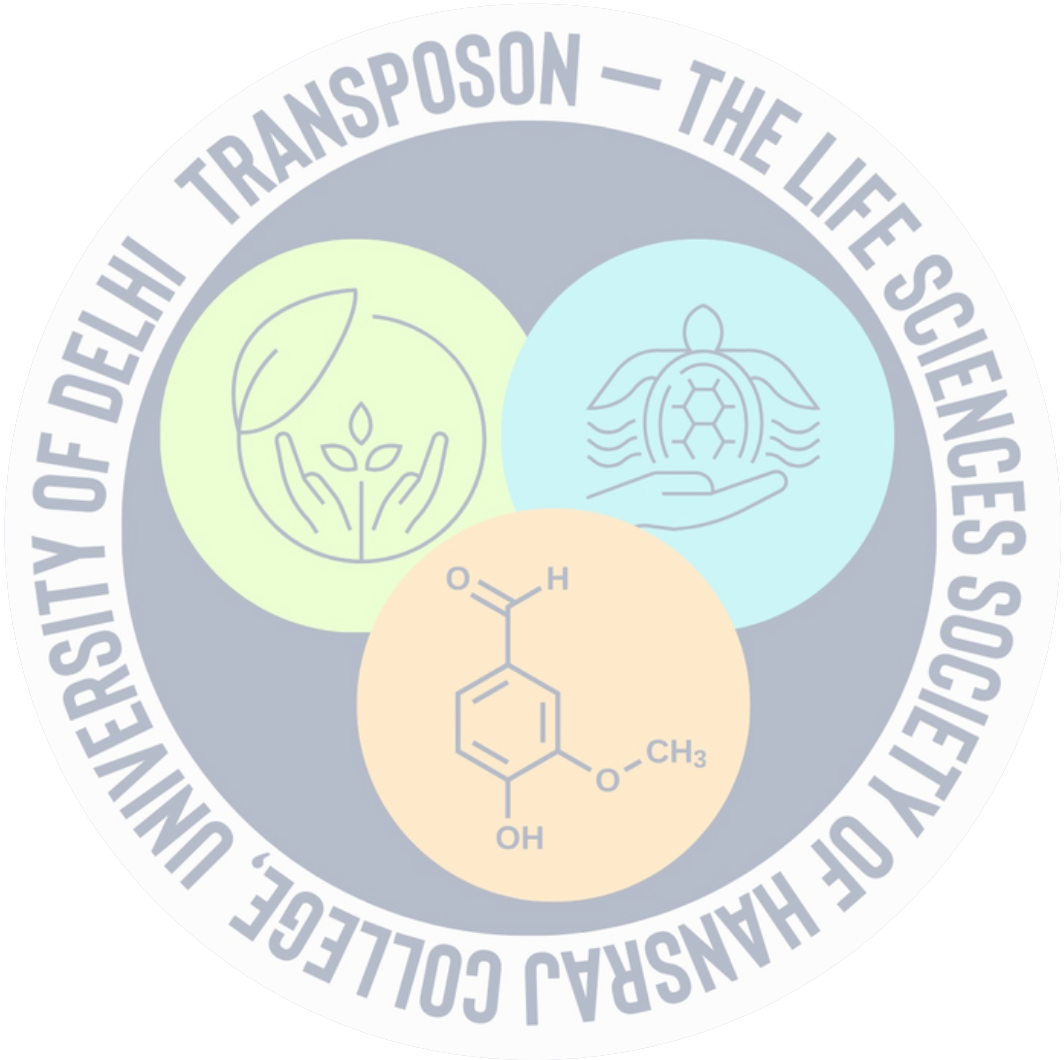
DE-SCIPHER

Transposon - The Life Sciences Society | Hansraj College

Edition
2023-2024


TRANSPOSON — THE LIFE SCIENCES SOCIETY OF HANSRAJ COLLEGE, UNIVERSITY OF DELHI
O
H
O
CH3
OH

About De-Scipher

De-Scipher, the annual magazine of Transposon- The Life Sciences Society of Hansraj College is a convergence of the thoughts and ideas and the creative expression of science enthusiasts. It offers a glimpse at the activities of the society along with curating the science-focused works through articles, essays, sketches, photographs, poems, riddles, caricatures etc. The first edition of the magazine revolves around the world of science with hints of its merge with other fields. It publishes a range of research articles explaining occurrences at the microbial level, its translation in the laboratory, developments in clinical studies and diseases and also mysterious phenomena seen in the plant and animal world, and their potential causes. The magazine aims to raise understanding of the knowledge known and to ignite the minds of the readers to think beyond and further.

De-scipher, a very apt name suggested by Sareena Hayat, a student of B.Sc Life Sciences, 3rd Year, hence, quite literally aims to decipher the science behind minuscule as well as the vast processes guiding life. Everything, and every organism along with its characteristic features undergo a plethora of processes that manifest into its existence and uniqueness. It is all about deciphering and decoding the science behind these processes that lead to finding even more minute details and help in carving out applications of the research for the future. The magazine, with a concoction of the creative and well-researched submissions from students, interprets what has been discovered and lays down approaches for the ways we could move ahead in the world of Botany, Zoology and Chemistry.

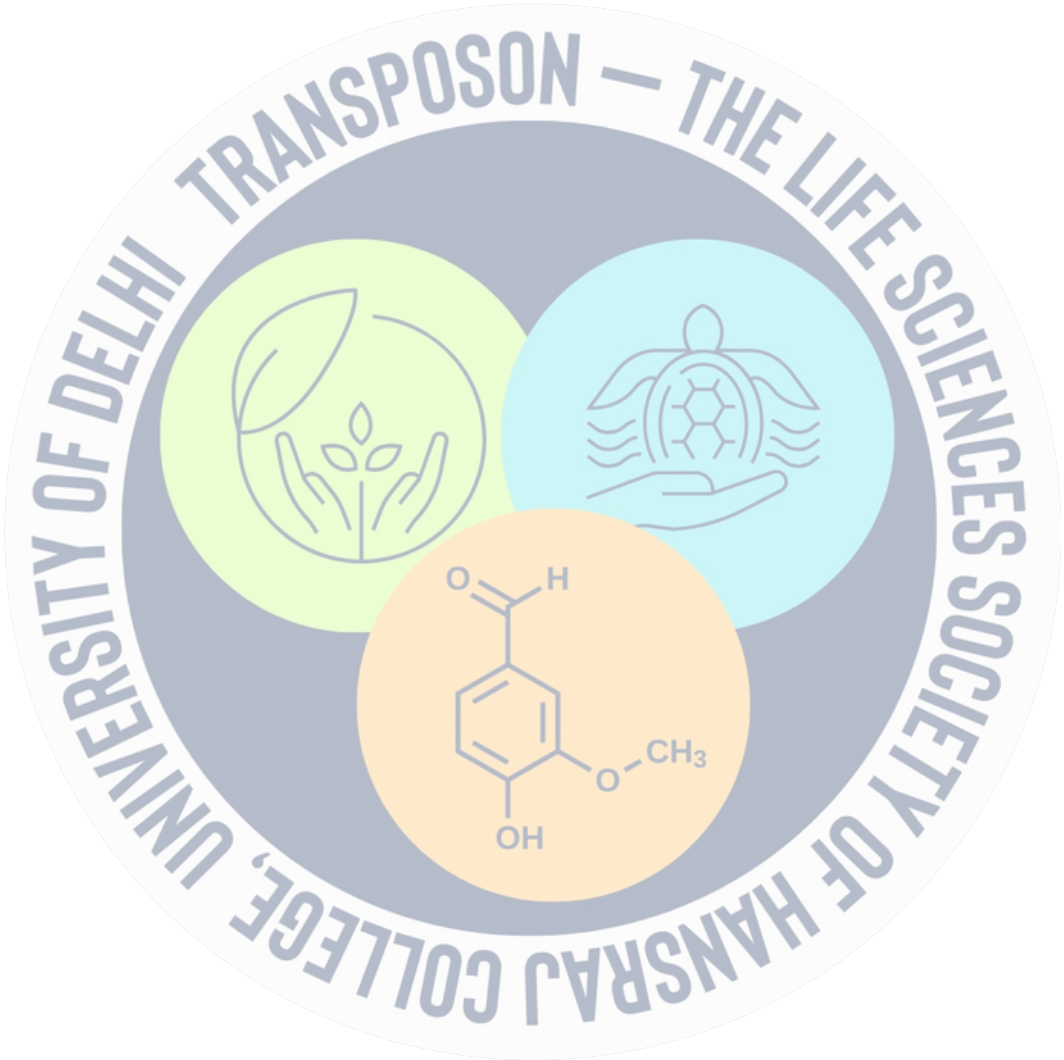

TRANSPOSON — THE LIFE SCIENCES SOCIETY OF HANSRAJ COLLEGE, UNIVERSITY OF DELHI
O
H
O
CH3
OH

TABLE OF CONTENTS

1

INSPIRATIONAL INSIGHTS

2

TEAM SPOTLIGHT

3

TRANSPOSON'S EVENTS

4

AFFINITY : THE ANNUAL FEST

TABLE OF CONTENTS

INSPIRATIONAL INSIGHTS

Message from Vice Principal & Teacher-In-Charge

Prof. (Dr.) Vijay Rani Rajpal
Vice Principal, Hansraj College
Teacher-In-Charge
Life Sciences (2023-24)

Dear Members of the Life Science Society and Esteemed Graduates, it is my great honor and pleasure to write to you all on this momentous occasion of the valedictory event for the Life Science Society, Transposon. Today, we celebrate not only the remarkable achievements and hard work of our students, who put together a series of interesting lectures, debates, society festival and other activities through the year and celebrated the spirit of curiosity and innovation that drives us forward in the field of life sciences. I would like to complement the society convener Dr. Ridhi Khurana for mentoring the students throughout the year 2023-24. This year has been particularly significant for Transposon, as we proudly adopted our new name, symbolizing our dynamic and ever-evolving nature. Much like the transposable elements, Life Sciences students hop between the departments of Botany, Zoology and Chemistry and move forward, creating diversity and fostering growth.

A highlight of this event is the release of the first edition of our annual magazine, De-Scipher. This magazine is a testament to the dedication, creativity, and intellectual prowess of our students. Within its pages, you will find an array of articles, research findings, and creative writings that reflect the latest advancements and enduring mysteries in life sciences. I encourage everyone to explore this interesting publication.

To our graduates, today marks the culmination of years of hard work, perseverance, and dedication. As you step into the next chapter of your lives, remember that the knowledge and skills you have acquired in Hansraj College are just the beginning. Continue to ask questions, seek answers, and contribute to the ever-expanding field of life sciences. The world needs your passion, your innovation, and your commitment to making a difference.
Congratulations to each and every one of you. Your achievements have made us all proud, and I have no doubt that you will continue to excel in all your future endeavors. Let us celebrate this momentous occasion with joy and anticipation for the incredible journeys that lie ahead.

Message From Convenor & Co-Convenor

The Life Sciences Society of Hansraj College has had a tremendous year 2023-24. The society revamped itself with a new name, Transposon. The responsibility of the student admissions and activities of the B.Sc. (P) Life Science students at Hansraj College changes hands each academic year between our three life science departments – Botany, Chemistry, and Zoology. Much like transposons, our students leave their footprint wherever they go! Along with a new name, this year the society also designed a new logo reflecting an amalgamation of the roles of the three constituent departments in shaping up the future of these bright young minds.

This year the society proudly launches the first edition of De-Scipher, the annual magazine of the Life Science Society of Hansraj College. This magazine has been named by Ms. Sareena Hayat, our third-year B.Sc.(P) Life Science student. The name De-Scipher, communicates the mindset behind the magazine to decipher and to share scientific knowledge with its readers. The magazine also aims to highlight both academic and extracurricular achievements of our talented Life Science students along with sharing snippets of the society's year-round activities.

This year the society's activities were inaugurated in October 2023 by announcing this year's student council, releasing the new look of the society with a new name, new logo, new magazine and new enthusiasm. The inaugural event was graced by an inspiring talk by Prof. B. K. Thelma, Department of Genetics, University of Delhi South Campus on the 'Fundamentals, Breakthroughs, Clinical Relevance and Unseen Future of Genetics' research in the country. In November 2023, the Society welcomed the first year B.Sc.(P) Life Science students with a lively and engaging event. In February 2024, the society organized an inter-college life science quiz, Biogeeks. We received participation from students from various colleges of University of Delhi. The event was very engaging, and informative for all the participants and the organizers. In April 2024, the society organized Affinity 2024, an annual festival of the society – a celebration of our creative, young, and talented students. Affinity brought together our student council, our students and students from different colleges with a refreshing change of pace to re-envision science with fun and creativity. The year's activities were culminated with a valedictory ceremony to launch our magazine, and to acknowledge the efforts of our student council for their tremendous hard work and dedication towards everything the society set out to achieve.

We wish the society and its stakeholders a great time ahead in its endeavors and ventures that will take the society to newer heights and attain new landmarks in its course, contributing to the institution's growth in years to come.

Message From President & Vice President

We are very elated to present to the readers the first-ever magazine of the department of Life Sciences, Hansraj College, “De-Scipher.” De-Scipher aims at decoding and disclosing the science behind known as well as unknown phenomena in the world of living organisms. The magazine is a conjugated effort put forth by the contributors whose imagination and zeal for knowledge extend beyond the horizons, while also penetrating to the deepest levels.
We would like to thank Dr. Ridhi Khurana, Convenor and Dr. Pratibha Pant, Co-convenor for bringing the idea of a departmental magazine to life, and to the students of Life Sciences, whose creativity made the magazine a wholesome and complete reading experience. The expression of ideas and thoughts is an important aspect, and the magazine is a reflection of that.

The magazine also features the events conducted by Transposon- The Life Sciences Society, Hansraj College, and each of those events were successful because of the unwavering commitment of the organizing body, the speakers and the avid participation of the students across various colleges. Hence, we would like to appreciate each and every individual involved in the plethora of activities organised by the society, contributing to the magazine in every way possible.

Last but not the least, the Magazine Team deserves a special mention for putting the cherry on the cake. They truly have blended individual ideas to produce a complete piece. Without any further ado, we wish you delve into the subsequent pages and have a wonderful experience reading De-Scipher, a literal first of its kind.
Happy Reading!

TEAM TRANSPOSON

DR. RIDHI KHURANA

"The orchestrator of harmony, weaving together diverse talents and perspectives into a beautiful symphony of collaboration, make a society successful."

CONVENOR

DR. PRATIBHA PANT

""The essential partner in this collaborative journey, sharing the load of responsibilities and amplifying the society's impact."

CO-CONVENOR

TEAM TRANSPOSON

KASTURI SAHA

"Embodies the driving force of change, uniting members behind a shared vision. With dedication and leadership, will navigate the path towards progress of society."

PRESIDENT

SHUBHAM KHURANA

"The cornerstone of support, amplifying the president's vision with dedication , fostering unity shaping the society's shared destiny."

VICE PRESIDENT

VANSH JAIN

"The meticulous architect of unity, building bridges of communication and cohesion."

GENERAL SECRETARY

SHIVAM RAJ

"Harmonizes every detail, weaving together the threads of organization and communication"

JOINT SECRETARY

TEAM TRANSPOSON

TANIYA POKHRIYAL

“Safeguards the foundation, ensuring the financial well-being that propels our shared aspirations forward”

TREASURER

CULTURAL SECRETARY

SAHIL

“The curator of diversity, painting vibrant strokes of creativity to enrich our collective experience.”

ASMI RAWAL

“Bridges imagination with implementation, crafting the future with innovation and expertise”

TECHNICAL HEAD
2ND YEAR

TECHNICAL MEMBER
1ST YEAR

RAJAT GUPTA

“Bridges imagination with implementation, crafting the future with innovation and expertise”

TEAM TRANSPOSON

MISHTHI KHURANA

“The heartbeat of collaboration, steering towards a harmonious and progressive community.”

COUNCIL MEMBER
3RD YEAR

COUNCIL MEMBER
2ND YEAR

ANUSHKA SARASWAT

“The pillars of governance, contributing diverse perspectives to nurture the community's growth.”

AKANKSHA

“The pillars of governance, contributing diverse perspectives to nurture the community's growth.”

COUNCIL MEMBER
1ST YEAR

TEAM TRANSPOSON

SAREENA HAYAT

"The voice of the students, dedicated to shaping a vibrant and inclusive community"

CLASS REPRESENTATIVE
3RD YEAR

CLASS REPRESENTATIVE
2ND YEAR

ANJALI KUMARI

"Bridge the gap between students and leadership, voicing the collective needs and aspirations."

BHINDERJEET SHARMA

"Bridge the gap between students and leadership, voicing the collective needs and aspirations."

CLASS REPRESENTATIVE
1ST YEAR

MAGAZINE TEAM

Kasturi Saha

Shubham Khurana

Anushka Saraswat

Vansh Jain

Asmi Rawal

LIFE SCIENCES SOCIETY

HANSRAJ COLLEGE, UNIVERSITY OF DELHI

Cordially invites you to the

INAUGURAL LECTURE

Guest speaker

PROF. B.K. THELMA

Genetics 2.0:

Fundamentals, Breakthroughs, Clinical Relevance and Unseen Future

SHRI SHANTI NARAYAN SEMINAR ROOM

MONDAY ● October 30, 2023 ● 2:00 PM onwards

Dr. Pratibha Pant	Dr. Ridhi Khurana	Prof. Vijay Rani Rajpal	Prof. (Dr). Rama
Co-Convenor	Convenor	Teacher-In-Charge	Principal
Life Sciences Society	Life Sciences Society	Department of Botany	Hansraj College

TRANSPOSON'S EVENTS

Inaugural Ceremony

The event took place at Sri Shanti Narayan Seminar Hall, marking the culmination of the Inaugural Lecture for the Session 2023-24 of 'Transposon' the then Life Sciences Society of Hansraj College, D.U.

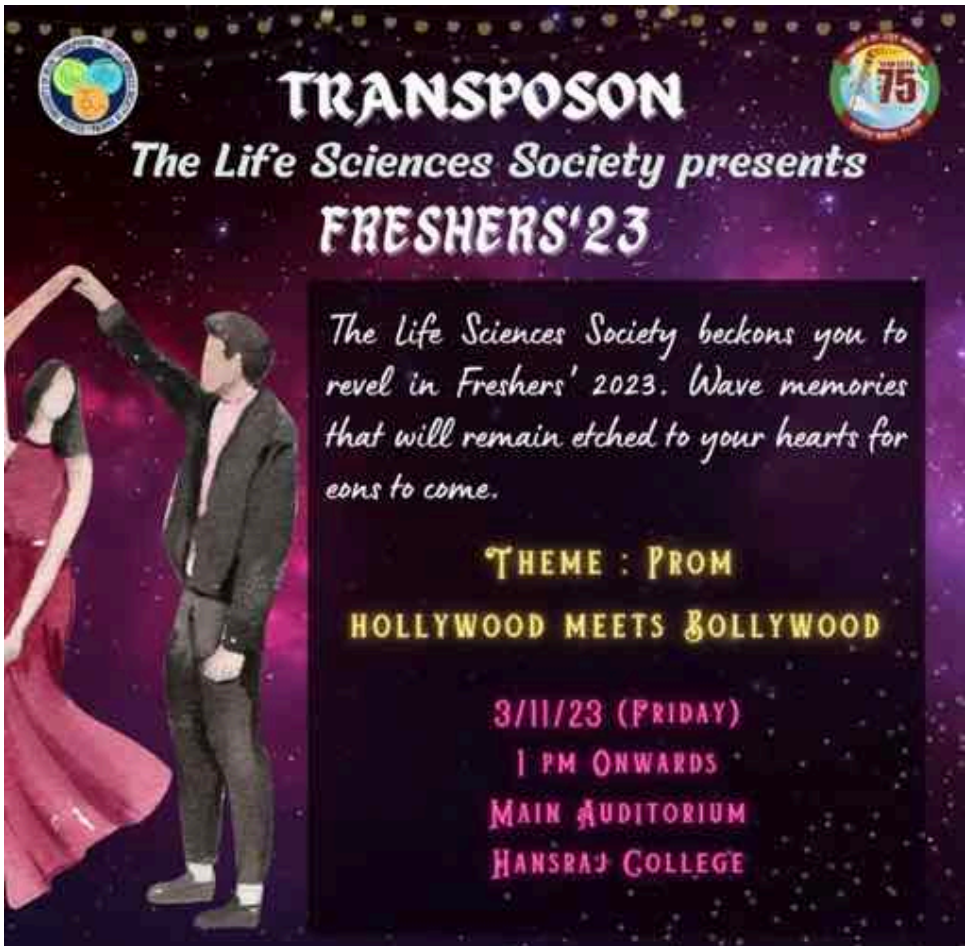
Prof. B.K. Thelma, enlightened all of us with her knowledge about the building blocks of almost all biological studies- Genetics.
The lecture filled with immense knowledge, summed up the basis of genetic research intertwined with Fundamentals, Breakthroughs, Clinical Relevance and Unseen Future in the field.

Monday, October 30, 2023 marked the day of another bright start for Transposon as we all jumped to yet another milestone.
The yearly Magazine 'De-Scipher' was launched with utmost passion by the society.
As the name suggests, it's an initiative to dig deep into the concepts of scientific processes i.e. everything around us, in depth. A magazine that would do justice to curiosity with intrusive scientific knowledge.
Prof B.K. Thelma navigated the prospects by beginning with Fundamentals, the Mendelian Genetics. How a course of experiments was the first step to actually crack the 'code' in Genetics. Just like the growth curve of organisms, the Breakthroughs and new advances in the field- maybe for discoveries and degeneracies did provide the exponential and lag phases of the future of all clinical studies. All these discoveries are the 2.0 version of the basic fundamentals once discovered and are only aiming towards merrier as time passes. The basis and purpose of research , can't separate the words Genetics from being the foundation of diagnosis and treatments hence pivoting towards its Relevance as a Clinical Tool.

Inaugural Ceremony

Be it gene therapy or interventions ranging from avoiding the disease to minimising its severity, the scope is endless. What once viewed as a surround effect can now be well traced back up to the individual's rootsthe genome. Looking from the basics the current is actually the future which was once aspired for but there remains quite a lot as the Unseen Future Perspectives of genetics. Linking behavioural sciences to the genomics may act as a foundation stone for the well acclaimed manson that is to be built with immense hit and tries. Society may be skeptical about the fast paced advancements but Genetics and i's version is an invincible boon. The Lecture paved the way to numerous thought processes the time for whose argumentations could never be enough hence, in the limited time, there was a doubt and discussion session that enlightened and dwelled upon the points dropped during the immensely thought provoking lecture. Transposon was well inaugurated relating to the name and the essence, Leaving footprints wherever it was. The session ended with vote of thanks and Prof. B.K. Thelma was greatly applauded for provoking the thought processes among all the attendees that will build the future of Genetics 2.0.

Welcoming Day for Freshers



Transposon – The Life Sciences Society of Hansraj College welcomed the freshers for the session 2023-24 by organising a Freshers' party on the 3rd of November, 2023 in the main auditorium of the college. The freshers party for the first-year students of Life Sciences was a vibrant and entertaining event. The theme of the party was Bollywood meets Hollywood, freshers were asked to come as a pair, each drawing inspiration from one Bollywood and one Hollywood character, resulting in a colourful array of costumes and characters.
Many participants from the first year showcased their talents through dance performances, singing, and reciting poetry, adding an extra layer of excitement to the event. Participants creatively dressed up as pairs, with one partner representing a Bollywood character and the other a Hollywood character.

Welcoming Day for Freshers

This theme added a fun twist to the traditional fresher's party and allowed everyone to showcase their creativity. All the freshers introduced themselves and the characters they had been portraying after a ramp walk. A special event, the 'Hook Step Challenge', added to the entertainment. It encouraged participation from everyone and created a lively atmosphere.

Based on the performances, introduction and the participation in the challenge, the titles of Miss and Mr. Fresher were awarded to Swetalina and Hrishikesh Tamuli, respectively. Their enthusiasm and participation throughout the event were commendable.

Best-dressed Award: Bhoomi Dodeja and Abhay Chand were recognized for their outstanding dressing sense and was awarded the title for the Best Dressed awards. Their attention to detail and creativity in portraying the chosen characters stood out during the event.

Overall, the freshers party organized by the Life Sciences Society was a memorable event filled with talent, creativity, and enthusiasm. It provided an opportunity for the first-year students to mingle, showcase their talents, and bond over a shared love for Bollywood and Hollywood characters with the batchmates and the senior batches of Life Sciences. The success of the event was evident through the active participation and exuberant atmosphere throughout the evening.

Sci-Art Showcase Competetion

Transposon, the Life sciences Society of Hansraj college held “Sci-Art Showcase”- a sweatshirt designing competition, exclusively for the students of Life Sciences. The event was organized via online mode with the deadline of 29th January, Monday, 2024.

The best design was promised to be featured in society’s magazine De-scipher. A lot of entries were received. Students put forward their creative designs and very elegantly incorporated all the three cores and the central essence of Life sciences. The event was unanimously judged by the council team. They filtered out the best entries.

Laxmi Rajak, student of B.Sc Life science , 3rd year, crafted the winning design that graced the sweatshirts. The event over all was very successful and all the participants had a close competition.

Overall, the event was very unique and eye-catching. Such idiosyncratic events are very necessary as it helps students to show case their creativity and diligence.

Biogeeks - The Life Sciences Quiz

Transposon-The Life Sciences Society, Hansraj College, organized BioGeeks, a thrilling quiz showdown aimed at creating enthusiasm among the students of life sciences and test their calibre in the three frontiers of Life Sciences: Botany, Zoology and Chemistry. It was held on 1st February 2024 at Padma Bhushan Gyan Prakash Chopra Seminar Room, Hansraj College. The quiz started around 2:00pm with the welcoming of participants, audience and everyone present there. This was followed by an overview of Vikshit Bharat through a video. Vikshit Bharat @2047 is the vision to make India a developed nation by 2047, the 100th year of independence.

The vision encompasses various aspects of development, including economic growth, social progress, environmental sustainability and good governance. After that, anchors gave an introduction of the society and explained the general rules of the quiz.

There were 13 teams from different colleges of Delhi University competing with each other. Each team consisted of 2 members. Quiz was conducted in four rounds. Rules of each round was explained by the anchors before starting of the round. Round 1- Bio Quest, included questions that tested the basics of the participants in Botany, Zoology and Chemistry. There was no elimination in this round. In Round 2- Pic A Boo, pictures were displayed and teams had to identify them. Based on the scores at the end of this round, 3 teams were eliminated and the remaining 10 competed in Round 3- Double

Trouble Round. In round 3, each team was allowed to choose one subject of their interest from Botany, Zoology and Chemistry and 3 questions were asked from the same. This round also had negative marking. Based on the score at the end of this round, 5 teams were eliminated and the remaining 5 competed with each other in Final Round, which was 'Rapid Fire Round'. There was also a tie-breaker round for the 3rd position.

With the final scores, Team ‘Zoology’ held the 3rd position, Team ‘Alpha Challengers’ the 2nd position and 1st position was held by team ‘Dicer’.

Winners were provided with certificates and gift hampers by Dr. Ridhi Khurrana, Convenor and Dr. Pratibha Pant, Co- Convenor of the society. Also, E- certificates were provided to all the participants. With the proper coordination among the members of Transposon and continuous support from the Convenor and Co-Convenor, the quiz was organized very well. Overall, the event was a great success. It was amazing and informative. Transposon- The Life Sciences Society of Hansraj College aims to organize such interesting and informative events to create enthusiasm among students and implant new ideas into the young minds.

TRANSPOSON

LIFE SCIENCES SOCIETY | HANSRAJ COLLEGE | UNIVERSITY OF DELHI

CORDIALLY INVITES YOU TO
THE ANNUAL FEST

AFFINITY

MONDAY, APRIL 8, 2024 | HANSRAJ COLLEGE | 9:30 AM ONWARDS

Kasturi Saha	Dr. Pratibha Pant	Dr. Ridhi Khurana	Prof. Vijay Rani Rajpal	Prof. (Dr). Rama
President	Co-Convenor	Convenor	Teacher-In-Charge	Principal
Transposon	Transposon	Transposon	Department of Botany	Hansraj College

AFFINITY' 2024

Transposon, the Life Sciences Society of Hansraj College, University of Delhi organised its annual fest – 'Affinity' in association with Confluence'24 on 8th April, 2024.

Vice Principal Prof. Vijay Rani Rajpal's inspiring words set the tone for the fest, highlighting the importance of fostering curiosity and appreciation for science. Dr. Ridhi Khurana, Convenor and Dr. Pratibha Pant, Co-convenor, were acknowledged for their pivotal roles in organizing the event. The ceremony expressed gratitude to the entire organizing team, led by Kasturi Saha and Shubham Khurana, for their dedication. With the commencement of events, including the photography competition "Ambivalence-contrast through your lens", the fest promised an engaging exploration of science and creativity.

Ambivalence: Contrasts Through Your Lens

Ambivalence: Contrasts through your lens, the photography competition aimed to showcase the juxtaposition of elements, themes, and emotions within a single frame. Photographers were encouraged to explore the dynamic interplay between opposing elements, whether it be light and shadow, joy and sorrow, or urban and natural landscapes. The competition sought to celebrate the artistry of capturing contrasting elements and the emotions they evoke. The event began with Dr.Pratibha Pant, Co-convener of the society felicitating the judges for this competition- Dr. Dinesh Kumar Gautam from Department of Zoology and Dr. Himanshu Khurana from Department of Chemistry. Participants were given a time of 45 minutes to click the photograph within the Botany Department and front lawn of Hansraj College. Judgement was given on the basis of quality of photo, aesthetic appeal, contrasts not only technically but emotionally as well, and the caption participants wrote for their photographs highlighting the message they wanted to send out through it.After careful deliberation, the judges selected the following winners: The first position was bagged by Samiksha Girdhar- student of Life Sciences, 3rd Year at Hansraj College.

The photograph clicked by her represented how an aunt is a tiny yet mighty organism and how it is a great example for survival of the fittest over the years,well surely Samiksha herself was the fittest to win this competition owing to her amazing photography skills. Sneha Longani- student of Life Sciences, 2nd year at Hansraj College secured the second position with her thought evoking photograph- a tree with living, dying and dead leaves showcasing the beautiful yet heart breaking contrast not only between the elements of photograph but also between the different phases of life.

The Paw-Fect Connection: Celebrating Human - Animal Relationship

Paw-Fect: The Bookmark Competition was another interesting competition that tested the creativity and imagination of the participants. Theme for this competition was 'Celebrating Human-Animal relationship.'

The event marked its beginning from 10:20 am at Botany Lab 03, after the inaugural session of Affinity'24. Judges for the competition, Dr. Pooja Jha, from Department of Botany and Dr. Aparna Bansal, from Department of Chemistry were felicitated by Dr. Ridhi Khurana, Convenor of the society. Thereafter rules for the event were announced. Each participant was provided with a bookmark cut out of 18cm*6.5cm. They were given 45 minutes to design the bookmark according to the theme. Volunteers made sure that mobiles or any unfair means were not used by participants.

Participants submitted their entries by mentioning their participant number, which was provided to them at the starting of the event and college name. They were judged based on their adherence to theme, presentation and creativity.

Based on the scores of judges, Anudeepti Bajpai from Botany (H) 3rd year, Hansraj college secured first position and second position was taken up by Anshika Arren from Botany (H) 2nd year, Hansraj college. They were awarded in the valedictory session of Affinity'24.

SOS: Science of Senses

Science of Senses was another exciting competition in the line of events for Affinity. It was a scientific blindfold competition in which participants had to guess the hidden item using their senses. Sense organs are specialized organs that help to perceive the world around us. They are an integral part of our lives and it is the only way that enables us to perceive the environment. In this competition participants had to guess the hidden items using power of their senses.

The game was conducted in 2 rounds in Botany lab 2, first round was blindfold round in which 19 participants participated and each participant was given 45 seconds to guess the item using their sense of smell, touch and taste being blindfolded. Some items which were placed in this round were curry, coriander, mint leaves spices like turmeric, cinnamon. Nuts like almonds, cashews, pistachio etc. 10 marks were awarded for each correct answer. After first round and tie breaker round, 13 participants qualified for second round.

In second round they have to use their sense of sight which is responsible for most of the information we absorb from our five combined senses and their master gland brain which is the seat of intelligence, interpreter of the senses. Participants had to guess the name of the plant by looking its leaves, flowers, fruits. They were given 30 seconds each for that and if question was not answered, it was passed to next two people. 10 marks were awarded for each correct answer and 5 extras for answering pass question.

After overcoming all challenging questions, 2 students stood as the winner of this competition. Muskan Arya from Botany honors, 3rd year secured 1st position and Naincy Yadav from Life Sciences secured 2nd position.

Science Se Song Tak

Science se song tak was another exciting competition in the line of events of Affinity, where songs were deciphered through scientific emojis and symbols. This game tested the speed and scientific knowledge of candidates along with their love for Bollywood. It was held at noon in Lab 1, Department of Botany, Hansraj College.

The game started with 19 teams being registered. In each team, there were two members. The game was held in 2 rounds. In the first round, each team was given the chance to guess the maximum number of songs from the scientific emojis in 15 minutes. After this round, only two teams scored the maximum points, which were teams 5 and 12. Initially, 7 teams were eliminated on the spot and the remaining 10 teams that scored equal points got ahead with a tiebreaker challenge. Only 7 teams moved ahead to round 2.

The second round was mainly about teamwork. In this round, each member was given 1 minute to guess one song and enact it to his teammate. After this round out of the 7 teams, there was a tie between 2 teams. The final tiebreaker was held between teams 12 and 5.

After overcoming all challenges, team 12 named A square that included Anjali Srivastava and Arya Srivastava became the winners of the game. The second prize was won by team P square which included Palak Pandey and Pankaj Kumar.

RRR - Rapid Roast Rebuttal

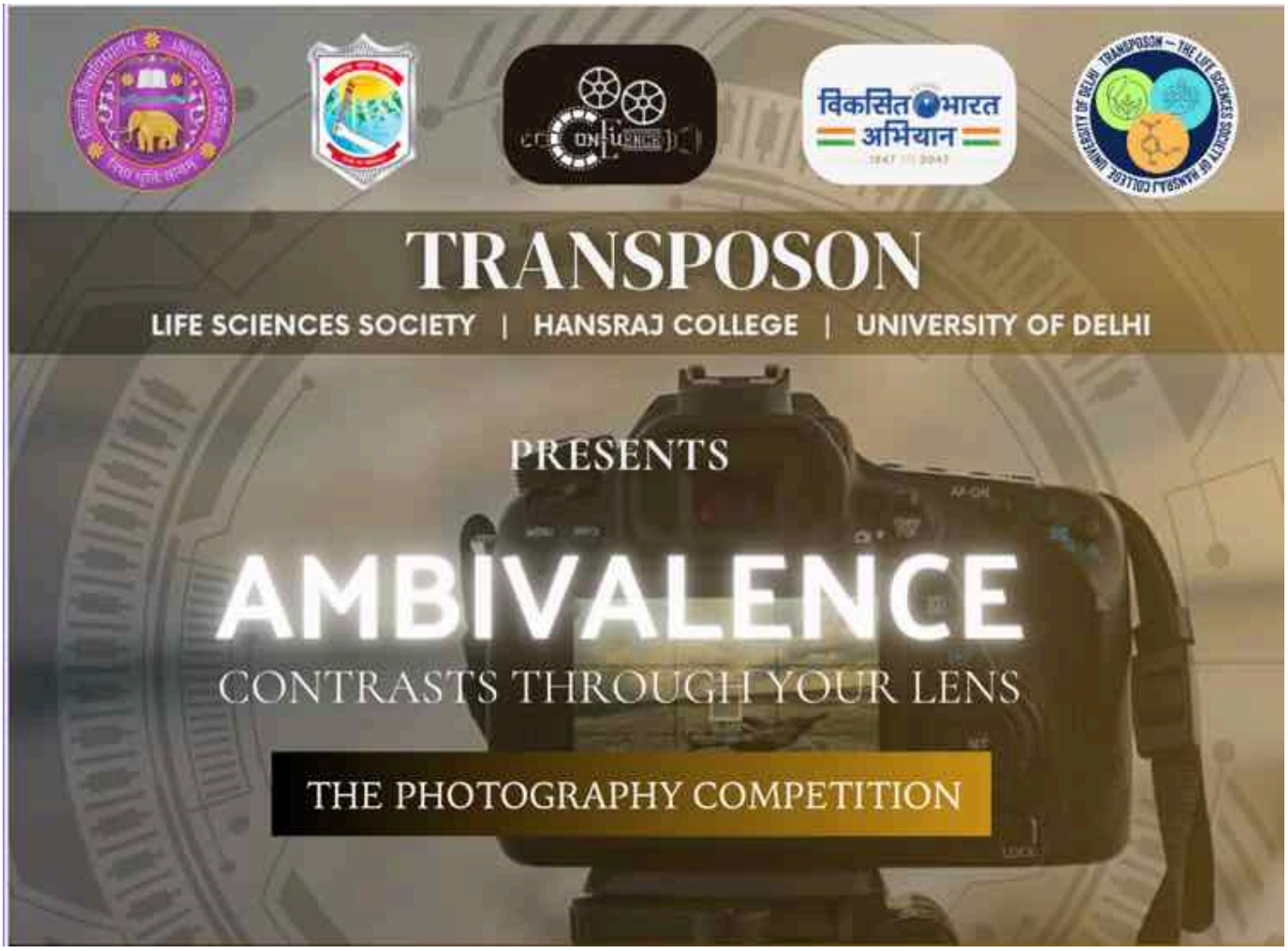
RRR – Rapid Roast Rebuttal, the contest about debunking myths was the final event conducted in room A1 by the Society in a line up of unique competitions. RRR was about showcasing confident minds roasting the misconceptions prevailing in the scientific world with a hint of sarcasm and use of everyday examples.

The event began with Dr. Ridhi Khurana, Convener of Transposon felicitating the esteemed Judges for the contest, Dr. Sahil Mehta and Dr. Mandeep from the Department of Botany. The rules were explained and topics were chosen by the participants. Students were given a buffer time of 20 minutes to prepare and they did wonders while presenting their thoughts for 3-4 minutes one by one in front of the audience.

Each contestant spoke about the baselessness of misbeliefs such as bulls getting angry at colour red or veganism being the only right choice. They related with the crowd and surely gathered their attention through a great deal of laughs and claps. Participants were judged on the basis of their speaking skills, confidence, relevance to the topic and audience engagement.

The winners were announced in valedictory ceremony after the event. Ishita Chadha, 3rd year B.Sc. (P) Life sciences student bagged first prize with the facts she put forward on veganism and the comical interaction she had with the audience. Ayush Galyan, 2nd year B.Sc. (P) Life Sciences student amusingly roasted the false notion of humans only using 10% of their brains and secured 2nd position. Consolation prize was also awarded to Shivarjit Pathak, 2nd year B.Sc. (P) Life Sciences student for denying the colourblindness of dogs and cats in a witty manner.

The valedictory session of the event brimmed with enthusiasm and appreciation for the participants' dedication and talent. After a series of intense competitions, attendees gathered to honour the achievements of the participants. Winners of various competitions, including, Ambivalence - Contrast through your lenses, SOS-Science of Senses, RRR- Rapid Roast Rebuttal, Science se song tak and Paw- Fect: Celebrating Human Animal relationship, were announced amidst continuous applause and celebration. Each winner was praised for their exemplary skill and contribution to the success of the fest. The ceremony concluded with heartfelt congratulations extended to all the winners, whose creativity and passion had illuminated the event, leaving a lasting impression on all attendees.


TRANSPOSON
LIFE SCIENCES SOCIETY | HANSRAJ COLLEGE | UNIVERSITY OF DELHI
PRESENTS
AMBIVALENCE
CONTRASTS THROUGH YOUR LENS
THE PHOTOGRAPHY COMPETITION


GPS Map Camera
Delhi, Delhi, India
M6H5+PMJ Hansraj College, Hansraj College, Delhi, 110007, India
Lat 28.679275°
Long 77.209314°
08/04/24 10:23 AM GMT +05:30
Google

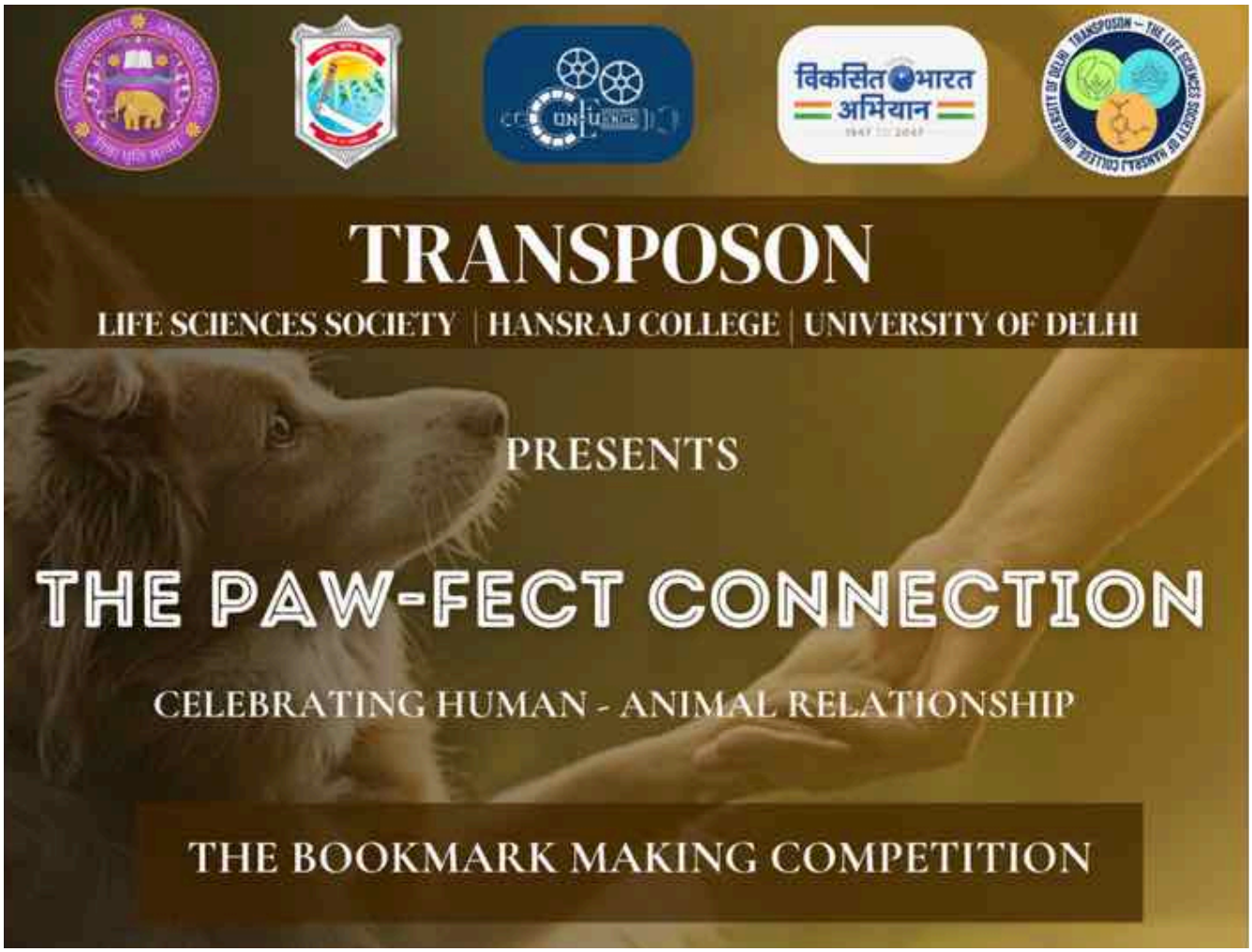

GPS Map Camera
Delhi, Delhi, India
M6H5+PMJ Hansraj College, Hansraj College, Delhi, 110007, India
Lat 28.679283°
Long 77.209261°
08/04/24 10:28 AM GMT +05:30
Google


TRANSPOSON
LIFE SCIENCES SOCIETY | HANSRAJ COLLEGE | UNIVERSITY OF DELHI
PRESENTS
SCIENCE SE SONG TAK
THE SCIENTIFIC EMOJI COMPETITION


Delhi, Delhi, India
M6H5+PMJ Hansraj College, Hansraj College, Delhi, 11000
Lat 28.679298°

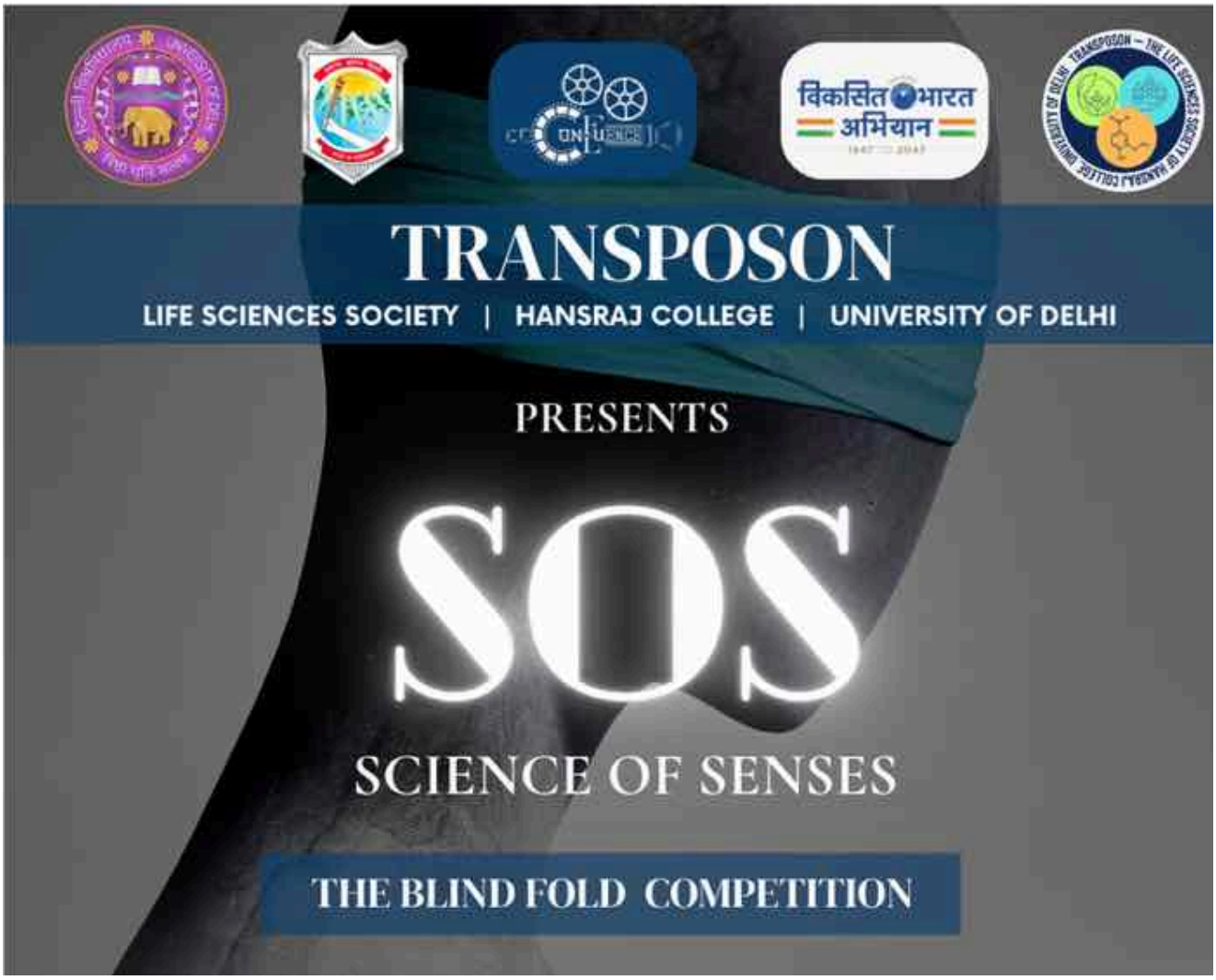

GPS Map Camera
Delhi, Delhi, India

Paw-fect Connection: Celebrating Human Animal Relationship


TRANSPOSON
LIFE SCIENCES SOCIETY | HANSRAJ COLLEGE | UNIVERSITY OF DELHI
PRESENTS
THE PAW-FECT CONNECTION
CELEBRATING HUMAN - ANIMAL RELATIONSHIP
THE BOOKMARK MAKING COMPETITION


GPS Map Camera
Delhi, Delhi, India
12, opposite Hansraj College, Hansraj College, Malka Ganj, Delhi, 110007,


GPS Map Camer
Delhi, Delhi, India
12, opposite Hansraj College, Hansraj College, Malka Ganj, Delhi, 110007,
India
Lat 28.679207°
Long 77.209484°


TRANSPOSON
LIFE SCIENCES SOCIETY | HANSRAJ COLLEGE | UNIVERSITY OF DELHI
PRESENTS
SOS
SCIENCE OF SENSES
THE BLIND FOLD COMPETITION


GPS Map Camera
Delhi, Delhi, India
M6H5+PMJ Hansraj College, Hansraj College, Delhi, 110007, India
Lat 28.679362°
Long 77.209089°
08/04/24 12:02 PM GMT +05:30


Delhi, Delhi, India
08/04/24 12:00 PM GMT +05:30


TRANSPOSON
LIFE SCIENCES SOCIETY | HANSRAJ COLLEGE | UNIVERSITY OF DELHI
PRESENTS
RRR
RAPID ROAST REBUTTAL
THE SCIENTIFIC ROASTING COMPETITION


GPS Map Cam
Delhi, Delhi, India
M6H5+PMJ Hansraj College, Hansraj College, Delhi, 110007, Indi
Lat 28.67923°
Long 77.209289°
08/04/24 01:55 PM GMT +05:30


GPS Map Camera
Delhi, Delhi, India
M6H5+PMJ Hansraj College, Hansraj College, Delhi, 110007, India
Lat 28.679268°


RRR
GPS Map Camera
Delhi, Delhi, India

ARTICLES

The Secret Language of Plants

By Yasmeen Farahath, 1st Year, B.Sc. (P) Life Sciences

introduction

Plants have long held secrets in their silent world, communicating through anintricate web of signals. Despite lacking a central nervous system, they utilise chemical and physical cues to navigate their environment and interact with other organisms. This phenomenon, often dubbed the "secret language of plants," reveals a fascinating realm of interconnectivity.

Through the emission of volatile organic compounds (VOCs) and other signalling mechanisms, plants convey vital information about their environment, including threats like drought, herbivores, or diseases. "Plant language" or "talking trees" describes plant signalling to neighbouring plants,as seen in observations of elevated phenolics and tannins in intact trees near damaged ones. In damaged plants, VOCs serve as nonvolatile signals, triggering SOS messages to neighbouring plants and natural enemies. This concept extends to communication with other organisms. While animals possess chemosensors for volatile signals, plants were considered "deaf" due to lack of similar structures.

Plant Intelligence: Exploring the Depths of Consciousness

The idea of plants possessing consciousness or musical preferences may seem implausible, recent research offers insights into their remarkable ability to sense and react to their surroundings. During the 1970s, a prominent book titled "The Secret Life of Plants" suggested that plants could exhibit consciousness and even respond differently to various types of music. For instance, a study cited in the book claimed that plants exposed to Mozart* showed better growth compared to those exposed to Jimi Hendrix*. While these assertions have been met with scepticism, they have spurred a growing interest in understanding the intelligence and communication of plants. Plants lack brains, yet they possess remarkable abilities to perceive their surroundings and communicate with neighbouring plants.

Studies have revealed instances where plants, such as cabbages and pea plants, recognize danger and convey this information to nearby companions. For instance, when threatened, cabbages emit a toxic gas to deter insects, prompting nearby healthy cabbages to do the same, suggesting a form of communication among them.
Similarly, pea plants have demonstrated the ability to communicate through their roots. When some pea plants experienced drought conditions and closed their pores for protection, nearby well-watered pea plants mimicked this response, indicating a transfer of information between them.

Moreover, researchers have explored the possibility of plants responding to sound vibrations. Italian scientist Dr. Gagliano recorded clicking noises produced by corn seedlings and observed that they grew towards similar sounds played to them. This phenomenon suggests that plants may perceive and respond to sound stimuli, potentially using vibrations as a form of communication. While the intentionality behind plant communication remains a subject of debate, the evidence indicates that plants are far more dynamic and interconnected than previously thought. They sense their environment and share information with their plant neighbours, challenging traditional notions of plant behaviour.
Mozart's music, created by composer Wolfgang Amadeus Mozart, is renowned for its elegance, beauty, and balance, with intricate melodies and harmonies. It is widely appreciated for its relaxing and enjoyable qualities, representing classical music at its finest.
Jimi Hendrix was an iconic American guitarist, singer, and songwriter known for his groundbreaking electric guitar playing and influential contributions to rock music.

Unlocking the Secrets of Plant Defense Mechanisms

Plants have intricate defence mechanisms against herbivorous insects, often involving complex communication systems. One such mechanism is the emission of volatile compounds when plants are attacked, attracting natural predators of the herbivores.
Recent research has identified specific volatile signals emitted by plants in response to caterpillar activity. For example, apple seedlings release a blend of seven compounds when infested by moth larvae, effectively attracting conspecific male and female adult moths. Similarly, North American moths show heightened attraction to specific volatile blends, challenging the assumption that herbivores avoid these compounds.
Moreover, the study revealed interplant communication, as neighbouring tomato plants increased defensive chemical production in response to volatile signals from attacked plants. These findings highlight the sophisticated ways plants communicate to defend against threats. Understanding plant communication and defence mechanisms offers insights for agriculture and ecosystem management, aiding in crop protection and fostering sustainable ecosystems.

The interaction between plants and herbivores, like Spodoptera moths, exemplifies the complexity of plant-insect interactions. Chemical signals released by injured moths can trigger defence responses in plants, deterring herbivores and attracting their predators for natural pest control. *Arabidopsis* plants demonstrate a sophisticated ability to detect and respond to compounds produced by Spodoptera moths, showcasing the intricate nature of plant defence mechanisms.

Unlocking the Secret Language of Plants: The Power of Sound Waves

Recent studies suggest that plants possess a hidden means of communication: sound waves. Researchers have observed that plants not only produce sound in response to various stimuli but also respond to sound vibrations in their environment. For instance, a study by Mancuso et al. (2017) revealed that corn seedlings emit clicking sounds when subjected to simulated insect feeding. This phenomenon suggests that plants might use sound as a tool to attract pollinators or communicate with insects.

Moreover, research by Appel and Cocroft (2014) demonstrated that plants can detect vibrations caused by insect herbivore chewing, triggering defence responses to protect themselves from further damage. In addition to responding to sound, plants themselves can emit sound waves to communicate with each other. Gagliano et al. (2012) discovered that maize plants produce clicking sounds from their roots, potentially serving as a means of communication among neighbouring plants.
Furthermore, sound waves can indicate the water status of plants. Maia et al. (2011) found that water-stressed lupine plants produce different acoustic emissions compared to well-watered plants, suggesting that sound waves may serve as an indicator of plant hydration levels. Even more intriguingly, plants can detect airborne sound waves. Research by Li et al. (2018) demonstrated that Arabidopsis plants are capable of sensing airborne sound waves across a wide frequency range, potentially allowing them to communicate or respond to environmental cues.
These findings underscore the multifaceted role of sound waves in plant biology, from triggering defence mechanisms to facilitating communication and sensing environmental changes. As scientists delve deeper into the study of plant sound perception, the complexities of plant communication continue to unfold, revealing a fascinating aspect of the natural world.

Unlocking the Underground Realm: The Power of Root Networks

Plants communicate and share resources through intricate root systems beneath the soil. These underground connections allow for the exchange of nutrients, water, and warning signals about environmental threats.

For example, tomato plants use root communication to defend against diseases, while paper birch trees utilise mycorrhizal fungi networks to exchange nutrients and alert neighbouring trees to dangers like insect attacks. Additionally, plants coordinate growth through underground signals. Sunflower roots can detect cues from neighbouring plants and adjust growth accordingly, showing sophisticated coordination.

Root exudates, containing signalling compounds, attract beneficial microbes and repel pests, enhancing plant health and defence. Moreover, root networks enable resource sharing among plant species, optimising resource utilisation in the environment.
These findings highlight the multifunctional role of root networks in plant biology, including communication, growth coordination, resource sharing, and defence against threats. As research progresses, scientists uncover the intricate mechanisms governing plant interactions and ecosystem dynamics below the surface.

Cracking the Code: Plant Communication for Conservation and Medicine

Understanding plant communication is crucial for conservation and medicine. By decoding how plants interact, we can better preserve biodiversity and protect endangered species. Plants use visual and olfactory cues to attract pollinators, aiding in reproduction and species propagation. Conservationists can leverage this knowledge to create pollinator-friendly landscapes and enhance restoration efforts.

Moreover, plant communication offers insights into addressing climate change impacts by predicting imbalances in plant-pollinator dynamics. In medicine, plant chemicals like salicylic acid, found in aspirin, and compounds such as curcumin and quercetin, offer therapeutic benefits like anti-inflammatory and anticancer effects. Unlocking the secrets of plant communication holds promise for revolutionising both conservation and medicine, offering innovative approaches to protect biodiversity and improve human health.

The Significance of Plant Communication

Plant communication plays a pivotal role in ecological harmony, facilitating mutual growth, nutrient exchange, and pest signalling among interconnected plants. It also aids in stress response, helping plants adapt to environmental changes. Beyond ecology, it fosters symbiotic relationships, enhances agricultural benefits, and offers potential medicinal properties, underscoring its broad significance in ecological balance, stress resilience, agricultural optimization, and human health.

Conclusion

Plant communication complexity depends on factors like VOC type, concentration, and combination, as well as distance and direction of the source, and genetic and environmental background of receiving plants. This discovery underscores the intelligence and sophistication of plant life, challenging the notion of plants as passive entities. It urges us to protect and conserve plant diversity, highlighting the interconnectedness of all living beings. In essence, delving into the intricacies of plant communication reveals a profound appreciation for the interconnectedness of life on Earth. By unravelling the mysteries of plant communication and defence mechanisms, researchers pave the way for innovative strategies in agriculture and ecosystem management, offering insights into how to better protect crops and foster sustainable ecosystems.

Recent trends in Cancer Treatment

By Shubham Khurana, 3rd Year, B.Sc. (P) Life Sciences

Introduction

One of the most important and crucial subjects of clinical difficulties has long been thought to be cancer treatment. Various methods have been developed based on the kind and stage of the tumour. Gene therapy holds the potential to transform various forms of cancer treatment. Recent advances in genetic research and bioinformatics have made it feasible to discover, diagnose, and establish a viable course of treatment utilising gene delivery technology. Numerous methods for cancer therapy have been developed and tested in vitro and in vivo, including as cell-mediated gene therapy, CRISPR/Cas9-based therapy, targeting micro RNAs, oncolytic virotherapy, suicide gene-based therapy, and bare nucleic acid-based therapy. Some of the techniques have been discussed below.

Targeting telomerase for cancer therapy

Reactivating telomerase is essential for tumours to preserve telomeres and allow for replicative immortality. Continued telomere attrition in the absence of telomere maintenance leads to replicative senescence, which prevents neoplastic cells from growing indefinitely. The discovery of this essential dependency has fuelled the development of tactics aimed at telomerase-expressing cells for cancer therapy and supports the therapeutic utility of targeting telomerase. While oligonucleotide inhibitors of telomerase (e.g., imetelstat) and vaccines (e.g., GV1001) have progressed to early-stage clinical trials, neither strategy has yet shown clinical efficacy despite their well-founded therapeutic rationale, raising concerns about their failure to translate. In fact, there is still some disagreement over the fundamental molecular foundation of imetelstat.

This is a crucial factor to take into account since it would shed more light on the therapeutic applicability of direct telomerase inhibitors. Clinical trials for solid tumours have not demonstrated a relationship between baseline telomere length or telomere shortening and patient benefit, despite the fact that imetelstat induces telomere shortening in cell culture and xenograft studies, which results in replicative senescence. Before any anticancer benefits are felt, imetelstat and the majority of telomerase-directed strategies depend on cumulative telomere shortening. On the other hand, cancer cell proliferation can be sustained by modest residual telomerase activity, which can lengthen and shield the shortest telomeres. This suggests that in order to completely deplete telomerase activity and continue to apply selective pressure to cancer cells, very strong telomerase inhibitors are needed. As a result, it's possible that the telomerase inhibitors available now aren't strong enough to stop the advancement of human disease. But new developments in human telomerase structural models should make it easier to rationally design telomerase inhibitors that work better and could even be used in clinical settings.

Suicide gene therapy

A therapeutic approach known as "suicide gene therapy" involves introducing transgenes that cause cancer cells to commit suicide. Currently being investigated are two main suicide gene therapy approaches: ganciclovir/herpes simplex virus and cytosine deaminase/5- fluorocytosine. Among the cutting-edge tactics include transgenic expression of DNases and caspases, intracellular antibody expression that blocks essential cell pathways, and suppressing gene expression. The targets, vectors, and processes of cancer cells' suicide-inducing strategies are examined.

These tactics have been thoroughly studied in a range of cancer types, with several delivery pathways including viruses, non-viral vectors, liposomes, nanoparticles, and stem cells being explored. We go over the several phases of integrating suicide gene therapy into clinical oncology and how it's used for various cancer kinds.
In addition, suicide gene therapy is a hot topic as a means of shielding individuals taking part in regenerative medicine clinical trials from getting cancer. These clinical studies in oncology try to repair the organs that patients' pathologic or iatrogenic injuries have harmed using stem cells. The stem cells do, however, have the potential to undergo neoplasmic change. We address techniques that induce cell suicide with the goal of stopping cancerogenesis that originates from stem cells. In suicide gene therapy, one of the main obstacles is the activation of particular pro-drugs. Tumours can be made more sensitive to chemotherapeutic drugs by using this method. Additionally, it was found to inhibit the development of multidrug resistance and, at last, to concurrently activate multiple pro-drugs without causing any extra negative effects.

Cell mediated gene therapy

Effective tumor-selective medicines must be developed due to the poor prognosis for patients with invasive and metastatic tumours and the hazardous side effects of currently existing medications. Based on available findings, it may be possible to create safe and efficient targeted therapies for these tumours by taking use of the stem/progenitor cells' innate tumor-tropic characteristics. Several possible genes and/or gene products have been mentioned. More importantly, though, is that future research aimed at finding novel genes for the therapy of particular tumour types should be prompted by growing safety and efficacy findings for cell mediated delivery.

Tumour types that would react best to cell-mediated gene transfer can be identified with the help of more research to clarify the chemotactic factors and signalling pathways that control the tumor-tropism of stem and progenitor cells. The success of the described approach depends on in vivo human safety and efficacy data such as cell distribution and survival duration with and without conventional chemotherapy; finding "safe" genomic insertion sites for exogenous genes; verifying the minimal immunogenic potential predicted for stem/progenitor cells; and minimising the immunogenicity of non-human gene products.

Additionally, as has been mentioned throughout this commentary, if the best possible therapeutic benefit is to be achieved, it is probably necessary to customise the therapeutic gene, the delivery cell type, and the vector employed to engineer gene expression to certain tumour types. Furthermore,

it is suggest that, at least initially, patients who have achieved evident complete or near-complete remission with conventional therapy but whose prognostic factors suggest that relapse with metastatic disease is highly likely will benefit most from cell mediated approaches to cancer therapy in terms of eliminating minimum residual disease.

CRISPR/Cas9

The scientific community worldwide has paid particular attention to CRISPR/Cas9's precise, straightforward, and targeted genome editing capabilities, particularly in the last five years in the field of cancer biology. The field of molecular biology has advanced with the discovery of Cas9 nuclease, particularly in treating cancer's multifunctional genes. In order to suppress
oncogenes in mouse models in a way that is cost-effective, highly precise, accurate, and time limited without requiring the use of multifunctional mouse colonies, researchers nowadays have been employing CRISPR/Cas9.

Without a doubt, CRISPR/Cas9 has shown to be a ground-breaking technique with amazing outcomes when used to treat cancer cells, but there are still a few issues that need to be resolved immediately. Reducing the off-target effects of Cas9 nuclease is one of the main hurdles in the synthesis of the CRISPR system. One intriguing tool to manage the CRISPR system's off-target behaviours and unfavourable side effects is the Cas9 nuclease. Researchers should look into other physical or chemical substances, such as tetracycline and doxycycline, to control the off target challenge of Cas9. This is a potential strategy to produce the desired expression of Cas9.

Conclusion

Advanced technology such as gene therapy has great therapeutic potential for treating various types of tumours. As evidenced by published studies and clinical trials, new tactics are being developed on a daily basis. We are hopeful that the application of all the methodologies covered in this discussion to cancer gene therapy will usher in a new age for tumours and cancer therapy, expediting the quality of life for patients with tumours, particularly those whose tumours are advanced. Many researchers may find it preferable to target genes for the production of immune cytokines or the immune response against cancer, but this approach is limited to generalised action.

To ensure the long-term safety of both present and future generations, gene editing techniques used in gene therapy will need to become highly specific. Even though gene delivery techniques have advanced significantly and cancer genetics is well understood, it remains difficult to create mechanisms that can repair oncogene activation without disrupting normal genes. CRISPR-Cas9 is one such mechanism that has proven to be successful in this regard. In order to better understand the characteristics of such a potent gene editing strategy and its possible long-term effects, future research in cancer gene therapy should allow engineers, medical professionals, physicists, and even chemists to collaborate and work with biologists and clinicians. This could be a promising technique for treating cancer.

Screening of potential probiotics from curd

By Kasturi Saha, 3rd Year, B.Sc.(P) Life Sciences
Under Dr. Mojibur R. Khan, Institute of Advanced Study in Science and Technology, Guwahati

Fermentation is a process in which the enzymatic action of microorganisms brings about chemical changes in the organic substrate. It is one of the oldest techniques used traditionally to preserve food. Fermented foods are the byproduct of microbial fermentation, reducing the substrate to bioactive enzymes, proteins, and simpler carbohydrates.

The term 'probiotic' is derived from the Greek phrase, 'pro-bios' meaning 'for life'. According to the World Health Organization (WHO), 'probiotics' is defined as 'live microorganisms which when administered in adequate amounts confer a health benefit on the host'. Probiotics are primarily viable bacteria benefitting the host's health through colonization in the gut. The human gut is inhabited by trillions of microbial cells ~1014 cells. The gut lining serves as the primary facet for the adhesion of microorganisms. Members of the phylum Firmicutes dominate the gut microbiota, closely followed by Bacteroidetes. The other phylum, such as Proteobacteria, Actinobacteria, Fusobacteria, Spirochaetes, Verrucomicrobia, and Lentisphaerae have also been reported to be a part of gut microbiota. However, the ratio of Firmicutes and Bacteroidetes is crucial for maintaining overall gut health and the alteration of Firmicutes : Bacteroidetes is known to be associated with dysbiosis. It has been reported that the ratio of Firmicutes and Bacteroidetes ranges from 0.4 in infants to 10.9 in adults. In addition, previous reports suggest that dysbiosis precedes the development of gut-associated disorders such as inflammatory bowel disease (IBD), metabolic syndrome, autoimmune disorders, neurodegenerative disease, and obesity. Microbiota dysbiosis serves as evidence of the fact that cellular and metabolic changes are a consequence of the crosstalk between the host and the microorganisms. In the recent decade, the effects of probiotics on host health have gained significant recognition worldwide. Studies have shown that probiotics such as *Lactobacillus acidophilus* for the prevention of colorectal cancer, *Bifidobacterium* for the treatment of *Helicobacter pylori* infections, *Lactobacillus rhamnosus* GG for the treatment of acute diarrhoea in children and *Bifidobacterium longum* for the treatment of IBD.

Moreover, probiotics such as *Lactobacillus rhamnosus* GG act as natural immunomodulators, preventing the occurrence of atopic eczema in children, improving conditions of people with perennial rhinitis and reducing obesity in humans.

Reports from other studies indicate that probiotic administration reduces obesity, improves insulin sensitivity, and discreetly induces alteration of gut microbiota to a healthier composition regulating health and diseases. Probiotics, thus, directly or indirectly impact the colonization of the gut microbiota.
Given the diversity and importance of probiotics, there has always been a need for an international consensus to examine the safety and efficacy of these microorganisms. For microbes to be named "probiotics" within India, the Indian Council of Medical Research (ICMR) and the Department of Biotechnology (DBT) have set guidelines to evaluate and regulate them systematically. The guidelines for potential probiotics include identifying the microbes on strain level, followed by in vitro tests such as resistance to gastric acidity, bile salt tolerance, antibiotic susceptibility, antimicrobial activity against pathogenic bacteria, and safety and efficacy studies in in-vivo models. With the emerging concept of live bio-therapeutic products, probiotics possess the potential for future novel therapeutics. As fermented foods are good sources of probiotics, exploring potential next-generation probiotics that can mechanistically improve host health is vital. Therefore, following the ICMR and DBT guidelines, we have screened for the probiotic potential of nine bacterial strains isolated from fermented milk samples; curd from Assam.

Lactic acid bacteria form the largest group of probiotics, which has the ability to digest lactose and produce lactic acid. It is known that acid production can kill and displace some pathogens from surfaces, thus proving to be beneficial. 9 isolates were grown MRS agar plates containing 1% $CaCO_3$. The bacteria which produced acid, reacted with the $CaCO_3$ which acts as a base, neutralizing and dissolving it to form a clear zone. 7 bacteria showed clear zone formation around them, indicating acid production.

Gram staining, a fundamental technique in microbiology, is widely used to distinguish between two types of bacteria, Gram-positive and Gram-negative bacteria. Gram-positive bacteria stain purple while Gram-negative bacteria stain pink. The difference in the response to Gram staining is due to the difference in the cell wall structure of the two types of bacteria. Gram-positive bacteria have thick layer of peptidoglycan ≈ 30-100 nm, while Gram-negative bacteria have a very thin layer, measuring only up to a few nanometres. The outer membrane
of the Gram-negative bacteria contains lipopolysaccharides, an amphipathic molecule involved in the interaction of the cell with the environment. Exposing cells to elevated amounts of lipopolysaccharides has been found to be toxic, sometimes leading to inflammation. In the presence of gut lesions, if these molecules reach the bloodstream, they can cause septic shock. Therefore, bacteria which are Gram-positive are preferable as probiotics.

Out of the 7 bacterial isolates on which Gram staining was done, 6 were Gram-positive while 1 was Gram-negative and did not hold the crystal violet colour. The Gram-positive isolates were, thus, screened further according to the ICMR guidelines.

A probiotic should be able to survive under gastrointestinal conditions to exhibit its beneficiary effects. Stomach has a pH of 1.5-3.0 due to the presence of HCl and contains the enzyme pepsin. Pancreas produces pancreatic juice such as pancreatin which contains digestive enzymes that ultimately reach the intestine. As well as in the intestine, bile secreted by liver pose as stress to the microorganisms. A prerequisite quality for the microbes to act as probiotics is that they should tolerate gastrointestinal stresses after ingestion. Out of the 6 isolates that were screened for survivability in pepsin (3mg/mL), pancreatin (1mg/mL) and oxgall (2%), the bacterial stain A10 showed survivability to all the three conditions. The other 5 isolates showed tolerance only to pancreatin and oxgall, but did not survive in acidic pepsin.

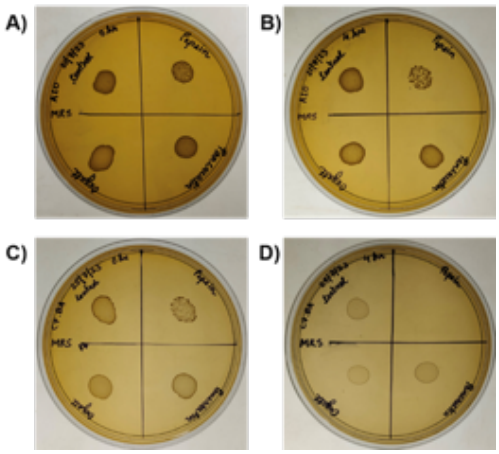


Figure 1: Survivability to gastrointestinal condition: A and B denote survivability of A10 in all conditions whereas C and D denote non-survivability of C7.BA isolate in pepsin

Further, antibiotic can inhibit the growth or kill bacteria in the gut. Antibiotic susceptibility of probiotics is an important property to conserve the effectiveness of antibiotics while inhibiting pathogenic bacteria. If the probiotic is antibiotic resistant, it poses the risk of horizontal gene transfer of the antibiotic resistant gene to pathogenic bacteria. In this assay, the isolate A10 was sensitive to all the antibiotics tested, namely, streptomycin, sulphatriad, tetracycline, ampicillin, chloramphenicol and penicillin-G. Clear zones were observed around each of the antibiotics, eliminating the possibility of antibiotic resistance in A10.

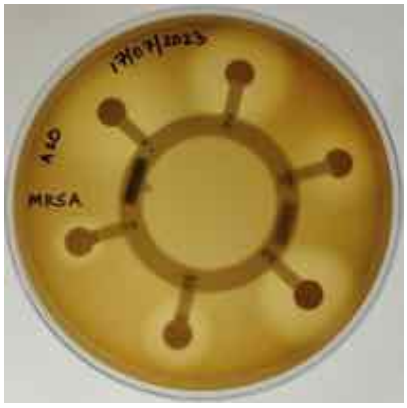


Figure 2: Clear zone formation around antibiotics by A10

Probiotics produce compounds which may be anti-microbial, thus inhibiting the growth of some pathogenic and non-pathogenic microorganisms. Some of the inhibitory compounds produced by Lactobacillus strains include lactocidin, acidolin, acidophilin and lactacium-B. These compounds along with competition by probiotics for nutrition and adherence sites are responsible for inhibiting the growth and multiplication of pathogens in the gut. Therefore, in this study, inhibition by A10 was tested against Gram-positive bacterium, *S. aureus* and Gram-negative bacterium, *E. coli* K12. A10 showed antagonistic effects against both the pathogens exhibiting inhibition zone of 21 mm against *E. coli* K 12 and 13 mm against *S. aureus*.

In addition, adhesion properties are largely influenced by the hydrophobicity of the microbial cells, and thus measure hydrophobicity is considered a pre-test for adherence. It gives a measure of the intestinal colonization, represented by the adhesion and persistence once bacteria has entered the intestinal cavity. Adhesion is essential for the probiotic to colonize, show antagonistic activity against pathogens, and enhance immune system. Higher colonization has been observed with higher hydrophobicity. In this study, hexadecane, a 16-carbon hydrocarbon was used to measure hydrophobicity of A10 isolate and found to be 14.54%.

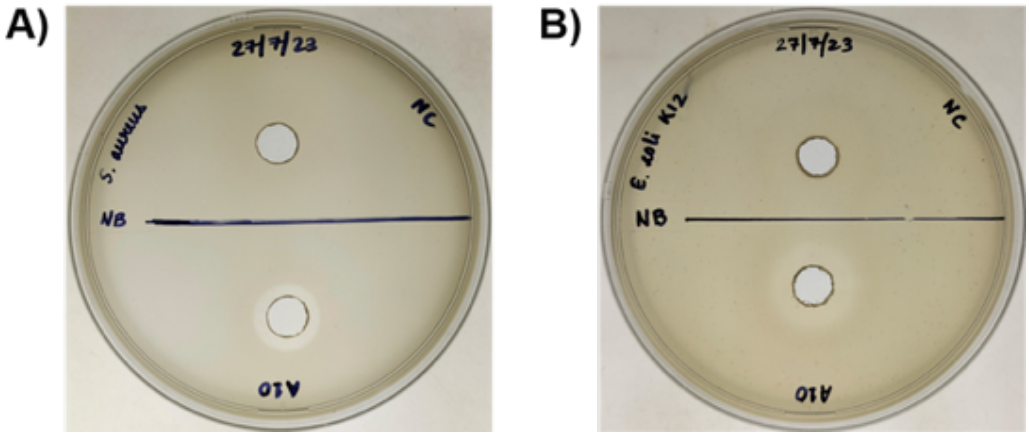


Figure 3: Inhibition zone formation by A10 against: A) *S. aureus*, B) *E. coli* K12

Auto-aggregation occurs between genetically identical cells and leads to the formation of a community structure serving various functions. Through the phenomenon, bacteria clump together and settle at the bottom of the culture tubes. It is mediated by the class of compounds called as autoagglutinins. Due to the settlement of clumped or aggregated bacteria, the optical density reduces, increasing the auto-aggregation percentage. The auto-aggregation of A10 was calculated to be 41.97%.
Further in-vitro and in-vivo studies can be conducted with the strain that passes the preliminary screening tests. In-vitro tests include biochemical assays such as NaCl tolerance and glucose fermentation as well as adhesion studies using cell culture methods. In-vivo studies can be done using *Caenorhabditis elegans*, *Drosophila melanogaster*, zebrafish, and mice/rats as model organisms. The safety and efficacy of potential probiotics can be checked accordingly. These can be followed by studies in humans to confirm the efficacy as a probiotic.

Now Cows Will Produce Human Insulin

By Taniya Pokhriyal, 3rd Year, B.Sc. (P) Life Sciences

“Mother Nature designed the mammary gland as a factory to make protein really, really efficiently. We can take advantage of that system to produce a protein that can help hundreds of millions of people worldwide,” said Matt Wheeler.

Matt Wheeler, professor at the Department of Animal Sciences, University of Illinois, led a research project with his colleagues. They used recombinant DNA technology and made a transgenic calf in Brazil. This insulin-producing calf was developed by introducing the gene encoding the precursor of insulin i.e. proinsulin, into the nuclei of 10 cow embryos. These were later implanted in the uterus of each of the normal cows and one of the transfected embryos developed into the transgenic calf. After reaching maturity, the transgenic cow was stimulated with lactating hormones.
“Our goal was to make proinsulin, purify it out to insulin, and go from there. But the cow basically processed it herself. She makes about three to one biologically active insulin to proinsulin,” Wheeler said.

It still requires additional testing and FDA approval. As the lactation was induced artificially the milk production was low and the team can’t say exactly how much insulin was made. The insulin and proinsulin need to be purified consequently for further use.
The study is published in the journal, Biotechnology and the research is supported by National Council for Scientific and Technological Development

Have you ever wondered why oceans glow at night?

By Anushka Saraswat, 2nd Year, B.Sc (P) Life Sciences

Bioluminescence is the biochemical emission of light by living organisms. It is a form of chemiluminescence that occurs in living organisms. Bioluminescence occurs widely in marine vertebrates and invertebrates, including some fungi, bacteria (specifically bioluminescent bacteria), and terrestrial organisms (such as fireflies). In some animals, the light is bacterial and produced by symbiotic bacteria (e.g. those of the genus *Vibrio*), while in others the light is autogenic and produced by the animal itself. An interesting example of an organism that exhibits bioluminescence is *Noctiluca scintillans*.

The name *Noctiluca scintillans* comes from the Latin words, *Noctiluca*, meaning 'light at night' and scintillans, meaning 'shining, throwing out flashes of light.' It is a sea organism that belongs to the phylum Dinoflagellata that can exist in either green or red form. It is found all over the world but its geographical location depends on its colour. This solitary organism is known for its bioluminescent ability, making the water glow at night. However, the large flowers of these algae serve as the potential cause for environmental hazards such as red water leakage. These may also be signs of anthropogenic eutrophication.

Noctiluca is a single-celled, spherical organism with a length ranging from 400 to 1500 microns. It lacks the ability of locomotion and swimming, and floats with the ocean current. Due to its translucent appearance, it is easily observable. A long cytoplasmic extension present at the bottom of a deep groove is flanked by a prominent nucleus.
Noctiluca scintillans' glow is a mysterious phenomenon to sailors and coastal residents, which they locally refer to as 'sea fire' or 'sea glow.' It is a biological process in which a simultaneous chemical reaction along with the emission of light occurs. Bioluminescence differs from fluorescence and phosphorescence because of the fact that the latter are physical processes instead of a chemical reaction.These algae produce luminescent flashes under the condition of mechanical stress.Therefore, this phenomenon can be seen whenever turbulence arises in the water bodies.

The organism is composed of the protein luciferin, which on reaction with luciferase (also present in the organism) causes luminescence. This reaction was discovered by Lyon physiologist Raphael Dubois in the late 19th century. Luciferin, together with luciferase combines with oxygen and forms an oxidative complex. Luciferin then emits photons. The reaction itself is complex and requires two additional cofactors, ATP and magnesium ion. Different types of luciferin exist in nature, each of which interacts with a specific luciferase enzyme.

In the case of *Noctiluca*, the reaction. called scintillation, occurs in scintillons, which are small organelles present in the cytoplasm. These dense cysts exhibit their activity at night and form vacuoles. Light produced is due to the mechanical excitation of shear stress. Deformation of the cell membrane causes an action potential across the tonoplast caused by Ca2+ ions released from intracellular sites. This lowers the pH from 8 to 6 due to large flow of protons from the cavity into the scintillator. This changes the structure of luciferase and activates it. Luciferin has a chain that prevents its automatic oxidation at alkaline pH. This activity then allows the enzyme to oxidize luciferin to oxyluciferin. However, the process that goes on behind the release of photons is currently undiscovered. This opens up the horizon to delve into these glowing seas and oceans to explore and study the bioluminescence of *Noctiluca*.

Neuroeconomics – The Circuit of Neurons Rounding Off Economics!

By Gautam Joshi, 3rd Year, B.A. (P) Economics + History

The decade old rift between science and humanities as streams parallel to each other has made the domains seemingly appear as black and white, but is there a grey within?
Grey, as a word, might have various meanings owing to its subjectivity to different fields. As students of sciences, grey would seem familiar to the neuron bodies which make up the grey matter and to us, economics students, grey is synonymous to the grey or the shaded region under our utility curve.

As humans, we make new decisions with every passing minute, which vary in intensities and consequences, but each of them is taken by our brain, and the neurons, hold the fundamental power in each of those.

You might be wondering, whether there's any relationship between neuroscience and economics or is it simply a complex word, cited to gauge attention. Well, neurons in our brain are the reason we can make decisions, and these decisions and choices between objects to maximise utility form the basis of economics. Utility, well, in simple terms, is the amount of satisfaction you get out of the consumption or usage of something, and satisfaction is an emotion which is further processed by the brain, proving that the input and output to economics lies in the network of neurons. So, the connection between the two is not only theoretical but practical, and hence well researched and worked upon.

What happens to neurons and how do they link up when a decision is to be taken? How are inhibitory and excitatory neurons linked and how is a decision stabilized? These are some of the questions lying within the scientific scope of this subject and thereby relating this to the economic decisions, tend to maximise our material gains, ensuring the best utilisation of given resources.

A self-explanatory work for a layman to get an overview of this domain is the Ultimatum Game, which blends gains, neurons as well as emotions. With a proposer who has a sum of money and divides it amongst himself and his opponent, and a responder who is there to accept or reject the portion of money the proposer is willing to share, the Ultimatum Game, is a game of strategy to maximise gains. While doing so, the fear of getting rejected is kept in mind, as rejection of the offer implies loss of the gains to both the participants. So, how does the split occur?

A generic assumption would be that, the proposer might be unfair, offering around 10-20% of the money. But studies have found that the proposer offers a relatively fair deal of about 40-50%. How do the decisions relate to the functioning of the brain, and cause the acceptance or rejection of the deal?

When the responder thinks that they are treated unfairly, it excites negative emotions. There is activation of cognitive or emotional modulation, controlled by the dorsal part of our cortex. This further inhibits the neural signals from the other parts of the brain responsible for taking a positive decision. The only consequence, then, is the rejection of the proposed offer, making both the participants lose money. n simple terms, this subject deals with the relationship and activity of the neural circuit, and the strategy we will be choosing, when a choice is offered. As one neuron inhibits or excites the other neuron, it translates into game theory, where one strategy affects other strategies and stimulates or hinders the ideal decision.

Neuroeconomics can help disentangle complex neural interrelationships with which our brain is endowed and thus compute the socio-economic outcomes in various fields. This also criticises the classical economic assumption that decisions are unitary. Clearly, they are a multifaceted experience, involving a myriad of activities beginning from the simplest neurons to the complex brain, to maximise our utility, which can be equalled to contentment. With a bridge between science and economics, this nascent field is still far-fetched and untouched, and holds a bunch of research opportunities for us to tap and explore.

Revolutionizing Cancer Treatment – The Rise of Gene Therapy

By Rajat Gupta, 1st Year, B.Sc. (P) Life Sciences

Introduction

In 2022, the global burden of cancer was starkly highlighted with an estimated 20 million new cases and 9.7 million deaths. This number is projected to rise to 35 million new cases by 2050, reflecting a 77% increase. While traditional cancer treatments such as surgery, chemotherapy, and radiotherapy have been the cornerstone of cancer therapy, their limitations necessitate novel approaches. Among the promising innovations, gene therapy stands out, offering targeted, effective, and potentially curative solutions.

Understanding Gene Therapy

The European Medicines Agency (EMA) defines gene therapy as a therapeutic approach involving nucleic acids used to regulate, repair, replace, insert, or delete genetic sequences. The therapeutic, prophylactic, or diagnostic effects are directly related to the recombinant nucleic acid sequence it contains or the product of genetic expression of this sequence. Unlike vaccines against infectious diseases, gene therapy addresses the underlying genetic causes of diseases, including cancer.

Traditional Cancer Treatments: Limitations and Challenges

Traditional cancer treatments include surgery, chemotherapy, and radiotherapy. Surgical removal of tumors is effective but often incomplete. Chemotherapy uses cytotoxic drugs targeting proliferating cancer cells but lacks selectivity, harming normal cells and causing significant side effects. Radiotherapy, discovered following the identification of X-rays in 1896, uses radiation doses to target tumors but can also damage surrounding healthy tissue. These treatments, while effective for many cancers, often fall short in treating aggressive cancers like *glioblastoma multiforme* (GBM).

Why Gene Therapy?

Gene therapy offers a paradigm shift in cancer treatment by targeting the genetic mutations that drive cancer. Traditional therapies often fail due to issues like non-specific distribution, poor bioavailability, rapid blood clearance, and low solubility in body fluids. Gene therapy aims to selectively neutralize tumor cells while sparing healthy cells, thus reducing side effects and increasing treatment efficacy.

The first clinical trial of gene therapy was approved in 1990 for adenosine deaminase-severe combined immunodeficiency (ADA-SCID). This landmark trial paved the way for the application of gene therapy in various diseases, including cancer. Advances in bioinformatics and high-throughput genomic approaches have enabled the identification of specific genetic mutations, making targeted gene therapy feasible and effective.

Mechanisms and Approaches of Gene Therapy

Gene therapy involves transferring DNA to an individual to manipulate a defective gene and mitigate disease. The process involves three basic steps: identifying the missing gene, inserting the gene of interest into a vector, and allowing the vector to infect the patient, thus transferring the gene to the patient's cells.

Gene therapy can be classified into somatic and germline therapies. Somatic gene therapy involves transferring the gene of interest into non-reproducing cells of the body, either in vivo or ex vivo. Germline therapy targets DNA in cells directly involved in gametogenesis, potentially affecting future generations.

Delivery systems for gene therapy include viral vectors (adenoviruses, lentiviruses, retroviruses, herpes simplex virus) and non-viral vectors (physical methods like microinjections, chemical methods using liposomes and polymers, and biological vectors like bacteria). While viral vectors are highly efficient, they pose risks like immunogenicity, toxicity, and high costs. Non-viral vectors, though safer, often suffer from lower transfection efficiency and poor gene expression.

The Promise of CRISPR-Cas9

Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) technology has revolutionized gene therapy. CRISPR-Cas9 allows precise editing of genomic sequences, enabling the correction of genetic mutations causing cancer. Compared to alternatives like Zinc Finger Nucleases (ZFNs) and Transcription Activator-Like Effector Nucleases (TALENs), CRISPR is more flexible, efficient, and accurate.

CRISPR-Cas9 works by introducing double-strand breaks in the DNA at specific locations, guided by RNA sequences. These breaks can be repaired through Non-Homologous End Joining (NHEJ) or Homology-Directed Repair (HDR), allowing for targeted gene disruption or precise gene correction. This technology has been employed in various cancer therapeutic strategies, including genome editing, immunotherapy, anticancer drug development, oncolytic virotherapy, and combating carcinogenic viruses.

Clinical Applications and Future Directions

The application of CRISPR-Cas9 in cancer therapy has shown promising results in clinical trials. For instance, a Phase 1 clinical trial involved engineering T lymphocytes to disrupt three genes (TRBC, TRAC1, PDCD) to enhance their anti-tumor properties. These genetically modified T cells persisted for nine months, demonstrating safety and feasibility. Other studies have shown that CRISPR-mediated gene knockout can induce apoptosis in cancer cells and reduce tumor growth.

Gene therapy is also being explored to combat carcinogenic viruses such as HPV, HBV, and EBV, which are implicated in cancers like cervical cancer, liver cancer, and nasopharyngeal carcinoma. CRISPR-Cas9 has been used to target viral genes, significantly reducing viral replication and cancer cell proliferation.

CAR-T Cell Therapy

Chimeric Antigen Receptor T-cell (CAR-T) therapy is another promising application of gene therapy. It involves engineering T cells to express receptors targeting specific tumor antigens. These approaches has shown remarkable success in treating hematologic malignancies like B-cell acute lymphoblastic leukemia (ALL) and diffuse large B-cell lymphoma (DLBCL). The process includes patient selection, leukapheresis, CAR-T cell manufacturing, lymphodepletion, CAR-T cell infusion, monitoring, and management of side effects.

Future research aims to expand CAR-T therapy to target additional tumor antigens, enhance CAR-T cell functionality, overcome immunosuppression in the tumor microenvironment, reduce toxicity and side effects, and develop allogeneic CAR-T cells derived from healthy donors. These advancements could make CAR-T therapy more effective, accessible, and affordable

Conclusion

Gene therapy represents a transformative approach in cancer treatment, offering targeted and potentially curative solutions. Advances in technologies like CRISPR-Cas9 and CAR-T cell therapy have opened new avenues for treating even the most aggressive cancers. As research continues to evolve, gene therapy holds the promise of revolutionizing cancer treatment, providing hope for millions of patients worldwide.

1000 Genome Project – Defining Genetic Variation

By Shivam Raj, 1st Year, B.Sc (P) Life Sciences

Introduction

The 1000 Genomes Project, launched in 2008, was a collaborative international effort with the primary goal of sequencing the genomes of a diverse set of individuals worldwide. This ambitious initiative aimed to create a comprehensive catalogue of genetic variations occurring at a frequency of at least 1% across all human populations.

Decoding genomic complexity

The project specifically targeted identifying more than 95 percent of variations known as single nucleotide polymorphisms (SNPs), variations in individual DNA bases (adenine [A], guanine [G], thymine [T], or cytosine [C]), occurring at a rate of one in every 100–300 nucleotides in the human genome. Additionally, it aimed to identify larger variants known as indels, involving insertions or deletions of DNA segments of varying sizes throughout the genome. These variations were considered crucial for understanding human health, disease, ancestry, and evolution.

Bridging genomic insights

The 1000 Genomes Project, initiated in 2008, expanded on data from the International HapMap Project. This project aimed to create a haplotype map of the human genome,

facilitating the identification of genetic variants linked to diseases. Haplotypes, sets of alleles located closely on a chromosome and inherited together, were a key focus. Involving scientists worldwide, this collaborative effort contributed significantly to genomic research.

Key points of this project

Goals: Create a comprehensive catalog of human genetic variation to improve understanding of genetics and disease.
Scope: Sequenced genomes of over 2,500 people from diverse populations.
Data: Identified common and rare genetic variations, and provided insights into genetic diversity and disease biology.
Legacy: Publicly available data used extensively in medical research.

Unveiling genomic frontiers

The 1000 Genomes Project comprised two main phases: a pilot phase completed in 2010 and a full-scale genome study phase scheduled for completion in 2012. The pilot phase involved three projects, each focusing on different high-throughput, genome-wide sequencing strategies. Two of these projects utilized newly developed deep-coverage sequencing technologies, reading DNA segments multiple times for accuracy. One project involved sequencing trios (two parents and one offspring) to provide a gold standard, while another focused on sequencing exomes (protein-coding gene regions) of 697 individuals. The third project utilized low-coverage sequencing of the genomes of 179 individuals from various regions.

Unlocking genomic riches

The full-scale study phase included the analysis of samples from 2,500 individuals representing diverse global populations. This phase employed a combination of low-coverage whole-genome sequencing, deep-coverage exome sequencing, and array-based SNP genotyping. The resulting data, which encompassed a wealth of genomic information, was made publicly accessible through various platforms, including the project's website and Amazon Web Services.

Stages of the PROJECT

Data Collection

Sample Selection: The project recruited participants from 26 populations across the globe, aiming to capture a broad spectrum of human genetic diversity.

DNA Acquisition: Blood samples were collected from consented participants.
High-Throughput Sequencing: Cutting-edge DNA sequencing technologies were used to generate vast amounts of data, capturing the complete DNA sequence (whole genome sequencing) for a subset of participants and the exome (protein-coding regions) for a larger group.

Data Processing

Quality Control: Raw sequencing data can contain errors. The project employed rigorous quality checks to identify and remove these errors before further analysis.
Alignment: Sequencing reads needed to be aligned to a reference human genome sequence. This process involves precisely matching each sequenced fragment to its corresponding location on the reference genome.
Variant Calling: After alignment, the project identified and characterized genetic variations (SNPs, insertions/deletions) present in each individual's genome compared to the reference.

Data Curation

Standardization: Data from different sequencing centres needed to be standardized to ensure consistency and facilitate combined analysis across the entire dataset.
Annotation: The identified variants were annotated with additional information like their potential functional impact on genes or proteins. Genotype Calling: Researchers determined the specific alleles (versions of a gene) present at each variant site for each individual.
Quality Control (continued): Data curation involved further quality checks to identify and remove potential errors or inconsistencies in the processed data.

Data Release

The 1000 Genomes Project made a strong commitment to open access. All the high-quality processed data was publicly released, allowing researchers worldwide to access and utilize this valuable resource for their studies.

Key Contributions

The 1000 Genomes Project has revolutionized genetics research by,

- Facilitating GWAS: Providing crucial reference data for identifying genetic links to diseases or traits.
- Enhancing Imputation: Enabling prediction of missing genotypes, boosting genetic association studies.

- Pinpointing Disease Genes: Cataloging common genetic variations to identify disease-causing genes.
- Unraveling Human Evolution: Offering insights into human history and adaptation through genetic variations.
- Pioneering Personalized Medicine: Potential for predicting disease susceptibility and medication response based on genetic makeup.
- Overall, it's been instrumental in advancing human genetics and shaping future medical discoveries.

Genomic pioneering: the far-reaching impact

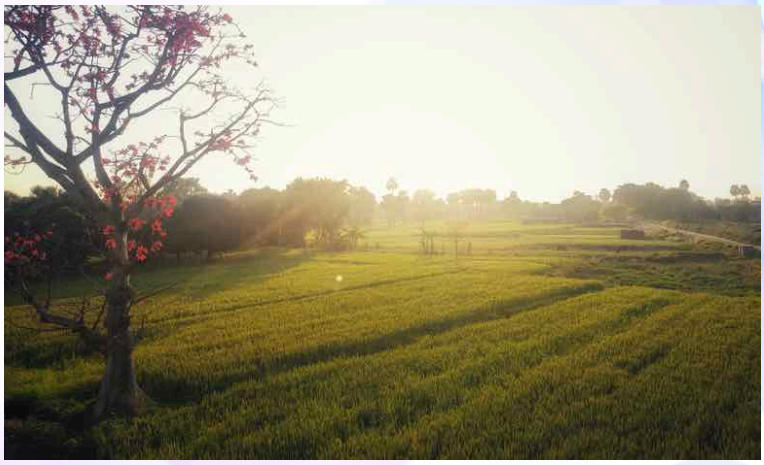
The significance of the 1000 Genomes Project lies in its contribution to various scientific fields, such as medicine, human genetics, and human evolution. It played a crucial role in advancing genetic research by providing a detailed map of not only common variants but also rare variants within specific genomic regions associated with diseases. Despite its initial estimated cost of $500 million, the project leveraged newly developed and efficient sequencing methods and later estimates placed costs between $30 million and $120 million, addressing challenges and setting the stage for further advancements in genomic research.

Continuation and evolution

The 1000 Genomes Project concluded data generation in 2013. Yet, ongoing support from the consortium and Wellcome Trust led to the creation of the International Genome Sample Resource (IGSR). Recently, IGSR completed remapping all sequencing reads to GRCh38 and plans to release variant calls. While details post-2017 are scarce on the official website, updates may be found in the news and publications sections

CAMERA SPEAKS!

Nature's Colour Palette



@ Ankit Kumar, 2nd Year , B.Sc Life Sciences

CAMERA SPEAKS!

MONOCHROME

@ Ankit Kumar, 2nd Year , B.Sc Life Sciences

CAMERA SPEAKS!

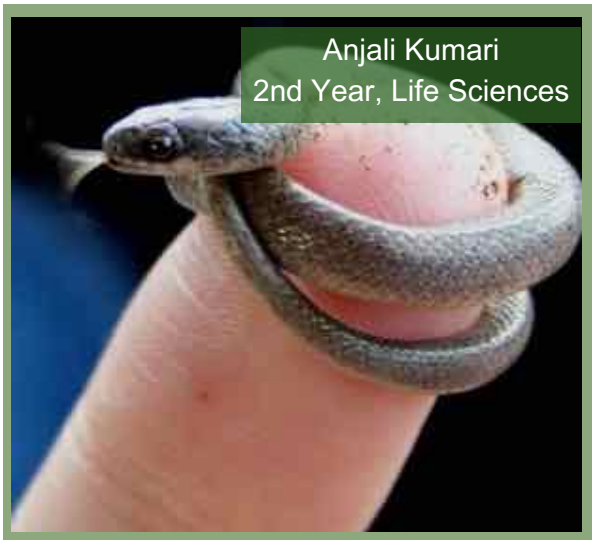
FAUNAS MAGIC

@ Prince, 1st Year , B.Sc Life Sciences

DO YOU KNOW?

World's smallest poisonous frog is less than a centimeter long and its skin is 200 times more toxic than Morphine

In a few decades, we may experience some terrible things. Because according to experts, artificial intelligence will be able to achieve the ability to do about 40% of human tasks equally.

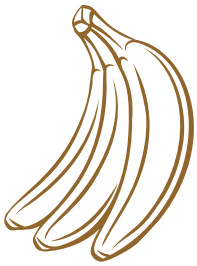


The world's smallest known snake, Barbados threadsnake (*Leptotyphlops carlae*) reaches a maximum height of just about 10.4 cm (4.1 inches) long. They are non-poisonous, weighing around 0.6 grams and prefer in live in burrows.

Pigeon's nurse their young ones with crop milk, a curd like substance produced in their digestive tract which helps them grow faster. Although, curd milk is not same as the mammalian milk, its production is also regulated by prolactin hormone.

DO YOU KNOW?

Bananas are radioactive. Due to being rich in potassium, every banana is actually slightly radioactive thanks to containing the natural isotope potassium-40. Interestingly, your body contains around 16mg of potassium-40, meaning you're around 280 times more radioactive than a banana already. Any excess potassium-40 you gain from a banana is excreted out within a few hours.



Vansh Jain, 2nd Year, Life Sciences

Mother Koala Bear feeds her own faecal matter to their young ones. Doing so, they introduce bacteria into the body of their joeys that are essential to digest eucalyptus leaves. Adult Koalas feed on Eucalyptus leaves, which are low in protein content and contains toxins that are poisonous to the young Koalas.

Anjali Kumari, 2nd Year, Life Sciences

The term 'Ruminate' means to deeply think about something again and again. It also refers to chewing the cud, the process of rumination which occurs in Cowsin which they digest the food to some extent in their rumen and again un- swallow it to chew it some more. So, the term is used to represent the metaphorical process of chewing on an idea.

Anjali Kumari, 2nd Year, Life Sciences

Animals can experience time differently from humans. To smaller animals, the world around them moves more slowly compared to humans. Salamanders and lizards, for example, experience time more slowly than cats and dogs. This is because the perception of time depends on how quickly the brain can process incoming information.

Vansh Jain, 2nd Year, Life Sciences

RIDDLES: CHALLENGE YOUR MIND

By Bhinderjeet Sharma, 1st Year, B.Sc. (P) Life Sciences

QUESTION

✷

When I break, you inhale me.
You can't imagine life, anywhere without me.
Who am I?

✷

1

QUESTION

✷

I always work for you even when you are asleep. Poets include me in their poetry, whenever they write something deep. Who am I?

✷

2

QUESTION

✷

I become half of initial in particular time period & I often do glow. I'm not a single person but several members in a row.
Who are we?

✷

3

QUESTION

✷

Most advanced in my kingdom.
Often Used as symbol of many emotions by you.

✷

4

QUESTION

✷

Bonding with no love but a small positive and big negative as partners make me strong!

✷

5

QUESTION

✷

Sparkly shiny marbles, shinier than Sun
For gazing our world, you need at least one.

✷

6

1-H2O(WATER) 2-HEART 3-RADIOACTIVE ELEMENTS 4-FLOWERS(ANGIOSPERM) 5-COVALENT BOND 6-EYES

ACADEMIC ACHIEVERS

Ifrah Sadaf

Gold Medalist

B.Sc. (P) Life Sciences, University of Delhi

2020-2023

ACADEMIC ACHIEVERS

Lavanya

Cuet pg (psychology):
Marks- 249/300

Sahil

Cuet PG Botany: Marks- 203
Cuet PG Life Sciences:
Marks- 212

Shubham Khurana

IIT JAM Biotechnology:
Rank- 440, Marks- 59.67
Cuet PG Life Sciences:
Marks- 183

Abhinav Borgohain

Cuet PG Life Sciences:
Marks-166
Cuet PG Microbiology:
Marks- 175

Kasturi Saha

IELTS, 8.5
Universities accepted into:
Imperial College London
University College London
University of Bristol

Sareena Hayat

IIT JAM Biotechnology:
Ranks- 679, Marks- 56
Cuet PG Microbiology:
Marks- 179
Cuet PG Biochemistry:
Marks- 166

Mishthi Khurana

GATE XL: AIR 7
GATE BT: AIR 236
IIT JAM Biotechnology:
Rank- 23, Marks- 77.33
Cuet PG Life Sciences:
Marks- 203
Cuet PG Microbiology:
Marks- 252

Bhumika

IIT JAM Chemistry:
Rank- 775, Marks- 44.67

ACADEMIC ACHIEVERS

Anika

CAT - 92.27 percentile
MDI Gurgaon

Ishita Chadha

Universities accepted into:
Imperial College London
University of Manchester
Kings College London
Queen Mary University of London

Pranjal

Cuet PG Life Sciences
Marks- 178/300

Taniya Pokhriyal

IIT JAM Biotechnology:
Rank- 218

Shambhavi Tripathi

Cleared CDS 2024

Ritika sharma

IIT JAM Biotechnology:
Rank- 732, Marks- 55.33

Annex Anna Appootty

Cleared ASPIER entrance exam
ASPIER, affiliated under
Mysore University, Mysore

ACADEMIC ACHIEVERS

First Position in Hansraj College in Life Sciences

Nishka
IInd Year

Ravneet
Ist Year

Anjali Kumari
Ist Year

Shruti Gupta
Ist Year

ACADEMIC ACHIEVERS

Second Position in Hansraj College in Life Sciences

Kasturi Saha
IInd Year

Vanshika Gupta
Ist Year

Laghima Singh
Ist Year

ACADEMIC ACHIEVERS

Third Position in Hansraj College in Life Sciences

Mishthi Khurana

IInd Year

Anushka Saraswat

Ist Year

Vansh Jain

Ist Year

ACADEMIC ACHIEVERS

Students who secured SGPA 9 and above in B.Sc. (P) Life Sciences, Hansraj College

Semester-V	
Name	**SGPA**
Kasturi Saha	9.18
Ishita Chadha	9
Lehar Grover	9
Semester-III	
Anjali Kumari	9.73
Ashish Kumar	9.36
Anushka Saraswat	9.27
Umme Habiba	9.27
Arya Shrivastava	9.18
Asmi Rawal	9.10
Riya Kushwaha	9.09
Vansh Jain	9.09
Vanshika Gupta	9.09
Semester-I	
Namrata yadav	9.09
Arpit Karan	9

EXTRA CURRICULAR ACHIEVEMENTS

Vansh Jain
2nd Year

- Vice chancellor internship scheme Intern
- IQAC Internship, Hansraj college
- Digital Marketing Intern, GVM GLOBAL

Sahil
3rd Year

- INSPIRE Scholar, funded by DST, Government of India

Shubham Khurana
3rd Year

- Summer Research Intern at Har Gobind Khorana Centre, Hansraj College
- Founding member of Smilecreators NGO

Kasturi Saha
3rd Year

- INSPIRE Scholar
- UCL India Excellence Scholarship
- Dr Virender Kumar Rolling Environment Quiz, Ist Runner-up
- Summer Research Intern at IASST, Guwahati

EXTRA CURRICULAR ACHIEVEMENTS

Sareena Hayat
3rd Year

- Theatre Play Competitions won by **असभ्य**(Abhyas)
- 2nd Prize as Director at Deshbandhu College Theater Competition
- Ist prize as Director at Maulana Azad Medical College Theatre Play competition
- Ist prize as Director at IIT BHU theatre play competition
- Ist prize as Director at Maharaja Surajmal Institute of Technology theatre play competition
- 3rd prize as Director at Amity University, Noida theatre play competition
- Best Design and Direction Award at Gargi College theatre play competition
- Best production as Director at College of Vocational Studies theatre play competition
- Best set design as Director at College of Vocational Studies theatre play competition

Deeksha Singh
2nd Year

- Secured Ist position in' Debate competition' in Zusammen's The Annual Fest of Zakir Hussain Delhi College
- Secured Ist position in 'Reel Maniac' held during Alpha 23, Hindu college
- Secured 2nd position in 'Block and Tackle' organized by Rukmini Devi Institute of Advanced Studies
- Secured 3rd position in 'Debate competition' in Hansraj College
- Secured 3rd position in 'Turn coat' at Indradhanush 3.0, Annual fest of Shaheed Bhagat Singh Evening College
- Secured Quarter finalist position among 90 participants under Pareto time '23, Kirori Mal College
- Secured Ist position in Debate Competition in Hansraj college, Physics Department
- Got consolation prize in speech competition in Hindi Department, Hansraj College

EXTRA CURRICULAR ACHIEVEMENTS

Mishthi Khurana
3rd Year

- Dr Virender Kumar Rolling Environment Quiz, Ist Runner-up
- Co-authored 3 research articles around pollen germination

Asmi Rawal
2nd Year

- Co author of lactonic tales and the silver lining
- Stood 3rd position in pankh'23 A social impact case competition of IIM Calcutta

Ishita Chadha
3rd Year

- Summer Research Intern at National Institute of Immunology
- INSPIRE Scholar

Taniya Pokhriyal
3rd Year

- Summer Research Intern at Har Gobind Khorana Centre, Hansraj College

EXTRA CURRICULAR ACHIEVEMENTS

Yamini Sharma

3rd Year

- Co-authored 3 research articles around pollen germination

Abhinav Borgohain

3rd Year

- Online training program on cancer oncology and forensic science under IIT Kanpur and AIIMS New Delhi

Sameeksha Girdhar

3rd Year

- SRCC Technical literacy awareness internship NGO RAHI

Anika

3rd Year

- Grade I Certification of Keyboard from Trinity College London

EXTRA CURRICULAR ACHIEVEMENTS

Riya Kushwaha

2nd Year

- Selected for summer internship at Centre for Cellular and Molecular Biology, Hyderabad through Indian National Science Academy

Aditi Verma

2nd Year

- Published a research poster on role of nanotechnology in breast cancer
- Written an research article for National Science Workshop which is based on bio-mimicry of Lotus leaf.

Ravneet

2nd Year

- Won 10+ Paper/Poster Presentations at various colleges

Sanjana Sharma

2nd Year

- Secured multiple prizes or stage and street dramatics event conducted by Delhi Collegiate Theatre Circuit
- Interned under Unwind Delhi and Umeed Delhi

EXTRA CURRICULAR ACHIEVEMENTS

Ayush Galyan

2nd Year

- Secured the 3rd position at Bidmasters-Business Competition held organized by Department Of Management Studies, Shaheed Rajguru College Of Applied Sciences For Women

Arpit Karan

1st Year

- 3rd prize in poster making competition in Chandrayaan Utsav

Siddheshwar Nath Mishra

1st Year

- Volunteerd in Annual Global Summit 2024 by Rural Economic Forum

Shruti Gupta

2nd Year

- Won 2nd prize for NSS Hansraj at SRCC and Aryabhatta College

EXTRA CURRICULAR ACHIEVEMENTS

Deepika Malik
1st Year

- Debate Competition (Zakir Hussain College)
- Bhashan Pratiyogita (Hansraj College)
- Speech Competition (SBSC)

Harshit Shaurya
1st Year

- 1st prize in National Science Day Workshop Exhibition

Pratyasha Gautam
2nd Year

- 3rd position in poster making in G20 collaboration with Akashvaani.

Swetalina Mohanty
1st Year

- Yuva Ratn by Khushhali foundation held at University level

Shivarjit Pathak
2nd Year

- Won 3rd Prize at Bidmaster SRCASW

The Life Science Group 2023-24

DOWN THE MEMORY LANE

End of Session 2023-2024

December, 2020, I was constantly juggling through the potential courses I could study. Biology was the ‘one’ but the conventional MBBS didn’t excite me. I knew I wanted to be in the lab, I wanted to make a career in something called ‘Research.’ A chance encounter with a former Life Sciences graduate opened the world of B.Sc Life Sciences to me, and God, am I not grateful?
An interdisciplinary course, as it is termed, Life Sciences gives one the flavour of Botany, Zoology and Chemistry, all at the same time. Botany opens the world of plants, Zoology explores the animal kingdom, with a focus on humans and Chemistry explains the basis of everything. One day you are in the Botany Lab, preparing slides of bacteria, the next day in the Zoology Lab, culturing the same bacteria and isolating their DNA and again, the next day, in the Chemistry Lab, identifying the compounds which actually make that bacteria.
And now, with all the labs done, all files complete, no more classes to go, there seems a void. As if a piece of my heart is getting left behind. I guess, that's for Hansraj to keep. What is there for me, and for the outgoing batch of Life Sciences, is a heart full of memories and experiences.

The session started afresh with the departmental society getting its own name, Transposon, along with a new logo, special courtesy Ridhi ma'am. The inaugural lecture on genetics was one of its kind, keeping the students enticed on the field and its clinical applications, while inspiring them to think ahead into the future. This was followed by a series of novel and creative ideas, being translated into events, such as the Sweatshirt designing competition, and the very exciting Biogeeks quiz. The society also conducted its annual fest, Affinity, 2024 and every competition and challenge saw an appreciable audience, who not only played and competed but also laughed their way throughout. And through all of these events, Life Sciences revamped itself, strengthening its foundation.

DOWN THE MEMORY LANE

End of Session 2023-2024

For us to be the seniormost batch this session was definitely an honour. Being a Life Sciences student will always remain our identity, etched in facets of our personality forever. The 2024 batch expresses its heartfelt gratitude to the society, the teachers, the juniors and to Hansraj College. The journey couldn't have been a more beautiful one.

Goodbye Transposon. Goodbye Hansraj!

See you soon…

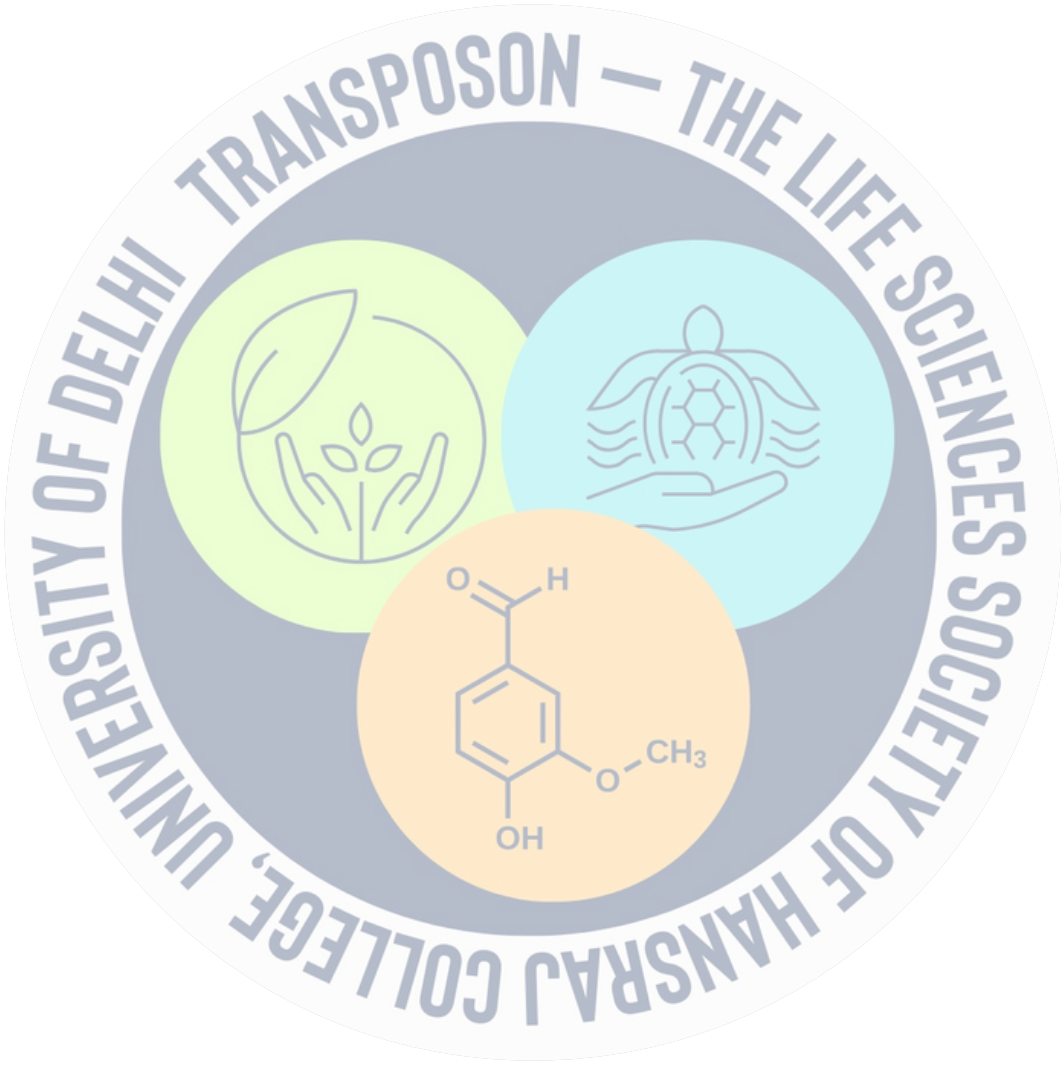
And until next time,

Signing off

Kasturi Saha

President, Transposon – The Life Sciences Society

Hansraj College


TRANSPOSON — THE LIFE SCIENCES SOCIETY OF HANSRAJ COLLEGE, UNIVERSITY OF DELHI
O
H
O
CH3
OH