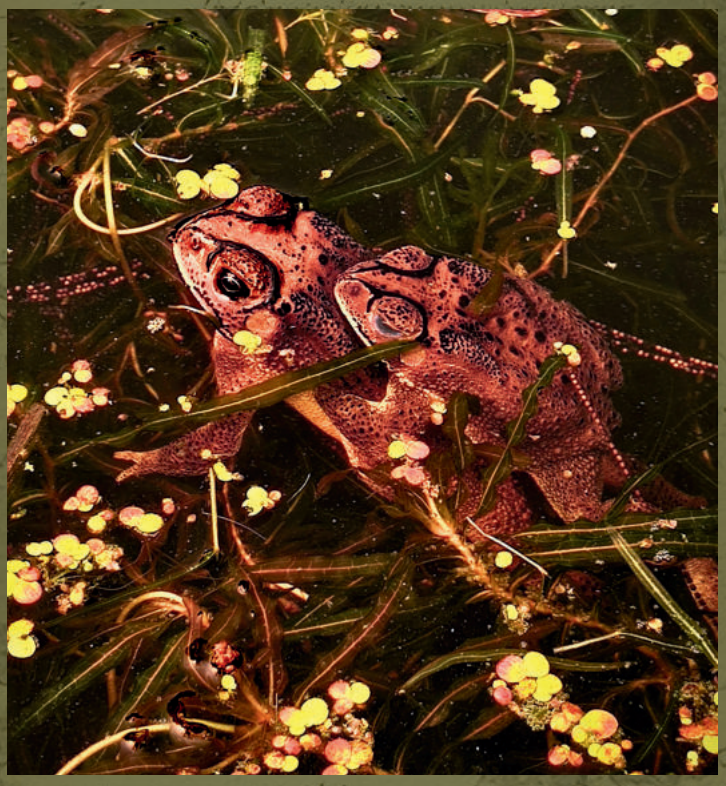
ARTEMIS 2024

Annual Zoological Magazine



DEPARTMENT OF ZOOLOGY

DYAL SINGH COLLEGE (M) | UNIVERSITY OF DELHI

ARTEMIS

Artemis, the Greek goddess of the wilderness, hunting, and wild animals, embodies a profound relationship between humans and nature. Her symbolism speaks to the ancient bond between people and the natural world, underscoring respect, responsibility, and balance. As a protector of wildlife and the wilderness, Artemis represents a harmonious coexistence with animals, highlighting the importance of conservation and ethical interaction. This magazine, named Artemis, aims to evoke this powerful symbolism, reminding us of our shared history and interdependence with nature.

Artemis, the Zoological magazine serves as a vibrant platform for showcasing our department's diverse activities and creativity. It is a space where students and faculty can share their innovative research, creative projects, and skill-building initiatives. Through articles, artwork, and reports on departmental events, the magazine not only celebrates achievements but also encourages collaboration and exploration. Artemis is designed to inspire readers, foster an appreciation for the relationship between humans and nature, and promote sustainable practices, aligning our academic pursuits with the spirit of discovery and respect that the goddess herself represents.

This inaugural edition of Artemis marks a milestone, establishing a legacy for future students to explore and build upon. By documenting our department's successes, innovations, and achievements, this first issue serves as both a record and a source of inspiration. Future students will be able to look back on the accomplishments featured here, drawing motivation to join the field of zoology and contribute to its growth. With each new edition, Artemis will continue to capture the spirit of our department, motivating prospective students to embark on their own journeys of discovery, exploration, and commitment to nature.

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Letter from the PRINCIPAL

Prof. Vinod Kr. Paliwal

Principal, Dyal Singh College, University of Delhi

Dear Readers,

I am delighted to present the inaugural magazine from the Department of Zoology. This publication showcases the creativity and various talents of our students, which will undoubtedly aid them in their future endeavors.

I would like to extend my appreciation to the members of the Editorial Board and the Advisory Faculty for their hard work and dedication in bringing this magazine to life. Your efforts are truly commendable and recognized. I hope that your achievements inspire enthusiasm and motivation in other departments.

This magazine reflects the growth of our department, highlighting our journey from planning events and competitions to publishing our first magazine.

The name "ARTEMIS" signifies the deep connection between humans and animals throughout the course of evolution.

Zoology plays a vital role in advancing research for the betterment of humanity, wildlife conservation efforts, and providing useful insights needed to maintain ecological balance—all of which are essential for preserving the planet, essentially focusing on every aspect related to animals and humans—from developing medicines and curing diseases to the conservation of all living beings, both small and large.

I am excited to see what the future holds for our Zoology community. Finally, I wish everyone the best of luck in their endeavors.

Thoughts from our TEACHER-IN-CHARGE

Dr. Neetu Bhattacharya

Teacher in Charge
Associate Professor,
Department of Zoology,
Dyal Singh College,
University of Delhi

Dear Readers!
It is with immense pleasure that I present to you this edition of our department magazine, ARTEMIS. This publication reflects the hard work, creativity, and academic excellence of our talented students and faculty members.

Our department has always believed in fostering an environment that nurtures curiosity, innovation, and collaboration. This magazine serves as a platform to showcase the remarkable achievements, research, and artistic expressions that stem from this vibrant community. Each article, essay, and piece of artwork in this edition is a testament to the dedication and passion that our students and staff put into their work.

I would like to express my heartfelt gratitude to the editorial team, contributing writers, and everyone involved in making this publication a success. Your tireless efforts and commitment are what make this magazine a true reflection of our department's spirit and accomplishments.

I hope this edition inspires readers and serves as a reminder of the potential within each member of our department. May it continue to motivate and encourage more creative contributions in the years to come.

Happy reading!

EDITORIAL BOARD

Shreshth Kohli

CHIEF EDITOR
and
COORDINATOR

I'm excited to introduce the first issue of our department's magazine. Leading this project has been a pleasure, providing a platform for creative minds to share their ideas. This magazine beautifully reflects the balance of creativity and intellectual diligence essential in the field of science.
A heartfelt thanks to our talented design and content teams for their dedication, and to our advisory faculty for their invaluable guidance and support in making this vision a reality. Together, we have created something truly special, and I hope it inspires readers as much as it has inspired us.

Shreya Singh

CO- EDITOR

I'm thrilled to introduce Artemis, the very first issue of our departmental magazine! It's been an absolute honor to bring together the incredible work, ideas, and insights of our talented peers. Artemis isn't just a magazine—it's a vibrant platform for sharing stories, celebrating achievements, and sparking meaningful conversations across our community.
A heartfelt thanks to our editorial and advisory teams for their incredible dedication and invaluable guidance. We hope every page fuels your curiosity, inspires you, and brings you joy. Thank you for joining us on this exciting journey. Welcome to Artemis!

Chhavi Khandelwal

CONTENT TEAM

Artemis, meaning the goddess of nature, wilderness, animals, hunt, vegetation is the appropriate name for this magazine as this defines the beautiful and serene connection we have amongst ourselves and the nature we live in.
Being a part of the editorial team has be really great and fruitful! This magazine gave all of us the opportunity to showcase the hidden and astonishing talents the students have, got to grow and learn which gradually will sculpt us into a better person.
I'm beyond thankful to the zoology department for introducing this amazing magazine and I hope you readers find it as fascinating and engaging as we did whilst working on this magazine.

Tisha Arora

LEAD DESIGNER

I'm delighted to be part of the exciting beginning of Artemis. With the hard work of our teachers and dedicated team, I truly believe the foundation we're laying for this first edition will blossom into something truly remarkable.

Anjali Mishra

DESIGNER

We're thrilled to present the first edition of our magazine! This project has been a true labor of love, brought to life by an incredible team effort. Every page showcases the dedication and creativity of our team, making this journey an absolute joy. We're beyond grateful to everyone who contributed to this vision and can't wait for you to explore what we've created together. Here's to the beginning of something amazing!

Priyanshu Dutta

DESIGNER

It's been a pleasure working with such a dedicated and enthusiastic team. Artemis has provided a platform for students to display their talents and passion, and I am grateful to the entire team and the teachers for making this possible. I am truly excited and happy to be part of such a great magazine and editorial team, and I look forward to seeing how it turns out!

Gaurav Karki

CONTENT TEAM

I am grateful to be given the opportunity to work for Artemis. This esteemed magazine serves as a vibrant testament to the boundless creativity, innovative spirit and unwavering passion that resonates within our community.

Artemis embodies the synergy of art, intellect and imagination, fostering a unique space for exploration, inspiration and connection. Our dedicated team of writers, designers and contributors pour their hearts and minds into this magazine.

ADVISORY BOARD

Prof. RITA RATH

We are thrilled to announce the launch of the Department of Zoology's Annual Magazine, Armetis-2024, showcasing a year of remarkable achievements, discoveries, and student contributions. Congratulations to the entire team for their hard work and dedication! This first edition reflects our commitment to advancing science and environmental conservation. Best wishes for future endeavours. Enjoy reading!

Dr. ROOPA R. SAMAL

We are excited to celebrate this significant milestone with the launch of our departmental magazine "Artemis". Artemis seeks to serve as a venue that highlights the dynamic nexus of zoology and creativity. Our authors' dedication and teamwork are evident in our first issue, which features a wide variety of essays, images, and poems. We are confident that Artemis will draw readers' interest and enthusiasm for zoology in addition to commemorating the accomplishments of our department. We invite everyone to peruse Artemis' pages and interact with the wealth of information that demonstrates our dedication to both art and scientific research.

Dr. RITU RAI

We are happy to announce the publication of the first issue of our departmental magazine - ARTEMIS 2024.

“Artemis” magazine is a record of all the activities of the department carried out throughout the year. It will also serve as a platform to display intellectual informations, creative thoughts, literary talents and art love.

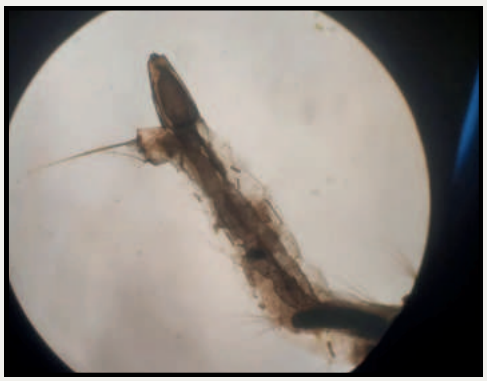
The student editorial team deserves a special appreciation for their enthusiasm and sincere efforts in compilation of the magazine. Congratulations to all the members of the Zoology family.

INTERNSHIPS

OFFERED BY DEPARTMENT OF ZOOLOGY

AN INVESTIGATION ON EFFICACY OF BOTANICAL EXTRACTS ON LARVAE OF *AEDES AEGYPTI* IN NEW DELHI

SUPERVISORS: PROF. RITA RATH AND DR. ROOPA R. SAMAL
INTERNS: ANSH RAI, BIKRAMADITYA BEHERA, SHREYA SINGH, SHUBHAM, ANAMIKA MAURYA (KALINDI COLLEGE), NITU KUMARI, SHIVANGI DUBEY, TISHA ARORA



Mosquito-borne diseases like dengue fever, chikungunya, and Zika virus pose a significant global health threat, affecting millions annually. To combat their spread, controlling the ***Aedes aegypti*** mosquito population is essential. This study explored the larvicidal potential of hexanolic extracts from *Ocimum gratissimum* (African basil), *Mansoa alliacea* (garlic vine), *Cymbopogon citratus* (lemongrass), and *Moringa oleifera* (moringa) in New Delhi, India.

Using standard WHO bioassay methods, the extracts demonstrated significant larvicidal efficacy, with lethal concentrations ranging from 10.503 ppm to 6.376 ppm. Notably, *Cymbopogon citratus* showed an LC50 of 10.503 ppm at 24 hours, decreasing to 1.924 ppm at 48 hours, making it 3.92 times more effective than *Moringa oleifera* and significantly more effective than the other plants tested.

This research aimed to identify sustainable, plant-based larvicides as alternatives to chemical insecticides for ***Aedes aegypti*** control, contributing to innovative mosquito management strategies and reducing the prevalence of mosquito-borne diseases.

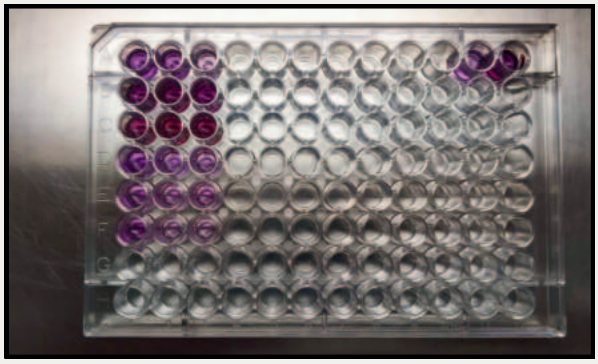
BEHAVIORAL BASIS OF HOST PLANT SELECTION IN *SPODOPTERA FRUGIPERDA*

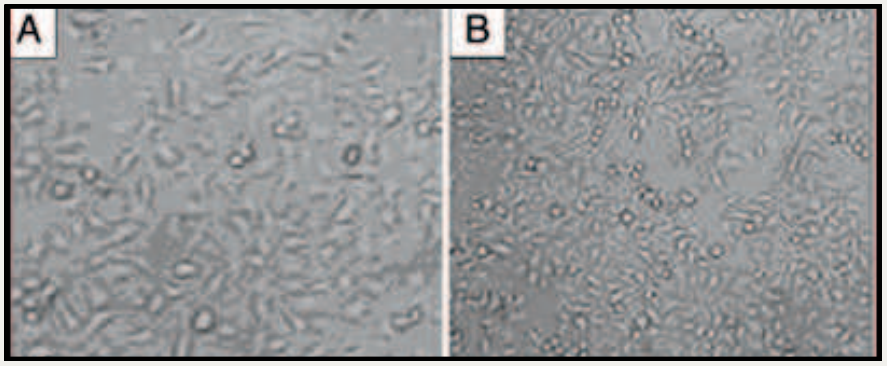
SUPERVISORS: DR. SANJIV MULLICK AND PROF. NEERAJA SOOD
INTERNS: SHRESHTH KOHLI, PRITAM, KHUSBHOO RAWAT, YASHASVI SONI

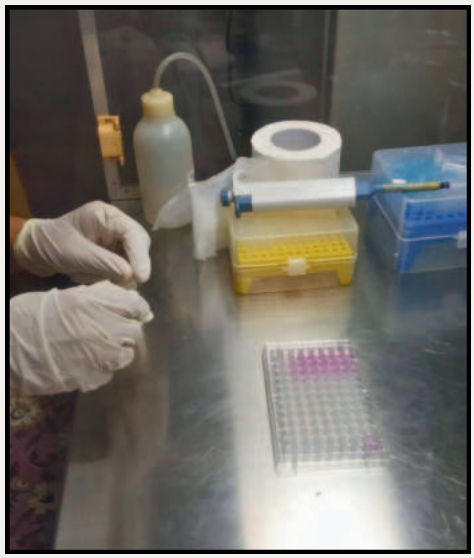
Spodoptera frugiperda, commonly known as the fall armyworm, is a highly destructive pest impacting over 300 economically valuable crops, leading to substantial agricultural losses worldwide. Globally, It is responsible for an estimated $20 billion in annual crop damage. This internship focuses on innovative, eco-friendly approaches to controlling the spread of ***S. frugiperda*** by exploring and leveraging its behavioral patterns. Through in-depth behavioral studies and targeted manipulation strategies, we aim to develop sustainable, non-chemical methods to manage and reduce infestations. This research is critical for reducing reliance on chemical pesticides, preserving environmental health, and ensuring crop productivity and food security.

ANTICANCER PROPERTIES OF MEDICINAL PLANT EXTRACT

SUPERVISORS: DR. NEETU BHATTACHARYA AND DR. DEEPMALA MISHRA
INTERNS: ADITI MEHROTRA, AASTHA MAHESHWARI, HIMANSHI SINGH, SAKSHI(ZHC) MISHRA, SHUBHRA KHANNA



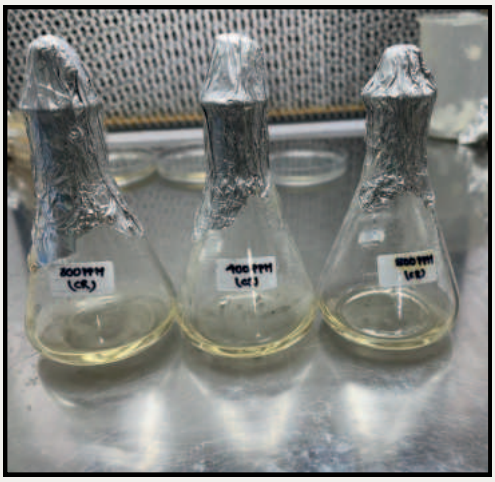


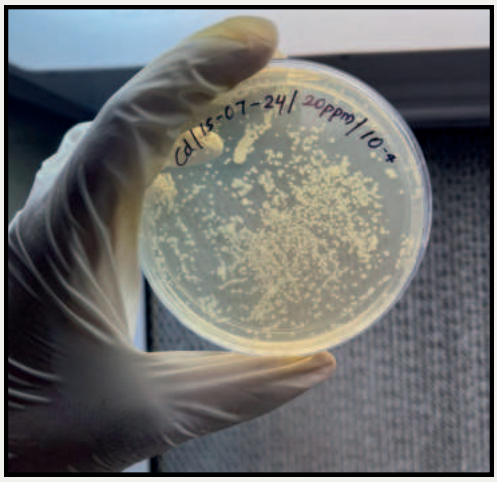


Cancer remains a leading cause of death globally, with traditional treatments like chemotherapy, radiotherapy, and surgery often limited by side effects and inconsistent results, especially in advanced stages. Interest has grown in medicinal plants, including *Begonia lorentzonii* and *Bergenia pashmina*, for their promising anticancer properties. This study explores the anticancer effects of these plant extracts, examining their ability to halt cancer cell growth and trigger apoptosis. By using diverse extraction methods and testing on breast cancer cell lines, initial results show significant cancer cell inhibition and apoptosis induction, positioning these plants as potential sources for new anticancer drugs.

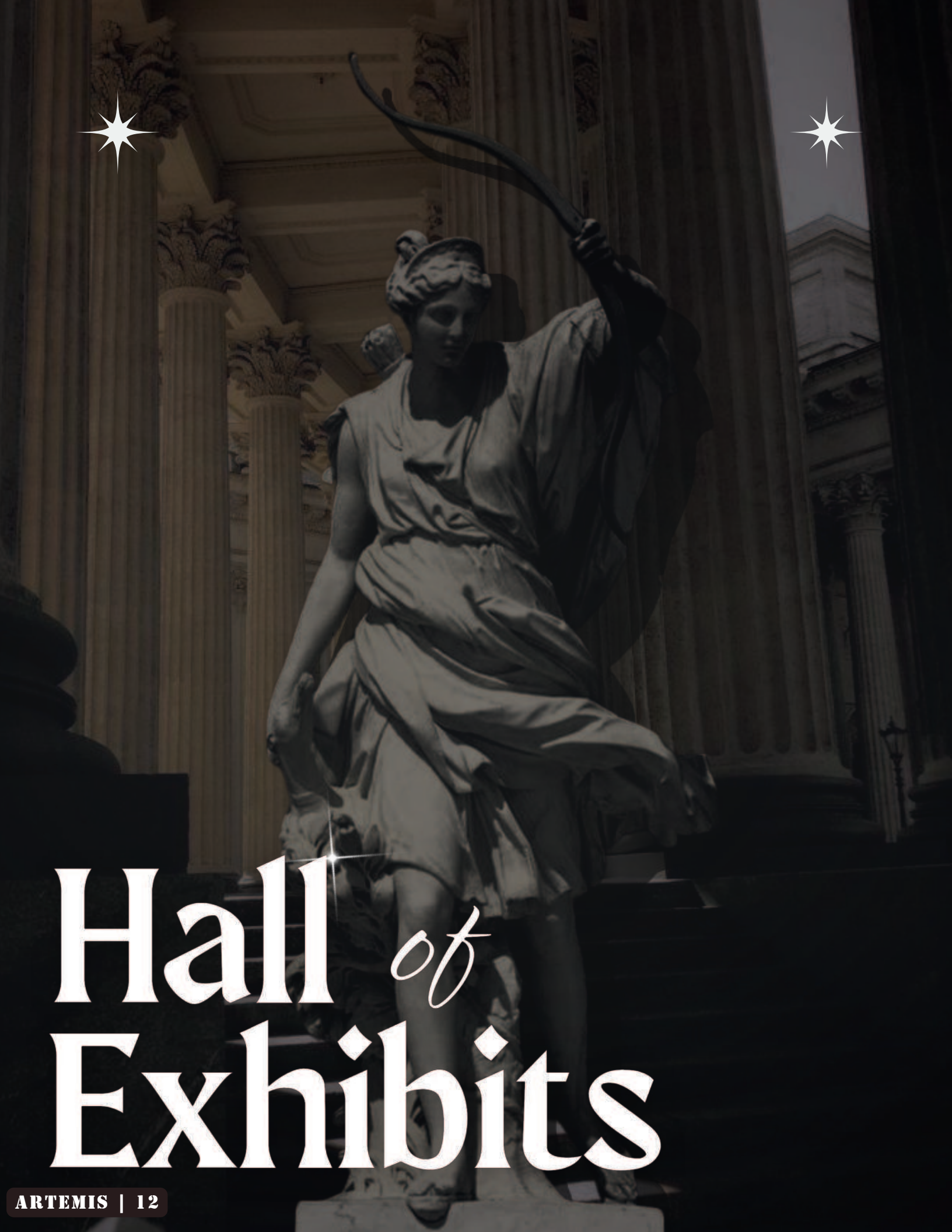
ROLE OF MICROPRGANISMS IN BIOREMEDIATION TO ACHIEVE SUSTAINABLE DEVELOPMENT

SUPERVISORS: DR. BIJI BALAN AND PROF. SADHNA GUPTA
INTERNS: ADITYA KUMAR PARBAT, NISTHA, RAJRATTAN, RIYA, SNEHA SINGH, VILAKSHAN SHARMA





Overpopulation, rapid urbanization, industrialization, and intensive agriculture have introduced pollutants—such as pesticides, heavy metals, and antibiotics—into the environment. These pollutants, primarily from anthropogenic sources, harms both terrestrial and aquatic ecosystems and can impact human health beyond certain levels. While physical and chemical remediation methods exist, they have notable drawbacks. Bioremediation, which uses microorganisms' ability to break down contaminants, offers an effective, economical, and eco-friendly alternative. This research not only focuses on the microbial remediation of metal-contaminated water bodies but also discusses the challenges and limitations of native bacteria for bioremediation. The present investigation holds great potential for enhancing the bioremediation rate and removal of target contaminants from the contaminated sites



Hall of Exhibits

BIKRAMADITYA BEHERA

SAMAD ANJUM

CHHAVI KHANDELWAL

ANJALI ANGRAHARI

ADITYA PRAKASH

SAMAD ANJUM

BIKRAMADTIYA BEHERA

BISWARUPA SWAIN

ANUSHKA TIWARI

CHHAVI KHANDELWAL

SHUBHAM

CHHAVI KHANDELWAL

ANJALI AGRAHARI

ANJALI AGRAHARI

BISWARUPA SWAIN

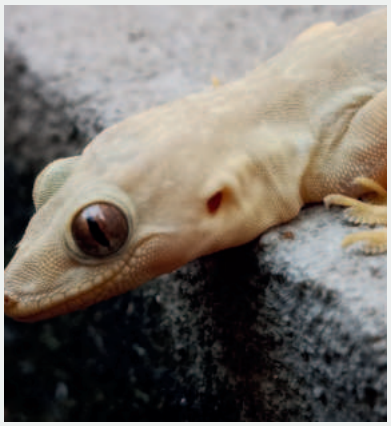
SHUBHAM

IN FOCUS: Anjali Mishra

In the Heart of the Nature

Innocence

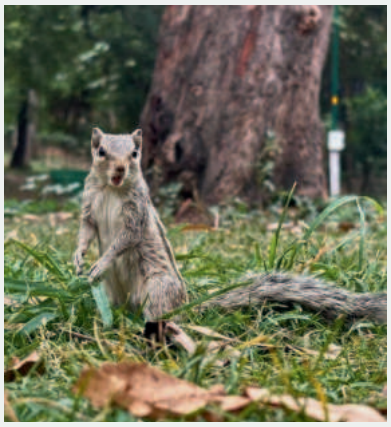
Serenity



Stealth

Nurture

Anjali Mishra



Surprising

Patience

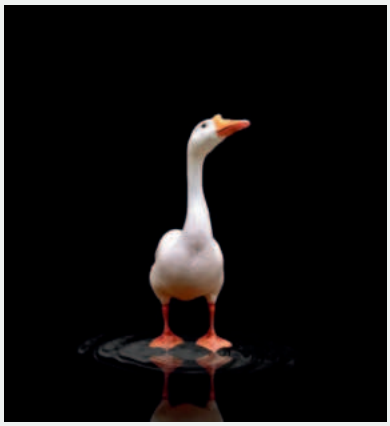
Radiance

Curiosity

IN FOCUS : Pritam

Focusing on Perfect Shot

Euphoria

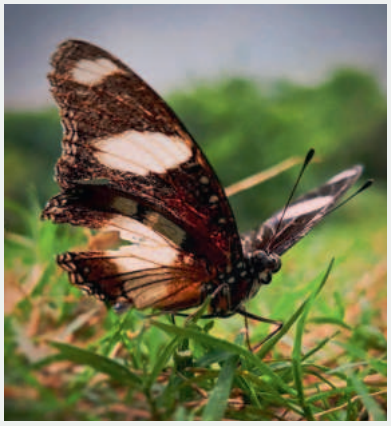


Elegance

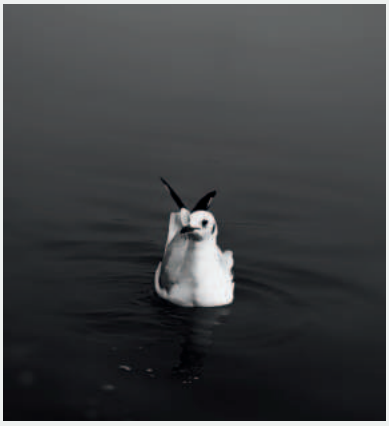
Celestial

Exquisite

Pritam

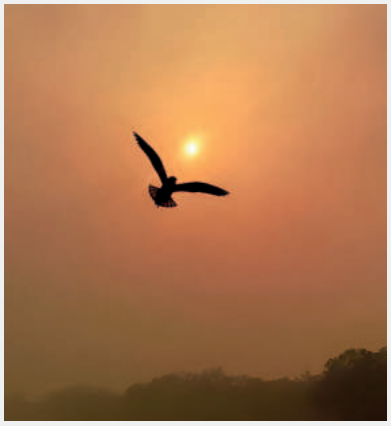


Imperfection



Stillness

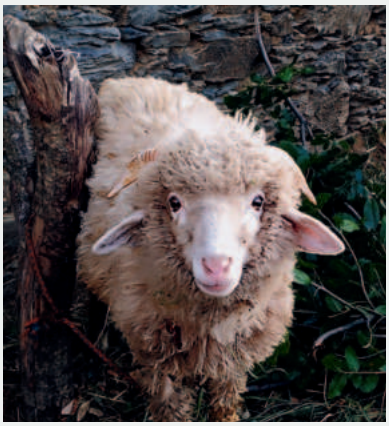
Endeavour



Soaring

IN FOCUS: Shreshth Kohli

Capturing Nature's Cuteness



Endearing

Serene

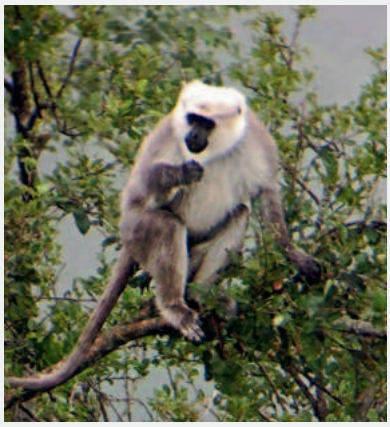
Mystical

Delicate

Shreshth Kohli

Harmony

Intriguing

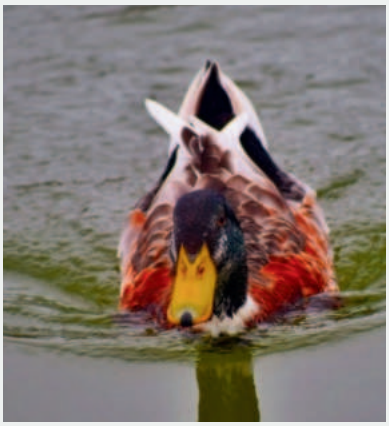


Majestic

Charming

IN FOCUS: Priyanshu Dutta

Perceiving another Perspective



Grace

Peek-a-boo

Leap

Dearest

Priyanshu Dutta

Invincible

Fascinating

Evergreen

Lurking

MANVI CHOUDHARY
Life Science. Sem-V

MANVI CHOUDHARY
Life Science, Sem-V

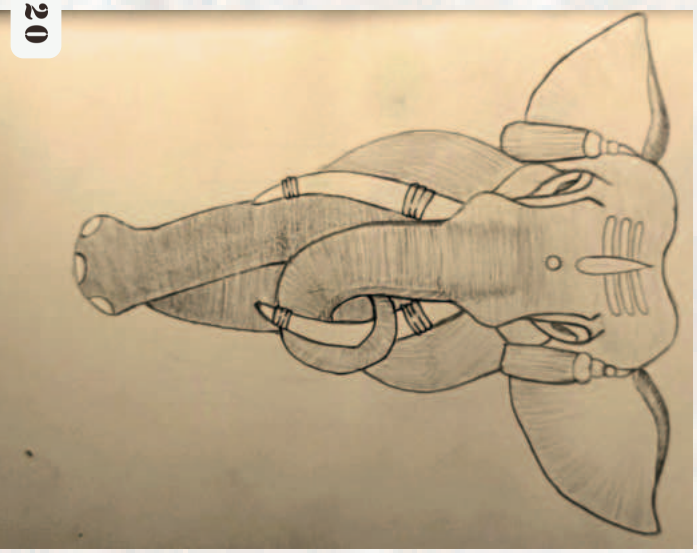
AYAAN MUDGAL
Zoology, Sem-V

GAURAV KARKI
Zoology, Sem-V

AYAAN MUDGAL
Zoology, Sem-V

CHHAVI KHANDELWAL
Zoology, Sem-V

SHRESHTH KOHLI
Zoology, Sem-V



TISHA ARORA
Zoology, Sem-lll

ANJALI AGRAHARI
Zoology, Sem-lll

GAURAV KARKI
Zoology, Sem-l

SHRESHTH KOHLI
Zoology, Sem-V

TISHA ARORA
Zoology, Sem-lll

NAINITAL *Diaries and aesthetics*

MICROBIOLOGY WORKSHOP

IN COLLABORATION WITH AIIMS

EDUCATIONAL TRIPS

INKSPIRE

NO WORDS NEEDED TILL THE END

Kashish Srivastava
(1st Sem, Zoology Hons)

Humans understand each other's moods through body language and facial expressions. Animals, too, show emotions, though in their own ways. A dog wagging its tail with ears down, for instance, shows happiness. Animals feel love, care, and attachment, sometimes forming bonds even stronger than humans'. Given a choice, I would choose an animal over a human, as they lack the "greed" humans often carry. Their bond with humans is pure, while it is humans who betray others, be it fellow humans or animals.

But words are not always required to show how much an individual loves you. Sometimes, it might be your pet dog wagging his tail then sitting on your lap to comfort you with his fur and embrace on your harsh day. And not only with humans, if animals find their aura with other species, their friendship couldn't be broken at any cost. But in humans, a specified cost is needed in everything – from commodities to strong relationships of family, friends, etc. Do dogs or cats fight? Yes, they do. But if they are kept together from the beginning, if they find their auras, they could be the best friends forever in real life. The movie which is famously known for the friendship theme "Zeus and Roxanne" represents the strong kinship between a dog and a dolphin. How they both try to save their lives together from their predators, who want to sell them – humans of course.

Let's take an example of one of the most beautiful whites called "Mute Swan." Mute swans are known for their strong pair bonds, generally social birds. Do you know what happens when their mate dies?

Generally, when a mute swan loses its mate, it may experience intense grief. The surviving swan may become lethargic, lose interest in feeding, and exhibit signs of depression. They may also call out more frequently, searching for their lost partner. The stress of losing a mate can weaken the immune system, making the surviving swan more susceptible to illness. They might also neglect their own health, leading to malnutrition or injury. Their strong social bonds highlight the emotional complexity of these beautiful birds. Even these organisms, who can't say "words" like us, who can't pamper their loved ones, also have such an interesting, long-lasting bond.

The world is vast and filled with diverse, complex animals, many of which remain undiscovered. Just like us, they experience a range of emotions and know how to love, care, and survive with their loved ones. While humans may consider themselves complex in their bonds, they often lack the serenity and loyalty animals show to their loved ones, from a dog to its master to any creature's deep affection.

Priyanshu Dutta

The Hidden Stories Behind Zoo Feasts: A Glimpse into Animal Instincts

Amishee Sood
(5th Sem, Zoology Hons)

Morning: The Food Arrives As the sun rises over the National Zoological Park, New Delhi, I find myself following the daily routine of feeding the animals. After weeks of interning here, I've come to realise that every meal more than just food – it's a story of their instincts and behaviours. Today, I'm going to observe how these instincts come alive at feeding time and get a glimpse of their wild selves.

The Macaw's Choice: A Burst of Color and Instinct The blue-and-yellow macaws in the bird enclosures are already eyeing the nuts and fruits we've left for them. A macaw swoops down and picks a piece of fruit with precision. The way they know which fruits are best for them reminds me of their wild selves. Their choices and actions are rooted in their instincts, even here in the zoo—a gentle reminder that these ancienthabits persist despite the changes around them.

The Antelope's Vigilance: Eyes on the Horizon In the four-horned antelope enclosure, the animals approach their food cautiously. Even without predators, their ears twitch as they scan the air for any sign of threat. Throughout my internship, I have noticed this attention to detail. Their alertness is a reminder that instincts developed over centuries of survival in the wild remain very much alive, even in the safety of the zoo.

The Bear's Feast: A Reflection of Seasons Later in the day, I visit the Himalayan black bear enclosure, where the bear is carefully handling fresh fish and fruits with its paws. As the zookeeper explained, the bear's wild diet changes with the seasons to prepare for hibernation. Even in the zoo, its feeding habits reflect this seasonal rhythm, showing how deeply rooted these habits are.

The Jackal's Quickness: A Flash of the Hunter In the evening, I watch the golden jackal being fed fresh meat shaped like its natural food source. True to its wild hunting instincts, the jackal moves quickly andprecisely as it grabs the food. Every time I see this, I am amazed by how these instincts remain unaffected by confinement and stay sharp.

Conclusion: Instincts that Endure As I close my notebook, I look at the animals, knowing my day is done. Every meal is a story of their wild past—from the macaw's deliberate choice to the jackal's swift grab. Their feeding routines are more than just habits. Throughout my internship,I've come to understand how these animals retain the instincts that have defined their species for centuries, even within the zoo

Pritam

"THE ETHICS OF ANIMAL RESEARCH"

RajKamal Murmu
(3rd Sem, Zoology Hons)

The ethics of animal research is a complex and evolving topic, involving the consideration of scientific benefits, animal welfare, and moral responsibility. Researchers who use animals in their studies must adhere to ethical frameworks that balance the need for scientific progress with the minimization of animal suffering. The "Three Rs"—Replace, Reduce, and Refine—are at the core of ethical animal research. These principles encourage researchers to Replace animals with alternative methods, such as using computer models or cell cultures. If animal use is necessary, the number of animals should be Reduced to the minimum required to achieve valid scientific results.

Lastly, researchers must Refine their methods to minimise pain, stress, or suffering, ensuring that animals experience as little harm as possible throughout their involvement in research (as outlined by Forskningsetikk's ethical guidelines).

A key ethical question in animal research revolves around whether it is morally acceptable to use animals in experiments that would be unethical for humans. This debate hinges on the recognition of animals' capacity for suffering and sentience. Some animals, particularly those with higher cognitive abilities, are seen as more morally relevant.

For instance, research involving primates often receives more scrutiny due to their close genetic and behavioural similarities to humans leading to higher standards of justification for such research, particularly regarding chimpanzees. Moreover, ethical considerations must also include respect for life and dignity, acknowledging that animals have intrinsic value beyond their utility to humans. Ethical frameworks, such as those enforced by Institutional Animal Care and Use Committees (IACUCs), ensure that researchers weigh the scientific benefits against the moral cost of animal suffering. Religious and cultural perspectives further complicate the ethics of animal research. Various religious traditions, such as Hinduism and Buddhism, emphasise the importance of compassion for all living beings, which can influence attitudes toward animal rights and the acceptability of animal testing. In these contexts, inflicting harm on animals can be seen as morally wrong unless justified by a greater good. In conclusion, ethical animal research requires a careful balance between scientific necessity and moral responsibility. The principles of Replace, Reduce, and Refine guide researchers in mitigating harm, while respecting the intrinsic value of animal life remains a crucial concern. As scientific methodologies and cultural perspectives continue to evolve, so too will the ethical frameworks governing animal research.

Shreshth Kohli

ANIMAL CROSSING

Shreshth Kohli
(5th Sem, Zoology Hons)

They say that whenever you set out for something and encounter two birds flying across your path, it signifies that your endeavour will be successful. But have you ever wondered why you usually only see pigeons? A popular animal crossing joke goes: "Why did the deer cross the road? To get to the other side." But if we look deeper, it's not the animals crossing the roads but the roads crossing through forests. Animals carry significant cultural symbolism and omens; for instance, a ladybug landing on you is believed to bring luck, while frogs are thought to signal fertility and changes in weather. There's always a reason, we say, behind why a specific animal crosses your path—yet, are we changing these signs?

Around our homes and buildings, we frequently see the same animals: dogs, cats, pigeons, rats, etc. Why not different species? These animals have adapted to human environments, becoming almost invasive, able to survive alongside us. Meanwhile, other animals, more sensitive to disturbances, are being pushed out of their own habitats. Many have lost their homes and been supplanted by these invasive species due to human activity.

Since ancient times, humans have developed beliefs, superstitions, and taboos around animals. Perhaps this is because humans have an extraordinary ability to observe and learn. Throughout history, people have worshipped nature as a source of inspiration, which has driven human intelligence and a unique path of evolution. Our ancestors tried to understand the natural world around them.

In 2002, when a great flood struck the Andaman Islands, the indigenous tribes, with their knowledge of nature, sensed the impending disaster and knew how to respond. While their villages and farmland were swept away, the people survived, much like the wildlife around them.

Animals have always played a crucial role in human culture, symbolising fate, luck, and natural wisdom. But as human societies continue to reshape the environment, the animals we encounter and their meanings may be shifting. Are we preserving life's diversity, or are we driving it away? In a world where invasive species thrive and natural habitats shrink, perhaps the omens aren't about luck or fertility but about the planet's fate itself. Our challenge now is to pay attention to the world we are shaping.

Priyanshu Dutta

Chausingha Khadu

Gaurav Karki
(1st Sem, Zoology Hons)

Every 12 years in Chamoli, Garhwal, nestled the scenic hills of Uttarakhand, the locals celebrate a festival - Nanda Devi Raj jaat- a festival of sending back their patron goddess-Nanda (consort of Shiva) to her in-laws high up in the Himalayas.
What's interesting to note here is the Four horned ram- the **Chausingha khadu**- that leads the holy pilgrimage.
Chausingha khadu is a four horned ram that is born to normal two horned parents in an interval of 12 years. The birth of the Animal is considered sacred and as an indication of the start of the royal pilgrimage.
The Chausingha khadu must not be confused with the Hebridean sheep, which has four horns due to selective breeding practices in Scotland. The Chausinghakhadu is also four-horned, but this trait is not the result of selective breeding; rather, it is seen as a rare and sacred occurrence.
According to an article by the tribune in which they interviewed a wildlife expert in the study of ungulates, Professor S. Satyakumar, says that "the birth of four horned ram is certainly a result of genetic variations occurring in one in a million sheep and is rarest of rare, it being born in a particular region and once in 12 years is an interesting case study in faunal genetics."
The last Nanda Devi Raj jaat occurred in 2014 and the next is predicted to happen in 2026

Priyanshu Dutta

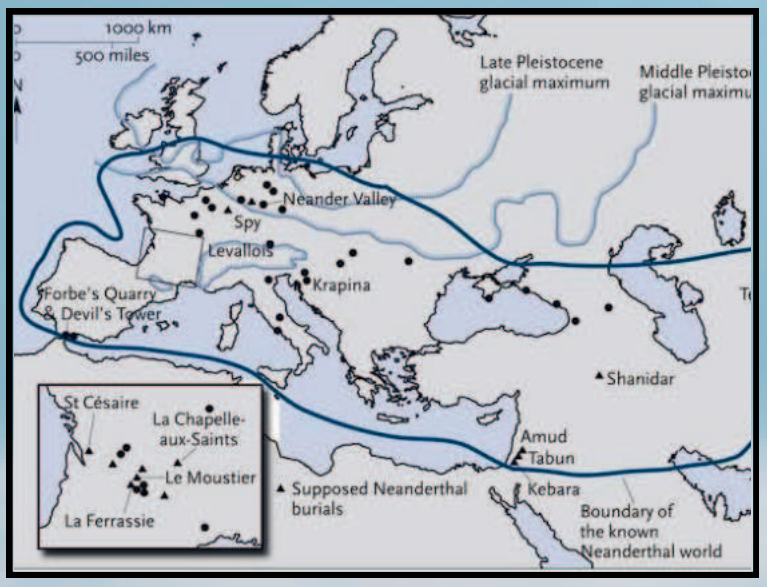
Our long-lost ancestors

Aditya Prakash
(3rd Sem, Zoology Hons)

In recent times, genetic testing has become available to the general public. These tests have found that about 31% of people who took them have some Neanderthal genes.

There's a growing scientific consensus that I, and every human on Earth, have a small amount of DNA passed down from ancient interactions with a species once considered completely separate.

The amount of Neanderthal DNA we carry depends on our ancestral roots. So, how do scientists know this? It's a remarkable story. Scientists had to reach back in time and read the genetic code of people who died 50,000 years ago, decrypting secret messages hidden within our living cells.In 1856, in the Neander Valley of Germany (thus the name Neanderthal), some miners unearthed a partial skull along with a few other bones. Scholars examined the remains and declared it a new type of human.



Additional fragments surfaced from Spain to Siberia—in caves, in pits, sometimes fused into walls. These discoveries became popular, and people initially thought Neanderthals looked hunched. However, it was later discovered that the skeletons found had severe arthritis; most Neanderthals actually stood upright. Furthermore, Neanderthals hadn't existed for at least 20,000 years, having gone extinct thousands of years before that. Scientists began debating whether Neanderthals were our evolutionary grandparents or more like distant great-uncles. This second theory was supported by the locations and ages of the remains. Neanderthal bones were found across what is now Europe and dated to this period. Meanwhile, bones resembling modern humans, Homo sapiens, were found in Africa, with the oldest estimated to be around 200,000 years old. This suggests that Neanderthals didn't give rise to Sapiens but rather that two distinct populations evolved separately on their continents. At some point, a group of Sapiens left Africa, and as they spread across the globe, the Neanderthals disappeared.

Chhavi Khandelwal

Where Homo sapiens and Neanderthals were found at the same site, Neanderthals were always buried deeper, separated by layers of soil and time. It appeared that the "Team Great-Uncle" theory was prevailing. But to prove this, scientists needed to analyze some Neanderthal DNA.

If we wanted to send a message 50,000 years into the future, DNA wouldn't be our choice; many factors, including heat, light, moisture, bacteria, and our own enzymes, can easily destroy it.

Working with ancient DNA is challenging. Even touching an ancient sample with bare hands can transfer our DNA to it, often in amounts far exceeding the DNA present in the sample. Thus, this work is carried out in sterile environments.

Over time, geneticists have developed new techniques. In the 1980s, they managed to extract a bit of DNA from a quagga (an extinct animal resembling a half-zebra, half-horse, which died out in 1872) that had died 140 years earlier. They sequenced only 229 base pairs of its genetic code. Two years later, an ambitious Swedish geneticist and Nobel laureate, Svante Pääbo, published a paper on the DNA he collected from the face of a 2,500-year-old mummy.

By the 2000s, a more experienced Pääbo embarked on a groundbreaking project: sequencing the entire Neanderthal genome, all 3.2 billion base pairs. His team collected DNA from three fragments of Neanderthal bone preserved in a cool, dark Croatian cave for millennia. Bones generally don't contain much DNA, even in life, but DNA from a decomposing body can seep into the bone matrix and get trapped. Thus, Pääbo's team extracted and sequenced a collection of ancient DNA, though it was not in ideal condition. In fact, they believe much of the DNA they recovered came from microbes.

Assembling the Neanderthal genome was like solving a 20-million-piece puzzle with pieces from other puzzles mixed in, and there was no reference picture.

While they didn't have a complete Neanderthal genome, they did have recently completed genomes of Sapiens and chimpanzees, which had diverged from a common ancestor millions of years ago. The bundles of DNA within us, called chromosomes, look quite similar across these species, with a different base—a different letter—every 80 positions, on average.

In 2008, Pääbo's team sequenced the entire mitochondrial genome of a 38,000-year-old Neanderthal, revealing that our mitochondrial DNA split from Neanderthals around 660,000 years ago. After sequencing various Neanderthal bones, Pääbo successfully completed the entire Neanderthal genome. His work earned him a Nobel Prize, and he also identified a previously unknown hominin, Denisova.

Since the Neanderthal-Sapiens split is much more recent than our split with chimps, we would expect Neanderthals to be quite similar to us—and indeed, they are.

A Draft Sequence of the Neandertal Genome doi: 10.1126/science.1188021
2. Identifying and Interpreting Apparent Neanderthal Ancestry in African Individuals doi: 10.1016/j.cell.2020.01.012.
3. Modern human incursion into Neanderthal territories 54,000 years ago at Mandrin, France doi: 10.1126/sciadv.abj9496.
4. Svante Pääbo, reader of the Neanderthal genome doi: 10.1111/apha.13902
5. Map of Neanderthals in modern-day Europe
6. Trinkaus, Erik , Tuttle, Russell Howard and Williams, Frank L'Engle. "Neanderthal". Encyclopedia Britannica, 28 Oct. 2024, https://www.britannica.com/topic/Neanderthal. Accessed 9 November 2024.

The Paradox of Society - Catalyst and Cure for Psychological Disorders

"The only way to deal with this world is to find a way to be part of it."

— Ruth Bader Ginsburg

Shreya Singh

(5th Sem, Zoology Hons)

In a community that serves as a refuge and struggle, mental health journey becomes a paradox between the embrace and the bars of societal care. Most of us have felt that subtle inner resistance, sensing society's quiet disapproval whenever we start to step outside its comfort zone. And yet we have also experienced the warmth of community—friends, family, mentors—that assure us that we are not alone. This paradox is inherent: society injures, but also heals, and in this balance between opposing forces, ebb and flow, life is possible to a greater or lesser extent.

Society as a Catalyst for Psychological Disorders

Today's societal systems shape our lives, who we are, and how we feel but they can also lead to stress, anxiety, and isolation. Just imagine the financial hardships, discrimination, and lack of resources that people from diverse backgrounds must deal with. The result? increased levels of stress and an increased occurrence of despair and anxiety. Life may feel like a tightrope walk for people with these challenges. Consider a young student who is struggling to provide for their family or an adult who works two jobs but is still unable to meet their basic needs. These are realities for many people, not only circumstances. According to research, people can be at a mental health disadvantage due to things like unstable housing, a lack of employment or job chances, and inadequate education, which can affect not only the individual but also their family and communities.

This struggle is compounded by the stigma surrounding mental health. Culture and societal values often discourage empathy toward mental health issues, thus, making it difficult for the affected individuals to seek assistance. This stigma can be damaging, forcing people to conceal their issues out of fear of judgement. Consequently, many fight these battles in silence, unsure of how or where to seek help.

Society as a Cure for Psychological Disorders

The silver lining is that society offers chances for healing as well. The ability to repair one another is one of the best things about human society. Community activities like group gatherings and support networks like family and friends frequently help with this. For someone dealing with mental illness, just listening to them without passing judgement or showing love might be a lifesaver.

In schools, businesses, and local communities, programs that encourage people to voice their concerns can help people overcome their anxiety and encourage them to seek treatment. Education fosters understanding of mental health conditions and can even help prevent mental illnesses. As observed, society gives a life to the person and has the capacity to be made in the right way to life.

As the saying goes, "the chains that bind us are often the hands that free us." This idea captures the paradox beautifully: the same social structures that can contribute to mental health struggles also hold the potential for healing and resilience. By creating compassionate communities and ensuring access to mental health resources, we can build a supportive society.

A Holistic Approach to Mental Health

To truly address society's dual role in mental health, we must adopt a holistic approach. This means tackling root causes—social inequalities, stigma, and lack of resources—meanwhile cultivating welcoming, encouraging communities. It all comes down to the degree of management and governance established by the politicians and their policies. In primary care and community health settings, expanding access to mental health treatments and education will improve their efficacy for those in need. To lessen the stigma associated with mental health, it is crucial to raise awareness and embrace constructive behaviours.

Creating spaces for sharing stories and listening with empathy helps break down the walls individuals often build. Education, especially for young people, fosters understanding and empowers them to view seeking help as a strength, building a culture of compassion from the ground up.

The paradox of society as both a catalyst and cure for psychological disorders serves as a powerful reminder of the complexity of mental health. While society may at times contribute to our struggles, it also offers the compassion and support needed for recovery. Through collective action, supportive communities, and a shared commitment to prioritising mental health, we can bridge the gap between suffering and resilience. In doing so, we not only help individuals heal but also nurture a more compassionate, understanding world. And, perhaps most importantly, we remind ourselves that while we may all walk our own paths, we are never truly alone in our journey.

Chhavi Khandelwal

जैसा है, वैसे ही चलता रहेगा

Nitin Kumar
(5th Sem, Zoology Hons)

सब वैसे ही चलता रहेगा!
छीन लिया उनका घर,
अपना घर बनाने के लिए।
जला दिए जंगल,
अपनी भूख मिटाने के लिए।
उनकी संख्याएं घटा दीं,
अपनी जनसंख्या बढ़ाने के लिए।
अब सिर्फ चर्चाएं होती हैं,
सिर्फ हस्ताक्षर होते हैं,
जलवायु को बचाने के लिए।
अपनी समस्याएं हमने खुद बढ़ा लीं,
समस्याओं को घटाने के लिए।
न बदला है, न शायद बदलेगा!
जैसा चल रहा है, सब वैसे ही चलेगा!

DESIRE & DESTINY

Anushka Tiwari
(5th Sem, Zoology Hons)

A baffled beetle was astonished by the sheer beauty held by a little lily.
The purest in the world.
It was all the beetle had. It was all he ever wanted ever since the day he started wanting anything.The little lily was way too far to reach and the lands were swampy.
His wings were small but he never really stopped trying.
After years of failing and falling into the mud, he finally landed on the lily sepals.
It felt beautiful and this feeling was stronger than any other he ever experienced.
The days lasted for weeks, the weeks lasted for months and the months lasted for years.
Summers smiled with them, monsoons cried with them, and winters lied with them.
Until the day Lily revealed to him that she wasn't meant for him.
She had a whole different destiny and a separate aisle to choose.
The day of judgement finally arrived.
A generous coldhand plucked out the lily flower and took her away.
Far away enough for her to never return.
The beetle tried to stop the hand.
The beetle denied the inevitable and tried to defy destiny.
Hiswings tore apart and his will was shattered.
The bones turned into stones and he never loved flowers again.

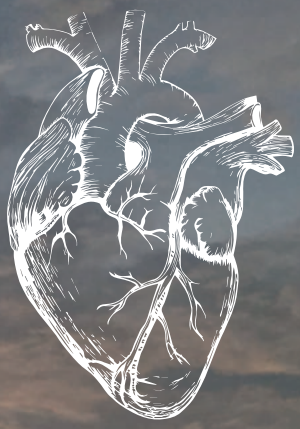
Chhavi Khandelwal

Priyanshu Dutta

دھڑکن

धड़कन

اُن نگاہوں میں ایک ہرن جیسی چمک تھی،
ہر لفظ کے ساتھ ایک چھپی ہوئی ہلچل تھی،
دل کے پیغام سنتے ہی وہ اِس قدر شرمائی،
میں مُسکرا کر دیکھتا رہا، ہوائیں بھی چنچل تھی



Saika khan
(1st Sem, Zoology Hons)

उन निगाहों में एक हिरण जैसी चमक थी,
हर अल्फ़ाज़ के साथ एक छुपी हुई हलचल थी,
दिल के पैगाम सुनते ही वो शरमाई इस क़दर,
मैं हंसकर देखता गया, हवाएं भी चंचल थीं...

Priyanshu Dutta

Cage

Gaurav Karki
(Ist Sem. Zoology Hons)

I run into you very often
When I walk the streets of my heart
When all the peculiar shades of red have caught my attention
You say the same red will adorn my forehead
But you forget for me
Love is a lost war.
All this while I was a dove
But with stained wings
And songs as sad as elegies
Your two arms and chest were, yet, never a cage to me
But home.

Anjali Mishra

پنکھ اور پنجے۔

Saika khan
(1st Sem, Zoology Hons)

جنگل کے دل میں، جہاں قدرت گاتی ہے
وہاں ایک محبت رہتی ہے، جیس پاک کسی پرندے کے پر ۔
شیر کی دھاڑ، خوفناک مگر مہربان
ایک محبت کی سرگوشی لاتی ہے جو آپس میں جڑی
ہوئی ہے۔
ہاتھی چلتا ہے نرمی اور وقار کے ساتھ
ایک اٹوٹ بندھن قدرت کی بانہوں میں۔
ہنسنی کی آنکھوں ،نرم اور شرمیلی
میں چمکتی ہے ایک محبت
جو کبھی نہیں مرے گی۔
بھیڑیے کی آواز سے لے کر ڈولفن کی چھلانگ تک
ان کی محبت ایک وعدہ ہے، جو وہ خاموشی سے نبھاتے
ہیں۔
ہر مخلوق میں، بڑی ہو یا چھوٹی
ایک دل کا دھڑکتا ہے، جو سب میں محبت لاتی ہے۔

जंगल के दिल में, जहां कुदरत गाती है,
वहां एक मुहब्बत रहती है, जैसी पाक किसी परिंदे के पर।
शेर की दहाड़, खौफनाक मगर मेहरबान, एक मोहब्बत की
सरगोशी लाती है जो आपस में जुड़ी होती है।
हाथी चलता है नरमी से, कद के साथ,
जैसे एक अटूट बंधन कुदरत की बाहों में।
हंस की आंखें, नज़्म और शर्मीली,
मैं चमकती है एक मोहब्बत,
जो कभी नहीं मरेगी।
भेड़िये की आवाज से लेकर डॉल्फ़िन की छलांग तक,
इनकी मोहब्बत एक वादा है,
जो ये खामोशी से निभाते हैं।
हर मख़लूक में, बड़ी हो या छोटी,
एक दिल की धड़कन है, जो सब में मोहब्बत लाती है।

Priyanshu Dutta

पहली बारिश

Manasvi
(3rd semester Life Sciences)

किसको पता है क्या हुआ सूरज के ताप को,
कुछ और निखर के आने लगा चाँद रात को।
वो रंग ही बदल गया शाख-ए-गुलाब का,
जैसे कोई गिरा गया सागर शराब का।
खुशबू भी आने लग गई गमलों की मिट्टी से,
पंछी भी बोलने लगे हैं मुझसे खिड़की से।
मौसम में एक अलग-सी हवा दौड़ने लगी है,
ख़ुद बाग़बान आम अभी तोड़ने लगा है।
आहट से तेरी, मेरी फ़िज़ा भी बदल गई,
महबूब हँस दिया, तो अदा ही बदल गई।
हर तौर तू बदल के गया कारवाँ मेरा,
जैसे बदल गया हो कोई आसमाँ मेरा।

Anjali Mishra

BREAST CANCER

RECENT BREAST CANCER RESEARCH

By: Anjali Agrahari
(3rd Sem, Zoology Hons)

Estrogen and Breast Cancer Development: Estrogen has been newly identified as a more significant cause of breast cancer. Research shows that it directly triggers DNA damage and genomic rearrangements, leading to the activation of cancer genes. This new understanding goes beyond estrogen's role in cell proliferation, showing it can initiate mutations, potentially changing approaches to hormone-related cancer prevention and treatment

Targeted Therapy for BRCA Mutation Carriers: The NHS recently approved talazoparib, the first targeted drug for breast cancer patients with BRCA gene mutations. This treatment offers an alternative to chemotherapy, specifically benefiting those whose cancer is linked to these mutations. By halting cancer growth for extended periods, it opens up a new, more personalized treatment option

Checkpoint Inhibitor Therapy for HER2-Negative Breast Cancer: A new drug combination using entinostat and dual immune checkpoint inhibitors (nivolumab and ipilimumab) has shown promising results for advanced HER2-negative breast cancer. In clinical trials, 25% of patients saw significant tumor reduction, and the response rate was even higher (40%) in those with triple-negative breast cancer, a more difficult-to-treat subtype

TARDIGRADES

Earth's tiny astronauts and their journey into the cosmos

By - Bhumi Soni

In the vast expanse of space, where the conditions are often hostile to the life, one minuscule creature has now captured the attention of scientists and space enthusiasts which is *Tardigrade,* commonly known as "water bears". These tiny microorganisms have proven that life can endure even in the most extreme environments. NASA's groundbreaking research has not only revealed possible survival abilities but also significant implication for our understanding of life beyond earth.

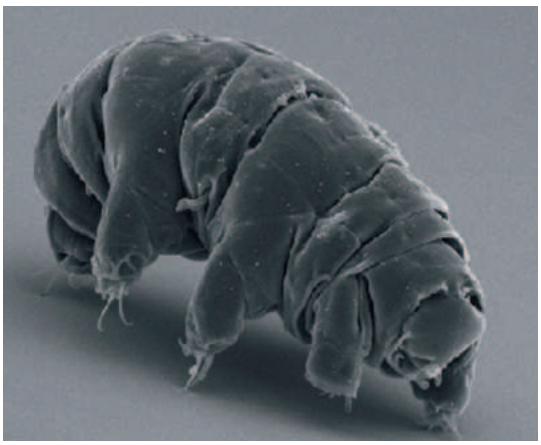
WHEN BIOLOGY MEETS SPACE

WHY IS NASA SENDING WATER BEARS INTO SPACE?

A new experiment, aboard the International space station (ISS) studied *Tardigrades,* tiny creatures also known as water bears, because of their appearance under a microscope. *Tardigrades* can tolerate extreme environments on earth and can survive without water . The new experiment - called Cell Science, aimed at identifying its genes and its ability to survive and adapt to highly stressful environments. On June 3 2021, NASA sent 128 glow-in-the-dark baby squids and some 5,000 *tardigrades* to the International Space Station through mission SpaceX's 22nd commercial resupply mission for research purposes in the space. This has made them a model organism for studying biological survival under extreme conditions on earth and in space. In addition, researchers have sequenced the genome of the *Tardigrade hypsibius exemplaris* and developed methods for measuring how different environmental conditions can affect *Tardigrade* gene expression. The results could advance understanding of the stress factors affecting humans in space and support development of countermeasures . Before this, an European team sent 3000 living *Tardigrades* into earth's orbit for 12 days on a FOTON - M3 - rocket where 68% of them survived. Hence, this makes it one of the toughest animals on the earth. It could be a model organisms for future for the survival of humans and could be sent to different planents for the study of biological survivals of various organisms which could be beneficial for us to find planents which may be habitable and home for us.

WHAT ARE TARDIGRADES?

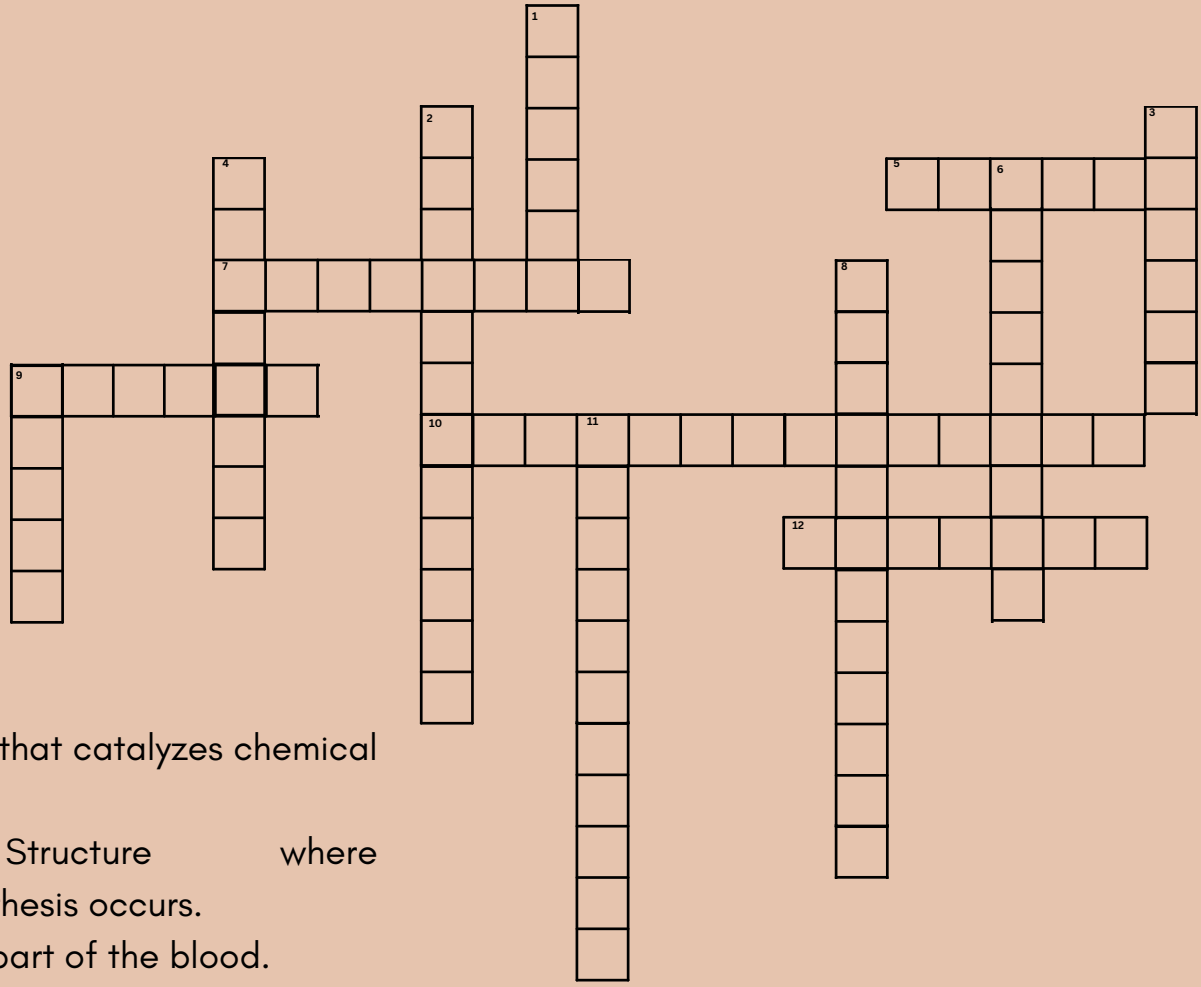
They are comonly known as "water bears". These are microscopic water dwelling organisms belonging to the phlyum tardigrada. They are renowned for the remarkable resilence and ability to survive extreme conditions. They are generally about 0.3 to 0.5 mm in length . they have segmented body with four pairs of stubby, jointed legss each ending in tiny claws.



WHY TO CHOOSE TARDIGRADE?

Because they can withstand extreme temperatures,pressures,radiations and even vaccum of space. They can enter a state called cryptobiosis, where they essentially shut down their metabolic activity and become dormant .with this scientists can research how microgravity affects tardigrades which can help scientists to understand the broader implications of space travel on living organisms , including potential effects on human health. overall these research contribute to our understanding of life resilience and the possibilities for life in universe.

BRAIN-TICKLING CROSSWORD

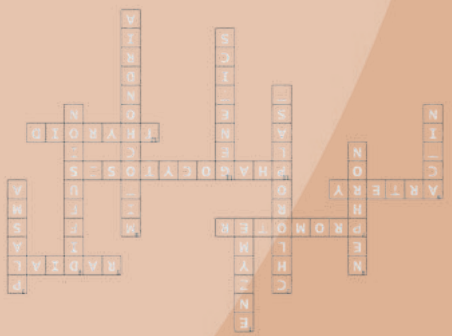


DOWN

1. Protein that catalyzes chemical reactions.
2. Structure where photosynthesis occurs.
3. Liquid part of the blood.
4. The smallest functional unit of the kidney.
6. Movement of molecules from high to low concentration.
8. The powerhouse of the cell.
9. Protein involved in muscle contraction.
11. The study of heredity and variation in organisms.

ACROSS

5. Type of symmetry seen in jellyfish and sea anemones.
7. DNA region that initiates transcription.
9. Vessel that carries blood from the heart.
10. Process where cells engulf large particles.
12. Gland that regulates metabolism.



ARTEMIS

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