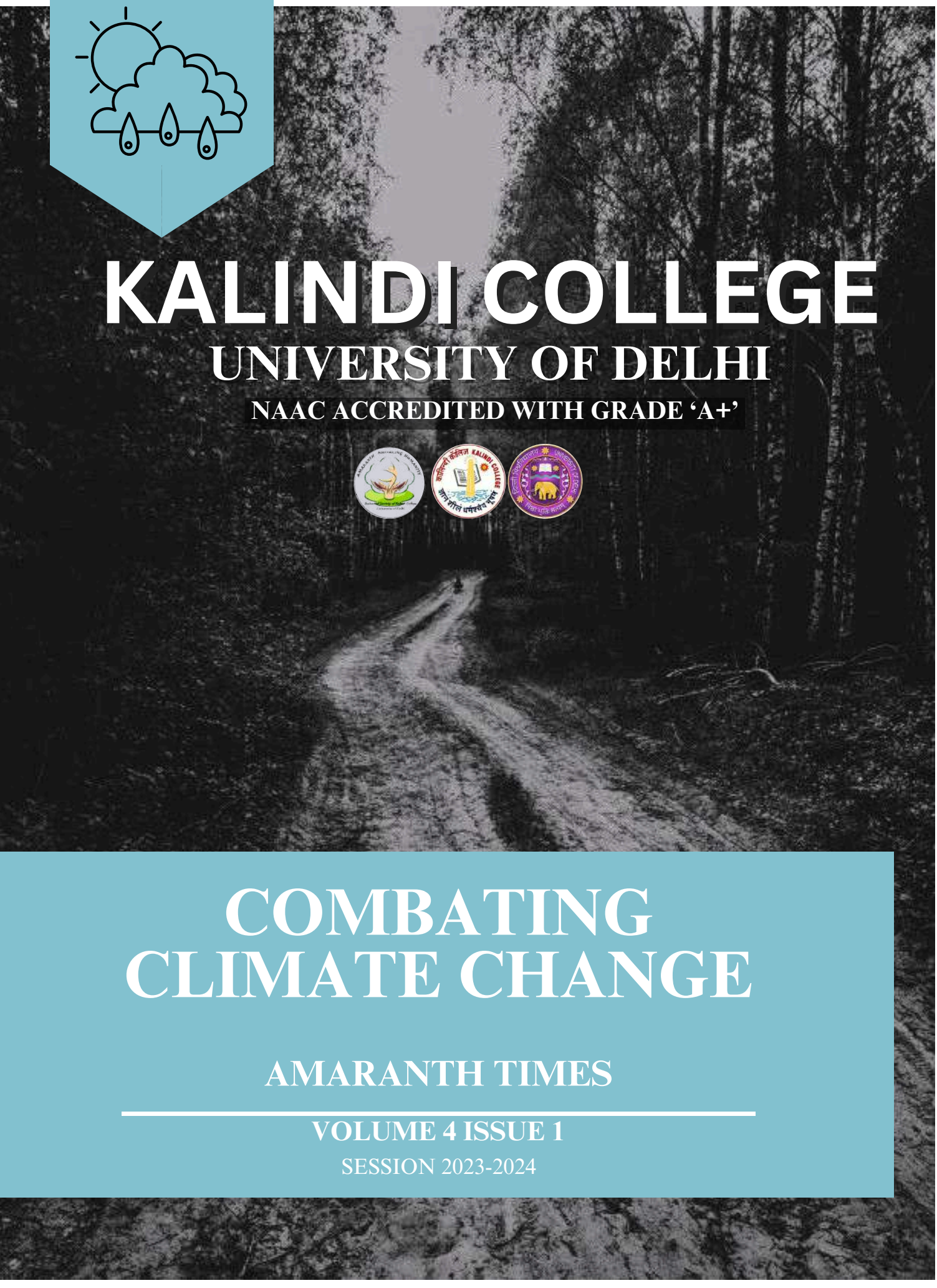

KALINDI COLLEGE

UNIVERSITY OF DELHI

NAAC ACCREDITED WITH GRADE 'A+'

COMBATING CLIMATE CHANGE

AMARANTH TIMES

VOLUME 4 ISSUE 1

SESSION 2023-2024

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MESSAGE FROM PRINCIPAL'S DESK

It gives me immense pleasure that the Department of Botany is coming up with their next issue of the newsletter, "Amaranth Times" for the academic session, 2023-24. The newsletter helps in bringing out the creative and artistic side of students, along with dealing with the adversities of climate change and preventive measures for the same. I am sure readers will benefit from the informative articles and other updates in biology. I wish them all the very best!

-Prof. Meena Charanda
PRINCIPAL

MESSAGE FROM TEACHER-IN-CHARGE

Through our periodical "Amaranth Times" for the 2023–24 session, I am pleased to share with you the modest steps we are making to mitigate climate change. With its effects on ecosystems, biodiversity, and human livelihoods, climate change is one of the biggest concerns of our time. We as botanists understand how important plants are in combating climate change. We can set an example for others to follow and make a sustainable World for the next generation. I hope this newsletter will inspire readers towards a greener and healthier environment. I express my gratitude to Dr. Monika Keisham and her entire editorial team, as well as the student editors Shruti Srivastava and Aastha Mehta for their efforts and hard work. Additionally, a special thank you to the students who shared their work through this newsletter. Enjoy your reading!

-Dr. M. Arunjit Singh
Teacher-In-Charge

MESSAGE FROM FACULTY EDITOR

Celebrations are in order as we unveil the latest issue of "Amaranth Times," a testament to the dedication of our students and the relentless efforts of our editorial team. This 2013-24 edition delves deep into the pressing issue of combating climate change, a topic of utmost importance in today's world. Through insightful articles, readers will gain valuable insights into the challenges we face and the actions we can take to mitigate this global crisis. We extend our heartfelt gratitude to our faculty members whose guidance and support have been invaluable throughout this journey. Special appreciation goes to our esteemed Principal ma'am for her unwavering encouragement and leadership. Let's join hands in raising awareness and fostering a sustainable future for generations to come.

-Dr. Monika Keisham
Assistant Professor

Session
2023-24

EDITORIAL TEAM

AMARANTH TIMES

VOLUME 4 ISSUE 1

AMARANTH TIMES

Volume 4

Issue 1

EDITORIAL HEADS

AASTHA MEHTA
B.Sc. (Hons.) Botany
III Year

Greetings!

It has been a privilege to serve as editor for this edition of our newsletter "Amaranth Times" focusing on climate change. Reading everyone's thoughtful ideas on climate change has been truly inspiring, and I hope it sparks similar feelings in our readers. Climate change is a huge problem but the articles section in this issue shines a light on how clever solutions are emerging through science and innovation. Working on the newsletter has definitely made me appreciate scientists and researchers who have dedicated their life's work towards this cause. Finally, a huge thank you to my fellow members and professors! You're all so creative and dedicated – I've learned a lot from you all.

Greetings to all of you wonderful readers!

These days, nearly everyone complains, "Oh, what unusual weather?"Although it seems like a fairly straightforward issue, 'climate change' is the pernicious answer. Our goal in publishing "Amaranth Times" is to raise public awareness of climate change. The goal would be accomplished, in my opinion, even if just one person finds inspiration in this message. I am so thrilled to be a part of this year's edition which certainly possesses a noble goal. and I would also like to express my sincere gratitude to the botany department for giving us this chance and to each and every member for their tireless efforts in making a difference. I hope all the readers enjoy and find inspiration, for bringing about change at their own level.

SHRUTI SRIVASTAVA
B.Sc. (Hons.) Botany
III Year

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CO-EDITORS

HARMANPREET KAUR
B.Sc. (Hons.) Botany
III Year

Greetings to the readers!
It has been an absolute honour to be the co-editor of "Amaranth Times". I would like to thank my teachers for providing me this opportunity. And I'm grateful to have such an awe-inspiring team, without their endless efforts this newsletter wouldn't have been completed.
And now we are thrilled to present Volume 4 of our esteemed newsletter which focuses on combating climate change. It's the need of the hour that we humans start protecting our dear Mother Earth, for it has given us this luxury of living. I hope the readers will gain a new perspective about the environment after reading the articles.

Greetings to fellow readers!
Being one of the co-editors, I feel honoured to have contributed to this newsletter, it's been an absolute pleasure to work on the "Amaranth Times." I would like to express my gratitude to my teachers for providing me with this chance to collaborate with such a fantastic editorial team. As someone who has always loved art, this newsletter has allowed me to showcase my creative abilities.
It's time we realize that climate change is real and try to understand the consequences and adverse effects it'll cause in the long term and actually work on it because we are very well aware. It's easier said than done, so let's not just be all talk and ignorant about this havoc. The coming generations don't deserve to suffer because of the current generation, that is, us. Let's thrive for a better future, not by oiling the wheels and making the condition of this planet worse, but by taking responsibility for its betterment.

VIDHI KASANA
B.Sc. (Hons.) Botany
III Year

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EDITORIAL MEMBERS

RANI
B.Sc.(Hons.)Botany
II Year

Dear readers, as an editorial member, I'm compelled to address a pressing issue of climate change. In our newsletter, we have delved into its complexities and solutions. Together, let's raise awareness and inspire action. From renewable energy to conservation efforts, every contribution matters. Join us as we navigate this crucial topic with urgency and hope. Thank you for joining the conversation. Let's work together towards a sustainable future.

Greetings everybody!
Being part of our editorial team fills me with joy and purpose. As a nature enthusiast and environmental advocate, contributing to this newsletter is a meaningful endeavor. Our words possess the potency to enact change, and this year, our dedication to "Combating climate change" is imperative. Let's weave a tale brimming with inspiration, innovation, and a deep affection for our planet. Let's unite to script the subsequent phase of our environmental narrative, laying the groundwork for a sustainable heritage.

KHUSHI SINGH
B.Sc.(Hons.)Botany
II Year

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EDITORIAL MEMBERS

MIMANSA KUMAWAT
B.Sc.(Hons.)Botany
II Year

A warm and blossoming welcome! As one of the member of our intriguing and esteemed newsletter, "Amaranth Times," I am privileged to have the opportunity to work alongside such a talented and supportive team. Our journey has been enriched by the guidance and encouragement of our motivating teachers and by your decision to embark on this journey of discovery and enlightenment with us. We trust that the insights shared in this newsletter will spark contemplation and action, fostering a brighter and more nourished future for all.

Hey everyone! I am really glad to be a member of our editorial team. As a keen observer of nature and passionate advocate for the environment. I enjoyed being a part of this newsletter's editorial team.
Our words are the catalyst for change and togetherness. This year our theme is "Combating climate change" so let's write the next chapter of our environmental story, one filled with inspiration, creativity, and a deep love for our planet. Be a change of sustainable legacy.

SANDHYA YADAV
B.Sc.(Hons.)Botany
II Year

AMARANTH TIMES
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EDITORIAL MEMBERS

RIYA
B.Sc.(Hons.)Botany
I Year

Hello readers!
I feel excited to be a part of this newsletter, "Amaranth Times". I feel honoured to be on board in making of this edition of the newsletter, I owe it to all the teachers and editorial team. It was an amazing journey of learning and growing together. I hope we made it worth your while. Here's wishing you a great reading time.

Hello everyone !
I am very grateful to have the opportunity of being a part of "Amaranth Times" team. It was an amazing experience to work with all the members who helped in developing my skills. I am thankful to my teachers and seniors who gave me this opportunity. This edition of "Amaranth Times" is based on the theme 'Combating Climate Change ' which is an issue of concern for every living being. I hope all the readers enjoy reading this and help to save our environment for future generations. Wishing you a great read.

BHAVYA SHARMA
B.Sc.(Hons.)Botany
I Year

AMARANTH TIMES
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EDITORIAL MEMBERS

NEHA JHA
B.Sc.(Hons.)Botany
I Year

Hello everyone!
I am grateful to have the opportunity to be a member of the newsletter team. It was an amazing experience to work with all the members. I got to learn so many skills from my seniors. I hope you enjoy reading it as much as we enjoyed the process of making it.

I express my gratitude for the opportunity to contribute to the "Amaranth Times". My sincere thanks to the teachers and our team for entrusting me with this chance. Working together has been an incredible experience, providing valuable learning opportunities. I hope that all readers enjoy it.

MUSKAN RAJPUT
B.Sc.(Hons.)Botany
I Year

THEME BASED ARTICLES

The Ozone Layer's Road to Recovery: Assessing Progress and Challenges Ahead

Vidhi Kasana
B.Sc. (Hons.) Botany, III year

As one of Earth's most critical protective barriers, the ozone layer has long been at the forefront of global environmental discussions. After decades of intensive efforts to combat ozone depletion, there is a growing sense of optimism surrounding its recovery. However, beneath this optimism lies a complex narrative of progress, challenges, and ongoing threats. In this article, we delve into the journey of the ozone layer's recovery, examining the strides made, the hurdles yet to be overcome, and the evolving dynamics shaping its future. From the early days of ozone depletion awareness to the latest scientific findings and policy initiatives, we explore the multifaceted dimensions of this environmental triumph and the continued vigilance required to safeguard this vital atmospheric shield.

What's the ozone layer?

The ozone layer, situated in the stratosphere about 10 to 50 kilometers above Earth, is crucial for shielding life from harmful ultraviolet (UV) radiation emitted by the sun. Composed mainly of ozone (O3) molecules, it absorbs much of the Sun's UV radiation, particularly the hazardous UV-B and UV-C rays. This protective layer plays a vital role in safeguarding human health by reducing the risk of skin cancer, cataracts, and other UV-related ailments. Additionally, it helps preserve ecosystems by mitigating damage to crops and marine life caused by excessive UV exposure.

How did it start depleting?

The depletion of the ozone layer began in the mid-20th century due to the widespread use of human-made chemicals known as chlorofluorocarbons (CFCs), halons, and other ozone-depleting substances (ODS). These chemicals were commonly used in aerosol sprays, refrigeration, air conditioning, and foam-blowing agents.

When released into the atmosphere, they slowly drift upward and reach the ozone layer. Once there, they undergo chemical reactions, breaking down ozone molecules and reducing the ozone concentration. The discovery of this phenomenon led to international concern and culminated in the Montreal Protocol in 1987, a landmark agreement aimed at phasing out the production and use of ODS. Despite significant progress in reducing ODS emissions, the ozone layer continues to face threats from remaining ODS and emerging substances, emphasizing the ongoing importance of global efforts to protect and restore this vital atmospheric layer.

What is the Montreal Protocol?

The Montreal Protocol is an international environmental treaty designed to protect the ozone layer by phasing out the production and consumption of Ozone-Depleting Substances (ODS). It was agreed upon on September 16, 1987, during a summit held in Montreal, Canada, hence its name.

The protocol was established in response to growing scientific evidence indicating that certain human-made chemicals, such as chlorofluorocarbons (CFCs), halons, and other ODS, were significantly depleting the ozone layer. This depletion posed serious threats to human health, ecosystems, and the environment.

How is it affecting the vegetation and the environment?

Ozone depletion has had significant repercussions on vegetation and the environment. Increased UV radiation reaching the Earth's surface due to ozone depletion has adversely affected plant life. UV-B radiation interferes with the photosynthesis process, reducing crop yields and stunting plant growth. It also damages the DNA of plants, leading to decreased productivity, changes in leaf structure, and impaired reproductive capacity.

Furthermore, ozone depletion has cascading effects on ecosystems. Marine phytoplankton, vital for oceanic food chains, are vulnerable to UV radiation, leading to reduced productivity and biodiversity in aquatic ecosystems. Land-based ecosystems experience similar challenges, with UV radiation impacting soil microorganisms, nutrient cycling, and overall ecosystem health.

Beyond vegetation, ozone depletion poses threats to human health, including an increased risk of skin cancer, cataracts, and weakened immune systems. Additionally, it contributes to climate change by altering atmospheric circulation patterns and exacerbating global warming.

Addressing ozone depletion requires continued international cooperation and adherence to agreements like the Montreal Protocol. By phasing out ozone-depleting substances and promoting sustainable practices, we can mitigate the harmful effects on vegetation, ecosystems, and human well-being, ensuring a healthier and more resilient planet for future generations.

Scientists have verified that the ozone hole has been steadily decreasing over the past few decades. Now, how did that happen? *(Source: World Economic Forum)*

When the ozone layer hole was discovered, this led to a global rush to repair the harm. Together, nations from all over the world signed the Montreal Protocol in 1987, formalising the goal of preserving and repairing the ozone layer by drastically cutting back on the amount of ozone-depleting substances emitted into the sky. The 198 UN member states have ratified it alone out of all UN treaties.

According to the United Nations Environment Programme (UNEP), ozone-depleting substances ODS consumption have drastically dropped, especially CFCs which have reduced to almost zero.

Can the ozone layer be completely healed? (Source: World Economic Forum)

Scientists expect that the ozone layer could be fully restored if the Montreal Protocol is followed to the letter.

According to an assessment report by the UN released in January 2023, it verifies that 99% of gases that deplete the ozone layer have been eliminated. According to UNEP projections, the Antarctic ozone layer is expected to return to its 1980 levels by 2066, while the remainder of the world's ozone layer is expected to recover between 2040 and 2045. UNEP also said that this action has led to the prevention of various skin diseases and cancer.

As we conclude our exploration of the ozone layer's recovery journey, it becomes evident that while significant strides have been made, our work is far from finished. The challenges posed by climate change, emerging pollutants, and ongoing human activities demand continued vigilance and concerted global action. By remaining committed to international agreements, advancing scientific research, and promoting sustainable practices, we can ensure the continued restoration and protection of this essential atmospheric layer. Let us carry forward the lessons learned from the ozone depletion crisis, forging a path toward a healthier, more resilient planet for generations to come. Together, we have the power to shape a future where the ozone layer thrives, safeguarding life on Earth for all.

Let's Work Together to Fight Climate Change

Ayushi Verma

B.Sc. (Prog.) Life Sciences, III year

In today's rapid world climate change is a big problem that is affecting everyone on Earth. The rapid rising of temperature, ice caps melting and extreme weather changes are becoming more prominent therefore, the need to combat and find a solution is very necessary. To make a difference and reduce the harmful impact of climate change there are simple steps that we can take. One of the most pressing issues in combating climate change is the reduction of greenhouse gas emissions. The burning of fossil fuels for energy production remains a primary contributor to increased atmospheric CO_2 levels and it further leads to global warming and other issues such as floods. Switching over to renewable energy sources is very necessary and effective ways such as solar, wind, and hydroelectric power are essential for reducing emissions and curbing the impacts of climate change. Furthermore, decarbonizing transportation is paramount in the fight against climate change. One of the main root causes is electric vehicles which offer a promising solution by eliminating tailpipe emissions as traditional gasoline-powered cars. The emissions from these vehicles are very harmful and further lead to ozone depletion. Additionally, promising public transportation, cycling, car-pooling, and walking can further be used and also reduce carbon emissions. Another critical aspect of combating climate change is protecting and restoring ecosystems. As we can witness forests, wetlands, and other natural habitats serve as carbon sinks, absorbing CO_2 from the atmosphere and mitigating the effects of global warming. To have a sustainable and eco-friendly environment practices such as conservation efforts, reforestation initiatives, and sustainable land management are vital for preserving biodiversity and enhancing the ecosystem. Moreover, working to safeguard marine ecosystems such as coral reefs and mangroves can help mitigate the impacts of sea-level rise and ocean acidification as climate change is not only impacting human beings but also the life underwater.

In addition to mitigation efforts, adaptation strategies are essential for building resilience to climate change. Education and public awareness are also crucial components of effective climate action. It's vital to learn about climate change and talking to others is one of the easy ways to know about the problem and find the solution by fostering a culture of environmental concern, and raising awareness about sustainability, individuals can make a difference that reduces the carbon footprint and contribute to combat climate change.

By working together and making small changes, we can all help to protect our planet for ourselves and future generations.

Combating Climate Change

Rani

B.Sc. (Hons.) Botany, II year

Climate change poses as one of the most pressing challenges of our time. Its impacts are widespread and profound, affecting ecosystems, economies, and societies globally. From extreme weather events to rising sea levels and biodiversity loss, the consequences of climate change are undeniable. However, amidst these challenges lies an opportunity for collective action. By coming together, we can combat climate change and build a sustainable future for generations to come.

Understanding the Problem:

At the heart of combating climate change is understanding its root causes. The primary driver is the increase in greenhouse gas emissions, primarily carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), largely from human activities such as burning fossil fuels, deforestation, and industrial processes. These gases trap heat in the atmosphere, leading to global warming and climate disruption.

The Effects:

The effects of climate change are multifaceted and far-reaching. They include:

- Extreme Weather Events: Intensified hurricanes, droughts, floods, and wildfires are becoming more frequent and severe, threatening lives, livelihoods, and infrastructure.
- Rising Sea Levels: Melting polar ice caps and thermal expansion of seawater are causing sea levels to rise, increasing the risk of coastal flooding and erosion.
- Biodiversity Loss: Climate change is disrupting ecosystems, leading to habitat loss, species extinction, and ecosystem degradation.
- Food and Water Insecurity: Changes in temperature and precipitation patterns are affecting agricultural productivity and water availability, exacerbating hunger and scarcity.

Addressing climate change requires concerted efforts on multiple fronts:

- Transitioning to Renewable Energy: Shifting away from fossil fuels towards renewable energy sources such as solar, wind, and hydroelectric power is essential to reduce greenhouse gas emissions.
- Energy Efficiency: Improving energy efficiency in transportation, buildings, and industries can significantly decrease energy consumption and emissions.
- Protecting Forests: Halting deforestation and restoring degraded lands can help sequester carbon dioxide and preserve biodiversity.
- Adapting to Climate Impacts: Investing in climate-resilient infrastructure, agriculture, and water management strategies can help communities adapt to the impacts of climate change.
- Promoting Sustainable Practices: Encouraging sustainable consumption and production patterns, including circular economy approaches, can reduce resource depletion and environmental degradation.

Combating climate change is a complex and urgent task, but it is not insurmountable. By taking decisive action at the local, national, and global levels, we can mitigate its impacts and create a more sustainable and resilient future for all. Let us heed the call to action and work together to address this existential threat facing humanity.

Role of Technology in Climate Change

Neha Jha

B.Sc. (Hons.) Botany, I year

In the world of the 21st century, where countries are accelerating towards the path of development, technology has played a substantial and crucial role. It has become part of our daily life routine and is changing the way we live, work and relate to the external world. Technology plays role of both boon and bane in the sector of climate change.

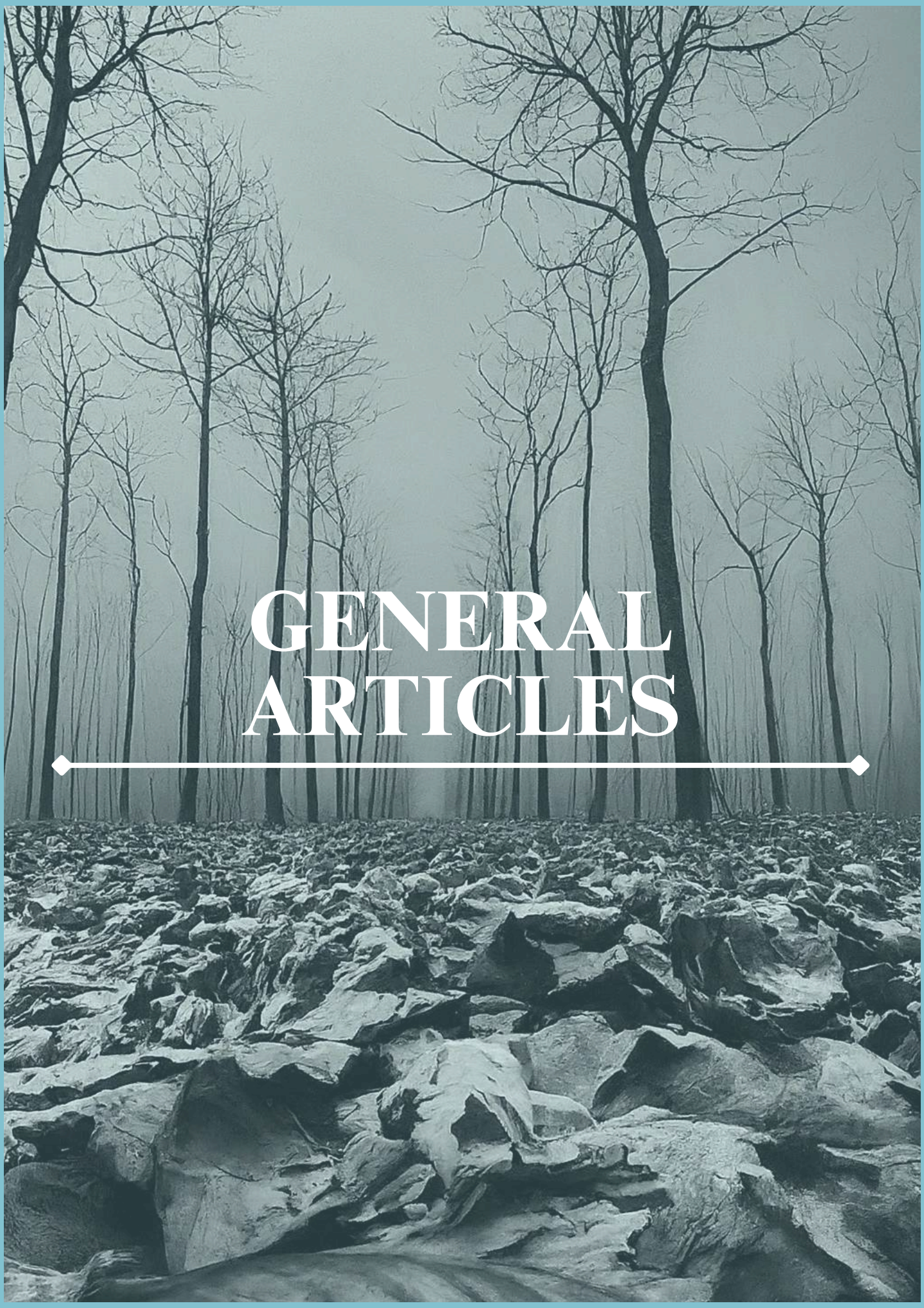
When we talk about negative effects on the environment that technology has imprinted in the sake of development, it has many aspects which include the following.

1. LOSS OF BIODIVERSITY- As technology development leads to diversification of infrastructure like dam construction, industry expansion, roads and building extension and even activities like mining ultimately demands for destroying resources like wood and space that threatens ecological balance and causes loss of biodiversity.
2. GLOBAL WARMING - Activities like industrial gaseous emission, fossil fuel burning for automobile, electricity generation, use of greenhouse etc. cause emission of some harmful gases like that of carbon dioxide, methane, sulphur dioxide etc. which do not allow the infrared rays and heat of sun to reflect back and trap it in the earth atmosphere and leads to unwanted increase in earth temperature or global warming.
3. RESOURCE DEPLETION- Use of non-renewable resources like fossil fuel, mineral, metals etc. are essential component or backbone of different technological development sectors, these raw materials are extracted by process of mining and lead to destruction of habitat and depletion of these resources which take thousands of years to get replenished.
4. POLLUTION- Excessive use of technology in automobiles manufacturing, industries etc. leads to generation of some toxic residues which contribute to air, water and soil pollution. Problems like acid rain, eutrophication, global warming, health diseases and many more problems are caused by pollution.

Other than side effects, technology offers some efficient solution to tackle climatic problems as following:

- RENEWABLE ENERGY SOURCES- Development of technology helps to combat side effects of fossil fuel use by replacing it from solar, geothermal, wind and hydroelectric energy for production of electricity in a sustainable from which helps to tackle problem of resource depletion and air pollution. Use of wind mills, solar panels, hydropower plants etc. are some of its sources.
- ENERGY EFFICIENT INFRASTRUCTURE- Including technology in energy efficient infrastructure, efficient transportation system, smart grids and energy storage that helps to reduce energy consumption leading to sustainable development.
- CLIMATE MONITORING- There are many data interpreting technological tools that are used to collect and analyse data about earth climatic conditions and help us to assess its impact and strategies to address these problems.

Major climatic problems like global warming, deforestation, resource depletion etc. can mitigate these problems by shifting towards sustainable ways like using renewable energy, climate monitoring with urban planning etc. Overall development and use of technology is important for human race and keeping the balance between drawbacks and advantages is very important to address climate change.



GENERAL ARTICLES

Food security

Bhavya Sharma
B.Sc. (Hons.) Botany, I year

Every organism on this planet has food as it's basic requirement for living. We know food gives us energy to carry out our normal body functions and continue living. Healthy, nutritional and quality food is the requirement of every person but not everyone gets it in proper ratio. Nowadays a term called 'Food Security' is used very often. Food security means when everyone has access to healthy and nutritious food that meets their dietary needs and food preferences for an active and healthy life. It has three dimensions:-

1) Food availability - It means total food production including imports and exports and storage in government granaries.

2) Food accessibility - It means everyone has access to good quality food.

3) Food affordability - It means an individual should have enough money to buy proper food to meet his dietary needs.

India is a developing country and has experienced remarkable economic growth and became the fastest growing economy in the world . India has ranked 101 among the 116 counties on the Global Hunger Index 2021. Although the topic of food and poverty is of major concern. In the recent years India has experienced a drastic growth in it's population which is now 1.4 billion thereby increasing the demand of food and agricultural production. To meet the demand of such a huge population the need for food security becomes essential. The government is trying to overcome this problem but there are challenges to everything.

Firstly, the growth rates in agriculture have been fluctuating as farming becomes more vulnerable to climate change because in India many farmers still depend on monsoon for irrigation. Secondly, land degradation constitute a major threat due to increasing urbanisation people are moving to cities in search of livelihood and better facilities. Thirdly, about 30% of the 5723 administrative blocks in the country report that groundwater is at unsustainable levels. Despite of the challenges, India has transitioned from being food deficit country to a self - sufficient food producing country in the last 30 years. This has been possible through the 2013 National Food Security Act.

This Act aims to provide for food and nutritional security by ensuring access to adequate quantities of quality food at affordable prices. Features of National Food Security Act 2013 are :-

i) Targeted coverage - The act includes specific categories of beneficiaries entitled to subsidised food grains. These include priority household which constitute the poorest of the poor and eligible households under the Antyodaya Anna Yojana.

ii) Entitlement - The act guarantees the right to receive food grains at subsidised prices. Nutritional support is also provided to pregnant women and lactating mothers.

iii) Subsidised prices- For priority households the prices for rice , wheat and coarse grains are fixed at Rs.3, Rs.2, Rs.1 per kg respectively.

iv) Public Distribution System - The act emphasises the need for strengthening and reforming the PDS by computerisation.

v) Grievance redressal - It aims to provide a platform for beneficiaries to seek remedies in case of denial or irregularities in accessing their entitlement. Other initiatives taken by the Government include mid-day meal scheme, national nutrition

strategy etc. Besides governmental schemes other initiatives have also been taken to solve this problem like practising sustainable agriculture such as organic farming, integrated pest management, by developing high yielding crop varieties, drought and pest resistant seeds. Encouraging the adoption of modern technologies like precision agriculture, remote sensing, strengthening food distribution system through better logistics and supply chain management will helpin grievance redressed. From this we can conclude that food security is one of the rising concerns and has potential to contribute to India's economic stability significantly. Increased income for farmers and better employment opportunities by increasing agricultural production and improving the distribution network would eventually result in higher GDP . Hence there would be an overall development of the country. The crux of India's food problem pertains not so much to increasing food availability but with the distribution of food.

Plants and Nostalgia

Kavita Chetan Pandya
B.Sc. (Hons.) Botany, III year

The best memories of my childhood without a doubt are the summers that I spent at my grandmother's house. These golden times of my life were quite literally filled with bright sunny days and the orange yellow treasure of Gujarat, the Kesar Keri (gir kesar mango).

In the summer, every meal in a Gujju household included at least two mango preparations: Chundo, a sweet and spicy raw mango pickle that is an essential part of Gujarati thali, and Keari Ras, which was the highlight of both my meal and my day.

Since there were no smartphones back then, we were all bored at home and couldn't wait until the evening to go outside and play with our friends. Green grass covered the parks, and the one thing that is impossible to ignore is the divine scent of jasmine (moogra), which is not only my favourite flower but also my grandmother's. She always made me get up early in the morning to gather the flowers in full bloom for her prayers.

Not only are plants beneficial to the environment and economy, but they also have a profound emotional impact on our lives. For example, walking on grassy areas calms us down, and gazing at verdant trees makes us happier. A connection with nature keeps us rooted and makes us feel peaceful.

Back at home in Delhi, starting with the late spring blossoms of Semal tree (*Bombax ceiba*) resembling fiery embers, the early summer blossoms of siris and bottle brush looking like fuzzy cotton candy, the saffron yellow blossoms of Gulmohar at the peak of summer and finally the late summer blooms indicating the incoming of rains are the yellow drapes of amaltas, which envelop Delhi in a bright yellow hue. These are just a few trees of many which shape our life experiences, taking us back to our childhood and inspire culture, folklore, art and literature for generations, cementing their role in not only ecology, but the cultural ethos of a civilisation.

SCIENTIST SECTION

DR.VANDANA SHIVA

CREDITS: Right Livelih*oo*d

Vandana Shiva is an intellectual and activist from India, who has worked in a wide range of different fields inspiring change globally. Her activism is rooted in promoting counter-development and supporting grassroots networks, women's rights and ecology.

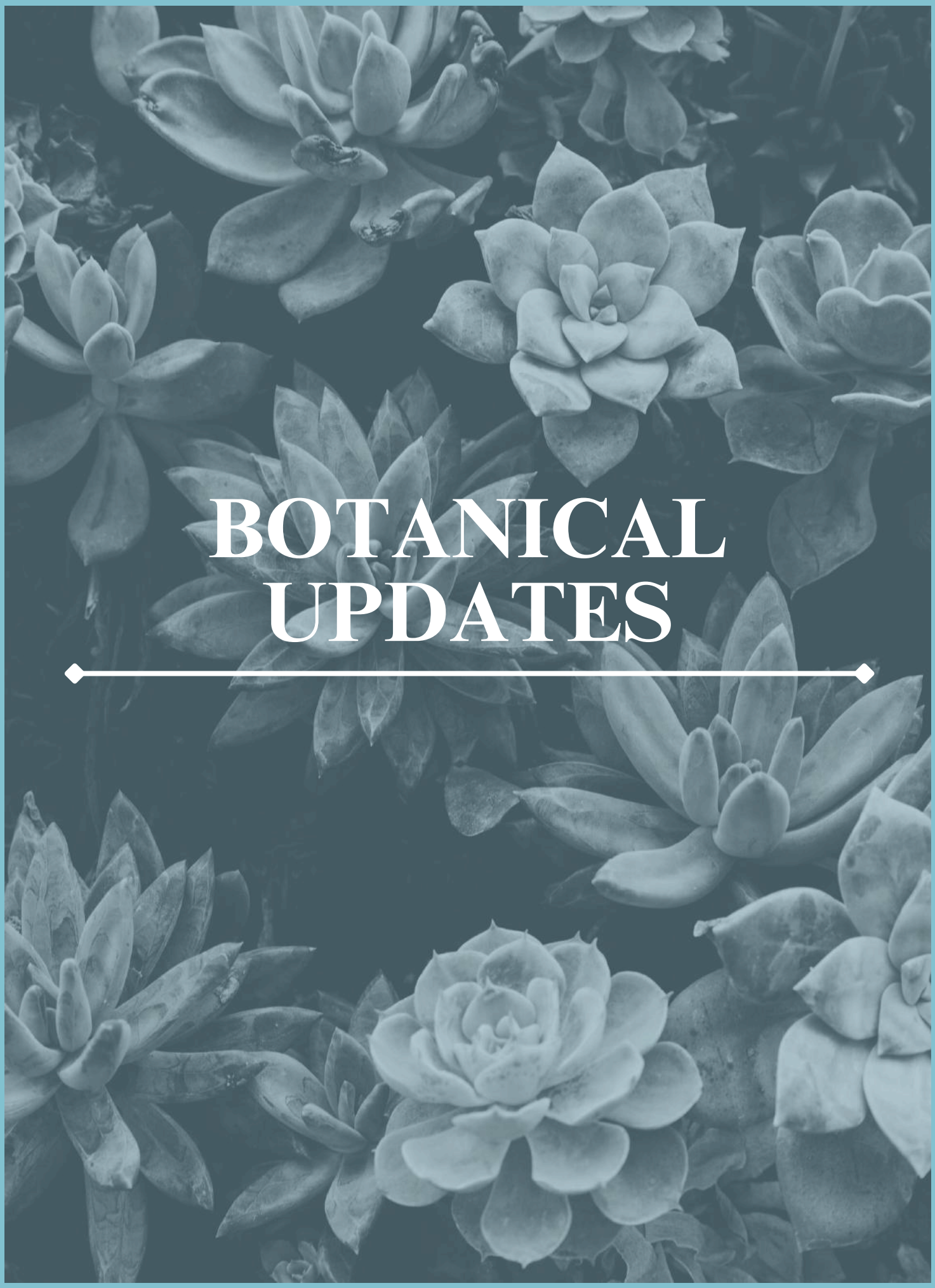
Dr. Vandana Shiva trained as a physicist and did her Ph.D. on the subject "Hidden Variables and Non-locality in Quantum Theory" at the University of Western Ontario in Canada. She later shifted to inter-disciplinary research in science, technology and environmental policy, which she carried out at the Indian Institute of Science and the Indian Institute of Management in Bangalore, India. In 1982, she left to set up her Research Foundation for Science, Technology and Natural Resource Policy in her home town of Dehra Dun in the foothills of the Himalaya. Dr. Shiva's record has been that of the totally committed, very productive and effective activist-advocate-intellectual. As an activist, she has coordinated, supported and learned from grassroots networks on a wide range of issues across India. As an advocate, especially in international flora, she has proven to be one of the most articulate spokespersons of counter-development in favour of people-centred, participatory processes. As an intellectual, she has produced a stream of important books and articles, which have done much both to form and address the agenda of development, debate and action.

Dr. Shiva's foundation is an informal network of researchers, working in support of people's environmental struggles, part of the objective of which is the articulation and justification of people's knowledge. The foundation has done important work in a number of areas, including:

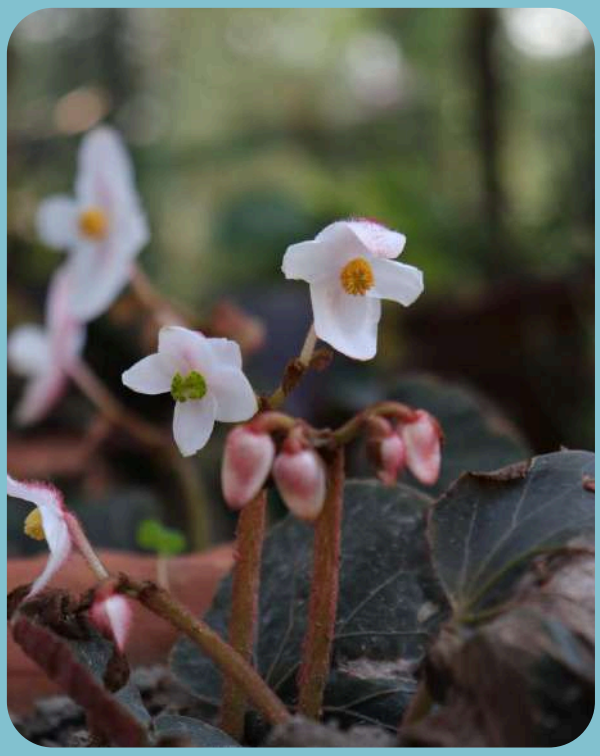
- **Agriculture and genetic resources.** Dr. Shiva's critical analysis of the effects of the Green Revolution, and looking beyond it to the impacts of the 'second' Green Revolution powered by genetic engineering, is of pioneering importance. For several decades, she has been a campaigner on the ethical and ecological impacts of genetic engineering. She has led campaigns on bio-safety and built citizens' responses to the introduction of genetically modified organisms (GMOs) into agriculture.
- **Biodiversity.** She started her work on biodiversity with the Chipko Movement (1987 Right Livelihood Laureate) in the 1970s. As with forestry and water, her contribution has gone beyond critique with the launch of a "people's programme on biodiversity." She has pioneered the organic movement in India and has built a new movement called Navdanya, the country's biggest network of seed keepers and organic producers, for the conservation of indigenous seeds. Dr. Shiva sees biodiversity as intimately linked to cultural diversity and knowledge diversity. She has campaigned nationally and internationally against "biopiracy" - the patenting of indigenous knowledge. Her book on the subject, titled Biopiracy, deals with the emerging corporate monopolies on the living resources of the poor.
- **Ecology and gender.** Her book Staying Alive: Women, Ecology and Survival (Zed, 1989) has had an international impact. She was a co-chair of the 1991 World Congress on Women and Environment, and she directed a dialogue on "Women, ecology and health" with the Dag Hammarskjold Foundation, leading to a volume of Development Dialogue edited by her. Dr. Shiva has launched a global movement called Diverse Women for Diversity, for the defence of biological and cultural diversity.

Time magazine named Dr. Shiva as an "Environmental Hero" in 2003, and Asia Week has called her one of the five most powerful communicators of Asia. Among her many awards, she received the Order of the Golden Ark, the Global 500 Award of the UN, the Earth Day International Award, the Lennon Ono Grant for Peace and the Sydney Peace Prize 2010.

Dr. Shiva has served on the boards of many organizations, including the World Future Council, the International Forum on Globalization and Slow Food International.



A new flowering plant found in Arunachal Pradesh is named after a Hyderabad scientist



Date: March 24, 2024
Source: The Hindu
Link:https://www.thehindu.com/news/cities/Hyderabad/a-new-flowering-plant-found-in-arunachal-pradesh-is-named-after-a-hyderabad-scientist/article67946103.ece

A new colourful flowering plant species, 'Begonia Narahari', with a distinctive feature of displaying a vivid blue iridescence in direct light, was discovered in Mishmi Hills of Arunachal Pradesh's Lohit district by scientists.
Begonia is considered to be one of the largest and fastest growing genera of flowering plants, belonging to the family Begoniaceae, having more than 2,100 species and mainly distributed in tropical and subtropical regions of the world.

The fungi that lives in Antarctica

Date: January 11, 2024
Source: Royal Botanic Gardens Kew
https://www.kew.org/read-and-watch/top-10-species-2023

When we think of the icy and barren wilderness of Antarctica, we don't typically think of plants. Yet the cold continent is home to many species of lichens, fascinating forms of life that are a partnership between fungi and algae or cyanobacteria.
Even lichens cannot make their home on ice though. They grow on 'nunataks', the 2% of Antarctica exposed as bare rock. Kew mycologist Raquel Pino-Bodas joined a team of scientists investigating lichens near the Spanish Antarctic base, adding three new cold-braving Antarctic lichen species to the 100 known so far.

An orchid living atop a volcano

Date - January 11, 2024
Source: Royal Botanic Gardens Kew
https://www.kew.org/read-and-watch/top-10-species-2023

A scientific expedition to the volcanic Indonesian island of Waigeo hoped to rediscover a long-lost blue orchid (*Dendrobium azureum*) last seen more than 80 years ago. This they did, on the very summit of Mount Nok! Not only this, the team, including Kew's Dr André Schuiteman found multiple previously unknown orchid species as well. One new find was *Dondrobium lancilabium wuryae* (a new subspecies of *D. lancilabium*), an orchid with spectacular red flowers named for Mrs Wury, the wife Ma'ruf Amin, Indonesia's vice-president. It is the ninth new orchid from Southeast Asia to be described in the last 12 months by Dr Schuiteman and partners.

The palm that flowers underground

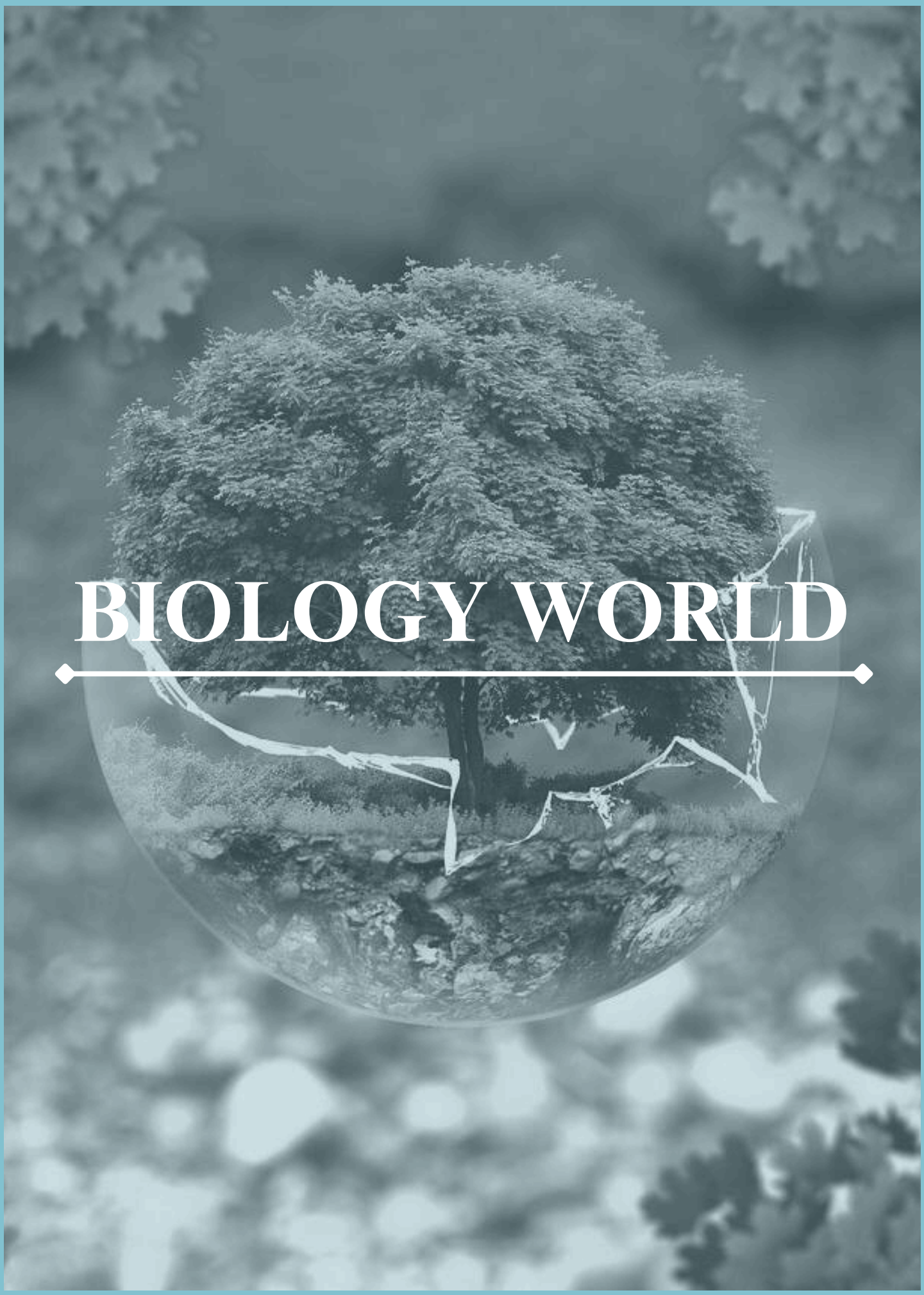
Pinanga subterranea

Date: January 11, 2024

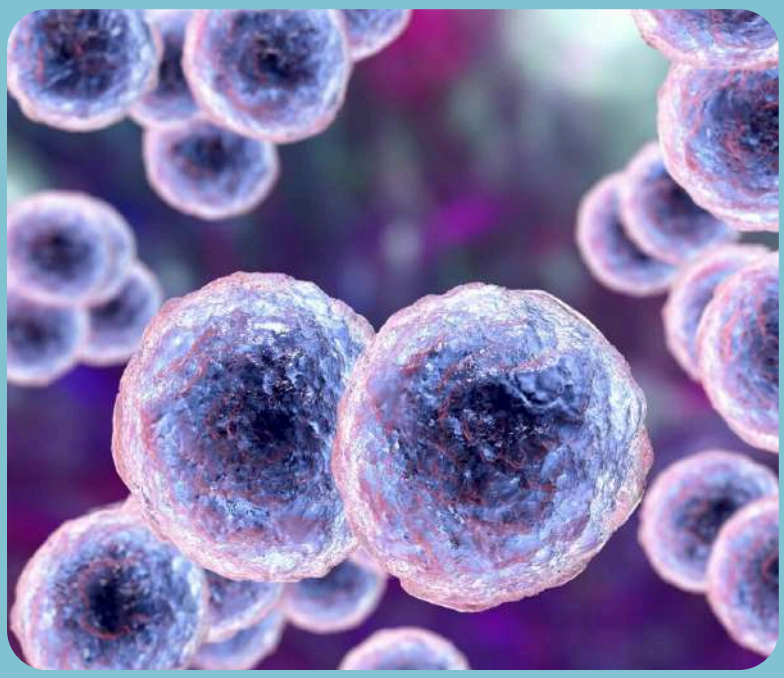
Source: Royal Botanic Gardens Kew

https://www.kew.org/read-and-watch/top-10-species-2023

Hidden in plain sight on the island of Borneo, it is a palm that fruits and flowers entirely underground. This highly unusual plant behaviour is only known to one other plant, an orchid called *Rhizanthella*. Despite being a fascinating scientific discovery, *Pinanga subterranea* was nothing new to the communities living in the region. The plant has multiple names in Bornean languages: Pinang Tanah, Pinang Pipit, Muring Pelandok, and Tudong Pelandok



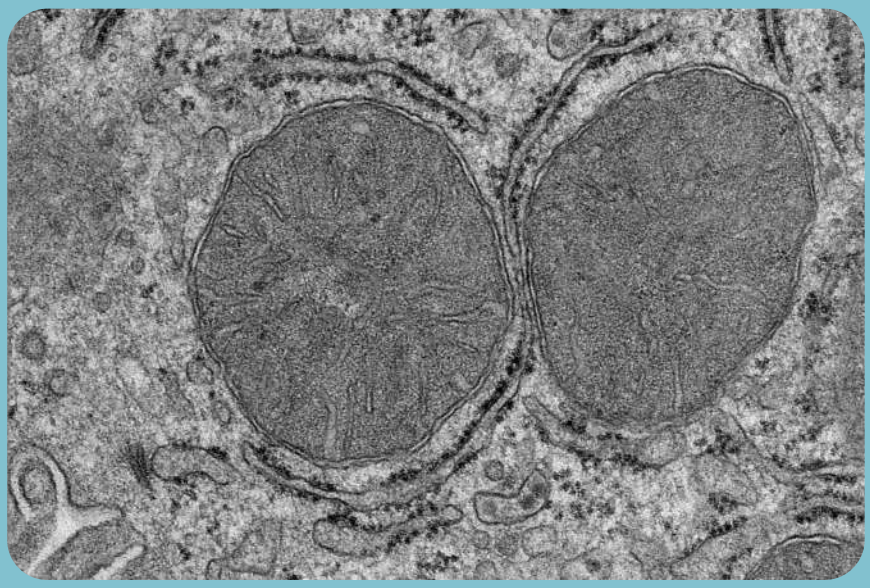
Microbial viruses act as secret drivers of climate change



Date: February 29, 2024
Source: Ohio State University
https://www.sciencedaily.com/releases/2024/02/240229182828.htm

In a scientific breakthrough, researchers have revealed the biological mechanisms by which a family of proteins known as histone deacetylases (HDACs) activate immune system cells linked to inflammatory bowel disease (IBD) and other inflammatory diseases. This discovery adds a vital piece to better understanding how methane interacts and moves within different ecosystems, said ZhiPing Zhong, lead author of the study and a research associate at the Byrd Polar and Climate Research Center at The Ohio State University.

Food in sight? The liver is ready!



Date: April 25, 2024
Source: Max Planck Institute for Biology of Ageing
https://www.sciencedaily.com/releases/2024/04/240425161504.html

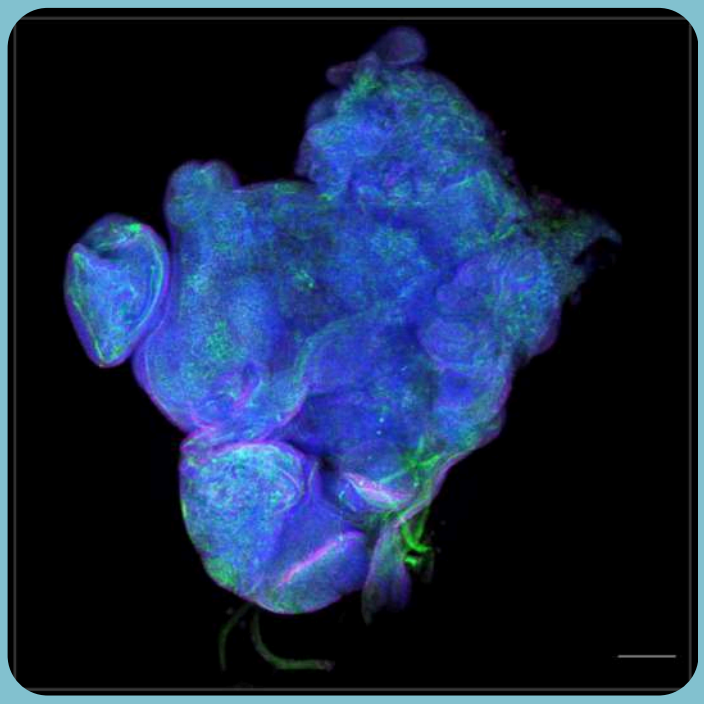
What happens in the body when we are hungry and see and smell food? A team of researchers has now been able to show in mice that adaptations in the liver mitochondria take place after only a few minutes. Stimulated by the activation of a group of nerve cells in the brain, the mitochondria of the liver cells change and prepare the liver for the adaptation of the sugar metabolism. The findings could open up new avenues for the treatment of type 2 diabetes.

Researchers discover urine-based test to detect head and neck cancer

Date: April 16, 2024
Source: Michigan Medicine - University of Michigan
https://www.sciencedaily.com/releases/2024/04/240416214642.html

Researchers have created a urine-based test that detects pieces of DNA fragments released by head and neck tumors. The test could potentially facilitate early detection of this cancer type, which currently does not have a reliable screening method. In this study, evidence is provided to support the hypothesis that conventional assays do not detect ultrashort fragments found in urine, since they are designed to target longer DNA fragments. The team used an unconventional approach to develop a urine test for HPV-positive head and neck cancer ctDNA detection," said study co-first author and research specialist Chandan Bhambhani, Ph.D.

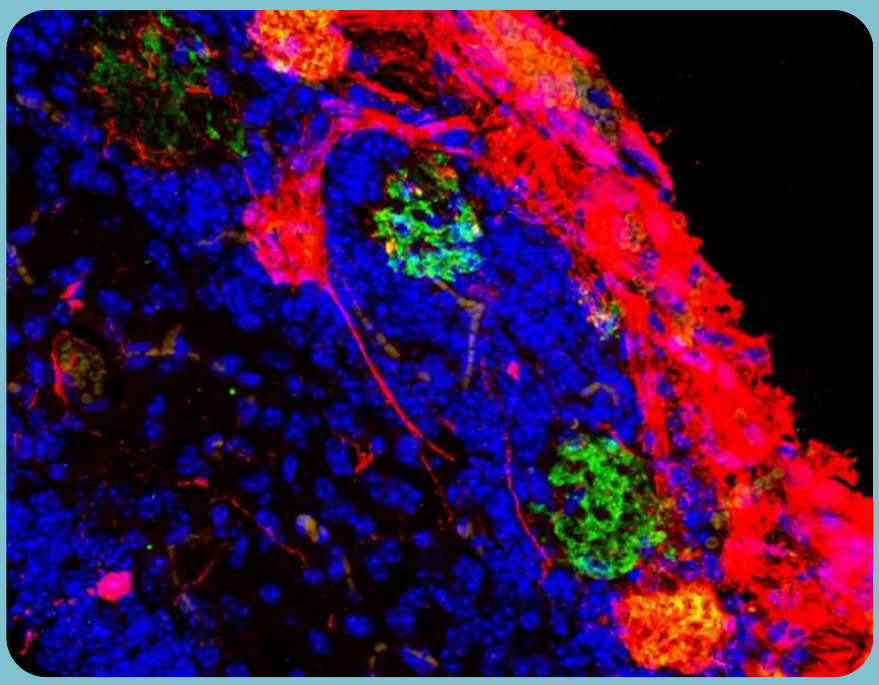
Discovering cancers of epigenetic origin without DNA mutation



Date: April 24, 2024
Source: CNRS
https://www.sciencedaily.com/releases/2024/04/240424111523.html

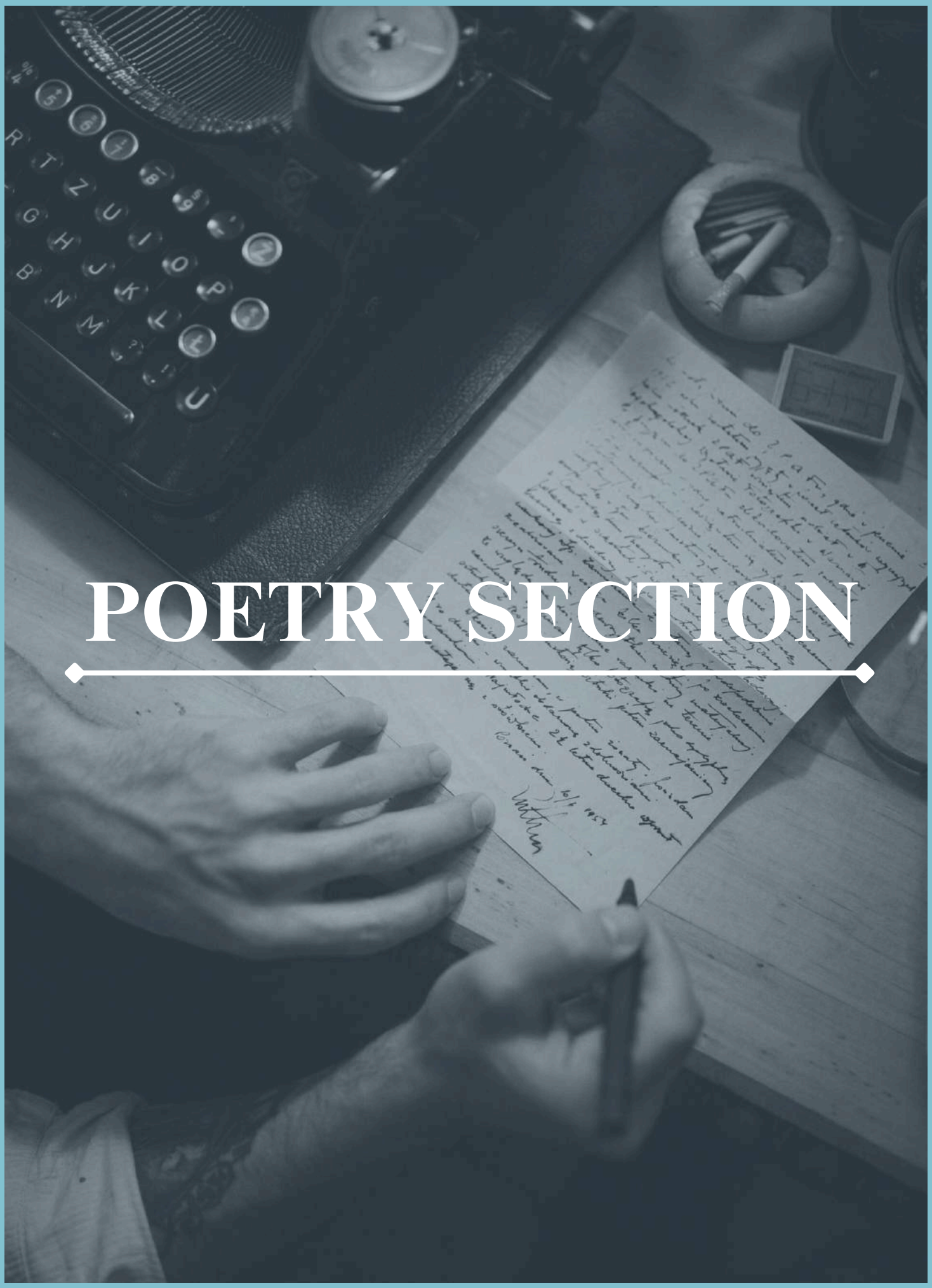
A research team has discovered that cancer, one of the leading causes of death worldwide, can be caused entirely by epigenetic changes, in other words, changes that contribute to how gene expression is regulated, and partly explain why, despite an identical genome, an individual develops very different cells (neurons, skin cells, etc.) While studies have already described the influence of these processes in the development of cancer,this is the first time that scientists have demonstrated that genetic mutations are not essential for the onset of the diseases.

With hybrid brains, these mice smell like a rat



Date: April 25, 2024
Source: Columbia University Irving Medical Center
https://www.sciencedaily.com/releases/2024/04/240425131554.html

Mice lacking an olfactory system have had their sense of smell restored with neurons from rats, the first time scientists have successfully integrated the sensory apparatus of one species into another.It is the first time that an animal has been able to use the sensory apparatus of another to sense and respond accurately to the world and is one indication of how flexible the brain can be integrating outside brain cells.



POETRY SECTION

CLIMATE CHANGE

A divorce to the planet

Piya Chawla
B.Sc. (Hons.) Botany, I year

We live on our beautiful, beautiful planet Earth
To all the trees and organisms, she gave birth
For her, all her creations are of high worth
But we humans are expanding our greed girth.

As a baby is nourished in the Mother's womb
She is also giving "us humans" a sharing room
She protects her progeny like a cereal's glume
But we selfish entities makes her efforts doom.

For our relishment she invented thoughtful Climate
That we can fill new experiences in our life's bucket
From changing climates to combating summits,
The situation is alarming we need to get it admit.

Climate change is a massive problem absolutely
But we need to solve this consequence resolutely
This is our planet's call please refer it astutely
Already it's the eleventh hour, take action acutely.

Better late than never, let's put all strength together
Protect the earth to be a supporter to our successor
It's possible the climate can again be refresher
But it is a submissive request to be under pressure.

The time can come where the temperature is in limit
Our mother planet Earth can afresh reclaim its spirit,
It is nearly all out, but we can rescue our last wicket
Please take action after all, we all are Earth's spinet.

SEA SHORE

Kriti Sharma
B.A. (Hons.) English, III year
Ramanujan College

Greetings to you, from the bank of a sea.
I speak to you with the breaths left in me.

I seek life in every drop that splashes.
Ending my life in chemicals and ashes.

My sand shelters plastic, my air shelters smoke,
My water spaces poison leaving me with rocks.

Though I see people, now and again,
What I seek is some drops of rain.

But won't it be wrong to the clouds? It will.
Giving me some more droplets to kill.

I saw fishes die, I buried them in me.
Leaving me as the only friend to the sea.

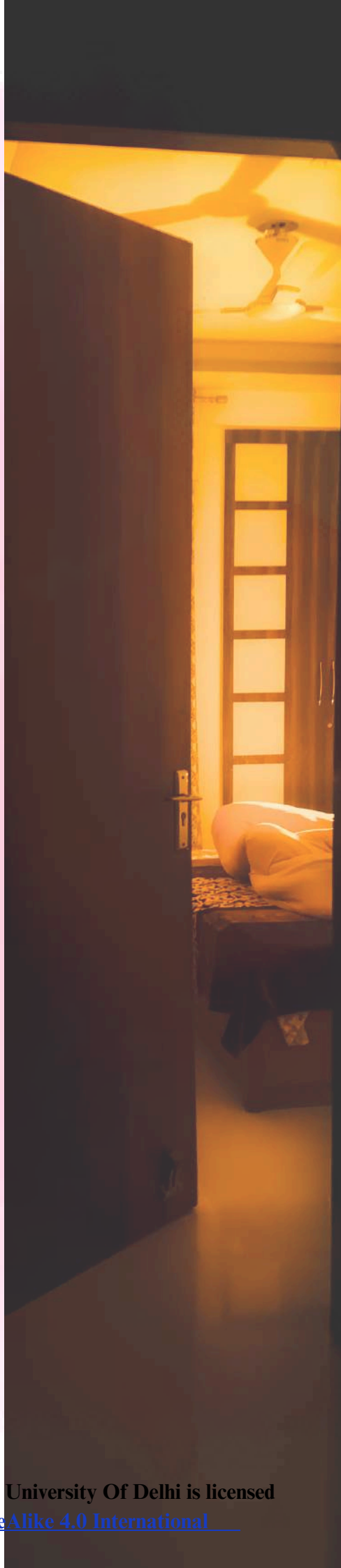
Fishermen pass by, seeking for an earning,
I guess its time for this race to start learning.

Its very easy to bring forth your hand and ask,
What's really tough is preserving as a task.

Let there be a day more happy and less grim,
With some air to breathe and water to swim.

REVERIE

Vidhi Kasana
B.Sc. (Hons.) Botany, III year



Eyes wide open
staring blankly through the debris
of this room
which once had witnessed
vivid reveries of that noble juvenile
who had their aspirations
drawn over these walls
which have now fallen.
seemed like the moon had stopped reflecting
the yellow sunlight and the garth
had lost it's greens.
I stumble upon the scattered pieces
of the concrete of yearnings
I couldn't carry out.
gathering these obstructions,
amidst the surrounding darkness,
had bruised my hands in such a way
not even the sharpest of blades could ever have.
how am I supposed to draw now?
the walls others had built for me,
the egg white plane
awaits for me to draw again.
I stand enclosed.
creating,
with the squelching red ink
leaking out the wounds
which would never clot.

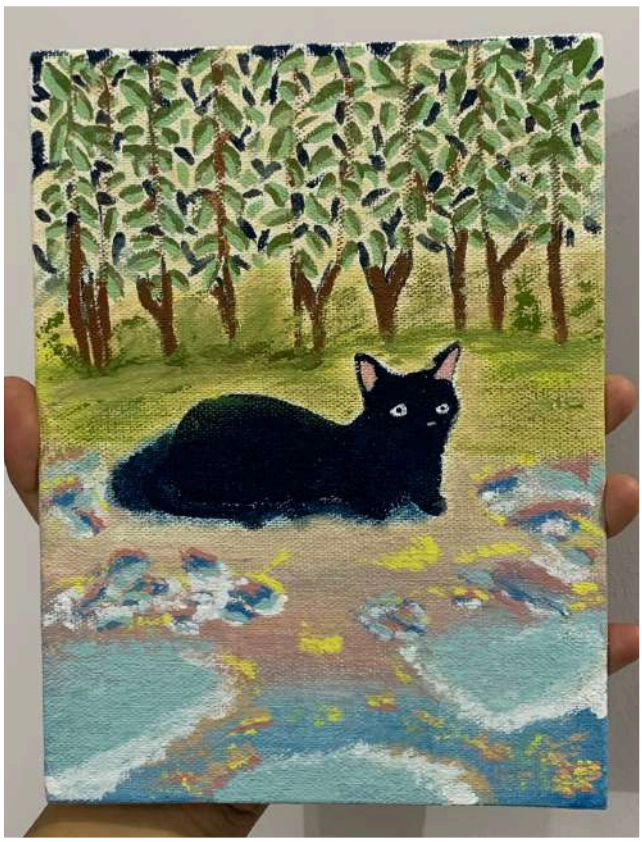
आसमान की ओर:

असीम सपनों का विश्वास

Sandhya Yadav
B.Sc. (Hons.) Botany, II year

शौक को कभी पाला नहीं जाता,
हवाओं के भरोसे कभी उड़ा नहीं जाता।
नदियों सा आदर पाना है तो पर्वत छोड़
निकलना पड़ता,
क्योंकि हर बात को किस्मत पर टाला
नहीं जाता।
इतना भूल गए कि भूलना भी अब
भूलाना नहीं आता।
सब कुछ मिल जाएगा तो तमन्ना
किसकी करोगे,
कुछ ज्यादा वक्त जरूर लगेगा,पर सब्र
का बांध कभी नहीं टूटेगा।

PAINTING SECTION



Vidhi Kasana
B.Sc. (Hons.) Botany, III Year

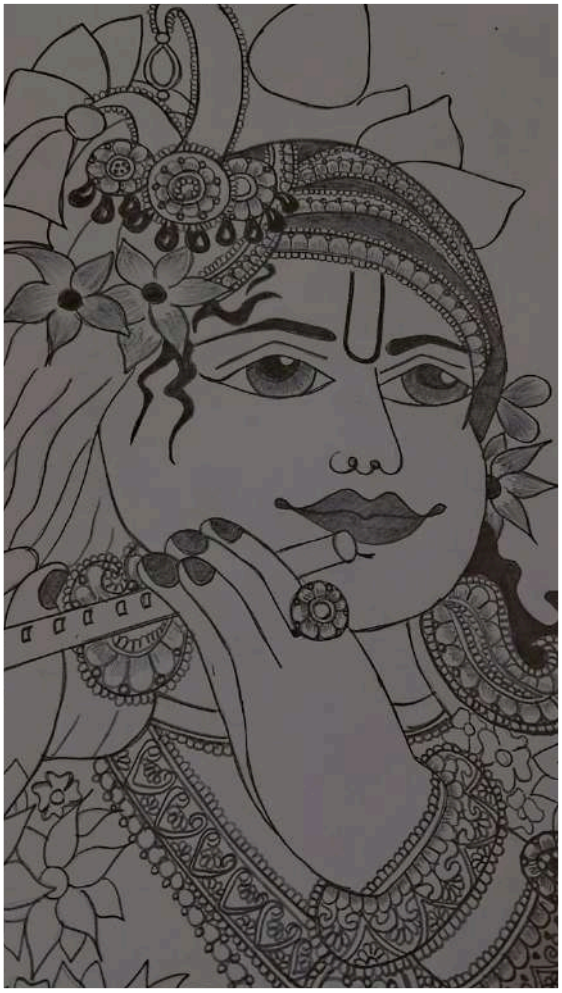
Muskan Rajput

B.Sc. (Hons.) Botany, I Year

Riya Kumari
B.Sc. (Hons.) Botany, I Year

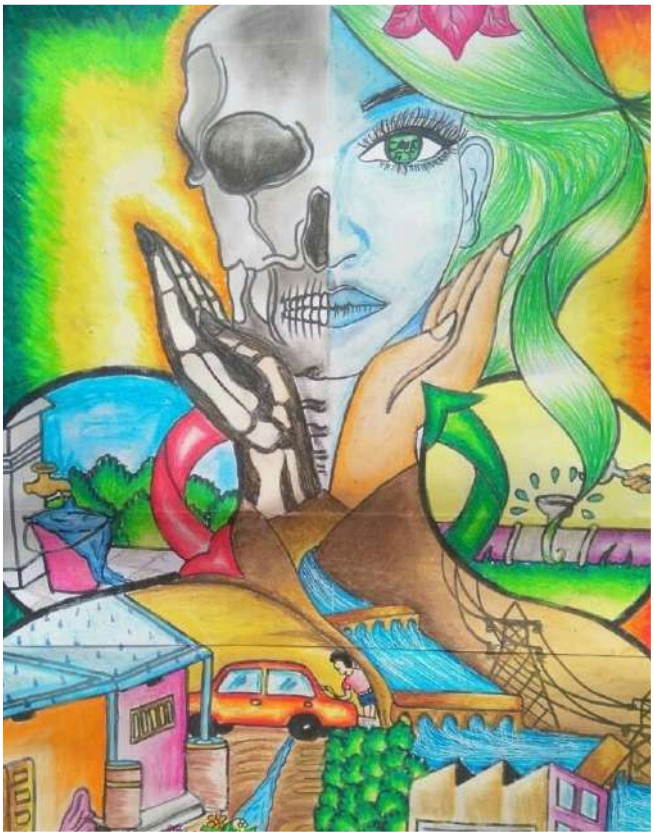
Khushi Gupta

Lavanya Sharma
B.Sc. (Hons.) Botany, III Year



Priya Sharma

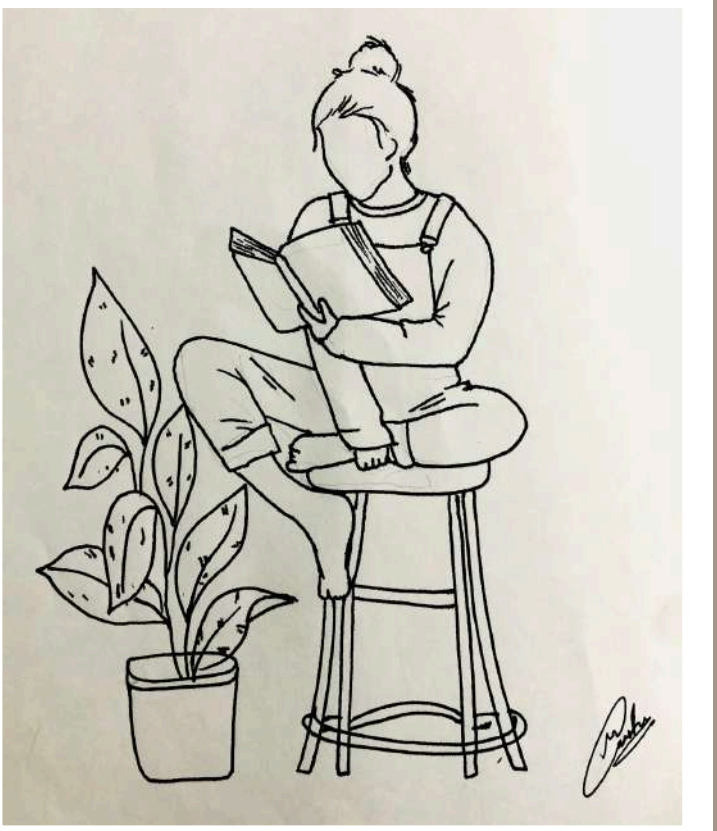
B.Sc. (Hons.) Botany, III Year



Apurva Tomar

B.Sc. (Hons.) Botany, I Year

Shilpi Singh
B.Sc. (Hons.) Botany, I Year



Muskan Rajput
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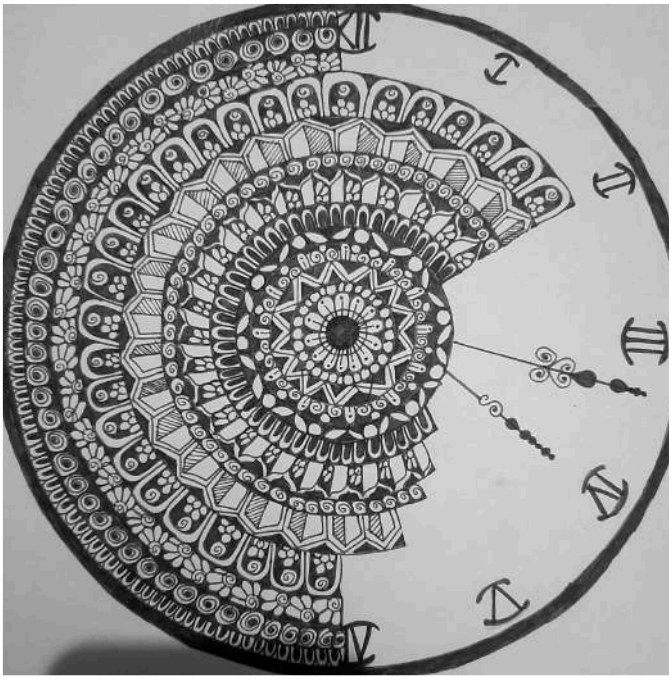
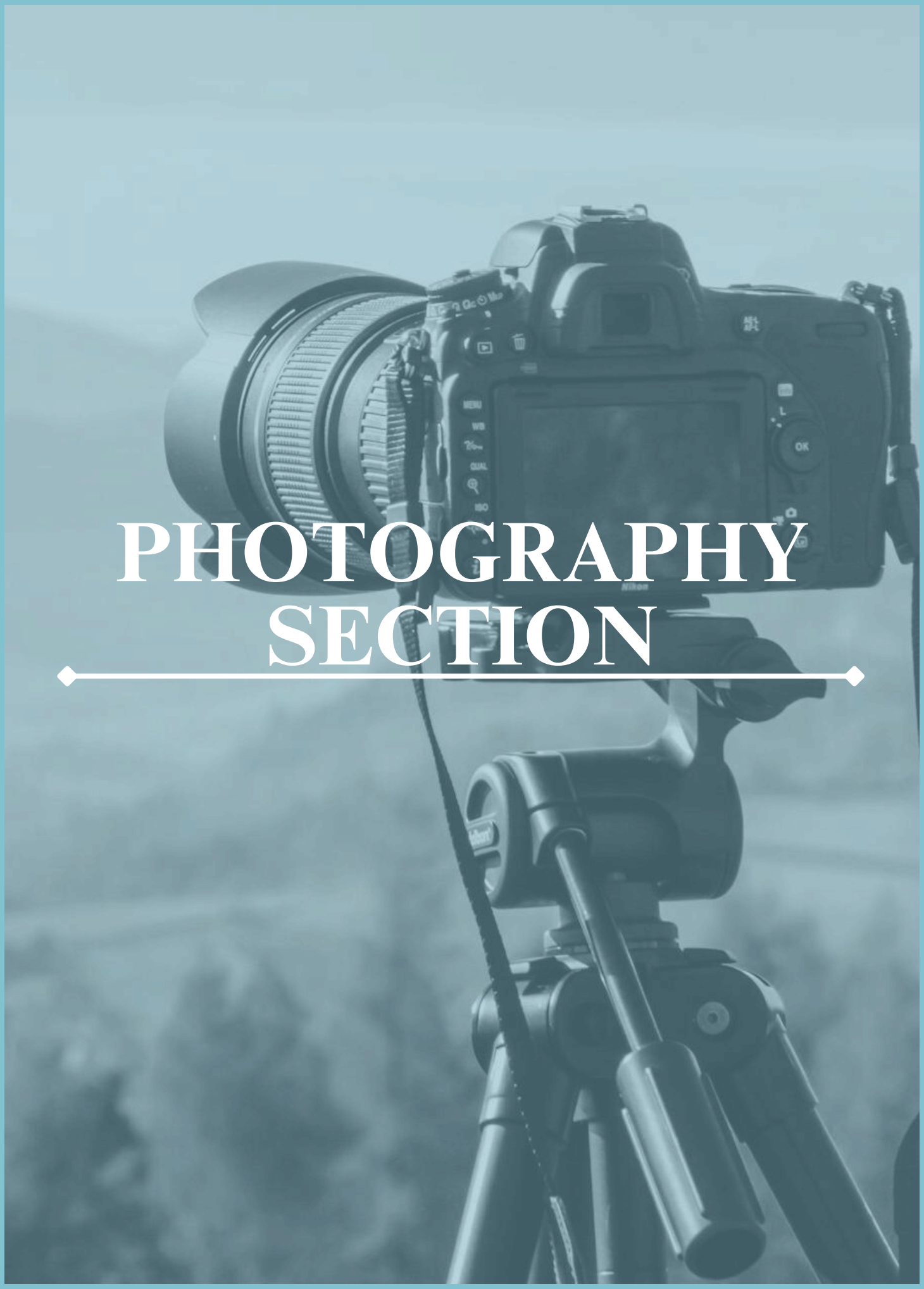
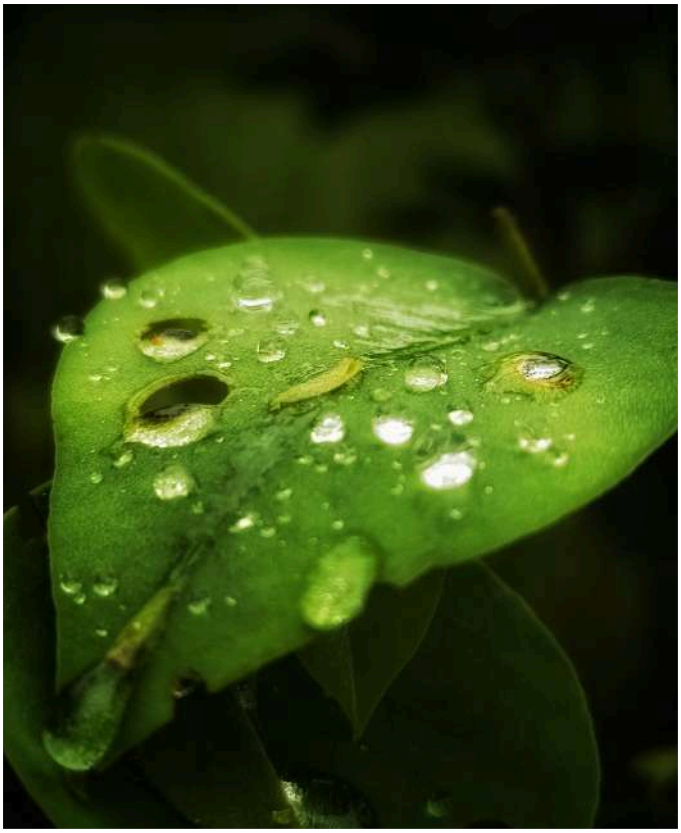


Khushi Singh

B.Sc. (Hons.) Botany, II Year

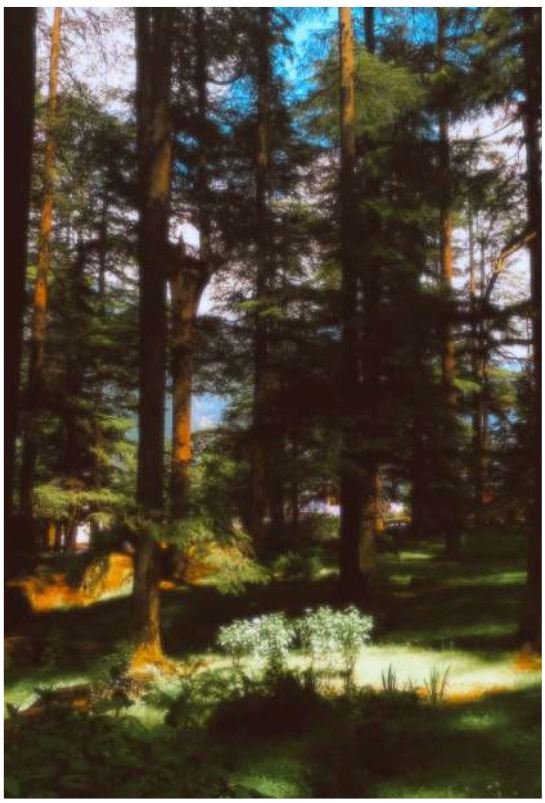


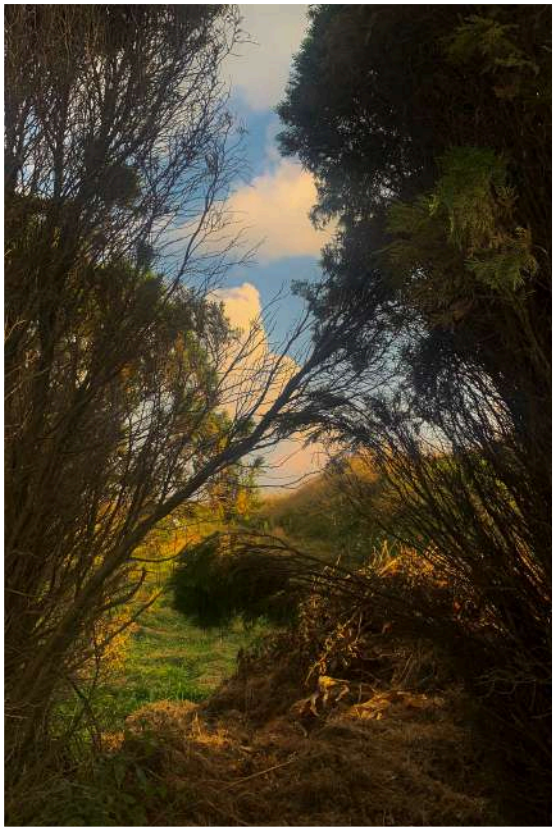
PHOTOGRAPHY SECTION

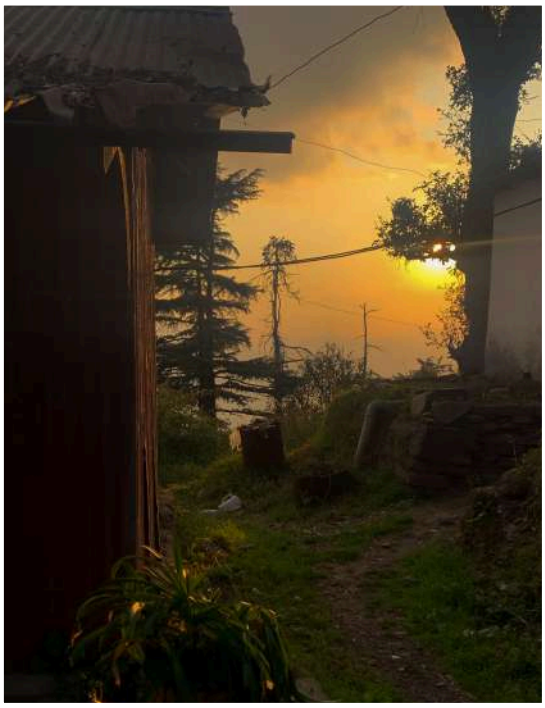


Shalu

B.Sc. (Hons.) Botany, II Year







Vidhi Kasana

B.Sc. (Hons.) Botany, III Year

Anusha Singh

B.Sc. (Hons.) Botany, I Year

Khushi Singh

B.Sc. (Hons.) Botany, II Year

Muskan Rajput

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Riya Kumari

B.Sc. (Hons.) Botany, I Year

Salony Kumari

B.Sc. (Hons.) Botany, II Year

Shilpi Singh

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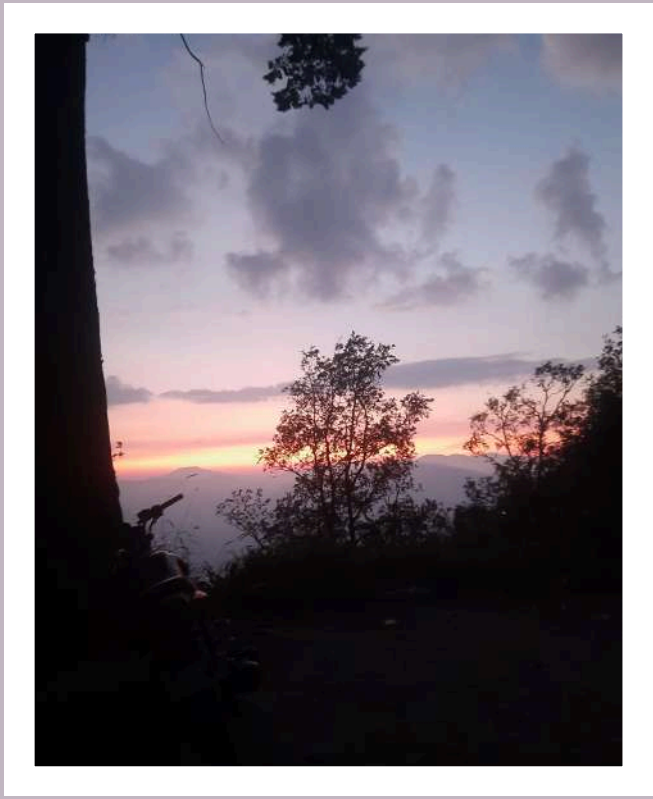

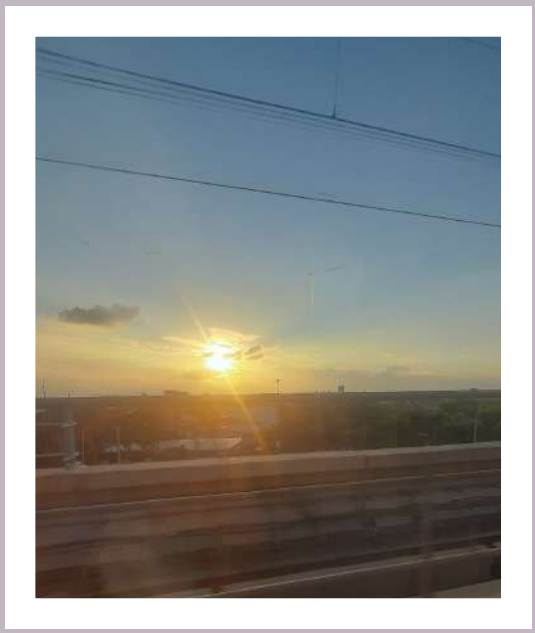

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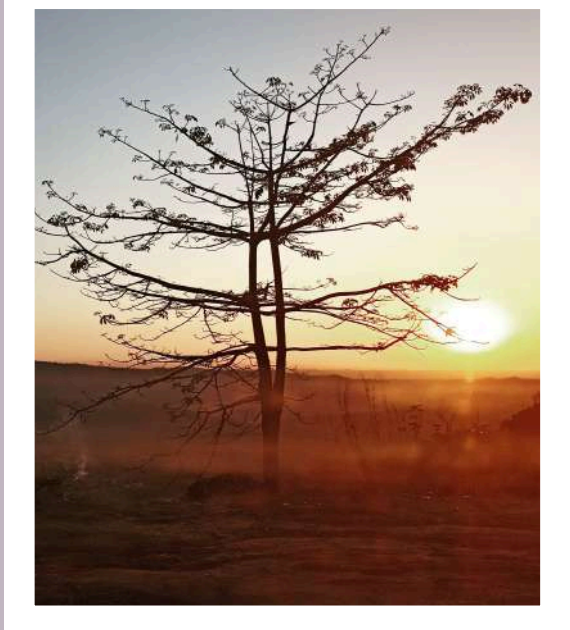

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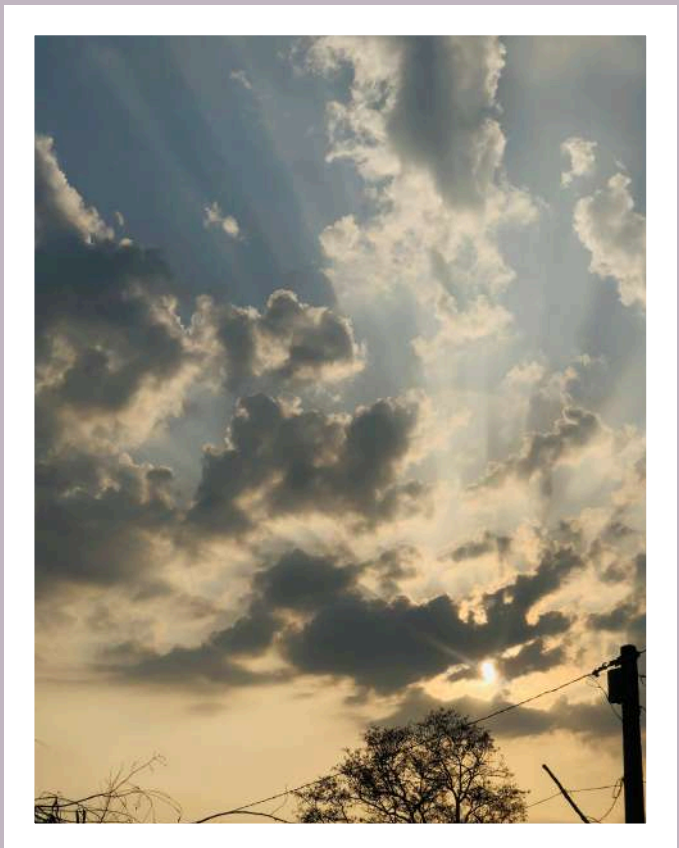

Muskan Rajput
B.Sc. (Hons.) Botany, I Year

Mimansa Kumawat

B.Sc. (Hons.) Botany, II Year

Rani
B.Sc. (Hons.) Botany, II Year

EVENTS SECTION

WORLD ENVIRONMENT DAY

In celebration of World Environmental Day, the Amaranth: The Botanical Society, Kalpdhra: The Environmental Society with Garden Committee, and IQAC organized sessions on “Climate change on the distribution, composition, and functioning of global biomes” and “Hands-on workshop for bonsai making”. The first session was held on 5th June 2023 from 11:00 am in Seminar Room, Kalindi College and the second session was held on 5th June 2023 from 1:30 pm in Botany Lab, Kalindi College. The special guest speaker was Prof. Rupesh Chaturvedi, Associate Professor at the School of Biotechnology, Jawaharlal Nehru University, and expert Mr. Saumik Das, Business owner of Grow Green Bonsai and Bonsai Ambassador of South Asia Bonsai Federation. Prof. Rupesh Chaturvedi elaborated on climate change in the distribution, composition, and functioning of global biomes, where he covered a broad spectrum of topics including climate change, driven primarily by human activities, alternation in the geographical distribution of biomes, composition shifts, and functioning of ecosystems. The session proceeded with a query round where many students interacted and asked about their doubts. In the same sequence of events, the second session was designed to provide students with a valuable opportunity to enhance their practical skills and knowledge through hands-on training. Attendees of the workshop were fortunate enough to have Mr. Saumik Das lead the session with his knowledge, He began by sharing the cultural significance of bonsai and then proceeded to provide a comprehensive guide on creating a bonsai. The event was successfully conducted under the direction of our TIC Dr. M Arunjit Singh, Dr. Divya Verma, and the convenorship of Dr. Sanavar Soham of the Garden Committee. However, it could not have been possible without the support of our Principal, Prof. Meena Charanda.

THALASSEMIA CHECKUP CAMP

A one-day health awareness and screening camp for young adults in Delhi and the National Capital Region was held on September 4, 2023, to raise awareness of thalassemia, an inherited blood disorder. The event was sponsored by the Indian Council of Medical Research and organized by the Department of Botany at Kalindi College in collaboration with the Department of Anthropology, University of Delhi, AIIMS, Amity Institute of Anthropology, and the National Thalassemia Welfare Society. Dr. Naorem Kiranmala Devi, Associate Professor at the Department of Anthropology, University of Delhi was the distinguished guest. The camp was held as part of the research project, with Prof. K. N. Saraswathy serving as the primary investigator and Prof. Benrithung Murry, R.P. Mitra, Dr. N. Kiranmala Devi, Prof. Roumi Dev, Dr. Seema Tyagi, Dr. Ravi Rajan from AIIMS, and Dr. J. S. Arora served as co-investigators. The lamp lighting signalled the beginning of the ceremony, which continued with the honouring of the esteemed guests. Dr. Kiranmala continued by discussing thalassemia, including the types and necessary precautions, as well as the do's and don'ts. The lecture was given in the Botany lab and was attended by 76 students including 8 faculty members from various departments. Under the initiative, Ph.D. students were working towards the collection and sampling of blood. The students and volunteers filled out the appropriate consent forms, which were subsequently submitted for blood collection and sampling. 110 individuals from all over the college underwent the test. The tests were carried out with the utmost attention and care, adhering to all the necessary standards. Under the direction of the TIC and conveners, the event was a resounding success. But it wouldn't have worked without the support and guidance of our Principal, Prof. Meena Charanda.

DR. SUDESH BHARDWAJ MEMORIAL LECTURE AND OATH CEREMONY

In memory of Dr. Sudesh Bhardwaj, the Department of Botany organized a lecture on "Harnessing data mining & based approaches to understand viral replication" and an Oath ceremony followed by the fresher's celebration for the class of 2023. The event was held on 27th October 2023 from 10 am in the Botany Lab, Kalindi college with a total of 53 students and 8 faculty members in attendance. The special guest speaker Dr. Vikas Sood, Assistant Professor of Jamia Hamdard University graced the event. The family of Dr Sudesh was also present as guests for the day.

The event started with the seeking of divine blessing and honouring of the guests with planters. A short remembrance in honor of Dr. Sudesh was presented. Before the lecture, the newly appointed office bearers engaged in the oath ceremony. Ms. Shruti Srivastava was appointed as the President followed by Ms. Harmanpreet Kaur as Vice President.

A team of 15 student members of the Botanical Society underwent the badging ceremony, with the guest and faculty doing the honours. The event proceeded with the lecture by Dr. Sood on harnessing data mining techniques, where he covered a broad spectrum of topics including the usage of bioinformatics, data storehouses, and data mining. He also explained the correlation between media and science including the infusion of trends for mining data. He vividly explained the importance of programming languages and also included live examples of people in the field. The session proceeded with a query round where many students interacted and asked about their doubts.

In the same sequence of events the fresher ceremony, based on the theme of Halloween, for the new batch of 1st years commenced. It started with various fun cultural programs followed by 5 rounds for the selection of Ms. Fresher'23. A series of open mic events along with fun games and activities were part of the Ms. Freshers '23. Ms. Riya Kumari was crowned as the Ms. Freshers'23, followed by Ms. Congeniality'23 as Nidhi and Best Rookie as Ms. Rekha.

The event was successfully conducted under the guidance of our TIC Dr. M Arunjit Singh, Dr. Ranjana Roy Mishra as the coordinator and under the convenorship of Dr. Pratibha Thakur, Dr. Naghma Praween and Dr. Priyanka Verma. However, it could not have been possible without the support and guidance of our principal Prof. Meena Charanda.

TRIP TO MUKHTESWAR AND NAINITAL

A botanical excursion to Mukteshwar and Nainital was organized by the Botany Department from 28th October to 1st, November 2023. The primary objective of this excursion was to study the rich biodiversity of the region and to collect various plant specimens, including angiosperms, algae, bryophytes, etc., for submission in practical classes and examinations. Led by faculty members Dr. M. Arunjit Singh, Dr. Monika Keisham, and Dr. Priyanka Verma, alongside non-teaching staff member Mr.Bilal, the expedition comprised of 22 enthusiastic students.

Mukteshwar, situated approximately 50 km away from Nainital, boasts a dense forest teeming with diverse flora and fauna. Renowned for its temple, the area attracts visitors year-round. Adjacent to the temple lies a picturesque waterfall, enhancing the natural beauty of the surroundings.

The journey commenced at 8:15 pm from the college campus, with students equipped with polythene bags, papers, bottles, forceps, and scissors to facilitate specimen collection.

A luxury bus was arranged for transportation, departing at 9:45 pm. We arrived in Mukteshwar at 10:45 AM on 29th October 2023.

Upon reaching, we delved into the forest area post breakfast. The excursion revealed the remarkable biodiversity of the forest, with students actively collecting specimens of algae, bryophytes, pteridophytes, and angiosperms and even observing wood-rotting fungi. Throughout the journey, the faculty members elucidated on plant diversity, habitat, morphology, and economic uses. Following a two-hour exploration, we savored lunch amidst nature before proceeding to visit a temple and witnessed a breathtaking sunset.

The following day, on 30th October 2023, we visited the Central Institute of Temperate Horticulture to further explore the local flora. On 31st October 2023, our itinerary included visits to a waterfall in the morning, a tea garden post lunch, and finally, a trip to Nainital in the evening.

The return journey commenced thereafter, and we arrived in Delhi at 4:00 am on 1st November 2023.

TRIP TO MUKHTESWAR AND NAINITAL

Outcomes of the Botanical Excursion:

1. Learning Biodiversity: The students gained valuable insights into plant biodiversity through hands-on experience and expert guidance during the excursion.
2. Specimen Collection: The expedition resulted in the collection of diverse plant specimens, including angiosperms, algae, bryophytes, etc., essential for submission in practical classes and examinations.

Overall, the botanical excursion to Mukteshwar proved to be an enriching and educational experience, fostering a deeper appreciation for the natural world among the students.

TSUBAKI'24 - THE INTER COLLEGE ANNUAL FEST

On 16th April 2024, the annual Botanical Fest Tsubaki'24 was organized in Sangam Parisar of Kalindi College. It was a great success where 81 students and teachers graced the event. The event started at 10:00 am and had a series of activities and events that kept everyone engaged and entertained throughout the day.

The fest began with seeking divine blessings and honouring the guests with planters. The esteemed guest, Dr. Amit Kumar Rai, a Scientist D at the National Agri-Food Biotechnology Institute, DBT NABI Mohali, delivered a fascinating lecture on "The Potential of Microorganisms from Traditional Foods for the Development of Plant-Based Functional Food Products". He shared his insights on probiotic potential, nutrient enrichment, functional properties, cultural heritage, health benefits of these traditional foods, and the diversity of plant-based products. He emphasized that collaboration between food scientists, microbiologists, and culinary experts can lead to innovative approaches for incorporating microorganisms from traditional foods into plant-based products, driving advancements in the field of functional food development.

The fest continued with several exciting events and competitions. Floral Focus was the first competition, where participants had to click photos of plants inside the college campus. The second event was Pebble Picasso, where competitors showcased their creativity by painting on stones. Following the suit Quiz-Wits play took place, and it had a questionnaire round about the environment and plants. The final event was Unveil the Unseen, where competitors had to touch the object and guess its name, it also had several rounds including 'identify me' and 'riddle me up'.

The fest concluded with several open mic sessions and fun events that kept everyone's spirits high. The winners were appreciated with certificates and trophies, and the office bearers of Amaranth also acknowledged efforts of with certificates in the signing off ceremony. Overall, the Tsubaki Fest was an eventful and informative day, filled with fun, learning, and entertainment. The event was successful due to the constant guidance of our TIC Dr. M. Arunjit and faculty members. The support of our Principal Prof.Meena Charanda made it possible.

TSUBAKI'24- THE INTER COLLEGE ANNUAL FEST

“What you do makes a difference, and you have to decide what kind of difference you want to make.”

- Dr. Jane Goodall

THANK YOU!!

KEEP THINKING