



SCIVERSE

FOR THE UNQUENCHABLE CURIOSITY OF YOUNG MINDS

WHAT'S IN FOR YOU?

- WHAT IS THE CHEMICAL-LOCHA BEHIND LOVE?
- DISCOVERING THE BEAUTY OF OUR CAMPUS;
- BUSTING MYTHS ON SMART DEVICES;
- FUN QUIZES AND PUZZLES



ECO-WARRIORS

THE GREEN GUARDIANS,
DEVOTING THEIR TIME AND
ENERGY IN CONSERVING NATURE



THE SPARKS

THE INNOVATORS AND
DISCOVERERS OF THE TRUTH
BEHIND THE REALITY



TURING

THE TECH-SAVY YOUNG
MINDS, WHO ARE FIT WITH
THE PACING CHANGE OF
TIME AND TECHNOLOGY

ED-DESK

Synergy! A term that captures teamwork, collaboration, and cooperation. Across the fields of science and technology, diverse disciplines work together to bring forth groundbreaking innovations. Staying aware and informed about the latest developments around us is essential in order to stay competitive and nourish our creativity to cultivate personal and professional growth. It also helps us to recognize and defend against new risks, such as cybersecurity threats or health concerns. At the Synergy Club, we have united with a simple yet profound objective: to foster the development of scientific thought among us through this newsletter. Our efforts are focused on the dissemination of scientific knowledge and information, as well as presenting interactive tasks that make learning enjoyable and fun.

I take this opportunity to thank all club members who have generously invested their time to produce this wonderful issue. The Synergy Club will continue working to bring you more editions in the future.

Regards,
Mriganka Bujar Baruah
(Club Coordinator, Synergy Club)

In today's world, technology is not just a tool--it is the language of progress. This year we at TURING CLUB have come up with the aim to inspire curiosity, encourage creativity, and build problem-solving skills among students.

This year let us, explore some exciting fields such as coding, robotics, graphic design, AI and many more. I would like to invite all students to join us in our team to research, and innovate. I encourage all students to embrace technology, not just as a career option but as a way of thinking--one that is logical, forward-looking, and solution-oriented. Let us continue to learn, experiment, and create, so that we can shape a better digital future.

Regards,
Sukhbinder Kaur Sandhu
(Turing Club Coordinator)

Dear students,

Today it gives me immense pleasure to present to you all the inaugural issues of our Newsletter. This publication reflects not only the efforts of our club leaders but also the spirit of inquisitiveness. Science which is more than a subject cannot be grilled within the classroom knowledge and understanding. The more we explore, the better we enrich ourselves with the facts of Science. Synergy Club will not only encourage students to express their curiosity, creativity and enthusiasm in innovation but will also help to develop a heart that will learn to love the environment, develop ideas for sustaining their God gifted resources, with special regards to the Eco-Warriors who are a part of the Synergy Club along with the techno-stars Turing Club.

We therefore encourage you to contribute in diverse ways - either through their own research articles, reports on experiments, or reviews of recent discoveries.

As a Teacher Co-Ordinator I hope that with each issue ,our Synergy Club Newsletter will ignite new sparks of curiosity and nurture in you the confidence to become the innovators, thinkers and problem solvers of tomorrow. My best wishes to the young minds for the future challenges

Regards,
Dr Madhusmita Bhagawati Teacher
(Co-Ordinator , Synergy Club)

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THE SCIENCE BEHIND LOVE

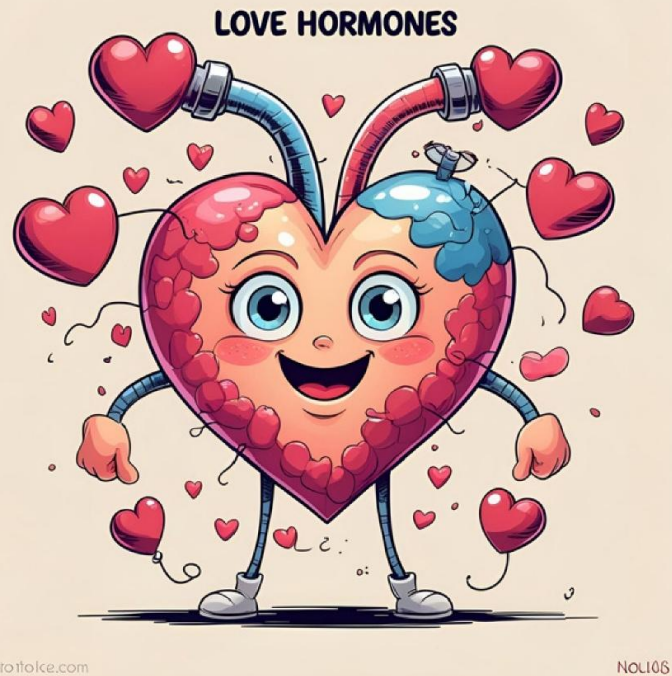
- by Ashwin Sarmah, XII Science

Nowadays love has been a common topic of discussion among teenagers. But what is actually love? People say love is not something you can define; it's just a wonderful feeling you can feel. But how does one can feel love? How does a person fall in love?

Well philosophers say that falling in love is a spiritual thing, it's a natural process that happens in one's life. But this does not typically answer the question 'how?'. Well to answer that question we need to go deep into the science of love or more specifically the role of hormones in a human body.

To understand the biology of love, we need to first ask the fundamental question: Why do we fall in love in the first place? Love is not a random occurrence in human life; rather, it plays an essential role in ensuring the survival of the species. Our capacity to form strong, enduring bonds is directly linked to reproduction and the raising of offspring, which is central to the continuation of life on Earth.

In this light, love can be seen as a strategy for survival. Through emotional bonding, humans are encouraged to stay together, share resources, and offer protection, thus increasing the likelihood that their children will reach adulthood and eventually reproduce themselves.



Over time, these behaviors became ingrained in human biology, reinforcing the importance of emotional bonds for reproductive success.

From an evolutionary standpoint, love serves as a mechanism to promote pair bonding, which increases the chances of successful reproduction and child-rearing. In the wild, many species reproduce and then go their separate ways, but humans are unique in that we invest significant time and effort in raising our offspring, sometimes for decades. This intense parental involvement requires stable, long-term partnerships—something that romantic love, in its most profound form, can help foster. Love motivates individuals to pair up, invest emotionally and physically in one another, and ensure that their children are cared for and nurtured.

Fun Fact

- Pupils dilate when you are looking at someone you love

Mechanism of Attraction

When two people are attracted to one another, their brains and bodies are finely tuned to respond to specific cues that signal potential mates. These cues vary depending on the individual, but they generally involve physical, behavioral, and even chemical signals that indicate compatibility, fertility, and health.

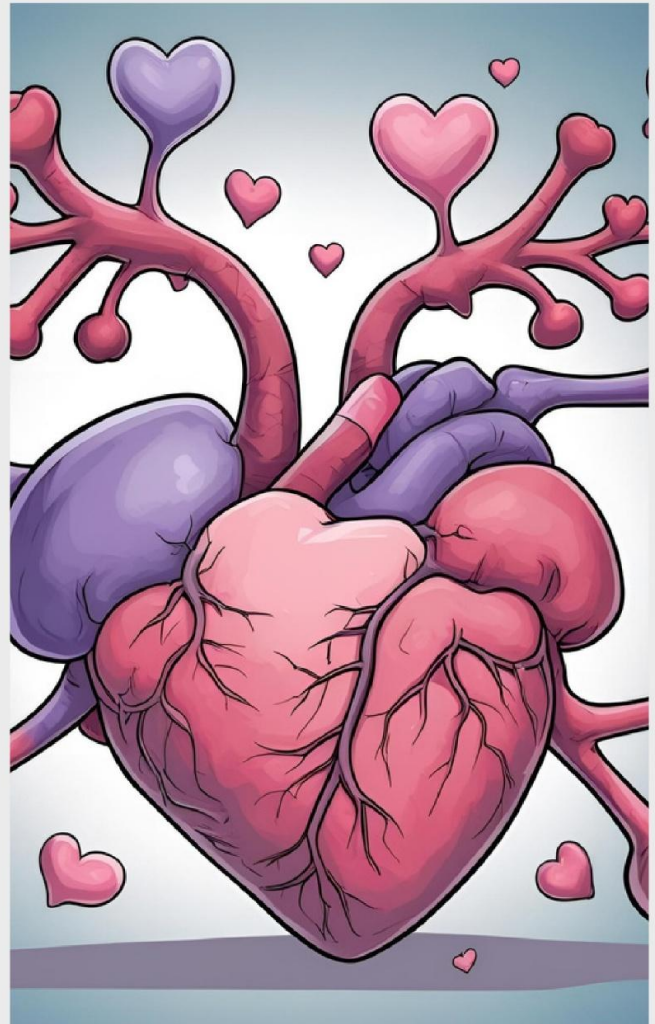
One of the first things that come to mind when we think about attraction is physical appearance. This is not just superficial; physical traits such as facial symmetry, body shape, and skin condition can signal genetic health and reproductive fitness. Evolutionary biologists argue that humans are biologically wired to seek out individuals whose appearance suggests a strong immune system and good genetic material. For example, symmetrical faces are often perceived as more attractive because symmetry is an indicator of health and genetic quality.

Behavioral traits also play a significant role in attraction. For instance, behaviors like confidence, kindness, intelligence, and a good sense of humor can trigger feelings of attraction. These characteristics are often associated with strong social and parenting skills, which are highly valued in potential mates.

While physical traits and behaviors are important, there are other subtle factors at play as well. One of these is pheromones—chemical signals that our bodies release, which can influence attraction without us even realizing it. Pheromones are detected by the vomeronasal organ, a small structure in the nose, and can signal information about a person's genetic makeup, such as immune system compatibility.

Research has shown that people are often more attracted to those with whom they share dissimilar immune system genes, as this increases the likelihood of producing healthy offspring with strong immune defenses.

In sum, attraction is a complex interplay of biological and psychological factors that operate on both conscious and unconscious levels. While it may feel like attraction is random or based purely on personality or physical chemistry, it is actually a finely tuned process designed by evolution to ensure the best possible genetic match.



Role of Hormones

Mystery of all the feelings of love lies inside the role of different hormones. But what are hormones? Hormones are nothing but chemical messengers produced by some endocrine glands which are released into the bloodstream to organs and tissues, where they help control and coordinate various body functions. The main basic hormones which make a person fall in love or stay in love are norepinephrine, serotonin, dopamine, oxytocin and endorphins.

Norepinephrine or Noradrenaline

It is released by the adrenal gland and a part of the brain called the locus coeruleus. It is both a neurotransmitter and a hormone. Well, what does it do to your body when you are attracted to a person? It increases your focus, heart rate, blood pressure and muscle tone. You become highly focused on the person you're attached to- you notice their smallest details, their voice, expressions, etc. It contributes to the "rush" or "thrill" of seeing or thinking the person you like. Noradrenaline can also be released due to chocolates, exercise, sleep, small wins, music and meditation.

Serotonin

Serotonin is a neurotransmitter and hormone that helps regulate many key functions in the brain and body. It is released by the intestine and the brain (raphe nuclei brainstem). In the brain, serotonin cannot cross the blood-brain barrier, so the serotonin used in the brain must be produced there. It is made from an amino acid called tryptophan (found in foods like milk, turkey, nuts). This is then converted to 5-HTP which creates serotonin. It controls the feeling of well-being, happiness, anchoring. When you are with someone, you will think that the other person is the reason of your happiness. It is the effect of serotonin which makes you feel stable in presence of someone. When serotonin is deprived from the body, a person may suffer from

severe anxiety, depression, feeling of loneliness and fear. It is also secreted due to happy moments, massage, light exercise, bright light etc.

Dopamine

Dopamine is a neurotransmitter and a neurohormone. It is produced by the neurons in the VTA and substantia nigra. It is a crucial hormone in the early stages of romantic love. It creates the sensation of pleasure and happiness when you see or think about the person. It drives you to closeness, attention and connection. It is a reward hormone, every interaction with that person feels like a "reward". When you're in love, dopamine makes you feel euphoric, energetic, focused, and even addicted to your partner's presence. It is also secreted when you watch suspenseful stories, in cliff hangers of a story- let me tell you a story, in 9th standard I was pretty much excited to have my first very own bicycle, so in the month of July my parents gave me a bicycle, days passed and I learned to ride it; one day what happened I was late for my tuition so I was going very fast riding my bicycle but suddenly something happened....If you read the story till the end of it you are now very focused and curious to know what happens next, well this is nothing but your dopamine in the action.

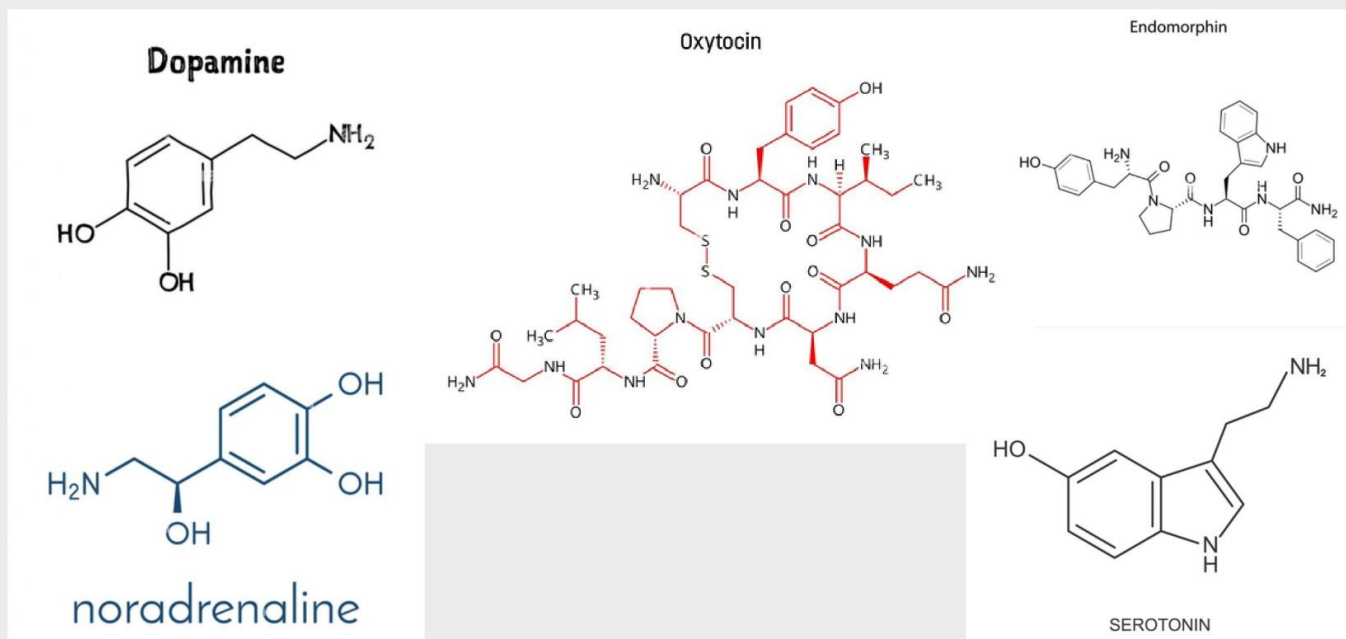
These three hormones are very essential for the first staged of love. it suppresses the analytical power of a person to analyze the other person in an analytical or logical way.

Oxytocin

It is again a hormone and neurotransmitter. It is produced in the hypothalamus, stored and released by the posterior pituitary gland, and acts in the brain and body. It is also called the love hormone or the cuddle hormone. It is released due to physical touch and eye contact. It helps to create a deep emotional bonding, increases feelings of trust and empathy towards your loved ones. It lowers cortisol (stress hormone) – makes people feel calm around their loved ones. It is strongly involved in maternal love and bonding with infants.

Endorphins

Endorphins are the natural painkillers and mood elevators produced by brain and nervous system. It is mainly released by the pituitary gland into the bloodstream during stress, laughter etc. Brain and the spinal neurons also release endorphins to block pain. Endorphins are especially important in long-term relationships, where comfort, safety, and emotional bonding become key. It creates a sense of calm, safety and contentment with the other person. It helps maintain happiness and reduce irritability in relationships. It helps to build a tolerance in critical situations. Laughing, playing, exercises, yoga, chocolates etc. can release endorphins in the body.



There are also several other hormones which work in association with these hormones to create the feeling of love. Although the mentioned hormones have several other functions, their role in the emotions of a person is high. Therefore, it is not the heart that falls in love, it is the role of these hormones that makes you experience this feeling.

EDEN CAMPUS

-by Jnyanam Bordoloi, of
class XI Sci.

I've been studying in this school since foundation LKG, that is for 13 years and counting. In all these years, there has been changes, of teachers, of students, of buildings, of books, of syllabuses and what not. But one thing that has remained stagnant if not flourished further, is the lush-green and rich variety of plants that we have inside our campus. The memories of playing at the slide under the shade of the big tree as a kindergartener are still fresh. The rows of trees that give shade to us when we get tired playing at the field, the serene golden flowers blooming near the now so-called Hawa Mahal, the rows of flowering plants on either side of the main alley, all add up to the natural richness of our school's campus. Some of these have been there long before the school was set up, while many were planted by our beloved founder, Pradip Bhuyan Sir. We all have nevertheless admired the beauty of the plants in our campus in one way or the other, but how many of us really know what these plants are called? What other roles they play that are important but not usually noticed? Addressing these questions, the Synergy Club, under the guidance of Madhushmita Ma'am and with the help of Professor Jayanta Manna and Dr. Pranab Buzarbaruah have conducted a survey of plants in the school campus and identified nearly 80 different species of plants. In virtue of the success of this project, we are planning to put up signboards near every tress which would contain its local name and scientific name, to let every student know about them.



Photographed by author

As one enters the campus from the main gate, he/she gets welcomed by a *Lagerstroemia speciosa*, or how it's locally called, Ajar-gos. There are plenty of those throughout the campus. Many of us might have also noticed and admired the beautiful pinkish-purple flowers that bloom on them during spring. Next up, getting down the stairs, one can notice an enormous *Ficus rumphii* above the canteen. Then near the temple, one could see a row of *Gravelia robusta*, or the silver oak, a tree native to Australia. Then there are neem trees, bel-gos, *Mesua ferrea* (nahor-gos), *Nyctanthes arbor-tristis* (sewali), *Nerium oleander* (Rakta Karabi) and many more beautiful blooming plants, including the Japanese-Rose. Climbing over the bricks and mortar on the entrance of the Higher-Secondary Sci. Section one could see *Philodendron hederaceum*, a species of money plant. Then, one could see row of different species of palm outside the science- section classroom windows, including the *Metroxylon sagu* (Sagu-gos), *Dypsis lutescens* (Momai-Tamul), *Livistona jenkinsiana* (Tokou-gos) and many more. And bestowing its shade upon the Hawa Mahal is a big Gulmohar, accompanied by 2 more before it on the same row. These trees in themselves host an ecosystem, sheltering many insects, orchids (*Cymbidium aloifolium*), arrowheads, ferns, and even other tress growing out of them. And if you look at the branches with keen eyes, you might be able to see one, or a family of Spotted Owlets (*Athene brama*), that have been sheltered by the tress. Then near the middle section, one could see two Palash which bloom with bright-red orange flowers, and yield seeds with wing-like appendages that help them propagate.



Gulmohar, near hawa mahal



Bohotgos, *Artocarpus lakoocha*, at field

Fun Fact!

The **King's Holly**, in **Tasmania, Australia**, has been alive for **43,600 years!** Meaning it's been around since woolly mammoths and neanderthals walked the earth. Scientist have even found fossils of its leaves laying under the earth where it grows. It stretches **1.2 km** with various pieces of shoot connected by roots under the earth.



Going upto the field, the first thing one can notice is the row of towering *Ficus benjamina*. Then in the middle of the field, on the right of the goalpost there is a big, old *Streblus aspe*, and on the left there's an *Aegle marmelos* and behind it, a *Dalbergia sissoo*. And walking towards the nets, just in front of the old canteen cart, one can see three *Adenanthera pavonine*, or locally known *Kuchandan*, which like its name suggests, bears bright red ruby-like seeds. Then behind the nets, there's a huge mango tree, which has an entire forest of fern growing on it. Next up, going up the open-air stage, near the prestigious rock, one can see a huge *Ficus benjamina*, then behind the rock, lies a tree which is getting quite rare in the wild, the *Artocarpus lakoocha*, or the *Bohot-gos*, which bears a spongy, small jackfruit-like fruit which serves as one of the key diet for birds, bats and many insects. Moving up the stage, there are many native species of plants growing in the forest that one could see, including *Caryota urens* (*Sewa*), *Sterculia villosa* (*Udal*) and *Dysoxylum procerum* (*Bandordima*). Inside the campus, we also have a Teak tree near the path to the picnic-site. Then on the middle stage, there's a beautiful red-flower bearing *Delonix regia*, i.e. a *Krishna-sura*. And at the basketball court, there are *Alstonia scholaris*, also called *Saitan-gos*, which despite their name, bear beautiful pink flowers. Also at the court, we have *Magnolia champaca*, or the *Titasopa*, which bear fruits cherished by birds and small mammals. And then alongside the walkway, there are rows of *Gmelina arborea*.

Among the notable trees that bear fruit edible for humans, we have jackfruit, mango, *jolphai-gos* (*Elaeocarpus floribundus*), *bel-gos* (*Aegle marmelos*), *Ou-tenga* (*Dillenia indica*), and those edible for animals include *Bohot* (*Artocarpus lakoocha*) and *Titasopa* (*Magnolia champaca*). As for medicinal qualities, there are *Euphorbia nerifolia* (*Sisu*), *Psidium guajava* (*Guava*), *Aegle marmelos* (*Bel*), *Streblus asper* (*Soura-gos*), the *Kuchandan*, i.e. *Adenanthera pavonine*, and perhaps the most obvious- the neem tree or *Azadirachta indica*.

Trees as we all have been reading in our textbooks since childhood are among the basic necessary components of the earth that make our, and perhaps millions of other forms of life, existence on this planet possible. Absorbing carbon and other harmful, greenhouse gases, providing oxygen, shade, fruits, flowers, timber, certain parts that have medicinal qualities, are the qualities of trees which we all are more or less aware of. Other than these, trees in themselves act as an eco-system. A good example can be seen in our campus itself, as mentioned earlier, in the *Gulmohars* near our hawamahal, host not only insects and birds, but also have orchids, ferns and even other plants growing over it, sheltering them, providing water and nutrients. On top of that, trees can cater precipitation, shield against harsh winds and dust storms, and nevertheless, they provide recreational opportunities, or in simple terms, please the eyes, inspire art and photography. Given the current problems of waterlogging, frequent dust storms, landslide, and most importantly, climate change, all are rooted in uprooting of trees, in huge numbers.

As mentioned earlier, there are about 80 species of plants recognised in our campus, there are well over 45,000 species all over India and over the world. There are about 391,000 species of vascular plants currently known to science, of which about 369,000 species (or 94 percent) are flowering plants, according to a report by the Royal Botanic Gardens, Kew, in the United Kingdom. And about 2,000 new plant species are discovered or described every year, many of which are already on the verge of extinction. These are just number of species, total number of plants would be exponentially greater. Given this wide variety and huge population, one might wonder what harm could extinction of one species, or uprooting of one tree even inflict? The thing is that everything is connected, as mentioned earlier, trees host eco-systems in themselves, so fall of one tree would result in fall of an eco-system, and subsequently cause other inter-connected eco-systems to deplete as well. Therefore, every species, every individual plant counts. And why is it important to know all these big names of species of plants, if you wonder, then as Sir David Attenborough once said, **"We can Protect Nature, only when we Cherish, we can Cherish it only when we Admire it, and we can Admire it only when it Know it well"**.

THE WILD LENS,

Lets take a moment to watch, admire, cherish, and protect these amazing animals



"DAZZLING" —Jnyanam Bordoloi, XI Science

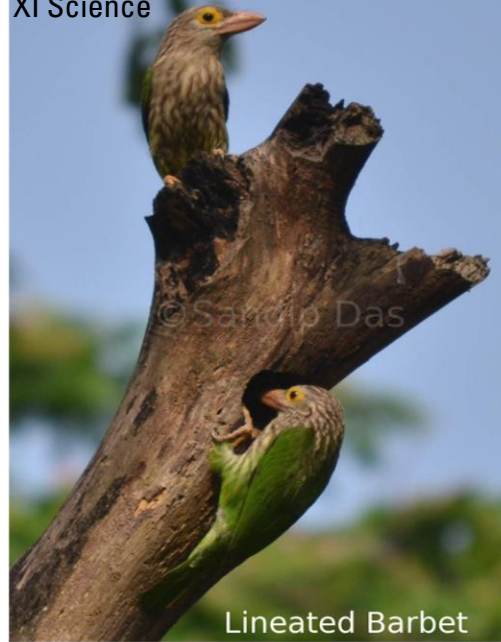


"HIDING BEAUTY"
-Jnyanam Bordoloi, XI Science



"APPU" -Jnyanam Bordoloi, XI Science

"TREEHOUSE" —Amitayus Das,
XI Science



Lineated Barbet



Black-winged Kite

"THE PHANTOM" —Amitayus Das, XI Science



"WARE-BAT"
-Amitayus Das, XI
Science

Indian Flying Fox

Is Your Smartphone Really Listening To You ?

(Exploring the Myths and Truths Behind Voice Data and Privacy)



The idea that smartphones “listen” to users without consent has been a long-standing suspicion among the public. Many claim to talk about a product or service only to see ads for it moments later. This has led to concerns that smartphones are secretly recording conversations.

But is there any truth to this?

Understanding Voice Assistant Technology :

The suspicion that smartphones secretly spy on conversations arises mainly from experience such as targeted ads appearing soon after casual talks, apps having microphone permissions, and smart assistants like Siri, Google Assistant, and Alexa constantly listening for wake words. These incidents often seem too coincidental, making users believe their conversations are being monitored.

App Permissions and Abuse Risks :

Apps with granted microphone access can technically record audio, though doing so without consent is illegal in most regions. However, some lesser-known apps have misused these permissions to gather background audio data, raising concerns about privacy and security.

Behavioural Data vs. Voice Data :

For targeted advertising, tech companies typically rely more on behavioural data than voice data. This includes browsing history, app usage patterns, and social media activity, which often provide more accurate insights into user interests than spoken conversations.



TIPS

To turn off audio permission

- Go to Settings → Apps → [Select App e.g., Facebook, Instagram, TikTok]
- Tap Permissions
- Find Microphone
- Set it to “Deny” or “Ask every time”



CASE STUDY

In 2018, researchers from North-eastern University tested over 17,000 Android apps and found no evidence of apps secretly activating the mic to record conversations. However, they did find apps were:

- Taking screenshots.
- Recording screen activity.
- Uploading it without user knowledge.

How to Protect Your Privacy :

1. Review app permissions regularly on iOS/Android.
2. Turn off microphone access for apps that don't need it.
3. Use privacy-focused browsers and search engines.
4. Disable ad personalization on Google, Facebook, and other platforms.
5. Keep your device software updated.



TIPS

Recommended Microphone-Blocking Apps for Android

- Anti Spy (by BytePioneers s. r. o.)
- Mic Guard (Rakta Tech)



Myth or Truth?

Truth:

Smartphones do listen for wake words and, in some cases, send voice data to cloud servers. Apps with mic access can technically record audio, though it's highly regulated.

Myth:

There is no verified evidence that smartphones or apps routinely and secretly listen to private conversations for advertising purposes. Instead, what feels like "listening" is often the result of advanced algorithms using your online behaviour and digital footprint to serve hyper-targeted content.

**-Tasmin Sultana Majarbhuiyan,
XII Humanities**



Emotional AI: Teaching Machines to Understand Us



Emotional AI is a rapidly growing field of technology where machines are designed to understand and respond to human emotions. By analyzing facial expressions, voice tones, and patterns in speech, these systems can identify how someone is feeling—even though they don't experience emotions themselves. This ability allows for more natural, empathetic interactions between humans and machines, which can be especially valuable in areas like healthcare, education, and customer service.

But emotional AI isn't just about improving how we interact with machines today.

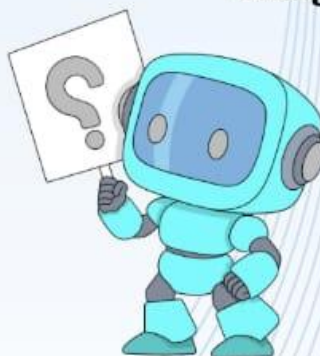
Researchers are now exploring its long-term potential imagining systems that can track emotional and social changes across generations. In the future, emotional AI could help predict major shifts in how societies think and feel, offering valuable insights or even warnings to future communities. By combining emotional intelligence with machine learning and predictive modeling, AI may evolve from being a reactive tool to becoming a proactive partner in human development.



As emotional AI continues to advance, one key obstacle will be teaching machines to handle the complexity of human emotion. This is where fuzzy logic, a system that deals with uncertainty and nuance comes into play. It allows AI to interpret emotions more realistically, without relying on black and white thinking.

Though still in its early stages, emotional AI holds the promise of transforming not just how machines understand us, but how we understand ourselves.

-Bhargavi Dutta, XI COM A2



IT'S TRIVIA TIME!

1. Which gland releases dopamine hormone?

- a) Hypothalamus b) Adrenaline
- c) Pancreas d) Both a & b

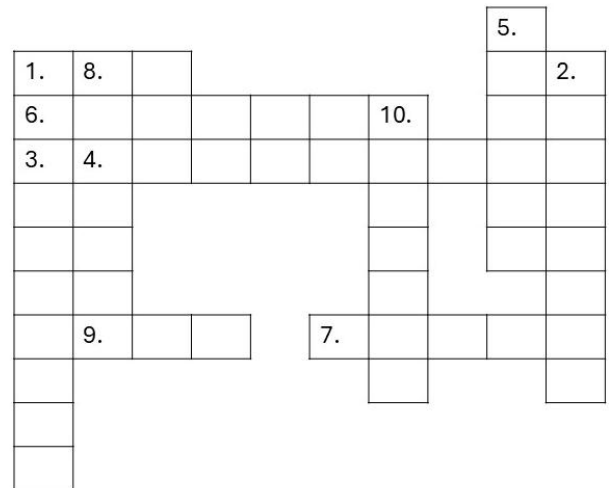
2. The gland that releases dopamine, releases it as an inhibitor of which hormone?

- a) Prolactin b) adrenaline
- c) Thyroxine d) insulin

3. What could cause deficiency of serotonin?

- a) Deficient sugar I diet
- b) Less exposure to sunlight
- c) Spider Bite
- d) Too long screen-time

TECH TALK CROSSWORD



1. What species does the tallest tree recorded till that belong to?

- a) Coast Redwood b) Giant Dragon Bamboo
- c) Kannimara Teak d) Sugar pine

2. After which of the following species of primates, is the state tree of assam named?

- a) Red-tuffed Lemur
- b) Caped Langoor
- c) Hoolock Gibbon
- d) Golden Squirrel-monkey



3. What is the largest flower known till date?

- a) Rafflesia arnoldii
- b) Passiflora edulis
- c) Camellia 'Middlemist's Red'
- d) *Pedicularis groenlandica* (elephant flower)



Clues for Tech Talk Crossword Puzzle

Across

- 1. Brain of the computer
- 4. A global network connecting millions of computers
- 6. A place to store digital files
- 7. A clickable object that opens web pages
- 9. Temporary memory in a computer (abbr.)

Down

- 2. Physical parts of a computer
- 3. A program that tells the computer what to do
- 5. Portable computer
- 8. Device used to print documents Tech
- 10. Popular mobile operating system by Google