

FLIGHT

VIEWING BIODIVERSITY THROUGH DIFFERENT LENSES



2022 | ISSUE 15

ALBATROSS
DEPARTMENT OF ZOOLOGY
GARGI COLLEGE, UNIVERSITY OF DELHI

DIVERSITAS

Diversitas ,
Viewing
Biodiversity
through
different
lenses

With global environmental sustainability at a crossroads, we present in this magazine a transdisciplinary approach based on the intersection of arts and sciences

The diversity of the phenomena of nature is so great, and the treasures hidden in the heavens so in rich, precisely in order that the human mind shall never be lacking in fresh nourishment.
- Johannes Kepler

to raise awareness and understanding of current biodiversity through various lenses. Biodiversity encompasses not only the world's species, each with its own evolutionary history, but also genetic variability within and among species populations, as well as species distribution across local habitats, ecosystems, landscapes, and entire continents or oceans. Biodiversity is important to most aspects of our lives.



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Diversitas

"VIEWING BIODIVERSITY THROUGH DIFFERENT LENSES"

Taking a different approach for this year's edition, we bring to you biodiversity and all its adjacent themes or what we like to call "lenses" to have a more holistic approach to our understanding. This theme holds special importance, as the last two years have shown us the perils of when we humans take nature and its diverse organisms for granted. An initiative in introspection is the need of the hour and we believe this theme is the perfect vehicle for the same. We hope that by the time you are done reading this edition, you have a deeper and fresher outlook on biodiversity and how it can have different meanings when looked at through different lenses.



FROM THE PRINCIPAL'S DESK



Prof. Promila Kumar
Principal
Gargi College

It fills my heart with immense pleasure to learn that the Department of Zoology is all set to release the 15th edition of its annual magazine 'Flight' on the theme "*Diversitas: Viewing biodiversity through different lenses*".

Out of all the creations on earth, nothing has undergone as dramatic a change from human activity as biodiversity. Biodiversity states the variety of living species on Earth, which includes plants, animals, bacteria, and fungi. It refers to every living thing, including plants, bacteria, animals, and humans. There are around 8.7 million species of plants and animals but only around 1.2 million species have been explored so far, most of which are insects. Millions of other organisms remain a complete mystery.

All of the Earth's species work together to survive and maintain their ecosystems. For example, the grass in pastures feeds cattle. Cattle then produce manure that returns nutrients to the soil, which helps to grow more grass. This manure can also be used to fertilize cropland. Many species provide important benefits to humans, including food, clothing, and medicine.

The gloomy fact is that many of these species are on the verge of extinction due to human intervention putting the Earth's magnificent biodiversity at risk. We are at the crossroads of humanity, where the earth's biodiversity is collapsing every second and it's a matter of pride that the department of zoology is actively raising awareness about issues that are extremely relevant and have far-reaching ramifications for the entire human civilization.

The entire editorial team and everyone involved, deserve appreciation for bringing this edition on an extremely relevant topic having far-reaching ramifications for the entire human civilization. I look forward to reading our students' perspectives on the topics undertaken and wish them all success.

A MESSAGE FROM THE TEACHER IN-CHARGE

"Diversitas: Viewing biodiversity through different lenses"

I like this topic because I teach Biodiversity, it is a different kind of life that surround us as microorganisms, plants and animals. We live in an intricate ecosystem with dependence on one another. Although the human species, with the most developed brain sometimes doesn't feel the importance of other life forms. But viewing it through different lenses gives more strength to our understanding of the importance of this mesh of life. All forms of life are interwoven, for example- the human gut harbours millions of microorganisms, and our aesthetic senses, our emotions and expressions either poetry or paintings are influenced and embraced by biodiversity.

Nowadays, with the growing craze of ecotourism and spirituality, we are understanding the importance of a balanced ecosystem. Our ancient cultural system of praying trees and animals in a different form is also a way of accepting other organisms on earth.

I am sure students must have collected and shared their experiences of viewing biodiversity through different lenses in this upcoming edition of Flight. I believe these small steps will guide young minds in becoming more concerned, aware and conscious of all other different forms of life around us.

I am waiting eagerly for this issue of Flight. My best wishes to the editorial team for the successful publication of this annual magazine of the department of zoology.



Dr. Shivani Tyagi
Teacher-in-Charge

A MESSAGE FROM THE PRESIDENT



Madhurya Ray
President
Albatross, the Zoological Society of
Gargi College

“You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make”

Jane Goodall

They say the most wonderful things in life happen when you least expect them. Becoming the President of Albatross is one such experience that will always hold a special place in my heart. The lessons that I have learned, the growth and experiences that I have gained, are unmatched and will surely bring a smile to my face whenever I take a trip down memory lane. It has truly been a remarkable journey that metamorphosed my introverted self into a confident person!

It fills me with utmost pride and exuberance to present to you, the fifteenth edition of our annual departmental magazine 'Flight'. This creative, innovative, and educative issue is sure to tickle all our readers' curious nerves. It is based on the theme "Diversitas: Viewing Biodiversity through different lenses". With this edition, we aim to solicit various perspectives of biodiversity, not only from the conventional point of view but also through a multidisciplinary approach. It also includes a peek at our departmental activities that have taken place this year.

'Flight' is a result of the hard work and dedication of our talented editorial team, along with the enthusiastic participation from our student body. It is certainly not easy to execute a digital magazine of such stellar quality. I congratulate the editorial team for their exemplary work despite all the barriers of online functioning. I also congratulate the Student's Union 2021-2022 for their diligent efforts and perseverance to conclude yet another eventful year with success. Communicating and organizing events online has not been a cakewalk but kudos to our team for never losing their passion and spontaneity.

I would take this opportunity to thank our Teacher-In-Charge Dr. Shivani Tyagi and union advisors, Dr. Madhu Yashpal and Dr. Kuntal Kalra for their immense support. I also thank our magazine in charge, Dr. Tenzin Nyibum Bhutia, and Dr. Rashmi Sahni for their motivating and helpful guidance.

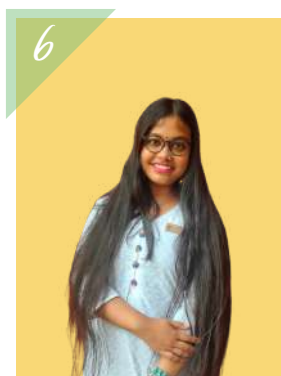
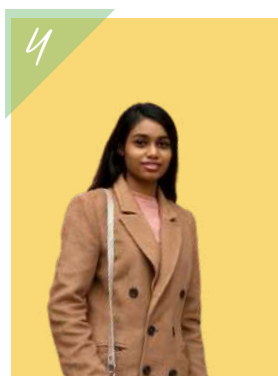
I hope this magazine serves as a source of exciting outlooks and information as you flip through its pages in your leisure!

UNION 2021-22

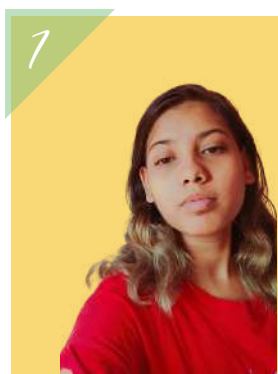
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Editorial Board Message

Being students of zoology, it's easy to discuss the problems of the living world but rather difficult to ever create or even have a lasting impact on the same. We could talk at length about global warming, mass extinctions, food shortages and even pandemics, but nothing really changes until there is dialogue and a conscious effort to learn and do better, to take cognizance of all of our actions, to learn now rather than repeating the same mistakes.



This magazine is our step towards starting a conversation, encouraging our readers to broaden their viewing lenses and open their minds to the different possibilities in science around them. And on that very note, we, the editorial team of Flight, the annual magazine of the zoology department, present to you this year's theme – “Diversitas: Viewing Biodiversity through different lenses”.

In this edition, we have curated for you 6 lenses of biodiversity and with them come some fun and hopefully some inspiring ideas for all of you. Despite the change in the mode of operation and adjusting to the new normal, our team has worked day and night with all their heart to bring about a magazine that readers from all backgrounds would enjoy.

FLIGHT is a culmination of months of hard work by students and teachers alike and we would like to take this opportunity to thank all the people who have contributed to the completion of this task. This edition is an initiative to demystify the subject of biodiversity and we hope you enjoy reading it as much as we were thrilled to curate it.



Signing off
The Editorial Team, Flight

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Those who lead to educate and groom...



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[Specialisation: Parasitology]



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Those who made it possible to coordinate well...



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Mr. Raj Kumar



Mr. Gopal Singh



Mr. Jai Prakash Rawat



Mr. Govind Singh



Mr. Arvind Kumar



Mr. Mukesh Kr. Meena




Mrs. Kiran



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Mr. Krishna



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Learning about
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...ween human interventions
...fect the biodiversity around
...nable from an ecological
...ective? Let's find out.





PRAGYA KATIYAR
BSC(H) ZOOLOGY
I YEAR

*"But man is a
part of nature, and
his war against
nature is inevitably
a war against
himself."*

Rachel Carson
(American Marine
biologist)

ON THE CROSSROADS OF TECHNOLOGY AND ECOLOGY

WHERE DO WE DRAW THE LINE FOR
SUSTAINABILITY AND COEXISTENCE

The application of scientific knowledge and modern technology has reshaped our lives and provided mankind with several changes. Present technology has made many things possible, like gene cloning which has saved many precious lives. Even a genetically modified pig's heart being successfully transplanted into the human body seems less like a miracle now

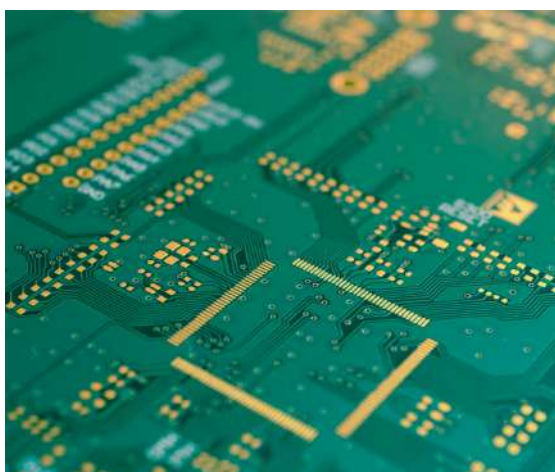
From the use of radiation therapy to cure cancer to the development of covid vaccines in such a short span is a combined result of human intelligence and modern technology.

If we made a comparison of the world 50 years in the past and now, it clearly shows how far we have come. Now let's view this world with a different lens. In our childhood was the sky not full of twinkling stars? Was it not easier to spot birds around 10 years ago than it is now? Unfortunately, it seems like technology has done much more harm to nature than to benefit mankind.

Telecom companies pay a huge amount to set up mobile towers on a person's land because it profits them at the cost of exposing us to harmful radiation. The World Health Organization's International Agency for Research on Cancer says these radiations from mobile towers and cell phones are possibly carcinogenic to humans. According to a set of recommendations released by the United Nations University, more people in India have access to a Mobile phone than a toilet.

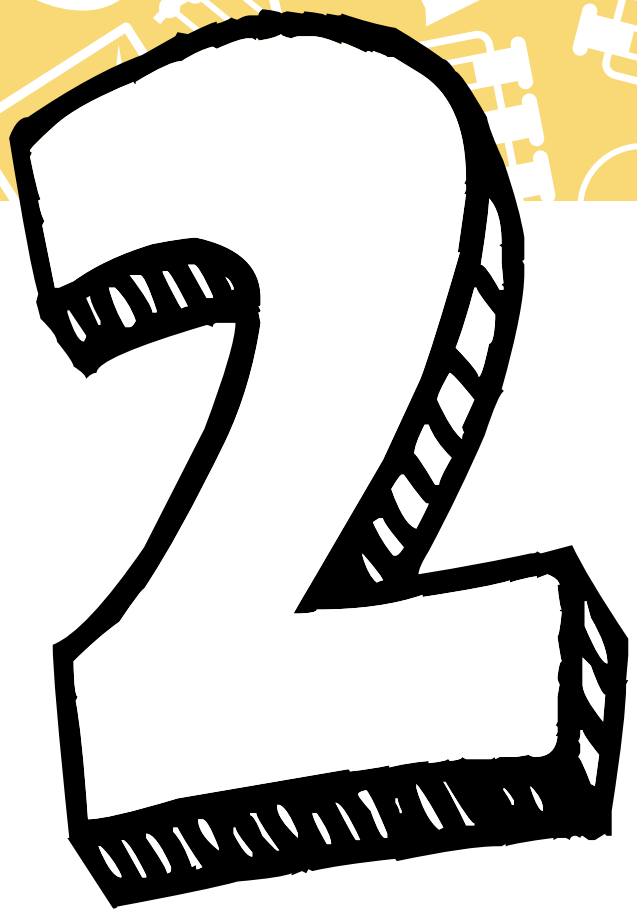
It's not hidden that the weapons meant for protection kill more than to save. The World has seen horrifying incidents like the attack on Hiroshima and Nagasaki. The Bhopal Gas Tragedy can't be forgotten where methyl isocyanate gas leaked from a pesticide plant in Bhopal which took the lives of over 15000 people and more than 5 lakh people were affected due to this toxic leak. According to Rachna Dhingra of NGO Bhopal Group for Information and Action (BGIA), till 2 December 2020 in Bhopal, 518 people lost their lives due to COVID-19 and within those, when visited 450 people's houses, 254 were found to be Bhopal Gas Tragedy survivors.

Some precious metals like gold and silver are used to make various electronic devices and the electronic wastes from these devices are now a matter of concern. Climate change, air pollution, water pollution and noise pollution are the results of the usage of various technologies. Global



warming which is now a major concern in the present World is also an outcome of the same.

Technology undoubtedly is advancing and with every advancement lies a hidden fear of danger to our nature. Now it is important to wisely understand the need of the hour and to focus on sustainable development and Environmental technology or green technology, which is the development of those technologies which aims to conserve the environment and reduce its negative effect.



GENETICS

Dive into Mendel's world where your morals and ethics will be put to test. We are going a bit further than just genes and heredity and approaching the limits of human and nature's capabilities to design organisms. With our next lens, you'll be left with more questions than answers from when you first started because the tiny genes are a bit more complicated than you thought.

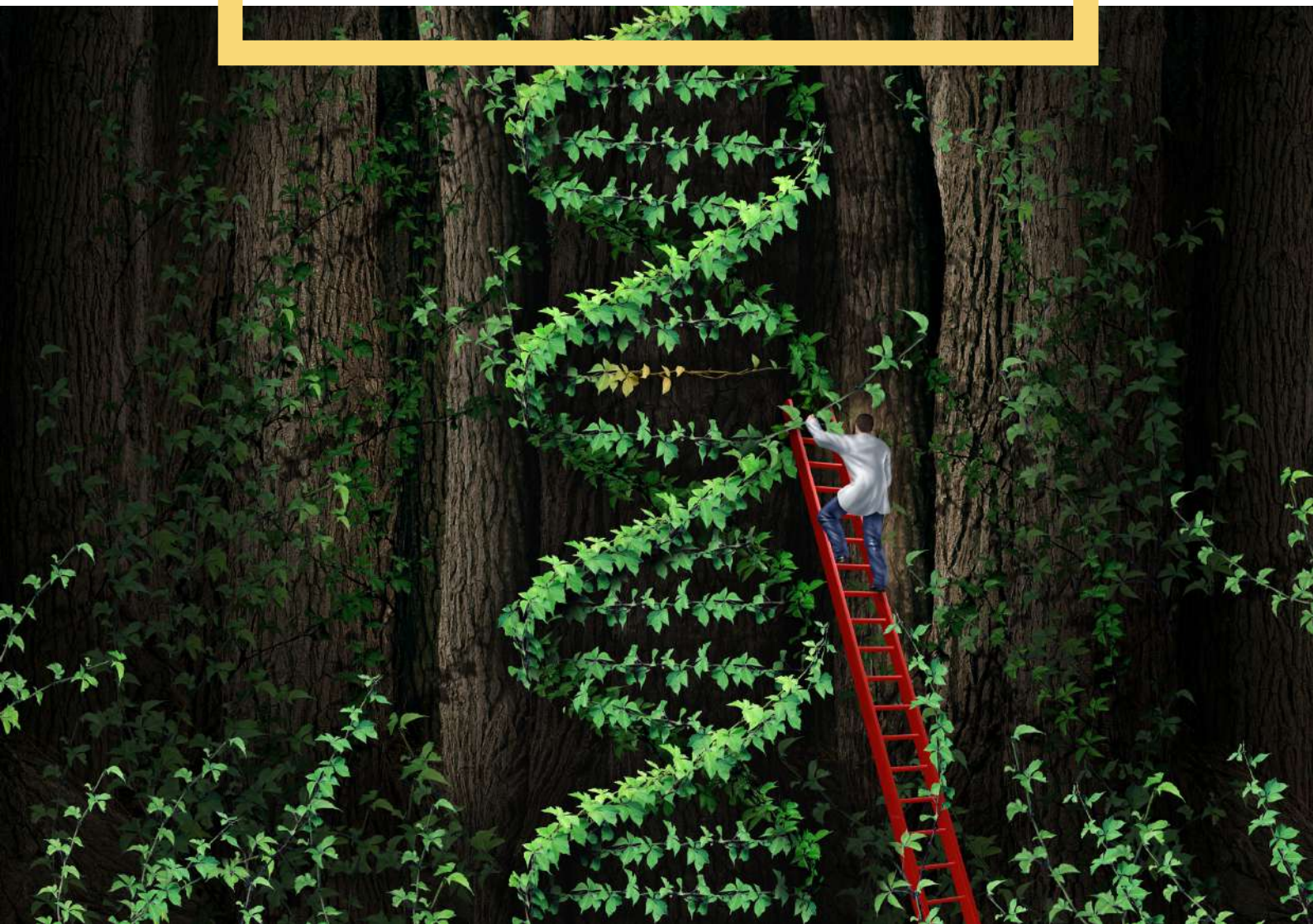


Demystifying Gene Editing

Crisper and its applications

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AARUSHIE CHATTERJEE
B.SC. (H) ZOOLOGY
II YEAR



Recent technological developments within gene editing opens up new opportunities in many branches of life science. The use of CRISPR/Cas9 in synthetic biology approaches offers the possibility to design systems with new desired properties spanning from in vitro systems and cell factories to microbes, plants, and animals including humans as well. This foundational technology provides tools that enable researchers with the knowledge of biochemistry and molecular biology to modify the genetic structure of any living organism.

Gene editing has been used in humans to eradicate or prevent severe genetic diseases such as Huntington's disease, sickle cell anaemia, etc, in plants to bioengineer new varieties with improved disease resistance, high content of health-promoting compounds, or offer more efficient starting material for the production of biofuels or high-value compounds and in animals to rear cattle with more nutritive milk, lean meat or as a test subject, etc. Even though these practices have been proved to be very beneficial for mankind, it poses a very serious ethical question in front of us.

While on one hand, one might profess whether scientists should even be allowed to make changes to living systems at the genetic level. The idea of genetically engineering naturally evolved life might seem morally abhorrent, whatever benefits we envisage to get out of it. The central question is not even about whether the technology used is wrong, but how to use it in a morally justified way. Under what conditions should gene editing be allowed? What regulatory initiatives should be taken for better and more sustainable use?

"Is gene-editing not a brutal practice done by humans for their own sake and undermines the freedom of every living organism and is it against animal rights?"

In other words, CRISPR/Cas9 is a tool that may be used in many different contexts, by many different people, for a variety of purposes. And it is fast becoming a stalemate of genetics research everywhere. Therefore, one thorny issue that is still concerning is how to regulate the use of CRISPR/cas9 and the future gene-editing technologies given the fundamental uncertainty about the possible consequences of having this tool in our hands.

In April 2015, a few Chinese scientists announced the use of gene-editing technology in human embryos. The Chinese laws did not monitor the research concerning the modification of the germline of humans. Reportedly, the embryos used were unviable and couldn't be implanted. This announcement sparked a huge controversy in the scientific community and fueled lots of public debate concerning the regulation of gene-editing technology. This incident highlighted the pressing need to make national and international decisions on how to set adequate rules and regulations.

The complexity and the great variety of applications of gene-editing technology, call for an interdisciplinary effort and the incorporation of interdisciplinarity in the legal domain. The very nature of gene-editing technology makes it particularly difficult to establish clear boundaries in both scientific terms and in the eyes of the public. Any legislative initiative needs to consider both the benefits and the problematic aspects of gene editing, from a broader perspective of society and the general public.



“

Gene Editing is a type of genetic engineering wherein the current technology enables us to modify the genes of a species. By using this technique, genetic material can be added, removed, or altered at particular locations in the genome. It sounds interesting but nowadays this is quite a controversial topic. The world is divided into two different categories and the question is whether gene editing is ethical or unethical?

”

Gene editing: ethical or unethical

.....

AVANI JAMWAL
B.SC. (H) ZOOLOGY
I YEAR

Well, everyone has different views on this as every technology has its pros and cons. This technology can be a boon for us as it can transform the whole living world. It can be applied to plants as well as animals including humans. Humans can tackle and defeat diseases now by editing the genomes that were once deemed incurable. It can also result in extending the human lifespan.

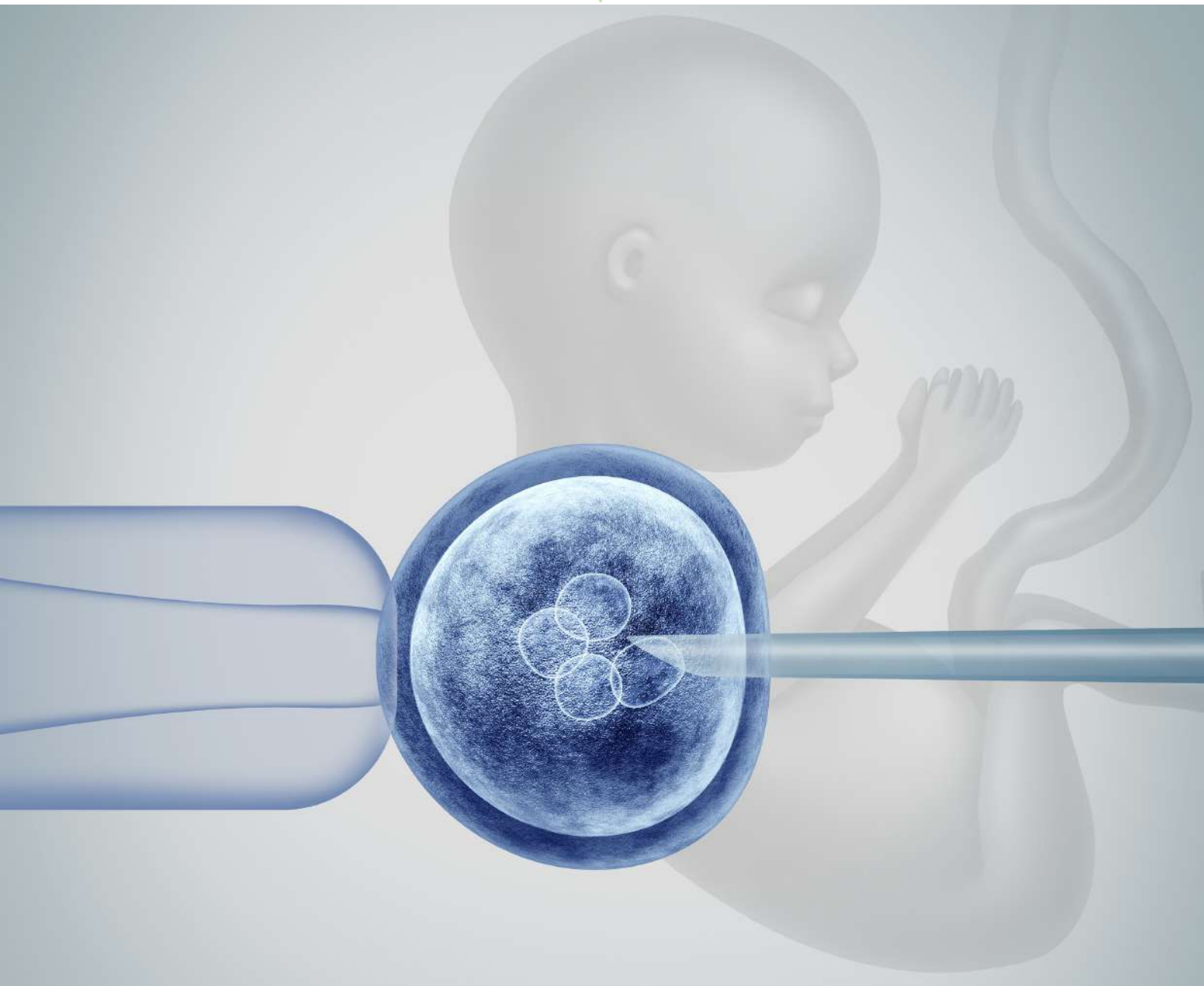
On the other hand, it can also help in the growth of food production and improve its quality, which will also lead to a better quality of life as scarcity of food will be eradicated. Along with this, the quality of crop production will also increase with the advancement of pest resilient crops.

Above are some of the advantages that every person sees, but we can't ignore the adverse effects that can be caused by gene editing. Ignorance is a lack of knowledge and information, hence the reason why many people ignore the cons of this technology.

Anyone who believes in the idea of God will encounter some level of a moral dilemma about the idea of humans genetically manipulating future generations. Some of the adverse effects have to be considered otherwise it could lead to several issues like a reduction in genetic diversity in the world. Gene editing produces genetically modified organisms. If these organisms are introduced into the environment they can affect biodiversity and its function in our ecosystem.

Human actions have a general impact on genetic diversity, disrupting or diminishing the capacity for adaptation, speciation, and macroevolutionary change. This effect will eventually reduce biodiversity on all levels. A population cannot evolve or adapt to environmental change unless it has genetic diversity. Gene editing could further affect the human population. Altering our cells through this practice to make them more resilient to the natural aging process could extend our lifespan which challenges what nature intended for us and that's unethical. It can also change the human genome.

The biggest fear of all about gene editing is that it could be used to change the genetic makeup of the human race. It's one thing to remove DNA sequences that cause a genetic illness, but it's quite another to make genomic alterations that will be passed down to future generations. Not only this, there are many more reasons why gene editing is still regarded as unethical. Reasons being gene editing poses a significant threat to future generations, reinforcing existing inequalities and creating new forms of discrimination, eroding public trust in responsible science, and undermining global agreements.



Concluding the above debate, gene editing has advantages that seem convincing and hopeful but the disadvantages can be downright terrifying. It is also essential to remember that there is no system of genetic modification that will provide consistent results every time. Hence, a moral society doesn't find gene editing ethical. As with many new technologies, there is concern that genome editing will only be accessible to the rich and will increase existing disparities in access to health care and other interventions. Many people have moral and religious objections to the use of human embryos for research because gene therapy involves making changes to the body's basic building blocks (DNA), which raises many unique ethical concerns.

Also, it changes the intelligence, height, weight, abilities, IQ and various traits of a person which puts it in a moral grey area. Hence, this shows how gene editing in a species is unethical.



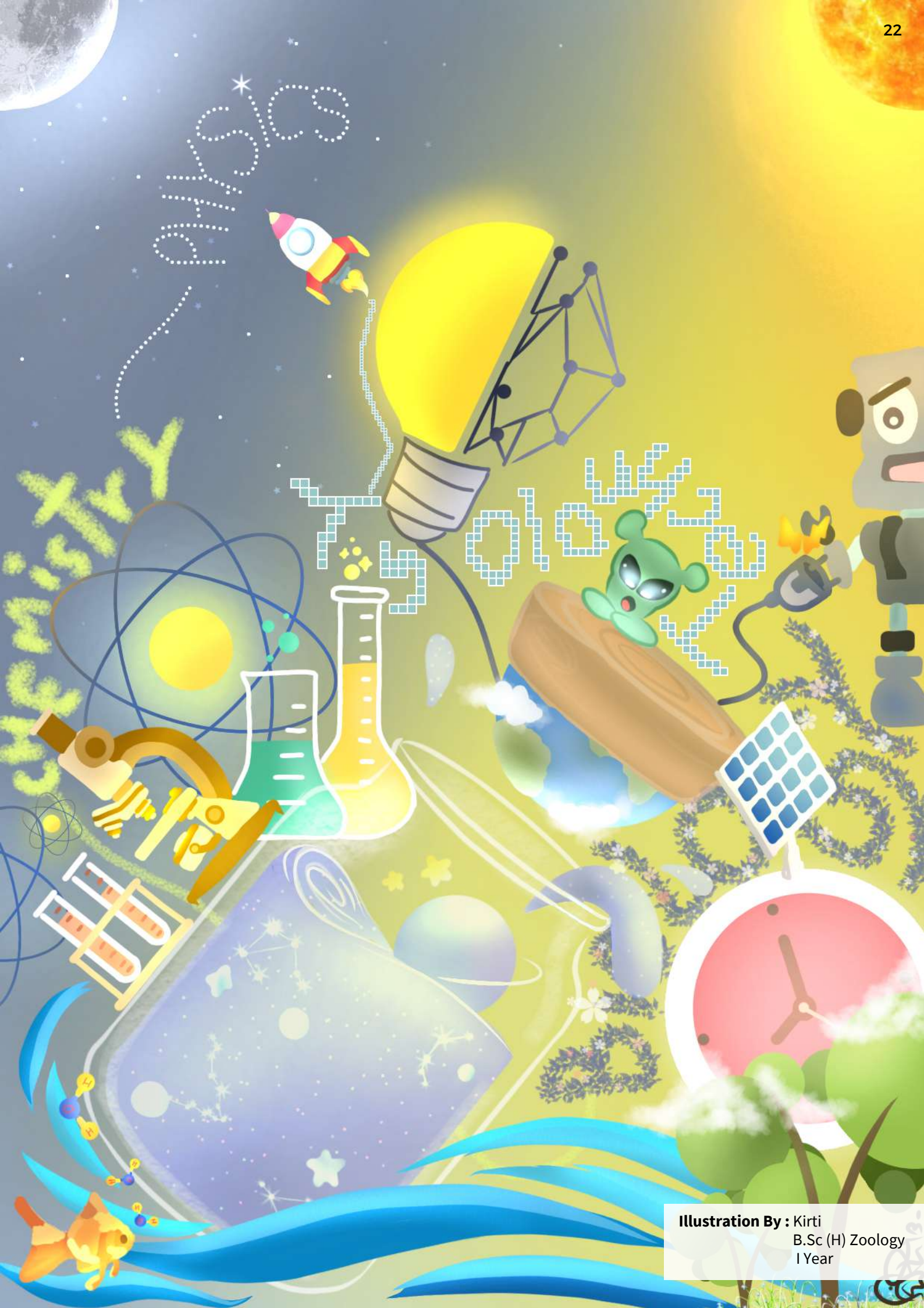


Illustration By : Kirti
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3

BIOTECHNOLOGY

Biotechnology is defined as the integration of natural sciences and engineering sciences to achieve the application of organisms, cells, parts thereof and molecular analogues for products and services. It is the science of how we can best use biodiversity to solve our problems and if this lens sounds intimidating, that's because it is folks.

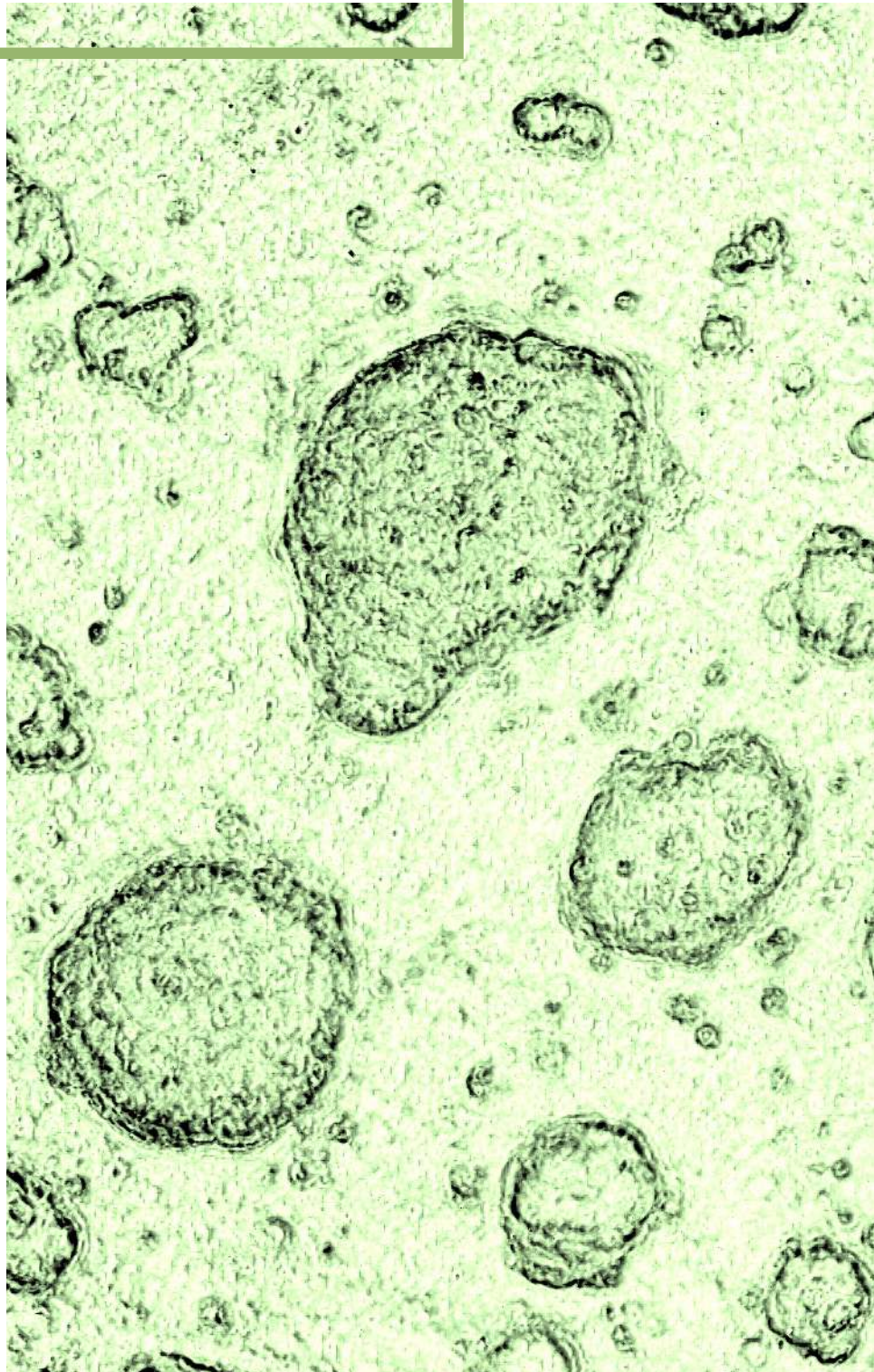
STEM CELL BIOTECHNOLOGY

AND A RAY OF HOPE FOR EXTINCT SPECIES

Human expansion is leading us into another mass extinction with more than 1 million species facing the risk of going extinct in the coming decades. Wildlife inspires humans in one way or another and with so many animals going extinct, the human race is just going to be lonelier.

Scientists have come up with numerous solutions to this problem, stem cell technology is one of them. It can replace the extinct species with another species that is functionally equivalent to the extinct one, also known as 'de-extinction'. Since we all live in an ecosystem and are interdependent on one another, with every species that goes extinct, it potentially leads to the extinction of another species, this, in turn, unravels the world around us.

The advancement in technology has made it possible to reverse the stem cells from adults into embryo-like states and are termed as induced pluripotent stem cells (iPSC's). This technology is widely being used in the field of research for wildlife conservation, particularly the de-extinction of species. Several cell types can be developed using iPSC's including the zygotes of individuals. Scientists confirm that cryopreserved zygotes are potential individuals for a species even though they are a single-celled ontogenic state. The Bucardo population is functionally extinct but can reproduce using biotechnological assistance as it has no multi-celled individuals left but several single-celled individuals that can be cloned. This is how the traits of bucardo were preserved. Such species are



considered 'evolutionary torpids' since they can't reproduce on their own and are not evolving. The cloning of bucardo involved preserving the cultured fibroblasts using cryopreservation for less than 3 years.

Another such species is the northern white rhinoceros which is left with only 2 individuals, both in captivity as recorded in 2018. The cryopreserved cells are recovered in laboratories using stem cell embryogenesis and cloning is used as a second recovery pathway. Researches indicate that a new generation of white rhinoceros will be born in the coming decades with the use of biotechnology and the genes will not be entirely lost.

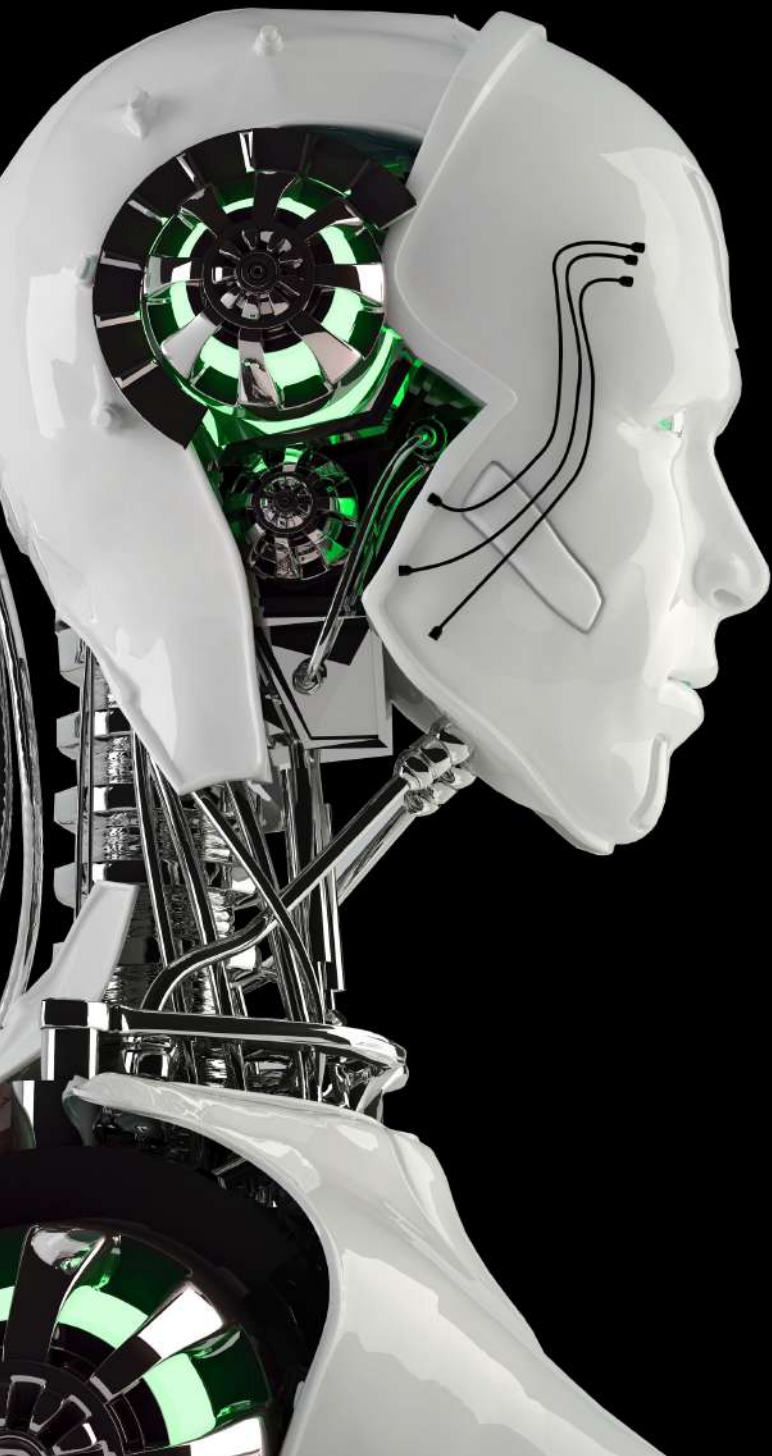
IPSCs are used more than embryonic stem cells (ESCs) since they are capable of differentiating into 3 germ layers and do not require embryonic tissues for harvesting. The first animals to prove this theory, and on which the IPSCs were tested were mice and they were recorded to be fully functional. The mice were injected with an in vitro tetraploid blastocyst and then transferred to a surrogate mother for gestation. Immature spermatozooids and gametes required injection of these gametes into an adult mouse testis or ovary to become fully functional. Generation of fully functional oocytes from mice can be derived using ex vivo coculture with female gonadal somatic cells. IPSCs are also used to produce alternative animal products to prevent the drain of natural resources due to excessive farming, combustion of fossil fuels, land clearing for livestock etc., which further helps in environmental protection. IPSCs have great potential in resurrecting extinct animals if the mechanisms that control generations of fully pluripotent IPSCs are sufficiently investigated. However, animals produced using this technology will be raised in captivity which sometimes may make them ineligible to interact and live in the wild. The U.S Endangered species act of 1973 reintroduced the grey wolves (*Canis lupus*) to Yellowstone national park which brought back the wolves into the park and reduced the excess elk population, consequently increasing the flora in the area that the elk fed upon. Despite the optimism for IPSC, there is still more work that needs to be done in order to make it reach its actual potential. Every technology has its positive and negative impacts. Looking on the

brighter side, IPSCs can help medical science in ways beyond imagination. It can produce animals that have better genes and are more beneficial to the human race and to the environment. IPSCs have the potential to reverse what was once thought to be irreversible damage. It can help medical science reach a new level of civilization. It can be used to manufacture exotic products from animals without the need to kill them. For example, high-quality ivory can be generated in vitro and can be made available which in turn will reduce poaching and reduce the risk of their extinction.

IPSC technology can one day become a huge success story directed by our creativity and ambition.

ADITI KHERWAL
B.SC (H) ZOOLOGY
II YEAR

The advancement in technology has made it possible to reverse the stem cells from adults into embryo-like states and are termed as induced pluripotent stem cells (IPSCs). This technology is widely being used in the field of research for wildlife conservation, particularly the de-extinction of species



SOFT ROBOTS

TO THE RESCUE OF BIODIVERSITY

Aarti Venkatesan
B.Sc. Hons. Zoology
II Year

Scientists' recent interest in exploring these underwater bodies stems primarily from increasing pressures caused by climate change and the expansion of the offshore energy sector for human development. Apart from learning about the biodiversity in these oceans, the distinct features and information gathered from the under-sampled regions, particularly those in industrially developed areas, aid in the sustainable management of these resources. Deep ocean temperature data collected by soft robots will aid in addressing the growing issue of climate change. In light of the recent increase in the degradation of earth resources as a result of human exploitation, more in-depth knowledge and understanding of the deep marine environment is urgently required.

With the recent boom of technology in the past decade, the integration of science and technology has led to various fascinating and path-breaking innovations. With the advancements in technology, the scope of human exploration has exponentially expanded. Even after these technological advancements, the deepest parts of the Earth's oceans are almost entirely unexplored. The oceans play an important role in climate regulation because they can store energy and chemicals (e.g., CO₂, O₂) while also supporting coastal populations and offshore human activities. Nonetheless, we know more about the moon's surface than we do about the ocean floor. In the past decade after extensive research, scientists were successful in creating bioinspired self-powered soft robots designed specifically for deep-sea operation at the deepest part of the ocean at the Mariana Trench.



Due to the environmental constraints mainly due to high pressure, it has been extremely difficult to conduct research in deep marine environments. With technological development, scientists have invented self-powered robots. The research was recently published that elaborated about these soft robots and their utility.

The scientists created an untethered soft robot for deep-sea exploration based on the structure of a deep-sea snailfish, along with onboard power, control, and actuation protected from the high pressure by integrating electronics in a silicone matrix.

These materials are lightweight, compliant, resilient, and easily deformable in three dimensions, with elastic, plastic, and rheological properties similar to those of natural organisms. These robots are made from elastomers, gels, and other easily deformable matters to withstand the dynamic and unstructured environments found undersea. These soft robots aim to replicate the motion and functionalities of organisms that thrive in such conditions along with an attempt to recreate the biological mechanisms produced by these organisms to survive. Moving, gripping, and additional functionalities such as sensing, camouflaging, and adapting to environmental changes, in addition to basic actions, are critical for achieving the original aspirations of soft robots.

Further decentralized electronics are used to reduce shear stress at electronic component interfaces by increasing the distance between components or separating them from the printed circuit board. The dielectric elastomer material used for the robot's flapping fins is designed in such a way that it could be successfully actuated in a field test in the Mariana Trench.

These soft robots express a vast potential of essential functions, including exploring sea and seabed conditions, investigating marine life, detecting ocean intruders, and recording ocean currents. They are designed in such a manner that they can also be used to collect intact samples of delicate sea creatures because they can mimic human soft gripping actions. These robots are made of hydrogels. Hydrogels in aqueous environments can absorb water and swell in response to external stimuli. The reversible swelling-deswelling property of hydrogels caused by stimuli can be used to generate macroscopic actuation for soft robots. It is also observed that locomotion in these robots takes place due to the Marangoni effect, which causes an interfacial flow from a low surface tension domain to a high surface tension domain.

Despite recent advances, achieving fast locomotion speed remains difficult because mechanical energy transfers slower in soft materials than in hard materials, resulting in slower locomotion of soft robots.

Collecting intact samples of delicate sea creatures has been difficult because existing technologies, such as nets and vacuum devices, frequently damage their integrity during capture; thus, the invention of soft robots in the form of grippers has served as a potential solution to this problem. The structure and design of The soft gripper are inspired by the octopus, which uses tentacles covered with suction cups to grasp objects underwater. Similarly, the gripper is soft when approaching the object, but stiffens suddenly after enveloping the target and caging it. Sensing provides soft robots with the ability to detect and regulate their emotions in real-time, allowing for adaptations, autonomy, and interactions with humans and the environment. Sensing is critical for interactive soft robots that operate in wet, dynamic, and complex environments. Recent studies show that flexible sensors can be integrated with underwater soft robots to detect a wide range of information such as physical, chemical, and biological signals. Oceanographic data is in scarce to appropriately characterize topographic terms, whose definition usually requires high-resolution flow measurements in remote and topographically complicated places, which soft robots can resolve due to their unique design to tolerate harsh climatic conditions.



Soft robotics is a bioinspired approach that seeks to create robots that are soft, flexible, compliant, reconfigurable, and adaptive, similar to soft-bodied biological organisms, whereas hard robots are heavy, rigid, and complex machinery. These robots have the potential to help modern scientists solve numerous key difficulties, potentially leading to ground-breaking research.

Soft robots can meet the demands of high-seas operations and shape the future robotic generation capable of monitoring the world's most remote locations. The development of these systems will lower manufacturing costs and open the road for long-term large-scale deployments of soft robots for ocean monitoring, resulting in higher spatial resolution for environmental data and remote autonomous asset management.



EVOLUTION

Where did life come from? How different or similar are we to the different organisms around us? How far have all the organisms come and what does the future hold? Our next Lens "EVOLUTION" is here to connect us to our past and to help us to know our existence in this diversified world.

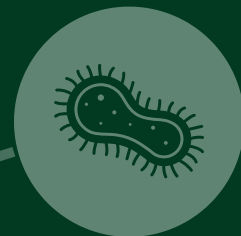




Illustration By : Nidhi Yadav
B.Sc (H) Zoology
III Year
(II position in Picturesque - The Illustration competition)

Images By : Archi Gupta
 B.Sc (H) Zoology
 III Year



**RACE BETWEEN
 EVOLUTION
 AND CLIMATE
 CHANGE**

“ **NATURAL CHANGES
 CAUSE EVOLUTION AND
 EVOLUTION CAUSES
 NATURAL CHANGES** ”

Evolution and species adaptations are natural processes that gradually occur in response to ecological changes. These necessary changes provide flora and fauna with the traits which help them accommodate the changes in their surroundings. Presently, Earth is facing issues related to its climate like global warming, rising sea levels, habitat destruction, and so on due to prolonged man-made and natural causes. Moreover, the present scenario of climate change and the related severe environmental issues are fast-paced and pose a threat to many species which only have a certain limit to adapt.

According to research, different species are showing adaptive changes at different levels. The evolutionary changes can be classified into behavioural, morphological, physiological, ecological, phenological, genetic, and geographic range shifts.

Behavioural adaptations

Behavioural changes are the primary changes that species can adopt in order to adapt. These changes include changes in biological rhythm, migration, hibernation, changing breeding times, searching for shade or refuge, etc. For instance, North American tree swallows are observed to breed earlier so as to adapt to climate change.



Morphological adaptations

Morphological changes involve alterations in the sizes of body structures according to the surrounding temperature so as to control heat loss. Different bill sizes of birds observed as a result of rising temperature could be one example. Furthermore, North American migratory birds adapt to rising temperatures by having a small body size and increased wing length. American lobster has been observed to respond to recent warm temperatures in Northwest Atlantic by having faster growth rates ultimately resulting in small body size.

Physiological adaptations

Temperature is an important deciding factor for the physiology of some species. For instance, the male-female ratio of endangered *Chelonia mydas* is becoming imbalanced due to increased temperatures. As temperature affects the sex of the offspring, more females are being produced as compared to males.



Ecological adaptations

Climate change and its consequences have also caused animals like Chinook salmon to migrate towards Arctic rivers.

Genetic adaptations

Genetic changes are brought about by interbreeding between species due to geographic range shifts caused by climate change.



There are a few other adaptations as well shown by some species, however, most of the time, these adaptations provide short-term fitness and are not enough for the long term, fast-advancing climate change. As a result, many species suffer and are ending up as endangered or even extinct. For example, the first mammal to be extinct due to rising sea levels and habitat destruction was the Bramble Cay melomys. Elevated temperatures are also destroying richly biodiverse corals by causing mass bleaching and death. Alterations to the food chain due to the evolution or extinction of base-level species, accelerated growth of invasive species, forest fires, etc. are all serious consequences of climate change. Moreover, these evolutionary changes and other direct consequences of climate change are also in turn accelerating the changes in the environment. Therefore, it is high time that people should start taking steps toward slowing down the rapid changes and eventually bringing the environment to its optimum conditions. A few of the steps suggested by reputed studies are reducing our carbon footprint, planting more trees, and indulging in conserving species.

Climate change is a serious issue that needs to be controlled soon or else it'll cause unfavourable evolutionary changes in organisms and other consequences which in turn will cause more changes in climate and ecology, ultimately leading to some serious repercussions in the future. Therefore, solving the issue of climate change is a vital step towards saving the immensely diverse and interdependent species of the Earth.

Sharon Mathew
B. Sc. (H) Zoology
III year

(II position in article writing competition)

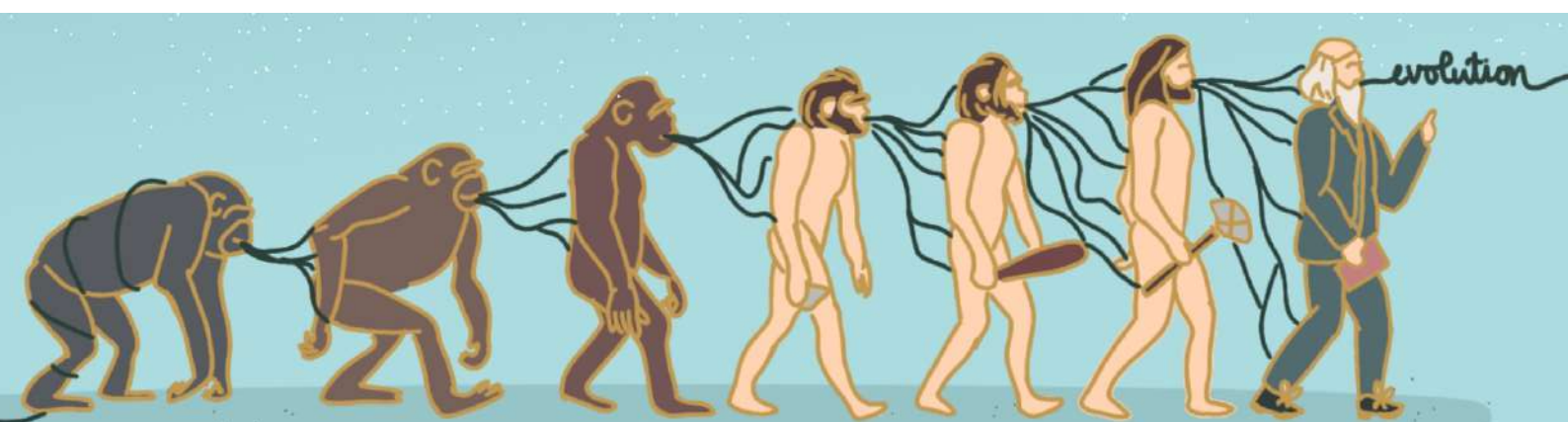


Illustration By : Kirti
B.Sc (H) Zoology
I Year
(II position in Picturesque - The
Illustration competition)

5

HEALTH

Viewing biodiversity through the lens of health involves looking at the various ways in which biodiversity and its products are employed in the medical field or used to ensure better health for humans. From the health benefits of naturally occurring animal products such as milk and honey to making humulin in *E. coli*, this lens encompasses it all.





Genetically modified organ donors

A HOPE FOR ALLEVIATION OF ORGAN SHORTAGE

Divyanshi Chauhan
B.Sc. Hons. Zoology
II Year

(III position in article writing competition)

Our relationship with animals is somewhat complicated. Some animals we keep as pets and companions and some we eat. Some try to eat us. We drink their bodily fluids and drive many products from their bodily fluids. We grind up their bones and turn them into cosmetics, we use their skin for various accessories. And we mix our cells into their embryos to create chimeras that will grow new human body parts for transplantation. That last one didn't add up, right?

We are in the middle of a medical crisis, the growing shortage of available organs is a major problem in transplantation. India, a country of 1.38 Billion, has an organ donation rate of 26 per million. Annually, out of 21,000 kidneys required, only 5000 are available. Only 70 hearts are available for transplantation, while the 4930

hearts are still waiting to be transplanted. Every day, 22 people in the United States die because they were waiting for an organ transplant that never arrived.

WHAT EXACTLY ARE CHIMERAS, AND HOW MAY THEY ASSIST IN THIS CRISIS?

Chimeras are animals that consist of cells that originate from two different types of species. They're made by putting cells from one species into a growing embryo of a different species. Dr. Bartley Griffith and his team performed the first orthotopic heart xenotransplantation from a genetically engineered pig into a 57-year-old man successfully on January 7, 2022. By genetically modified pig, they mean a chimera pig. In September 2021, the kidneys from genetically modified pigs were transplanted into two legally dead people with no



observable brain function by the scientists at New York University Langone Health (NYU). No rejection of the organs were observed and they functioned normally while the patients was supported by the ventilators. High immunological incompatibility and a complex rejection response accompany xenogeneic transplantation from pigs to humans. However, the genetic modifications in pigs reduce the cross-species immune barrier.

Several approaches are available for obtaining genetically engineered pigs, including polynuclear and cytoplasmic microinjection, somatic cell nuclear transfer (SCNT), and viral transduction of DNA. Single site nucleases are used to introduce modifications to a specific locus in the genome with extreme precision. Human genes are introduced into the developing embryo of the pig, which will lead to the development of the

organ fit for transplantation in humans. With an ever-growing list of patients with end-stage organ disease waiting for replacement organs during a persistent shortage of available donor organs, this milestone solidifies a foundation of evidence that will one day make xenotransplantation a common solution to the organ shortage problem.

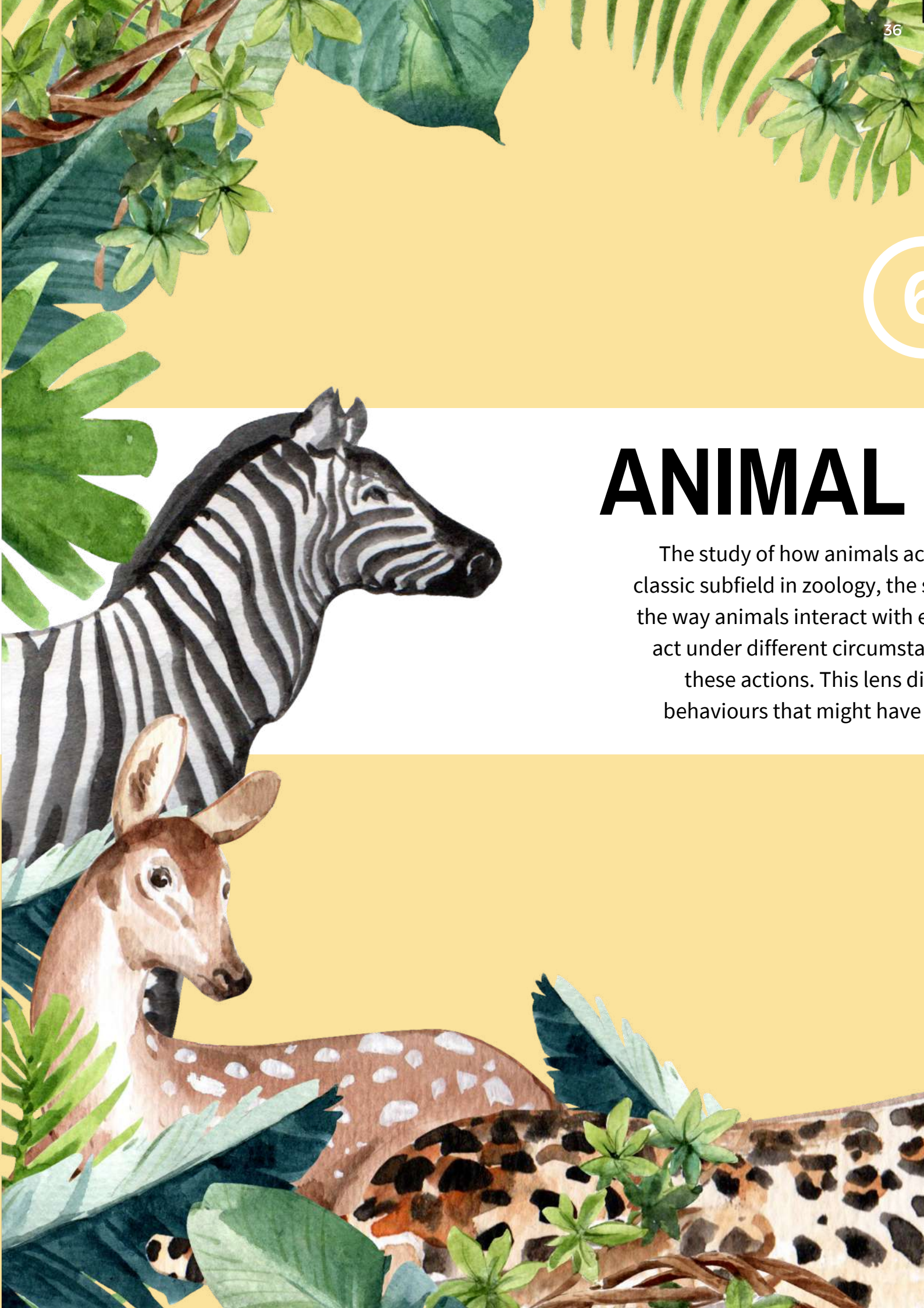
Xenotransplantation might seem like a solution to the organ shortage problem, but it's not without the associated risks. Doctors in California attempted to save the life of a baby girl in 1984 by implanting her with the heart of a baboon, but she died 21 days later. Despite the fact that such therapies are extremely dangerous, some medical ethicists believe they should be carried out provided the patient is aware of the dangers.

The transplant has sparked the debate around GMOs (Genetically

Modified Organisms). Dr. Griffith's pig heart transplantation was deemed "unethical, risky, and a great waste of money" by People for the Ethical Treatment of Animals (PETA). Animals, being complex and intelligent, are not tool-sheds to be looted, says PETA.

There has always been resistance from some scientists and activists for genetically modified organisms, as they argue that Animals have the right to live free without being genetically modified, with all the associated agony and anguish, just to be slaughtered and their organs harvested.

On the one hand, xenotransplantation of genetically modified organ donors has the potential to alleviate the organ shortage. On the other hand, it could be regarded as a crime against nature.



ANIMAL

The study of how animals act is a classic subfield in zoology, the study of the way animals interact with each other and act under different circumstances. This lens discusses these actions. This lens discusses behaviours that might have



BEHAVIOUR

...t in their natural habitats – ethology – is a study of animal biodiversity. It encompasses ... each other and their surroundings, how they ... nces, and what mental processes underlie ... ves deeper into the why's and how's of ... boggled your minds every now and then.



Biomimicry

NATURE IS THE ULTIMATE TEACHER

There is a staggering amount of biodiversity around us — various different organisms leading their lives in a myriad of different ways. It's only natural that we'll have something to learn from them by observing their ways of going about life. Biomimicry is the name for that: mimicking nature in order to solve the problems human beings are facing is termed as "biomimicry". From something as simple as velcro tapes to something as complex as bullet trains, nature inspired designs are present in various aspects of our lives. The beauty of these biomimetic designs is that they are efficient, elegant, economical, and eco-friendly.



One such example is the Eastgate Centre located in Harare, Zimbabwe which uses a passive system to keep the building cool. The structural design of the building responsible for regulating its internal temperatures was originally inspired from the architecture of termite mounds. The presence of openings in the external structure and large open spaces inside the building, as mimicked from the construction of termite mounds, enables passive airflow and is part of what keeps the building's temperatures conducive for the occupants.

Another remarkable example of learning from nature is that of the lesson taught by sharkskin.

Sharkskin has a patterned structure that enables it to keep microorganisms from adhering to or accumulating on its surface. This endows the sharkskin with antimicrobial properties. Sharklet®, developed by Sharklet Technologies, is a patterned surface that has been inspired by the structure of the sharkskin surface. As claimed by Sharklet Technologies, it is the world's first technology to inhibit bacterial growth by patterns alone. It finds use in layering surfaces such as that of hospital walls, which are often touched by different people who might be carrying various microorganisms with them, besides also solving the problem of algae accumulation on the hulls of ships and submarines.

SAKSHI JHA
B.SC. (H) ZOOLOGY
I YEAR

Structural colours are yet another biomimetic marvel. Not all colours we see around us in nature are due to coloured pigments; some colours are due to the nanostructure of the surface. The pattern of the surface causes the light hitting it to undergo diffraction, followed by constructive interference of light waves of some colours and destructive interference of light waves of other colours. This leads to the surface appearing to be of a certain colour. A beautiful exhibition of this is seen in the wings of the Morpho butterfly. Their brilliant blue colour is not due to any coloured pigments, but rather due to the Morpho wing nanostructure. The surface patterns on the wings cancel out all colours of the spectrum of white light except for the blue component. Cypris Materials, a Berkeley-based company, has learned from this and mimicked this phenomenon to create synthetic structural colours which work on the same principle as that of the Morpho butterfly's wings. These structural colours can now be used to paint walls without the toxicity and ecological damage associated with the use of conventional paints which are made out of harmful inorganic chemicals. They are also employed in coating windows to increase their energy efficiency and in the heat-reflective coating of roofs, besides a few other uses.

These are just a few examples of where mimicking nature has given rise to efficient and elegant solutions to age-old problems. There are many other such examples, and many more yet to be chanced upon as the various organisms around us have numerous other lessons to teach us. Nature indeed is the ultimate teacher and it's up to us to be good students.



DECODING REVENGE

A dive into the animal kingdom

So you were wronged- a friend threw you under the bus or somebody stole your brilliant and sensational idea. It must have made you angry and hurt. You are stomping your feet while pacing in your room probably thinking of a way to give them the payback they deserve. Your shoulder angel is advising you that “letting go” is the way to go. However, sometimes these negative emotions might bottle up over time and revenge sounds more appealing.

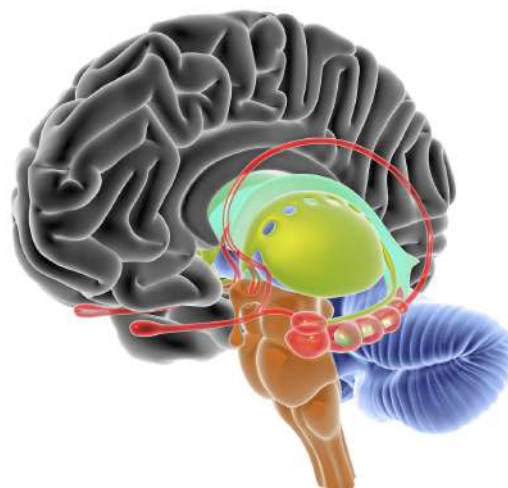
You’ll be surprised to know that revenge, vengeance, spite, and anger, aren’t just “human” emotions and neither are the biochemical processes behind them. For humans, revenge often is a rather irrational expression of our justice-seeking brains. We are hard-wired to praise altruistic or selfless behaviour but punish acts of selfishness. We often tend to anthropomorphize animals with human-like tendencies, habits, and emotions to the extent that we start associating those species with those very characters. Crows hold grudges like the old fables, elephants have an excellent memory, the wolf is the poster child for brotherhood and other primates like chimpanzees and gorillas are loving parents just like us.

But what if a few of these behaviours are not just limited to humans but have far-reaching consequences in the rest of the animal kingdom as well. Let us start by understanding how a brain processes the feelings of anger and revenge.

Before diving into the details let's brush up on the basics: the limbic system, involved in our behavioural and emotional responses, consists of several parts (amygdala, hippocampus, thalamus, hypothalamus, basal ganglia, and cingulate gyrus) and is considered to be a primitive portion of the brain. Whereas the prefrontal cortex, which determines the reason and rationality behind our emotional responses, is considered a more recent part of the brain, said to have developed later on in our lives. The catch here is that our emotions of fear and anger start in our amygdala, our limbic system. It is so good at warning us about danger, that we act even before the prefrontal cortex has the

chance to judge the reasonableness of our actions and hence the sudden outbursts when anger strikes. Now, where does revenge originate in our brains, and what suppresses it?

This is answered by the University Of Geneva researchers, and their economic game study. In this, the test subject is presented with one player’s fair behaviour and the other player’s unfair behaviour. Then they used brain imaging to decipher which parts of the brain were active as the test subject experienced anger and injustice. They were able to pinpoint the DLPFC (dorsolateral prefrontal cortex) as the site of inhibition of the act of retribution. The more active the DLPFC is, the lesser revenge a participant seeks. Revenge also lights up the same areas of the brain which are involved in the reward circuit, giving us the sweet feeling of “winning” something.





Revenge as a concept serves the purpose of social species; ravens, crows, primates, etc. Crows and ravens tend to remember faces, and actions that have been done to them and act accordingly when they see you next time. Hence the old fable of crows holding grudges against people who torment them. Macaques, a genus of old world monkeys, also indulge in the practice of revenge, where if they aren't able to directly attack the offender because of its bigger stature, they go after and inflict harm upon someone weaker, perhaps one of the younger members of the attacker's family. One such real-life example was seen recently in the town of Maharashtra, where a group of monkeys killed 250 dogs. As you might have guessed this response was prompted as an act of vengeance. Allegedly a puppy killed a baby monkey in that very town sparking a series of events leading the entire monkey tribe to see red.

Revenge also lights up the same areas of the brain which are involved in the reward circuit, giving us the sweet feeling of “winning” something

These findings may help explain how a process known as 'conflict contagion' can occur, in which a conflict that begins with a few individuals spreads to entire groups thus further explaining the social aspect behind revenge.

According to a study that sheds further light on the variables that drive individuals to seek vengeance, levels of the 'love hormone' oxytocin may increase in animals engaged in conflict and alter the area of the brain connected with decision-making activity. This study, which was published in the journal *eLife*, highlighted that increased levels of the hormone cause a greater sense of love and empathy among a group, as well as a drive to seek vengeance when attacked by an outside group.



A cat, on the other hand, has no concept of revenge indicating that on average less social animals have a lower revenge response. The tiger has even lesser social skills than the house cats but are extremely territorial and hence will immediately attack you if felt threatened.

Hence revenge is a response that not every species possess but certainly it does offer some evolutionary advantage to those who do possess it.

Its primary objective is to act as a deterrent, which has obvious benefits for any species' survival. Let's take an example of a group of animals that are infamous to seek revenge if prompted, communicating to other species in the vicinity to be wary of them and not to poke the animal leading to dire repercussions for them, ultimately subsiding any potential fights. Hence revenge ultimately serves as an evolutionary benefit for the said group where both the revenge-seeking and forgiveness-seeking groups work in tandem to maintain peaceful social interactions.



To conclude, revenge seems to be a fairly universal emotion across species in the animal kingdom but not all express it to the same extent as we humans do. A lot still needs to be uncovered about the neurobiology of the emotions of revenge and vengeance. So until then try refraining from acts that would land you in a pickle with the above species or even your own species.

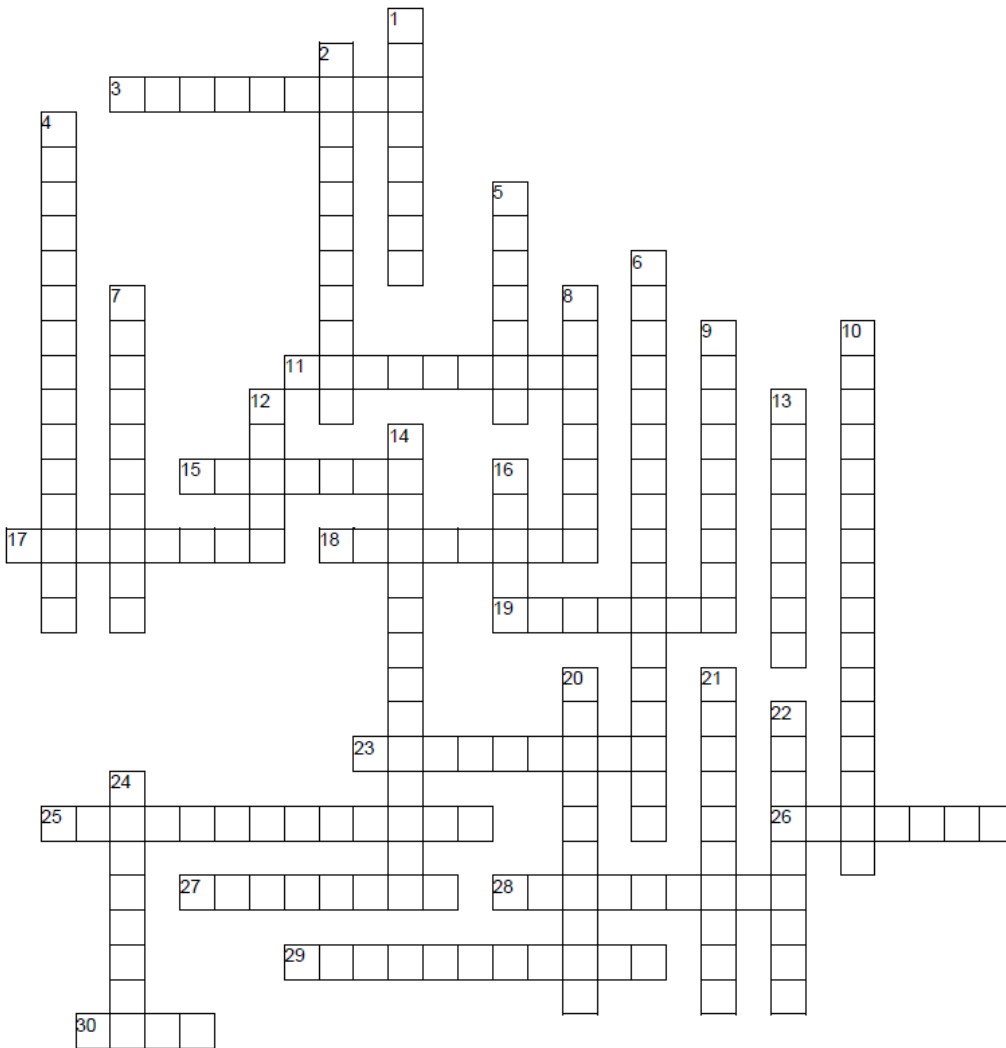
Bisma Khan and Smriti Verma

B.Sc (H) Zoology

II year

(I position in article writing competition)

crossword



DOWN

1. animals that hunt for other living animals
2. the interaction between two organisms that require the same resource
4. the primary level of consumer that eats producers
5. the place organisms live
6. the second level of consumer that eats herbivores
7. a group of organisms of the same species living in an ecosystem
8. organism that consumes only animal tissue
9. all living components of an ecosystem
10. the third level of consumer, generally a carnivore

13. organism that must obtain nutrients and energy from eating other organisms
14. the non-living components of an ecosystem
16. the role of an organism and what it needs to survive in its ecosystem.
20. The complete destruction of every member of a species
21. organism that breaks down chemical compounds made by living things
22. the part of the Earth in which life can exist
24. organism that must obtain nutrients and energy from eating other organisms

ACROSS

3. organism that consumes only plant tissue
11. energy links between different organisms in an ecosystem
15. the overlapping of food chains in an ecosystem
17. organism that consumes both plant and animal tissue
18. organism that can produce their own food through the process of photosynthesis
19. the study of the relationships and interactions of living things with their environment
23. a community of organisms in an environment
25. the living components of an ecosystem
26. very similar organism that can interbreed and produce fertile offspring
27. an individual living thing composed of one or more cells
28. another term for producer
29. another term for consumer
30. the animal hunted by other animals



word search

E L D O O P G U X C R O E H D L O D K J E E Z O
 B H E J Q Z S W C X S G L O B A L W A R M I N G
 P Q M N O M Y G M G J X B Y H B I O T I C U Q T
 K Q A S J V M A K W C T I D E N E T A E R H T B
 M H M S I L A S N E M M O C B A C I T O I B A R
 C I V K C R I P Y Q C G M M P V X P B I R I X E
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 J J I U Y A Z D X I O I D Y O S E I E K O C Y O
 D A K B Z D E C O S Y S T E M R R T F S R N T C
 M A T T U E J B A E Z S I J O E V I R J P J K D
 W R V I X R F P L B E V U T J V A S B A O S Q Z
 S N C C O E S H A B I T A T O I T M G W X I P L
 X T M B U G U S O D K H D I Z D I Q A S Y Q O L
 L C S G X N C I T T L Z O K L O O H K S S Y P Z
 S N I Z Q A C Z B X K F O V A I N W S Q E G U V
 V I L T Q D E U I J U Y B W S B U S Y D I O L Z
 L T A O P N S L C O M M U N I T Y S T D C L A G
 D X U Q L E S I T E R E H P S O I B R A E O T U
 G E T O O F I T P B M R H N I C H E T V P I I V
 U W U I E D O T B G I Q P T X P O H F J S B O C
 I B M W C M N P O N R L W Y F T P D V O S E N C

abiotic
 biodiversity
 biology
 biomes
 biosphere
 ecology

ecosystem
 endangered
 mutualism
 commensalism
 parasitism
 population

producer
 species
 succession
 symbiosis
 threatened
 habitat

biotic
 community
 conservation
 consumer
 extinct
 niche

trivia

1. What is a biodiversity hotspot?

1. Areas that are rich in biodiversity, unique, and threatened
2. Areas with lower levels of genetic diversity
3. Large size ecosystems
4. Areas where species survive only in human care



2. Which groups face the greater risk of extinction?

1. Corals
2. Amphibians
3. Flowering plants
4. Mammals

3. Which percentage of the world's cultural and biological diversity is nurtured by indigenous people?

1. 80%
2. 10%
3. 20%
4. 75%



4. The white willow tree (*Salix alba*) is a core compound of?

1. Morphine
2. Aspirin
3. Herpes treatment
4. Cholesterol treatment

5. Global food loss and wastage is estimated to be roughly one-third of all food produced for human consumption. True or False?

1. True
2. False



trivia

6. Which of these food crops are threatened due to climate change?

1. Peanut
2. Potato
3. Beans
4. All of the above



7. How many tons of plastic end up in the ocean each year?

1. 1.5 million tons
2. 10 million tons
3. 14 million tons
4. 20 million tons

8. Which components of coastal ecosystems help to protect and maintain coastlines?

1. Mangrove forests
2. Coral reefs
3. Sand dunes
4. Dams



9. The number of coral reefs threatened by ocean warming will rise to 90 percent by 2030 if no action is taken. True or False?

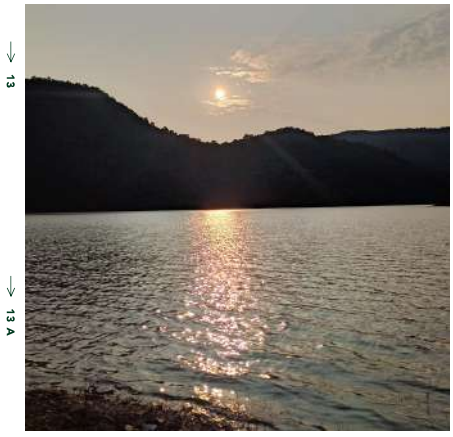
1. True
2. False

10. 75% of the world's food comes nowadays from:

1. 12 plants and 5 animal species
2. 269 plants and 25 animal species
3. 157 plants and 30 animal species
4. 83 plants and 4 animal species



UPASNA MOHAPATRA



FILM NEGATIVE

UPASNA MOHAPATRA



FILM NEGATIVE

UPASNA MOHAPATRA



FILM NEGATIVE

UPASNA MOHAPATRA



FILM NEGATIVE

Bio

Snap





→ 13

→ 13 A

FILM NEGATIVE



→ 14

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FILM NEGATIVE

FILM NEGATIVE

UPASNA MOHAPATRA

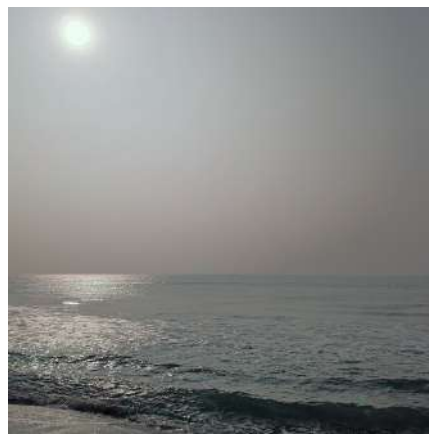
UPASNA MOHAPATRA

KHUSHBOO SHARMA

KHUSHBOO SHARMA

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KHUSHBOO SHARMA



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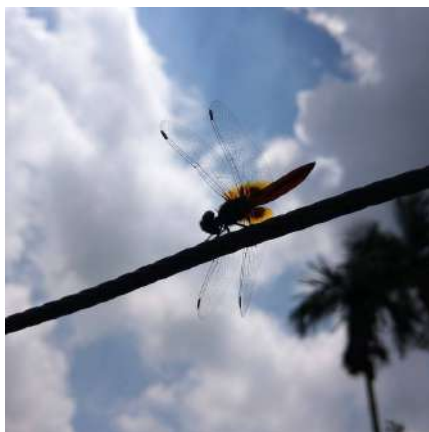
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FILM NEGATIVE

KHUSHBOO SHARMA

SWEATA BISWAS

ARCHI GUPTA

AVANI JAMWAL

SWEATA BISWAS

SWEATA BISWAS

SWEATA BISWAS

AVANI JAMWAL



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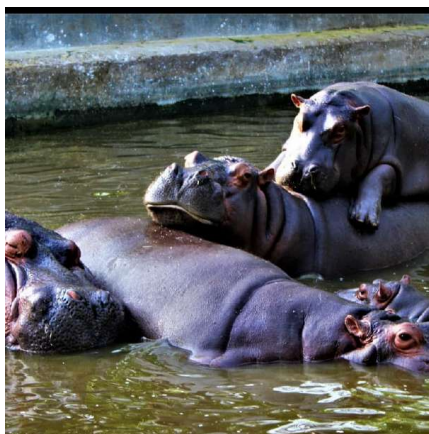


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→ 13

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ARCHI GUPTA



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ARCHI GUPTA



→ 13

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FILM NEGATIVE

SIMRAN WALIA

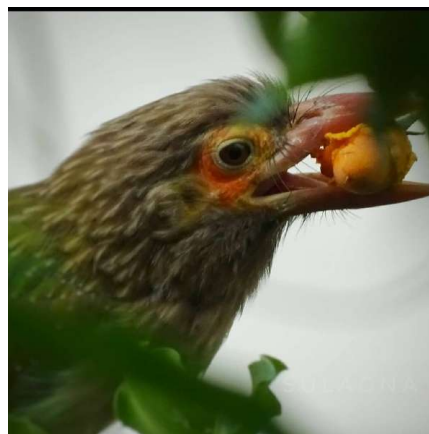


→ 14

→ 14 A

FILM NEGATIVE

SUHANA NEHAL



→ 13

→ 13 A

FILM NEGATIVE

ARCHI GUPTA



→ 14

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FILM NEGATIVE

ARCHI GUPTA



→ 13

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FILM NEGATIVE

SUVECCHA PANJA



→ 14

→ 14 A

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UPASNA MOHAPATRA

YEAR 2021-22

DEPARTMENT ACTIVITIES





Inaugural Lecture by Prof. Atanu Kumar Pati

An informative virtual lecture was organized by Albatross, reflecting upon the topic of 'Chronobiology: An Introduction' by Prof. Atanu Kumar Pati, Professor Emeritus of Biosciences, PRSU, Raipur. Prof. Kumar intrigued the audience with his captivating lecture and motivated future zoologists to pursue the field of chronobiology. He spoke about the various opportunities in the field and provided all the insights that proved to be of immense value. His lecture was followed by a QnA session. The meeting ended with our department president, Madhurya Ray, introducing the newly elected members of the Student Council and adjourning the meeting on a futuristic note.



Webinar on UPSC

An illuminating webinar titled "Journey to destination" on UPSC was conducted through which eminent dignitaries, Mr Raviteja Munikoti, IRS(IT)-2016 Batch & Ms Tejaswini Pusuluri, IFS-2018 Batch provided deep insights into UPSC preparation. Their knowledge and experiences were highly beneficial to students in building a better strategy for the civil services. It was a privilege for the zoology department to receive advice from meritorious officers of our country.

Alum Connect

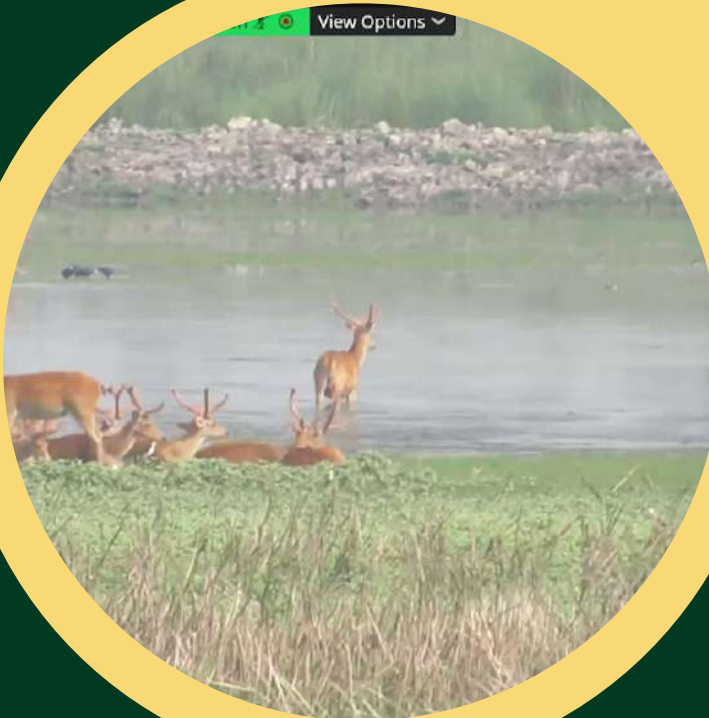
Further, we had organized an AlumConnect with Ms Ishita Talwar who is a notable alumna of the Zoology Department (Batch of '21), Gargi College. Currently, she is pursuing M.Sc. Biology from the Department of Biological Sciences, TIFR, Mumbai. She had secured an All India rank 10 in IIT JAM Biotechnology 2021 and Qualified JGEEBILS.

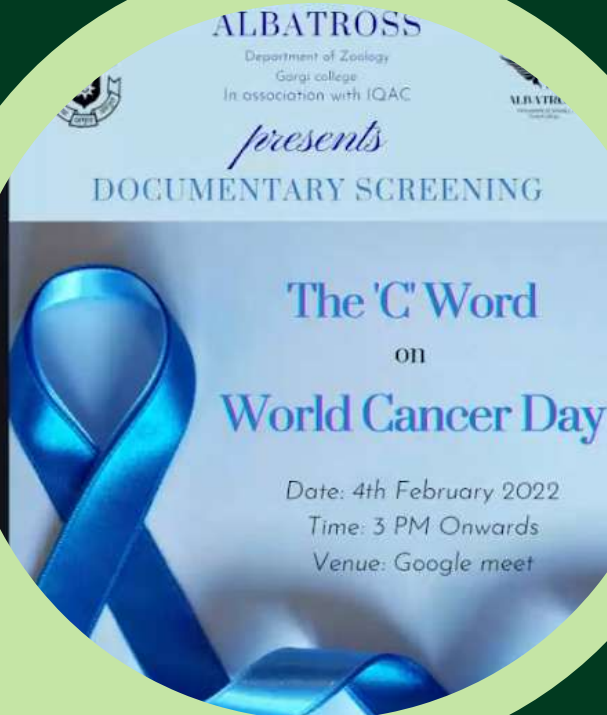
It was an informative- cum-interactive session that was open to all students to discuss various queries related to their careers and other future opportunities.



Virtual Tiger Safari

An exciting virtual visit to Dudhwa Tiger Reserve was organized for the students of Gargi College. The tour focused on providing an enlightening experience to the students and spreading awareness about the importance of nature and conserving our flora and fauna. The Albatross society was delighted to host such a refreshing and informative event and nearly all the students were interactive during the tour. A few of the most interactive students were awarded gift vouchers.





Documentary (World Cancer day)

On the occasion of World Cancer day, an informative documentary was screened with the motto of generating awareness and sensitivity around the importance of all the aspects of cancer, its diagnosis, and treatment. After hosting a successful virtual film screening, a conversation guide was added to support the discussion that followed. Along with the discussion, a Q & A session was also organized to examine the understanding of the participants and make the session more interactive.

Important Instructions

- Open for all bonafide students of Gargi College.
- Name, Year, Course should be mentioned clearly on the top of illustration clearly.
- To submit - [Click here](#).
- Plagiarised entries will lead to disqualification.
- Only one entry is allowed.
- All illustrations are expected to be factually consistent with reputed sources.
- Entry is to be submitted in .JPEG format only
- Both digital and handmade illustrations will be accepted.
- Submission deadline: 18th February 2022

Contact :
 Madhurya Ray (President) - 9874647616
 Chestha Mutreja (Vice President) - 9350243626
 Instagram: [albatross.gargi_official](#) Facebook: [Albatross_The Zoological Society of Gargi College](#)



“Picturesque”- The Illustration Competition

On 12th February 2022, Darwin's Day, “Picturesque”- The Illustration Competition was organized for all bonafide students of Gargi College. The theme of the competition was “Evolutionary Journey of Different Species, in light of Darwin's Theory”. The Department received beautiful and innovative illustrations from immensely talented artists of our college.

ALBATROSS

Department of Zoology, Gargi College
In association with IQAC

CALL FOR ARTICLES



Exciting cash prizes and gift vouchers!

The Article Writing Competition :

With biodiversity as its theme, Albatross organized an enriching competition for the students of the department encompassing topics such as; gene editing, ecology, animal behaviour, stem cell technology, etc. The students responded with enthusiasm and diversity in their competent entries. The winners of the competition were awarded cash prizes and their entries presented in our annual magazine, Flight.

presents

POSTERMANIA

On the occasion of

NATIONAL SCIENCE DAY

THEME

*INTEGRATED APPROACH IN SCIENCE
AND TECHNOLOGY FOR A
SUSTAINABLE FUTURE*

DEADLINE FOR SUBMISSION: 7TH FEBRUARY

Postermania" - The Poster making competition.

Held on 28th Feb on the occasion of National Science Day, the theme of POSTERMANIA was "Integrated Approach in Science and Technology for a sustainable future." Several science enthusiasts participated in the competition to showcase their scientific zeal through creativity.

Anwasha De - 3rd Year
Varnika- 2nd YearBisma Khan- 2nd Year
Upasna Mohapatra- 2nd Year
Smriti Verma- 2nd YearPhotography Society
Gargi College

SOCIETIE

Quizzito
The Quiz Society

Mugdha Sharma- 2nd Year

Seeta Prajapati -3rd Year
Kasturi Das - 1st Year

Bisma Khan - 2nd Year
Aarti Venkatesan - 2nd Year
Sakshi Jha - 1st Year

Q E D

The English Debating Society
Gargi College

Ruchi Jha- 2nd Year

रइहोतुं

The StreetPlay Society



S 21-22



Anwasha DE

(President - NSS Gargi) - 3rd Year

Sharon Mathew (GSS Science) - 3rd Year

Divyanshi Chauhan(NSS) - 2nd Year

Smriti Verma (NSS- Editorial team) - 2nd year

Mahima(GSS) - 1st Year

Suhana (GSS) - 2nd Year

Harpita (GSS)- 2nd Year

Suvechha Panja (GSS) - 2nd Year

Garima Singh(GSS) - 2nd Year

Yuvika(GSS) - 2nd Year

Vaishnavi Singh (GSS) - 2nd Year

Archi Gupta(GSS)- 3rd Year

Seeta Prajapati - 3rd Year
Anwasha De - 3rd Year
Afreem Bano- 2nd Year

Suvechha Panja - 2nd Year



Harpita- 2nd Year
Upasna Mohapatra- 2nd Year
Avani Jamwal - 1st Year



Nikki Yadav - 1st Year
Vaishnavi Gautam - 1st Year

Madhurya Ray- 3rd Year

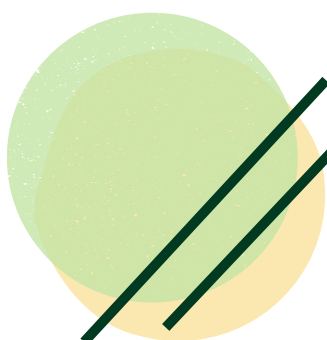


HALL OF

FAME

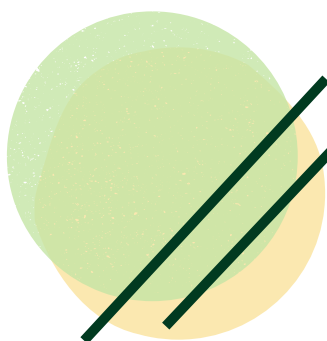
2021-22

ACHIEVEMENTS



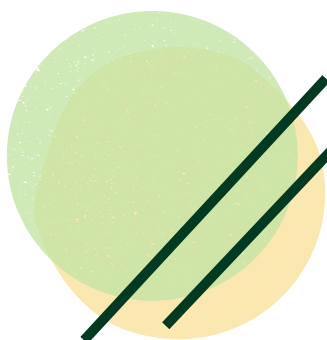
Anika Johri (1st year)

- Paid internship at Labgo, a branch of Sigma Test and Research Centre, working as a scientific research content writer.
- Published author in 2 poetry anthologies, and was selected out of hundreds of other applicants.



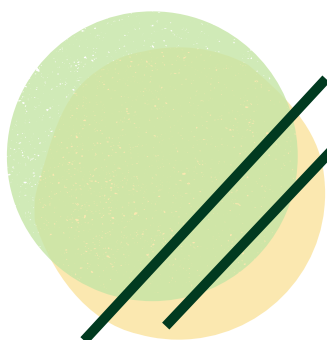
Khushboo Sharma (1st year)

- Secured 3rd Position in Best Out of Waste Competition.
- Secured 3rd Position in Video Making Competition organized by Ethereal of "Shaheed Rajguru College of Applied Science For Women".
- Secured 3rd Position in Poster Making Competition of Sports Olympiad organized by Gargi College.



Garima Singh (2nd year)

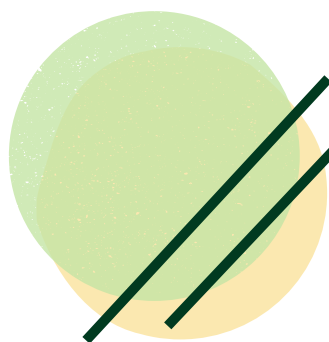
- Successfully secured Earth Day Eco-Warrior (Open Positions - 2500) internship at EarthDay.org India through Internshala



Varnika Vashishtha (2nd Year)

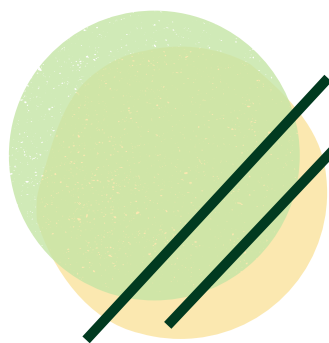
- First Runner up in Lens and Canvas (Photography and Painting competition) organized by SRCC Fine Arts Society

ACHIEVEMENTS



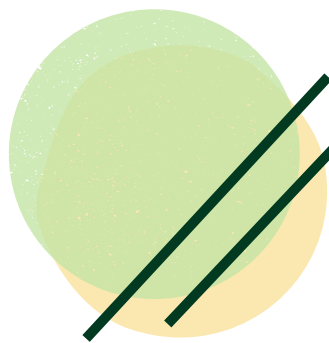
Janvi Aggarwal (2nd year)

- Worked as a content specialist intern at mybiologydictionary.com
- Secured the third position in an inter-college National Online Quiz "QUIZONE" organized on the occasion of World Ozone Day
- Secured the first position in an inter-college virtual quiz on Wetland Action for People and Nature as a part of World Wetland Day
- Secured the second position in inter-college 'Think and Link' organized by Ramjas College, University of Delhi
- Secured the first position in an intra-college food quiz held on the occasion of world food day



Suvechha Panja (2nd year)

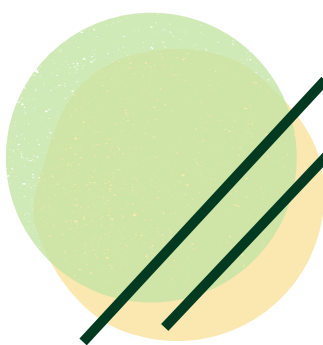
- 1st Prize in "QUIZONE" conducted by Bhaskaracharya College of Applied Sciences on World Ozone Day 2021.
- 3rd Prize in Independence Day week Dance
- Competition 2021 organized by NSS Gargi
- 3rd Prize in Video Making Competition in
- 3rd Prize in Anime Konekuto competition organized by P.G.D.A.V. College, Delhi University in their Fest Commantra '22



Musarrat Jahan (2nd Year)

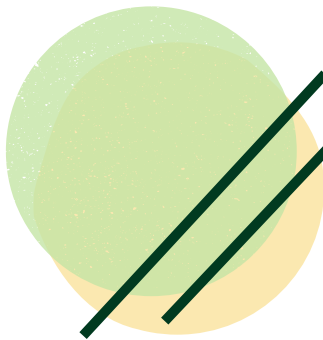
- 1st position in the photography contest, Swami Shradhanand College

ACHIEVEMENTS



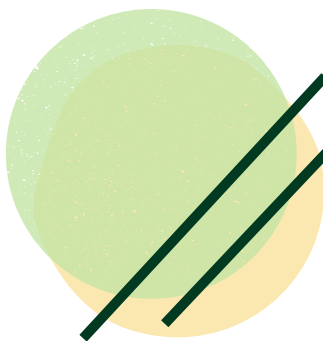
Tanya Jain (2nd Year)

- Won third prize in Create-a-Canvas an Inter College Poster making competition organised by Deshbandhu College Wildlife Week celebration: WILD-O-VIGUS
- Won first prize in Handmade Poster Making Competition organised by NSS Dyal Singh college on AIDS/HIV Awareness
- Won second prize in slogan writing competition organised on Vanyajeev Mahotsav organised by Aranya-The nature and environment society of Zakir Husain Delhi College



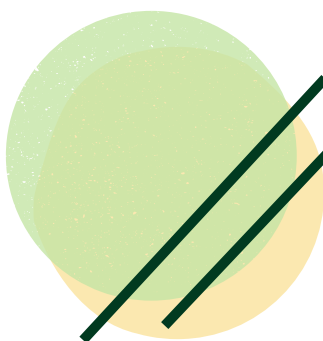
Himani (2nd year)

- Third prize in the poster making competition by Shaheed Rajguru Applied Science of Women.
- Indo-Singapore Workshop on "Cardiovascular Diseases: An Insight to New Advances and their Translational Application."



Yuvika (2nd Year)

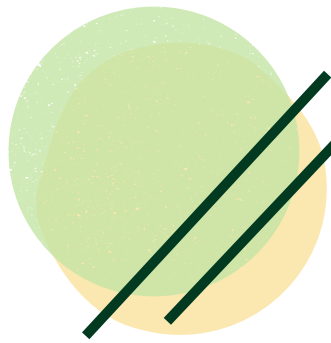
- 2nd position in 'QUIZONE' Competition conducted by Bhaskar Acharya College of Applied Science UOD on the ""world Ozone Day"
- 3rd position in Video making competition organized by Ethereal, Shaheed Raj guru College of Applied Science for women DU



Shivangi Shekhar (2nd Year)

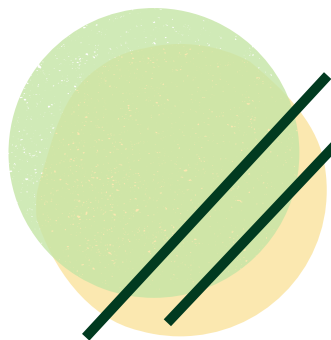
- Pathfinder Project on "Revenge Bedtime Procrastination"
- Working at BioXfield as a career communicator
- Social Media/Content research volunteer at GirlUp Urja
- Attended 'One Day Workshop' on "Bioinformatics- An in-silico approach to understand biological principles" at Maitreyi College.

ACHIEVEMENTS



Divyanshi Chauhan (2nd Year)

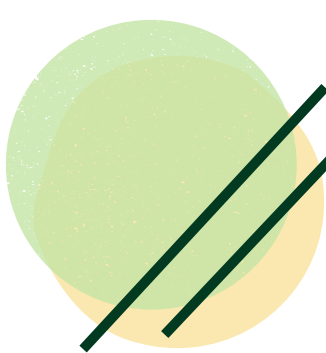
- Kalpana fellow, Kalpana fellowship program, Vigyanshaala international
- Biolearner, Bioxspace
- Research and content team lead at The STEM factor
- Scientific illustration: Context in the learning process of biological sciences workshop by Shri Guru Tegh Bahadur Khalsa College.
- 3rd position in the paper presentation competition 'Chemaroma' organised by Rasgandhayan, The Chemical Society of Gargi College, Delhi University
- 3rd position in article writing competition organised by Albatross, The Zoological Society of Gargi College, Delhi University (Page No. 34-35)



Bisma Khan (2nd Year)

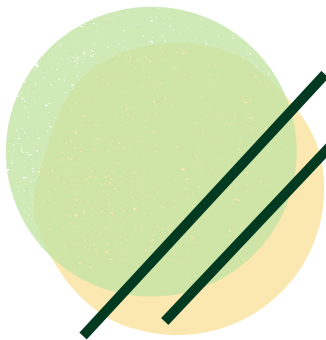
- 1st position in 'Scavenger Hunt Event' organised by Department of Mathematics, Jesus and Mary College in collaboration with The Puzzle Society, Jesus and Mary College, Delhi University
- 3rd position in the paper presentation event "REVEL" organized by the Science & Mathematics Departments of Gargi College (University of Delhi) under the aegis of the National Academy of Sciences, India (NASI) and the Science-Society Program by NASI Delhi Chapter
- 3rd position in 'Chamber of Secrets- The Treasure Hunt' organised by Paakhi, The Women Empowerment Cell of Sri Aurobindo College, Delhi University
- 3rd position in 'Hunt in the House' organised by Trisectrix, the Mathematics Association, Sri Venkateswara Association, Delhi University
- Quarterfinalist and 4th best open speaker at SDSMMPD'22 (Asian Parliamentary Debate Competition)
- 1st position in article writing competition organised by Albatross, The Zoological Society of Gargi College, Delhi University (Page No. 40-42)

ACHIEVEMENTS



Upasna Mohapatra (2nd Year)

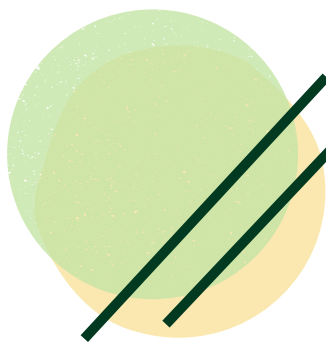
- Pathfinder Project on “Revenge Bedtime Procrastination”
- Completed internship at an NGO; Kannan Animal Welfare
- Undergoing certificate course in German Deutsch, University of Delhi



Smriti Verma (2nd Year)

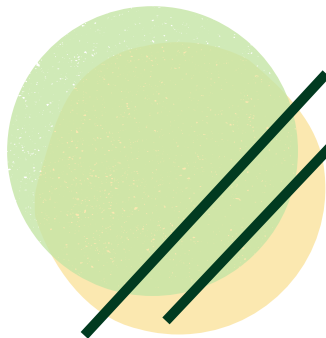
- Scientific Illustration: Context in Learning Process of Biological Sciences workshop by Shri Guru Tegh Bahadur Khalsa College, Delhi University
- 2nd position in ‘Anusandhan: Welcoming New Ideas of Science Fiction’ organised by G.E.R.M.S, Gargi College, Delhi University
- 1st position in ‘Scavenger Hunt Event’ organised by Department of Mathematics, Jesus and Mary College in collaboration with The Puzzle Society, Jesus and Mary College, Delhi University
- 3rd position in the paper presentation event “REVEL” organized by the Science & Mathematics Departments of Gargi College (University of Delhi) under the aegis of the National Academy of Sciences, India (NASI) and the Science-Society Program by NASI Delhi Chapter
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- 3rd position in ‘Hunt in the House’ organised by Trisectrix, the Mathematics Association, Sri Venkateswara Association, Delhi University
- 3rd position in the paper presentation competition ‘Chemaroma’ organised by Rasgandhayan, The Chemical Society of Gargi College, Delhi University
- 1st position in article writing competition organised by Albatross, The Zoological Society of Gargi College, Delhi University (Page No. 40-42)

ACHIEVEMENTS



Aarushie Chatterjee (2nd Year)

- 3rd position in “Postermaina - The Poster Making Competition” organised by Albatross, The Zoological Society of Gargi College, Delhi University



Aarti Venkatesan (2nd Year)

- Kalpana fellow, Kalpana fellowship program, Vigyanshaala international
- Pathfinder project on "Visualize Science E-learning tool"
- Content and graphic team, BioXspace
- Ideation and Outreach Team, Girlup pankh
- Academic Manager, Childrenwise NGO
- Novice Winner, SRCC PD Tournament, 2022
- PR and Marketing Head at ASanitaryGift
- Successfully completed the ICT in Digital Learning & Data Management organized by Maitreyi College.
- Attended a scientific workshop on Model Organism and Visual Experimentation: Zebrafish and JoVE organized by Sri Venkateswara College.
- Completed the certificate course on Biosafety Level III Facility and laboratory training and Handling practices for Mycobacterium by Department of Biochemistry, University of Delhi South Campus
- Miss Gargi Freshers runner up, 2022

ACHIEVEMENTS



Seeta Prajapati (3rd year)

- 3rd Prize In Extempore Competition - IIT BHU International Competition fest
- 3rd prize - National Speech Competition Ramanujan College
- Quarter-Finalist- Shaheed Bhagat Singh Morning Tark- Sangram (Parliamentary debate)
- 1st Prize - Zenith (GARGI) and evam monologuing marauders, Punjab University (Just a minute - JAM)
- 1st prize- Women Development Cell Acharya Narendra Dev College University of Delhi (Parliamentary Debate Competition)
- 2nd prize at - Zenith (GARGI) and evam monologuing marauders, Punjab University (Open Mic Poetry Competition)



Anwasha De (3rd year)

- Pathfinder Project on "Study of Intra-Clade C polymorphisms in envelope genes of HIV-1 in African and Indian Sequences" presented to the Pathfinder Committee
- Placed as Graduate Trainee at Becton and Dickinson through Placement Cell, Gargi College Jan 2022
- Certificate Course in German Deutsch (Passed with Distinction)- University of Delhi
- Bioinformatics and Computational Biology Add-on Certificate Course- Gargi College, University of Delhi 2021-22
- Subject Matter Expert and Virtual Educator: Development of content and academic material for Biology subject domain at Studyroom
- National Level Capability Enhancement Workshop on "Exploring DNA using Biopython" - Science Foundation, Deen Dayal Upadhyaya College, University of Delhi. 22nd January 2022
- 3rd position India Quiz, Quizzito- Quiz Society, Gargi College 2021

ACHIEVEMENTS



Sharon Mathew (3rd year)

- Winner of Pre-Jitter Zistatva Dance Challenge competition conducted by NSS Gargi.
- Completed internship in Ritva Foundation India.
- Completed 2 months internship as an Educator at Myra-ek Pehel.
- 2nd position in article writing competition organised by Albatross, The Zoological Society of Gargi College, Delhi University. (Page No. 30-32)



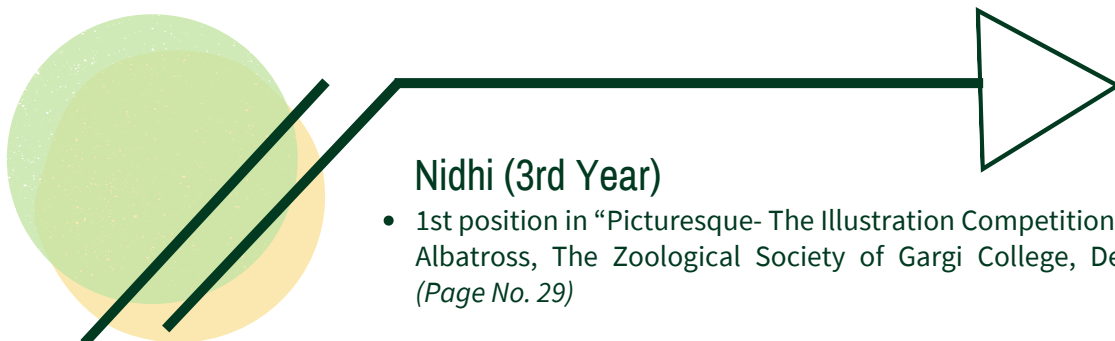
Mitiksha Gupta (3rd year)

- Quarterfinalist in Swaroop Fundraiser Debate of Sri Venkateshwara College
- First position in Bhoomika Nibhao Competition by Hindi Sahitya Sabha, SRCC (Sri Ram College of Commerce)
- Stood first in Debate Competition organised by NCUI (NATIONAL COOPERATIVE UNION OF INDIA)



Madhurya Ray (3rd Year)

- Participated in Pathfinder awards conducted at Gargi College with the paper "Study of Intra-Clade C polymorphisms in envelope genes of HIV-1 in African and Indian Sequences".
- Completed 15 days Bioinformatics workshop on Computational Biology for (meta) genomic Analysis conducted by PHIXGEN Pvt Ltd., 2021.
- Editor at Drew Reports News from 24th September 2021 to 30th December 2021.
- Content writer and editor at SpiritWish from February 2021 to November 2021.
- Content writer at iProCo India from August 2021 to October 2021.



Nidhi (3rd Year)

- 1st position in "Picturesque- The Illustration Competition" organised by Albatross, The Zoological Society of Gargi College, Delhi University (Page No. 29)

Rank Holders





RANK HOLDERS



Upasna Mohapatra
II Year



Ridam Yadav
II Year



Suvechha Panja
II Year



1st



2nd



Yuvika
II Year



3rd



3rd



Madhurya Ray
III Year



Ayushi Gahlot
III Year



Anwasha De
III Year



1st



2nd



3rd

BATCH OF 2022

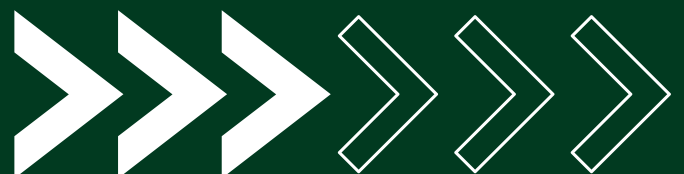
BSC (HONS) ZOOLOGY



First row : Preeti, Pratibha, Pratibha, Sheetal, Bharti, Astha, Pratibha, Simran, Khushi, Anjali, Nidhi, Nishu, Harsha, Manpreet, Chestha, Samriddhi

Second row: Ashukti, Anshika , Muskan, Alisha , Khushboo, veena, Khushbu, Sweata, Sharon, Anwasha, Harshita, Ayushi, Mahenoor, Afreen, Madhurya, Neha

Third row: Pooja, Karishma, Anshika, Riya, Rupali, Reena, Shruti, Shweta, Simran, Ashi, Preety, Bushra, Archi, Tanisha



BATCH OF 2022

BSC (HONS) ZOOLOGY

Gargi vibes, our respected professors, my beloved friends, Jubin Nautiyal ka concert, our offline practicals during COVID and the small outings after those practicals..... Everything will be cherished and dearly missed!

-Sharon Mathew

Gargi College and Zoology department will always be the home for me. I found the three best people here whom I cherish the most. Covid spared a little time for us to enjoy this time. But the moment may be temporary but the memories are forever.

-Mitiksha Gupta

we didn't realize we were making memories we just knew we were having fun. #college days #best days of life

-Shweta Meena

Bunch of crazy and hyper friends that made College Life exciting....

Wo class me late jana,
Faculty ki daant khana,
Last banch pr baithna,
College canteen me roj khana,
Bina baat kr shor machna,
Jor jor se gaana,
Sb ka ek sath milkr,
Kisi ek ki wat lagana

#college life

#memories

Reverie

-Nishu Yadav

Gargi has been a beautiful experience for me with its definite highs and lows. I believe that this phase of my life has helped me in becoming a better person altogether and I am grateful to all the wonderful people I met here. Special thanks to my professors, friends and juniors for showering me with immense love and respect. My fondest memory as a batch of 2022 would be our visit to the Aravalli Biodiversity Park together in 2019. Attaching some of those memoirs here.

-Anwasha De

My girl squad! I met them accidentally and they eventually became the best part of my college life. Cheers to all the laughs, giggles, exam stress, canteen gossip, boring lectures, lab fun which then turned to WhatsApp stickers, group calls, group chats, sharing notes and relatable insta posts

-Shruti

We met during 1st semester as strangers and then met during 5th semester as a girls squad. Irrespective of online classes, our bond has always been stronger. From entrance exam updates to gossip, our discussions have always been productive. I will definitely miss my girls gang after graduation! Cheers to this family!

-Sweata Biswas

On my very first day in college, I met these amazing souls who eventually became the fundamental part of my college life. Flunked a few lectures made a lot of memories that will be cherished forever.

-Shruti

2

BATCH

0

One memorable moment was when our class decided to surprise every teacher by thanking them for their efforts and hard work. Their reactions were precious. <33
-Suhana Nehal

OF

My memorable incident is with Neena mam and Smriti mam when both the teachers asked about my health and well being before starting class, which is very heart touching and special to me! Something very heartwarming during the pandemic.
-Harpita

So, in 2021 I met 3 wonderful people. They inspire me and keep me motivated at most times. -Divyanshi Chauhan

SECOND YEAR

Met some inspiring people who have motivated me throughout
-Aarti Venkatesan



One thing that always inspired me was Shivani mam's words. Before beginning the lecture, she always told the students some courageous things.

BATCH

Always remain enthusiastic and calm, and never give up on any situation. Because every problem comes with a solution. So keep trying and practice, because practice makes a man perfect. Thank you so much mam for these affords
-Sanjana.

The one thing I had learnt in our online mode of study is how we can adjust to every change and make the best of it, online classes helped me a lot to heal my depression as everyone in my

OF

family was diagnosed covid positive and it was such a hard time in my life, college classes were the only medium through which I could unleash my depression and divert myself from the stress environment.
-Sneha Rohila

All events were very memorable, Teachers, seniors, classmates, all were very supportive.

-Dishu Yadav

FIRST YEAR

The zoology department didn't leave any chance of having fun. They organised various webinars, competitions and even an online freshers party for us <33

-Prachi Sharma

The thing which I have learnt in 2021 is always try to face problems and try to solve it. Because no one can motivate you. You should be motivated yourself.

So no one will help you, they can just guide you but you yourself have to take a step to resolve your problem.

-Mahima

Learning together when we are apart, guiding from a distance, online college really yelled "Education never stops for those who want to learn and for those who want to teach"

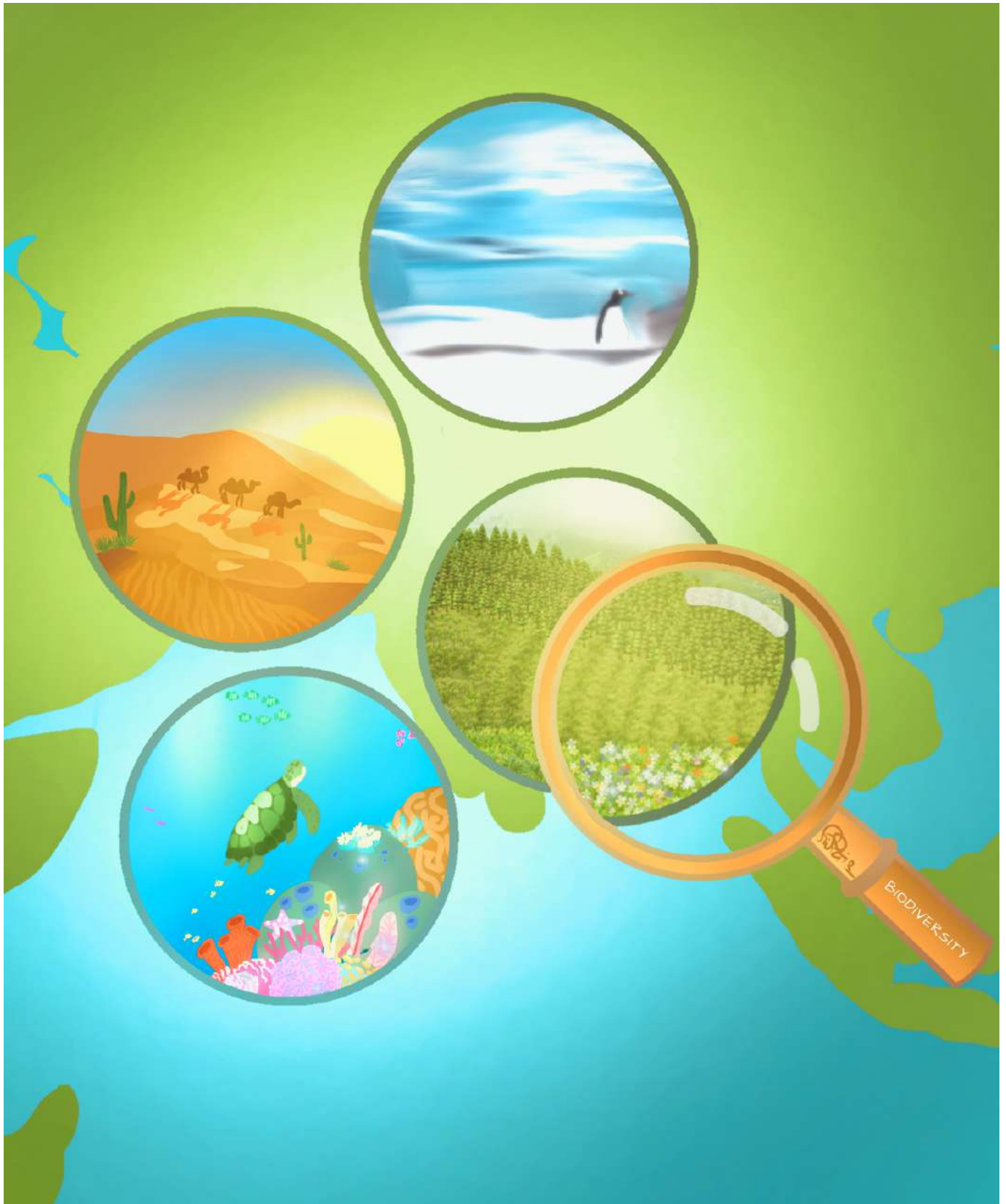
-Priti Jha

FLIGHT

2022 | ISSUE 15



DIVERSITAS: VIEWING BIODIVERSITY THROUGH DIFFERENT LENSES



ALBATROSS

DEPARTMENT OF ZOOLOGY
GARGI COLLEGE, UNIVERSITY OF DELHI