential learning is the process of learning through experience, rather it is defined as "learning through reflection on doing". In this pedagogical approach, learners play a critical role in assessing their own learning.

"I hear and I forget; I see, and I remember; I do, and I understand."



STUDENT VIDEO PRESENTATIONS

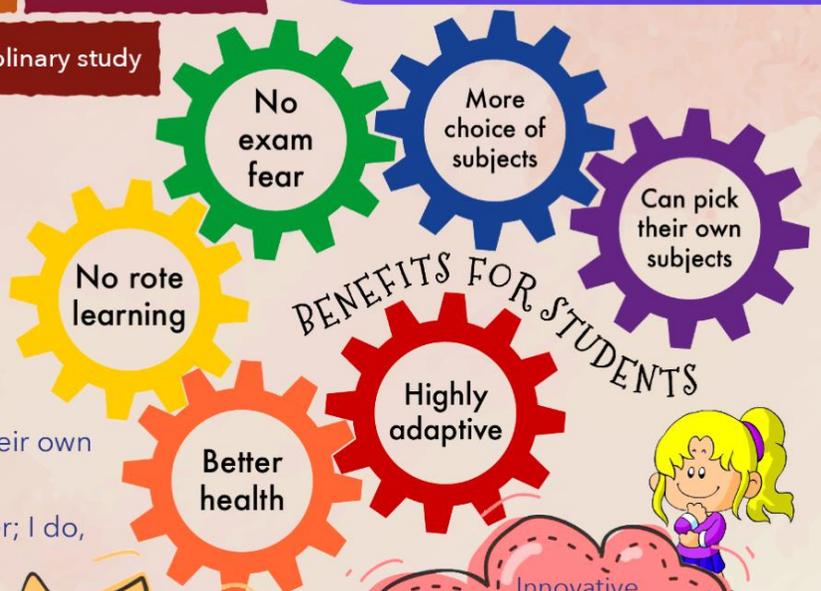
STUDENT LEARNING
COMPARISON OF SN1 AND SN2 REACTION MECHANISMS



Plethora of opportunities for learning.



Flexible yet purpose driven with measurable objectives, and timely support.



BENEFITS FOR STUDENTS

Innovative creative learning styles and the potential of technology-based teaching improves instruction and enhance learning.

Helps students to connect with peers and teachers to facilitate overall and holistic development.

Students and teachers can become engineers of collaboration, designers of learning experiences, leaders, guides, and catalysts of change.

CBE allows students to advance based on their ability to master a skill or competency at their own pace regardless of the environment.



COMPETENCY BASED EDUCATION

SAVE OUR EARTH

GLOBAL THREATS OF OUR TIME: CLIMATE CHANGE AND PLASTIC POLLUTION

Switching to renewables like solar or wind will reduce the emissions! Limiting global temperature rise to not more than 1.5°C would help us avoid the worst climate impacts and maintain a livable climate.

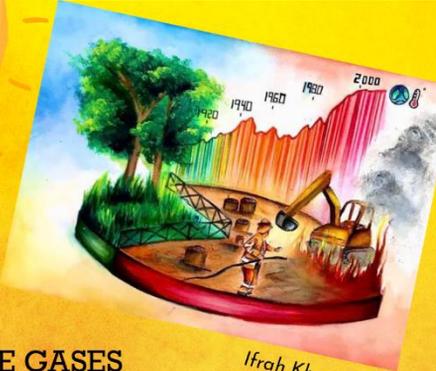
Ifrah Khan, 12B

GREENHOUSE GASES
eg carbon dioxide, methane act like a blanket, trapping sunlight and raising temperatures.

BURNING FOSSIL FUELS

eg. driving a car; using coal for heating

Clearing land and forests



Ifrah Khan, 12B



Siddhi Garg, 10B

Climate action is not cheap. But climate inaction is much more expensive!

We can pay the bill now or pay dearly in the future.

- Intense droughts
- Water scarcity
- Severe fires
- Rising sea levels
- Flooding
- Melting polar ice
- Catastrophic storms
- Declining biodiversity



1.1°C warmer

Dear future Earth,

On behalf of all humans, I am sorry. Over the decades, I have damaged you beyond repair. I apologize for the crackers I burst, the plants I did not plant and the energy I did not conserve. Forgive me for being so vile to pollute your lungs. Forgive me for heating you to leave you forever scorched. I feel awful for being so selfish and I wish I could undo it all. The truth is, if I want to, I can. An error does not become a mistake until we refuse to correct it. So, I will redirect my plans to save you, Earth. Over the years, I will plant trees to give you fresh new lungs, help you cool down, and look forward to your future, Earth. And hopefully, so will every other person.

– Suhani Chadha 8A

Microplastic Particles are “Little Poison Pills”

Chemicals found in plastic particles include toxic, often hormone-disrupting plasticizers, which lend plastic its strength and durability, and additives that confer color, texture, or electrical conductivity and could potentially influence our biology.

Those poison pills appear to be harmful to the brains and other organs of the nonhuman animals that are known to harbor them. In fish, the presence of plastic particles in the brain has been linked to physical and chemical abnormalities in that organ and elsewhere in the body.

If the behavior of plastic particles in nonhuman animals is any indication of our fate, we had better act now to significantly reduce our use of plastic – and begin remediating the mess we’ve already made.

Siddhi Garg, 10B

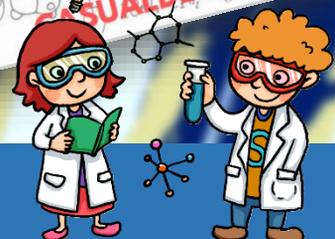
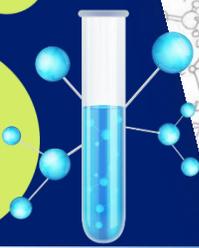
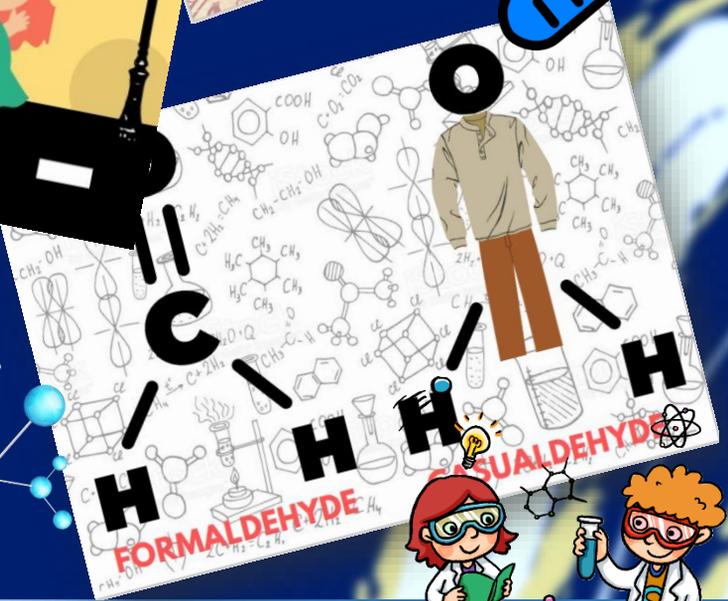
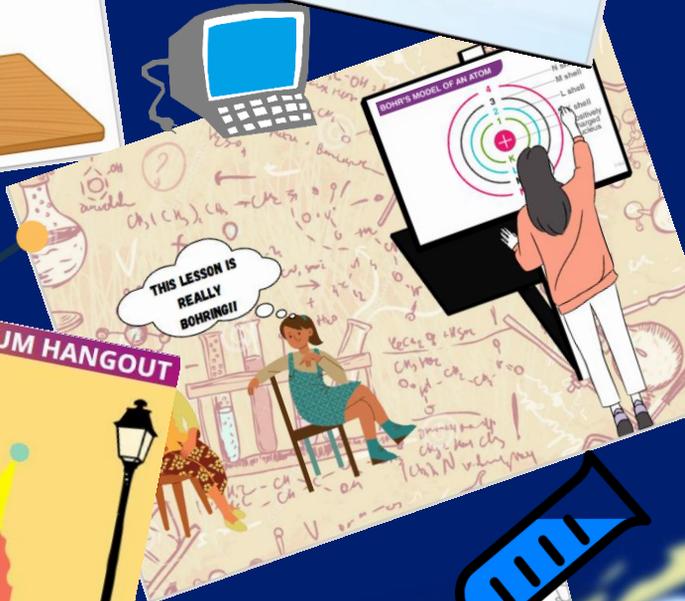




I EXPLODE WHEN I TOUCH WATER

THEY USED ME AS CHEMICAL WEAPON IN WORLD WAR I

I MAKE THE SOUP TOO SALTY



Chem Toons

THE CHEM-THIRSTY CROW



3) ASSOCIATED COLLOIDS

- PARTICLES IN HIGH CONCENTRATION AGGREGATING TO SHOW COLLOIDAL BEHAVIOUR

A crow and a blue pitcher are on a grey rock. The crow is looking at the pitcher.



SCIENCE PARTY

MYSTERIES OF THE UNIVERSE

The universe is a plethora of mystery
To know about it's formation,
We have to look at it's history.



Born 13 billion years ago.
How you and I may never know.
Full of galaxies and stars,
Many planets like Earth and Mars.

Our solar system in the Milky Way,
Our neighbor's Andromeda, that's what they
say.

They say you can find life,
What we know about space will never be
suffice.

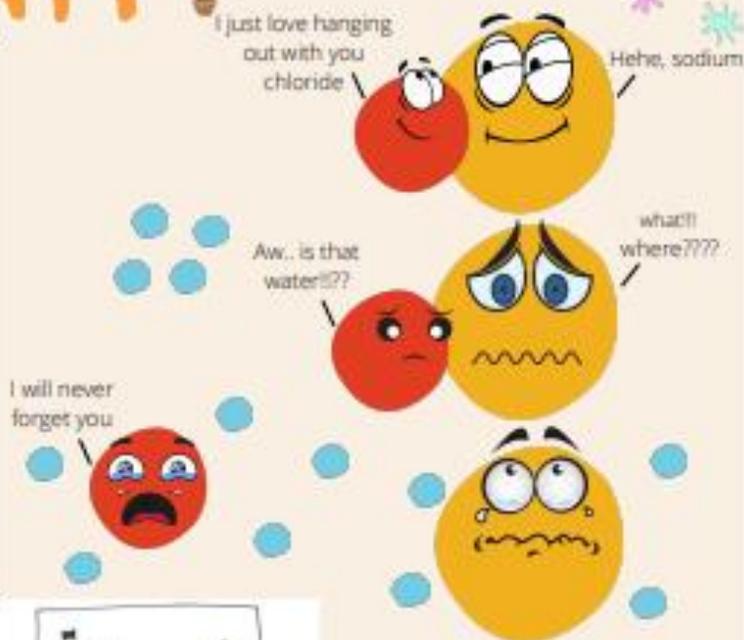
With a supermassive black hole in the centre,
And Oumuamua which was an interstellar
object to enter.

Jupiter with its great red storm,
Was the first planet in our solar system to be
born.



So many undiscovered things,
And Saturn with it's beautiful rings.
The universe is a mysterious place,
One day there will be a challenge we must
face.

- Anaaya Mittal, 7H



Science is my thinking
today.

When you do science -
here is the way
First you ask a question
- why or how?

Then you do it - yeah do
it now!

Experimentation is next
in line

If you get the result, you
are so good at it

Come to your conclusion
- and is analyze it yo

Being scientist - is a
trip.

It is not a square it is a
microchip
- anonymous:

SCIENCE RAP



SCIENCE PARTY



The Venus flytrap is a flowering plant best known for its carnivorous eating habits.

The "trap" is made of two hinged lobes at the end of each leaf. On the inner surfaces of the lobes are hair-like projections called trichomes.



What is the center of gravity?
The letter 'V'.

What period of time weighs the least?
A light year



What do you call an acid with an attitude?
A-mean-oh-acid



Never trust an atom because they make up everything ☺

Which element is derived from a Norse god?
Thorium.

A Physical Change changes how things look,
Like tearing the pages in a book,
Or freezing a liquid, like water to ice,
Or painting a house to make it look nice.

A Chemical Change has come to pass
If you see a new solid, liquid, or gas.
The color may change or the energy too.
A chemical change makes something new.

Types of Motion

Rectilinear Motion
Rotational Motion
Circular Motion
Periodic Motion



A PHOTON CHECKS INTO A HOTEL AND IS ASKED IF HE NEEDS ANY HELP WITH HIS LUGGAGE.



"NO, I'M TRAVELLING LIGHT."



CREATIVE CREW

- Riya Kohli –XI B
- Bhumi Goel –XI B
- Ayushi Agrawal XI B
- Nairika Gupta –XI B

The Collared Diamonds

- Ms. Anita Sood
- Ms. Surbhi Garella
- Ms. Namrata Alwadhi
- Ms. Rita Kohli

